

NATURAL FARMING REVOLUTION

PROFITABLE, RESILIENT AND
SUSTAINABLE MODELS FROM THE HIMALAYAS



ICAR-AGRICULTURAL TECHNOLOGY APPLICATION RESEARCH INSTITUTE
ZONE-I, PAU CAMPUS, LUDHIANA-141 004, PUNJAB

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FOREWORD

For the future of agriculture, human health, and environmental sustainability, natural farming is quickly becoming essential and is no longer an option. A subtle but significant shift is taking place throughout the varied ecosystems of the Himalayan area, where traditional agriculture has long struggled with high input costs, soil degradation, and climate-related problems.

This book, *Natural Farming Revolution: Profitable, Resilient and Sustainable Models from the Himalayas*, is a remarkable compilation of real-life success stories that demonstrate how natural farming is reshaping agricultural livelihoods across diverse agro-climatic zones, from the cold deserts of Ladakh to the lush valleys of Himachal Pradesh, the plains of Punjab, and the hill districts of Uttarakhand and Jammu & Kashmir.

What makes this collection particularly distinctive is its strong grounding in reality. These are not theoretical models or experimental trials conducted under controlled conditions. They are lived experiences of farmers, men and women alike, who have courageously transitioned from conventional practices to natural farming systems, achieving not only ecological sustainability but also impressive economic returns. The reported net farm incomes, ranging from modest yet stable earnings to exceptionally high returns exceeding ₹ 40 lakh annually, stand as compelling testimony to the immense potential of this approach. A further strength of this collection lies in its emphasis on diversification and integration. The successful models documented here bring together crops, livestock, horticulture, and value addition in a synergistic manner, thereby reducing risk and enhancing income stability. The focus on local resource utilization and minimal dependence on external inputs further strengthens the sustainability of these systems.

The book's thematic structure, which includes integrated farming systems, perennial and annual horticulture, value addition, low-budget farming, and innovative entrepreneurial models, offers a holistic understanding of natural farming as a comprehensive livelihood strategy rather than a mere cultivation technique. Beyond structure, what truly animates these pages are the stories of women entrepreneurs and smallholder farmers who have turned constraints into opportunities, exemplifying resilience, innovation, and grassroots leadership across some of the most challenging terrains in the country.

In the current context, where agriculture is increasingly under pressure from climate change, rising costs of inputs, and declining soil quality, these success stories serve as a source of inspiration and hope. They demonstrate that profitability and sustainability in farming are not mutually exclusive, but are in fact achievable when agricultural practices align with natural processes.

This book will serve as a valuable resource for policymakers, researchers, extension workers, and, most importantly, farmers seeking viable pathways toward sustainable agriculture. It not only documents success; it inspires replication.

I commend the authors and contributors for bringing together such a rich and impactful collection. This work will undoubtedly play a significant role in advancing the natural farming movement and empowering farming communities across the country.



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PREFACE

Agriculture in the Himalayan and sub-Himalayan regions has historically been constrained by a distinct set of challenges, shaped by fragile ecosystems, small landholdings, erratic climate, and limited input availability. Over time, increasing dependence on chemical-intensive agriculture has further weakened these systems, affecting soil health, farm profitability, and human well-being. Against this backdrop, natural farming has emerged as a promising pathway toward restoring ecological balance while ensuring sustainable livelihoods. This book is an effort to document and present evidence-based success stories of farmers who have embraced natural farming and transformed their agricultural practices into resilient, profitable, and sustainable systems.

The book is organized into six thematic sections, each capturing a distinct dimension of natural farming. The first section focuses on integrated natural farming systems, highlighting how diversification and resource integration can significantly enhance farm income and resilience. The second and third sections explore the application of natural farming in perennial and annual horticultural crops, showcasing its potential in high-value agriculture across varying climatic conditions. Building on these, the fourth section emphasizes value addition, an often-overlooked aspect that plays a crucial role in increasing farmers' income and market competitiveness. The fifth section presents low-budget natural farming models, demonstrating that even farmers with limited resources can achieve sustainable productivity and profitability. Finally, the sixth section covers miscellaneous innovative cases, including bio-resource centres, farmer producer organizations, and input-based enterprises that support the broader natural farming ecosystem.

The documented cases span multiple states, including Himachal Pradesh, Punjab, Uttarakhand, Jammu and Kashmir, and Ladakh, and represent a wide range of agro-climatic conditions, making this a richly diverse compilation. Each case study provides insights into practical strategies, challenges faced, and solutions adopted by farmers on the ground. The inclusion of women farmers, smallholders, and innovative entrepreneurs adds further richness and inclusivity to the narrative. The reported net farm incomes clearly demonstrate that natural farming is not merely an ecological choice but also an economically viable option across diverse farming contexts.

The purpose of this book is not only to document what has worked, but also to encourage wider adoption and adaptation of these models to local conditions. It aims to serve as a practical knowledge resource for farmers, extension personnel, researchers, and policymakers working to promote sustainable agriculture. We hope that this compilation will motivate more farmers to explore and adopt natural farming practices, and in doing so, contribute to building an agricultural system that is resilient, food-secure, and environmentally sound.

This book is a tribute to the farmers whose dedication, innovation, and perseverance are redefining what agriculture can look like, grounded in nature, driven by knowledge, and oriented toward the well-being of both people and the planet.



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SECTION 1: INTEGRATED NATURAL FARMING SYSTEM - AN INTRODUCTION

Agriculture in India, especially in ecologically sensitive regions such as the Himalayas and cold arid zones, is experiencing a gradual yet profound shift toward greater sustainability, resilience, and economic viability. Over recent decades, input-intensive conventional farming practices have resulted in major challenges, including declining soil health, increasing input expenses, loss of biodiversity, and heightened susceptibility to climate fluctuations. These issues are particularly acute in hilly and resource-poor areas where agriculture already faces environmental and financial instability. Against this backdrop, the Integrated Natural Farming System (INFS) has emerged as a viable pathway that blends traditional knowledge with ecological principles to foster self-reliant and profitable farming systems. This section highlights eight case studies demonstrating how farmers across varied agro-climatic conditions have improved their livelihoods through the adoption of integrated natural farming practices.

Integrated Natural Farming goes beyond simply moving away from chemical inputs; it involves a comprehensive redesign of the entire agricultural system. This approach centers on integrating crops, livestock, trees, and other farm enterprises into a cohesive framework where each component complements and supports the others. It encourages the use of on-farm resources such as farmyard

manure, compost, botanical extracts, and bio-inoculants to minimize reliance on external inputs. Resource recycling serves as a fundamental principle, ensuring that waste from one component becomes a valuable input for another, which enhances nutrient cycling and improves soil health. By maintaining biodiversity and ecological harmony, INFS increases the resilience of farming systems to pests, diseases, and climatic challenges while simultaneously boosting productivity and profitability.

One of the most notable benefits of INFS is its capacity to reduce risk through diversification. Rather than depending on a single crop or enterprise, farmers engage in a variety of activities including crop cultivation, horticulture, livestock rearing, mushroom farming, and value addition. This diversified approach guarantees multiple sources of income, thereby softening the blow of crop failure or fluctuations in market prices. The utilization of locally available resources reduces the cost of cultivation and enables farmers to become self-sufficient, lessening their reliance on external markets for inputs.

The success stories presented in this section encompass the states of Himachal Pradesh, Punjab, Jammu & Kashmir, Ladakh, and Uttarakhand, representing a broad spectrum of agro-ecological conditions ranging from fertile plains and mid-hill zones to high-altitude cold deserts. These varied environments demonstrate the adaptability and potential scalability of INFS practices. Farmers across these regions have tailored the core principles of INFS to suit their distinct climatic conditions, resource bases, and socio-economic settings, reflecting the approach's flexibility and its potential for wider adoption across the country.

The significant increase in farm income in these case studies is a noteworthy feature that serves as a powerful incentive for further adoption. In Bilaspur, Himachal Pradesh, for example, a farmer successfully transformed a traditional maize-wheat cropping system into a diversified integrated natural farming model, producing ₹26.64 lakh in net farm revenue. This shift included the integration of several businesses, effective resource management, and natural farming methods that greatly decreased input costs while increasing total output. In a similar vein, a female entrepreneur in Kullu showed the potential of integrated systems in hill agriculture by generating an annual net income of ₹23 lakh, underscoring INFS's economic viability as well as its role in empowering women and promoting inclusive agricultural development.

Even in the most demanding and challenging environments, such as the cold arid region of Kargil in Ladakh, farmers have successfully embraced and adopted INFS. Despite facing severe climatic conditions, considerably short growing seasons, and severely limited resources, they have been able to generate net incomes exceeding ₹6 lakh per year. This remarkable accomplishment clearly reflects the





resilience and adaptability of INFS and firmly establishes that sustainable farming practices can indeed flourish and thrive even under the most extreme agro-climatic conditions. The cases from Kargil further underline and highlight the significance of innovation, careful planning, and efficient resource management in successfully overcoming various environmental constraints and limitations.

These case studies highlight the vital and necessary function of INFS in guaranteeing livelihood resilience and long-term sustainability, which goes beyond income enhancement. By diversifying and growing their farming operations over time, farmers in Hoshiarpur, Punjab, and Reasi, Jammu and Kashmir, have been able to successfully stabilize their earnings. They have created more dependable and consistent revenue streams that simultaneously improve household food security and nutritional security for their families by skillfully integrating agricultural production with livestock husbandry, horticulture, and value addition operations.

INFS has been significant in enhancing livelihood stability in smaller, resource-constrained areas like Uttarkashi in Uttarakhand and Mandi in Himachal Pradesh. By implementing effective resource management techniques and combining several businesses, farmers have increased their earnings and standard of living despite having small landholdings. These illustrations show that small and marginal farmers, who have more difficulty maintaining their livelihoods, benefit most from INFS.

An additional significant dimension brought to light by these cases is the crucial role of innovation and inclusivity in shaping agricultural transformation. The active participation of women entrepreneurs and smallholder farmers clearly reflects the broad accessibility and considerable scalability of INFS across different regions and communities. Unlike conventional farming systems, which frequently demand high levels of capital investment, INFS is primarily knowledge-intensive in its nature, as it depends largely on farmers' thorough understanding of ecological processes, efficient resource management, and time-tested traditional practices. This particular characteristic makes it a highly attractive and viable option for farmers who possess limited financial resources but demonstrate a strong willingness to embrace sustainable and innovative agricultural approaches in their day-to-day farming operations.

Integrated Natural Farming makes a remarkably significant contribution to environmental sustainability as a whole. By completely eliminating or substantially minimizing the use of chemical inputs in agricultural practices, it actively helps in restoring soil health, conserving precious water resources, and enhancing overall biodiversity in the surrounding ecosystem. The strong emphasis placed on organic matter recycling



and the use of natural inputs gradually improves soil structure and fertility over a period of time, thereby supporting sustained and long-term agricultural productivity. Furthermore, diversified farming systems are also considerably more resilient and adaptable to the growing challenges of climate change, as they are better equipped to withstand extreme weather events as well as unpredictable fluctuations in temperature and rainfall patterns throughout the year.

Overall, the cases presented in this section clearly demonstrate that INFS can effectively serve as a highly viable and promising pathway for achieving higher incomes, ecological sustainability, and long-term livelihood security for farming communities. They provide substantial empirical evidence that sustainable agriculture is not only environmentally beneficial and ecologically sound but also economically rewarding and financially profitable for those who adopt it. With proper and careful planning, effective integration of available resources, and a strong commitment to natural farming principles, traditional and conventional farming systems can be successfully transformed into resilient and highly profitable agricultural enterprises.

This section effectively sets the stage for a much deeper and comprehensive exploration of these remarkable success stories, offering valuable insights and practical lessons for a wide range of stakeholders including policymakers, extension workers, researchers, and farmers alike. The rich experiences and achievements documented here can readily serve as replicable and adaptable models for promoting sustainable agriculture across diverse agro-climatic regions throughout the country, thereby making a meaningful contribution to the broader and long-term goals of rural development, environmental conservation, and food security across India.

1

Innovative Transformation from Maize-Wheat System to Natural Farming Based Integrated Farming for Exceptional Returns

Name : Mr. Bharat Bhushan
Address : Vill. Fagog, PO-Baloh, Jhandutta, Bilaspur-174 029 (HP)
Qualification : Graduate
Contact No. : 9817224371
Landholding : 6.40 acre



Introduction

Mr. Bharat Bhushan is a 49-year-old progressive farmer from Bilaspur district of Himachal Pradesh, belonging to a traditional farming family with deep roots in agriculture. He owns a total landholding of 6.40 acre, which for several years was dominated by the conventional maize-wheat cropping system practiced under chemical-based agriculture. Out of the total area, about 5.93 acre were earlier managed using chemical fertilizers and pesticides, resulting in low productivity, rising input costs, and declining soil health. Under this system, he was able to earn net returns of only about ₹7,880 per acre, which was insufficient to meet household needs and did not justify the increasing cost of cultivation.

Observing the stagnation in income and the adverse effects of chemical farming on soil fertility, Mr. Bharat Bhushan began exploring alternative and sustainable farming approaches that could improve profitability while conserving natural resources. His strong motivation to innovate, coupled with a desire to make farming economically rewarding, led him to approach Krishi Vigyan Kendra (KVK), Bilaspur during 2018–19. With consistent technical guidance, capacity-building support, and field-level handholding from KVK scientists, he gradually transitioned from monocropping to a diversified farming system based on Natural Farming (NF) principles. This transition marked a major shift in his farming journey, as he integrated tuber crops, horticultural crops, and allied enterprises into a resilient and market-oriented NF model, laying the foundation for sustainable income enhancement and long-term farm viability.

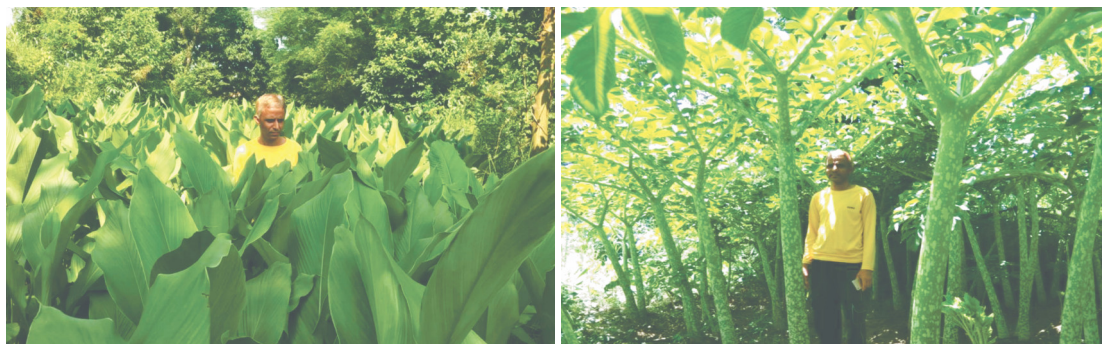
Uniqueness of work related to NF

Mr. Bharat Bhushan's work in NF is unique for introducing and popularizing neglected tuber crops such as elephant foot yam, greater yam, taro, ginger, and turmeric within the local cropping system. Moving away from low-income, chemical-based farming, he adopted NF principles and diversification to integrate



Mr. Bharat Bhushan at his Natural Farming field





Mr. Bharat Bhushan showing the crops grown under Natural Farming practices

agriculture and horticulture into a sustainable and profitable farming model. A distinctive feature of his approach is the dual marketing of tuber crops both as quality seed material and as fresh vegetables, marketed under the label of chemical-free natural produce, which enables him to secure premium prices. Recognizing the scarcity of reliable planting material, he addresses this critical gap by supplying bulk quantities of tuber seeds to fellow farmers, thereby strengthening the local production system.

With growing consumer preference for nutritionally rich tuber crops, his market-oriented NF model has gained wide acceptance. His active participation in innovation-based startup schemes and regular involvement in training and exposure programmes have further expanded his outreach and visibility. In recognition of his pioneering efforts, he received the Krishi Doot Award in 2021 and was selected under the Himachal Pradesh State Chief Minister Innovation Startup Scheme, through which he received financial support of ₹21 lakh for promoting tuber crops across the state.

Systematic Capacity Building

KVK Bilaspur has played a key role in systematic capacity building for NF by providing continuous technical backstopping and strengthening farmers' skills in tuber-based NF systems. Through structured training programmes, exposure visits, and on-farm demonstrations conducted at Mr. Bharat Bhushan's field, KVK has enabled farmers to gain hands-on experience in sustainable production practices and the use of improved planting material.

The establishment of assured marketing linkages for pesticide-free tuber seed has further enhanced farmers' confidence and economic viability. By facilitating the replication of his integrated agriculture, horticulture, and animal husbandry model across multiple villages, KVK has institutionalized learning platforms that support skill development, enterprise diversification, and wider adoption of NF practices, thereby contributing to long-term livelihood enhancement and system-level sustainability.

Major practices under NF

Under NF, he introduced several tuber crops such as elephant foot yam (Gajendra and Palma Zimikand-1), greater yam (Sree Swathy, Sree Nidhi, Sree Neelima, Rajendra-1, Rajendra-2), taro (Muktakeshi), and turmeric (Palam Pitamber, Palam Lalima, Pragiti, Rajendra Sonia and Rajendra Sonali). In addition, he diversified his farming system by cultivating colocasia, pulses (blackgram) as intercrop with turmeric, nursery of cucurbits and cauliflower, and fruit crop such as lemon. The adoption of NF practices, including the use of jeevamrit, beejamrit, intercropping, mulching, crop rotation, and livestock integration has greatly reduced his dependence on chemical inputs. He has also established dairy unit to recycle farm resources and provide organic manure for crops, thereby strengthening the sustainability of his NF system. Mr. Bharat Bhushan primarily focuses on tuber crops but simultaneously follows NF principles to ensure sustainability





in his farming system. He prepares and applies ghanjeevamrit, jeevamrit, and other cow-based formulations to enhance soil fertility and microbial activity. For moisture conservation, he adopts mulching practices and maintains whapasa conditions that ensure proper soil aeration and efficient water utilization. To manage pests and diseases, he uses bio-concoctions and other low-cost NF preparations, effectively reducing dependence on synthetic chemicals.

Economic analysis

Table 1 presents an enterprise-wise economic assessment of the integrated NF system, highlighting area allocation, production, costs, returns, and profitability indicators. Turmeric seed production emerged as the major income-generating crop, cultivated over 4.2 acre with a production of 350 q. It recorded a cultivation cost of ₹15.25 lakh and generated gross returns of ₹35.20 lakh, resulting in net returns of ₹19.95 lakh and a B:C ratio of 2.31, indicating strong profitability. Elephant foot yam and greater yam grown on 0.4 acre yielded net returns of ₹4.19 lakh with a B:C ratio of 2.23, reflecting efficient resource use. Blackgram showing a higher B:C ratio of 2.73 despite its smaller scale.

Nursery activities involving cucurbits and cauliflower proved economically viable, generating net returns of ₹56,135 and a B:C ratio of 2.48. Fruit cultivation, primarily lemon, recorded the highest B:C ratio of 3.85, indicating high returns relative to cost, even with limited area. The dairy unit with three buffalo provided steady supplementary income, yielding net returns of ₹1.20 lakh. Overall, the integrated system incurred a total expenditure of ₹21.29 lakh (including family labour) and generated gross returns of ₹47.93 lakh, with net returns of ₹26.64 lakh and an overall B:C ratio of 2.25, demonstrating the economic sustainability and profitability of diversified NF.

Table 1: Enterprise-wise cost–return structure and profitability of the integrated natural farming system

Crops/ enterprise	Area (acre)	Production (q/farm)	Cost# (₹/farm)	Gross returns (₹/farm)	Net returns (₹/farm)	B:C ratio
Turmeric seed production	4.2	350	15,25,220	35,20,480	19,95,260	2.31
Elephant foot yam & greater yam	0.4	70	3,40,540	7,60,460	4,19,920	2.23
Colocasia	0.2	5	25,450	56,825	31,375	2.23
Blackgram*	0.5	4	12,450	34,000	21,550	2.73
Nursery**	0.05	--	37,865	94,000	56,135	2.48
Lemon	0.45	--	7,044	27,120	20,076	3.85
Dairy unit***	--	--	1,80,230	3,00,410	1,20,180	1.67
Total			21,28,799	47,93,295	26,64,496	2.25

* Blackgram is intercropped with turmeric
 ** Nursery includes cucurbits & cauliflower
 *** No. of buffaloes = 3
 # Cost of cultivation or expenditure on the enterprise/ activity including family labour





Influence and impact on farmers

Mr. Bharat Bhushan's success under NF has inspired a large number of farmers in Bilaspur and surrounding areas to diversify into tuber crops. His farm has emerged as a live demonstration and learning site, with KVK Bilaspur and AICRP centres regularly organizing exposure visits to showcase sustainable NF-based practices. Through hands-on training and the distribution of free planting material to 21 farm families and Self-Help Groups, he has played a key role in accelerating the adoption of tuber crops at the community level. The shift from the traditional maize–wheat system to diversified tuber-based NF systems has significantly enhanced farm income while reducing dependence on chemical inputs. His work has revived interest in neglected tuber crops by clearly demonstrating their economic potential and suitability under sustainable farming systems. In addition, his enterprise generates more than 1,000 man-days of employment annually, contributing to rural livelihood enhancement. Recognition through awards, startup selection, and incubation programmes has further strengthened his position as a role model for progressive farmers and rural youth.



**Farmer receiving Unnat and Prerna Srot Krishi Doot Samman Puraskar
by Vice Chancellor of CSKHPKV, Palampur**

Contributors: Gourav, Manpreet Kour and Seema Shah, Krishi Vigyan Kendra, Bilaspur



2

Natural Farming Based Integrated Farming System-A Case Study of Innovative Hill Women Entrepreneur

Name : Mrs. Anita Negi

Address : Vill. Targhali, PO-Manglore, Bajaura, Kullu-175 123 (HP)

Qualification : 12th

Contact No. : 8219596910, 9816453339

Landholding : 8 acre



Introduction

Mrs. Anita Negi, a progressive woman farmer from village Targhali, P.O. Manglore, Tehsil Bajaura, District Kullu, Himachal Pradesh, has engaged in agriculture for more than 35 years. With a total landholding of 8 acre (6.25 acre under orchards and 1.75 acre under vegetables), she initially practiced chemical-based farming of cereals and pulses. Under the guidance of KVK Kullu, she adopted Natural Farming (NF) on her farm, gradually diversifying into horticulture, vegetables, and dairy in 2019. Her integrated farming approach has enhanced both productivity and profitability of the farm, making her a leading woman entrepreneur in the region.

Uniqueness of work related to NF

The uniqueness of Mrs. Anita Negi's work lies in her ability to transform a traditionally chemical-dependent and resource-constrained farm into a highly profitable and sustainable Natural Farming-based Integrated Farming System. Despite challenges such as fragmented landholdings, limited irrigation, and low profitability, she adopted innovative NF solutions including sprinkler-based efficient irrigation, on-farm vermicomposting, and indigenous bio-inputs such as jeevamrit, beejamrit, and ghanjeevamrit to reduce external input costs while sustaining high productivity.

Unlike conventional NF adoption limited to single crops, she holistically integrated orchards, diversified vegetables, dairy with desi cows, a fruit nursery, and vermicomposting into a self-sustaining production system. Her market-oriented crop planning, flexible marketing strategies, and use of mechanization within NF further distinguish her model. The maize-black gram-apple based integrated system developed on her farm demonstrates ecological intensification through improved soil health, nutrient recycling, and income stability, making her approach resilient, replicable, and a benchmark for women-led NF entrepreneurship.



Demonstration on preparation of bio products for Natural Farming practices





Field visit to the Natural Farming field of the farmer



Use of bio products in the field

Systematic Capacity Building

Mrs. Anita Negi was identified by KVK Kullu as an enterprising farmer based on her rich farming experience, progressive outlook, and strong willingness to innovate. To strengthen her entrepreneurial capabilities, she actively participated in a series of systematic training and awareness programmes organized by KVK Kullu and allied departments. These capacity-building efforts focused on NF practices, vegetable and horticultural crop management, efficient water management, vermicomposting, post-harvest handling, and value addition. She was also exposed to successful NF models through exposure visits, which enhanced her practical understanding. Through these interventions, she developed expertise in the preparation and use of bio-formulations such as jeevamrit, beejamrit, and ghanjeevamrit for integrated pest and nutrient management, which she effectively integrated into her farming system to improve sustainability and productivity.

Major practices under NF

Mrs. Anita Negi has adopted a Natural Farming-based integrated approach by combining multiple farm enterprises to enhance sustainability and productivity. Her major NF practices include diversified vegetable cultivation such as tomato, peas, garlic, cauliflower, french bean, squash, okra, and capsicum, along with orchard management of apple, persimmon, kiwi, peach, pear, and plum under natural inputs.

To strengthen nutrient recycling and reduce external inputs, she maintains an on-farm vermicomposting unit and a dairy unit with desi cows, which supports both farm operations and household nutrition. She has also developed a fruit nursery to ensure quality planting material and additional income. The use of farm mechanization and efficient resource management further complements her NF practices, demonstrating how integration of crops, livestock, and organic inputs can optimize resources and promote sustainable growth under NF.

Economic analysis

The enterprise-wise economic analysis presented in the table clearly shows a sustained improvement in farm profitability under a diversified horticulture and vegetable-based farming system during 2022–23 to 2024–25. Apple cultivation remained the major contributor to farm income, with net returns increasing from ₹6.38 lakh in 2022–23 to ₹13.27 lakh in 2024–25 due to higher productivity and better price realization (Table 1). Allied fruit crops including plum, pear, persimmon, and peach also recorded a steady rise in net returns, reflecting improved orchard management practices.

Among vegetables, tomato and pea cultivation emerged as highly remunerative enterprises, consistently generating substantial net income, while garlic, french bean, and cauliflower further strengthened overall





Table 1: Year wise economic performance of horticulture and vegetable-based farming system

Crop	Area (acre)	Year	Gross returns (₹)	Cost of cultivation (₹)	Net returns (₹)
Apple	2.5	2022-23	8,03,100	1,65,120	6,37,980
		2023-24	12,12,000	1,71,300	10,40,700
		2024-25	14,97,800	1,70,420	13,27,380
Plum, Pear, Persimmon, Peach	3.1	2022-23	2,80,320	1,38,100	1,42,220
		2023-24	3,42,200	1,41,750	2,00,450
		2024-25	3,50,580	1,44,220	2,06,360
Tomato	1.2	2022-23	5,09,310	69,860	4,39,450
		2023-24	4,45,000	70,800	3,74,200
		2024-25	5,10,350	71,020	4,39,330
Cauliflower	0.8	2022-23	60,500	39,200	21,300
		2023-24	1,01,400	43,250	58,150
		2024-25	95,200	44,250	50,950
Peas	0.8	2022-23	2,01,120	24,200	1,76,920
		2023-24	2,03,100	26,750	1,76,350
		2024-25	2,15,000	28,750	1,86,250
French bean	0.4	2022-23	45,150	12,780	32,370
		2023-24	48,230	13,500	34,730
		2024-25	51,500	14,780	36,720
Squash	0.2	2022-23	15,180	8,100	7,080
		2023-24	15,180	8,350	6,830
		2024-25	15,180	8,400	6,780
Garlic	0.2	2022-23	45,250	7,050	38,200
		2023-24	50,160	7,600	42,560
		2024-25	50,450	7,755	42,695
Others (okra, capsicum, brinjal, chillies)	0.2	2022-23	8,240	7,100	1,140
		2023-24	9,500	7,350	2,150
		2024-25	11,050	7,480	3,570
Total		2022-23	19,68,170	4,71,510	14,96,660
		2023-24	24,26,770	4,90,650	19,36,120
		2024-25	27,97,110	4,97,075	23,00,035





Vegetable plant nursery under NF



Horticultural plant nursery and produce under NF

returns. Despite only a marginal increase in total cost of cultivation, total net returns increased from ₹14.97 lakh to 23.00 lakh over the period, highlighting the economic viability, income stability, and sustainability of enterprise diversification in horticulture-based farming systems.

Influence and impact on farmers

Mrs. Anita Negi's success under NF has created a strong and visible impact on the farming community, particularly among women farmers. Her achievements have been formally recognized through prestigious awards such as the Best Innovative Farmer Award from IARI, New Delhi, the District Level Best Farmer Award from the Department of Agriculture, Kullu, and the Unnatsheel Kisan Preranasrot Samman Award from CSKHPKV, Palampur, which have enhanced her credibility as a role model. Beyond recognition, her farm has emerged as a learning and demonstration hub, regularly visited by farmers, officials, and students to observe practical NF and integrated farming practices. Through active knowledge sharing and farmer-to-farmer interactions, she has motivated many farmers to adopt diversified enterprises, efficient irrigation, vermicomposting, and market-oriented strategies under NF. Her journey clearly demonstrates to budding entrepreneurs that integrating horticulture, vegetables, dairy, and natural inputs can improve farm income, reduce risk, and ensure ecological sustainability, thereby transforming livelihoods and strengthening confidence in NF systems.



Vegetables produced with Natural Farming practices

Contributors: Subhash Kumar, Ramesh Lal and Surender Kumar, Krishi Vigyan Kendra, Kullu



Name : S. Karnail Singh

Address : VPO-Bassi Ghulam Hussain, Hoshiarpur-146 021 (PB)

Qualification : 12th

Contact No. : 9417683383

Landholding : 2.75 acre



Introduction

In May 2018, S. Karnail Singh, a progressive farmer from village Bassi Ghulam Hussain, District Hoshiarpur, met with a life-altering accident when a tree bough fell on him while he was returning home from delivering organically grown vegetables. The incident caused severe spinal cord damage, leaving him nearly 70 percent paralyzed from the waist down. After months of hospitalization, breathing complications, and financial strain on his family, he chose rigorous physiotherapy over surgery and remained confined indoors for nearly eight months. Despite these challenges, his passion for farming never diminished. With the support of a battery-powered tricycle, he gradually returned to his fields and resumed agricultural activities.

Today, he works 6-7 hours daily, supervising crop planning, sowing, harvesting, preparation of Jeevamrit and other bio-inputs, and marketing of produce. His organically certified and diversified farm majorly includes seasonal vegetables for marketing and wheat for household consumption. Earlier engaged in chemical farming, a tragic family loss due to cancer strengthened his resolve to shift completely to Natural Farming (NF). He joined the Innovative Farmers' Association, Hoshiarpur, in 2013, which has since grown from 10 to nearly 70 members. Through collective learning and marketing, he strengthened his knowledge and market linkages. Today, his farm stands as a model of resilience, demonstrating that determination and commitment can overcome even the most severe adversity.

Uniqueness of work related to NF

S. Karnail Singh has exhibited exceptional entrepreneurial competencies by transforming adversity into opportunity. His courage, resilience and problem-solving attitude enabled him to convert his limitations into strengths. He systematically developed a farming model that not only sustained his family but also inspired an entire community. One of his strongest competencies is innovation. By preparing farmyard manure, vermicompost, and natural bio-formulations like beejamrit, jeevamrit, agniastra, neem extracts and sour buttermilk, he established a cost effective, chemical free system that restored soil health and produced safe food. He effectively combined traditional wisdom with modern scientific inputs. His strong market orientation offers uniqueness in his NF model. He has adopted direct marketing channels such as ATMA Kisan Hut and local organic produce fairs in Hoshiarpur, thereby eliminating middlemen and ensuring better profit



S. Karnail Singh managing his farm operations on his e-rickshaw





margins. Every Sunday, he also participates in the Safe Food Mandi at Roshan Ground, Hoshiarpur, where he brings fresh naturally grown vegetables to consumers. Alongside this, his focus on dairy has helped him build a loyal consumer base. By aligning his production with the growing demand for safe and healthy food, he has successfully established himself as a trusted natural farmer.

Systematic Capacity Building

S. Karnail Singh's journey in NF has been shaped by continuous learning, training and institutional support. After his accident in 2018, he realized the importance of adopting scientific methods that would allow him to manage farming operations more efficiently despite his physical limitations. He became actively associated with Krishi Vigyan Kendra (KVK), Bahawal, the Department of Agriculture and Farmers Welfare and the Department of Horticulture, where he regularly participated in training programs, demonstrations, and exposure visits. These capacity building programs provided him with the technical knowledge to shift from conventional chemical farming to a fully natural farming system.

He was trained in Integrated Pest Management (IPM), where he learned to use sticky traps, pheromone traps, fruit fly traps and yellow cards as eco-friendly alternatives to chemical pesticides. Along with these practices, he also adopted mulching to conserve soil moisture and suppress weeds and zero tillage to improve soil health and reduce cultivation costs. This scientific handholding gave him the confidence to manage pest and crop production challenges in vegetables and fruits without relying on harmful chemicals. With guidance from experts, he expanded his farm portfolio to include vegetables, small fruit orchard and herbal crops. His active membership in the PAU Farmers' Club, PAU Organic Farmers' Club and the Innovative Farmers' Association further strengthened his skills as he exchanged experiences with progressive farmers and received continuous mentorship. Regular exposure to farmer field schools, on campus training, and farmers' fairs enabled him to keep pace with evolving technologies and market trends. By combining institutional guidance with own determination, he has built a sustainable farming model that demonstrates how capacity building, when effectively utilized, can empower even especially abled farmers to achieve remarkable success.

Major practices under NF

Instead of relying on a single crop, S. Karnail Singh is cultivating multiple crops, including many types of seasonal vegetables, fruit trees and even developing a small herbal garden. He further integrated dairy farming with indigenous cows, ensuring not just milk for household consumption but also compost for enriching his soil. He keeps a small portion of land for wheat for household consumption. This diversified portfolio provided resilience against risks, improved income stability and enhanced self-reliance. Major part of his income is from seasonal vegetables, including chilli, capsicum, okra, brinjal, cucumber, tomato, bottle gourd, bitter gourd, turmeric, onion, carrot,



**S. Karnail Singh marketing his produce
at weekly Safe Food Mandi**





coriander, radish, turnip and peas. In addition, he maintains a small orchard of guava, lemon, peach, pomegranate and malta along with a herbal garden that includes ashwagandha, tulsi, stevia and lemongrass. To enhance soil fertility, he grows legume crops for green manuring. For pest control, he schedules regular sprays of natural formulations and places traps across his fields. His farm operations are aligned with ecological balance and consumer demand.

Economic analysis

The diversified NF model adopted by Mr. Singh has significantly improved his farm profitability by reducing chemical input costs and enhancing soil health. Through integration of vegetables, fruits, herbal crops and

Table 1: Economic performance of diversified natural farming system

Particulars	Area (acre)/ Cows (No.)	Production (q/farm) / (L/farm)	Gross income (₹/farm)	Cost of cultivation # (₹/farm)	Net income (₹/farm)	B:C ratio
Chilli	0.13	10.30	20,188	9,058	11,130	2.23
Capsicum	0.13	9.40	22,748	8,860	13,888	2.57
Okra	0.50	17.50	36,137	12,580	23,557	2.87
Brinjal	0.25	26.00	44,299	15,664	28,635	2.83
Cucumber	0.25	17.00	31,648	11,558	20,090	2.74
Tomato	0.10	16.00	22,828	10,521	12,307	2.17
Bottle Gourd	0.10	13.20	20,565	10,248	10,317	2.01
Bitter Gourd	0.30	11.20	18,748	7,843	10,905	2.39
Turmeric	0.50	43.40	92,008	28,451	63,557	3.23
Onion	0.50	57.82	93,899	26,314	67,585	3.57
Carrot	0.50	79.48	72,565	23,476	49,089	3.09
Coriander	0.13	17.45	33,120	10,240	22,880	3.23
Radish	0.13	23.50	24,933	8,250	16,683	3.02
Turnip	0.13	11.60	17,330	7,849	9,481	2.21
Peas	0.25	10.80	20,001	8,546	11,455	2.34
Fruits/ herbal plants*	0.13	7.46	24,618	11,125	13,493	2.21
Dairy**	6	12410	7,19,780	248200	4,71,580	2.90
Total			13,15,415	4,58,783	8,56,632	2.87

Including family labour

* Fruits include guava, lemon, peach, pomegranate, and malta while herbal plants include shwagandha, tulsi, stevia and lemongrass

** For dairy enterprise, milk production (L/farm) is calculated on annual basis





dairy, he has developed multiple income sources, ensuring regular and stable earnings throughout the year. As shown in Table 1, the total gross income from all enterprises is ₹13.15 lakh with a total cost of ₹4.58 lakh, resulting in a net income of ₹8.56 lakh and an overall B:C ratio of 2.87. The dairy enterprise is the major contributor, generating a net income of ₹4.71 lakh, which accounts for about 55 percent of the total net income, making it the backbone of the farming system. Among crops, onion (₹67,585) and turmeric (₹63,557) are the leading contributors, followed by carrot (₹49,089) and brinjal (₹28,635). The diversification of enterprises, along with direct marketing of chemical-free produce, helps him earn around ₹8.57 lakh annually with a stable B:C ratio of nearly 2.90. His success reflects the economic sustainability of diversified NF systems.

Influence and impact on farmers

S. Karnail Singh offers great inspiration to the fellow farmers that despite being 70 percent paralyzed from the waist down, he converted his adversity into motivation to succeed. His resilience became the foundation of his journey in NF. Managing farm operations and marketing while being physically challenged required extraordinary willpower and creativity. His perseverance allowed him to run the farm as effectively as before his accident. By overcoming social doubt, financial pressure and physical disability, S. Karnail Singh has become a shining example of determination motivating thousands of fellow farmers. His adoption of NF demonstrates that environmentally friendly agriculture can also be profitable. Young farmers and entrepreneurs can learn from his resilience, diversification into multiple enterprises, direct marketing approach and eagerness to continuously learn new techniques. His example demonstrates that farming, when integrated with self-reliance and innovation, becomes a pathway not only to livelihood but also to social respect and inspiration.



**S. Karnail Singh receiving award during
Kisan Mela, 2024 at PAU, Ludhiana**

His remarkable success has been rewarded by many institutes at many levels. In 2020, he was honoured at Punjab Kala Bhavan, Chandigarh, and by the District Administration, Hoshiarpur, on Independence Day for his remarkable contributions to farming. In 2024, he was conferred the S. Surjit Singh Dhillon Purskar by the Vice-Chancellor of Punjab Agricultural University (PAU), recognizing his dedication and achievements. S. Karnail Singh's story stands as a beacon of inspiration for the farming community

**Contributors: Prabhjot Kaur, Karmvir Singh Garcha and Maninder Singh Bons,
Krishi Vigyan Kendra, Hoshiarpur**



4

Sustaining Farm income through Integrated Natural Farming System

Name : Mr. Jatinder Singh

Address : Vill. Bhabber, Teh. & Distt. Reasi-182 301 (J&K)

Qualification : 10th

Contact No. : 8899625752

Landholding : 2.5 acre



Introduction

Mr. Jatinder Singh, a 41-year-old progressive farmer from Village Bhabber, P.O. Dera Baba Banda Bahadur, Tehsil Reasi, District Reasi, Jammu & Kashmir, has transformed his 2.5 acre landholding into a model Natural Farming (NF) enterprise. A retired army personnel, he developed a keen interest in sustainable agriculture after observing the high input costs and declining soil fertility associated with chemical-based farming. After retiring from the Indian Army in 2018, he initially practiced conventional farming but earned only marginal profits. Seeking a sustainable alternative, he shifted to NF in 2020. In 2021, he attended a two-day training program on Natural Farming at Krishi Vigyan Kendra (KVK), Reasi, under the “Upscaling of Natural Farming through KVKs” project, where he received practical training on natural farming principles and bio-formulations. Motivated to reduce dependence on external inputs and improve soil health, he diversified his farm into an integrated system comprising horticultural crops, vegetables, spices, and livestock. During the initial phase, he faced challenges such as low yields, limited technical knowledge, and lack of a structured market for natural produce. With continuous guidance and technical support from KVK Reasi, he refined his practices and gradually established a sustainable and profitable farming model.

Uniqueness of work related to NF

Mr. Jatinder Singh practices diversified seasonal cropping under NF. During the Kharif season, he



Preparation of NF bio formulations at Mr. Jatinder Singh's field





Mr. Jatinder Singh in his field showing his NF produce

cultivates vegetables and spices such as tomato, okra, bottle gourd, bitter gourd, turmeric, and ginger. In the rabi season, he grows peas, garlic, onion, potato, and knolkhol. His horticultural component includes strawberry and mango orchards, all managed exclusively under natural farming practices. To maintain soil fertility and minimize dependence on external inputs, he integrates livestock comprising two cows and one buffalo, which supply dung and urine for preparing cow-based bio-formulations. He has also established a horti-poultry model that further enhances farm income through better resource recycling and diversification. In addition, he undertakes value addition by processing turmeric, strawberry, and mango products, thereby increasing market value. His produce is marketed directly in local markets of Katra and Jammu, ensuring improved returns through direct sales.

Systematic Capacity Building

Mr. Jatinder Singh strengthened his NF journey through systematic training, skill development, and community-oriented initiatives. Scientists at Krishi Vigyan Kendra (KVK) Reasi identified him as a suitable candidate for entrepreneurship development under NF due to his educational background, keen interest in sustainable agriculture, and strong motivation to reduce dependence on chemical inputs. His inclination toward value addition and direct marketing further supported his selection. In 2021, he attended a specialized training programme on NF conducted by KVK Reasi under the “Upscaling of NF through KVKs” programme. The training provided practical knowledge on the use of local and low-cost resources for sustainable crop production. He learned the preparation and application of key bio-inputs such as beejamrit, jeevamrit, neem astra, agni astra, and ghanjeevamrit, enabling him to replace costly chemical fertilizers and pesticides.

KVK Reasi further enhanced his capacity through follow-up training and Front Line Demonstrations conducted at his farm, strengthening his practical skills and establishing him as a model farmer in the area. He also developed hands-on expertise in intercropping, mulching, dairy integration, and recycling crop residues for soil enrichment, which improved the productivity and sustainability of his small landholding.





Mr. Jatinder Singh in his field showing his NF produce

With continued support from KVK Reasi, he gained exposure through visits to Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, KVK Reasi, and NF fields within and outside Reasi district. Interactions with practicing NF farmers broadened his perspective and encouraged further innovations on his farm.

Major practices under NF

Mr. Jatinder Singh has developed a diversified NF model integrating field crops, horticultural crops, spices, livestock, and value addition in spices to enhance sustainability and profitability. Strengthening his efforts beyond crop production, he established an on-farm resource centre for the preparation and supply of key NF formulations such as jeevamrit, beejamrit, ghanjeevamrit, agniasthra, brahmastra, and neemasthra to nearby farmers. This initiative has promoted the adoption of NF in the area while creating a localized system of self-reliance and knowledge sharing.

He utilizes crop residues and locally available tree leaves as mulching material to conserve soil moisture and improve soil nutrient status. The integration of three milch animals ensures a regular supply of dung and urine for preparing bio-inputs, significantly reducing dependence on external agro-chemicals. He also prepares botanical extracts such as agniasthra, brahmastra, and neemasthra for eco-friendly management of insect pests in his crops. Through the production and distribution of these NF formulations, he not only meets his farm requirements but also supports other farmers in transitioning toward sustainable agricultural practices.

Economic analysis

Mr. Jatinder Singh has made remarkable contributions to the promotion of natural farming in the region.

Table 1: Economic analysis of crop-wise and livestock under conventional farming system (2021–22)

Crop Name	Maize	Wheat	Sesame	Vegetable	Diary	Total
Area (acre/No.)	1.2	1.5	0.5	0.5	2.0	--
Production (q/L)	17.2	22.0	0.6	68.0	2,655.0	--
CoC#/(₹)	17,400	19,800	2,100	24,230	58,530	1,22,060
Gross returns (₹)	34,056	44,220	6,200	1,53,000	1,27,440	3,64,916
Net income (₹)	16,656	24,420	4,100	1,28,770	68,910	2,42,856
# CoC (cost of cultivation) including family labour						





Table 2: Year-wise economic analysis of diversified farming enterprise under natural farming system (2022–23 to 2024–25)

Crops/ Attributes	Maize	Wheat	Sesame	Black gram	Vegetable	Strawberry	Mango	Turmeric	Dairy	Poultry	Total
2022-23											
Area (acre/No.)	0.5	0.5	0.3	0.2	0.7	0.5	0.3	-	3.0	70.0	--
Production (q/L/No.)	6.5	7.2	0.7	0.8	64.0	34.0	2.5	-	3,874.0	12,500.0	--
CoC (₹)	6,400	6,600	1,200	2,200	45,020	1,24,000	6,500	-	75,700	12,000	2,79,620
Gross returns (₹)	15,600	20,520	8,050	10,000	1,28,000	4,08,000	25,000	-	1,78,204	75,000	8,68,374
Net income (₹)	9,200	13,920	6,850	7,800	82,980	2,84,000	18,500	-	1,02,504	63,000	5,88,754
B:C ratio	2.44	3.11	6.71	4.55	2.84	3.29	3.85	-	2.35	6.25	3.11
2023-24											
Area (acre/No.)	0.5	0.5	0.3	0.2	0.7	0.5	0.3	0.5	3.0	85.0	--
Production (q/L/No.)	6.8	7.4	0.7	0.8	68.0	35.0	2.8	10.0	3,920.0	14,800.0	--
CoC (₹)	6,800	6,900	1,300	2,400	46,110	1,26,000	6,700	32,500	76,700	13,200	3,18,610
Gross returns (₹)	17,000	22,200	9,000	10,496	1,51,640	4,48,000	26,000	98,000	1,80,320	88,800	10,51,456
Net income (₹)	10,200	15,300	7,700	8,096	1,05,530	3,22,000	19,300	65,500	1,03,620	75,600	7,32,846
B:C ratio	2.50	3.22	6.92	4.37	3.29	3.56	3.88	3.02	2.35	6.73	3.30
2024-25											
Area (acre/No.)	0.5	0.5	0.3	0.2	0.7	0.5	0.3	0.5	3.0	100.0	--
Production (q/L/No.)	6.8	7.4	0.7	0.9	70.0	35.0	2.9	12.0	3,945.0	16,000.0	--
CoC (₹)	6,900	7,100	1,400	2,500	48,230	1,29,000	6,900	34,200	79,900	14,500	3,30,630
Gross returns (₹)	18,153	22,350	9,750	11,180	1,63,800	4,62,000	29,000	1,20,000	1,89,360	1,12,000	11,37,593
Net income (₹)	11,253	15,250	8,350	8,680	1,15,570	3,33,000	22,100	85,800	1,09,460	97,500	8,06,963
B:C ratio	2.63	3.15	6.96	4.47	3.40	3.58	4.20	3.51	2.37	7.72	3.44





Farmers visiting the NF unit of Mr. Jatinder Singh's at Bhabber

With the technical support of KVK Reasi, he has also emerged as a master trainer, strengthening farmer-to-farmer extension and motivating other farmers to adopt sustainable practices. Earlier, under the conventional farming system (2021–22), his farm generated a net income of ₹2.43 lakh from crops and livestock (Table 1).

After adopting natural farming in 2022–23, he diversified his farming system by integrating crops such as maize, wheat, sesame, black gram, vegetables, strawberry, mango, and turmeric along with dairy and poultry enterprises. This diversification significantly enhanced farm productivity and profitability. The total net income increased to ₹5.89 lakh in 2022–23, further rising to ₹7.33 lakh in 2023–24 and ₹8.07 lakh in 2024–25. The overall benefit–cost ratio also improved from 3.11 to 3.44 during this period (Table 2). The results clearly demonstrate that integration of high value crops and other enterprises under natural farming not only improved soil health, but reduced input costs, and substantially increased farm income and sustainability.

Influence and impact on farmers

Mr. Jatinder Singh has made significant contributions to promoting NF in his region. With the support of KVK Reasi, he has taken on the role of a master trainer, strengthening farmer-to-farmer extension and



Mr. Jatinder Singh being awarded for his achievements in NF during a programme at KVK Reasi





community outreach. His farm has shown marked improvement in soil health, demonstrating the effectiveness of bio-inputs and sustainable practices under NF. More than 500 farmers have visited his farm to learn about NF practices, and 29 farmers have already adopted NF under his guidance. He is also associated with the National Mission on Natural Farming (NMNF) and has trained 12 Krishi Sakhis, further expanding the outreach of NF in the district.

As a mentor, he actively promotes knowledge dissemination, consumer awareness, and community-level adoption of NF. He regularly motivates rural youth to adopt NF for improving the quality and sustainability of farm produce. His efforts have been widely recognized. He was appreciated and awarded by Prof. S. K. Gupta, former Director of Extension; Prof. J. P. Sharma, former Vice Chancellor; and Prof. B. N. Tripathi, Vice Chancellor of Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu during Kisan Mela events and official visits to KVK Reasi. His successful strawberry cultivation under NF was also featured by DD News, further highlighting his achievements.



**Mr. Jatinder Singh being awarded for his achievements in NF during the
Kisan Mela held at SKUAST-J**

**Contributors: Banarsi Lal, Mandeep Singh Azad and Sanjay Koushal,
Krishi Vigyan Kendra, Reasi**



5

Attractive Income through Natural Farming in Cold Arid Conditions-An Integrated Farming System Model

Name : Mr. Ahmad Raza
Address : Vill. Minjii, District Kargil-194 103 (Ladakh)
Qualification : Graduate
Contact No. : 9469181097
Landholding : 1.2 acre



Introduction

Mr. Ahmad Raza, a progressive farmer from Tehsil Kargil, District Kargil (UT of Ladakh), belongs to farming background. He is one of few progressive farmers in district Kargil whose practices are Integrated Farming System (IFS) under Natural Farming (NF). He is one of the top most progressive farmers in Kargil. He maintains regular contact with scientists at KVK Kargil, seeking guidance and technical support to continuously improve his agricultural practices. In 2022, when KVK Kargil established NF demonstration units, Mr. Raza showed keen interest in NF, particularly due to its low input cost and eco-friendly nature. Before fully transitioning to NF, he had been experimenting with mulching in his apple orchard, which laid a strong foundation for further natural practices. In 2023, he participated in a two-day training program on NF conducted by KVK Kargil scientists. Following this, he successfully converted his 1.2 acre of irrigated land into a model IFS under NF. His integrated farming model includes a well-established apple orchard, five dairy cows and vegetable cultivation (including tomato, French bean and off-season peas), which together generate substantial income throughout the year.

Uniqueness of work related to NF

Mr. Raza began practicing NF in 2023 after receiving formal training from KVK Kargil. His IFS comprises of dairy farming (5 cows for milk production), horticulture (apple orchard) and vegetable cultivation (tomato, French bean, off-season peas). He gradually phased out chemical fertilizers and adopted natural inputs like jeevamrit, ghanjeevamrit, and mulching, leading to visible improvements in yield, soil health and sustainability. His use of black polyethelene mulching not only improve the irrigation interval but also overcome the day and night temperature fluctuation, and intercropping with alfalfa strengthened soil health and system resilience.

Systemic Capacity Building

He maintains a dairy unit with five cows for milk production,



Mr. Raza at his natural farming apple orchard





contributing significantly to his farm's overall income. He has successfully adopted mulching techniques in both his apple orchard and vegetable plots, which has resulted in an estimated 20 percent increase in yield. Aligned with the principles of NF, he regularly applies bio-inputs such as jeevamrit and ghanjeevamrit, particularly in his vegetable cultivation. His primary vegetable crops include tomato, French bean, and off-season peas, all of which perform well under cold arid conditions. A significant improvement on his farm has been the neutralization of soil pH, which was previously a concern. Through consistent use of natural formulations, his soil has become more balanced, promoting better microbial activity and crop resilience under climatic stress. His farm was converted into an integrated NF system with ongoing technical upgrades that included livestock integration, intercropping, and varied crop rotations. Over time, farm profitability increased because of this knowledge-driven strategy.

Major practices under NF

As a result of adopting NF practices under an IFS, Mr. Raza has achieved several impactful outcomes. His cost of cultivation has reduced by more than 50 percent, significantly improving the profitability of his farm. The yield and quality of both apples and vegetables have shown noticeable improvement, with apples becoming sweeter in taste and more marketable. The use of natural inputs and organic matter has enhanced soil health and increased moisture retention, which in turn has led to greater resilience against drought conditions. These practices have also contributed to environmental sustainability, by boosting biodiversity and reducing the use of chemical fertilizers and pesticides. Due to his success, he has emerged as a model farmer in the region, inspiring youth and fellow farmers across Kargil to explore and adopt eco-friendly, sustainable agricultural practices.

Mr. Raza's success demonstrates the power of diversification in farming. By integrating horticulture, vegetables and dairy, he has built a resilient and year-round income-generating system. His journey proves that NF is not just sustainable but also profitable, challenging the misconception that it is only suitable for subsistence-level farming. Today, Mr. Raza stands as a role model for youth in Kargil, demonstrating how combining traditional knowledge, scientific training and practical implementation can lead to both economic prosperity and environmental stewardship. His story encourages the next generation to view agriculture not as a fallback option but as a futuristic and viable profession in harmony with nature.

Economic analysis

In addition to revitalizing his land, NF also improved the financial situation of the farmer. Table 1 presents a



**Mr. Raza at his natural farming
apple orchard**





Table 1: Year-wise economic performance of vegetable, dairy and apple orchard based integrated farming enterprise

Attributes	Vegetables*	Diary unit	Apple orchard	Total
2021-22				
Area (acre)/ Cows (No.)	0.5	5.0	0.5	--
Production (q) / (L)	87.5	5,760.0	16.0	--
Cost# (₹/farm)	1,21,090	1,15,050	97,200	3,33,340
Gross income (₹/farm)	2,18,750	2,01,600	2,42,540	6,62,890
Net income (₹/farm)	97,660	86,550	1,45,340	3,29,550
B:C ratio	1.81	1.75	2.50	1.99
2022-23				
Area (acre)/ Cows (No.)	0.5	5.0	0.5	--
Production (q) / (L)	89.0	6,100.0	18.0	--
Cost# (₹/farm)	1,05,665	1,15,500	1,12,130	3,33,295
Gross income (₹/farm)	2,22,615	2,44,000	2,88,000	7,54,615
Net income (₹/farm)	1,16,950	1,28,500	1,75,870	4,21,320
B:C ratio	2.11	2.11	2.57	2.26
2023-24				
Area (acre)/ Cows (No.)	0.5	5.0	0.5	--
Production (q) / (L)	102.5	7,200.0	20.0	--
Cost# (₹/farm)	1,17,665	1,36,500	1,27,130	3,81,295
Gross income (₹/farm)	3,07,500	3,24,000	2,98,830	9,30,330
Net income (₹/farm)	1,89,835	1,87,500	1,71,700	5,49,035
B:C ratio	2.61	2.37	2.35	2.44
2024-25				
Area (acre)/ Cows (No.)	0.5	5.0	0.5	--
Production (q) / (L)	112.5	7,920.0	23.0	--
Cost# (₹/farm)	1,22,590	1,55,050	1,48,140	4,25,780
Gross income (₹/farm)	3,61,170	3,96,000	3,25,110	10,82,280
Net income (₹/farm)	2,38,580	2,40,950	1,76,970	6,56,500
B:C ratio	2.95	2.55	2.19	2.54
* Vegetables include tomato, French bean and off-season peas; # Including family labour				





year-wise economic analysis of a diversified natural farming system practiced, highlighting changes in area allocation, productivity, costs, and profitability across major crops. Over the four years, the farmer gradually diversified from cereal-dominated cultivation to a balanced mix of cereals, pulses, vegetables, sugarcane, and fruit crops, which improved overall farm economics. Total gross income increased steadily from ₹6.63 lakh in 2021–22 to nearly ₹10.82 lakh in 2024–25, while net income rose from ₹3.30 lakh to ₹6.57 lakh during the same period. The improvement in net returns was supported by higher yields in vegetables due to higher photo intensity during production season which leads to bigger size of vegetables. The overall benefit–cost ratio improved from 1.99 in 2021- 22 to 2.54 in 2024-25, showing that this farmer's varied natural farming system has gradually increased in profitability and economic stability over time.

Influence and impact on farmers

Mr. Raza's success demonstrates the power of diversification in farming. By integrating horticulture, vegetables and dairy, he has built a resilient and year-round income-generating system. His journey proves that NF is not just sustainable but also profitable, challenging the misconception that it is only suitable for subsistence-level farming. Today, Mr. Raza stands as a role model for youth in Kargil, demonstrating how combining traditional knowledge, scientific training and practical implementation can lead to both economic prosperity and environmental stewardship. His story encourages the next generation to view agriculture not as a fallback option but as a futuristic and viable profession in harmony with nature.

**Contributors: Nazir Hussain, Nassreen Fatima and Mansoor Hussain,
Krishi Vigyan Kendra, Kargil-I**



6

Generating Sustainable Farm Income in Cold Arid Ladakh through Integrated Natural Farming

Name : Mr. Feroz Ahmad

Address : Vill. GM Pore, Teh. TSG Kargil-194 105 (Ladakh)

Qualification : 12th

Contact No. : 9469293534

Landholding : 1.2 acre



Introduction

Mr. Feroz Ahmad, a 40-year-old progressive farmer from the village of GM Pore, Tehsil TSG, District Kargil, UT of Ladakh, has successfully transformed his small irrigated landholding of 1.2 acre into a model Natural Farming (NF) enterprise. He also has 2 cow and 14 sheep. Coming from a farming family, Feroz chose to modernize the tradition by adopting sustainable and eco-friendly practices after UT Ladakh was declared an organic region. His journey towards NF began in 2022. In 2023, he further reinforced his commitment by attending a two-day formal training in the Subhash Palekar Natural Farming (SPNF) system conducted in his village by KVK Kargil-I.

Uniqueness of work related to NF

He is well-educated and active as a social media influencer, managing a YouTube channel named Ali Chingari, where he shares videos primarily related to organic and NF practices implemented on his farm. Inspired by the core principles of enhancing soil health and microbial diversity, Feroz gradually developed an integrated farming system that includes livestock, and vegetables. Initially, he faced challenges such as low yields, lack of organized markets for natural produce and limited expertise in preparing bio-formulations. To overcome these hurdles, he sought guidance from KVK scientists and the Head of KVK, whose technical advice and support provided him the confidence needed to improve and upgrade his practices. He shifted to NF gradually after experiencing low returns and high cultivation costs under chemical farming. With ongoing instruction and direction from KVK Kargil, he overcame early obstacles pertaining to technical know-how and market access.



Preparation of jeevamrit at farmer's field





Vegetable produce with natural farming practices at farmer's field

Systemic Capacity Building

The scientists at KVK Kargil identified Mr. Feroz Ahmad as a suitable candidate for an entrepreneurship development programme focused on natural farming due to his entrepreneurial aptitude and strong commitment to reducing dependence on chemical inputs. Follow-up training under the “Out-scaling of Natural Farming through KVKs” programme, along with on-field demonstrations conducted at his farm in 2023, significantly strengthened his technical and practical capabilities and helped establish him as a model farmer in the region. A structured two-day training programme, complemented by continued engagement through social media and mentorship, further deepened his understanding of natural farming principles and enhanced his confidence in adopting them on his farm.

Major practices under NF

Through training and hands-on guidance, Mr. Feroz Ahmad learned to prepare and apply essential natural farming formulations such as beejamrit, jeevamrit, ghanjeevamrit and neem astra, enabling him to replace expensive chemical fertilizers and pesticides. He also adopted important practices including mulching, intercropping, livestock integration, and recycling of crop residues to improve soil fertility and farm sustainability. These interventions resulted in healthier produce and enhanced the resilience and productivity of his small landholding.

By integrating fruits, vegetables and livestock, he developed a diversified farming system that ensures year-round income and reduces the risks associated with mono-cropping. His success has encouraged neighboring farmers to explore natural farming, creating a local environment of knowledge sharing and self-reliance while demonstrating that natural farming can be both economically viable and environmentally sustainable.





Vegetable field grown with natural farming practices

Economic analysis

Mr. Feroz Ahmad's diversified natural farming enterprise has shown steady and impressive financial growth over recent years, as presented in Table 1. After shifting to natural farming, improved productivity and reduced input costs significantly enhanced profitability. In 2021–22, the vegetable–dairy system generated a net income of about ₹2.60 lakh with a B:C ratio of 2.40. Continued improvements in management raised net income to ₹4.24 lakh in 2022–23 and ₹5.65 lakh in 2023–24. By 2024–25, total net income further increased to approximately ₹6.38 lakh with a B:C ratio of 4.02.

During 2024–25, vegetables contributed 77.6 percent of the total net income, while the dairy unit contributed 22.4 percent, indicating that vegetables remained the major income source in the integrated system. The consistent rise in returns demonstrates that diversification through vegetables and dairy under natural farming has created a stable, low-risk, and economically sustainable farming model, ensuring year-round income and strengthening the family's financial security.

Influence and impact on farmers

A Diversified Integrated Natural Farming Model combines multiple agricultural components, crops, vegetables, horticulture, soil health management, livestock, organic inputs and eco-friendly practices into one farm system that works synergistically rather than in isolation. The farm of Mr. Feroz Ahmad has now become a model for NF. A large number of farmers, students, and agricultural professionals frequently visit his fields to observe the production technologies he practices.

Such models, tailored to Ladakh's unique environment and leveraged with institutional support, are proving to be a viable pathway for sustainable income generation and resilient rural livelihoods in one of India's most challenging agricultural regions.





Table 1: Year-wise economic performance of vegetable, dairy and apple orchard based integrated farming enterprise

Attributes	Vegetables#	Dairy unit\$	Total
2021-22			
Area@ (acre) / Livestock*(No.)	0.6	2.0+14.0	--
Production (q/L)	155.0	1,440.0	--
Cost of cultivation (₹/farm) **	1,70,050	15,100	1,85,150
Gross income (₹/farm)	3,87,520	57,600	4,45,120
Net income (₹/farm)	2,17,470	42,500	2,59,970
B:C ratio	2.28	3.81	2.40
2022-23			
Area@ (acre) / Livestock (No.)	0.6	2.0+14.0	--
Production (q/L)	159.0	1,540.0	--
Cost of cultivation (₹/farm)**	1,77,320	16,500	1,93,820
Gross income (₹/farm)	5,56,500	61,600	6,18,100
Net income (₹/farm)	3,79,180	45,100	4,24,280
B:C ratio	3.14	3.73	3.19
2023-24			
Area@ (acre) / Livestock (No.)	0.6	2.0+14.0	--
Production (q/L)	160.0	2,880.0	--
Cost of cultivation (₹/farm)**	1,64,250	40,160	2,04,410
Gross income (₹/farm)	6,40,130	1,29,600	7,69,730
Net income (₹/farm)	4,75,880	89,440	5,65,320
B:C ratio	3.90	3.23	3.77
2024-25			
Area@ (acre) / Livestock (No.)	0.6	2.0+14.0	--
Production (q/L)	166.0	3,600.0	--
Cost of cultivation (₹/farm)**	1,69,050	42,040	2,11,090
Gross income (₹/farm)	6,64,000	1,85,150	8,49,150
Net income (₹/farm)	4,94,950	1,43,110	6,38,060
B:C ratio	3.93	4.40	4.02
* 2 cows + 14 sheep; \$= Milk; # Vegetables include field pea, leafy vegetables, French bean and tomato; ** Including family labour			

**Contributors: Nazir Hussain, Nassreen Fatima and Mansoor Hussain,
Krishi Vigyan Kendra, Kargil-I**



7

Strengthening Livelihood Security through Integrated Natural Farming

Name : Mr. Shivraj Parmar

Address : Vill. Sarp, PO-Chinyalisaur, Uttarkashi-249 196 (UK)

Qualification : 12th

Contact No. : 8979963001

Landholding : 1.2 acre



Introduction

Mr. Shivraj Parmar, a 52-year-old farmer from the remote village of Sarp, Chinyalisaur, District Uttarkashi, has built a journey of resilience and innovation. He comes from a chemical-based farming family and has devoted more than 25 years to agriculture. Unlike many who continued with chemical based farming practices, he questioned their long-term sustainability. He was motivated to seek alternatives due to declining soil fertility, rising input costs, and increasing climatic challenges.

About ten years ago, he took a decisive step towards Natural Farming (NF), adopting a holistic approach that has now made him a model farmer in the region. He receives active support from his family, with two members directly engaged in farming. Over time, he has transformed his 1.2 acre land into a diverse and sustainable enterprise. He not only focuses on crop production but also on restoring soil health, conserving biodiversity, reducing dependence on external inputs, and securing livelihoods for the future.

Uniqueness of work related to NF

Mr. Shivraj Parmar's work in NF is distinguished by his integrated approach that combines assured quality production, and strong institutional linkages. He has established a transparent, chemical-free production system that generates consistent local demand, with consumers directly purchasing produce from the farm, thereby eliminating middlemen, reducing marketing costs, and ensuring timely cash flow. This trust-based farm-gate model strengthens consumer confidence in NF produce while providing economic stability



Exposure visit of women farmers to farmers' field under NRLM





without reliance on complex supply chains. Despite initial criticism and the absence of price differentiation for natural produce in local markets, he demonstrated resilience by building technical competence through practical experience and continuous learning. He follows a disciplined schedule for the application of bio-formulations, has trained family members to ensure consistency in NF practices, and actively leveraged support from KVK Uttarkashi for technical guidance. His association with the FPO Dichli Patti Utpadan Sangathan further enhanced his market access and bargaining power. Together, these efforts reflect a unique NF model that integrates production, capacity building, and market assurance, making natural farming both viable and replicable for small and hill farmers.

Systematic Capacity Building

Beyond individual farm success, Mr. Parmar has contributed significantly to systemic capacity building for NF in the mid-hill region. Through active engagement with Farmer Producer Organizations and Self-Help Groups, he has promoted collective learning and strengthened farmer-to-farmer knowledge exchange. He regularly shares practical skills related to grafting, budding, preparation of natural formulations, and enterprise integration, enabling fellow farmers to adopt NF practices with confidence.

His orchard functions as a field-level learning and demonstration site, where farmers from surrounding villages gain hands-on exposure to intercropping, orchard diversification, and integrated farming systems. The farm is also visited by NRLM functionaries for exposure visits, reflecting its role as a recognized learning hub. By opening his farm for training, experimentation, and peer learning, Shri Parmar has helped institutionalize practical learning platforms at the community level, thereby strengthening local capacities, reducing dependence on external inputs, and fostering a sustainable transition towards NF.

Major practices under NF

He follows the philosophy of low cost and high sustainability in his farming by adopting Subhash Palekar's Natural Farming principles and making his own farm-based inputs like jeevamrit, beejamrit, agniasttra, neemasttra, and dashparni ark, which function as natural fertilizers and pest repellents. He also prepares repellents from locally available plants and uses neem cakes instead of leaves. He practices mulching to conserve soil moisture, intercropping to optimize space and nutrients, and crop rotation to maintain ecological balance.

He adopts complementary practices like drip irrigation and anti-hail nets to enhance the effectiveness of his natural farming system. He possesses skills in grafting and budding, allowing him to introduce new scion varieties onto existing apple trees, thereby improving orchard productivity. He has also invested in beekeeping, which not only generates honey but also improves pollination in crops and fruit trees. Additionally, he practices fisheries, providing an extra income source and protein-rich food for his



Empowering women farmers through practical demonstrations under NF practices





Adoption of drip irrigation and anti-hail nets practices

household. Natural farming has given him greater control over his farm ecosystem and reduced vulnerability to market price fluctuations, as most of his input costs are near zero. The strength of Mr. Parmar's success lies in the diversification of enterprises. He manages his land under multiple components, ensuring year-round harvests and minimizing risks. His field crops include barnyard millet, rajma, paddy, cowpea, black gram, finger millet, and pigeon pea.

Among spices and vegetables, turmeric is his major spice crop, accompanied by seasonal vegetables like pumpkin, cabbage, green chili, ginger, peas, onion, and cucumber. In horticulture, he maintains an orchard with 1,500 apple trees, 50 pear trees, 50 cherry trees, 40 kiwi plants, and 50 rosemary plants. His allied enterprises include livestock, beekeeping with multiple colonies, and a small fishery unit. This integrated farming system creates strong internal linkages, livestock provide dung and urine for bio-formulations, orchards benefit from beekeeping, and crop residues are recycled into the soil, ensuring both productivity and sustainability.

Economic analysis

The strength of his enterprise lies not only in ecological sustainability but also in economic viability. His

Table 1: Component-wise economic performance of the natural farming-based integrated farming system

Component	Area (acre)	Gross returns (₹)	Cost# (₹)	Net returns (₹)
Vegetables	0.3	61,720	14,550	47,170
Cereals and pulses	0.4	43,650	11,080	32,570
Fruits	0.45	3,60,410	67,050	2,93,360
Beekeeping	--	13,540	4,500	9,040
Fishery (small pond)	--	20,250	4,770	15,480
Livestock (milk)	--	1,08,000	36,900	71,100
Labour cost (307 man-days)	--	--	1,22,800	--
Total (including labour)	--	6,07,570	2,61,650	3,45,920
B:C ratio				2.32
# Cost of cultivation or expenditure on the enterprise				





Visit of KVK scientists at farmer's field

diversified model generates a stable income from multiple sources, making the farm both self-sustaining and more profitable than conventional farming in the region. Fruits emerged as the major income contributor, generating a gross return of ₹3.6 lakh from 0.45 acre with a high net return of ₹2.93 lakh reflecting the profitability of perennial horticulture under NF. Vegetables cultivated on 0.3 acre yielded a net return of ₹47,170, while cereals and pulses on 0.4 acre contributed ₹32,570, ensuring food security along with income. The total gross return from all components was ₹6.07 lakh against a cultivation cost of ₹2.62 lakh, resulting in net returns of ₹3.46 lakh. With a benefit–cost ratio of 2.32, the system demonstrates strong economic viability and resilience under natural farming.

Influence and impact on farmers

The story of Mr. Shivraj Parmar demonstrates that Natural Farming is not a return to subsistence but a forward-looking model of sustainable entrepreneurship. As an active member of Farmer Producer Organizations and Self-Help Groups, he has attracted considerable interest from fellow farmers and rural institutions, encouraging collective engagement in sustainable agriculture. Farmers from surrounding villages frequently visit his farm to learn about intercropping, orchard diversification, and integrated farming systems. His farm has also emerged as a learning hub, regularly visited by National Rural Livelihood Mission (NRLM) functionaries for exposure visits. The success of his model illustrates that enterprise diversification reduces production risks and ensures year-round income, while the use of on-farm inputs lowers costs and enhances resilience. Further, the integration of livestock, orchards, fisheries, and beekeeping creates strong internal synergies that improve both productivity and sustainability.

Contributors: Shashidhar BR and Jyoti Beri, Krishi Vigyan Kendra, Uttarkashi



8

Developing Resilient Agriculture on a Hilly Small Farm through an Integrated Natural Farming Approach

Name : Mr. Roop Lal

Address : Vill. Naili, PO-Meramseet, Sundernagar, Mandi-175 036 (HP)

Qualification : 12th

Contact No. : 8219098603

Landholding : 1.4 acre



Introduction

Mr. Roop Lal, a 51-year-old progressive farmer from Naili village of Sundernagar block in Mandi district, Himachal Pradesh, is a fine example of how integrated natural farming can enhance rural livelihoods. He belongs to a modest family consisting of his mother, wife and son. Due to financial constraints, he completed education up to 12th and took up farming on his ancestral land. Initially, he practiced chemical-based farming of paddy and wheat, but low productivity and high cultivation costs resulted in meagre returns that were insufficient to support his family.

In 2017, he attended an awareness programme organized by Krishi Vigyan Kendra (KVK), Mandi, where experts motivated him to adopt integrated and Natural Farming (NF) practices. He subsequently underwent a six-day skill development programme and developed a keen interest in NF. Gradually, he diversified his NF farm on 0.6 acre by integrating crops, vegetables, nursery raising, dairy, poultry, goat rearing, mushroom production and a Natural Farming Resource Centre, transforming his small holding into a profitable enterprise.

Uniqueness of work related to NF

The uniqueness of Mr. Roop Lal's work lies in developing a compact yet diversified NF model suited for small landholdings. By integrating crop production, vegetable and nursery raising, livestock enterprises and on-farm bio-input preparation, he created a self-sustaining farming ecosystem. He reduced dependence on chemical inputs and external markets by preparing jeevamrit, beejamrit, dashparni ark, brahmastra and ghanjeevamrit on his farm using cow dung, urine and locally available plant materials. His emphasis on intercropping with legumes, mulching with crop residues and weed biomass, and raised bed preparation for maintaining whapasa conditions improved soil health and resilience. The integration of multiple enterprises ensured regular income, risk reduction and year-round employment for his family.



Seed treatment with jeevamrit





Raised beds for creating whapasa conditions



Use of ghanajeevamrit in fields

Systematic Capacity Building

Mr. Roop Lal's success is the outcome of systematic capacity building supported by KVK Mandi. He participated in several training programmes on integrated farming, vegetable cultivation, dairy farming, nursery raising and mushroom cultivation. His interest in NF motivated him to attend specialized training in 2018, after which he established a Natural Farming Resource Centre on his farm with support from ATMA. He further strengthened his skills through exposure visits to institutions such as PAU Ludhiana, Gurukul Kurukshetra, IARI New Delhi and CSKHPKV Palampur. Under the ICAR funded Out-Scaling Natural Farming Project implemented through KVKs, his practical knowledge was enhanced. Later, his farm was selected by the Department of Organic Agriculture and Natural Farming, CSKHPKV Palampur for experimental trials, where he received regular guidance on the preparation and application of NF bio-formulations. These coordinated interventions enabled a smooth transition towards sustainable farming.

Major practices under NF

Mr. Roop Lal developed a holistic integrated NF system combining cereals, pulses, vegetables, nursery raising, dairy, goat rearing, poultry, mushroom cultivation and an NF Inputs Resource Centre. He practices intercropping of cereals with legumes to enhance soil fertility and productivity. Crop residues and weed biomass are used as mulching material to conserve moisture and improve soil microbial activity. Raised beds are prepared for sowing to maintain whapasa conditions and better root development. Livestock forms the backbone of his NF system. Cow dung and urine are used for preparing jeevamrit and ghanajeevamrit, while goat manure contributes to soil nutrient enrichment. These integrated practices reduced input costs, improved soil health and established a low-cost, sustainable farming ecosystem on his farm. Mr. Roop Lal adopted direct marketing by selling fresh NF produce in the Sunday Market at Sundernagar, which ensured better price realization and direct linkage with consumers. He also supplies vegetables and cereals to government offices at the Tehsil headquarters at remunerative rates. Additionally, he uses social media platforms to promote his produce and attract buyers, which helped him expand his customer base and reduce dependence on middlemen. These marketing innovations strengthened the economic viability of his farming enterprise.

Economic analysis

The table 1 presents the enterprise-wise and year-wise economic performance of different components under a integrated natural farming system from 2022–23 to 2024–25. Although the farmer has been practicing natural farming since 2018–19, the results discussed here are based on data from the most recent three years. The overall economic indicators show a consistent upward trend, with total gross income increasing from ₹2.83 lakh in 2022–23 to ₹3.38 lakh in 2024–25, while net income rose from ₹1.64





Table 1: Enterprise and year-wise economic performance of natural farming

Attributes	Area/ (No.)@	Production #	Cost ## (₹/farm)	Gross Income (₹/farm)	Net Income (₹/farm)	B:C ratio
2022-23						
Maize+soybean	0.2	2.5+0.6	3,200	10,400	7,200	3.25
Wheat+pea	0.2	2.7+0.6	4,250	7,525	3,275	1.77
Paddy	0.2	2.5	3,000	5,750	2,750	1.92
Chickpea	0.1	0.4	1,000	3,600	2,600	3.60
Pea	0.1	3.0	2,200	6,000	3,800	2.73
Vegetables*	0.4	-	46,500	1,22,000	75,500	2.62
Nursery**	0.1	40,000.0	6,500	18,250	11,750	2.81
Bio Resource Center	1.0	-	4,200	12,500	8,300	2.98
Dairy	1.0	1,500.0	32,000	52,500	20,500	1.64
Backyard poultry	20.0	650.0	1,800	6,500	4,700	3.61
Goat rearing	3.0	3.0	6,500	19,500	13,000	3.00
Oyster mushroom	50.0	1.2	7,750	18,750	11,000	2.42
Total			1,18,900	2,83,275	1,64,375	2.38
2023-24						
Maize+soybean	0.2	2.7+0.7	3,500	12,625	9,125	3.61
Wheat+pea	0.2	2.8+0.7	4,250	7,840	3,590	1.84
Paddy	0.2	2.7	3,000	6,325	3,325	2.11
Chickpea	0.1	0.5	1,000	4,000	3,000	4.00
Pea	0.1	3.5	2,500	7,000	4,500	2.80
Vegetables*	0.4	-	47,000	1,25,500	78,500	2.67
Nursery**	0.1	45,000.0	7,200	19,500	12,300	2.71
Bio Resource Center	1.0	-	4,250	15,000	10,750	3.53
Dairy	1.0	1,550.0	33,600	54,250	20,650	1.61
Backyard poultry	20.0	670.0	1,800	6,700	4,900	3.72
Goat rearing	3.0	3.0	7,000	19,500	12,500	2.79
Oyster mushroom	50.0	1.3	8,000	19,500	11,500	2.44
Total			1,23,100	2,97,740	1,74,640	2.42
2024-25						
Maize+soybean	0.2	3.0+1.0	3,500	15,000	11,500	4.29
Wheat+pea	0.2	2.5+0.5	4,500	9,250	4,750	2.06
Paddy	0.2	3.0	3,250	6,900	3,650	2.12
Chickpea	0.1	0.5	1,200	4,000	2,800	3.33
Pea	0.1	4.0	2,500	8,000	5,500	3.20
Vegetables*	0.4	-	48,500	1,30,000	81,500	2.68
Nursery**	0.1	50,000.0	5,230	20,240	15,010	3.87
Bio Resource Center	1.0	-	4,500	15,600	11,100	3.47
Dairy	1.0	1,500.0	36,000	60,000	24,000	1.67
Backyard poultry	20.0	700.0	2,000	10,500	8,500	5.25
Goat rearing	3.0	3.0	7,000	21,000	14,000	3.00
Oyster mushroom	100.0	2.5	15,500	37,500	22,000	2.42
Total			1,33,680	3,37,990	2,04,310	2.53
@ Area (acre), No. in BRC, dairy, backyard poultry, goat rearing, and bags in oyster mushroom # Production: (q/farm); (L/farm); (eggs/farm); (offsprings/farm in goatery); (No. of seedlings/farm in nursery) ## Including family labour * Vegetables include tomato, chilly, bhindi, cucurbits, ginger, turmeric, onion, garlic, potato, cauliflower ** Vegetable nursery of cole crops and onion						





lakh to ₹2.04 lakh during the same period. The Benefit-Cost (B:C) ratio also improved steadily from 2.38 to 2.53, indicating enhanced profitability and better resource use efficiency over time. Among crop enterprises, maize + soybean, chickpea, and pea emerged as relatively more profitable components, showing higher B:C ratios and steady increases in net returns. Paddy and wheat + pea provided moderate but stable returns. Vegetables contributed the highest share to gross (38.46%) and net income (39.89%) among crop enterprises, reflecting their strong market potential under natural farming. The nursery enterprise also demonstrated increasing production and profitability, indicating good demand for planting material. In livestock-based enterprises, backyard poultry showed remarkable improvement and recorded the highest B:C ratio in 2024–25, highlighting its high profitability with low investment. Goat rearing remained consistently profitable, while dairy provided steady though comparatively moderate returns. Oyster mushroom cultivation also showed notable growth in production and income, especially in the final year. Overall, the data clearly demonstrate that a diversified natural farming model integrating crops, livestock, nursery, and allied enterprises ensures higher income, improved profitability, and greater economic sustainability over time.

Influence and impact on farmers

The success of Mr. Roop Lal created a strong influence within the farming community. His innovative NF practices and direct marketing strategy motivated neighboring farmers to adopt natural farming and participate in Sunday markets. Recognized as a Farmer Master Trainer (FMT), he has trained nearly 100 farmers in integrated and NF practices. His farm serves as a regular demonstration and learning site for farmers, trainees and RAWE students from CSKHPKV Palampur. Through knowledge sharing and field demonstrations, he has contributed significantly to scaling up natural farming technologies in the region.

Limitations and policy support

Being a smallholder farmer, Mr. Roop Lal has limited scope for expansion and faces constraints in scaling up his enterprises. A major challenge is the lack of organized marketing channels exclusively dedicated to chemical-free or Natural Farming produce, which restricts premium price realization. In addition, there is no compensatory or incentive mechanism to recognize and reward the ecological and human health benefits generated through Natural Farming practices. Policy support is therefore needed to develop dedicated markets for chemical-free produce, e-commerce platforms for direct sale of speciality produce, strengthen collective marketing systems, and introduce incentive or compensation mechanisms that promote ecological sustainability and public health benefits under Natural Farming.



Different crop fields grown under natural farming



Direct marketing of NF produce

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Krishi Vigyan Kendra, Mandi**





SECTION 2: NATURAL FARMING IN PERENNIAL HORTICULTURAL CROPS - AN INTRODUCTION

Horticulture, especially perennial fruit-based systems, plays a crucial role in improving farm incomes, nutritional security, and environmental sustainability in India. However, the growing dependence on chemical fertilizers, pesticides, and growth regulators in conventional horticulture has raised concerns about long-term sustainability. Such input-intensive practices have degraded soil health, increased production costs, and reduced farmers' profitability. In fragile ecosystems like the Himalayas, these issues are aggravated by soil erosion, climate variability, and limited natural resources. In this context, adopting natural farming in perennial horticultural crops offers a promising and sustainable alternative that harmonizes productivity with ecological balance.

Perennial horticultural crops such as apple, kiwifruit, and dragon fruit offer considerable and promising economic opportunities owing to their high market value and significant value-addition potential. However, their long gestation periods, vulnerability to pests and diseases, and heavy dependence on external inputs frequently pose serious challenges for farmers engaged in their cultivation. Natural farming effectively addresses these challenges by placing strong emphasis on ecological balance, soil regeneration, and the utilization of locally available inputs and resources. By substantially reducing input costs and progressively

improving soil fertility over a period of time, it enhances both the sustainability and overall profitability of orchard-based farming systems.

This section presents nine insightful success stories from diverse agro-climatic zones, mainly covering the Himalayan regions of Himachal Pradesh, Jammu and Kashmir, and Uttarakhand. These case studies comprehensively illustrate how farmers have adopted and integrated natural farming practices in perennial horticultural crops to enhance income generation, ecological stability, and livelihood resilience. The wide geographic range, from the mid-hills of Solan and Kangra to the high-altitude districts of Lahaul, Spiti, and Kinnaur, extending further to Pulwama and Dehradun, demonstrates the outstanding adaptability of natural farming across different climates, elevations, and cropping systems.

A key and distinguishing feature of these success stories is the remarkable income potential demonstrated by natural farming in perennial horticulture. For instance, a farmer in Solan district of Himachal Pradesh achieved an impressive net farm income of ₹49.04 lakh through the adoption of natural farming in kiwifruit and apple cultivation. This inspiring model clearly illustrates how combining natural farming practices with thoughtful crop diversification can significantly and substantially enhance overall profitability. Similarly, the incorporation of dragon fruit into a natural farming system in Kangra district enabled a progressive farmer to generate a commendable net income of ₹28.85 lakh, effectively showcasing the considerable potential of integrating emerging high-value crops into traditional horticultural systems.

The Himalayan horticultural economy still relies heavily on apple growing, which is seen in many of these success stories. Farmers from districts such as Lahaul and Spiti, Shimla, and Kinnaur have effectively shown that natural farming can meaningfully improve both the profitability and long-term sustainability of apple orchards. A farmer from the high-altitude region of Lahaul and Spiti successfully achieved a net income of ₹21.43 lakh by boosting orchard productivity through the regular adoption of natural farming practices, while a farmer from Shimla district earned a commendable income of ₹16 lakh, firmly establishing the economic viability of this approach even within well-established and traditionally recognized apple-growing regions.

The success of natural farming in these orchards can be attributed to several important and interconnected factors. First and foremost, soil health management through the regular application of organic manures, compost, mulching, and bio-inputs helps significantly improve soil structure, moisture retention, and overall nutrient availability. Second, the strategic use of botanical extracts and biological pest management





techniques effectively reduces dependence on chemical pesticides while maintaining and preserving ecological balance in the surrounding environment. Third, practices such as intercropping, cover cropping, and diversification within orchards actively enhance biodiversity and provide farmers with additional and supplementary income streams throughout the year.

Another important dimension illustrated in this section is the significant role of natural farming in promoting sustainable and resilient livelihoods. In districts such as Sirmour and Kinnaur, farmers have successfully adopted natural farming in high-value crops, generating incomes of ₹10.58 lakh and ₹10.27 lakh respectively. These cases demonstrate that even in challenging terrains and difficult climatic conditions, natural farming can deliver stable and financially rewarding returns. The example of women-led farming in Kinnaur is particularly noteworthy, as it underscores the role of natural farming in promoting women's empowerment and inclusive agricultural development. By reducing dependence on costly external inputs and encouraging locally manageable practices, natural farming enables women farmers to assume active leadership roles in agricultural decision-making and enterprise development.

This section also includes several encouraging examples of farmers who have achieved moderate but consistently stable incomes through the practice of natural farming. In Kinnaur, a dedicated farmer has ensured sustainable and reliable productivity with an income of ₹6.16 lakh from apple orchards, while in Pulwama, Jammu and Kashmir, a natural farming-based horticultural enterprise successfully generated an income of ₹5.89 lakh. These valuable cases firmly affirm that natural farming is effective not only in high-value flagship models but equally in ensuring consistent and dependable income for small and marginal farmers with limited resources.

The case from Dehradun, Uttarakhand, focusing on low-chill apple cultivation, further illustrates the adaptability of natural farming under changing climatic conditions. As climate change increasingly affects chilling requirements in traditional apple-growing regions, the adoption of low-chill varieties combined with natural farming practices has enabled farmers to sustain productivity and profitability, achieving a net income of ₹3.67 lakh. This example underscores the importance of innovation and timely adaptation in addressing the growing challenges posed by climate change.

Beyond economic benefits, natural farming in perennial horticulture makes a significant contribution to environmental sustainability. By minimizing chemical inputs, it reduces soil and water pollution, enhances biodiversity, and promotes ecological balance in agricultural landscapes. Mulching and organic matter



additions improve soil moisture retention, which is particularly beneficial in water-scarce and rainfed regions, while perennial crops contribute to carbon sequestration, making orchard-based natural farming an important component of climate-resilient agriculture. Furthermore, these success stories highlight the entrepreneurial potential of natural farming, as farmers are increasingly engaging in value addition, direct marketing, and agri-tourism activities alongside fruit production. Such initiatives enable farmers to capture a larger share of the value chain, thereby enhancing their overall income and ensuring long-term economic stability for their families and communities.

The experiences presented in this section clearly indicate that natural farming in perennial horticultural crops represents a scalable and replicable model for sustainable agricultural development. It offers a balanced approach that integrates economic viability with ecological sustainability and social inclusiveness, thereby addressing the key challenges faced by contemporary agriculture in India. The success stories documented here provide compelling evidence that natural farming holds the genuine potential to transform perennial horticulture into a profitable, resilient, and sustainable enterprise. These models serve as valuable learning platforms for farmers, extension workers, researchers, and policymakers, and highlight the need for supportive policies, capacity building, and effective knowledge dissemination to encourage wider adoption of natural farming practices in the horticulture sector.

This part lays the groundwork for a comprehensive and in-depth examination of these nine outstanding success stories, each of which provides distinctive and insightful perspectives on the useful use of natural farming principles in perennial crops. Together, they persuasively show that farmers may effectively attain both long-term environmental sustainability and economic prosperity in horticulture systems with the correct mix of creativity, sincere dedication, and efficient resource management.

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Natural Farming in Kiwifruit and Apple Farming for Sustainable High Income Model

Name : Mr. Mandeep Verma

Address : Vill. Shilli, PO-Damakari, Teh. Solan, Solan-173 212 (HP)

Qualification : MBA

Contact No. : 7018516200

Landholding : 7 acre



Introduction

Mr. Mandeep Verma, a farmer from the village of Shilli in Solan, Himachal Pradesh, has achieved remarkable success as a natural fruit grower. An MBA graduate and former Wipro employee, he transformed his family's barren land into a productive orchard using Natural Farming (NF) practices, relying solely on water and cow dung-based fertilizers such as jeevamrit, khatti lassi, and neem-based solutions. Most farmers in his village cultivate vegetables using chemical fertilizers and pesticides to maximize returns, but Mr. Mandeep observed that these practices reduced net profits and harmed both soil and human health. Determined to take a different approach, he chose NF of kiwifruit, which is popular among high-end consumers and naturally less prone to pests and diseases.

He started with a few hundred kiwifruit plants and now manages 1,000 kiwifruit plants, 1,200 apple trees (on M-9 rootstock), and a nursery producing thousands of kiwifruit saplings for sale. His story highlights the potential of sustainable agriculture and demonstrates that with dedication and innovation, NF can be both eco-friendly and profitable. After completing his MBA, Mr. Mandeep Verma worked for 4–5 years at Wipro Pvt. Ltd., but he was not satisfied with his job and returned to his native village of Shilli in Solan to pursue farming on his land. As an IT professional, he already possessed entrepreneurial skills such as knowledge of finance, management, and marketing, along with leadership, communication, and personal attributes like problem-solving, adaptability, resilience, and a strong capacity for networking and innovation. Being well-qualified and eager to learn, he quickly grasped complex technical aspects of farming and was



Scientists from ATARI, Ludhiana and KVK Solan inspecting kiwifruit nursery of Mandeep Verma





determined to minimize reliance on chemical inputs. These qualities collectively enabled him to establish himself as a successful agricultural entrepreneur.

Uniqueness of work related to NF

Mr. Mandeep Verma's farming enterprise i.e. "Swaastik Farms" in Shilli village, Solan is unique due to his systematic transformation of barren land into a diversified NF model, producing abundant kiwifruits and apples entirely through NF. The harvested fruits reach customers directly, free from insecticides, pesticides, weedicides, fungicides, or plant growth regulators. "All you have to do before eating is rub them with a gentle cloth," says Mandeep. His enterprise generates an income of ₹50 lakhs, demonstrating the profitability of eco-friendly farming and inspiring others across India. To ensure premium returns, he established a packing and grading unit, selling 1 kg packs of "A" grade fruits at ₹350. His orchard includes Allison and Hayward varieties of kiwifruit. An initial investment of ₹14 lakh in 2017 grew into substantial revenue through fruit and nursery plant sales. He also developed a website to sell fruits directly to customers, enabling deliveries across Hyderabad, Bangalore, Delhi, Uttarakhand, Punjab, Haryana, and Chandigarh. Beyond cultivation, Mandeep produces around 15,000 high-quality kiwifruit nursery plants annually. Recently, he has expanded into value addition by producing sugar-free natural fruit juices from his apples and kiwifruits, further diversifying his enterprise and enhancing profitability.

Systematic Capacity Building

After quitting his IT job, Mandeep Verma decided to cultivate his ancestral five acre of unproductive land in Solan. To make this vision a reality, he first gathered information about the local climate and consulted scientists from KVK Solan and Dr. YS Parmar University of Horticulture and Forestry, Nauni, to learn about fruit cultivation. He chose to grow kiwifruit and extensively studied the crop by consulting university libraries and relevant books. In 2014, he began kiwifruit farming on 2.8 acre of land, gradually increasing the number of plants in his orchard to 700. Initially practicing organic farming, he attended an NF training program in his village in 2018, which inspired him to adopt practices that minimized external inputs. Further, in 2020–21, KVK Solan strengthened his skills through follow-up trainings and on-farm demonstrations, enhancing his practical knowledge and establishing him as a model farmer in the region. Despite being from a vegetable-growing region, Mr. Mandeep Verma chose horticulture as his main enterprise. With knowledge limited to marketing and no prior farming experience, he faced the challenge of cultivating crops on barren, unproductive land. Determined to succeed, he started with kiwifruit cultivation and consulted scientists from KVK Solan to gain technical knowledge. They guided him to grow kiwifruit and apples using NF practices, which reduced cultivation costs while improving soil fertility. He was advised to follow all principles of NF, including mulching, whapasa, and the use of jeevamrit, ghanjeevamrit, beejamrit, intercropping, and rog nashi and keet nashi astr for crop management.



Scientists of KVK Solan alongwith farmers during exposure visit to Swaastik Farm of Mandeep Verma





Major practices under NF

On his farm, Mandeep grows around ten intercrop viz., soybean, French beans, black gram, turmeric, and ginger in the kharif season; pea, fenugreek, spinach, radish, and coriander in the rabi season, alongside the main crops. This ensures the efficient utilization of space and nutrients and also increase biodiversity in soil. The produce from intercrops is mainly used to meet household requirements. He maintains two indigenous cows, using their dung and urine to prepare jeevamrit, beejamrit, ghanjeevamrit, and other farm inputs and utilizes milk for household consumption. With the guidance of KVK scientists and his own dedication, Mandeep successfully established NF models for kiwifruit and apple in his village, demonstrating the viability of sustainable horticulture.

Economic analysis

After adopting NF system in apple and kiwifruit, there was a tremendous increase in soil physico-chemical and biological properties of soil when compared to the initial status of soil in 2018. According to Mandeep Verma, NF system proved better as compared to organic farming system which may be contributed to the low input cost and increased crop yield. Presently, he is earning about 50 lakhs through these enterprises annually. His net returns has increased from ₹40.49 lakh to ₹49.03 lakhs from 2022-23 to 2024-25 and there was steady increase in B:C ratio from 3.08 to 3.38 over these years (Table 1). Among the different enterprises, the kiwifruit nursery contributed the highest share, accounting for 41.77 percent of the total net income, highlighting its strong profitability and market demand. Kiwifruit cultivation contributed 34.48 per

Table 1: Year-Wise economics of fruit crops under natural farming system

Crop	Area (acre)	Production*	Gross returns (₹/farm)	Cost# (₹/farm)	Net returns (₹/farm)	B:C ratio
2022-23						
Kiwifruit orchard	4.0	130.3	22,79,900	7,70,420	15,09,480	2.96
Apple (on M9 rootstock)	2.0	102.3	14,32,200	3,91,630	10,40,570	3.66
Kiwifruit nursery	1.0	13500.0	24,30,000	9,30,800	14,99,200	2.61
Total	7.0	-	61,42,100	20,92,850	40,49,250	3.08
2023-24						
Kiwifruit orchard	4.0	133.6	23,77,724	7,75,130	16,02,594	3.07
Apple (on M9 rootstock)	2.0	105.4	14,96,964	4,00,140	10,96,824	3.74
Kiwifruit nursery	1.0	14200.0	26,98,000	9,40,700	17,57,300	2.87
Total	7.0	-	65,72,688	21,15,970	44,56,718	3.23
2024-25						
Kiwifruit orchard	4.0	137.1	24,68,340	7,78,240	16,90,100	3.17
Apple (on M9 rootstock)	2.0	108.8	15,76,875	4,12,120	11,64,755	3.83
Kiwifruit nursery	1.0	15000.0	30,00,000	9,50,940	20,49,060	3.15
Total	7.0	-	70,45,215	21,41,300	49,03,915	3.38
*q/farm or saplings/farm; #Including family labour						





cent, reflecting its significant role in overall farm returns. Apple cultivation on M9 rootstock contributed 23.75 per cent to the total net income.

Influence and impact on farmers

After adopting NF, Mr. Mandeep Verma reduced his cost of cultivation by 60 per cent by replacing costly chemical and other inputs with locally prepared bio-stimulants made from cow dung, cow urine, jaggery, gram flour, and other locally available plants. NF also improved the physical, chemical, and microbial properties of his orchard soil, enhancing nutrient availability and contributing to increased farm productivity. Mr. Mandeep has made significant contributions to promoting NF in Solan and across Himachal Pradesh. With the support of KVK Solan, he has taken on the role of a master trainer, mentoring over 300 farmers annually who visit his farm. Many have adopted NF in kiwifruit cultivation under his guidance. He actively disseminates knowledge through social media platforms, awareness camps, and KVK-organized trainings, imparting technical know-how to both farmers and students during exposure visits. In recognition of his achievements, Mandeep has received several awards: the “Progressive Farmer Award” at Kisan Mela, HP, in 2019; the “Gaurav Samman” by Himachal Dastak in 2019; the “Progressive Farmer Award” by UHF Nauni in 2021; and the “Unnat Kisan, Unnat Krishi” honor by the Indian Farmer Alliance, HP chapter, on 25th August 2021. He was also appreciated for his remarkable journey during the 2022 Republic Day celebrations in Solan. The journey of Sh. Mandeep Verma is an inspiring example for young entrepreneurs, demonstrating that those who dare to dream and take risks can achieve their goals through consistent effort and perseverance. He has challenged the notion that NF is not viable for commercial horticulture, proving that it can reduce input costs, produce healthier chemical-free food, and promote environmental sustainability by improving soil and water health, increasing biodiversity, and enhancing climate resilience. Mandeep encourages budding entrepreneurs to adopt NF practices, focusing on biodiversity, multilayered cropping models, and mulching to maintain vegetative cover, reduce water requirements, and minimize pest and disease vulnerability. He also emphasizes the importance of developing strong market linkages to secure premium prices for their produce.



Exposure visit to Swaastik Farm of Mandeep Verma at Vill. Shilli

Contributors: Arti Shukla, Anurag Sharma and Amit Vikram, Krishi Vigyan Kendra, Solan



Creating Sustainable Income Platform by Incorporating Dragon Fruits in Natural Farming System

Name : Mr. Jeewan Singh Rana
Address : Vill. Gharjarot, PO-Nagrota Surian, Kangra-176 027 (HP)
Qualification : M.A., M.Ed., M.Phil. (Edu.)
Contact No. : 9418494200
Landholding : 3.5 acre



Introduction

Mr. Jeewan Singh Rana, a retired school lecturer from village Ghar Jarot in District Kangra, has successfully transformed his post-retirement engagement into a sustainable and innovative farming enterprise. His association with Krishi Vigyan Kendra (KVK), Kangra, played a key role in shaping this transition, where he received training and technical guidance on vermicomposting and Natural Farming (NF) practices through demonstrations and advisory services.

Motivated to adopt a chemical-free and environmentally sustainable approach, he gradually shifted from conventional methods to NF with a focus on soil health, cost reduction, and quality produce. Under the guidance of KVK scientists, he explored the potential of high-value horticultural crops and identified dragon fruit as a suitable and innovative option for the region. By strictly following NF principles and preparing bio-inputs on-farm, he achieved healthy crop establishment and promising growth. His initiative has emerged as a successful model, demonstrating that dragon fruit cultivation under NF is both technically feasible and economically rewarding in the agro-climatic conditions of Kangra.

Uniqueness of work related to NF

With a sole commitment to practicing chemical-free farming, he has adopted NF to conserve soil health, resources, and water while reducing costs and producing high-quality fruits. His innovative approach, particularly in cultivating dragon fruit under NF, has drawn wide attention. The distinctiveness of his work has been recognized on various platforms. He was invited as a delegate to the National Workshop on Innovative Agriculture at Vigyan Bhawan, New Delhi (2022), conferred with the Certificate of Natural Farmer by the Department of Agriculture, Himachal Pradesh (2022), and honoured with the Progressive Natural Farmer Award by KVK, Kangra (2025). His contributions have also earned him opportunities to serve as a panelist at international conferences, receive appreciation in specialized workshops, and witness the 75th Republic Day Parade as a special invitee of the Ministry of Defence. These recognitions reflect the uniqueness and impact of his journey in NF.

Systematic Capacity Building

KVK, Kangra, has contributed significantly to systemic capacity building for NF by enabling a structured transition from chemical-based practices to Subhash Palekar Natural Farming (SPNF). Through continuous technical guidance, KVK motivated Mr. Jeewan Singh Rana to begin with



Farmers' Dragon fruit farm grown with NF practices





vermicomposting and progressively adopt NF practices aimed at conserving soil and water resources, reducing production costs, and improving fruit quality. His successful cultivation of dragon fruit under NF has emerged as a functional learning model within the farming system. KVK strengthened this process through need-based training programmes, on-farm demonstrations, exposure visits, and regular advisory services, which enhanced farmers' practical skills, scientific understanding, and confidence in NF. Awareness programmes, field days, and dissemination of extension materials further institutionalized knowledge sharing and learning mechanisms.

These interventions facilitated farmer-to-farmer learning, with around 250 farmers visiting the model farm and several adopting NF practices and high-value crops. The establishment of a Front-Line Demonstration (FLD) plot by the Department of Horticulture, Himachal Pradesh, further reinforced institutional convergence. Recognition of the farmer as a master trainer and as the first government-

registered dragon fruit nursery grower in the state reflects the creation of local resource persons and decentralized capacity. Overall, KVK's interventions strengthened systemic capacity by developing skilled farmers, promoting sustainable technologies, and creating scalable models for wider adoption of NF.



Farmer with Dragon fruit plant

Major practices under NF

Mr. Jeewan Singh has adopted a range of NF practices on his farm. He grows wheat as a field crop and has successfully introduced high-value horticultural crops such as dragon fruit and papaya. To improve soil fertility and enhance resource-use efficiency, he practices intercropping with legumes, including cowpea, pea, moong, mash, and kulthi. Mulching with crop residues is followed to conserve soil moisture and improve soil health, along with the adoption of the whapasa principle to maintain soil aeration and moisture balance. Livestock integration forms an integral component of his farming system, with the maintenance of a Sahiwal cow and calf ensuring a regular supply of cow-based bio-inputs. All NF formulations are prepared on-farm using dung and urine from the Sahiwal cow, supplemented with locally available herbs and plant-based materials.

Economic analysis

Table 1 presents year-wise and crop-wise economics and productivity of the diversified cropping system from 2022–23 to 2027–28. In 2022–23, total gross income was ₹1.15 lakh with a modest net income of ₹5,980 and an overall B:C ratio of 1.05, as dragon fruit was in the establishment phase and incurred higher initial costs. In 2023–24, with dragon fruit coming into bearing, total gross income increased to ₹3.16 lakh and net income to ₹1.97 lakh, improving the overall B:C ratio to 2.67. During 2024–25, further stabilization of the system resulted in total gross income of ₹3.65 lakh and net income of ₹1.68 lakh with a B:C ratio of





Table 1: Year-wise and crop-wise economics and productivity under diversified cropping system (2022-23 to 2027-28)

Year	Attributes	Wheat	Pea	Cowpea	Moong	Mash	Kulthi	Dragon Fruit	Total
2022-23	Area (acre)	2.3	0.2	0.2	0.2	0.2	0.2	0.625	-
	Production (q)	24.5	5	1.2	0.9	1.1	1.2	-	-
	Cost of cultivation* (₹/farm)	34,980	5,890	3,590	3,560	3,290	3,960	54,600	1,09,870
	Gross income (₹/farm)	71,050	22,500	5,400	5,400	5,500	6,000	-	1,15,850
	Net income (₹/farm)	36,070	16,610	1,810	1,840	2,210	2,040	-54,600	5,980
	B:C ratio	2.03	3.82	1.50	1.52	1.67	1.52	0.00	1.05
2023-24	Area (acre)	2.3	0.2	0.2	0.2	0.2	0.2	0.625	3.925
	Production (q)	25	5.5	1.2	0.95	1.15	1.2	15	44.6
	Cost of cultivation* (₹/farm)	36,200	5,960	3,640	3,680	3,310	4,265	61,800	1,18,855
	Gross income (₹/farm)	75,000	24,750	6,000	6,175	6,325	6,600	1,92,000	3,16,850
	Net income (₹/farm)	38,800	18,790	2,360	2,495	3,015	2,335	1,30,200	1,97,995
	B:C ratio	2.07	4.15	1.65	1.68	1.91	1.55	3.11	2.67
2024-25	Area (acre)	2.3	0.2	0.2	0.2	0.2	0.2	2.5	-
	Production (q)	25.5	5.5	1.25	0.95	1.2	1.25	11.6	-
	Cost of cultivation* (₹/farm)	36,800	6,170	3,720	3,690	3,440	4,845	1,38,800	1,97,465
	Gross income (₹/farm)	79,050	27,500	6,250	6,650	6,600	7,500	2,32,000	3,65,550
	Net income (₹/farm)	42,250	21,330	2,530	2,960	3,160	2,655	93,200	1,68,085
	B:C ratio	2.15	4.46	1.68	1.8	1.92	1.55	1.67	1.85
2027-28 (Estimates)	Area (acre)	2.3	0.2	0.2	0.2	0.2	0.2	2.5	-
	Production (q)	26.8	6.2	1.4	1.05	1.35	1.45	187.5	-
	Cost of cultivation* (₹/farm)	40,500	6,900	4,100	4,050	3,900	5,500	3,88,800	4,53,750
	Gross income (₹/farm)	88,000	31,500	7,400	7,800	7,900	9,000	31,87,500	33,39,100
	Net income (₹/farm)	47,500	24,600	3,300	3,750	4,000	3,500	27,98,700	28,85,350
	B:C ratio	2.17	4.57	1.80	1.93	2.03	1.64	8.20	7.36

* Including family labour





1.85. The farmer increased area under dragon fruit to 2.5 acres during 2024-25 and output stabilisation for this expansion will take place during 2027-28.

The estimates for 2027-28 indicate a substantial rise in profitability, with total farm gross income projected at ₹33.39 lakh and net income at ₹28.85 lakh, largely driven by high returns from post output stabilisation of 2.5 acre of dragon fruit (about 32 lakh gross income and 28 lakh net income). The overall B:C ratio is expected to reach 7.36, highlighting the strong economic potential of integrating high-value crops in a diversified natural farming cropping system. Among annual crops, pea consistently recorded the highest B:C ratio among field crops, followed by wheat, while pulses such as moong, mash, cowpea and kulthi provided moderate but stable returns. Overall, the diversified system enhanced income stability in the initial years and significantly improved profitability over time through strategic crop diversification and inclusion of high-value fruit crops.



A view of farmers' Dragon fruit farm

Influence and impact on farmers

Motivated by the success of Mr. Jeewan Singh Rana and guided by the principle of “seeing is believing,” farmers from neighbouring villages have shown keen interest in adopting NF practices. With continuous support from KVK through training programmes and exposure visits, around 100 farmers from his village have been trained in NF and exposed to various demonstration units across the district. Knowledge sharing through a group-based and farmer-to-farmer learning approach has further strengthened skill development and confidence among the farming community, with expectations of wider adoption and enhanced household income in the near future.

The impact of his initiatives extends beyond his village, as his natural farm has attracted nearly 250 farmers, many of whom have adopted NF practices and procured dragon fruit saplings. His efforts also led to the establishment of a Front-Line Demonstration (FLD) plot by the Department of Horticulture, Himachal Pradesh, involving the installation of 1,111 pillars for promoting dragon fruit cultivation. As the first government-registered dragon fruit nursery grower in the state, he has sold approximately 3,000 saplings and generated an additional income of ₹2.5 lakh. His success has encouraged diversification towards high-value crops under NF and created new income opportunities for farmers. In recognition of his expertise, KVK has nominated and trained him as a master trainer, enabling him to actively contribute to farmer capacity building and the wider dissemination of sustainable farming practices.

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Sarang Monga, ICAR-ATARI, Ludhiana**



Enhancing Profitability of Apple Orchard through Natural Farming in the High-Altitude Region

Name : Mrs. Deachen Dolma
Address : Vill. & PO-Hurling, Teh. Kaza, Lahaul & Spiti-172 113 (HP)
Qualification : 10th
Contact No. : 7876937834
Landholding : 3 acre



Introduction

Mrs. Deachen Dolma, a 45-year-old progressive woman farmer from Hurling village in Lahaul & Spiti district, has shown how Natural Farming (NF) can rejuvenate apple orchards and improve livelihoods in the cold desert. Hurling lies at an altitude of about 3,200 meters, where agriculture faces multiple challenges such as water scarcity and harsh winters. With agriculture as the primary livelihood option, she chose apple cultivation with a focus on chemical-free practices.

She owns 3 acre of land, most of which is under apple orchards, along with other fruits and vegetables. She initially focused on organic agriculture, but a turning point in her life came when she interacted with the Krishi Vigyan Kendra team and learned about Natural Farming (NF). She was inspired by an awareness programme on NF conducted by KVK Lahaul & Spiti-II (Tabo) under the Outscaling of NF through KVKs and subsequently adopted NF in her apple orchard, embracing the concept of low- cost, and chemical-free cultivation.

Uniqueness of work related to NF

The uniqueness of Mrs. Deachen Dolma's work lies in her successful adoption and demonstration of Natural Farming in perennial apple orchards under the extreme high-altitude and cold desert conditions of Spiti Valley. While NF adoption is commonly associated with seasonal vegetables, her case proves its technical feasibility and economic viability in long-duration fruit crops. Motivated by health concerns arising from chemical exposure, she transitioned from organic farming to a complete NF-based orchard system, relying entirely on on-farm bio-formulations such as jeevamrit, ghanjeevamrit, agniastra, neem oil, and khatti lassi for nutrient management and plant protection.

The systematic and stage-wise application of these formulations resulted in improved soil health,



Demonstration of soil sampling procedure



Farmers with prepared bio inputs for NF practices





enhanced tree vigour, stabilized yields, and superior fruit quality. Her achievement of a two-star NF certification and progression towards a three-star level further highlights the credibility and scalability of her approach. By integrating apple cultivation with diversified fruit crops and a kitchen garden under NF, she has developed a resilient, low-cost, and health-oriented production model. Her orchard now serves as a live demonstration site, inspiring neighbouring farmers and establishing Natural Farming as a sustainable and profitable pathway for apple cultivation in high-altitude regions.

Systematic Capacity Building

Mrs. Deachen Dolma received extensive capacity-building support between 2023 and 2025, including practical demonstrations in Hurling, follow-up trainings, and provision of essential inputs such as drums for bio-formulation preparation. She also participated in exposure visits to model NF orchards and interacted with experienced farmers, which broadened her knowledge and skills. These interventions not only strengthened her technical confidence but also enabled her to guide and motivate neighbouring farmers, establishing her as a model orchardist practicing NF in apple orchards.

Major practices under NF

Ghanjeevamrit was applied to the apple orchards during the month of March. Thereafter, jeevamrit was applied from the half-inch green stage until mid-September at 15-day intervals through drenching and at 10-day intervals through foliar sprays. Agniastra and neem oil were used for insect-pest management, while khatti lassi was applied to control diseases. Regular use of these NF formulations enhanced soil fertility, reduced pest and disease incidence, and improved tree vigour. Over time, her apple trees showed greener foliage, better growth, and improved fruit set.

Economic analysis

Table 1 presents the year-wise economic performance of apple cultivation under NF on a 3-acre orchard. Apple production increased substantially from 234 q/farm in 2022–23 to 317 q/farm in 2023–24 and further to 328 q/farm in 2024–25, reflecting improved orchard productivity under NF practices. The cost of cultivation showed only a marginal increase over the years, ranging from ₹3.32 lakh to ₹3.41 lakh per farm, indicating effective cost control despite rising input prices. Correspondingly, gross income increased from ₹25.70 lakh in 2022–23 to ₹28.50 lakh in 2023–24, while remaining high at ₹26.22 lakh in 2024–25. Net income without accounting for family labour improved from ₹22.38 lakh to ₹25.15 lakh in 2023–24 and was maintained at ₹22.81 lakh in 2024–25.

After including the imputed cost of family labour, net income ranged between ₹21.15 lakh and ₹23.85 lakh across the three years. Overall, the table highlights that adoption of NF,



Apple orchard grown under natural farming practices





along with improved market access, ensured consistently high net returns from apple cultivation by enhancing productivity and reducing production costs, thereby strengthening orchard profitability and income stability.

Table 1: Component and year wise income of apple cultivation through Natural Farming (Area = 3 acre)

Year	2022-23	2023-24	2024-25
Production (q/farm)	234	317	328
Cost (₹/farm)	3,32,175	3,35,175	3,40,800
Gross income (₹/farm)	25,70,040	28,50,030	26,22,000
Net income (₹/farm) without family labour	22,37,865	25,14,855	22,81,200
Family labour	1,22,216	1,29,510	1,37,822
Net income (₹/farm) with family labour	21,15,649	23,85,345	21,43,378

Influence and impact on farmers

Natural Farming (NF) has helped reduce expenditure on chemical inputs while enriching the soil with beneficial microorganisms. Her apple yield has stabilized, and fruit quality has improved significantly, with apples becoming firmer, juicier, and sweeter. She has already obtained a two-star certification in NF and is now working towards a three-star certificate, which will further enhance the market value of her produce. Beyond her own farm, her success has inspired neighbouring farmers to adopt NF practices, and she is increasingly recognized as a role model for sustainable and profitable apple cultivation in the region.



Organic apples from farmer's field ready for market

Contributors: R S Spehia and Ankita Dhiman, Krishi Vigyan Kendra, Lahaul & Spiti-II



Name : Mr. Subhash Shadru
Address : Vill. Shakti Nagar, PO- Samoli, Rohru-171 207 (HP)
Qualification : 10th
Contact No. : 7018194064
Landholding : 3.6 acre



Introduction

Mr. Subhash Shadru, a 45-year-old apple orchardist from Shakti Nagar, Rohru, Shimla district of Himachal Pradesh, has successfully initiated the transition of his apple orchards towards chemical-free cultivation. He was motivated by declining orchard productivity, increased tree mortality, and the rising cost of agrochemicals, which collectively reduced profitability and degraded soil health. Additionally, health issues associated with pesticide use, including headaches, eye irritation, and skin problems, further encouraged him to seek a safer alternative. These concerns led him to adopt Natural Farming (NF) as an economically viable and environmentally sustainable option.

His participation in a lecture by Padma Shri awardee Shri Subhash Palekar on natural farming at Haridwar in 2013 marked a turning point in strengthening his belief in this low-input, chemical-free approach. He began NF on 0.2 acre in 2013 and gradually expanded it to his entire 13.6 acre apple orchard by 2022 after observing positive results. During the transition, limited technical and scientific knowledge related to NF in apple cultivation posed initial challenges. However, regular field visits, trainings, and continuous technical support from Krishi Vigyan Kendra (KVK), Shimla at Rohru, significantly enhanced his confidence to adopt NF on a larger scale without hesitation.

Uniqueness of work related to NF

The work of Mr. Subhash Shadru under Natural Farming (NF) is unique due to his strong conviction, adaptive learning, and perseverance in overcoming multiple technical, social, and market-related challenges. Unlike many farmers who hesitate to continue NF after initial difficulties, he adopted a problem-solving approach by critically analyzing failures, seeking scientific guidance from KVK Shimla, line departments, and other institutions, and refining his practices accordingly. His decision to replace Jersey



Mr Subash Shadru during his exposure visit



Scientists visit to Farmers' apple orchard





cows with indigenous Sahiwal cows to ensure the authenticity of NF inputs reflects his deep understanding and commitment to core NF principles. Despite the absence of certification and premium markets in the initial years, he did not revert to chemical farming but instead developed direct market linkages for his chemical-free apples. Family resistance in the early stages further tested his resolve; however, his consistent results in terms of reduced costs, improved orchard health, and better net returns gradually convinced his family to actively participate in the NF system. This combination of scientific support, indigenous resource use, market innovation, and unwavering commitment distinguishes Mr. Shadru's NF practice as a resilient and replicable model for apple-based Natural Farming in hill ecosystems.

Systematic Capacity Building

Initially hesitant to discuss NF with fellow farmers, Mr. Subhash Shadru gained confidence after being nominated by ATMA to attend NF training at Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, followed by a six-day intensive training conducted by Subhash Palekar at Kufri. These programmes strengthened his understanding and enabled him to communicate NF principles effectively using scientific reasoning. Motivated to deepen his knowledge, he actively participated in NF-related trainings, workshops, and exposure visits organized by line departments, KVK Shimla at Rohru, ATMA, and other institutions.

He visited leading centres such as Gujarat Natural Farming Science University, Gurukul Kurukshetra, the Natural Farming Testing Center, the Regional Horticultural Research and Training Station, Mashobra, and KVK Shimla at Rohru. Initially limited to the use of jeevamrit, his skills expanded to the preparation and application of beejamrit, ghanjeevamrit, saptadhankur, and bio-formulations for pest management, along with the adoption of the whapasa system in his orchard. Over time, he also introduced site-specific innovations such as intercropping in apple orchards and the use of Pitambar Lassi for disease management, which resulted in improved crop health and quality.

Major practices under NF

Mr. Subhash Shadru adopted NF not only as a crop production practice but as an integrated and self-sustaining farming system with apple cultivation at its core. His NF-based system includes allied enterprises such as a dairy unit, poultry, rabbit farming, and goat rearing, all of which complement each other through the recycling of on-farm resources. Livestock plays a key role by providing dung and urine for the preparation of NF inputs, thereby reducing expenditure on pest and nutrient management and minimizing dependence on external markets.

To further enhance farm income and soil health, he practices intercropping in apple orchards with cash crops like tomato and capsicum, traditional crops such as sesame and colocasia, millets and pseudo-millets including ragi and bhangjeeri, and legumes like rajmash, mash, and soybean. These practices not



Mr Subhash Shadru with his apple grading facility Foreign visitor & KVK In-charge at Mr Shadru's BRC





only improved soil fertility and apple productivity but also generated additional income. The savings from low-cost NF cultivation and profits from integrated components were reinvested in value addition through the installation of a grading machine, which significantly enhanced returns. He has also developed direct market linkages with consumers in cities such as Mumbai, Pune, and New Delhi, strengthening the economic sustainability of his NF system.

Economic analysis

The economic analysis highlights a clear improvement in profitability after the adoption of an integrated NF model by Mr. Subhash Shadru. Earlier, under conventional apple monocropping, he was obtaining a maximum net return of about ₹9.75 lakh from the same land, which was gradually declining due to increasing cultivation costs and higher plant mortality. In contrast, the natural farming system generated total gross returns of ₹24.75 lakh per year through a combination of apple production, intercrops, livestock components, and income from a grading machine (Table 1).

With a total expenditure of ₹5.08 lakh, the net returns excluding family labour increased to ₹19.67 lakh. Even after accounting for family labour valued at ₹3.65 lakh, the net returns remained substantially higher at ₹16.02 lakh, demonstrating the economic advantage and stability of the integrated natural farming approach.

Table 1: Economics of natural farming model adopted by Mr. Subhash Shadru (Area=3.6 acre)

Economic details	Component	Returns (₹/ year)
Gross returns	Apple	21,00,000
	Intercrops (rajmash, tomato, capsicum, potato etc.)	1,25,000
	Dairy, poultry etc.	75,000
	Gross returns from grading machine	1,75,000
Total Gross returns		24,75,000
Expenditure	Inputs	28,000
	Hired labour	4,80,000
Total expenditure		5,08,000
Net returns (excluding family labour)		19,67,000
Estimated family labour*		3,65,000
Net returns (including family labour)		16,02,000
*Family labour involvement (730 man-days/ year @ Rs 500).		

Influence and impact on farmers

Mr. Subhash Shadru is widely recognized in the region as a progressive NF practitioner, and there is hardly any farmer in the area unfamiliar with his work. Owing to the success of his profitable and sustainable NF-based apple production system, he has played a key role in organizing awareness camps and field-level programmes to promote NF among farmers. His farm has also attracted visits from scientists and other eminent personalities, who have appreciated his integrated NF approach. To date, he has sensitized more





**Mr. Subhash Shadru motivating farmers
to adopt natural farming**



**Mr. Subhash Shadru attending workshop at GNFS
University with Scientists of Dr YSP UHF, Nauni**

than 2,500 farmers on Natural Farming, and over 120 apple growers are actively practicing NF under his guidance. In recognition of his dedication and expertise, he has been appointed as a Farmers' Master Trainer (FMT) under the National Mission on Natural Farming.

Mr. Shadru's integrated NF model has strongly motivated farmers from different regions to adopt chemical-free farming as a profitable and sustainable livelihood option. His innovative integration of poultry and other allied enterprises, along with apple cultivation, has been widely appreciated. His personal journey and financial growth through NF serve as a strong example that profitability can be achieved without compromising soil health and environmental sustainability. Through field-based interactions, he provides valuable feedback to scientists and helps extend NF technologies to a wider farming community. His established market linkages in metro cities further enable NF farmers to obtain better prices compared to conventional produce. Summing up his philosophy, he believes that “apples grown under natural farming may not appear shinier than chemically grown ones, but the returns from natural farming shine much brighter, without harming soil and environmental health.”

**Contributors: Nagender Pal Butail, Usha Sharma and Shikha Bhagta,
Krishi Vigyan Kendra, Shimla**



Name : Mr. Arjun Attri

Address : Vill. & PO- Parara, Teh. Dadahu, Sirmour-173 001 (HP)

Qualification : M.A.

Contact No. : 9805274263

Landholding : 3.75 acre



Introduction

Mr. Arjun Attri, son of Mr. Karan Singh Attri, hails from Parara village in Sangrah block of Sirmour district, Himachal Pradesh. He is a pharmacy graduate, and he initially worked in a pharmaceutical company but returned to his roots during the COVID-19 pandemic to pursue farming with his family. He has successfully transformed 2.5 acre of his agricultural land into a model Natural Farming (NF) farm.

Initially, he practiced chemical based farming, cultivating maize, wheat, black gram, kidney beans, and seasonal vegetables such as tomato, cucumber, okra, radish, and ginger, along with apple, plum, lemon, and strawberry plantations, supported by livestock rearing of local cows and goats. Though he blended traditional methods with some modern practices, he soon realized the drawbacks of chemical-based farming, including high input costs and declining soil fertility.

His journey towards NF began in 2020, gaining further momentum after specialized training at UHF Solan and regular technical support from KVK Sirmour. To reduce the dependency on costly chemical inputs and sustain soil health, he diversified his farm under the Integrated NF System, incorporating vegetables, fruits (apple and plum), fodder crops, apiculture, and improved dairy breeds such as Gir and Sahiwal. Despite initial challenges, continuous guidance from KVK Sirmour enabled him to refine his practices. Today, he is recognized as a role model in the region, showcasing sustainable and remunerative NF.

Uniqueness of work related to NF

Although he is a Pharmacy graduate, but he left his corporate job to embrace farming and became an early adopter of NF in Sirmour since 2020. By blending traditional knowledge with scientific training from UHF, Solan and KVK Sirmour, he developed a self-reliant multi crop NF model while using on-farm prepared bio-formulations. On just 2.5 acre of land, he successfully demonstrated a diversified farming system ensuring



Scientists visit to Farmers' farm



Farmer showing crop grown under NF practices





Farmer showing crops grown under NF practices

economic viability and sustainability. A key uniqueness of his model lies in its market-oriented approach. He follows a well-planned marketing strategy combining online and offline channels, with a strong focus on direct-to-consumer sales through farmers' markets and e-commerce platforms. Proper grading, packaging, and labelling of produce enhance market value, while active customer engagement and collaborations with local businesses help build brand identity and consumer trust.

Systematic Capacity Building

KVK, Sirmaur, has been instrumental in building systematic capacity for the promotion and sustained adoption of NF in the district. Through regular trainings, awareness programmes, kisan goshties, farmer-scientist interactions, and method demonstrations, KVK has strengthened farmers' technical knowledge on NF practices, particularly the preparation and use of on-farm NF inputs. On- and off-campus exposure visits to model farms and practicing farmers' fields provide hands-on learning opportunities and facilitate the horizontal spread of proven technologies. Continuous technical backstopping, along with the supply of resource materials and starter kits of NF inputs, has enhanced farmers' confidence in adopting NF. In addition, KVK supports farmers in certification processes, branding, and developing market linkages to improve economic returns. Special emphasis on engaging rural youth and women Self-Help Groups (SHGs) in input production and value addition has further reinforced livelihood opportunities. Collectively, these interventions have enabled KVK, Sirmaur, to institutionalize learning systems and strengthen the long-term sustainability and scalability of NF in the district

Major practices under NF

On his farm, Mr. Arjun Attri follows a wide range of NF practices to ensure sustainability and profitability. He cultivates staple crops such as maize, wheat, black gram, and kidney beans, along with vegetables like tomato, capsicum, cucumber, radish, garlic, and ginger using on-farm prepared bio-formulations. His





Vegetable crops grown under NF practices

horticulture component includes apple, plum, lemon, peach, and walnut plantations, where bio-formulations are applied to improve fruit quality and maintain soil fertility. Intercropping is an integral feature of his NF system, with cereal–pulse combinations (e.g., maize + black gram + kidney bean) to enrich soil fertility, while vegetables are grown in orchards to optimize land use and maximize profits. Ginger and turmeric are also cultivated in interspaces as they are less susceptible to damage from stray animals. Mulching with crop residues, leaves, and organic biomass helps conserve moisture, suppress weeds, and improve soil organic matter and microbial activity. To manage water efficiently, he practices whapasa, to enhance soil aeration and moisture retention, supplemented with drip and sprinkler irrigation for efficient water management. Livestock integration further strengthens his system, with local cows and goats providing dung, urine, and FYM that are converted into jeevamrit, beejamrit, ghanjeevamrit, compost, and herbal pesticides. This ensures nutrient cycling, reduces external input dependence, and generates additional income through milk and goat rearing.

Economic analysis

The economic performance of major vegetables (as intercrops) and fruit (principal crops on 2.5 acre) enterprises under the NF system, is presented in Table 1. Vegetables generated gross returns of about

Table 1: Economic performance of vegetable and fruit enterprises under NF

Crops	Gross returns (₹)	Expenditure # (₹)	Family Labour## (₹)	Total cost (₹)	Net returns (₹)	
					Without family labour	With family labour
Vegetables *	4,49,535	1,44,020	1,07,500	2,51,520	3,05,515	1,98,015
Fruits**	10,61,315	76,230	1,25,000	2,01,230	9,85,085	8,60,085
Total	15,10,850	2,20,250	2,32,500	4,52,750	12,90,600	10,58,100

* Vegetables include capsicum, tomato, cucumber, radish, garlic, pea (grown as intercrops)
 ** Fruits include apple, apricot, peach, plum, walnut (established as principal crops)
 # Expenditure including inputs, operations & hired labour
 ## Family labour = 465 man-days/year@500/day





₹4.50 lakh with an expenditure of ₹1.44 lakh, while family labour contribution amounted to ₹1.08 lakh. This resulted in net returns of ₹3.06 lakh when family labour was excluded, which reduced to ₹1.98 lakh after accounting for family labour costs. The farmer's income from vegetables is derived not only from the sale of fresh produce but also from the sale of seedlings and rootstocks, further improving the profitability of the vegetable enterprise. Fruits emerged as the dominant income source, recording gross returns of about ₹10.61 lakh against an expenditure of only ₹0.76 lakh and family labour worth ₹1.25 lakh. Consequently, net returns from fruits remained high at ₹9.85 lakh without family labour and ₹8.60 lakh even after its inclusion. Overall, the farming system generated total gross returns of ₹15.11 lakh with a total cost of ₹4.53 lakh, yielding net returns of ₹12.91 lakh excluding and ₹10.58 lakh including family labour. The analysis clearly indicates that fruit-based enterprises substantially enhance farm profitability under NF, while vegetables provide important supplementary income and employment.

Influence and impact on farmers

His initiative has significantly influenced neighbouring farmers by showcasing the visible benefits of NF, including reduced input costs, improved soil fertility, and assured net profit from diversified crops. His farm serves as a live demonstration site where farmers gain hands-on knowledge for preparation of natural inputs, efficient irrigation methods, and livestock integration. Several youth and smallholders in the region have started shifting towards NF after getting inspired by his success, recognizing its potential for sustainability and profitability.

The impact of his work is evident in reduced cultivation costs, enhanced soil health, and better crop resilience, which together ensure sustainable income even from small landholdings. By integrating crops, horticulture, and vegetables, he has created diversified income streams and year-round employment for his family. Beyond personal gains, his model demonstrates that NF is both eco-friendly and remunerative, positioning him as a catalyst of change and a motivator for neighbouring farmers, particularly rural youth, to gradually reduce chemical inputs and embrace NF for long-term sustainability.



Mr. Arjun Attris' NF field showing different crops under NF practices

Contributors: Shiwali Dhiman and Pankaj Mittal, Krishi Vigyan Kendra, Sirmour



Women Empowerment through Natural Farming in High Value Crops in Difficult Kinnaur Conditions

Name : Mrs. Ganga Sarni Bisht
Address : Vill. Kilba, PO- Kilba, Teh. Sangla, Kinnaur-172 105 (HP)
Qualification : Post Graduate; M.Phil. (Hindi)
Contact No. : 7878170831
Landholding : 2 acre



Introduction

Mrs. Ganga Sarni Bisht, an M.Phil. graduate in Hindi and a former teacher in Delhi, is an inspiring example of a progressive woman farmer who transitioned from urban employment to sustainable agriculture in her native village of Kinnaur. Due to health concerns, she left city life and returned to her village, where she realized that the increasing prevalence of health problems was largely associated with the consumption of chemically grown food. Determined to ensure safe, nutritious, and chemical-free produce for her family and community, she adopted Natural Farming (NF) as a sustainable and eco-friendly alternative. After receiving formal training under the guidance of Shri Subhash Palekar in 2018, she became one of the early adopters and a consistent practitioner of NF in her 2 acre area.

Uniqueness of work related to NF

Mrs. Ganga Sarni Bisht's natural farming work stands out through her apple-based model demonstration unit, which integrates diversification, intercropping, mulching, and whapasa principles. Her farm combines apple cultivation with seasonal vegetables and intercrops, enhancing soil fertility, biodiversity, and income diversification. Organic mulching using locally available biomass conserves moisture, regulates soil temperature, suppresses weeds, and promotes microbial activity, while whapasa ensures proper soil aeration and moisture balance for healthy root systems. A distinguishing feature is her perseverance through the transition phase, overcoming initial yield reductions and pest challenges by actively participating in KVK Kinnaur training programmes. She became the first woman in her village to adopt



Mrs. Ganga at her farm showing crop grown under NF practices





Application of prepared bio inputs in the farm

natural farming commercially, inspiring other farmers, particularly women, toward sustainable practices. She follows a scientific approach to input management, maintaining a dedicated hygienic, shaded unit for preparing jeevamrit, ghanjeevamrit, beejamrit, neemastra, brahmastra, agniastra, and saptadhankur, along with a well-ventilated storage facility for cow dung, cow urine, and jaggery, ensuring consistent availability and effectiveness of bio-inputs. Beyond production, she has established a retail outlet at Tapri and uses online platforms for direct marketing, securing better returns while building consumer trust in her chemical-free produce.

Systematic Capacity Building

The Krishi Vigyan Kendra (KVK), Kinnaur, has played a pivotal role in promoting Natural Farming (NF) by organizing awareness camps and offering technical guidance. To ensure inclusive development, there is a pressing need for specialized training programs for women, particularly in orchard management practices such as pruning, thinning, and plant protection. Such capacity-building initiatives will empower women to actively participate in scientific orchard management, enhance their skills, and contribute to higher farm productivity and income.

Major practices under NF

Mrs. Ganga Sarni Bisht follows a diverse and integrated Natural Farming (NF) system. Along with apple cultivation, she practices intercropping with peas, barley, wheat, kidney beans, cucumbers, coriander, and gourds, which enhances soil fertility. The produce from the intercrop is utilized for household consumption. To conserve soil moisture, suppress weeds, and improve soil health, she uses locally available grasses such as barley grass for mulching. For pest control, she regularly prepares and applies bio-inputs like agniastra, saptadhankur, and neemastra. Her farming system also integrates livestock, as the cow she maintains provides dung and urine that serve as essential components for jeevamrit, ghan-jeevamrit, and beejamrit, ensuring a continuous supply of natural formulations for her farm and the milk is used for household consumption.

Economic analysis

The economic analysis of the apple and pea-based cropping system during 2024–25 demonstrated strong





Application of prepared bio inputs in the farm

farm profitability under natural farming conditions (Table 1). The total cost of cultivation for both crops together was ₹2.31 lakh, which included input expenses on seeds, bioformulations, packaging materials, transportation and labour requirement of 166 man-days per year.

The system generated a total gross income of ₹12.58 lakh with a net income of ₹10.27 lakh, resulting in an overall benefit–cost ratio of 5.45. Apple cultivation emerged as the major contributor to farm income, generating a net income of ₹7.91 lakh with a B:C ratio of 6.01 and accounting for about 76.98 per cent of the total net income. Pea cultivation also contributed significantly to the farming system with a net income of ₹2.37 lakh and a B:C ratio of 4.24.

Overall, the apple and pea-based natural farming system proved to be economically viable and profitable. The integration of horticultural crops with sustainable natural farming practices ensured high productivity, better economic returns and improved livelihood security for the farmer.

Table 1: Economic performance of apple and pea-based cropping system (2024-25)

Year/Details	Apple	Pea	Total
Area (acre)	1	1	--
Production (q/farm)	96.8	51.6	--
Input expenses* (₹/farm)	1,00,280	47,600	1,47,880
Total labour** (₹/farm)	57,500	25,500	83,000
Total cost of cultivation (₹/farm)	1,57,780	73,100	2,30,880
Gross income (₹/farm)	9,48,640	3,09,600	12,58,240
Net income (₹/farm)	7,90,860	2,36,500	10,27,360
B:C ratio	6.01	4.24	5.45
*Expenses include seeds, bioformulations, packaging materials and transportation			
**Labour: 166 man-days/ year @ 500/day			





Apple and peas grown through natural farming practices

Impact and influence on farmers

Under the leadership of Mrs. Ganga Sarni Bisht, 20 women farmers have united to transform their farming practices and livelihoods. She spearheaded the formation of two women-led groups-Natural Food Security Group and Adishakti, which serve as strong examples of community-driven sustainable agriculture. Members have collectively leased one bigha of land to cultivate beans and peas using Natural Farming methods, and have established a Self-Help Group (SHG) that plans and manages activities with transparency and shared responsibility. This initiative has improved crop productivity while empowering women through land access, technical knowledge, and a dependable income source, inspiring others in the community and demonstrating that Natural Farming can be a pathway to socio-economic empowerment. On the agronomic front, Natural Farming has led to remarkable improvements in crop quality and the farm ecosystem. Apples now exhibit better colour, shine, durability, and market appeal. The return of beneficial insects and earthworms reflects a healthier soil environment, while improved soil moisture retention has reduced irrigation frequency.



Demonstration to other farmers for preparation of bio inputs

Contributors: Pramod Kumar and Budhi Ram, Krishi Vigyan Kendra, Kinnaur



Ensuring Sustainable Farm Income and Productivity of Apple Orchards with Natural Farming

Name : Mr. Ram Sain Rahi

Address : Vill. Lippa, PO-Lippa, Teh. Morang, Kinnaur-172 109 (HP)

Qualification : 10th

Contact No. : 9418855389

Landholding : 2.75 acre



Introduction

Mr. Ram Sain Rahi, S/o Mr. Amar Chand, is a dedicated apple grower from Lippa village in Kinnaur district of Himachal Pradesh. He represents how the integration of traditional knowledge with sustainable agricultural practices can strengthen rural livelihoods in the high Himalayan region. Lippa village, situated at an altitude of over 2,400 meters above sea level, is characterized by a cold climate and fertile soils that are well suited for apple cultivation. Having grown up in this remote area, Mr. Rahi was closely associated with conventional apple farming practices. Over time, however, he observed a growing dependence on chemical fertilizers and pesticides, which led to declining soil health, rising production costs, and concerns regarding fruit quality. In search of an eco-friendly and economical alternative, he adopted Natural Farming (NF) practices under the inspiration of the Himachal Pradesh Government's Prakritik Kheti Khushhal Kisan Yojana (PK3Y). With training and technical support from agricultural officers and state-sponsored programmes, he gradually shifted away from synthetic inputs and adopted NF formulations such as jeevamrit, ghanjeevamrit, and beejamrit, along with mulching, cover cropping, and locally prepared natural pest repellents.

Uniqueness of work related to NF

Mr. Ram Sain Rahi's work under NF is distinctive due to his systematic transition from chemical-based agriculture to a comprehensive, indigenous farming approach. Having practiced conventional farming in the early years of his career, he gradually adopted NF and became among the early practitioners in the region. Since 2018, he has been closely associated with Padma Shri awardee Shri Subhash Palekar, the proponent of Zero Budget Natural Farming (ZBNF). Under his guidance, Mr. Rahi refined his farming techniques and demonstrated the effective application of NF principles in the hilly terrain of Kinnaur. His approach is holistic and focuses on toxin-free crop production through the complete adoption of natural inputs. He prepares and applies jeevamrit, ghanjeevamrit, and beejamrit for soil and seed health, along with plant protection formulations such as neemastra, brahmastra,



Ghanjeevamrit preparation by farmer





agniastra, and saptadhankur. This integrated use of natural practices has helped improve soil fertility, manage pests and diseases, and enhance overall crop health without reliance on chemical inputs.

Systematic Capacity Building

Systemic capacity building is essential for the sustained adoption and scaling of Natural Farming (NF) in the dry temperate regions of Himachal Pradesh. In this context, Krishi Vigyan Kendra (KVK), Kinnaur plays a crucial role by strengthening farmers' knowledge, skills, and confidence through structured and continuous interventions. KVK supports NF adoption by organizing regular training programmes, on-field demonstrations, exposure visits, and farmer-to-farmer learning platforms that enable practical understanding of NF principles and input preparation methods. Through field days and technology weeks, farmers are exposed to successful NF models such as Mr. Ram Sain Rahi's orchard, allowing experiential learning and confidence building. Continuous technical backstopping, problem-solving support, and need-based advisory services further help farmers overcome initial challenges related to yield fluctuations, pest management, and market linkage. This systematic approach ensures not only individual farmer success but also the development of a resilient local ecosystem for Natural Farming adoption and long-term sustainability.



Natural farming field of farmer and its produce

Major practices under NF

Mr. Ram Sain Rahi cultivates about 2.2 acre of land under a diversified system comprising apple, almond, grape, kiwi, and pear orchards, ensuring year-round production and income. He practices intercropping with kidney beans, puffed rice, peas, and barley, which help improve soil fertility, conserve moisture, suppress weeds, and provide additional income. Mulching with farm-grown grass further enhances soil health and promotes microbial activity. His farming system integrates livestock, with a local breed cow supplying dung and urine for natural formulations such as jeevamrit, ghanjeevamrit, and beejamrit, while a donkey is used for transporting produce, reducing costs and dependence on machines.

Economic analysis

Mr. Ram Sain Rahi, a progressive farmer, transitioned from chemical farming to natural farming and observed significant improvements in profitability. During 2023–24, the system generated a total net income of ₹5.75 lakh with a benefit–cost ratio of 6.46, indicating strong economic efficiency. In 2024–25, improved yields and better price realization increased total net income to ₹6.16 lakh, while the overall B:C ratio further improved to 6.74 (Table 1). Apple remained the major contributor to farm income, while pea cultivation also recorded high returns with low cultivation costs. The consistently high B:C ratios across both years clearly demonstrate the economic viability and sustainability of the apple–pea based natural farming system.





Table 1: Economic performance of apple-peas intercropping based natural farming system (Area=1 acre)

Year	Economic analysis	Apple	Pea	Total
2023-24	Production (q/farm)	90.2	49.3	--
	Cost of cultivation (₹/farm)	77,806	27,650	1,05,456
	Gross income (₹/farm)	5,23,160	1,57,760	6,80,920
	Net income (₹/farm)	4,45,354	1,30,110	5,75,464
	B:C ratio	6.72	5.71	6.46
2024-25	Production (q/ farm)	93.3	45.8	--
	Cost of cultivation (₹/farm)	79,806	27,650	1,07,456
	Gross income (₹/farm)	5,40,560	1,83,200	7,23,760
	Net income (₹/farm)	4,60,754	1,55,550	6,16,304
	B:C ratio	6.77	6.63	6.74

Influence and impact on farmers

Mr. Ram Sain Rahi has emerged as a role model in his community by successfully adopting and demonstrating the benefits of NF. His economic gains, along with visible improvements in soil health, crop quality, and reduced input costs, have encouraged fellow farmers to explore NF practices. Despite constraints such as the limited availability of dedicated markets for NF produce and initial hesitation among farmers, his consistent efforts and field-level results have motivated 5–6 farmers in his village to adopt Natural Farming. The continuous application of jeevamrit and ghanjeevamrit has significantly enhanced soil fertility, leading to healthier crops with minimal incidence of pests and diseases. As a result, the apples produced exhibit better taste, size, and colour, enabling them to fetch premium prices in the market. These improvements have contributed to stable and high yields, demonstrating that NF can be both economically viable and environmentally sustainable for farmers in the region.

Contributors: Pramod Kumar and Budhi Ram, Krishi Vigyan Kendra, Kinnaur;



Name : Mr. Javid Ahmad Bhat
Address : Vill. Bundgund, Block Nawa, Pulwama-192 301 (J&K)
Qualification : 10th
Contact No. : 9103161616
Landholding : 2.5 acre



Introduction

Mr. Javid Ahmad Bhat is a 33 year-old farmer whose 2.5 acre landholding in Bundgund, Nawa, has become an example for the future of agriculture in Jammu & Kashmir. He represents a new generation of rural agrarian entrepreneurs advocating long-term ecological sovereignty. While his formal schooling concluded at the 10th grade, his true education has come through years of laborious engagement with the land itself. He possesses what agronomists describe as ecological intelligence, a profound, observation-based understanding of the complex interactions among soil microbes, plant health, and local weather patterns, which often eludes those trained solely in conventional chemical-based agriculture. For generations, Mr. Javid Ahmad Bhat's family followed the conventional high-input agricultural model that dominated the post-Green Revolution era in northern India. This system operated on a prescription-based logic: if crops failed to grow rapidly, urea was applied; if the soil lacked phosphorus, diammonium phosphate (DAP) was added; and if fungal infections appeared, chemical fungicides were sprayed. Over time, Javid began to recognize the adverse impacts of this approach. The soil, which should ideally be dark, organic matter-rich, crumbly, and well-aerated, had become compacted, grayish, and structurally degraded. He observed that the soil's natural ability to fix nitrogen and cycle nutrients had been severely suppressed due to the excessive use of synthetic inputs. This growing dependency not only degraded the land but also affected the family's economic viability. Rising input costs, coupled with a visible decline in the flavour, texture, and shelf life of produce, ultimately motivated his transition to Natural Farming (NF). This shift was not merely an agronomic decision but an act of economic liberation from the volatility of industrial input prices.

Uniqueness of work related to NF

Mr. Javid's success is not merely a byproduct of his agricultural skills but is rooted in specific entrepreneurial competencies that enabled him to navigate the high-stakes uncertainties of a new economic model. Abandoning the perceived security of chemical-based farming posed a significant challenge, particularly in a region where a single crop failure can result in severe financial distress. His decision to shift, therefore, reflects a high level of strategic courage. He consciously planned for a period of reduced yields, treating the initial decline in productivity as a necessary investment in soil capital to build long-term wealth. Rather than remaining a passive consumer of industrial inputs, Mr. Javid Ahmad Bhat transformed his farm into a production hub by developing on-farm microbial formulations such as jeevamrit. This approach effectively converted farm waste into high-value inputs, representing a classic example of frugal innovation that replaced industrial supply



Crop grown under NF practices





chains with a local, circular system. Furthermore, by recognizing growing consumer awareness and identifying that urban populations, particularly in areas such as Srinagar, were willing to pay a premium for chemical-free produce, he strategically positioned his farm within a high-value niche that offers both better margins and social recognition. Simultaneously, he demonstrated resilience and social persistence by withstanding early skepticism and mockery from neighbouring farmers, allowing the superior quality of his fruits and vegetables to serve as his most effective form of communication.

Systemic Capacity Building

Mr. Javid Ahmad Bhat's transition to Natural Farming was driven by sustained capacity building and close collaboration with SKUAST-K and the Department of Agriculture. Through regular trainings and workshops on panchagavya formulations, vermicomposting, soil health diagnostics, and biological pest management, he shifted from chemical-based pest control to holistic ecosystem management. This enabled him to adopt biological control measures, conserve beneficial insects, and eliminate dependence on costly synthetic inputs. Over time, Mr. Javid evolved into a master trainer, annually guiding hundreds of farmers through field-based demonstrations on mycorrhizal associations, biocontrol mechanisms, and biological nitrogen fixation. His farm operates as a circular bio-economy, where cow dung and urine are recycled into on-farm inputs, ensuring self-sufficiency and reducing exposure to input price volatility. On his 2.5 acre landholding, he follows a diversified production system combining vegetables such as kale, broccoli, traditional leafy greens, and peas, integrated with temperate fruit orchards including apple and plum, which stabilizes income and optimizes land use. By focusing on chemical-free production and consistent quality, he has successfully accessed direct consumers and premium markets, moving beyond commodity-based pricing toward a value-driven farming model.

Major practices under NF

Mr. Javid follows the Subhash Palekar Natural Farming (SPNF) approach, adapted to the moisture and temperature conditions of the Kashmir Valley. He applies liquid jeevamrit to activate soil microbial processes and ghanjeevamrit at sowing to enhance early root development and suppress soil-borne pathogens. Seed treatment with beejamrit further improves germination and protects seedlings during early growth stages. Indigenous pest management is practiced through neem-based botanical formulations prepared from locally available plants, which effectively control aphids and mites while conserving beneficial insects. Soil health is maintained through acchadana (mulching) and whapasa, which reduce moisture loss, suppress weeds, and maintain a balanced air-moisture regime in heavy soils. During the initial transition phase, marked by temporary yield reduction and social resistance, Mr. Javid sustained farm income through liquid manures and short-duration vegetable crops. Over time, improved crop performance and produce quality strengthened consumer trust. By using direct marketing and social media-based outreach, he successfully accessed nearby markets, improved price realization, and established a reliable consumer base.



Ready to sell produce of apple & carrot by farmer under NF





Economic analysis

The financial data from Javid Ahmad Bhat farm demonstrates a profound economic truth in NF, as the soils biological health increases, the cost of production decreases, leading to an increase B:C ratio. The detailed economic evaluation of three key horticultural components viz., vegetables, apple, and plum based on performance data from the 2022-23 to 2024-25 fiscal years is presented in Table 1. While the total land area remained constant at 2.5 acre, the net returns increased from ₹4.35 lakh to ₹5.89 lakh, representing a total growth of approximately 35.4 percent. Most notably, the overall B:C ratio improved from 3.07 to 4.19, indicating significantly higher efficiency in capital utilization. The transition from a B:C ratio of 3.07 to 4.19 within three years is a strong indicator of economic sustainability. Apple remained the most lucrative crop in terms of return on investment (ROI), while vegetables provided the bulk of the absolute net income. Table 2 and 3 present the component-wise cost structure for producing one box of apple and plum during 2022–23. The total cost of producing one box of apple was 276.94, with input costs forming the largest share (132.85), followed by packing material (55.44) and operational labour (47.10). The total cost per box of plum was 303.15, which was higher than apple mainly due to greater operational labour expenses (95.25), while other components contributed comparatively smaller shares.

Table 1: Year-wise economic performance of diversified natural farming system on a 2.5 acre farm

Component	Production (q)/(boxes)	Area (acre)	Cost# (₹)	Gross returns (₹)	Net returns (₹)	B:C ratio
2022-23						
Vegetables*	110	1.25	1,07,625	3,21,466	2,13,841	2.99
Apple**	200	0.63	55,388	1,84,296	1,28,908	3.33
Plum***	155	0.63	46,987	1,39,620	92,633	2.97
Total		2.50	2,10,000	6,45,382	4,35,382	3.07
2023-24						
Vegetables*	120	1.25	99,938	3,51,139	2,51,201	3.51
Apple**	240	0.63	51,431	2,01,308	1,49,877	3.91
Plum***	185	0.63	43,631	1,52,508	1,08,877	3.50
Total		2.50	1,95,000	7,04,955	5,09,955	3.62
2024-25						
Vegetables*	150	1.25	94,813	3,85,759	2,90,946	4.07
Apple**	270	0.63	48,794	2,21,154	1,72,360	4.53
Plum***	220	0.63	41,393	1,67,544	1,26,151	4.05
Total		2.50	1,85,000	7,74,457	5,89,457	4.19
*Vegetables include kale, broccoli, traditional leafy greens, and peas **Standard apple box weight = 15 kg ***Standard plum box weight = 10 kg # Including cost on inputs, hired labour and family labour						





Table 2: Component-wise breakdown of expenditure for one box of apple for 2022-23

Component	Cost per box (₹)	Details
Input costs	132.85	Bio-pesticides, and bio-fertilizers, FYM, vermicompost, jeevamrit, mulching
Operational labour	47.10	Summer pruning, winter pruning, weeding, bending, staking, and spraying
Post-harvest labour	32.50	Harvesting, grading, and sorting, clipping of pedicel
Packing material	55.44	Corrugated/Wooden boxes, trays, and liners, waste paper
Others/ transport	9.05	Carriage charges and miscellaneous contingencies like loading and unloading
Total	276.94	

Table 3: Component-wise breakdown of expenditure for one box of plum for 2022-23

Component	Cost per box (₹)	Details
Input costs	125.5	Bio-pesticides, and bio-fertilizers, vermicompost, jeevamrit, mulching, manure
Operational labour	95.25	Summer pruning, winter pruning, weeding, staking, sucker and watershoot removal, spraying
Post-harvest labour	35.4	Harvesting, grading, sorting
Packing material	40	Plum crates/boxes, trays, waste paper, and liners
Others/transport	7	Carriage and miscellaneous contingencies like loading and unloading
Total	303.15	

Influence and impact on farmers

Mr. Javid Ahmad Bhat's success has had a transformative influence across Pulwama district. His village, Bundgund, was declared an Organic Vegetable Village by the Department of Agriculture, bringing institutional recognition, improved infrastructure, and collective pride while demonstrating the viability of sustainable agriculture. He has emerged as a strong role model for youth, proving that farming can be a dignified, profitable, and environmentally responsible profession. His high benefit–cost ratio of 4.19 highlights the economic potential of Natural Farming, encouraging wider adoption. Mr. Javid's journey offers a replicable model that integrates profitability with sustainability. He emphasizes input sovereignty through on-farm bio-inputs, patience during soil regeneration, and careful observation of local agro-ecological conditions. By leveraging produce quality to access premium markets and adopting diversified crop–livestock systems, he demonstrates how Natural Farming can enhance resilience to both environmental and market risks.

Contributors: Syed Shujhat Hussain, Mohammad Saleem Dar and Jahangir Ahmad Magray, Krishi Vigyan Kendra, Pulwama; Kriti Gupta, ICAR-ATARI, Ludhiana



Natural Farming in Low-Chill Apples for Sustainable Productivity and Profitability

Name : Mr. Surendra Singh Tomar
Address : Vill. Chhibau, Jaunsar, Dehradun-248 123 (UK)
Qualification : 12th
Contact No. : 9411511302
Landholding : 0.8 acre



Introduction

Mr. Surendra Singh Tomar is a young progressive farmer from Chhibau village in the Jaunsar region of Dehradun district, Uttarakhand. The village lies in a rugged hilly terrain where agriculture had gradually become unsustainable due to poor irrigation facilities and declining soil fertility. At a time when many young people from hill areas were migrating to cities in search of employment, Mr. Surendra chose to remain in his village and invest in his ancestral land.

Three years ago, without any government subsidy or external financial support, he utilized his personal savings to revive his long-abandoned farmland by establishing an apple orchard. Today, the once-barren land supports 800 healthy apple trees, demonstrating the viability of horticulture in challenging hill conditions. His initiative has emerged as a source of inspiration for other young farmers in the region, showcasing how determination and scientific orchard management can transform marginal land into a productive enterprise.

Mr. Surendra underwent a 15-day training programme on nursery management at KVK Dehradun, which significantly enhanced his understanding of crop systems, scientific orchard management, and value addition. He continuously updates his technical knowledge through social media and interaction with experts and has been recognized as a Progressive Farmer of Dehradun by G.B. Pant University, Pantnagar.

Uniqueness of work related to NF

The uniqueness of Mr. Surendra Singh's initiative lies in successfully introducing low-chill apple varieties at a lower altitude of around 4,500 feet, where conventional apple cultivars generally fail to perform. He selected early-bearing varieties such as red velox, gale gala, schinico gala, and jeromine, grafted on clonal dwarf rootstocks (MM 27, M 9, and MM 11), enabling high-density plantation under challenging hill conditions. The orchard was established following a high-density planting system with 3 × 1 m spacing for dwarf rootstocks and



Farmer at his apple orchard raised with natural farming practices





supported by drip irrigation. Planting material was sourced from registered nurseries in Himachal Pradesh and Lakhmandal in the Chakrata region of Dehradun district. A major challenge was the absence of a nearby irrigation source. To address this, he innovatively developed a gravity-fed irrigation system by channelizing water from a nearby natural stream. The water is stored in three tanks of 25,000 litres capacity each and supplied to the orchard through plastic pipelines and drip irrigation installed at a cost of approximately ₹76,000, ensuring year-round moisture availability.

Under Natural Farming (NF) practices, jeevamrit is regularly applied in the orchard. Notably, the crop has shown no incidence of woolly aphid infestation, demonstrating the effectiveness of chemical-free nutrient and pest management. This integration of varietal innovation, water resource management, and NF practices at a lower altitude makes his work unique in the region.



Mr. Tomar motivating other farmers through the media

Systematic Capacity Building

Mr. Surendra's success is the outcome of systematic capacity building and continuous learning. His training at Krishi Vigyan Kendra (KVK) Dehradun strengthened his technical knowledge in nursery raising, scientific orchard layout, high-density planting systems, pruning and canopy management, and integrated pest and disease management. Regular interaction with scientists and progressive farmers helped him stay updated on innovations suited to hill agriculture and effectively adapt them to local conditions.

Beyond formal training, KVK Dehradun provided sustained technical guidance on the selection of appropriate varieties and rootstocks, orchard planning, crop management, and market-oriented harvest practices. This continuous scientific support enabled him to transform long-abandoned land into a productive and sustainable orchard under eco-friendly and NF practices.

Major practices under NF

Mr. Surendra adopted a chemical-free and sustainable approach in managing his orchard under NF principles. He regularly applied jeevamrit to enhance soil fertility and stimulate beneficial microbial activity, thereby improving long-term soil health. For eco-friendly plant protection, he used neemastra and dashparni ark to manage pests and diseases without the use of synthetic chemicals. Mulching was extensively practiced to conserve soil moisture, suppress weeds naturally, and improve soil structure. To support these NF practices, he established a high-density orchard with nearly 800 plants on clonal rootstocks and installed a gravity-based drip irrigation system for efficient water use.

Family labour played a major role in orchard operations, supplemented by limited hired labour during peak





activities such as planting and pruning. These integrated practices collectively demonstrate a sustainable and replicable model of NF-based orchard management in hilly regions.

Economic analysis

The land, once barren and unproductive due to poor soil fertility and lack of irrigation, was transformed through scientific planning and sustainable orchard management. Mr. Surendra planted 800 apple saplings under a high-density planting system at ₹480 per sapling, ensuring efficient space utilization and higher productivity. During 2021–22 and 2022–23, the orchard remained in its establishment phase over 0.4 to 0.7 acre area, with no commercial yield.

Initial investment was high, mainly on quality seedlings and land preparation, resulting in total cultivation costs of ₹1.11 lakh and ₹61,200 respectively (Table 1). By the third year, all 800 plants started bearing fruit. Production reached 22.5 q in 2023–24 and increased to 35 q in 2024–25. Gross returns rose from ₹2.40 lakh to ₹4.71 lakh, and net income increased from ₹1.62 lakh to ₹3.66 lakh (Table 1), clearly demonstrating profitability and sustainability on account of ability of the farmer to fetch higher prices due to earliness of his produce in the market.

Table 1: Year-Wise economic performance of apple cultivation under natural farming

Particular	2021-2022	2022-2023	2023-2024	2024-2025
Area (acre)	0.4	0.7	0.7	0.7
Production (q)	-	-	22.5	35.0
Planting Material (₹)	78,000	45,000	2,000	5,000
Black polythene mulch (₹)			32,800	35,600
Bio-inputs (₹)	1,000	1,000	1,500	1,600
Total input expenses (₹)	79,000	46,000	36,300	42,200
Labour cost (₹)				
Land preparation (₹)	20,000	5,000	5000	5,000
Transplanting/ Replacement (₹)	6,000	1,000	1,200	1,200
Bio-inputs application (₹)	1,200	3,000	3,400	3,600
Irrigation (₹)	4,000	5,000	5,200	5,200
Weeding & interculture (₹)	1,200	1200	1,400	1,500
Harvesting & packaging (₹)	-	-	25,000	45,500
Total labour cost (₹)	32,400	15,200	41,200	62,000
Total cost of cultivation (₹)	1,11,400	61,200	77,500	1,04,200
Returns (₹)				
Gross returns (₹)	-	-	2,40,000	4,71,000
Net returns (₹)	(-)1,11,400	(-)61,200	1,62,500	3,66,800





Influence and impact on farmers

Mr. Surendra Singh Tomar's orchard is more than an agricultural achievement, it represents vision, innovation, and rural transformation. His work demonstrated that apple cultivation is feasible at lower altitudes by adopting low-chill varieties, challenging the traditional belief that apples can only be grown in high-altitude areas.

Inspired by his success, farmers in Chhibau village have established 12 new orchards, while similar high-density apple plantations are emerging in nearby villages such as Koruwa based on his model. His achievement has encouraged local youth to return to their ancestral lands instead of pursuing uncertain urban employment. Farmers now actively seek training and quality saplings to replicate his approach, and orchard activities generate seasonal employment for local labourers during planting and harvesting. It is now well established that apple farming at lower altitudes is viable with suitable low-chill, high-yielding varieties.

The drip irrigation system he adopted saves nearly 70 percent water compared to conventional methods, a major advantage in hilly terrain. His farm has evolved into a demonstration and training hub for students and progressive farmers across Uttarakhand. The model emphasizes soil conservation, moisture retention, proper spacing, and scientific planting systems, transforming undulating land into productive orchards and symbolizing sustainable livelihood and community empowerment.

**Contributors: A. K. Sharma, Kiran Pant and Bijeta, Krishi Vigyan Kendra, Dehradun;
Sarang Monga, ICAR-ATARI, Ludhiana**





SECTION 3: NATURAL FARMING IN ANNUAL HORTICULTURAL CROPS – AN INTRODUCTION

In India, annual horticulture crops, especially vegetables and short-duration high-value crops, are essential for boosting farm revenue, ensuring nutritional security, and creating jobs. Annual crops are particularly crucial for small and marginal farmers because they provide faster returns and more crop planning flexibility than perennial systems. However, traditional methods of growing these crops frequently require a lot of inputs, including chemical pesticides, fertilizers, and irrigation. Increased susceptibility to climatic shocks, deteriorating soil health, and rising production costs are the results of this. These difficulties are exacerbated in delicate ecosystems like the cold desert regions and the dry temperate Himalayas. In light of this, natural farming of annual horticulture crops is gradually becoming a feasible and sustainable option for farming communities.

Natural farming places strong emphasis on the use of locally available inputs, ecological processes, and biodiversity to maintain soil fertility and overall plant health. In the context of annual horticulture, it enables farmers to reduce input costs, improve soil structure, and produce chemical-free, high-quality agricultural produce. The relatively short crop cycle of annual crops allows farmers to observe the benefits of natural farming practices fairly quickly, making it an effective entry point for transitioning from conventional to

sustainable agriculture. This section presents seven success stories that highlight how farmers across diverse regions have successfully embraced natural farming in annual horticultural crops to meaningfully enhance their livelihoods.

The case studies included in this section are drawn from Himachal Pradesh, Ladakh, Punjab, and Jammu and Kashmir, representing a wide range of agro-climatic conditions, from the dry temperate regions of Lahaul and Spiti and the cold deserts of Kargil to the relatively fertile plains of Punjab and the valley ecosystems of Jammu and Kashmir. These diverse contexts effectively illustrate the adaptability of natural farming practices across different environments, as well as their considerable potential to address region-specific agricultural challenges.

One of the most remarkable aspects of these success stories is the capacity of natural farming to generate consistent and financially rewarding incomes even under difficult and demanding agricultural conditions. For instance, in the dry temperate region of Lahaul and Spiti, a farmer has successfully grown high-value annual crops through natural farming practices, achieving a net farm income of ₹5.07 lakh. This achievement is especially significant given the harsh climatic conditions, short growing season, and considerable resource limitations that characterize the region. In a similar manner, in Kargil, Ladakh, a farmer has successfully converted barren and unproductive land into a thriving vegetable-based farm through the adoption of natural farming, earning a net income of ₹4.95 lakh. This inspiring transformation effectively demonstrates the potential of natural farming to rehabilitate degraded lands and turn them into economically productive and agriculturally valuable assets.

Another significant dimension brought to light in this section is the integration of complementary enterprises to strengthen income stability among farming households. In Nawanshahar, Punjab, a smallholder farmer has successfully integrated dairy with natural farming-based vegetable cultivation, establishing a stable income platform with a net return of ₹4.62 lakh. This thoughtful integration not only provides an additional source of income but also supports nutrient cycling through the use of farmyard manure and other livestock-based inputs. Such models clearly demonstrate the importance of combining crop and livestock components to achieve greater sustainability and overall resilience in farming systems.

The success stories also draw attention to the significant role of innovation and crop diversification in improving farm profitability and ensuring greater income stability for farming households. For example, the cultivation of off-season green peas in the cold desert region of Lahaul and Spiti has enabled a farmer to earn a net income of ₹4.45 lakh. By effectively leveraging the unique and favorable climatic conditions of the region, the farmer is able to supply fresh produce to markets during periods of low availability, thereby securing considerably higher prices and better returns. This case clearly highlights how natural farming, when thoughtfully combined with strategic crop planning, can successfully create niche market opportunities and substantially enhance overall farm income. Beyond these economic gains, these cases also effectively illustrate the equally important role of natural farming in promoting social inclusion and individual empowerment within rural farming communities. The inspiring story from Solan district, Himachal Pradesh, showcases the remarkable economic empowerment of a farm woman who has successfully adopted natural farming in annual high-value crops, earning a commendable net income of ₹4.19 lakh. This

noteworthy example clearly demonstrates how natural farming can serve as a powerful and transformative tool for empowering women farmers by substantially reducing their dependence on costly external inputs, lowering financial risks, and enabling them to take on active and meaningful leadership roles in farm management and overall agricultural decision-making processes.

The cases from Lahaul and Spiti further highlight how natural farming can instill a sense of hope and resilience among farmers operating in particularly challenging environments. By adopting sustainable practices and diversifying their cropping systems, these farmers have been able to overcome climatic constraints and achieve consistent and reliable incomes over time. Similarly, in Anantnag district of Jammu and Kashmir, a smallholder farmer has successfully integrated vegetables with traditional crops under a natural farming system, earning a net income of ₹3.42 lakh. This thoughtful integration not only enhances overall income but also improves household food and nutritional security for the farming family.

Natural farming has shown capacity to drastically lower the total cost of production is one of its main advantages in yearly gardening. Farmers can significantly reduce their production costs by substituting locally produced bio-inputs like compost, herbal extracts, and microbial formulations for conventional fertilizers and insecticides. Smallholder farmers, who frequently deal with severe financial difficulties and are nonetheless susceptible to debt, will especially benefit from this. When stable or increased crop yields are paired with lower input costs, agricultural households have larger net returns and greater long-term financial security.

Furthermore, natural farming makes a meaningful contribution to soil health restoration and broader environmental sustainability. The regular use of organic matter, mulching, and crop rotations improves soil structure, enhances moisture retention, and promotes beneficial microbial activity in the soil. These factors are especially important in regions with fragile soils and limited water availability throughout the year. By maintaining ecological balance and reducing chemical residues in the soil, natural farming also ensures the production of safe and nutritious food, which is increasingly valued and sought after in the market.

The scalability and replicability of natural farming methods across various geographical areas and farming situations is another significant feature emphasized in these success tales. Large landholdings or significant capital investment are not necessary for the models to function; instead, they mainly depend on expertise, competence, and effective resource management. Because of this, a variety of farmers, including the small and marginal farmers who are the foundation of Indian agriculture, can easily obtain them. For farmers looking to switch to natural farming in their own unique circumstances, the variety of crops and methods used in these situations offers insightful and useful information.

The wide-ranging experiences brought together in this section firmly and persuasively establish that natural farming in annual horticultural crops offers a genuinely viable and highly promising route toward achieving sustainable agricultural development across the country. It presents a thoughtfully balanced and comprehensive approach that successfully combines economic viability, environmental sustainability, and social inclusiveness in a truly meaningful and impactful way. By considerably boosting farm income, minimizing agricultural risks, and enhancing the overall efficiency of resource utilization, natural farming



effectively responds to and addresses many of the most pressing and complex challenges confronting contemporary agriculture in India today.

In conclusion, the success stories presented in this section offer strong and convincing evidence that natural farming holds the genuine potential to transform annual horticultural systems into productive, resilient, and financially rewarding agricultural enterprises. They bring to light the critical importance of innovation, diversification, and thoughtful integration in achieving truly sustainable and long-lasting outcomes for farming communities across diverse regions. These compelling cases also strongly emphasize the urgent and growing need for supportive policies, dedicated extension services, and comprehensive capacity-building initiatives to encourage and facilitate the wider adoption of natural farming practices throughout the country.

This section simultaneously lays a solid and well-structured foundation for a thorough and detailed exploration of the seven individual success stories, each of which offers unique lessons and valuable practical insights into the real-world application of natural farming principles in annual horticultural crops. Taken together, these inspiring stories clearly illustrate that with the right approach, adequate institutional support, and a genuine commitment to sustainable practices, farmers can successfully achieve meaningfully improved livelihoods while carefully conserving precious natural resources and making a lasting contribution to long-term agricultural sustainability for the benefit of future generations.

Name : Mrs. Krishna Devi

Address : Vill. & PO Jhalma, Teh. Udaipur, Lahul & Spiti-175 133 (HP)

Qualification : 12th

Contact No. : 9418356426

Landholding : 3 acre



Introduction

Mrs. Krishna Devi, wife of Mr. Karam Veer, is a progressive farmer from village Jhalma, District Lahaul and Spiti. She owns 3.0 acre of irrigated land and has achieved notable success in cultivating high-value off-season vegetables across the valley. With over 25 years of farming experience, she tapped the growing demand for high-value vegetables and established her identity in the agriculture sector.

She was introduced to Natural Farming (NF) through an awareness programme conducted by Krishi Vigyan Kendra (KVK) Lahaul and Spiti-I, Kukumseri under the project "Out-Scaling of Natural Farming through KVKs." She learned that modern agriculture relies heavily on costly inputs such as chemical fertilizers and high-yielding varieties, which, though productive, compromise economic viability and environmental sustainability. Motivated to adopt sustainable practices, she began NF on 0.5 acre in 2022. With technical support from KVK and financial assistance from the Department of Agriculture, she gradually expanded the area under NF to 1.5 acre and rest of the area is under chemical farming.

She now practices NF in off-season vegetables, pseudocereals, and pulses, while also cultivating plum and apricot. Alongside, she manages a small dairy unit. Initially, she struggled to obtain quality produce and attractive returns despite working in the harsh weather conditions of Lahaul and Spiti.

Uniqueness of work related to NF

Mrs. Krishna Devi has emerged as a pioneer of NF in the dry temperate conditions of Lahaul & Spiti, where extreme climate, low rainfall and a short growing season pose serious challenges to agriculture. Despite these constraints and with continuous technical guidance and handholding support from scientists of KVK, she successfully demonstrated the cultivation of off-season vegetables under NF practices, achieving



Preparation of bio-input (ghanjeevamrit) under natural farming practices



Model farm of Mrs. Krishna Devi (Cauliflower intercropped with garden pea)





Demonstration on preparation of ghanjeevamrit

premium-quality produce without the use of chemical fertilizers and pesticides. She adopted a phased approach, initiating NF on 0.5 acre in 2022-23 and gradually expanding it to 1.5 acre after observing improvements in soil health, crop performance, and reduced input costs, thereby providing a practical, risk-minimizing model for other farmers. Her diversified NF system integrates off-season vegetables, pseudocereals, pulses and perennial fruit crops such as plum and apricot, along with an NF-based vegetable nursery for cole crops and a small dairy unit for on-farm preparation of jeevamrit and ghanjeevamrit, significantly reducing external input dependency and enhancing overall farm sustainability.

Systemic Capacity Building

Mrs. Krishna Devi further strengthened her NF journey through systematic trainings, awareness programmes and exposure visits. She actively participated in several capacity building programmes organized by Krishi Vigyan Kendra (KVK) Lahaul and Spiti-I, Kukumseri, with a focus on vegetable and horticultural production, healthy and disease-free vegetable nursery raising and Integrated Pest and Disease Management under NF. These programmes emphasized hands-on demonstrations on the preparation and use of solid and liquid bio-formulations such as ghanjeevamrit, beejamrit, jeevamrit, artemisia-based bio-formulations, agniastara, saptdhanyankur Ark, and sour buttermilk, which significantly enhanced her technical competence and enabled her to replace synthetic fertilizers and pesticides with farm-derived bio-inputs, resulting in improved farm income.

She also gained practical knowledge on crop residue management, intercropping, mulching, and livestock integration for sustainable soil health management. In addition, she also participated in block-level NF awareness programmes organized by the Departments of Agriculture, Horticulture, and Animal Husbandry, further strengthening her understanding and adoption of NF practices.

Major Practices under NF

Mrs. Krishna Devi has successfully established a diversified NF model on her 1.5 acre landholding, demonstrating how smallholders can achieve climate resilience, sustainability and profitability through NF practices. She cultivates a range of off-season vegetables including lettuce, garden pea, potato, palak, broccoli, coriander, French bean, and cauliflower, along with fruit crops such as plum and apricot. She also grows buckwheat and rajmash, which diversify the cropping system while enhancing household nutrition





Capacity building programmes and diagnostic visits

and improving soil health. Livestock integration forms a key component of her NF model. Her dairy unit, comprising two crossbred cows producing 5.5–8.5 L of milk per day, provides dung and urine for the preparation of bio-formulations such as ghanjeevamrit, beejamrit, and jeevamrit, thereby enriching soil fertility and reducing dependence on external inputs. In addition, she prepares value-added milk products for generating supplementary household income.

For land preparation, ghanjeevamrit was applied @ 1000 kg/ha, while beejamrit was used for seed and seedling treatment to ensure better germination and uniform crop establishment. Nutrient management was carried out through the application of jeevamrit @ 1500 L/ha at fortnightly intervals, starting 15 days after transplanting and continuing until harvest. Insect-pest management involved prophylactic sprays of agniashtra and artemisia-based bio-formulations @ 5–6 L in 250 L of water per hectare, while fungal diseases were effectively managed through spraying of 2% sour buttermilk.

Economic analysis

From 2022–2023 to 2024–2025, the integrated farming system showed a consistent increase in productivity and profitability. In 2022–2023, crops grown on 0.6 acre generated a net return of ₹1.09 lakh with B:C ratio of 3.19 (Table 1), while livestock contributed ₹58,334, leading to an overall net return of ₹1.70 lakh with a B:C ratio of 2.63. In 2023–2024, expansion and crop diversification increased total net returns to ₹3.98 lakh and improved the B:C ratio to 3.07. By 2024–2025, inclusion of high-value crops like summer squash and broccoli further enhanced performance, with total net returns reaching ₹5.06 lakh and the B:C ratio rising to 3.35. Overall, diversification of crops, inclusion of pulses and niche crops like buckwheat, along with efficient utilization of livestock resources, significantly improved farm income, profitability, and sustainability over the years. About 82.4 percent net income of the entrepreneur was contributed by fruit and vegetables during 2024–25.

Influence and impact on farmers

Diversification of crops and value addition in dairy produce substantially increased the household income of Mrs. Krishna Devi and reduced dependence on external markets. Continuous use of cow-based bio-formulations improved soil fertility, lowered input costs and promoted long-term ecological balance. Integration of vegetables and fruits with livestock enabled her to overcome the limitations of monocropping such as soil nutrient depletion, high vulnerability to pests and diseases, and market or income risks from dependence on a single crop.

Her efforts have drawn the attention of many farmers and state officials, who frequently visit her diversified NF model as a learning site. Her journey has inspired neighbouring farmers, especially women, to adopt NF practices, thus serving as a role model in the community. She also motivates fellow farmers to





Table 1: Year-wise economics of natural farming system

Year/ Crops	Area (acre)/ Cows (No.)	Production (q or L)	Cost# (₹)	Gross returns (₹)	Net returns (₹)	B:C ratio
2022-23						
Fruit + Vegetables\$	0.6	49.1	50,160	1,60,132	1,09,972	3.19
Rajmash	0.1	0.4	4,584	7,200	2,616	1.57
Livestock*	2.0	3,102.0	50,236	1,08,570	58,334	2.16
Total			1,04,980	2,75,902	1,70,922	2.63
2023-24						
Fruit + Vegetables\$	1.5	118.6	1,24,493	4,50,642	3,26,149	3.62
Buckwheat	0.3	1.0	6,170	10,300	4,430	1.67
Rajmash	0.2	0.8	9,358	16,200	6,842	1.73
Livestock*	2.0	2,986.0	52,083	1,13,468	61,385	2.18
Total			1,92,104	5,90,610	3,98,506	3.07
2024-25						
Fruit + Vegetables\$	1.5	135.5	1,42,571	5,59,984	4,17,413	3.93
Buckwheat	0.2	0.7	4,320	6,700	2,380	1.55
Rajmash	0.3	1.2	14,033	24,800	10,767	1.77
Livestock*	2.0	3,109.0	54,317	1,30,578	76,261	2.40
Total			2,15,241	7,22,062	5,06,821	3.35
\$ Fruit and Vegetables during 2022-23 included: Potato, pea, cauliflower, palak, coriander, plum and apricot; during 2023-24 include: Potato, pea, lettuce, french bean, plum and apricot; and during 2024-25 include: Potato, pea, summer squash, lettuce, broccoli, cauliflower, plum and apricot * Dairy unit includes 2 cows for milk # Including family labour						

participate in capacity-building programmes, exemplifying farmer-to-farmer extension and creating a ripple effect in the valley. Through direct marketing and bulk sales in Delhi's Azadpur Mandi, she strengthened her position as a successful agri-entrepreneur. By overcoming initial challenges, she has emerged as a resource farmer for training and extension programmes, motivating rural youth and women farmers to pursue NF.



View of capacity building programmes under NF

**Contributors: Radhika Negi, Pankaj Chopra and Surender Kumar Thakur, Krishi Vigyan
Kendra, Lahaul and Spiti-I**



Name : Mr. Lobzang Tundup
Address : Vill. Pipiting Padum, Zanskar, Kargil-194 302 (Ladakh)
Qualification : 8th
Contact No. : 6006948532
Landholding : 6 acre



Introduction

Mr. Lobzang Tundup is a progressive farmer from Pipiting Padum village in the remote high-altitude Zanskar region of Kargil district. Raised in a marginal agrarian household, he became associated with farming activities at an early age and gained practical agricultural experience alongside his formal schooling. Due to socio-economic limitations and lack of educational awareness during his early years, he discontinued his education after completing the 8th standard and later worked as a daily wage Chowkidar in the Public Health Engineering Department to support his family.

Despite these constraints, his interest in agriculture remained strong. Agriculture in Zanskar is characterized by extreme climatic conditions, a very short growing season, and limited crop diversification options. Motivated by a strong desire to improve his livelihood, Mr. Tundup envisioned converting barren and unproductive land into a sustainable and productive farming system. Through perseverance, innovation, and hands-on learning, he demonstrated that scientific and Natural Farming (NF) practices can be successfully implemented even under harsh agro-climatic conditions. Today, he is recognized as a progressive farmer in his village, inspiring fellow farmers through his commitment to sustainable agriculture.

Uniqueness of work related to NF

Mr. Tundup's farming enterprise is unique due to his systematic transformation of barren land into a diversified NF model that integrates crop and livestock components. He follows chemical-free agriculture and relies on natural inputs such as ghanjeevamrit and jeevamrit along with practices like crop rotation, organic mulching, and on-farm recycling of resources. His enterprise includes the cultivation of cereals, vegetables under both open and protected conditions, and fodder crops, along with dairy farming.

This integrated approach ensures year-round food and fodder security while maintaining soil fertility and ecological balance. By minimizing external inputs and maximizing locally available resources, he has developed a low-cost and



Visit of KVK scientists to Mr. Tundup's farm





environmentally sustainable production system suitable for the fragile ecosystem of high-altitude Zanskar.

Systematic Capacity Building

A significant turning point in Mr. Tundup's journey occurred in September 2016 when he attended a Kisan Mela organized by KVK Kargil. Exposure to successful vegetable and floriculture models motivated him to seek technical guidance from KVK scientists. After the establishment of KVK Padum, Zanskar in 2017, he became an active trainee and regularly participated in training programmes related to scientific vegetable production, resource conservation, value addition, and animal feed preparation. Continuous engagement with KVK experts strengthened his technical, managerial, and innovative skills, enabling him to confidently adopt improved natural farming practices. Regular training, demonstrations, and advisory support played a crucial role in shaping his entrepreneurial growth.



Visit of KVK scientist to Mr. Tundup's field

Major practices under NF

Mr. Tundup manages a diversified farming system on his 6 acre landholding that combines cereals, vegetables, fodder production, and dairy farming under NF principles. He cultivates cereals on 2.80 acre, vegetables such as onion, broccoli, cauliflower, cabbage and carrot etc., on 0.50 acre in both open and protected environments, and fodder on 2.75 acre while maintaining dairy animals as an integral part of the enterprise.

Emphasis is placed on soil health through the application of natural formulations, organic mulching, and crop diversification. The integration of crops and livestock supports efficient nutrient recycling and reduces dependence on external inputs. This balanced farming model enhances productivity, ensures stable income, and promotes sustainable resource utilization in the high-altitude ecosystem.

Economic analysis

The diversified natural farming enterprise of Mr. Tundup has demonstrated a consistent upward trend in productivity and profitability over the last three years, as reflected in the enterprise-wise economic performance. During 2022–23, the integrated system generated a total net income of about ₹3.42 lakh (Table 1), with vegetables and dairy emerging as the major contributors to farm income. Vegetable cultivation



Visit of KVK scientist to Mr. Tundup's polyhouse





recorded a strong benefit–cost ratio of 2.23, while pea and fodder enterprises also showed favourable returns, indicating the economic feasibility of diversified natural farming under high-altitude conditions. In 2023–24, improvements in crop management and efficient resource utilization led to a substantial rise in gross and net income, increasing the total net returns to about ₹3.84 lakh. Vegetable cultivation showed further profitability with an improved B:C ratio of 2.45, and pea cultivation recorded the highest relative efficiency among field crops.

By 2024–25, continued refinement of natural farming practices and better yield realization significantly strengthened the enterprise, raising total net income to nearly ₹4.95 lakh. Vegetable and fodder enterprises showed remarkable profitability, with fodder achieving the highest B:C ratio of 3.38 and vegetables reaching 2.61, while dairy remained a stable source of income. The steady increase in net returns and benefit–cost ratios across years clearly demonstrates that the integrated natural farming model

Table 1: Enterprise-wise and year-wise economic performance of natural farming

Year	Attributes	Barley	Pea	Vegetables*	Dairy	Total
2022-23	Area@ (acre)/ Cows (No.)	1.8	1.0	0.4	4.0	--
	Production (q/farm)/ (L/ farm)	12.5	9.0	152.0	5000.0	--
	Cost of cultivation# (₹/ farm)	15,120	15,000	1,70,150	96,080	2,96,350
	Gross income (₹/ farm)	22,500	36,000	3,80,000	2,00,150	6,38,650
	Net income (₹/ farm)	7,380	21,000	2,09,850	1,04,070	3,42,300
	B:C ratio	1.49	2.40	2.23	2.08	2.16
2023-24	Area@ (acre)/ Cows (No.)	1.8	1.0	0.5	3.0	--
	Production (q/farm)/ (L/ farm)	13.5	9.4	162.0	4800.0	--
	Cost of cultivation# (₹/ farm)	16,000	15,000	1,75,000	96,160	3,02,160
	Gross income (₹/ farm)	24,975	39,480	4,29,300	1,92,200	6,85,955
	Net income (₹/ farm)	8,975	24,480	2,54,300	96,040	3,83,795
	B:C ratio	1.56	2.63	2.45	2.00	2.27
2024-25	Area@ (acre)/ Cows (No.)	1.8	1.0	0.5	3.0	--
	Production (q/farm)/ (L/ farm)	13.5	9.5	168.0	6000.0	--
	Cost of cultivation# (₹/ farm)	17,000	16,000	1,80,000	71,050	2,84,050
	Gross income (₹/ farm)	27,000	41,800	4,70,400	2,39,800	7,79,000
	Net income (₹/ farm)	10,000	25,800	2,90,400	1,68,750	4,94,950
	B:C ratio	1.59	2.61	2.61	3.38	2.74

* Onion, broccoli, cauliflower, cabbage and carrot etc.

Including family labour

@ 2.75 acre of land was allocated for fodder production for the dairy enterprise across all the three years and total production was 360 q/farm for 2022-23 and 2024-25, respectively and 350 q/farm for 2023-24.





is economically sustainable and capable of generating progressively higher income even in the challenging agro-climatic conditions of Zanskar.

Influence and impact on farmers

Mr. Tundup's success has had a significant positive impact on the farming community in Zanskar and serves as a strong source of inspiration for aspiring rural entrepreneurs. His farm functions as a live demonstration site for neighbouring farmers and

extension personnel, where visible improvements in crop productivity, soil health, and household income have encouraged many to adopt vegetable cultivation and natural farming practices. By consistently applying eco-friendly and low-cost technologies, he has demonstrated that sustainable agriculture can generate reliable income even under harsh high-altitude conditions. His journey highlights that perseverance, continuous learning, and timely technical guidance from institutions like KVKs are essential for long-term success.

Through the integration of crops and livestock and efficient on-farm resource management, he has achieved balanced growth and enhanced farm sustainability. Overall, his experience conveys a powerful message to budding entrepreneurs that dedication, innovation, and scientific support can convert local challenges into meaningful livelihood opportunities while promoting environmental conservation and community development.



Mr. Tundup at his farm

**Contributors: Mohammad Mehdi, Shabber Hussain and FA Shah Khan,
Krishi Vigyan Kendra, Kargil-II (Zanskar)**



Name : Ms. Charanjit Kaur

Address : Vill. Bains, Block-Banga, SBS Nagar -144 508 (PB)

Qualification : Post Graduate

Contact No. : 9888247967

Landholding : 2 acre



Introduction

Ms. Charanjit Kaur, daughter of S. Bhim Singh, hails from the village of Bains in Block Banga, District Shaheed Bhagat Singh Nagar. A postgraduate in M.Sc. (Computer Sciences), she defies conventional expectations by channeling her academic excellence into her true passion that is sustainable agriculture. Deeply rooted in farming since childhood, she grew up working alongside her father, nurturing both crops and her vision for a greener future. Her success blends traditional wisdom with modern marketing, and her farm is a model for Natural Farming (NF) in the region. Marketing is another domain where Ms. Charanjit excels. As president of the “Nawanshahar Organic Group,” she promotes group marketing, promoting collective growth and recognition. Out of the total 2 acre landholding, NF practices are implemented on 1.5 acre under diversified crop–livestock integration, while the remaining 0.5 acre is utilized for cultivation of seasonal fruits and vegetables primarily to meet household nutritional requirements rather than for commercial sale.

Uniqueness of work related to NF

What makes Ms. Charanjit stand out is her holistic and scientific approach towards NF. Not only does she implement NF on her farm, but she also enables other farmers through her leadership in a Self Help Group. Her farm is a living model of sustainable practices where traditional wisdom meets modern marketing strategies. Ms. Charanjit's agricultural portfolio includes a diverse range of crops including basmati rice, mustard, turmeric, wheat all grown naturally without synthetic inputs.

Systematic Capacity Building

Over the years, Ms. Charanjit enhanced her skills through hands-on training in mushroom cultivation, fruit and vegetable preservation, beekeeping, hybrid seed production, and NF. Her exposure to progressive



Preparation of bio-inputs



Field view of different crops grown by adopting NF practices





farming through various Kisan Melas and programs conducted by PAU Ludhiana, KVK Langroya, Shaheed Bhagat Singh Nagar and state departments strengthened her resolve to embrace and promote NF. KVK can play a pivotal role in amplifying her success by offering continuous training on advanced NF practices, supporting certification and branding, organizing exposure visits, and facilitating market access for natural produce. They can also aid in setting up composting units and community-level bio-input production hubs to strengthen the natural farming ecosystem. With continued support from institutions like KVK, her vision of sustainable and healthy farming can reach even greater heights.

Ms. Charanjit has taken it one step ahead by creating a NF Demonstration & Learning Centre on her farm. This learning center is a dynamic platform for farm visits, training in the preparation of bio-inputs, vermi-composting, and mulching, to facilitate other farmers in shifting to natural practices. This learning center is a model demonstration site for new and prospective farmers.

Major practices under NF

Ms. Charanjit Kaur adopts a holistic approach to NF, cultivating a diverse range of crops that includes cereals like basmati rice, oilseeds such as mustard, spices and medicinal plants like turmeric and wheat, thereby ensuring agro-diversity and year-round productivity. In her horticulture practices, she incorporates seasonal fruits and vegetables in her kitchen garden to enhance nutritional security and promote ecological balance. Mulching forms a key practice, where she applies organic materials such as crop residues, dry leaves, and green matter to retain soil moisture, suppress weeds, and increase organic carbon content in the soil.

Ms. Charanjit further implements whapasa, a moisture conservation technique that focuses on soil aeration and water retention, significantly cutting down irrigation requirements while preserving soil health. Animal integration plays a central role in her system, with ownership of 4 buffaloes and 2 calves providing multiple benefits, their dung and urine are used to prepare bio-inputs, the animal's milk she markets herself, and their by-products contribute to composting for improved soil nutrition. Self-reliance is evident in her preparation of bio-inputs and bio-pesticides using locally sourced materials, keeping costs low and operations sustainable. These include jeevamrit, crafted from cow dung, cow urine, jaggery, gram flour, and soil to boost microbial activity, beejamrit for seed treatment prior to sowing, neemastra and agniastra derived from neem leaves, green chili, garlic, and cow urine to effectively manage pest attacks and vermicompost generated from animal waste and crop residues to enrich soil fertility.

Economic analysis

Table 1 presents the year-wise economic performance of Ms. Charanjit's diversified NF system on a 1.5 acre farm integrating basmati rice, mustard, turmeric, wheat and livestock. Over four years, total net income increased consistently from ₹3.46 lakh in 2021–22 to ₹4.62 lakh in 2024–25, registering an overall increase of about 33.46 percent. During the same period, gross income improved from ₹6.11 lakh to ₹7.52 lakh, while the B:C ratio increased from 2.31 to 2.59, indicating enhanced profitability and improved resource use efficiency under the diversified natural farming system. Livestock remained the major contributor to total net income throughout the study period.

In 2024–25 alone, livestock generated ₹3.36 lakh, accounting for nearly 72.70 percent of the total farm net income, underscoring its central role in ensuring income stability and regular cash flow. Crop enterprises also contributed substantially to overall profitability. Net income from basmati rice increased from ₹26,500 to ₹33,650 between 2021–22 and 2024–25. Mustard income improved from ₹15,390 to ₹19,300, while turmeric generated consistently high returns, increasing from ₹45,300 to ₹52,500 during the same period. The inclusion of wheat further diversified the income portfolio, contributing ₹18,150 in 2021–22, which rose





Table 1. Year-wise economic performance of natural farming system

Details	Basmati Rice	Mustard	Turmeric	Wheat	Dairy*	Total
2021-22						
Area (acre)	1.0	0.5	0.5	0.5	4.0	--
Production (q)/(L)	10.0	3.2	42.0	7.0	7810.0	--
Cost# (₹/farm)	13,500	4,450	13,500	5650	2,27,800	2,64,900
Gross income (₹/farm)	40,000	19,840	58,800	23800	4,68,600	6,11,040
Net income (₹/farm)	26,500	15,390	45,300	18,150	2,40,800	3,46,140
B:C ratio	2.96	4.46	4.36	4.21	2.06	2.31
2022-23						
Area (acre)	1.0	0.5	0.5	0.5	4.0	--
Production (q)/(L)	10.5	3.5	46	6.9	8010.0	--
Cost# (₹/farm)	14,000	4,800	14,000	5780	2,35,000	2,73,580
Gross income (₹/farm)	44,000	22,750	69,000	24150	5,20,650	6,80,550
Net income (₹/farm)	30,000	17,950	55,000	18,370	2,85,650	4,06,970
B:C ratio	3.14	4.74	4.93	4.18	2.22	2.49
2023-24						
Area (acre)	1.0	0.5	0.5	0.5	4.0	--
Production (q)/(L)	11.0	3.3	44.0	7.2	8250.0	--
Cost# (₹/farm)	14,200	5,000	14,700	5880	2,42,800	2,82,580
Gross income (₹/farm)	46,200	22,440	66,000	25200	5,61,000	7,20,840
Net income (₹/farm)	32,000	17,440	51,300	19,320	3,18,200	4,38,260
B:C ratio	3.25	4.49	4.49	4.29	2.31	2.55
2024-25						
Area (acre)	1.0	0.5	0.5	0.5	4.0	--
Production (q)/(L)	10.7	3.5	45.0	7.5	8360.0	--
Cost# (₹/farm)	14,500	5,200	15,000	5950	2,49,400	2,90,050
Gross income (₹/farm)	48,150	24,500	67,500	26625	5,85,200	7,51,975
Net income (₹/farm)	33,650	19,300	52,500	20,675	3,35,800	4,61,925
B:C ratio	3.32	4.71	4.50	4.47	2.35	2.59
*Buffaloes; #Including family labour						





to ₹20,675 by 2024–25, with a steady improvement in its B:C ratio from 4.21 to 4.47. Overall, the natural farming model demonstrates that diversification of crops along with livestock under natural farming enhances total income, strengthens the benefit–cost ratio, and provides year-to-year economic resilience on a smallholder farm.

Influence and impact on farmers

Ms. Charanjit has emerged as an inspirational figure in the district, founded the “Nawanshahr Organic Group” with over 20 farmer members who collaborate on sustainable practices. She regularly conducts farm tours, training sessions, and group discussions to share her expertise and foster knowledge exchange among peers. Through her dedicated efforts, numerous farmers have successfully transitioned from chemical-intensive farming to natural farming methods, amplifying the adoption of eco-friendly techniques across the region. Ms. Charanjit's impact extends far beyond her own land. Through farm tours, group discussions, and training, she inspires and mentors other farmers to embrace natural farming. Her initiative has motivated numerous farmers in her area to leave chemical farming and switch over to eco-friendly and budget-friendly methods. Her work contributes to environmental restoration, improved soil health, biodiversity preservation, and consumer awareness about safe food. Ms. Charanjit Kaur is a beacon of how passion, education, and innovation can revolutionize agriculture. Her dedication to natural farming is not just transforming her own livelihood but sparking a movement toward healthier, sustainable, and community-driven farming in Punjab.



Exposure visit of farmers to the demonstration and learning unit at Ms. Charanjit Kaur's farm

**Contributors: Arti Verma, Jaswinder Kumar and Pardeep Kumar,
Krishi Vigyan Kendra, Nawanshahr**



Name : Mr. Cherring Angdui

Address : Vill. & PO-Demul, Teh. Kaza, Lahaul & Spiti-172 114 (HP)

Qualification : 10th

Contact No. : 9015447635

Landholding : 3.5 acre



Introduction

High up in the Trans-Himalayan region, where farming is often seen as a struggle against harsh climates and scarce resources, Mr. Cherring Angdui, a progressive farmer from Demul village situated at 4,400 metres above mean sea level (AMSL) in Lahaul & Spiti district, has carved out a unique identity in the district through his dedication to Natural Farming (NF). Farming has always been close to his heart, and after completing his education, he decided to devote himself fully to agriculture. He owns 3.5 acre of agricultural land, along with yaks and desi cows, which play a vital role in supporting his farming system. Farmers in Demul never relied on chemical fertilizers or pesticides due to both remoteness and awareness about the fragile mountain ecosystem. He continued this tradition but realized that even without chemicals, soils were gradually losing fertility and crop yields were not as satisfactory as they had been in the previous 10–15 years. He understood that simply avoiding chemicals was not enough because soil nutrition and scientific management were equally important for sustainable production. Motivated by the concept of low-cost, chemical-free farming, and with the support of KVK Tabo, he began preparing inputs like jeevamrit, beejamrit, and ghanjeevamrit using locally available resources such as dung and urine from his cows. These bio-formulations became the foundation of his journey towards NF.

Uniqueness of work related to NF

Mr. Cherring Angdui, a progressive farmer from Demul village, exemplifies a unique model of NF through his strong entrepreneurial outlook, continuous skill upgradation, and effective integration of production with local market linkages. Identified by KVK Tabo as a promising NF entrepreneur, his passion for agriculture,



NF inputs prepared by Mr. Angdui at Demul Village





willingness to adopt innovative natural practices, and commitment to providing safe food distinguished him among farmers of the region. From 2023 to 2025, he received sustained technical support through structured trainings and practical demonstrations under the Out-scaling of Natural Farming through KVKs programme and the Tribal Sub-Plan, where he actively learned and adopted the preparation and application of natural formulations, leading to improved productivity of vegetable crops.



KVK Scientist Visit to Farmer's field

Despite challenges such as limited market access and declining yields due to nutrient-poor soils in Spiti Valley, Angdui effectively addressed these constraints by utilizing the “Apni Mandi” initiative launched by the District Administration, Kaza, for direct marketing, and by following soil test-based recommendations of KVK Tabo. Regular application of jeevamrit and ghanjeevamrit enhanced soil fertility and helped in disease management. His journey highlights how scientific guidance, hands-on learning, and local marketing platforms together make NF a viable and sustainable livelihood option even under harsh agro-climatic conditions.

Systematic Capacity Building

Mr. Cherring Angdui shares that he is always eager to experiment with new practices, which keeps him in close contact with agricultural officers. In 2018, he first learned about NF from block-level officials. Following this, he was nominated by the agriculture department to attend a NF training camp. Driven by curiosity and a desire to understand this method, he joined a six-day training program in Kufri under Padma Shri Subhash Palekar Ji, where he received answers to his queries and gained in-depth knowledge of natural farming practices. He then actively participated in training programs on natural farming organized under the Tribal Sub-Plan (TSP) and Out-scaling of Natural Farming through KVKs by KVK Tabo, further enhancing his knowledge and skills. With guidance from KVK Tabo, he began preparing and applying formulations like jeevamrit and ghanjeevamrit, which not only enriched the soil but also helped manage plant health naturally.

Major practices under NF

He applies ghanjeevamrit after harvest by placing it in heaps in October and mixing it in April to



Farmer's field at Demul Village





enrich the soil. He applies jeevamrit at 15-day intervals through irrigation water or as foliar sprays. He also uses agniastra prepared from local grass Thuklang to control insect pests. Natural farming increases soil fertility and reduces the incidence of insect pests and diseases in open fields.

Economic analysis

Earlier, Mr. Cherring Angdai earned very little from farming, as the productivity of his pea fields was quite low. However, with the adoption of NF practices and polyhouse cultivation, his income has increased significantly. At present, he earns an annual income of ₹4.45 lakh (Table 1), which has greatly improved his family's livelihood. Alongside financial gains, the shift to NF has also enhanced soil health by enriching it with beneficial microorganisms, thereby ensuring long-term sustainability.

Table 1: Component and year wise income of green peas under Natural Farming (Area=3.5 acre)

Year	2020-21	2021-22	2022-23	2023-24	2024-25
Production (q/farm)	94.2	86.4	91.7	97.7	93.2
Cost (₹/farm)	1,09,300	89,520	1,03,390	1,11,200	1,20,760
Gross income (₹/farm)	6,12,300	5,87,520	6,14,390	5,86,200	6,33,760
Net income (₹/farm) without family labour	5,03,000	4,98,000	5,11,000	4,75,000	5,13,000
Family labour	55,371	57,273	62,522	64,241	68,263
Net income (₹/farm) with family labour	4,47,629	4,40,727	4,48,478	4,10,759	4,44,737

Influence and impact on farmers

Natural Farming has significantly improved soil fertility on Mr. Cherring Angdai's farm and enabled him to cultivate multiple crops, resulting in enhanced income and livelihood security. Beyond economic gains, he derives satisfaction from producing safe and healthy food and actively contributes to the farming community by preparing Natural Farming inputs not only for his own fields but also sharing them with neighbouring farmers, thereby promoting sustainable practices. His experience



Training camp attended by Mr. Cherring Angdai

demonstrates that diversification is central to stability and profitability in Natural Farming. By integrating vegetable cultivation with livestock rearing, he has developed a resilient production system that ensures steady income and minimizes risks associated with mono-cropping. Through his successful adoption of eco-friendly practices under the high-altitude cold desert conditions of Spiti Valley, Mr. Angdai has emerged as a model farmer who inspires and guides others towards sustainable and profitable farming.

Contributors: R S Spehia and Ankita Dhiman, Krishi Vigyan Kendra, Lahaul & Spiti-II



Economic Empowerment of a Farm Woman through Natural Farming in Annual High Value Crops

Name : Mrs. Pinky Devi

Address : Vill. Kothi Deora, P.O Ghatti, Solan-173 213 (HP)

Qualification : 8th

Contact No. : 9857077933

Landholding : 1 acre



Introduction

Mrs. Pinky Devi, a progressive woman farmer from Dangri village, Solan, Himachal Pradesh, has been actively promoting awareness and adoption of Natural Farming (NF) in her region. Earlier, she practiced chemical-based farming, however, rising input costs, increasing pest and disease incidence, and declining productivity led her to explore sustainable alternatives. She attended a six-day training programme on NF conducted by Padma Shri awardee Subhash Palekar at Dr. Y. S. Parmar University of Horticulture and Forestry, where she was inspired by the core principles of NF, particularly the avoidance of chemical fertilizers and pesticides and the emphasis on soil health improvement.

To strengthen her practical understanding, she subsequently sought technical guidance from Krishi Vigyan Kendra (KVK), Solan. In 2018, she adopted NF in apple cultivation. Encouraged by positive results, she expanded her enterprise during 2019–20 to include tomato and capsicum under the NF system. Through her sustained efforts and success, she has emerged as a role model in the area, promoting sustainable agriculture as well as millet-based nutritional practices.

Uniqueness of work related to NF

Mrs. Pinky Devi has developed a cost-effective and self-reliant farming model through the adoption of NF. By eliminating chemical fertilizers and pesticides, she has substantially reduced input costs and no longer depends on agricultural loans. She cultivates residue-free apples, tomatoes, and peas under NF practices, producing nutritionally superior crops with stronger flavor, improved aroma, better natural preservation, and longer shelf life.

Her adoption of mixed and intercropping systems enables the simultaneous harvest of multiple crops from the same field, thereby improving land-use efficiency and income stability. Continuous application of NF



Sansadhan Bhandar on Natural Farming inputs





practices has enhanced soil health, reflected in increased microbial activity, higher organic matter content, and improved soil fertility.

Systematic Capacity Building

Mrs. Pinky Devi received comprehensive training in NF and sustainable agriculture from Krishi Vigyan Kendra (KVK), Solan, which strengthened her technical knowledge and practical skills. Her master trainer training further enhanced her capacity to guide and mentor other farmers effectively. KVK Solan has played a vital role in strengthening NF in the region through on-farm trials and Front-Line Demonstrations conducted on farmers' fields to showcase its productivity, profitability, and sustainability. The KVK has also developed model NF demonstration plots for experiential learning.

Through awareness campaigns, training programmes, workshops, farmer fairs, and exhibitions, the KVK promotes NF at various levels. It uses ICT tools such as videos and social media platforms to disseminate success stories and best practices. The KVK also evaluates the comparative performance of NF and conventional systems in terms of yield, soil health, and economics, documents local innovations, validates NF technologies for different agro-climatic conditions, and collaborates with state departments, NGOs, ICAR institutes, and universities to strengthen capacity building and outreach.

Major practices under NF

Mrs. Pinky Devi manages her apple orchard along with vegetable crops such as tomato, capsicum, pea, and French bean under the NF system. She cultivates horticultural crops, including apple. Intercropping is practiced on her farm, with French bean, rajmash, and peas grown alongside tomato and apple to enhance soil fertility and overall productivity. Mulching is employed using dry grass as well as live mulch crops to conserve soil moisture and suppress weeds. She creates Vapour-Aided Plant Soil Air (VAPSA) conditions that leverage capillary action to provide adequate moisture to plants while minimizing water wastage. Additionally, she maintains two indigenous Sahiwal cows and uses their dung and urine to prepare NF inputs such as jeevamrit, beejamrit, ghanjeevamrit, agniast, drakeastr, and dashparniark, which are sold to farmers and the agriculture department at government-approved rates. She has adopted NF practices on her 1 acre land.

She prepares her own inputs at her home with desi cow's urine, dung and locally available plants. She uses self-prepared natural inputs viz. jeevamrit and ghanjeevamrut for the nutrient management as per the procedure and methods formulated by Padam Shree awardee Sh. Subhash Palekar. Mrs. Pinky Devi markets her produce through multiple channels, including local sabji mandis in Amritsar and Delhi, and has tie-ups with FPOs such as Karol Naturals and Bioferganic Company. She also supplies materials to NF stores at Sabji Mandi, Solan.



Creating awareness and method demonstrations on Natural Farming inputs





Economic analysis

The rising cost of cultivation and relatively low net income discouraged Mrs. Pinky Devi and motivated her to shift towards natural farming practices, which emphasize the use of low-cost, home-made inputs to reduce expenditure and improve profitability. The economic analysis of the integrated natural farming system during 2024–25 demonstrated strong profitability across all farm enterprises, including vegetable crops, apple orchard and dairy (Table 1). The system generated a total gross income of ₹6.09 lakh with a net income of ₹4.19 lakh against a total production cost of ₹1.90 lakh, resulting in an overall benefit–cost ratio of 3.20. The diversified nature of the farming system ensured multiple income sources and enhanced overall farm profitability.

Among the individual enterprises, tomato emerged as the most profitable crop, generating the highest net income of ₹1.37 lakh with a benefit–cost ratio of 6.48, and contributing about 32.8 percent to the total farm net income. Capsicum also contributed substantially to farm income with a net return of ₹0.75 lakh and a B:C ratio of 4.04, indicating high profitability under natural farming conditions. Pea cultivation produced a net income of ₹0.52 lakh with a B:C ratio of 5.03, highlighting the economic potential of legume crops in the system.

Apple cultivation contributed significantly to farm income, generating a net return of ₹0.68 lakh with a B:C ratio of 3.34. The dairy enterprise, consisting of three cows, produced 3,870 L of milk and generated a net income of ₹0.87 lakh, providing a stable and regular income source for the household despite a comparatively lower B:C ratio of 1.89.

Overall, the integrated Natural Farming system combining horticultural crops, apple orchard and dairy proved to be economically viable and sustainable. The diversification of enterprises not only improved farm income but also strengthened livelihood security by ensuring year-round income generation.

Table 1: Crop/ enterprise-wise detailed economic performance during 2024-25.

Attributes	Capsicum	Tomato	Pea	Apple	Dairy	Total
Area (acre)/ Cow (No.)	0.4	0.4	0.3	0.6	3	--
Production (q or L/farm)	20.8	58.4	12.3	10.1	3870	--
Cost# (₹/ farm)	24,580	25,100	12,795	29,144	98,546	1,90,165
Gross income (₹/ farm)	99,248	1,62,558	64,378	97,364	1,85,760	6,09,308
Net income (₹/ farm)	74,668	1,37,458	51,583	68,220	87,214	4,19,143
B:C ratio	4.04	6.48	5.03	3.34	1.89	3.20
# Including family labour						

Influence and impact on farmers

Mrs. Pinky Devi plays a significant role in promoting NF in her village and surrounding areas. As a Master Trainer and Community Resource Person (CRP), she disseminates practical knowledge to farmers, students, and visitors during exposure visits organized by Krishi Vigyan Kendra (KVK) Solan and also serves as a resource person in trainings conducted by line departments. She actively shares NF technologies through social media platforms such as WhatsApp and Facebook to expand outreach.

Officials from the Departments of Agriculture, Horticulture, and ATMA, along with farmers from across the





***Interaction with Hon'ble Minister of
Agriculture & Farmers Welfare during Lakhpati Didi***



***Visit of farmers to Natural Farming Apple
orchard at her demonstration block***

district, regularly visit her farm to learn from her successful model. Through block and district-level trainings and awareness camps, she has created awareness among more than 2,000 farmers, with nearly 50 farm women adopting NF under her guidance. She has delivered over 30 lectures in programmes organized by KVK, ATMA, and other line departments, sharing her field-based experiences and practical insights.

She has also established a Sansadhan Bhandar to provide ready-to-use NF inputs to new farmers while educating them on NF concepts and applications. Through her consistent efforts, she inspires both women and men farmers to adopt chemical-free agriculture and reduce dependence on external inputs. She is further working toward mobilizing women farmers with the long-term vision of forming a women-led Farmer Producer Organization (FPO).

Contributors: Meera Devi, Anurag Sharma and Amit Vikram, Krishi Vigyan Kendra, Solan



Sowing Hope and Reaping Success through Natural Farming in Dry Temperate Conditions

Name : Mr. Mool Raj

Address : Vill. Triloknath, PO-Triloknath, Lahaul & Spiti-175 142 (HP)

Qualification : B. Com (Graduate)

Contact No. : 9459986956

Landholding : 3.46 acre



Introduction

Mr. Mool Raj, aged 47, is a progressive farmer from village Triloknath in Lahaul and Spiti district of Himachal Pradesh. He has been engaged in agriculture for over 27 years and cultivates 3.46 acre of irrigated land. He is well known across the valley for producing chemical-free off-season vegetables and apples, reflecting how experience, innovation, and determination can contribute to sustainable farming success.

His journey in Natural Farming (NF) began in 2018. During the initial phase, he faced low yields; however, his strong interest in learning and improving farming practices motivated him to continue despite several challenges. In 2022, he participated in awareness and training programmes organized by Krishi Vigyan Kendra (KVK) Lahaul and Spiti-I, Kukumseri, under the project "Out-Scaling of Natural Farming through KVKs". These programmes emphasized that excessive dependence on costly chemical inputs in modern agriculture reduces profitability and leads to soil degradation and ecological imbalance. Motivated by the principles of sustainability and guided by KVK experts, he adopted NF practices on 2.22 acre of his land. In addition, he manages a cole crop nursery and a small dairy unit, which has helped him diversify his farming system and enhance farm income.

Uniqueness of work related to NF

The uniqueness of Mr. Mool Raj's work lies in the successful adoption of NF under the challenging conditions of the high hills dry temperate zone of Lahaul and Spiti. Despite initial problems such as low yields during the transition phase, pest and disease incidence, and limited technical knowledge on bio-formulations, he consistently followed NF practices with guidance from KVK scientists. His integrated NF model, combining off-season vegetables, apple, cereals, pulses, and a small dairy unit, helped reduce input costs and dependence on external markets. On-farm preparation and timely application of cow-based



Preparation of jeevamrit and agniastara



Capacity building & diagnostic visit programmes





Diagnostic visit to farmers' field



Model farm (apple integrated with cauliflower)

formulations like jeevamrit, beejamrit, and ghanjeevamrit improved soil health and crop resilience. Raising nurseries under protected structures for early transplanting further minimized climatic risks and enhanced market returns. His work clearly demonstrates that NF can be sustainable, resilient, and profitable even in harsh high-altitude environments..

Systematic Capacity Building

Mr. Mool Raj strengthened his NF journey through systematic training, awareness programmes, and exposure visits. In 2018, he attended a five-day specialized training programme at CSKHPKV, Palampur, where he acquired practical knowledge on sustainable crop production using locally available and low-cost inputs. Subsequently, he participated in several capacity-building programmes organized by Krishi Vigyan Kendra (KVK) Lahaul and Spiti-I, Kukumseri, focusing on vegetable and horticultural production, disease-free nursery raising, and Integrated Pest and Disease Management (IPDM) under NF.

These programmes emphasized hands-on demonstrations on the preparation and application of bio-formulations such as ghanjeevamrit, beejamrit, jeevamrit, artemisia-based formulations, agniastra, saptdhanyankur ark, and sour buttermilk, which significantly enhanced his technical competence. In 2023, he completed a five-day training on soil and water conservation in NF systems at the Forest Research Institute, Dehradun. He also gained practical insights into crop residue management, intercropping, mulching, and livestock integration for improving soil health.

His active participation in training and extension programmes organized by the Departments of Agriculture, Horticulture, and Animal Husbandry reflects his strong commitment to continuous learning. Further, exposure visits conducted in 2024 to the NF Testing Centre at Gurukul, Kurukshetra; the Centre of Excellence for Vegetables, Gharaunda (Indo-Israel Project); NDRI, Karnal; and the Soil and Water Conservation Institute, Chandigarh broadened his perspective and familiarized him with innovative approaches for strengthening NF practices.

Major practices under NF

Mr. Mool Raj has adopted a diversified NF system on 2.22 acre by integrating vegetables, fruit crops, cereals, pulses, and livestock to enhance sustainability, climate resilience, and profitability. He cultivates off-season vegetables such as lettuce, garden pea, potato, broccoli, and cauliflower along with apple as a fruit crop. Quality seedlings are raised under protected structures (polyhouse/low tunnel) during March–April with technical guidance from KVK scientists and transplanted during April–May to ensure timely harvest before snowfall. Buckwheat and rajmash are included in the cropping system to improve diversification, household nutrition, and soil health. Livestock integration forms a core component of his NF





Glimpses of Capacity building programmes under natural farming practices

model, with one Pahari breed cow yielding 4.5–6.0 L of milk per day and supplying dung and urine for on-farm preparation of bio-inputs.

For land preparation, ghanjeevamrit was applied @ 1000 kg/ha, while beejamrit was used for seed and seedling treatment to ensure better germination and uniform crop stand. Nutrient management was carried out through the application of jeevamrit @ 1500 L/ha at fortnightly intervals from 15 days after transplanting until harvest. Insect-pest management involved prophylactic sprays of agniastra and artemisia-based formulations at 5–6 L in 250 L of water per hectare, while fungal diseases were managed through spraying of sour buttermilk (2%).

Economic analysis

The economic analysis of the integrated farming system over three years shows a consistent improvement in farm profitability on a constant area of 2.22 acre. During 2022–23, the system generated net returns of ₹1.05 lakh with a benefit–cost ratio of 2.94, mainly from vegetable, horticulture, and nursery components (Table 1). With diversification and expansion of vegetable and nursery activities in 2023–24, net returns increased to ₹2.59 lakh and the B:C ratio improved to 3.46. Further strengthening of high-value vegetable

Table 1: Year-wise economics of integrated farming system (Area=2.22 acre for all three years)

Year	Farm Component	Cost of cultivation (₹)	Gross returns (₹)	Net returns (₹)	B:C ratio
2022-23	Potato, pea, cauliflower, apple and nursery of cole crops	49,732	1,48,050	98,318	2.98
	Buckwheat and rajmash	4,575	11,700	7,125	2.56
	Total	54,307	1,59,750	1,05,443	2.94
2023-24	2022-23 + lettuce	1,00,245	3,50,270	2,50,025	3.49
	Buckwheat and rajmash	5,385	14,703	9,318	2.73
	Total	1,05,630	3,64,973	2,59,343	3.46
2024-25	2023-24 + summer squash	1,22,018	4,64,327	3,42,309	3.80
	Buckwheat and rajmash	3,570	10,125	6,555	2.84
	Total	1,25,588	4,74,452	3,48,864	3.78





crops in 2024–25 resulted in net returns of ₹3.49 lakh with a B:C ratio of 3.78. Overall, the results clearly demonstrate that integration of vegetables, horticulture, nursery raising, and cereals significantly enhanced income and economic efficiency.

Influence and impact on farmers

The integration of crops and livestock along with the use of natural inputs has significantly enhanced Mr. Mool Raj's household income while reducing dependence on external markets. Regular application of cow-based bio-formulations has improved soil fertility, lowered production costs, and promoted ecological balance. Crop diversification has helped minimize risks associated with nutrient depletion, pest and disease incidence, and market fluctuations. His successful NF model has attracted the attention of fellow farmers and state officials, and his farm is frequently visited as a live demonstration site. As a master trainer, he has played an important role in promoting Natural Farming and motivating neighbouring farmers to adopt sustainable practices. By encouraging participation in capacity-building programmes, he strengthens farmer-to-farmer extension and accelerates NF adoption in the region. His direct marketing initiatives, including bulk supplies to Azadpur Mandi, Delhi, have further established him as a successful agri-entrepreneur and a role model for rural youth and women farmers.



Training programme organized under natural farming practices

Contributors: Radhika Negi and Pankaj Chopra, Krishi Vigyan Kendra, Lahaul and Spiti-I



Integrating Vegetables with Traditional Crops under Small Holder Natural Farming

Name : Mr. Mohd Asif Kelam
Address : Vill.& PO-Verinag, Shahabad Bala, Anantnag-192 212 (J&K)
Qualification : Graduate
Contact No. : 8825055485
Landholding : 1 acre



Introduction

Mr. Mohd Asif Kelam, a 40-year-old progressive farmer from Verinag, Jammu & Kashmir, belongs to a traditional farming family. Despite being a graduate, he initially faced challenges such as limited employment opportunities, lack of capital, inadequate technical skills, and insufficient scientific knowledge in advanced horticulture and nursery management. Conventional farming provided low and uncertain income, motivating him to adopt sustainable and nature-based farming practices. With strong determination to improve his livelihood, he approached Krishi Vigyan Kendra (KVK) for technical guidance and training. With continuous mentoring and handholding support, he gradually shifted from conventional practices to a diversified farming system based on Natural Farming (NF) principles, ensuring higher income, reduced risk, and long-term sustainability.

Uniqueness of work related to NF

The uniqueness of Mr. Mohd Asif Kelam's work lies in the successful integration of Natural Farming principles with a diversified Integrated farming system under temperate agro-climatic conditions. By relying on on-farm resources such as vermicompost, livestock manure, crop residues, and bio-enhancers prepared at the farm level, he significantly reduced dependence on externally purchased chemical inputs.

Despite initial challenges related to pest and nutrient management, he refined his practices through continuous experimentation and guidance from KVK scientists. The integration of dairy and poultry enterprises ensured regular availability of organic manure and enhanced nutrient recycling, resulting in improved soil health, crop resilience, and consistent productivity. His success demonstrates the practical feasibility and economic sustainability of Natural Farming under smallholder farming systems.



Preparation and use of bio-inputs in farm under NF practices





Systematic Capacity Building

Systematic capacity building played a crucial role in strengthening his farming enterprise. KVK scientists provided regular field visits, technical backstopping, exposure visits, and hands-on training in Natural Farming practices, integrated farming systems, protected cultivation, orchard management, dairy farming, poultry farming, and vermicomposting.

Major Practices under NF

As per the recommendations of KVK scientists, Mr. Asif adopted Natural Farming practices such as application of vermicompost and bio-enhancers, recycling of farm residues, use of botanical and biological plant protection measures, and promotion of beneficial soil microorganisms. Protected cultivation was adopted for raising healthy vegetable seedlings, ensuring better crop establishment and productivity. In addition, crop diversification was strengthened through intercropping and mixed cropping systems. During the kharif season, intercropping combinations such as Rajmash + Chilli, Rajmash + Coriander, Moong + Brinjal, and Moong + Knolkhol were practiced to enhance resource use efficiency and reduce production risks. In the rabi season, pea and turnip were grown under mixed cropping to ensure diversified output and better utilization of available land. Livestock integration played a key role in nutrient cycling and soil fertility improvement. These integrated practices resulted in improved crop health, reduced incidence of pests and diseases, better quality produce, and enhanced environmental sustainability.

Economic analysis

Adoption of NF improved the economic performance of Mr. Mohd Asif Kelam's farming enterprise through a diversified cropping system involving multiple crops during both kharif and rabi seasons, along with intercropping practices that ensured continuous income generation throughout the year. The complete elimination of chemical fertilizers and pesticides considerably reduced the cost of cultivation, while the use

Table 1: Detailed economic analysis of diversified cropping system under NF during 2024–25

Crop	Rajmash	Moong	Knolkhol	Coriander	Brinjal	Chilli	Pea	Turnip	Total
Season	Kharif	Kharif	Kharif	Kharif	Kharif	Kharif	Rabi	Rabi	–
Variety name	Shalimar Rajmash -1	Shalimar Moong -1	Early White Vienna	Shalimar Dhaniya -1	Pusa Purple Long	Kashmir Long-1	Shalimar Matar-1	Purple Top White Globe	--
Area (acre)	0.5	0.5	0.25	0.25	0.25	0.25	1	1	--
Production(q)	1.70	2.40	16.50	0.50	15.00	1.35	31.50	74.00	--
Total labour (₹)	10,262	10,507	4,244	3,372	4,190	4,660	15,430	22,109	74,774
Hired labour (₹)	1,231	1,261	509	405	503	559	1,852	2,653	8,973
Family labour (₹)	9,031	9,246	3,735	2,967	3,687	4,101	13,579	19,456	65,802
CoC (₹)	12,828	13,134	5,305	4,215	5,237	5,826	19,288	27,636	93,469
Gross returns (₹)	30,600	28,800	33,000	9,750	37,500	34,425	63,000	1,33,200	3,70,275
Net income (₹)	17,772	15,666	27,695	5,535	32,263	28,599	43,712	1,05,564	2,76,806
Net income without FL (₹)	26,803	24,912	31,430	8,502	35,950	32,700	57,291	1,25,020	3,42,608

Note: Production data represent Rajmash-1 (seed purpose), Moong-1 (seed purpose), Knolkhol (vegetable), Coriander (seed), Brinjal (vegetable), Chilli (dried produce), Pea (green pods) and Turnip (utilized as animal feed)





Mr. Mohd Asif Kelam at his farm showing crop grown under natural farming

of on-farm natural inputs such as jeevamrit and beejamrit helped maintain soil fertility and sustain crop productivity. During 2024–25, the diversified natural farming system generated a total gross return of ₹3.70 lakh with a net income of ₹2.77 lakh, demonstrating the economic viability of the Natural Farming model (Table 1). Among the *rabi* crops, turnip (used as animal feed) emerged as the most profitable component of the system, generating the highest net income of ₹1.06 lakh, followed by pea (green pods) with ₹0.44 lakh. These results highlight the suitability of root and legume crops under low-cost natural farming conditions. During the *kharif* season, brinjal recorded the highest net income (₹0.32 lakh), followed by chilli (₹0.29 lakh) and knolkhol (₹0.28 lakh), indicating the strong economic potential of vegetable crops in diversified natural farming systems. Pulse crops such as rajmash and moong also contributed significantly with net incomes of ₹0.18 lakh and ₹0.16 lakh, respectively, while coriander provided additional supplementary income despite comparatively lower returns.

Short-duration vegetable crops such as knolkhol and coriander provided relatively quick returns with moderate investment, thereby improving cash flow for the farmer. In addition to their economic contribution, pulse crops such as rajmash and moong enhance system sustainability through biological nitrogen fixation, which improves soil fertility and reduces dependence on external inputs. Overall, the diversified cropping system under Natural Farming proved to be economically profitable, resource-efficient, and a sustainable livelihood option for small and marginal farmers.

Influence and impact on farmers

Mr. Mohd Asif Kelam is now widely recognized as a progressive Natural Farming practitioner and a role model in the Verinag region. His farm has evolved into a live demonstration unit for diversified farming systems based on Natural Farming principles. A large number of farmers, rural youth, students, and extension officials regularly visit his farm to observe and learn practical, low-cost, and sustainable farming techniques. Through farmer-to-farmer interactions, training programmes and exposure visits facilitated by KVK, he actively disseminates NF practices and enterprise-based farming models among fellow farmers. Many farmers, inspired by his success, have adopted diversified farming systems, livestock integration, vermicomposting, and protected cultivation. His efforts have contributed to increased awareness about soil health restoration, reduction in chemical input use, and enhancement of farm income and resilience in the region.

Contributors: Shabeer Ahmad Ganaie and Ishtiyag A. Khan, Krishi Vigyan Kendra, Anantnag





SECTION 4: VALUE ADDITION OF NATURAL FARMING PRODUCE – AN INTRODUCTION

Indian agriculture has gradually but significantly changed in recent years, moving from a production-centered to a value-driven agricultural sector. Although raising total production is still crucial, it is no longer enough to guarantee farmers a stable and sustainable way of life. Farmers' incomes are sometimes limited by rising input costs, erratic price swings, post-harvest losses, and limited market access, especially for those with small and marginal landholdings. Value addition of natural farming output has become a very effective and potent technique to increase farm profitability, guarantee higher income security, and actively encourage rural entrepreneurship across the nation in this quickly changing environment.

A strong and reliable basis for sustainable agriculture is already provided by natural farming, which places a heavy focus on ecological balance, chemical-free production, and inexpensive locally accessible inputs. But only when farmers go beyond primary production and actively participate in the processing, branding, packaging, and direct sale of their agricultural goods can the entire economic potential of natural farming be achieved. In addition to greatly extending the shelf life and total market worth of agricultural products, value addition gives farmers the ability to take a

much bigger cut of the consumer price. The agricultural landscape in India has undergone a profound and revolutionary change as a result of this huge shift from being merely producers to being entrepreneurs and active market participants.

This section presents seven inspiring success stories that illustrate how farmers across Himachal Pradesh, Punjab, and Uttarakhand have successfully harnessed the power of value addition within natural farming systems to substantially enhance their incomes and build more resilient livelihoods. These detailed case studies highlight a variety of diverse approaches, including on-farm processing, product diversification, direct marketing, and enterprise integration, effectively demonstrating the broad applicability of value addition across different agro-climatic and socio-economic contexts throughout the country.

One of the most compelling aspects of these success stories is the significant boost in farm income achieved through smart value addition. A striking example comes from Una district in Himachal Pradesh, where a farmer has effectively combined natural farming methods with value addition of high-value crops to earn a net farm income of ₹32.98 lakh. This case powerfully illustrates how an entrepreneurial mindset, paired with sustainable agricultural practices, can turn farming into a genuinely profitable venture. By converting raw produce into value-added products and marketing them strategically, the farmer has managed to earn considerably higher returns compared to simply selling unprocessed commodities in the conventional manner.

In a comparable case from Amritsar district in Punjab, a farmer has successfully embraced a self-marketing model for value-added natural produce, generating a net income of ₹18.62 lakh. This example highlights the vital role that direct market linkages play in maximizing farm profitability. By cutting out middlemen and fostering a direct, trustworthy relationship with consumers, farmers can not only command better prices but also build lasting brand recognition and consumer loyalty. The rising demand for safe, chemical-free food among health-conscious consumers further strengthens the market opportunity for naturally grown and value-added agricultural products.

The cases from Hoshiarpur and Mohali districts in Punjab bring to light the important role of value addition in ensuring income stability and meaningful diversification of agricultural earnings. Farmers in these regions have successfully integrated multiple enterprises within their natural farming systems and adopted thoughtful value addition practices to establish consistent and dependable income streams throughout the year. With net incomes of ₹8.25 lakh and ₹7 lakh respectively, these encouraging examples clearly demonstrate that even moderate-scale farming operations can achieve significant and meaningful economic gains through well-planned and strategic value addition. By processing surplus produce, minimizing post-harvest losses, and diversifying their range of product offerings, farmers are able to effectively reduce the risks associated with market fluctuations and seasonal variations in agricultural production.

Another important dimension highlighted in this section is the pivotal role of women-led initiatives in promoting value addition and strengthening rural entrepreneurship. The case from Shimla

district in Himachal Pradesh provides a compelling example of a woman farmer who successfully combined natural farming with value addition in apple cultivation, generating an impressive net income of ₹6.28 lakh. This example underscores not only the substantial economic advantages of value addition but also its potential to empower women and advance inclusive rural development. Through active involvement in processing, packaging, and marketing, women farmers can assume leadership roles in agricultural enterprises, gaining greater economic independence and enhanced social recognition within their communities.

The success stories from Sirmour in Himachal Pradesh and Uttarkashi in Uttarakhand further reinforce the case for value addition as a key driver of economic stability and long-term agricultural sustainability. Recording net incomes of ₹4.38 lakh and ₹4.07 lakh respectively, these examples clearly show that even small-scale farmers with limited resources can achieve meaningful improvements in their livelihoods through value addition. By creating diversified income streams and reducing over-reliance on the sale of raw produce, farmers can gradually build more resilient and sustainable farming systems that are better equipped to withstand market uncertainties and financial pressures.

One of the most distinctive advantages of value addition within natural farming systems is its ability to reduce post-harvest losses and improve the overall utilization of farm produce. Perishable crops, especially fruits and vegetables, are often vulnerable to significant losses due to poor storage infrastructure and limited market access. By processing these crops into products such as juices, jams, pickles, dried goods, and other value-added items, farmers can considerably extend shelf life and tap into broader, newer market segments. This not only leads to improved income but also contributes to food security and promotes more efficient use of resources throughout the agricultural value chain.

Value addition is closely aligned with the core principles of the circular economy and resource efficiency that underpin natural farming. By utilizing agricultural by-products and minimizing waste, farmers can generate supplementary income while maintaining ecological balance within their systems. For instance, residues from fruit processing can be converted into compost or used as animal feed, thereby closing nutrient cycles and enhancing the overall sustainability of farming enterprises. The success of value addition initiatives, however, depends on several enabling factors such as access to training, suitable infrastructure, and strong market linkages. Strengthening farmers' skills in processing, quality management, packaging, and branding is essential for making value addition both viable and profitable. Moreover, targeted support from government schemes, cooperatives, and farmer producer organizations can significantly enhance market access and promote the widespread scaling of such initiatives across regions.

Growing consumer demand for safe, nutritious, and sustainably produced food has become a defining feature of both domestic and international markets. As public awareness increases regarding the adverse health and environmental impacts of chemical-based agriculture,



consumers are increasingly turning toward natural and organic products. This positive shift offers valuable opportunities for natural farming practitioners to distinguish their produce and secure higher market prices. The process of value addition enhances this potential by improving product quality, convenience, and overall market appeal.

The collective experiences presented in this section strongly illustrate that value addition acts as a major catalyst for economic transformation within natural farming systems. It enables farmers to move higher along the agricultural value chain, diversify income sources, and develop more resilient farming enterprises. Through the effective integration of production, processing, and marketing activities, farmers can gain greater control over their livelihoods and reduce their exposure to economic fluctuations and market risks.

In conclusion, the success stories presented in this section offer strong and convincing evidence that value addition of natural farming produce is not only economically viable and financially rewarding but also socially empowering and environmentally responsible. These inspiring examples provide practical and actionable insights for farmers, entrepreneurs, policymakers, and development professionals who are working towards promoting sustainable agriculture and inclusive rural growth. They serve as a powerful reminder of how innovation, an entrepreneurial outlook, and a clear market focus are essential to fully unlocking the vast potential that natural farming holds for rural communities and the broader agricultural sector.

This section provides a solid foundation for examining seven notable success stories, each showcasing a distinct approach to achieving success through value addition in natural farming. Collectively, they demonstrate that with proper knowledge, sufficient resources, and an enterprising mindset, natural farming has the potential to evolve into a comprehensive and sustainable model for rural prosperity and long-term economic stability among farming communities across India.

Entrepreneurship through Natural Production and Value Addition of High Value Crops

Name : Mrs. Reeva Sood

Address : Vill. Gunghrala, PO-Chaksarai, Teh. Amb, Una-174 303 (HP)

Qualification : Master in Sociology in Rural Development

Contact No. : 9971234222

Landholding : 70 acre



Introduction

Mrs. Reeva Sood, a 67-year-old progressive farmer and agro-entrepreneur from village Gunghrala, Tehsil Amb, District Una (Himachal Pradesh), has made remarkable contributions to Natural Farming (NF). Since 2018, she has transformed about 70 acre of barren and rocky land spread across Gunghrala, Behar Bithal, Akrot, and Behar Jaswan into productive fields under dragon fruit and a wide range of medicinal and aromatic plants. Her motivation for adopting Natural Farming stemmed from personal challenges, as her husband battled cancer and she herself was diagnosed with diabetes. These experiences inspired her to embrace chemical-free and ecological farming after recognizing the adverse effects of chemical fertilizers and pesticides on human health. With a vision to produce safe and nutritious food, she chose farming as a means to promote both environmental and consumer well-being.

Despite belonging to a highly educated family with members in the medical and engineering professions, Mrs. Sood chose an unconventional agricultural path by introducing dragon fruit, a crop largely unfamiliar to the region at the time, along with various medicinal plants. Owing to its antioxidant and anti-cancer properties, dragon fruit emerged as the cornerstone of her climate-resilient and sustainable farming model. During the initial years, she encountered challenges such as limited technical knowledge, low awareness, and the absence of structured markets. Through active engagement with agricultural experts and institutions, she gradually refined her NF practices, diversified her production system, and developed organic formulations. Her enterprise later expanded into value addition, resulting in the production of 100



Exposure visit of farmers to the medicinal plant unit under NF





percent natural herbal juices marketed under her brand, Agriva Naturally. Her pioneering efforts have earned her recognition as the “Dragon Fruit Lady of Himachal Pradesh” by The Indian Express, The Times of India, and Better India.

Uniqueness of work related to NF

The uniqueness of Mrs. Reeva Sood's work in NF lies in her transformation of barren and marginal lands into productive fields through chemical-free practices, combined with value addition by processing dragon fruit into 100 percent natural herbal juices infused with medicinal herbs, promoting the holistic 'farm-to-table' concept. She expanded to the global market with APEDA registration and an Import-Export Certificate (IEC), launching Dragona, an innovative herbal-infused dragon fruit juice.

Unlike many farmers, her model emphasizes scientific validation, complying with Ayurvedic Pharmacopoeia of India (API), FSSAI, and APEDA standards through R&D with Baba Farid University of Health Sciences, Faridkot. Products undergo phytochemical tests for withanolides, polyphenols, carotenoids, betalains, and vitamin C, as well as microbial, pesticide, and heavy metal analysis. Woman-led Agriva Naturally also uplifts rural women. Applying Harvard entrepreneurship training and Participatory Learning Action (PLA), she introduced climate-resilient crops in disaster-prone Zone-5 of Himachal Pradesh, prioritizing soil health, biodiversity, and sustainability with support from District Administration, KVK, Horticulture Department, and a World Bank grant.

Systematic Capacity Building

KVK, Una, has played a pivotal role in strengthening systemic capacity for Natural Farming through scientific training, on-farm demonstrations, and continuous technical guidance. Acting as a bridge between research institutions and farmers, KVK facilitated effective technology transfer and showcased Ms. Reeva Sood's farm as a live demonstration model for Natural Farming. Regular training programmes, exposure visits, and awareness campaigns were organized through field days, publications, and digital platforms. KVK also supported value addition, branding, and market linkages, including facilitation of farmer clusters and buyback arrangements for crops such as dragon fruit. Further, collaborations with research institutions and policymakers helped in scientific validation of practices, scaling up of the model, and mainstreaming sustainable, chemical-free farming at regional and national levels.

Major practices under NF

Mrs. Reeva Sood has implemented a diversified NF system that integrates fruit crops, medicinal plants, and traditional herbs to achieve ecological sustainability and economic viability. Dragon fruit serves as the main commercial crop, while high-value medicinal plants such as sarpgandha and ashwagandha are



Exposure visit of CRPs to the Natural Farming unit, organized by KVK, Una





Exposure visit of farmers to the dragon fruit processing unit, organized by KVK, Una

intercropped to promote biodiversity and improve soil health. Other crops, including turmeric, anjeer (figs), tulsi, and rudraksh, further enhance ecological balance and provide nutraceutical and therapeutic benefits. She adopts mulching extensively using locally available organic materials such as dried leaves, grasses, and crop residues, which conserve soil moisture, minimize weed growth, prevent rot and disease, regulate soil temperature, and gradually enrich the soil with organic matter. The farm strictly follows the whapasa principle, ensuring minimal soil disturbance, efficient water use, and long-term soil sustainability. Integration of animals is a key feature of her system. She prepares jeevamrit using cow dung and urine and produces compost manure from animal waste and crop residues, creating a closed-loop nutrient cycle. This practice enhances microbial activity, root health, and crop immunity while reducing dependency on chemical fertilizers and pesticides. Intercropping models between dragon fruit and medicinal crops foster mutually beneficial growth, further increasing productivity.

Economic analysis

Table 1 presents a detailed crop-wise economic assessment of major crops cultivated under the NF system. Dragon fruit emerged as the most remunerative enterprise, cultivated over 13.65 acre, with a production of 819 q and the highest gross income of ₹70.98 lakh against a cultivation cost of ₹50.17 lakh resulting in a net income of ₹20.81 lakh and a B:C ratio of 1.41. Among medicinal crops, sarpagandha grown on 6.83 acres generated a gross income of ₹6.82 lakh with net returns of ₹3.06 lakh and a B:C ratio of 1.82, while ashwagandha recorded net returns of ₹2.39 lakh with a B:C ratio of 1.87. Turmeric, despite higher production of 409.8 q, incurred relatively higher cultivation costs, leading to a comparatively lower

Table 1: Economics of high-value crops under Natural Farming system

Crops	Area (acre)	Production (q/farm)	Cost of cultivation (₹/farm)	Gross income (₹/farm)	Net income (₹/farm)	B:C ratio
Dragon Fruit	13.65	819.0	50,17,194	70,98,030	20,80,836	1.41
Sarpagandha	6.83	37.6	3,75,628	6,82,541	3,06,913	1.82
Ashwagandha		51.2	2,73,234	5,12,250	2,39,016	1.87
Turmeric		409.8	5,46,442	9,22,052	3,75,610	1.69
Moringa	4.55	191.1	2,50,250	4,55,080	2,04,830	1.82
Vaijanti	2.28	10.3	1,02,629	1,93,815	91,186	1.89
Total			65,65,377	98,63,768	32,98,391	1.50





B:C ratio of 1.69. Moringa and vajjanti also contributed substantially to farm income, recording net returns of ₹2.04 lakh and ₹91,186, respectively, with B:C ratios close to or above 1.80. Overall, the diversified crop portfolio incurred a total cultivation cost of ₹65.65 lakh and generated a gross income of ₹98.63 lakh, resulting in cumulative net returns of ₹32.98 lakh and an average B:C ratio of 1.50, highlighting the economic feasibility and profitability of natural farming-based diversification.

Influence and impact on farmers

Through her enterprise Agriva Naturally, Mrs. Reeva Sood has influenced farmers across Himachal Pradesh, Punjab, Haryana, Delhi, and Rajasthan by distributing over 80,000 dragon fruit saplings and 5,64,650 medicinal plants. Her adoption of Jahar Mukht Kheti presents a women-led model of sustainable agribusiness, encouraging farmers to reduce chemical inputs and adopt high-value, climate-resilient crops. Her integrated practices, including intercropping, mulching, and value addition through 100 percent natural herbal juices, have established her farm as a living demonstration site for practical Natural Farming through training, community engagement, and buyback mechanisms. Her work has received national and international recognition for promoting climate-resilient, chemical-free agriculture. With APEDA registration and an Import–Export Certificate, she has entered global markets through her herbal-infused dragon fruit juice, Dragona. Her role as Professor of Practice at Career Point University, advisor to the University of Delhi, and mentor at Baba Farid University of Health Sciences further strengthens her impact, demonstrating how Natural Farming can integrate health, sustainability, women empowerment, and market-driven innovation.



A herbal-infused dragon fruit juice (Dragona)



Mrs. Reeva Sood showing her products

Contributors: Meenakshi, Sanjay Kumar Sharma and Yogita Sharma, Krishi Vigyan Kendra, Una



Self-Marketing of Value-Added Natural Produce for Exceptionally High Farm Income

Name : S. Sukhdev Singh
Address : Vill. Chamryari, Ajnala, District Amritsar-143 103 (Pb)
Qualification : Graduate
Contact No. : 8872007512
Landholding : 20 acre



Introduction

S. Sukhdev Singh, a graduate farmer from Village Chamryari, Block Ajnala in District Amritsar, owns about 20 acre of land. Earlier, his income from cultivating wheat and paddy was low, but after receiving technical guidance from experts at KVK Amritsar, he adopted Natural Farming (NF) and diversified his enterprise. Unlike conventional farms in the area, he expanded into sugarcane, vegetables, and nursery production, and also ventured into on-farm processing, including the making of haldi (turmeric) and pesticide/chemical-free gur (jaggery), which adds value to his produce.

On his farm, S. Sukhdev Singh now grows sugarcane alongside vegetable crops like onion, chili, capsicum, and vegetable nursery plants under natural farming. He applies jeevamrit sprays, uses ghan-jeevamrit, and practices mulching to maintain soil health, improve yields, and produce pesticide-free crops. Diversified cropping and careful irrigation, following whapasa principles, help conserve soil moisture and increase resilience. He integrates animals on the farm to supply cow dung and urine for making bio-inputs, ensuring a self-sustaining system.

To further enhance his operations, he has set up a vermicompost unit and a haldi processing plant on his farm. jeevamrit and ghanjeevamrit are prepared using cow dung, cow urine, jaggery, gram flour, and local soil, and are applied either as sprays or as soil amendments. Mulching with crop residues and the use of natural plant extracts reduce pest incidence and improve soil fertility.

Through natural farming, S. Sukhdev Singh markets sugarcane jaggery, cucurbits, turmeric, directly to consumers and local markets. His active involvement in pesticide/chemical-free gur making increases the value of sugarcane and reduces dependence on middlemen.



Natural farming practices and bio-input preparation at farmer's field





Systematic Capacity Building

Krishi Vigyan Kendra (KVK) Amritsar scientists identified S. Sukhdev Singh as an ideal candidate for entrepreneurship development under natural farming. This decision was based on several factors, including his higher professional qualification, which enabled him to quickly grasp complex technical details related to natural farming, and his strong motivation to reduce dependence on chemical inputs. Additionally, his entrepreneurial mindset for value addition and direct marketing made him particularly well-suited for the venture.

He learned the preparation and application of key bio-inputs such as beejamrit, jeevamrit, ghanjeevamrit, dashparni ark, and neemastra, which enabled him to replace expensive chemical fertilizers and pesticides. He also developed expertise in intercropping, mulching, integrating livestock into the farming system, and recycling crop residues for soil enrichment. These practices improved the productivity, resilience, and sustainability of his small landholding while ensuring healthier produce.

Uniqueness of work related to NF

He has successfully shifted from traditional wheat-paddy farming to the practice of natural farming, now cultivating a diverse range of crops such as sugarcane and various vegetables. As part of his sustainable approach, he incorporates mulching by using crop residues and biomass to conserve soil moisture, suppress weeds, and enrich soil fertility, particularly in crops like turmeric and sugarcane. In addition to this, he has introduced value-added processing activities on his farm, including the production of turmeric (haldi) and the manufacture of pesticide- and chemical-free gur (jaggery), both of which significantly enhance the value of his produce and contribute to the long-term sustainability of his farming model.

He markets his natural produce, primarily sugarcane jaggery and vegetables, directly to consumers and local markets. Additionally, he engages in the production of pesticide- and chemical-free gur, which not only enhances the value of his sugarcane but also reduces his reliance on middlemen, ensuring a more direct and profitable connection with the market. To further increase its market value, he prepares different varieties of jaggery by incorporating ingredients such as fennel, coconut, and other natural flavoring components, making the product more attractive and value-added for consumers.

Major practices under NF

S. Sukhdev Singh's methodology is a sophisticated integration of the core principles of Natural Farming, designed to restore soil biology while maintaining high productivity. S. Sukhdev Singh practices natural farming in his 5 acre of land. At the heart of his nutrient management are jeevamrit and ghanjeevamrit, fermented microbial cultures prepared using a blend of cow dung, cow urine, jaggery, gram flour, and local soil. These inputs are applied both as foliar sprays and soil amendments to stimulate microbial activity and enhance plant health. To further boost soil fertility, he has established a vermicompost unit and integrates livestock to ensure a continuous supply of raw materials for bio-inputs, creating a closed-loop, self-sustaining ecosystem.

Water management and soil structure are optimized through the whapasa principle, which focuses on maintaining the ideal microclimate of air and moisture in the soil, thereby increasing crop resilience during dry spells. This is complemented by intensive mulching, using crop residues and biomass to suppress weed growth, conserve moisture, and eventually enrich the soil through decomposition. For pest management, he has replaced chemical toxins with natural plant extracts and traditional preparations like dashparni ark and neemastra, which effectively reduce pest incidence without harming the beneficial insect populations or the environment.





Farmer at his Sugarcane field grown with natural farming practices

He prepares jeevamrit and ghanjeevamrit on his farm using a blend of cow dung, cow urine, jaggery, gram flour, and local soil. These bio-inputs are then applied either as sprays or soil amendments to enhance plant health. Additionally, he employs mulching techniques and uses natural plant extracts to reduce pest incidence and further improve soil fertility.

Economic analysis

The economic transition of S. Sukhdev Singh's farm from a low-return wheat–paddy cycle to a diversified Natural Farming (NF) system demonstrates strong financial resilience and profitability. The three-year economic analysis of this 5 acre natural farming model shows a steadily improving farm economy driven primarily by sugarcane processed into jaggery on 3 acre, which consistently records an exceptionally high B:C ratio increasing from 10.81 in 2022–23 to 11.14 in 2024–25 (Table 1). The total gross returns of the farm increased from ₹18.58 lakh in 2022–23 to ₹20.79 lakh by 2024–25.

Although the total cost of cultivation increased slightly from ₹2.35 lakh to ₹2.52 lakh, the system remains highly efficient with the overall farm B:C ratio improving from 7.92 to 8.26 over the three-year period. High-value crops such as turmeric and vegetables further strengthen farm profitability, while additional income is generated through desi basmati rice and millet processing into flour. Due to value addition in jaggery through the preparation of different varieties, the product fetches a premium market price ranging from ₹140 to ₹240 per kg. Ultimately, the farm generates a substantial net income of ₹18.27 lakh annually (18.62 lakh excluding family labour), reflecting the strong financial viability of the system. This economic success is driven by three main factors: the drastic reduction in chemical input costs, the use of on-farm bio-inputs, and the high premiums achieved through direct marketing and value addition.

Influence and impact on farmers

Before adopting natural farming, the farmer faced several challenges. The high cost of chemical inputs burdened his farm's profitability, while years of continuous chemical use had significantly degraded the soil quality and reduced its fertility. Water scarcity during long dry spells further worsened the situation, making it difficult to sustain crop growth and yields. Additionally, the lack of access to quality seeds limited diversification and hindered the potential for improving farm performance.

His successful transition to NF and his involvement in processing activities have made him a role model for neighboring farmers. Many have visited his farm to learn about practices like mulching, jeevamrit





Table 1. Economics of crops and enterprises under natural farming system

Crop Name	Sugarcane (Jaggery)	Turmeric powder	Desi basmati rice	Millet powder (Bajra/Jowar)	Vegetables (Cucurbits)	Total
2022-23						
Area (acre)	3.0	0.5	0.5	0.5	0.5	--
Production (q)	73.5	11.4	5.3	7.1	44.0	141.3
Total labour (₹)	65,850	42,400	3,983	3,243	10,650	1,26,126
Hired labour (₹)	42,631	36,464	3,425	2,789	8,540	93,849
Family labour (₹)	23,219	5,936	558	454	2,110	32,277
Cost of production (₹)	1,34,620	72,708	7,569	5,207	14,800	2,34,904
Gross returns (₹)	14,55,300	2,96,400	20,405	24,006	64,240	18,60,351
Net income (₹)	13,20,680	2,23,692	12,836	18,799	49,440	16,25,447
Net income (w/o FL) (₹)	13,43,899	2,29,628	13,394	19,253	51,550	16,57,724
B:C ratio	10.81	4.08	2.70	4.61	4.34	7.92
2023-24						
Area (acre)	3.0	0.5	0.5	0.5	0.5	--
Production (q)	74.8	12.0	5.4	7.5	45.6	145.3
Total labour (₹)	69,320	44,630	4,192	3,414	11,230	1,32,786
Hired labour (₹)	45,200	38,382	3,605	2,936	8,870	98,993
Family labour (₹)	24,120	6,248	587	478	2,360	33,793
Cost of production (₹)	1,39,660	74,640	7,725	5,660	16,250	2,43,935
Gross returns (₹)	15,10,960	3,18,000	21,926	25,875	70,224	19,46,985
Net income (₹)	13,71,300	2,43,360	14,201	20,215	53,974	17,03,050
Net income (w/o FL) (₹)	13,95,420	2,49,608	14,788	20,693	56,334	17,36,843
B:C ratio	10.82	4.26	2.84	4.57	4.32	7.98
2024-25						
Area (acre)	3.0	0.5	0.5	0.5	0.5	--
Production (q)	77.5	12.6	5.8	7.9	46.0	149.8
Total labour (₹)	72,670	46,862	4,402	3,585	11,670	1,39,189
Hired labour (₹)	48,140	40,301	3,786	3,083	9,160	1,04,470
Family labour (₹)	24,530	6,561	616	502	2,510	34,719
Cost of production (₹)	1,44,660	75,572	7,981	5,813	17,650	2,51,676
Gross returns (₹)	16,12,000	3,42,000	23,490	28,598	72,680	20,78,768
Net income (₹)	14,67,340	2,66,428	15,509	22,785	55,030	18,27,092
Net income (w/o FL) (₹)	14,91,870	2,72,989	16,125	23,287	57,540	18,61,811
B:C ratio	11.14	4.53	2.94	4.92	4.12	8.26





Processing and value addition of sugarcane and turmeric

preparation, and the production of value-added products such as pesticide- and chemical-free gur. Young farmers and entrepreneurs can draw inspiration from his resilience, his diversification into multiple enterprises, his direct marketing approach, and his willingness to continually adopt new techniques. His example demonstrates that farming, when combined with self-reliance and innovation, can be not only a means of livelihood but also a source of social respect and inspiration.

His success has made him a model for neighboring farmers. Many have visited his farm to learn about mulching, Jeevamrit preparation, and value-added products like pesticide/chemical-free gur. The impact has been evident in improved soil fertility, increased farm income, and the production of healthier, pesticide-free crops. Continued training, exposure visits by KVK, support for collective marketing and branding, and assistance with certification and technical backstopping for bio-inputs and pest management will further help in promoting NF in the region.

**Contributors: Astha and Bikramjit Singh, Krishi Vigyan Kendra, Amritsar;
Sarang Monga, ICAR-ATARI Ludhiana**



Name : Mr. Narinder Singh
Address : Vill. Ajjowal, Hoshiarpur- 146 001 (PB)
Qualification : M. Tech (IT)
Contact No. : 9417343120
Landholding : 10 acre



Introduction

In the small village of Ajjowal in Hoshiarpur district, Punjab, lives Mr. Narinder Singh, whose story has become an inspiration for farmers across the state. His journey is remarkable not only because of the crops he grows on his farm, but also because of the way he chooses to grow them. Narinder is not a farmer by compulsion; he is a farmer by choice. He completed a Master's degree in Information Technology, yet he chose the soil of his ancestral village and started farming. According to him, farming is more than a profession; it is a responsibility toward nature, his family and future generations. He believes that the land, water and air we use today are not truly ours, as they are borrowed from our children. If we pollute them now, we are stealing from future generations. This belief became the foundation of his decision to farm without chemicals and to dedicate his life to Natural Farming (NF). Mr. Narinder cultivates 10 acre of land, of which 6 acre belongs to his family and 4 acre is taken on lease. In 2009, he made a bold shift and stopped using chemical fertilizers and pesticides, and embraced organic methods. In the beginning, the crop yields were uncertain, and people around him doubted whether farming without chemicals could ever be profitable. But Narinder held his ground and, instead of depending on chemical inputs from shops, he began to make them on his own. He started preparing and using bio-inputs like beejamrit, jeevamrit and agniastra. These natural formulations not only enriched his soil but also reduced his expenses. These simple yet scientific approaches gave him confidence to protect his vegetables and fruits while keeping the environment safe. He used farmyard manure, crop residues and green manure to feed the soil. He set up a vermicompost unit to produce rich organic compost. He experimented with natural sprays made from neem, cow urine, buttermilk, chilli and garlic to control pests and diseases. Slowly, the soil began to respond, the crop stand became healthier and the yields increased year after year. He named his farm Golden Natural Farm, as the name reflects his belief that farming done with honesty, care and respect for nature is as precious as gold. Today, farmers and consumers recognize this name as a symbol of trust and quality.

Uniqueness of work related to NF

A walk through Mr. Narinder's farm shows how carefully and uniquely he uses every piece of land. Sugarcane fields stand in one corner, while maize, mustard, wheat and turmeric grow in another. Gladiolus flowers bloom in neat rows and the net house shelters shiny green capsicum. Vegetables and pulses such as moong, mash, lentil, gram, potato, onion and garlic occupy one section. Crop residues feed the compost pits, while legume crops



Mulching of crop residue for weed management and soil moisture conservation





Mr. Narinder Singh at farm displaying diversified natural farm

serve as green manure which improves the soil and healthy soil gives strong crops. His vermicompost unit actively turns waste into wealth. The diversified farming, along with intercropping, minimizes risks. The processing of many crops and direct marketing lead another layer of uniqueness and profits. This diversity makes Golden Natural Farm resilient and reliable.

Systemic Capacity Building

Narinder has been on the path for systemic capacity building, even since the start of Golden Natural Farm. He firmly believes that a farmer must always keep learning and innovating. Farming is not static, as crops, pests, markets and climates keep changing. To stay ahead, he regularly attends training programmes, fairs and workshops. He attended a training programme at the Indian Institute of Sugarcane Research in Lucknow in 2013 and learnt about advanced methods of processing jaggery, maintaining hygiene and storing the products. Narinder is closely associated with Krishi Vigyan Kendra (KVK), Hoshiarpur and Punjab Agricultural University (PAU), Ludhiana. He regularly participates in their events, keeps in touch with experts and updates himself with the latest knowledge. He is also a member of PAU's Organic Farming Club and Kisan Club, where he interacts with other progressive farmers. In his village, Narinder leads a Self Help Group and is an active member of the Innovative Farmers' Association and Natural Farmers' Association, Hoshiarpur. This association has about 80 active natural farming practitioners, and Narinder has served as its president. These groups conduct regular meetings through which farmers share their experiences, learn from others and build networks for collective marketing and knowledge sharing. This association also runs a shop, "ATMA Kisan Hut," in Hoshiarpur city, from where consumers can directly purchase natural farming produce.

Major practices under NF

Mr. Narinder has never been afraid to try new things. He knows that farming, especially NF in the beginning, is risky and depending on just one or two crops can put a family's future in danger, so he diversified his farm. He grows wheat, sugarcane, mustard, desi maize and turmeric along with vegetable crops such as capsicum, chilli, cucurbits, potato, onion and garlic. To maintain soil fertility, he cultivates pulses such as moong, mash, lentil and gram and also grows legume crops especially for green manuring. He grows sugarcane on 4 acre, but instead of selling the raw cane to the mills, he processes it into jaggery and shakkar. Currently, he makes flavoured jaggery by mixing fennel, sesame, ajwain or peanuts. These products quickly became popular among buyers, as they are both tasty and healthy. Similarly, he processes other crops, and products such as wheat flour, besan, turmeric powder and mustard oil are sold to





Mr. Narinder Singh at farm displaying diversified farm and sugarcane processing

consumers to earn higher profits. Narinder also grows turmeric and gladiolus flowers. He has set up a net house on 0.25 acre where he cultivates off-season capsicum to earn higher returns. As part of NF practices, Mr. Narinder follows intercropping, for example growing vegetables along with sugarcane, and regularly uses bio inputs such as beejamrit and jeevamrit. He maintains a mixed fruit orchard of peach, pear, lemon, orange, malta, kinnow and guava plants on 3 kanal area that provides supplementary earnings. Mr. Narinder has developed expertise in crop residue management and converts field and household waste into compost, which in turn feeds the soil again. In addition, the waste products from these units act as sources for preparing various bio-stimulants and insecticides.

Economic analysis

Narinder Singh's path to success has not been smooth. When he first switched to farming without chemicals in 2009, people laughed at him and said NF could never be profitable. His family worried that yields were falling and money was getting tighter. Markets for organic and natural farming products were small and most buyers were unwilling to pay higher prices. NF also required more labour, and manure preparation, natural product sprays and monitoring fields demanded extra time and effort. However, Mr. Narinder refused to give up and came up with new enterprises, experimented with value addition and focused on direct sales. He kept careful records of costs and profits, learning from both successes and failures. Under the natural farming system coupled with direct marketing, the farm generated a total gross income of ₹13.08 lakh with a net income of ₹8.25 lakh and an overall B:C ratio of 2.71, clearly indicating strong economic viability. Among all enterprises, sugarcane (processed into jaggery and shakkar) contributed the highest share to net income with ₹3.86 lakh, accounting for about 46.8 percent of the total net returns, followed by gladiolus (₹85,350), turmeric (₹83,003) and vegetables (₹74,661). Fruit crops recorded the highest profitability with a B:C ratio of 3.56, followed by gladiolus (3.15) and vegetables (2.78).

Influence and impact on farmers

Narinder's journey offers valuable lessons for young farmers and aspiring entrepreneurs. He demonstrates that farming with nature can be both productive and profitable, proving that chemicals are not the only path to success. His diversified approach, growing multiple crops, adding value and direct marketing helps farmers to earn more while providing consumers with healthier produce at fair prices. He promotes continuous learning and collective growth by working with farmer groups, sharing knowledge and participating in trainings, fairs and meetings. Mr. Narinder Singh's journey from an IT graduate to a





Table 1: Economic performance of natural farming system coupled with direct marketing

Particulars	Area (acre)	Production (q/farm) / spikes (No.)	Cost of cultivation # (₹/farm)	Gross income (₹/farm)	Net income (₹/farm)	B:C ratio
Wheat	2.00	20.36	28,040	70,826	42,786	2.53
Sugarcane*	4.00	562.88	2,34,755	6,20,840	3,86,085	2.64
Turmeric	1.00	58.00	49,867	1,32,870	83,003	2.66
Mustard	1.00	4.00	6,349	15,357	9,008	2.42
Desi Maize	3.00	22.05	34,110	92,689	58,579	2.72
Vegetables**	1.00	53.24	41,958	1,16,619	74,661	2.78
Gladiolus	1.00	50,000	39,650	1,25,000	85,350	3.15
Fruits***	0.38	20.00	16,530	58,900	42,370	3.56
Pulses****	2.00	8.46	32,480	75,840	43,360	2.33
Total			4,83,739	13,08,941	8,25,202	2.71

Including family labour
 * Sugarcane is processed into jaggery and shakkar
 ** Vegetables include potato, onion, garlic, capsicum, chilli and cucurbits
 *** Fruits include peach, pear, lemon, orange, malta, kinnow and guava
 **** Pulses include moong, mash, lentil and gram and their processed products such as besan

successful natural farmer is a story of courage, innovation and commitment. Through his example, Mr. Narinder shows that a farmer with vision and determination can rise above challenges and turn even a small village farm into a model for others. Mr. Narinder's success in NF and direct marketing has been recognized at several platforms. He has won awards from various organizations such as Punjab Agricultural University, Ludhiana; District Administration, Hoshiarpur; Punjab Pollution Control Board; Punjab Jagrati Manch and Sarbat Da Bhala Charitable Trust, along with many other local organizations. Among the major recognitions are the CRI Pump Award for Organic Farming at PAU's Kisan Mela in 2017 and an honour presented by Union Ministers during a Kisan Sammelan in Hoshiarpur in 2018. He has also received several recognitions from institutes such as PAU's Regional Research Station (RRS), Ballawal Saunkhri, and Mohinder Singh Randhawa Fruit Research Station, Gangian, giving further visibility to his work.



Mr. Narinder Singh receiving award during
Kisan Mela, 2017 at PAU, Ludhiana

Contributors: Prabhjot Kaur, Karmvir Singh Garcha and Maninder Singh Bons, Krishi Vigyan Kendra, Hoshiarpur; Kriti Gupta, ICAR ATARI, Ludhiana



Income Stabilization through Multiple Enterprises and Value Addition in Natural Farming System

Name : S. Jagdeep Singh Shergill
Address : Vill. Sohali, PO- Allapur, Teh. Kharar, Mohali-140 103 (PB)
Qualification : 10th
Contact No. : 9872374351
Landholding : 7 acre



Introduction

S. Jagdeep Singh Shergill is a progressive farmer from village Sohali in District S.A.S. Nagar (Mohali). He has been practicing Organic Farming (OF) since 2009 and later transitioned to Natural Farming (NF) in 2021. Aged 55 years and matriculate by qualification, he has had a keen interest in agriculture and allied sectors since childhood. He initially practiced chemical-based farming; however, over time, he became increasingly aware of the adverse effects of agrochemicals on human health, livestock, and soil fertility. This realization motivated him to shift first to organic farming and subsequently to NF, with the aim of promoting sustainable and eco-friendly agricultural practices.

Uniqueness of work related to NF

The uniqueness of S. Jagdeep Singh Shergill's NF model lies in its effective integration of multiple enterprises with complete on-farm bio-input recycling. Unlike conventional NF adoption limited to crop production, he has successfully linked field crops, horticulture and dairy, into a closed-loop system, ensuring minimal external inputs.

Crop residues such as paddy straw are judiciously utilized both as mulch for moisture conservation and as livestock feed, enhancing resource-use efficiency. His on-farm preparation of NF formulations, combined with livestock-based nutrient recycling, has significantly reduced cultivation costs while maintaining soil health and productivity. Value addition through jaggery preparation from sugarcane and direct marketing further enhances farm profitability.

The adoption of solar-powered irrigation and micro-irrigation systems adds another dimension of sustainability. This integrated, low-cost, and eco-friendly NF model serves as a replicable example for Punjab farmers seeking sustainable income enhancement.



Cow reared by the farmer



S. Jagdeep Singh motivating farmers to adopt NF





Systematic Capacity Building

Systemic capacity building played a crucial role in strengthening S. Jagdeep Singh Shergill's NF practices through sustained technical backstopping and institutional support. KVK S.A.S. Nagar (Mohali) facilitated his capacity enhancement by providing need-based training, hands-on demonstrations, and continuous advisory services on key NF principles and formulations. Regular field visits and farmer–scientist interactions helped refine his skills in bio-input preparation, pest management, and nutrient recycling. Exposure through participation in Kisan Melas, field days, and the Viksit Krishi Sankalp Abhiyan broadened his understanding of integrated NF systems and market-oriented production. Input support, timely guidance, and recognition of his efforts further strengthened his confidence and leadership role. This systematic and continuous capacity-building approach enabled him to adopt NF as a resilient, knowledge-driven, and replicable farming system, contributing to its wider dissemination in the region.

Major practices under NF

S. Jagdeep Singh Shergill has adopted natural farming system that enhances productivity, sustainability, and input self-sufficiency. He cultivates sugarcane and paddy as field crops, along with horticultural crops such as garlic, onion, and turmeric. The integration of dairy and poultry enterprises supports efficient nutrient recycling and reduces dependence on external inputs. Crop residues, particularly paddy straw, are effectively utilized as mulch for moisture and weed management and as feed for livestock, improving resource-use efficiency. He prepares and applies vermicompost to maintain soil health and ecological balance while also meeting on-farm nutrient requirements. The adoption of sprinkler and drip irrigation systems across 2 acre promotes water conservation, supported by electricity-operated and solar-powered tubewells. As a dedicated NF practitioner, he strictly avoids chemical fertilizers, pesticides, and other synthetic inputs, demonstrating a sustainable and replicable NF model.

Economic analysis

The natural farming system adopted by the farmer ensured stable and diversified income throughout the year. Crop production, particularly sugarcane processed into jaggery and high-value horticultural crops such as garlic, turmeric, and onion, contributed substantially to overall farm profitability by reducing dependence on a single enterprise. In addition, livestock components, especially dairy and poultry, played a crucial role in providing regular cash flow and strengthening income stability. Overall, the integration of field crops, horticulture, and livestock under natural farming resulted in efficient resource use, reduced

Table 1: Enterprise-wise economic performance of natural farming systems

Attributes	Crop	Area (acre)	Cost# (₹)	Gross returns (₹)	Net returns(₹)
Field crops	Sugarcane (jaggery)	3	1,10,420	3,75,150	2,64,730
Horticulture crops	Garlic	0.40	35,415	1,40,220	1,04,805
	Onion	0.40	32,360	60,850	28,490
	Turmeric (powder)	0.40	25,430	1,20,270	94,840
Livestock	Milk Processing (burfi)		2,20,250	3,36,035	1,15,785
	Poultry		95,515	1,87,260	91,745
Total			5,49,390	12,19,785	7,00,395
# Cost of cultivation or expenditure incurred in that enterprise					





Preparation of jeevamrit by the farmer



Farmers' diversified crop field

cultivation costs, and improved economic resilience, with the system generating a net return of about ₹7 lakh (Table 1).

Influence and impact on farmers

Mr. Jagdeep Singh actively shares his experiences with fellow farmers from his own and nearby villages through awareness and training programmes organized by KVK Mohali. By demonstrating the practical and economic benefits of NF on his own farm, he consistently motivates other farmers to adopt this approach. His success in enhancing farm income and maintaining soil health has established him as a role model for NF in the region. Farmers visiting his farm gain first-hand exposure to NF practices and develop confidence that the system can provide good economic returns per unit area while producing chemical-free and healthy food. He also participated in Kisan Melas organized by KVK Mohali, GADVASU Ludhiana, and the Department of Agriculture, where he displayed NF-based products and further encouraged farmers to shift towards sustainable farming systems.



Exposure visit of KVKs Scientists to the S. Jagdeep Singh farm grown under Natural Farming

**Contributors: Munish Sharma & B.S. Khadda, Krishi Vigyan Kendra, Mohali;
Kriti Gupta, ICAR-ATARI Ludhiana**



Natural Farming & Value Addition in Apple Orchards: A Case of Women-Led Agricultural Innovation

Name : Mrs. Sushma Chauhan
Address : Vill. Palai, PO-Shillaru, Theog-171 217 (HP)
Qualification : Graduate
Contact No. : 8580992527
Landholding : 7 acre



Introduction

Mrs. Sushma Chauhan, from the apple-rich belt of Shilaroo, Theog, Shimla, manages a family farm of nearly 7 acre, primarily under apple orchards. She initially practiced chemical-based farming, which led to high input costs, soil degradation, and declining fruit quality. Observing that cultivating just 1 acre required ₹60,000 in inputs with minimal returns, she decided to adopt Natural Farming (NF). After getting a six-day training at Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, and began NF on a 1 acre apple orchard.

By preparing jeevamrit and ghanjeevamrit using her indigenous cow and applying bio-formulations from local flora, she reduced input costs from ₹60,000 to ₹40,000. Intercropping further increased her income, and her gross returns rose to nearly ₹3 lakh in the first season. Encouraged by these results, she gradually expanded NF to 2 acre, while the remaining land continued under chemical-based farming. Beyond the cultivation of apples and intercrops, Sushma ventured into value addition, producing items such as koda soup, koda sweets, and apple barfi. With the support of her family, she established an on-farm resource center for bio-input preparation and demonstrations, making her farm a learning hub for fellow farmers. Her dedication earned her recognition as a Farmer Master Trainer (FMT) and Krishi Sakhi, enabling her to guide and motivate other farmers, especially women to adopt sustainable, low-cost, and climate-resilient NF practices.

Uniqueness of work related to NF

The uniqueness of Mrs. Sushma Chauhan's work lies in pioneering women-led Natural Farming in apple orchards, a system traditionally dominated by chemical-based monocropping in the apple belt of Himachal Pradesh. As the first woman in her village to adopt NF in orchards, she successfully demonstrated that



Mrs. Sushma Chauhan in her natural farming apple orchard at Shilaroo, Theog, Shimla





Mrs. Sushma Chauhan motivating other farmers to adopt natural farming practices

apples can be grown profitably with reduced inputs, improved soil health, and better fruit quality. Despite initial skepticism, added workload of bio-input preparation, and the challenge of balancing household responsibilities, she developed efficient on-farm systems for preparing jeevamrit and ghanjeevamrit and involved family members in orchard operations. Her integrated NF model combines apple orchards with intercrops, traditional millets, and value addition, creating multiple income streams and reducing risk. Establishing an on-farm resource and demonstration center further distinguishes her work, positioning her farm as a hub for learning, women empowerment, and climate-resilient NF entrepreneurship.

Systemic Capacity Building

Sushma's journey was strengthened through structured training and mentoring. She gained her first exposure during a six-day programme at Nauni, where she learned to prepare bio-inputs and adopt eco-friendly practices such as mulching, intercropping, and livestock integration. Follow-up support from KVK Rohru through demonstrations and exposure visits helped refine her skills. She further enhanced her expertise through advanced training at CSKHPKV Palampur and formally assumed responsibilities as a FMT.

As a Krishi Sakhi, she actively engages and motivates rural women to take part in programs under the National Rural Livelihood Mission (NRLM), helping them to learn and adopt NF practice, and uses her 2 acre NF plots as live demonstrations. Her leadership fosters a community-driven ecosystem of knowledge sharing and promotes women-led entrepreneurship in sustainable agriculture

Major practices under NF

Her NF enterprise spans 2 acre, while the remaining family land continues under chemical-based practices. Apple serves as the core crop, supplemented by cherries, plums, maize, and rajmash. She has diversified with peas, cabbage, garlic, turmeric, and climate-resilient millets such as bathua, kangni, and koda. Integration of livestock ensures a closed nutrient cycle and eliminates her dependence on chemicals.

Her enterprise is further strengthened through value addition. Products like apple barfi, koda sweets, and koda soup fetch higher returns at local fairs and exhibitions. Through her on-farm resource center, she sustains her own farming system while training and inspiring fellow farmers.

Economic analysis

Table 1 highlights strong economic advantage of adopting natural farming. Natural farming on 2 acre generated total gross returns of ₹8.65 lakh with a low production cost of ₹1.22 lakh, resulting in net returns of ₹7.43 lakh excluding family labour and ₹6.28 lakh even after accounting for family labour.





Table 1: Annual economics of natural farming-based crop production (₹/year)

Component	Returns (₹/ year)
Gross returns from horticultural crops (apple, cherry, plum)	7,10,250
Gross returns from agricultural crops (pea, rajmash, millets, turmeric, garlic, cabbage) and value-added products	1,54,860
Total Gross returns	8,65,110
Expenditure on natural inputs (bio-formulations, pits, etc.)	21,140
Expenditure on hired labour	1,01,220
Total expenditure	1,22,360
Returns (excluding family labour)	7,42,750
Estimated family labour	1,15,000
Net returns	6,27,750

Influence and impact on farmers

Mrs. Sushma Chauhan has emerged as a role model for women orchardists and farmers in the apple belt of Himachal Pradesh. With continuous support from KVK Rohru, she has grown from a learner to a Farmer Master Trainer (FMT) and Krishi Sakhi, actively promoting NF at the grassroots level. Her farm has become a demonstration hub where farmers witness practical results of use of bio-input, intercropping, and orchard diversification. More than 250 farmers, especially women, have visited her farm to learn NF practices, and nearly 20 have started adopting them under her guidance. She has also participated in KVK exhibitions, fairs, and farmer trainings, where she showcases her value-added products such as koda soup, koda sweets, and apple barfi, creating consumer awareness about nutritious and chemical-free foods. By leading from the front, she has strengthened farmer-to-farmer extension and inspired rural women to see NF not only as an eco-friendly practice but also as a viable livelihood option.



Mrs. Sushma Chauhan awarded by the minister of HP for promoting NF in state

Contributors: Shikha Bhagta, Usha Sharma and Ajay Bragta, Krishi Vigyan Kendra, Shimla



Name : S. Ranjeet Singh
Address : Vill. Kanshipur, PO-Nihalgarh, Sirmour-173 025 (HP)
Qualification : 10th
Contact No. : 9816440808
Landholding : 1.8 acre



Introduction

S. Ranjeet Singh, son of S. Pritam Singh, from village Kanshipur, Block Paonta Sahib, District Sirmour, is a progressive farmer who successfully transitioned to Natural Farming (NF). For years, he practiced mixed farming using chemical fertilizers and pesticides but realized that high input costs were reducing profits and harming soil health. His interest in sustainable farming grew after attending an awareness programme organized by Krishi Vigyan Kendra (KVK), Sirmour, followed by a six-day training in 2020 conducted by Padma Shri Subhash Palekar.

Encouraged by the training, he began experimenting with NF on a small part of his land, preparing bio-inputs using cow dung and urine sourced from nearby farmers. Gradually, his efforts proved successful, and he expanded NF to his entire 1.8 acre holding. Today, he and his wife cultivate diverse crops using on-farm prepared inputs, achieving low-cost, eco-friendly, and sustainable production. The couple also motivates and guides other farmers in their village and surrounding areas to adopt NF practices.

Uniqueness of work related to NF

The uniqueness of S. Ranjeet Singh's work lies in his ability to transform challenges into opportunities and set a practical benchmark for NF. Despite strong initial resistance from his family, he began NF trials on a small piece of land and successfully demonstrated its economic and ecological benefits. Unlike many farmers who limit NF to a few crops, he diversified his entire 1.8 acre farm with fruits, vegetables, spices, pulses, cereals, and sugarcane, proving that NF is adaptable across crops and production systems. He ensures complete self-reliance by preparing all major NF inputs such as beejamrit, jeevamrit, and ghanjeevamrit at home using dung and urine from a desi cow and locally available materials, which significantly reduces input costs while improving soil fertility and crop health.



Interaction of farmer with Community Resource Persons (CRPs)





A key distinguishing feature of his work is the integration of production with value addition and direct marketing. Fresh produce from the farm is supplemented with a wide range of value-added products prepared by his wife, including papaya jam; pickles of mango, lemon, garlic, bamboo, ginger, chilli, and aloe vera; jaggery and gur from sugarcane; vinegar from guava and sugarcane; and triphala prepared from aonla, harad, and bahera. Post-harvest processing not only enhances the shelf life and market value of perishable produce but also creates a niche for chemical-free products. For marketing, the family operates a dedicated sales outlet under NLRM at Gurudwara Shri Paonta Sahib, enabling direct sale to consumers. This direct marketing approach ensures an assured market, builds strong consumer trust, and provides better price realization.

Systematic Capacity Building

KVK Sirmour promotes NF through a structured capacity-building approach that progresses from awareness generation to skill development and large-scale adoption. Regular trainings, on-farm demonstrations, and exposure visits to successful NF units are organized to strengthen farmers' technical knowledge and build confidence through practical learning.

The KVK provides continuous handholding support on the preparation and application of bio-inputs and promotes key NF practices such as mulching, intercropping, whapasa, and integration of livestock to ensure a sustainable and low-cost input supply system. Capacity building is further strengthened through guidance on value addition, processing, branding, and market linkages with sales outlets and niche markets to enhance farm income. By encouraging farmer-to-farmer extension, participatory learning, and convergence with line departments, KVK acts as a catalyst in scaling up NF across villages and in developing eco-friendly, resilient, and economically viable farming systems.

Major practices under NF

On his 1.8-acre farm, S. Ranjeet Singh cultivates a diverse range of crops under NF. In the rabi season, he grows wheat, gram, peas, and mustard, while in kharif, he cultivates paddy, maize, green gram, and black gram, along with vegetables such as chilli, tomato, cucumber, okra, pea, turmeric, ginger, sugarcane, garlic, and elephant foot yam, all without chemical inputs. He also maintains a small orchard of lemon,



S. Ranjeet Singh at his field grown under natural farming practices





papaya, guava, mango, drumstick, sapota, and banana, where bio-formulations like jeevamrit and neemastar are applied to enhance soil fertility, manage pests, and maintain crop vigor.

Intercropping pulses, spices, and vegetables with cereals and horticultural crops such as wheat with chickpea and pea, and vegetables within orchards, optimizes land use, improves soil health, and generates additional income. He adopts mulching with crop residues, green biomass, and organic matter to conserve soil moisture, regulate temperature, suppress weeds, and support microbial activity, thereby reducing irrigation requirements. The principle of whapasa is followed to maintain soil aeration and optimal moisture, enhancing root growth and microbial activity. Integration of local and Red Sindhi cows provides dung and urine for preparing bio-inputs and pest-control formulations, making the farm self-reliant, nutrient-efficient, and sustainable.

Economic analysis

Table 1 summarizes the economic performance of different farm enterprises managed under the integrated NF system, with and without the inclusion of family labour. Vegetables generated gross returns of about ₹2.10 lakh against an expenditure of ₹0.56 lakh, while family labour accounted for ₹0.60 lakh, resulting in net returns of ₹1.55 lakh without and ₹0.95 lakh with family labour. Field crops contributed gross returns of nearly ₹0.97 lakh with comparatively lower margins, yielding net returns of ₹0.70 lakh excluding family labour, which declined to ₹0.08 lakh after accounting for family labour costs.

Fruit crops recorded gross returns of about ₹0.68 lakh with modest expenditure and family labour involvement, resulting in net returns of ₹0.56 lakh without and ₹0.28 lakh with family labour. Value-added products such as pickle, squash, and jaggery emerged as the most remunerative component, generating gross returns of about ₹3.80 lakh with a total cost of ₹0.73 lakh, and net returns of ₹3.40 lakh excluding and ₹3.07 lakh including family labour. Overall, the integrated system realized gross returns of about ₹7.56 lakh

Table 1: Enterprise-wise economic analysis under the integrated NF system

Crops	Gross returns (₹)	Expenditure # (₹)	Family Labour ## (₹)	Total cost (₹)	Net returns (₹)	
					Without family labour	With family labour
Vegetables*	2,10,450	55,850	60,000	1,15,850	1,54,600	94,600
Crops**	96,850	26,450	62,500	88,950	70,400	7,900
Fruits***	68,120	12,400	27,500	39,900	55,720	28,220
Value added products****	3,80,150	40,630	32,500	73,130	3,39,520	3,07,020
Total	7,55,570	1,35,330	1,82,500	3,17,830	6,20,240	4,37,740

* Vegetables include pea, spinach, coriander, fenugreek, cauliflower, cabbage, brinjal, okra, ginger, and turmeric

** Crops include maize, paddy, urdbean, mustard, gram, wheat, lentil, chickpea, and sugarcane

*** Fruits include citrus, papaya, banana, and anola

**** Pickle, squash, jaggary

Expenditure including inputs, operations & hired labour

Family labour=365 man-days/year@500/day





with total costs of ₹3.18 lakh, yielding net returns of ₹6.20 lakh without and ₹4.38 lakh with family labour, highlighting the strong economic advantage of diversification and value addition under NF.

Influence and impact on farmers

The successful integration of NF with value addition and marketing has inspired many farmers in the region. Products such as pickles, jams, squashes, jaggery, gur, and natural vinegars, sold at the NLRM sales centre in Paonta Sahib, have attracted consumer attention and built confidence among fellow farmers. Witnessing how locally grown produce can be processed and marketed for higher profits, around 150 farmers are now associated with this initiative. With support from ATMA, the approach has spread to 12 nearby villages. This model demonstrates that linking production, value addition, and direct marketing can make NF both eco-friendly and a sustainable livelihood option.

The impact of adopting NF is evident at both household and community levels. Cultivation costs have decreased, while soil fertility, crop diversity, and overall farm returns have improved. Value-added products enhance income and create assured market linkages, providing consumers with safe and nutritious food. Farmers are realizing that NF promotes sustainability, profitability, and environmental conservation.



Training on natural farming for Community Resource Persons

Contributors: Shiwali Dhiman and Pankaj Mittal, Krishi Vigyan Kendra, Sirmour



Creating Platform for Long Term Economic Stability through Natural Farming and Value Addition

Name : Mr. Ramesh Minan

Address : Vill. Sainj, PO-Bhatwari, Uttarkashi-249 135 (UK)

Qualification : Graduation (B. Com.)

Contact No. : 6398672167

Landholding : 1.75 acre



Introduction

Mr. Ramesh Minan, Village Sainj, Block Bhatwari, District Uttarkashi, Uttarakhand is a 45 years old farmer who exemplified how determination and innovation can transform the lives of farmers. He is a B.Com graduate and initially worked as a construction supervisor. During the COVID-19 lockdown, he chose to return to his roots and focus on agriculture. He comes from a family with limited resources, he turned challenges into opportunities by adopting Natural Farming (NF) as a sustainable livelihood. With support of his family, he cultivates 0.50 acre of his own land and leases an additional 1.25 acre. He practices a diverse farming system that includes crops, horticulture, dairy, and poultry.

He was inspired by Padma Shri Dr. Subhash Palekar's philosophy and he completely stopped using chemicals and adopted eco-friendly farming practices. His journey gained momentum through training and technical guidance from Krishi Vigyan Kendra Uttarkashi where he learned to prepare bio-inputs, enhance cultivation and add value to his produce. He is recognized as a Farmer Master Trainer, and has made his farm a model for learning and inspiration for other farmers in Uttarkashi.

Uniqueness of work related to NF

The uniqueness of his work lies in his ability to revive barren ancestral land and transform it into a self-sustaining natural farm. He was inspired by Padma Shri Dr. Subhash Palekar, and completely abandoned chemical inputs, viewing them as "poison." Instead, he relies on farm-based bio-inputs such as jeevamrit, beejamrit, ghanjeevamrit, neemastra, and agniastra, all made from cow dung, urine, and locally available resources. Beyond his farm, he is a part of the Hill Farmer Agri-Horti and Entrepreneurs Association (FPO) and leads a Farmer School on NF, where he trains and inspires others to adopt eco-friendly practices.



Cows reared by the farmer





Through this effort, he is not only promoting healthier food but also nurturing a farming culture that respects nature and sustains the land for years to come. He has developed an innovative marketing strategy that sets him apart from many traditional farmers in the region. He sells his produce in local markets but has also expanded his reach by using digital platforms like Facebook and WhatsApp to take direct orders from consumers. In this way he ensures fair prices for his produce and reduces dependence on middlemen. He sends his high-quality walnuts to distant states such as Delhi, Haryana, Rajasthan, Gujarat, and Maharashtra, where they fetch premium prices of ₹400–500 per kg. He sells his turmeric in three different forms, fresh at ₹60 per kg, dried at ₹120 per kg, and powdered at ₹200 per kg, catering to different consumer needs and increasing profitability. He also sells vegetables, dairy products, and seasonal produce through local and digital networks, ensuring a steady income. Through digital marketing and value addition, he has turned his farm into a model of modern agribusiness.

Systematic Capacity Building

He is recognized as a Farmer Master Trainer by KVK Uttarkashi and plays a key role in strengthening local capacities for sustainable agriculture. He runs a Farmer School on Natural Farming, where he facilitates knowledge sharing on eco-friendly practices while building farmers' confidence to transition towards chemical-free farming. His farm has been developed into a demonstration and learning hub that regularly hosts rural youth, women, and fellow farmers for hands-on training in integrated farming systems. Through exposure visits and practical sessions, he promotes the adoption of innovative and location-specific practices suited to hill farming. He also contributes to women's empowerment by providing training in food processing and value addition, including preparation of pickles, jams, squashes, and turmeric powder, thereby enhancing household income and supporting pathways towards self-reliance and entrepreneurship. By institutionalizing learning and peer-to-peer exchange, he has strengthened community-level agricultural systems and inspired a new generation to view farming as a viable, dignified, and sustainable livelihood.

Major practices under NF

Mr. Ramesh successfully manages an Integrated Farming System on his own 0.50 acre of land along with an additional 1.25 acre of leased land. He has adopted a diversified farming system that integrates fruits, field crops, vegetables, dairy, and poultry to ensure food security, generate income, and promote sustainability. Out of his total landholding, about 0.30 acre is devoted to fruit cultivation, where he maintains an orchard with 20–25 walnut trees, 70 apple trees, 10 malta trees, 15 lemon trees, 10 galgal trees, and 5–7 plum trees, contributing to long-term returns. Among field crops, he cultivates paddy (including red rice), tur (pigeon pea), soybean, rajma, mandua, and jhangora (barnyard millet). Among vegetable crops, he grows peas, brinjal, capsicum, cauliflower, turmeric, ginger, chili, and coriander, which provide steady income to



Farmer demonstrating preparation of NF bioformulations to other farmers





Farmer showing his field grown under natural farming

his family. His farming follows the principles of NF, enriching soil and seeds with jeevamrit and beejamrit, using crop residues and leaves as mulch to conserve moisture and control weeds, improving soil aeration for natural moisture use, and integrating dairy animals that supply dung and urine for bio-formulations. For pest control, he applies neemastra, brahmastra, agniastra, and khatti lassi instead of chemical sprays. To complement crop production, he maintains two dairy cows and a pair of bullocks that supply draught power along with dung and urine for preparing NF bio-inputs. He has also recently started poultry farming with 150 chickens, adding a new source of income. This integrated system allows efficient use of land and resources, supports ecological balance, reduces risks, and strengthens the sustainability of his farming model.

Economic analysis

Table 1 highlights the enterprise-wise economics of an NF system with gross returns of ₹6.37 lakh and net

Table 1: Enterprise-wise economic performance of the natural farming system.

Component	Details	Area (acre)	Gross returns (₹)	Cost # (₹)	Net returns (₹)
Fruits	Walnut, malta, lemon, apple, plum, galgal	0.25	2,25,220	71,890	1,53,330
Vegetables	Pea, brinjal, capsicum, cauliflower, chili, etc.	0.2	58,500	20,250	38,250
Cereals & Pulses	Paddy, red rice, rajma, soybean, mandua, jhangora, tur	0.3	72,160	30,600	41,560
Turmeric	Fresh, dried, powder	0.1	36,150	10,800	25,350
Dairy	2 cows, milk & value addition		1,86,975	76,500	1,10,475
Poultry	150 birds		13,500	3,600	9,900
Value addition	Pickle, jam, squash etc.		45,320	16,200	29,120
Total			6,36,975	2,29,950	4,07,025
B:C ratio					2.77
# Cost of cultivation or expenditure on the enterprise/ activity					





returns of ₹4.07 lakh (excluding labour), resulting in a benefit–cost ratio of 2.77. Fruit crops cultivated on 0.25 acre generated gross returns of ₹2.25 lakh with net returns of ₹1.53 lakh, making them the most profitable component. Cereals and pulses grown on 0.30 acre contributed ₹72 thousand as gross returns and ₹41 thousand as net income. Vegetable crops earned ₹58.5 thousand as gross returns and ₹38 thousand as net returns. Processing of various naturally grown food items generated ₹29 thousand net returns. The dairy unit alone added ₹1.10 lakh net income, while poultry contributed nearly ₹10 thousand. Value-added and fresh turmeric generated net returns of ₹25 thousand.

Influence and impact on farmers

The success of Mr. Ramesh Minan has motivated many neighboring farmers to adopt natural farming after witnessing his results. He has reduced dependency on chemicals in the region, encouraged crop diversification, and promoted eco-friendly methods. By openly sharing his journey, he has gained the trust of fellow farmers and is now regarded as a role model for sustainable agriculture in Uttarkashi. He spreads awareness through radio, television, social media, and online platforms like Google Meet and Zoom, and has already trained over 500 farmers on his farm. As an active member of the Hill Farmer Agri-Horti and Entrepreneurs Association (FPO), he promotes collective learning and marketing. He continuously updates his knowledge through trainings at KVK Uttarkashi, GB Pant University, and exposure visits across states. Beyond farming, he supports rural youth and women by training them for value addition of horticultural crops such as jams, squashes, pickles, and turmeric powder, helping them move towards entrepreneurship.



***Felicitation with the Shridev Suman
Award 2025 for promoting NF***



***Farmer receiving an award from former CM and
Union Minister for outstanding work in agriculture***

Contributors: RL Meena, KK Pandey and Koushal Singh, Krishi Vigyan Kendra, Uttarkashi





SECTION 5: LOW BUDGET NATURAL FARMING - AN INTRODUCTION

Indian agriculture today stands at a critical crossroads, where escalating cultivation costs, increasingly fragmented landholdings, and mounting ecological pressures are posing serious and growing threats to the sustainability of farming livelihoods across the country. These challenges are felt most acutely by small and marginal farmers, who together make up the vast majority of India's farming community. Over-reliance on external inputs such as chemical fertilizers, pesticides, hybrid seeds, and mechanized equipment has driven up the cost of production considerably, often pushing farmers into debt and leaving them economically vulnerable. It is against this difficult backdrop that Low Budget Natural Farming (LBNF) has emerged as a transformative approach, one that seeks to restore the economic viability of agriculture by substantially reducing input costs while sustaining or even improving overall farm productivity.

Low Budget Natural Farming is deeply rooted in the core principles of self-reliance, ecological balance, and minimal dependence on external resources and inputs. It actively encourages the use of locally available resources such as cow-based inputs, crop residues, botanical extracts, and traditional knowledge systems to sustain soil fertility and maintain plant health over the long term. By eliminating the need for expensive chemical inputs, LBNF substantially reduces the financial burden on farmers and minimizes the risks

associated with constantly fluctuating input prices in the market. At the same time, it enhances soil health, promotes biodiversity, and strengthens resilience to climate variability, making it a sustainable and practical alternative to conventional farming systems.

This section presents eight success stories drawn from diverse regions including Punjab, Uttarakhand, Jammu and Kashmir, Ladakh, and Himachal Pradesh, showcasing how farmers have embraced low budget natural farming to improve their livelihoods and overall quality of life. These case studies span a wide variety of agro-climatic conditions, ranging from the fertile plains of Punjab to the challenging hilly terrains of Uttarakhand and Himachal Pradesh, and the harsh cold desert regions of Ladakh, demonstrating the remarkable adaptability and scalability of LBNF across vastly different farming contexts and environments.

One of the most remarkable features of these success stories is the capacity of low budget natural farming to convert degraded or unproductive land into profitable agricultural systems. In Punjab's Ropar district, a farmer significantly improved the productivity of once-barren land through the sustained adoption of natural farming methods, attaining an impressive net income of ₹19.45 lakh. This case clearly demonstrates that with proper knowledge, an appropriate approach, and efficient utilization of resources, even marginal or degraded lands can be transformed into productive and economically sustainable farming units.

The success stories further highlight the critical importance of diversification in strengthening farm profitability and building greater financial resilience. In Nainital district of Uttarakhand, a farmer has adopted diversified natural farming practices to generate a net income of ₹6.46 lakh. By integrating multiple crops and complementary enterprises, the farmer has established a more resilient farming system that is far less vulnerable to climatic uncertainties and unpredictable market risks. Diversification not only ensures the availability of multiple income sources throughout the year but also progressively improves soil health and overall resource use efficiency on the farm.

Even in resource-constrained regions with demanding agro-climatic conditions, such as Bandipora in Jammu and Kashmir and Pithoragarh in Uttarakhand, low budget natural farming has emerged as an effective strategy for improving farm income and ensuring long-term sustainability. By adopting practices that cut input costs and raise agricultural productivity, farmers in these areas have earned net incomes of ₹3.21 lakh and ₹3.16 lakh respectively. Their experience affirms that consistent practice of LBNF can bring meaningful and lasting livelihood improvements, even on modest landholdings with limited financial means.

An equally important dimension highlighted in this section is the significant role of natural farming in empowering women and building resilience among farming communities facing adverse conditions. The case from Kargil in Ladakh presents an inspiring story of a woman entrepreneur who has successfully adopted low budget natural farming to overcome serious environmental and economic challenges, earning a net income of ₹2.64 lakh. This example underscores the potential of LBNF to promote inclusive development by enabling women to actively participate in agricultural enterprises and important decision-making processes.

he experience from Chamoli district in Uttarakhand demonstrates how low budget natural farming can build the foundation for consistent and sustainable returns, especially on small hilly farms where cultivable land is severely limited. Achieving a net income of ₹2.54 lakh, the farmer has shown that disciplined resource management paired with sound natural farming practices can generate steady income over the long term. In a comparable example from Nawanshahar district of Punjab, a farmer practicing millet-based natural farming has earned a net income of ₹2.50 lakh. This case underscores the growing relevance of traditional crops like millets in supporting good health, ecological sustainability, and stronger resilience against the increasing uncertainties of climate variability.

In Mandi district of Himachal Pradesh, a dedicated farmer has built a sustainable farm business through natural farming, achieving a net income of ₹1.88 lakh. Although this income level may appear relatively modest in comparison to other cases documented in this section, the significantly low cost of cultivation associated with natural farming substantially improves net profitability for farmers. By minimizing expenditure on external inputs, farmers are able to retain a larger share of their total earnings, thereby enhancing their overall financial stability and household well-being.

Perhaps the most defining quality of low budget natural farming is its proven capacity to cut cultivation costs significantly without sacrificing agricultural productivity in any way. Reliance on on-farm resources and traditional practices allows farmers to stay insulated from the financial strain of persistently rising input costs. Small and marginal farmers stand to benefit the most from this advantage, given their limited access to institutional credit and their heightened vulnerability to economic shocks and sudden market disruptions. Stable crop yields achieved at lower production costs directly translate into stronger net returns and a more resilient financial foundation for farming households across the country.

Beyond its economic benefits, LBNF makes a significant and lasting contribution to environmental sustainability at the farm and landscape level. The regular use of organic inputs, mulching, crop rotations, and mixed cropping systems progressively improves soil health, enhances water retention capacity, and promotes biodiversity in agricultural landscapes. These practices help in restoring degraded soils and reducing the overall environmental footprint of agriculture. Moreover, natural farming systems demonstrate considerably greater resilience to climate change, as they are better equipped to withstand extreme weather events and unpredictable fluctuations in temperature and rainfall patterns.

An equally important dimension of LBNF is its knowledge-intensive nature, which sets it apart from conventional farming systems that depend largely on external inputs and standardized practices. Natural farming demands a sound understanding of ecological processes, local conditions, and skills ranging from bio-input preparation to soil health management and diversified cropping system design. This strong emphasis on knowledge and skill development empowers farmers while fostering a culture of innovation within farming communities. Sustaining this process, however, requires robust community support, well-structured training programs, active farmer networks, and targeted government initiatives that together build technical capacity, disseminate knowledge, and accelerate the broader transition toward sustainable and ecologically sound agriculture.



Overall, the diverse experiences documented in this section clearly demonstrate that Low Budget Natural Farming represents a viable and scalable solution for addressing the complex and multifaceted challenges of modern agriculture in India. It offers a practical and accessible pathway for enhancing farm income, effectively reducing agricultural risks, and actively promoting environmental sustainability at multiple levels. By focusing on cost reduction, resource efficiency, and ecological balance, LBNF provides a holistic and integrated approach to sustainable agricultural development for farming communities across the country.

In conclusion, the success stories presented in this section offer compelling evidence of low budget natural farming's potential to bring about meaningful transformation in the lives and livelihoods of farmers across India's diverse agro-climatic regions. Each of these eight stories provides unique and practical insights into how LBNF can be applied across widely varying contexts to build farming systems that are resilient, self-reliant, and economically viable. Together, they stand as inspiring and instructive models for farmers, policymakers, and development practitioners committed to advancing sustainable and inclusive agricultural growth across the country, clearly demonstrating that innovation, determination, and sound resource management can unlock lasting prosperity even in the face of significant constraints and challenges.

Productivity Enhancement of Barren Land for Earning Attractive Income through Natural Farming

Name : Mr. Gurjit Singh Dhir
Address : Vill. Khalidpur, PO-Majri Jattan, Rupnagar-140 001 (PB)
Qualification : PG Diploma in Finance & Bank Management
Contact No. : 8146527825
Landholding : 30 acre



Introduction

Mr. Gurjit Singh Dhir is a forward-thinking farmer who has devoted his post-retirement life to agriculture. After serving for 37 years in the banking sector, he retired as Deputy General Manager, Chandigarh Zone, in August 2014. He is currently a successful agri-entrepreneur in Rupnagar district, Punjab, earning sustainable returns through environmentally friendly Natural Farming (NF) practices on his 30 acre farm. His journey in NF began with the purchase of land in village Khalidpur, Rupnagar district, in 2004, which he gradually developed into "Saini Organic and Natural Farm". The farm was developed on previously barren and undulating land with poor soil fertility, which initially limited crop productivity and net returns despite the large landholding. Immediately after retirement, he shifted to the farm and began systematic land development by establishing essential infrastructure, including underground irrigation pipelines and sheds for farm operations and livestock. Exposure to diverse agricultural systems across India during his service period strengthened his belief in sustaining food security for future generations. Driven by the objective of producing healthy and chemical-free food, he fully committed his farm to natural and organic inputs. He adopted NF practices such as on-farm bio-input preparation, vermicomposting, mulching, crop rotation, and intercropping to develop a resilient and sustainable farming system.

Uniqueness of work related to NF

The uniqueness of Mr. Gurjit Singh Dhir's NF model lies in his strong market-oriented approach combined with large-scale diversified natural farming. Unlike conventional NF systems that primarily focus on production, he has successfully integrated direct marketing and value addition into his NF enterprise. By establishing trust with consumers, a significant portion of his produce is pre-booked even before harvest, ensuring assured returns. Nearly 40 percent of the produce is sold directly from the farm at premium prices, while the remaining is marketed through weekly sales in local and Chandigarh markets. The processing of



Mulching in Potato



Preparation of bio-inputs for natural farming





Ready to sell processed produce by the farmer



Movable selling outlet

farm produce into ready-to-use products such as cold-pressed mustard oil, turmeric powder, flour from traditional and black wheat, and jaggery adds further value and income stability. This consumer-linked, processing-based NF model enhances profitability, reduces market risk, and demonstrates a scalable pathway for sustainable livelihood generation under NF.

Systemic Capacity Building

Systemic capacity building has been central to strengthening Mr. Gurjit Singh Dhir's NF journey through continuous skill enhancement and institutional support. He participated in specialized NF training programmes at national and state platforms, which provided hands-on experience in the preparation and application of bio-inputs for sustainable crop production. In 2017, he established close linkages with PAU–Krishi Vigyan Kendra, Ropar, where regular technical guidance and advisory support helped him refine chemical-free and low-input NF practices.

His exposure was further enriched through participation in a brainstorming session on “Challenges and Solutions in Implementation of NF in North-Western India” held in 2023 at ICAR–ATARI, Zone I, Ludhiana, and a workshop on NF at IIT Ropar. Continuous technical upgradation transformed his farm into an integrated NF system involving diversified crop rotations, intercropping, and livestock integration. This knowledge-driven approach improved farm profitability over time, generated employment for about 20 families, with nearly 80 percent women labourers, and enabled the production of residue-free, healthy food while conserving soil and environmental health.

Major practices under NF

His farm follows the core principles of Natural Farming (NF), with a strong emphasis on diversification and multi-cropping. A wide range of pulses, vegetables, field crops, and nearly 100 species of fruit plants, forest trees, and medicinal plants are cultivated on the farm. Both commercial and traditional crop varieties are maintained, including traditional wheat varieties such as Bansi Gold and Sona Moti, along with black wheat and the special chapati-quality variety PBW 1. In addition, the farmer grows desi maize, fragrant Pakistani Basmati, and Pusa Basmati 1121 rice. Wheat is cultivated on raised beds and integrated with pulse crops such as moong bean, mash, and soybean, along with other field crops. Canola mustard and sugarcane are also important components of the cropping system. Among vegetables, the farmer grows potato, onion, brinjal, cole crops, root vegetables, and cucurbits. Potato and onion are cultivated on approximately three-foot-wide beds, resulting in higher yield and better-quality produce, while also facilitating intercultural operations and saving irrigation water. The farm includes a guava orchard and a diverse range of fruit crops such as kinnow, jamun, apple, ber, mango, lime, dragon fruit, and aonla, along with medicinal plants like





harad, lemongrass, and tulsi. Several intercropping systems are practiced, including radish, turnip, and beetroot grown between mustard rows on beds; radish grown for seed production intercropped with potato, sugarcane intercropped with potato, and turmeric cultivated under the shade of fruit trees across the farm. Mulching with paddy straw is widely adopted in crops such as garlic, onion, sugarcane, turmeric, and potato, which helps suppress weeds, conserve soil moisture, and produce uniform, well-sized produce. Mulching also supports the maintenance of whapasa, thereby enhancing the activity of beneficial soil microorganisms. The farmer maintains an integrated livestock unit for the preparation of bio-inputs such as beejamrit, jeevamrit, ghanjeevamrit, neemastra, and brahmastra, which further strengthens farm resilience. Fermented buttermilk is used as a natural fungicide, while a foliar spray prepared from mustard cake, cow dung ash, and lime in a 2:5:2.5:1 ratio is applied for crop nutrition and plant health management.

Economic analysis

In addition to revitalizing his land, NF also improved the financial situation of the farmer. Table 1 presents a year-wise economic analysis of a diversified natural farming system practiced on about 30 acre, highlighting changes in area allocation, productivity, costs, and profitability across major crops. Over the four years, the farmer gradually diversified from cereal-dominated cultivation to a balanced mix of cereals, pulses, vegetables, sugarcane, and fruit crops, which improved overall farm economics.

Total gross income increased steadily from ₹24.41 lakh in 2021–22 to nearly ₹29.52 lakh in 2024–25, while net income rose from ₹15.65 lakh to ₹19.45 lakh during the same period. The improvement in net returns was supported by better cost management and higher yields in vegetables, sugarcane, and fruit crops. The overall benefit–cost ratio improved from 2.79 in 2021-22 to 2.93 in 2024-25, indicating gradual enhancement in profitability and economic stability of the diversified natural farming model of this innovative farmer over time (Table 1).

Influence and impact on farmers

Mr. Gurjit Singh Dhir actively shares his knowledge and experiences gained through NF with fellow farmers and plays a key role in promoting NF in the region. Over the past ten years, he has disseminated his experiences and practices through various platforms, encouraging farmers to adopt sustainable farming approaches. His farm functions as a practical demonstration site, facilitating exposure visits for school and college students, Krishi Sakhis and community resource persons, trainees from different self-help groups, and KVK trainees. He also leads knowledge dissemination through information and communication technology (ICT) tools, particularly WhatsApp groups such as “Bhumi Kendrit Kudrati Kheti,” “Kudrati Kheti Mission,” and “Rupnagar Organic PAGREXCO,” which serve as interactive platforms for farmer-to-farmer learning. In recognition of his contributions, Mr. Gurjit Singh Dhir has been appreciated as a farmer, trainer, spiritual seeker, and community leader by several institutions, including the District Administration, Rupnagar, Punjab (2023), KVK Ropar (2024), and the State Department of Agriculture (2025). His commitment and enthusiasm for Natural Farming inspire other farmers to adopt practices that safeguard human health and the environment while producing high-quality agricultural produce. While guiding farmers in the adoption of NF, he consistently advises them to begin with small, manageable steps to ensure confidence and long-term success.



Appreciation of farmer by district administration





Table 1: Year-wise economic performance of diversified natural farming system on a 30 acre farm

Year	Details	Wheat	Basmati	Mustard/ Pulses	Potato	Onion	Brinjal/ Turmeric	Other vegetables	Sugarcane	Guava/ Kinnow / Papaya	Total
2021 -22	Area (acre)	9	8	3	3	3	2	2	1	5	—
	Production (q/farm)	120	90	12	240	205	75	120	25	275	—
	Cost of cultivation (₹/farm)	1,06,146	2,00,352	48,273	96,372	96,222	73,498	65,088	30,094	1,60,070	8,76,115
	Gross income (₹/farm)	4,25,040	5,09,850	1,13,448	1,92,720	3,25,130	1,55,550	1,50,240	1,50,750	4,18,550	24,41,278
	Net income (₹/farm)	3,18,894	3,09,498	65,175	96,348	2,28,908	82,052	85,152	1,20,656	2,58,480	15,65,163
	B:C ratio	4.00	2.54	2.35	2.00	3.38	2.12	2.31	5.01	2.61	2.79
2022 -23	Area (acre)	8	8	3	3	2	2	2	1.5	5	—
	Production (q/farm)	125	80	15	255	145	80	125	40	290	—
	Cost of Cultivation (₹/farm)	93,056	2,00,728	48,378	1,00,407	67,088	80,050	70,210	55,034	1,60,410	8,75,361
	Gross income (₹/farm)	4,50,750	4,70,080	1,47,765	2,05,275	2,32,145	1,71,840	1,70,500	2,52,640	4,57,330	25,58,325
	Net income (₹/farm)	3,57,694	2,69,352	99,387	1,04,868	1,65,057	91,790	1,00,290	1,97,607	2,96,920	16,82,965
	B:C ratio	4.84	2.34	3.05	2.04	3.46	2.15	2.43	4.59	2.85	2.92
2023 -24	Area (acre)	8	7	3	3	2	3	3	2	5	—
	Production (q/farm)	125	70	18	250	150	130	200	55	285	—
	Cost of cultivation (₹/farm)	96,056	1,80,320	50,757	1,00,431	65,842	1,14,090	1,13,043	75,128	1,63,385	9,59,052
	Gross income (₹/farm)	4,62,500	4,25,180	1,85,022	2,37,500	3,00,150	3,08,620	2,70,200	3,40,615	4,51,440	29,81,227
	Net income (₹/farm)	3,66,444	2,44,860	1,34,265	1,37,069	2,34,308	1,94,530	1,57,157	2,65,487	2,88,055	20,22,175
	B:C ratio	4.81	2.36	3.65	2.36	4.56	2.71	2.39	4.53	2.76	3.11
2024 -25	Area (acre)	8	6	3	3	2	3	4	3	4	—
	Production (q/farm)	130	75	19	270	148	128	170	85	255	—
	Cost of cultivation (₹/farm)	1,02,104	1,65,270	51,066	1,05,036	65,020	1,26,072	1,46,048	1,20,177	1,25,412	10,06,205
	Gross income (₹/farm)	4,62,500	4,25,180	1,85,022	2,37,500	3,00,150	3,08,620	2,70,200	3,40,615	4,21,885	29,51,672
	Net income (₹/farm)	3,60,396	2,59,910	1,33,956	1,32,464	2,35,130	1,82,548	1,24,152	2,20,438	2,96,473	19,45,467
	B:C ratio	4.53	2.57	3.62	2.26	4.62	2.45	1.85	2.83	3.36	2.93

Contributors: Sanjeev Ahuja, Urvi Sharma and Satbir Singh, Krishi Vigyan Kendra, Ropar;
Rajesh K Rana, ICAR ATARI, Ludhiana



Name : Mr. Narendra Singh Mehra

Address : Vill. & PO Devla Malla, Teh. Haldwani, Nainital-263 139 (UK)

Qualification : M.A. & Diploma in Tourism Studies

Contact No. : 9897130131

Landholding : 7.5 acre



Introduction

Mr. Narendra Singh Mehra, from Devla Malla village in Nainital, Uttarakhand, holds an MA and a diploma in tourism studies but chose to pursue his passion for agriculture. For the past 12 years, he has been practicing organic farming and was honoured as the “State Millionaire Organic Farmer of India.” He developed a unique wheat variety named Narendra 09 and received several awards, including the Kisaan Shri Samman, Progressive Farmer, Uttarakhand Icon, Farmers Leadership, Uttarakhand Ratna, Millennium Farmers of India, Defence Bio-Energy, Agriculture Today, and Jagriti Agri Panchayat Awards for his innovative work. His journey towards Natural Farming (NF) began in 2021, and he now serves as a Farmer Master Trainer for Nainital district under the NMNF project. He also achieved a world record by producing 25 kg of turmeric from a single plant. Mehra owns 7.5 acre of land where he grows cereals, pulses, oilseeds, sugarcane, vegetables, and fruits using traditional and indigenous seeds. He prepares natural pest control solutions using neem, cow dung, and cow urine. Motivated to restore soil fertility and reduce dependence on chemicals, he adopted an integrated farming system. Mehra believes that soil health can be revived through organic methods and urges fellow farmers to adopt organic seeds and focus on producing safe, chemical-free food.

Uniqueness of work related to NF

Mr. Narendra Singh Mehra's work in NF is distinguished by his ability to convert operational and market-related challenges into a resilient and scalable NF model. Despite initial skepticism from fellow farmers and limited local support, he established a disciplined and systematic approach to the preparation and application of bio-inputs, ensuring consistency and effectiveness in natural formulations. By standardizing schedules for input preparation and use, he successfully addressed labour and management constraints associated with diversified farming systems. To overcome the lack of price differentiation for naturally



Preparation of bio inputs



NF field of Mr. Narendra Singh Mehra





grown produce in local markets, he developed direct marketing channels and linked his farm produce with distant urban markets, enabling him to realize premium prices. This integration of on-farm bio-input management with assured market linkage distinguishes his NF practice from conventional models and demonstrates how NF can be both technically reliable and economically rewarding. His approach highlights the uniqueness of NF as a self-reliant, low-input, and market-responsive farming system suitable for progressive farmers and diverse agro-ecologies.

Systematic Capacity Building

Mr. Narendra Singh Mehra has consistently enhanced his knowledge and skills through exposure visits and trainings on organic and NF across different states of India. Recognized as a motivated speaker and practitioner, he actively promotes the principles of sustainable agriculture. In 2023 and 2025, he attended specialized training programmes on NF organized by Krishi Vigyan Kendra, Nainital, which provided him with practical insights into the use of local and low-cost resources for sustainable crop production. During these hands-on trainings and mentoring sessions, he learned the preparation and application of key bio-inputs such as beejamrit, jeevamrit, ghanjeevamrit, dashparni ark, neemastra, and kunaapjal, which enabled him to replace expensive chemical fertilizers and pesticides. He also developed expertise in intercropping, mulching, integrating livestock into the farming system, and recycling crop residues for soil enrichment. These practices improved the productivity, resilience, and sustainability of his small landholding while ensuring healthier produce.

With support from KVK Jeolikote, Mr. Mehra also visited the Natural Farming Testing Center at Gurukul Kurukshetra, Haryana, and interacted with progressive natural farmers in Uttarakhand, which broadened his outlook and encouraged innovative practices on his farm. Beyond his own farming activities, he regularly trains and shares his experiences with farmers from different states. He actively participates in training programmes, Kisan Melas, and events organized by GBPUAT, Pantnagar, ICAR, and other institutions in Maharashtra, focusing on natural and organic farming, Basmati rice cultivation, and vegetable production. In addition, he has been conducting demonstrations for several years under the Cluster Front Line Demonstration (CFLD) project on oilseeds (mustard) and pulses (urd, lentil, and gram) under organic mode. His initiatives have not only motivated fellow farmers to adopt NF but also helped build a strong local network of self-reliance and knowledge sharing.

Major practices under NF

Mr. Mehra has developed a well-diversified NF model that effectively combines crop cultivation, horticulture, livestock integration, and value addition to enhance both sustainability and profitability. On his farm, he grows a wide range of vegetables including beans, tomato, colocasia, brinjal, and chilli. He also



Mr. Mehra in his field showcasing his NF produce





Mr. Mehra in his field showcasing his NF produce



practices innovative intercropping systems such as beans with ginger, turmeric, and capsicum, and peas with garlic. The horticultural component of his farm features orchards of aonla, mango, citrus, litchi, guava, pear, and plum, all managed entirely under NF methods. To maintain soil fertility and minimize dependence on external inputs, he keeps five cows and two cattle that provide dung, urine, and other raw materials for preparing cow-based natural formulations. His farm produce is marketed directly in Delhi, Bengaluru, and Bihar, ensuring higher profits through direct sales.

Economic analysis

Table 1 summarizes the financial performance of the natural farming enterprises, highlighting the contribution of different components to overall farm income. Among the enterprises, fruits emerged as the highest income-generating component, with gross returns of ₹6.58 lakh and net returns of ₹4.33 lakh, despite relatively higher cultivation costs, reflecting their strong market value. Crops such as wheat, paddy, soybean, maize, and pulses generated gross returns of ₹3.35 lakh with net returns of ₹2.94 lakh, indicating stable returns under diversified cropping. Vegetables including onion, tomato, garlic, and cauliflower also contributed substantially, yielding net returns of ₹1.47 lakh from comparatively low input costs. Livestock,

Table 1: Financial performance of natural farming enterprises

Crops	Gross returns (₹)	Cost# (₹)	Net returns (₹)
Vegetables*	1,67,607	20,374	1,47,233
Crops**	3,35,213	40,746	2,94,467
Fruits***	6,58,390	2,25,000	4,33,390
Livestock (Milk)	92,420	45,140	47,280
Total without family labour	12,53,630	3,31,260	9,22,370
Family labour ##		2,76,000	
Total with family labour	12,53,630	6,07,260	6,46,370

* Vegetables include onion, tomato, garlic, brinjal, lady finger and cauliflower

** Crops include wheat, paddy, soybean, maize, mustard, urd, lentil and gram

*** Fruits include Mango, Indian gooseberry, litchi, guava, and wood apple

Cost of cultivation or expenditure on the enterprise/ activity excluding family labour

Family labour = 920 man-days/year@₹300/day





particularly milk production, provided regular supplementary income with net returns of ₹47,280. Overall, the integrated system generated total gross returns of ₹12.53 lakh and net returns of ₹9.22 lakh excluding family labour. After accounting for family labour involvement of 920 man-days valued at ₹2.76 lakh the net returns stood at ₹6.46 lakh demonstrating the economic viability and resilience of the diversified natural farming system

Influence and impact on farmers

Mr. Mehra has played a key role in advancing NF practices in the region. With the support of KVK Nainital, GBPUAT Pantnagar, and the National Centre for Natural and Organic Farming, Ghaziabad, he has also taken on the role of a master trainer, expanding his outreach through farmer-to-farmer learning. His farm has shown remarkable improvement in soil health, with organic carbon levels increasing from 0.91 to 1.75, reflecting the positive impact of bio-inputs and sustainable techniques. Over 1,000 farmers have visited his farm for exposure and learning, and 65 have already adopted NF under his guidance. Beyond his farm, Mr. Mehra has delivered more than 100 lectures at national and international forums, ATMA programs, and various State Agricultural Universities, where he shares practical insights and inspires others to adopt eco-friendly practices. As a dedicated mentor and trainer, he continues to promote knowledge sharing, consumer awareness, and community participation, establishing himself as a regional leader in NF.



***Awarded for release of new variety NARENDRA 09
by Plant Variety Registry, Govt. of India***



***Farmer receiving award in a
Kisan Mela at GBPUAT, Pantnagar***

Contributors: Kanchan Nainwal and Sanjay Choudhary, Krishi Vigyan Kendra, Nainital



Name : Mr. Gh Nabi Dar
Address : Vill. Mangnipora, Bandipora-193 502 (J&K)
Qualification : 8th
Contact No. : 6005722782
Landholding : 1.5 acre



Introduction

Mr. Gh Nabi Dar, a progressive farmer from Bandipora district of Jammu & Kashmir, has successfully established a diversified Natural Farming (NF) model on his 1.5 acre landholding. Like many small farmers in the region, he was confronted with steadily rising costs of chemical fertilizers and pesticides under conventional farming, which were not only straining his income but also degrading the long-term health of his soil. Recognizing the need for a more sustainable and economically viable approach, he made a decisive shift towards natural farming methods to reduce input expenses, restore soil vitality, and secure a stable livelihood for his family. His farm also integrates a dairy component, which complements crop production and provides additional income as well as organic inputs for the system.

With continuous guidance and technical support from Krishi Vigyan Kendra (KVK), Bandipora, he adopted a scientific, low-cost, and eco-friendly farming approach suited to the agro-climatic conditions of the region. He actively participated in training programmes, field demonstrations, and exposure visits organized by KVK, which equipped him with the knowledge and confidence to implement natural farming practices effectively. Presently, he cultivates brown sarson, vegetable pea, chilli, watermelon, garlic, moong, and rice under Natural Farming, ensuring year-round production and a steady stream of income. Through careful crop planning and the disciplined use of natural inputs, he has transformed his small landholding into a productive, profitable, and environmentally responsible farming enterprise.



Scientists visit to Mr. Gh Nabi Dar's natural farm





Uniqueness of the work related to NF

Mr. Gh Nabi Dar has developed an efficient natural farming model that focuses on crop diversification and optimum utilization of limited land resources. Despite having only 1.5 acre of land, he has adopted a well-planned cropping system that ensures continuous production and better income throughout the year. On one acre, he grows brown sarson and rice in rotation, which helps maintain soil fertility and break pest and disease cycles. The remaining land area is carefully divided for different crops, including vegetable pea (0.3 acre), chilli (0.2 acre), watermelon (0.2 acre), garlic (0.2 acre), and moong (0.2 acre). This diversified cropping pattern reduces risk and provides multiple sources of income.

In addition to crop diversification, Mr. Dar follows several natural farming practices that enhance soil health and crop productivity. He uses beejamrit for seed treatment, which protects seeds from soil-borne diseases and promotes better germination. Jeevamrit is regularly applied to the soil to stimulate beneficial microbial activity and improve nutrient availability. For pest and disease management, he prepares and applies botanical formulations such as neemastra and agniastra, which effectively control pests without harming the environment. He also practices mulching, which helps conserve soil moisture, suppress weeds, and regulate soil temperature. Through this integrated approach, Mr. Dar has successfully improved soil fertility, reduced pest incidence, and minimized dependence on chemical inputs, making his farming system more sustainable and cost-effective.

Systematic Capacity Building

Mr. Gh Nabi Dar actively participated in training programmes, field demonstrations, and exposure visits organized by Krishi Vigyan Kendra. Through continuous handholding support, he mastered preparation and timely application of natural formulations.

His practical learning and regular interaction with agricultural experts helped him standardize crop-wise nutrient and pest management schedules under Natural Farming conditions.

Major practices under NF

Mr. Gh Nabi Dar follows several important natural farming practices that help improve crop productivity and sustainability. Before sowing, he treats seeds with beejamrit, which protects them from soil-borne diseases and enhances germination. During the crop growth period, jeevamrit is regularly applied at critical stages to activate beneficial soil microorganisms and improve nutrient availability. He practices crop rotation between brown sarson and Rice, which helps maintain soil fertility and reduces pest and disease problems. In addition to field crops, he also practices diversified vegetable cultivation, which provides multiple sources of income and helps stabilize farm earnings throughout the year. For pest management, he relies on botanical formulations instead of chemical pesticides, making the system environmentally friendly. Moreover, the farmer efficiently utilizes family labour and locally available resources, reducing cultivation costs and strengthening the sustainability of his natural farming system.

Economic analysis

The financial performance of Mr. Gh Nabi Dar clearly demonstrates the economic viability and sustainability of his diversified natural farming system over the years. During 2022–23, the total cost of cultivation was ₹0.99 lakh, while the gross income reached ₹3.36 lakh, resulting in a net income of ₹2.38 lakh with an overall benefit–cost (B:C) ratio of 3.41 (Table 1). In the following year, 2023–24, the cost of cultivation slightly increased to ₹1.00 lakh, while the gross income rose to ₹3.60 lakh, generating a net income of ₹2.60 lakh and improving the B:C ratio to 3.59. The positive trend continued in 2024–25, when the total cost of cultivation increased to ₹1.28 lakh, but the gross income increased substantially to ₹4.49 lakh, resulting





Table 1: Economic component of various crops and dairy unit under natural farming

Particular	Brown Sarson	Vegetable Pea	Chilli powder	Watermelon	Garlic	Moong	Rice	Dairy	Total
2022-23									
Area	1.0	0.3	0.2	0.2	0.2	0.2	1.0	2.0	—
Production (q/farm)	5.2	4.2	1.1	20.0	4.0	0.8	19.3	2615.0	—
Cost of cultivation#(₹/farm)	9,300	10,800	7,170	5,840	9,400	1,830	14,440	39,944	98,724
Gross income (₹/farm)	33,800	19,110	19,250	48,000	52,000	7,200	62,725	94,140	3,36,225
Net income (₹/farm)	24,500	8,310	12,080	42,160	42,600	5,370	48,285	54,196	2,37,501
B: C ratio	3.63	1.77	2.68	8.22	5.53	3.93	4.34	2.36	3.41
2023-24									
Area	1.0	0.3	0.2	0.2	0.2	0.2	1.0	2.0	—
Production (q/farm)	5.4	5.2	1.3	22.0	4.2	0.9	20.4	2135.0	—
Cost of cultivation#(₹/farm)	10,800	11,200	7,290	6,870	9,520	1,940	16,500	36,146	1,00,266
Gross income (₹/farm)	35,802	24,180	24,050	58,300	56,700	8,500	69,360	83,265	3,60,157
Net income (₹/farm)	25,002	12,980	16,760	51,430	47,180	6,560	52,860	47,119	2,59,891
B: C ratio	3.32	2.16	3.30	8.49	5.96	4.38	4.20	2.30	3.59
2024-25									
Area	1.0	0.3	0.2	0.2	0.2	0.2	1.0	2.0	—
Production (q/farm)	5.5	6.8	1.2	23.0	4.5	0.9	20.6	3517.0	—
Cost of cultivation#(₹/farm)	11,400	12,100	7,350	6,100	9,710	2,060	17,400	61,948	1,28,068
Gross income (₹/farm)	37,400	32,300	24,000	62,100	63,225	9,180	73,130	1,47,714	4,49,049
Net income (₹/farm)	26,000	20,200	16,650	56,000	53,515	7,120	55,730	85,766	3,20,981
B: C ratio	3.28	2.67	3.27	10.18	6.51	4.46	4.20	2.38	3.51
# Including family labour									





in a net income of ₹3.21 lakh with an overall B:C ratio of 3.51. The increase in income is largely attributed to higher productivity and better market returns from multiple farm enterprises, including crops and dairy. Among the different components of the system, watermelon and garlic recorded some of the highest B:C ratios, reaching 10.18 and 6.51 respectively in 2024–25, followed by crops such as moong, chilli powder, rice, and brown sarson, indicating strong profitability and market demand under natural farming practices. The integration of diverse crops with dairy also played an important role in stabilizing farm income and enhancing the overall economic resilience of the farming system.



View of the farmers' Natural farming field

Influence and impact on farmers

The success of Mr. Gh Nabi Dar's diversified Natural Farming model has created a positive impact among neighbouring farmers in Bandipora district. His farm has gradually become a demonstration unit where farmers visit to observe practical examples of chemical-free and sustainable agriculture. Through his experience, he actively shares knowledge about crop diversification, preparation of natural inputs, and efficient farm management practices. This has encouraged many small and marginal farmers in the area to reduce dependence on costly chemical fertilizers and pesticides and adopt eco-friendly alternatives. By promoting the use of locally available resources and low-cost inputs, he shows that farming can remain profitable while protecting soil health and the environment. His farming system proves that even with a small landholding of about 1.5 acre, diversified Natural Farming can provide stable income, improve soil fertility, and produce safe and healthy food for consumers. Through careful crop planning, integration of vegetables and field crops, and systematic management of natural inputs, he has successfully improved productivity and profitability. Overall, Mr. Gh Nabi Dar's journey clearly demonstrates that Natural Farming is a practical and sustainable solution for small farmers, and his farm stands as a model for promoting ecological balance and resilient agriculture in Bandipora district.

Contributors: Tariq Sultan, Tahir Saleem and Nazeer Ahmad Mir, KVK Bandipora-I



Low-Budget Natural Farming for Sustainable Farm Productivity and Income

Name : Mr. Sundar Singh Anna
Address : Vill. Dundu, PO- Chhadandev, Pithoragarh-262 541 (UK)
Qualification : 12th
Contact No. : 7770863227
Landholding : 4.23 acre



Introduction

Mr. Sundar Singh Anna, son of Mr. Laxman Singh Anna, from Village Dundu, Post Office Chhadandev, Vikashkhanda Kanalicchhina, began farming and gardening after retiring from the army in 2018. In 2020, after receiving training in organic farming from Govind Ballabh Pant University of Agriculture and Technology, Pantnagar, he reduced the use of chemicals on his fields and transitioned to chemical-free farming within 18 months. Initially, his enthusiasm declined due to reduced production, but after receiving training and resources from scientists of KVK, Gairah, Pithoragarh, he resumed farming with renewed dedication. By completely giving up chemicals, his crop production began increasing after the fourth cropping cycle.

Uniqueness of work related to NF

The uniqueness of Mr. Sundar Singh's work lies in his resilience, innovation, and leadership in promoting Natural Farming despite multiple initial challenges. During the early phase, he struggled with obtaining fair prices for his natural produce due to the absence of clear market differentiation between chemical and natural products. With consistent support from Krishi Vigyan Kendra, Pithoragarh and district authorities, he gradually secured better market linkages. He addressed challenges such as resource mobilization, supply chain development, pest and disease management, and social discouragement by establishing a self-reliant system for preparing and supplying natural bio-formulations.



Preparation of bio-products for natural farming





Mr. Sundar Singh with his ready to use bio-products

His entrepreneurial competencies further distinguish his work. Recognized as a dedicated and innovative farmer, he continuously experiments on his farm and motivates fellow villagers to adopt chemical-free practices by creating awareness about the harmful effects of chemical inputs.

His commitment to direct marketing, fair pricing, and hands-on demonstrations of preparations such as jeevamrit, dashparni ark, brahmastra, agniashtra, kunapjal, and neemashtra has strengthened farmer confidence in Natural Farming. Through regular trainings and follow-up support, he has emerged as a role model, inspiring the farming community to move toward ecological sustainability and improved livelihoods.

Systematic Capacity Building

Mr. Sundar Singh strengthened his natural farming practices through training, skill development, and community-oriented initiatives. In 2022, he participated in a special training programme on natural farming organized by KVK, Pithoragarh, where he gained practical knowledge of low-cost techniques. Thereafter, he collected natural farming resources and fully shifted toward sustainable agriculture. He began preparing bio-inputs such as beejamrit, jeevamrit, ghanjeevamrit, dashparni ark, brahmastra, agniashtra, kunapjal, and neemashtra, which enabled him to stop using chemicals.

Initially, pest control was a challenge, but after the fifth and sixth crops, plants became naturally stronger, reducing the incidence of diseases and pests. Weed management was addressed with mulching, and certain weeds were utilized as fodder for cows. Crop residues were decomposed using biological decomposers and incorporated into the soil, improving earthworm populations and soil structure. Growing sugarcane naturally fetched three times the price of jaggery compared to chemically grown produce, encouraging him to expand the crop area. His natural farming system includes Burmese compost, ghanjeevamrit, beejamrit, kunapjal, dashparni ark, mulching, and cow rearing.

Major practices under NF

Mr. Sundar Singh has adopted a diversified natural farming system that integrates multiple crops and eco-friendly practices. On his farm, he cultivates crops such as black wheat, lentil, barley, urd, red rice, basmati rice, soybean, and sugarcane under natural farming principles. Intercropping and crop diversification are important components of his system; for example, lentil and barley are grown together during the rabi season, while urd is intercropped with soybean and sugarcane, in the kharif season to improve soil fertility and optimize land use.

The farmer also prepares farm-based bio-inputs using locally available materials, reducing dependence on chemical fertilizers and pesticides. This approach not only improves soil health but also enhances productivity while maintaining ecological balance.





Mr. Sundar Singh demonstrating his field grown using natural farming practices

Economic analysis

The economic analysis of crops grown under the natural farming system shows that Mr. Sundar Singh has achieved good profitability with relatively low production costs. The total cost of cultivation on the farm was ₹1.13 lakh, while the total gross income reached ₹4.29 lakh, resulting in a net income of ₹3.16 lakh with an overall benefit–cost ratio of 3.80 (Table 1). Among the crops, black wheat and lentil provided the highest returns due to lower input costs and good market prices. Other crops such as urd, soybean, barley, red rice, and basmati rice also contributed positively to farm income. Additionally, sugarcane processed into jaggery generated substantial income through value addition. This economic performance indicates that natural farming combined with crop diversification and on-farm processing can provide a stable and sustainable source of income for farmers.

Table 1: Crop wise economic performance under natural farming system (2024-25)

Crop	Area (acre)	Production (q/farm)	Cost# (₹/farm)	Gross income (₹/farm)	Net income (₹/farm)	B:C ratio
Black wheat	1.4	11.7	14,800	76,050	61,250	5.14
Lentil	0.8	3.0	7,200	36,000	28,800	5.00
Barley	0.5	3.0	3,540	10,500	6,960	2.97
Urd	1.0	1.5	8,500	27,000	18,500	3.18
Red rice	0.5	3.5	11,400	43,750	32,350	3.84
Basmati rice	0.7	5.0	14,100	42,500	28,400	3.01
Soybean	0.6	2.5	8,230	27,500	19,270	3.34
Sugarcane (jaggery)	0.8	17.5	45,410	1,66,250	1,20,840	3.66
Total			1,13,180	4,29,550	3,16,370	3.80
#Including family labour						





Impact and influence on farmers

Mr. Sundar Singh has played a significant role in promoting Natural Farming in Uttarakhand by demonstrating that persistence, knowledge, and confidence are essential during the initial two to three years of transition from chemical to natural systems. By emphasizing soil carbon and nitrogen enhancement, proper crop residue management, and the effective use of jeevamrit, beejamrit, brahmastra, vermicompost, and cow-based inputs, he has shown farmers how yields can improve sustainably over time. With active support from KVK, Pithoragarh, he has served as a trainer, providing practical guidance and hands-on training to local farmers. His efforts have strengthened confidence among farmers, encouraged the adoption of cow rearing and beekeeping as supportive enterprises, and contributed to improved soil health, environmental conservation, and enhanced farm profitability in the region.



***Award to the farmer for natural
production of sugarcane***



***Best Farmer Award by Agriculture Minister
for promotion of natural farming***

Contributors: Alankar Singh and Mahendra Singh, Krishi Vigyan Kendra, Gaina, Pithoragarh



Combating Adversities through Natural Farming- An Inspiring Story of a Women Entrepreneur

Name : Mrs. Skalzang Youton
Address : Vill. Kumik, Zanskar, Kargil-194 302, (Ladakh)
Qualification : 5th
Contact No. : 9103074761
Landholding : 0.75 acre



Introduction

Mrs. Skalzang Youton is a resident of Lower Kumik village in the Zanskar region. She has an academic qualification of up to the 5th standard and lives with her husband, Mr. Jigmat Spanbar, in a family comprised of five members. Approximately two decades ago, Ms. Youton and her husband migrated to Padum, the administrative center of Zanskar, in search of better economic opportunities from their native village. In the initial years, they worked as seasonal laborers and gradually saved enough to purchase a small plot of land measuring about 50 m² in Lower Kumik.

On this land, they constructed a modest residential house along with a cowshed and a fodder storage room. With determination and support from the local community, Ms. Youton began livestock rearing after receiving a Jersey calf as a gift. Over time, this initiative expanded into a small dairy unit with two milking cows. The dairy activity not only provided regular income through milk sales but also supplied organic manure for crop production. To further supplement household income, the family leased nearby land for the cultivation of barley and fodder crops. Despite her sustained efforts in agriculture and livestock rearing, the family's income remained modest. This motivated Mrs. Skalzang Youton to explore additional and improved livelihood opportunities to ensure better economic security for her family.

Uniqueness of Work Related to NF

Mrs. Skalzang demonstrated strong entrepreneurial qualities such as curiosity, risk-taking ability, and a continuous learning mindset, which shaped her NF journey. Inspired during a visit to Leh where she observed women successfully selling fresh vegetables, she proactively interacted with them to understand improved cultivation practices. Motivated to enhance her own farm enterprise, she sought technical guidance from Krishi Vigyan Kendra (KVK) Kargil-II, Padum, marking a decisive step toward scientific and sustainable farming.

Despite facing constraints such as limited land resources, lack of irrigation facilities, and the transition from chemical-based to Natural Farming (NF), she adopted innovative and adaptive strategies. Installation of a solar-powered



Mrs. Skalzang Youton at her NF field along with KVK scientists





irrigation system ensured reliable water availability under water-scarce conditions. Following the regional ban on chemical fertilizers, she successfully shifted to NF inputs like jeevamrit and ghanjeevamrit to restore soil health and sustain productivity. Further, by integrating livestock and promoting value addition of barley, she diversified her income sources and reduced risk. Her ability to combine entrepreneurial vision with scientific NF practices makes her model distinctive and replicable in challenging hill ecosystems.



Different crops grown at NF field of farmer

Systematic Capacity Building

Under the expert supervision of KVK Kargil-II, Mrs. Skalzang received hands-on training in improved vegetable cultivation, soil health management, and value addition. Starting small, she cultivated vegetables using scientific practices, leading to encouraging results. In the early phase, she adopted chemical fertilizers to boost productivity, resulting in a threefold increase in income. With growing confidence, she participated in KVK-organized demonstrations and exposure visits, enhancing her technical knowledge and management skills. Later, when the regional ban on chemical fertilizers was introduced, she again approached KVK for guidance. The scientists trained her in NF techniques, including the preparation and use of jeevamrit and ghanjeevamrit, promoting low-cost and eco-friendly cultivation practices.

Major practices under NF

Mrs. Skalzang successfully evolved into a diversified organic entrepreneur by integrating vegetable production, value addition, and dairy farming. She initially expanded her cultivation area by purchasing 0.375 acre of land and established irrigation through a solar-powered borewell financed via a Kisan Credit Card (KCC) loan. Guided by KVK, she ventured into value addition of barley, processing and branding it as roasted barley flour, later promoted as an organic local product enriched with jeevamrit. The product gained popularity among tourists and local households, fetching a premium price of ₹80/kg. With additional support from the Department of Agriculture, she constructed a commercial greenhouse, enabling year-round production of vegetables such as tomato, brinjal,



Demonstration of NF crops grown under protected cultivation



chili, cucumber, and winter greens like spinach, lettuce, and mustard. Her enterprise now functions as a model integrated farming system, combining organic vegetable production, value addition, and dairy farming for sustainable income generation.

Economic analysis

The economic performance of the integrated NF system adopted by Mrs. Skalzang shows consistent improvement over the three years. The integration of barley, diversified vegetables, fodder and dairy enterprises strengthened income generation and enhanced overall farm profitability. As presented in Table 1, during 2022–23 the total gross income from all enterprises was ₹2.24 lakh with a net income of ₹1.75 lakh and a B:C ratio of 4.56. Vegetables contributed the largest share to total income, followed by barley and

Table 1: Enterprise-wise and year-wise economic performance of natural farming

Year	Attributes	Barley	Vegetables*	Dairy	Total
2022-23	Area@ (acre)/ Cows (No.)	0.25	0.3	1	–
	Production (q/farm) / (L/ farm)	3.9	42	720	–
	Cost of cultivation# (₹/ farm)	5,600	35,120	8,500	49,220
	Gross income (₹/ farm)	27,300	1,68,250	28,840	2,24,390
	Net income (₹/ farm)	21,700	1,33,130	20,340	1,75,170
	B:C ratio	4.88	4.79	3.39	4.56
2023-24	Area@ (acre)/ Cows (No.)	0.25	0.3	1	–
	Production (q/ farm)/ (L/ farm)	3.9	52	810	–
	Cost of cultivation# (₹/ farm)	6,550	39,360	9,500	55,410
	Gross income (₹/ farm)	31,200	2,23,600	34,020	2,88,820
	Net income (₹/ farm)	24,650	1,84,240	24,520	2,33,410
	B:C ratio	4.76	5.68	3.58	5.21
2024-25	Area@ (acre)/ Cows (No.)	0.25	0.3	3	–
	Production (q/ farm)/ (L/ farm)	4.1	58	6000	–
	Cost of cultivation# (₹/ farm)	6,600	41,320	9,540	57,460
	Gross income (₹/ farm)	32,800	2,32,440	56,400	3,21,640
	Net income (₹/ farm)	26,200	1,91,120	46,860	2,64,180
	B:C ratio	4.97	5.63	5.91	5.60

Excluding family labour due to lack of remunerative employment opportunities as labour in the area

* Vegetables include tomato, brinjal, chili, cucumber, and winter greens like spinach and lettuce

@ 0.2 acre of land was allocated for fodder production for the dairy enterprise across all the three years





dairy. In 2023–24, higher vegetable production and increased milk output raised the gross income to ₹2.88 lakh and net income to ₹2.33 lakh, reflecting improved economic efficiency. Further expansion of the dairy unit from one to three animals in 2024–25 significantly enhanced milk production to 6,000 L, which substantially increased farm returns. Consequently, total gross income reached ₹3.21 lakh and net income improved to ₹2.64 lakh, with the B:C ratio increasing to 5.60.

Influence and impact on farmers

Mrs. Youton's success has inspired many fellow farmers, especially women, in Zaskar to adopt vegetable cultivation and natural farming practices. Her model farm is frequently visited by KVK trainees and extension personnel as a live demonstration site for integrated organic farming. She has become a resource person in her locality, sharing experiences on jeevamrit preparation, greenhouse management, and small-scale value addition. Her success story highlights the potential of women-led entrepreneurship in enhancing food security and rural livelihoods in remote Himalayan regions.

Limitations and Policy Support

Despite the encouraging progress, Mrs. Skalzang Youton's enterprise continues to operate under significant constraints. The Zaskar region is an extremely remote and high-altitude area with limited market connectivity, high transportation costs, and restricted access to timely inputs and services. The growing period is short due to prolonged winters and harsh climatic conditions, which limits crop cycles and overall production potential even under protected cultivation. In addition, she is a smallholder farmer with only 0.75 acre of land, which inherently restricts large-scale expansion and economies of scale. These structural limitations influence the overall income ceiling of the enterprise, despite efficient management and adoption of Natural Farming practices. However, such smallholder farmers who are directly contributing towards ecological and human health should be aptly compensated through policy support initiatives pertinent to the local geography and conditions.

**Contributors: Mohammad Mehdi, Sabber Hussain and Tashi Dawa, Krishi Vigyan
Kendra, Kargil-II**



Employing Natural Farming for Creating Foundation for Sustainable Future Returns on Small Hilly Farm in Chamoli District

Name : Mr. Narayan Dutt Sati
Address : Vill. Gothinda, Block- Tharali, Chamoli-246 481 (UK)
Qualification : 12th
Contact No. : 8126647212
Landholding : 1.5 acre



Introduction

Mr. Narayan Dutt Sati, a 40-year-old farmer from Village Gothinda, Chamoli, exemplifies how determination and wise resource management can turn challenges into opportunities. Despite having limited scientific knowledge and facing scarcity of both organic and chemical inputs, he successfully transformed his 1.5 acre ancestral land into a productive Natural Farming (NF) enterprise. Instead of becoming discouraged, he utilized locally available resources and systematically adopted NF techniques. His journey emphasizes the importance of seeking guidance and technical support. By collaborating with Krishi Vigyan Kendra, Chamoli, and learning from KVK Scientist, he gained the knowledge and confidence required to adopt sustainable and effective farming practices. Through integrating vegetables, cereals, and livestock, Shri Sati has developed a self-reliant farming system that improves soil fertility and ensures year-round productivity. His approach demonstrates how strategic planning, intelligent resource use, and continuous learning can establish a farming enterprise that is both sustainable and profitable. His story stands as an inspiring model for budding entrepreneurs, proving that innovation, persistence, and mentorship are essential for success.

Uniqueness of work related to NF

Mr. Narayan Dutt Sati has developed a diversified and sustainable NF enterprise that integrates vegetables, cereals, millets, and livestock to enhance both productivity and profitability. On his farm, he cultivates a range of crops, including finger millet, barnyard millet, capsicum, tomato, cabbage, and



Mr. Sati sharing his NF knowledge with village women.





Mr. Sati at his dairy farm



Spray of jeevamrit at his field

cauliflower, with a particular focus on seedling and fruit sales. To sustain soil fertility and reduce dependence on external inputs, he has incorporated livestock comprising two cows. This integration ensures a consistent supply of organic manure and bio-inputs, naturally supporting soil health and crop yields. Mr. Sati markets his produce directly in the Tharali local market, earning better returns by bypassing intermediaries. His enterprise stands as a model of self-reliant, diversified, and eco-friendly farming, demonstrating how strategic planning, efficient resource use, and sustainable practices can create a profitable and replicable NF venture.

Systematic Capacity Building

Mr. Narayan Dutt Sati has advanced his NF journey through structured training and awareness programmes conducted by KVK Chamoli under the “Outscaling of Natural Farming through KVKs” project. These programmes equipped him with both conceptual knowledge and practical skills for preparing and applying essential bio-inputs and natural formulations. By implementing these techniques, he has not only improved the productivity and sustainability of his farm but also demonstrated effective, eco-friendly practices suited to hilly terrain. With continued mentoring from KVK Chamoli, Mr. Sati is now sharing his knowledge with neighbouring farmers, promoting a culture of peer learning and encouraging sustainable agriculture within his community.

Major practices under NF

Mr. Sati's farm model is sustainable and profitable in the region. He used to practice application of beejamrit, jeevamrit, agniasthra and khatti lassi for all the cereals and vegetable crops with crop residue as mulch for vegetable crops. He also prepares and applies herbal kunapjal on vegetable crops, especially. He also used to apply ghanjeevamrit and advocated its benefits as reduction of the infestation of white grub in the fields.

Economic analysis

The farming system comprising field crops, vegetables and dairy enterprise showed a clear improvement in overall profitability during 2024–25 compared to 2023–24. The total gross income increased from ₹3.20 lakh in 2023–24 to ₹4.03 lakh in 2024–25, while net income rose from ₹1.75 lakh to ₹2.54 lakh. The overall B:C ratio also improved from 2.21 to 2.70, indicating better economic efficiency in the second year. Among vegetables grown under polyhouse and open field conditions, cabbage recorded the highest net income of ₹0.47 lakh in 2023–24 with a B:C ratio of 3.15, though it slightly declined to ₹0.40 lakh in 2024–25. Capsicum showed consistent improvement, with net returns increasing from ₹0.41 lakh to ₹0.43 lakh. Tomato also performed better in 2024–25, where net income increased from ₹0.30 lakh to ₹0.35 lakh. Field crops grown on 0.6 acre maintained stable returns across both years, with a B:C ratio of 2.32. Net income





slightly declined from ₹0.13 lakh in 2023–24 to ₹0.10 lakh in 2024–25 due to reduced production. The dairy component showed the most significant improvement. Milk and ghee production increased from 1460 litres and 18 kg in 2023–24 to 2737 litres and 24 kg in 2024–25. As a result, net income from dairy increased substantially from ₹0.44 lakh to ₹1.25 lakh, and the B:C ratio improved from 1.65 to 2.72. Overall, the integration of crops and dairy enhanced income stability and profitability, with dairy emerging as the major contributor to increased net returns in 2024–25.

Table 1: Economic performance of Mr. Narayan Dutt Sati's diversified NF enterprise

Year	Attribute	Field crops*	Vegetable***			Dairy@	Total
			Tomato	Capsicum	Cabbage		
2023-24	Area (acre)/ Cows (No.)	0.60**	0.30	0.40	0.70	2.00	–
	Production (q/L)	6.80	15.50	9.20	35.4	1460 + 18	–
	Gross income (₹)	22,308	65,100	50,600	69,030	1,12,800	3,19,838
	Cost#(₹)	9,616	24,022	20,653	21,939	68,560	1,44,790
	Net income (₹)	12,692	41,078	29,947	47,091	44,240	1,75,048
	B:C ratio	2.32	2.71	2.45	3.15	1.65	2.21
2024-25	Area (acre)/ Cows (No.)	0.60**	0.30	0.40	0.70	2.00	–
	Production (q/L)	5.50	16.10	10.30	32.20	2737 + 24	–
	Gross income (₹)	18,084	67,620	56,650	62,790	1,97,820	4,02,964
	Cost#(?)	7,795	24,952	21,330	22,450	72,650	1,49,177
	Net income (₹)	10,289	42,668	35,320	40,340	1,25,170	2,53,787
	B:C ratio	2.32	2.71	2.45	2.80	2.72	2.70

* Finger millet, barnyard millet, wheat and toria

** Gross cropped area

*** Both in polyhouse and open fields

Including family labour

@ Milk (Selling price = ₹60/L) + cow ghee (Selling price = ₹1400/kg)

Influence and impact on farmers

He actively engages with the community, spreading awareness about the health benefits of NF products and encouraging local farmers to adopt eco-friendly and sustainable practices. As the first in his village to embrace natural farming, he has become a role model and facilitator, inspiring others and contributing to the growth of entrepreneurship in sustainable agriculture across the region. Mr. Narayan Dutt Sati has emerged as a leading advocate for NF in Block Tharali, Chamoli. With technical support and guidance from KVK Chamoli, his farm has not only achieved higher yields but also shown marked improvements in soil health, demonstrating the effectiveness of bio-inputs and sustainable methods. His farm now serves as a practical learning hub for neighboring farmers, who visit to gain first-hand experience and insights. Inspired by his achievements, many local farmers have begun adopting NF practices under his mentorship. Through innovative techniques, consistent dedication, and a community-focused approach, Mr. Sati has gained recognition as a role model in the region, creating a ripple effect that encourages wider adoption of eco-friendly and sustainable farming while fostering a culture of environmental responsibility in agriculture.

Contributors: D. C. Kala, Krishi Vigyan Kendra, Chamoli



Name : S. Gurnek Singh
Address : VPO. Chuaharpur, SBS Nagar-144 514 (Pb)
Qualification : 10th
Contact No. : 9646006859
Landholding : 2 acre



Introduction

A progressive farmer with a forward-looking approach, S. Gurnek Singh of village Chuaharpur in Shaheed Bhagat Singh Nagar district has emerged as a strong advocate of Natural Farming (NF) in Punjab. After retiring from the Electricity Board, he spent a few years abroad, but his attachment to his native soil brought him back to his village. Nearly two to three years ago, he decided to settle permanently and devote himself to agriculture. Initially, he cultivated conventional crops like other farmers in the region, but he soon realized the growing challenges associated with chemical-based farming, including declining soil health, rising input costs and increasing health concerns in society.

With a deep sense of responsibility towards the environment and community well-being, he gradually shifted his focus towards millet-based NF as a sustainable alternative to the prevailing wheat-paddy system. His transition was guided by the vision of restoring soil fertility, conserving water resources and producing safe, chemical-free food. Today, his farm stands as a model of diversified, low-cost and health-oriented farming, demonstrating that small landholders can achieve sustainability and profitability through natural farming practices.

Uniqueness of work related to NF

Adopting NF is the need of the hour to save Punjab's natural resources, reduce farming costs, increase farmer income and protect the health of humans, animals and birds from chemical effects. Observing the devastating effects of chemicals on humans, animals and birds, which are facing fatal diseases such as cancer, high blood pressure, diabetes, respiratory problems and skin diseases, he decided to maintain distance from the use of chemicals in his fields. Keeping this uniqueness in mind, he started a campaign against the excessive use of fertilizers, herbicides and pesticides in the production of



View of S. Gurnek Singh's field crop grown with use of natural farming practices





Wheat Crop grown by using natural farming practices

traditional crops. S. Gurnek Singh prepares his own organic sprays like jeevamrit, beejamrit, neemastra and agniastra using locally available materials, which makes his farming low-cost, self-reliant and sustainable. S. Gurnek Singh, apart from domestic use, started sharing the produce of natural farming and the technique of cultivating staple cereals and millets with needy friends. He also started self-marketing of the grains through WhatsApp Marketplace. He cleaned and packed various cereal grains and millets himself and sold them at Kisan Melas and farmer gatherings. He also provided his produce to other farmers and self-help groups for marketing.

Systematic Capacity Building

During 2020–21, he participated in the 550th birth anniversary programs of Shri Guru Nanak Dev Ji at Sultanpur Lodhi, where he met Shri Gurmukh Singh, Dr. Azad, and Khadir Wali during a seminar on NF of staple and underutilized grains. This interaction motivated him to start NF of staple grains. He is now actively participating in all the extension activities and trainings organized by PAU Ludhiana, KVK Langroya, Shaheed Bhagat Singh Nagar, and the Departments of Agriculture and Horticulture.

Major practices under NF

The farmer cultivates pearl millet, foxtail millet, proso millet, ragi and kodo millet on his land under NF. In the same field, he also planted black wheat, sona-moti wheat, chickpea and mustard during the rabi season. He has not used any chemical or fertilizer purchased from the market on the land and has used only need-based irrigation for the crops. He prepared organic sprays like brahmastra and agniastra at home to prevent pests and diseases in the crops.

He and his family have planted various vegetables, fruits, flowers and medicinal plants in their garden to



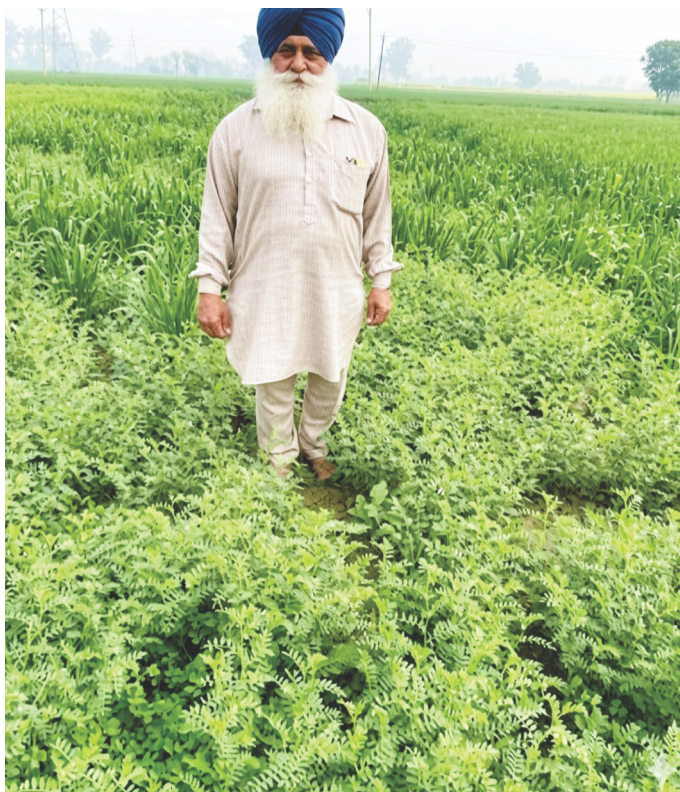


meet household needs. He has never burnt crop residues and incorporated all biomass into the soil. He also raised two indigenous breeds of cattle (Sahiwal) and started using animal waste for compost and bio-inputs such as jeevamrit.

Economic analysis

The diversified Natural Farming (NF) system adopted by S. Gurnek Singh generated a total gross income of ₹3.89 lakh with a net income of ₹2.50 lakh and an overall B:C ratio of 2.79 (Table 1). Among the crops, wheat proved most profitable with a net return of ₹0.38 lakh, followed by mustard with a net return of ₹0.36 lakh. Pearl millet and kodo millet also performed well, generating net returns of ₹0.12 lakh and ₹0.10 lakh, respectively.

The Sahiwal cow yielded about 3810 L of milk annually, contributing ₹0.99 lakh as net income. Overall, the integration of millets, traditional



*Field of chickpea crop grown with use of
natural farming practices*

Table 1. Economic performance of diversified natural farming system for 2024-25

Particulars	Area (acre)/ No.	Production (q/L)	Cost# (₹/farm)	Gross income (₹/farm)	Net income (₹/farm)	B:C ratio
Wheat	1	12.5	12,320	50,000	37,680	4.06
Kodo millet	0.2	1.3	2,811	13,026	10,215	4.63
Foxtail millet	0.2	1	2,712	8,094	5,382	2.98
Proso millet	0.2	0.6	3,090	8,400	5,310	2.72
Ragi	0.2	1.04	2,818	10,482	7,664	3.72
Pearl millet	0.5	4.5	5,040	17,121	12,081	3.40
Mustard	0.7	4.9	9,000	45,080	36,080	5.01
Fodder maize	0.7	85	6,500	22,000	15,500	3.38
Chick pea	0.3	1.74	3,216	23,490	20,274	7.30
Dairy	2	3,810	92,050	1,91,625	99,575	2.08
Total			1,39,557	3,89,318	2,49,761	2.79





cereals, pulses and livestock under NF ensured diversified income sources, reduced production costs and improved profitability.

Influence and impact on farmers

He started providing seeds of basic crops to farmers who wanted to start NF. He encouraged the farmers in his contact to adopt NF of basic grains as much as possible so that a healthy and sound society can be created by protecting natural resources, humans, animals and birds from the adverse effects of chemical poisons.

NF ensures food safety and nutrition, reduces the cost of farming associated with the purchase of chemical farm inputs and irrigation, and improves the water retention capacity of the soil, which ultimately supports groundwater reserves. It also enhances soil and plant diversity. Instead of the traditional wheat-paddy cropping system, he cultivated jowar (sorghum), bajra (pearl millet), kangani (foxtail millet), kodhra (kodo millet), black wheat, sona-moti wheat, chickpea and mustard. To further promote NF, KVK can contribute by organizing advanced trainings and refresher courses on NF techniques and facilitating exposure visits to S. Gurnek Singh's model farm.

S. Gurnek Singh's journey from conventional to natural farming reflects his determination, resilience and vision. With support from Krishi Vigyan Kendra, Shaheed Bhagat Singh Nagar, and the Departments of Agriculture and Horticulture, his work is inspiring a wave of eco-conscious farming across the farming community of Punjab.

Contributors: Pardeep Kumar, Baljit Singh and Arti Verma, Krishi Vigyan Kendra, Nawanshahr



Name : Mr. Ramesh Kumar

Address : Vill. Bhagyar, PO-Ghidi, Sundernagar, Mandi-175 031 (HP)

Qualification : 12th

Contact No. : 9625923201

Landholding : 2.5 acre



Introduction

Mr. Ramesh Kumar, a 43-year-old progressive farmer from Bhagyar village, Dhanotu block of Mandi district, Himachal Pradesh, is a true example of how determination and innovation can transform farming into a profitable livelihood. The village lies about 40 km from Sundernagar and 60 km from the district headquarters. He comes from a modest family of four, his wife and two sons. Due to financial hardships, he completed only higher secondary education and started farming.

With one hectare of land, he initially practiced chemical-based farming of maize, wheat, black gram, and vegetables along with dairy. However, the high cost of cultivation left his earnings insufficient to meet household expenses. In 2017, a friend introduced him to Krishi Vigyan Kendra (KVK) Mandi and its activities. He was encouraged by the experts and attended several vocational training programs on scientific farming practices. During this period, he was introduced to the Natural Farming (NF) and attended a five-day training program on NF at CSKHPKV, Palampur, under Agricultural Technology Management Agency (ATMA). He was so inspired and motivated that he adopted NF practices on his 2 acre land, which established his identity as a successful NF practitioner in the region.

Uniqueness of work related to NF

The uniqueness of Mr. Ramesh Kumar's Natural Farming (NF) work lies in the development of a self-sustaining farm ecosystem that integrates diversified cropping, livestock, nursery raising, and on-farm bio-input production. Faced with high cultivation costs and low returns under chemical farming, he gradually transitioned to NF and overcame initial challenges related to technical know-how and market access through continuous training and guidance from KVK Mandi. Establishing an NF Resource Centre on his farm is a key distinguishing feature, enabling him to prepare and supply bio-inputs such as jeevamrit,



Use of ghanjeevamrit in fields



Regular application of jeevamrit





beejamrit, and botanical formulations using locally available resources. His use of mulching with crop residues and forest leaves, raised beds to maintain whapasa conditions, and intercropping with legumes strengthened soil health and system resilience. By combining NF with direct marketing and farmer training, he transformed constraints into opportunities and emerged as a model NF entrepreneur and knowledge hub in the region.

Systematic Capacity Building

His achievement is the outcome of systematic and continuous capacity building. With constant support from KVK Mandi, he participated in various training programs on integrated farming, vegetable cultivation, nursery raising, mushroom cultivation, and dairy farming. Under ATMA, he received training in NF at CSKHPKV, Palampur during 2018, and later established his own NF Resource Centre on his farm. His skills were further strengthened under the Out-scaling Natural Farming Project of ICAR, implemented through KVKs.

His knowledge was broadened by exposure visits to reputed institutions such as PAU Ludhiana, IARI New Delhi, and CSKHPKV Palampur. He was recognized as a Farmer Master Trainer and underwent specialized training under the National Mission on Natural Farming (NMNF) at UHF Solan. He later developed his farm into a site for trials and demonstrations in collaboration with the Department of Organic Agriculture and Natural Farming, CSKHPKV Palampur. He received regular guidance from KVK for preparing bio-inputs such as jeevamrit, beejamrit, neemastra, dashparni ark, brahmastra, and ghanjeevamrit, which further strengthened his move towards sustainable practices.

Major practices under NF

Mr. Ramesh Kumar developed a holistic NF model that integrates crop diversification, nursery raising, dairy and goat rearing, and on-farm preparation of NF bio-inputs. He adopted intercropping to enhance crop productivity and profitability. Crop residues, along with locally available banj oak leaves, were used as mulching material, which helped conserve soil moisture and create a favourable microclimate for beneficial soil microorganisms. Raised beds were prepared for sowing to maintain whapasa conditions, thereby improving soil aeration and root growth. Livestock played a central role in his NF system. Cow dung and urine from dairy animals were used for preparing jeevamrit and ghanjeevamrit, while goat manure contributed to soil nutrient enrichment and reduced dependence on chemical fertilizers. These integrated practices helped establish a self-sustaining and low-cost farming ecosystem on his farm.

To strengthen input availability, Mr. Ramesh Kumar established a Natural Farming Resource Centre on his farm with financial support from ATMA. Using locally available resources such as cow dung, cow urine, green leaves, and plant-based materials, he regularly prepares jeevamrit, beejamrit, dashparni ark, brahmastra, agniasttra, and ghanjeevamrit. These bio-inputs are used on his own farm and are also supplied to neighbouring farmers, promoting wider adoption of NF practices in the area.

Economic analysis

The adoption of NF has resulted in substantial economic gains. Under chemical-based farming, Mr. Ramesh's farm generated a gross income of about ₹1.58 lakh with net returns of only ₹71,000. After adopting NF, his farm earned a gross income of ₹3.26 lakh annually, with net returns of nearly ₹1.88 lakh (Table 1). This improvement in profitability has reduced financial risks, ensured year-round income, and strengthened the economic security of his family. The diversification of enterprises, including crops, livestock, nursery raising, and bio-input production, established a sustainable and resilient farming model on his farm.





Table 1: Enterprise-wise economic performance of natural farming and conventional farming systems

Component	Crop/ enterprise	Area*	Gross returns (₹)	Cost of cultivation (₹)	Net returns (₹)
Natural farming					
Crop production	Okra+finger millet-wheat+pea/ chickpea	0.2	25,312	10,500	14,812
	Maize+cowpea/ finger millet+chilly+ french bean- garlic/ onion+ radish+ palak+ methi+ coriander	0.4	82,975	36,980	45,995
	Maize+soybean-wheat+pea	0.6	27,325	11,800	15,525
	Radish-barley/ pea	0.2	18,200	9,500	8,700
	Cucurbits+capsicum+brinjal-peas+cole crops	0.2	33,900	12,500	21,400
	Chari bajra-berseem+jai	0.2	6,250	2,500	3,750
Fruit crops	Walnut plants	4.0	6,000	1,200	4,800
Nursery	Vegetable nursery	6.0	5,000	2,000	3,000
Livestock	Milch animal	3.0	1,04,400	48,000	56,400
Resource centre	NF Resource centre	1.0	5,000	1,000	4,000
Other	Sale of flowers from rhododendron plants	40.0	2,000	500	1,500
	Sale of grasses from pasture land	0.2	10,000	1,500	8,500
Total			3,26,362	1,37,980	1,88,382
Conventional farming					
Crop production	Maize /blackgram-wheat	1.2	43,212	28,300	14,912
	Tomato/ capsicum/ brinjal/ summer squash/ cucumber-peas	1.1	70,530	34,550	35,980
Livestock	Milch animal	2.0	44,500	24,000	20,500
Total			1,58,242	86,850	71,412
* Area in acre/ No./ m ² / unit					

Influence and impact on farmers

The success of Mr. Ramesh Kumar has created a strong influence within his farming community. His





***Demonstrating preparation of NF formulations
to CRPs at KVK Mandi***



View of crops grown under natural farming

adoption of natural farming practices and direct marketing strategies has motivated many neighboring farmers to explore and adopt similar approaches. As a Farmer Master Trainer (FMT), he has trained about 2,000 farmers in natural farming, and his farm now serves as a regular learning and demonstration site for farmers and trainees. Recently, in his role as a resource person and FMT, he trained 87 Community Resource Persons (CRPs) under the NMNF programme organized by KVK Mandi. Through his sustained efforts as a trainer and motivator, Mr. Ramesh Kumar has played a key role in scaling up natural farming practices across the region.

Limitations and Policy Support

Despite successfully adopting natural farming practices, Mr. Ramesh Kumar faces significant limitations in realizing remunerative prices for his produce. Although his crops are chemical-free and produced through sustainable methods, the absence of organized market linkages and certification-based premium channels restricts price realization. Most of his produce is sold in local markets through direct sales to the consumers, which is quite time consuming. Seasonal gluts and lack of branding further reduce income stability, highlighting the need for structured value chains for natural farming products. Policy support is also required to strengthen direct marketing e-commerce platforms, farmer producer organizations, and dedicated NF markets.



Selling of natural farming produce at Sunday market Sundernagar

Contributors: DS Yadav, Pankaj Sood and Neha Chauhan, Krishi Vigyan Kendra, Mandi





SECTION 6: MISCELLANEOUS CASES UNDER NATURAL FARMING – AN INTRODUCTION

Natural Farming in India has come a long way, growing far beyond its roots in crop production. While previous sections have covered its role in integrated systems, horticulture, annual crops, value addition, and low-budget farming, a remarkably diverse range of practices exists that defies easy categorization yet remains vital to strengthening the natural farming ecosystem across the country. These unconventional initiatives reflect how natural farming is steadily evolving into a comprehensive model for holistic rural development, and this section brings together six such inspiring success stories under the theme of Miscellaneous Cases, showcasing how farmers and entrepreneurs are pushing boundaries, exploring new dimensions of natural farming to boost income, advance sustainability, and create lasting community impact.

Natural Farming is fundamentally rooted in the principles of self-reliance, ecological balance, and efficient use of resources. As farmers gain experience and confidence in these practices, many gradually expand their efforts beyond basic cultivation to establish complementary enterprises such as input production, nursery development, farmer collectives, and bio-based entrepreneurship. These innovative undertakings not only create diverse and supplementary income opportunities but also help build a supportive

ecosystem that promotes large-scale adoption of Natural Farming. The examples highlighted in this section effectively demonstrate this transition from individual farm-level practices to wider, system-oriented innovations that strengthen entire farming communities. The success stories included in this section are drawn from Jammu and Kashmir, Uttarakhand, and Himachal Pradesh, collectively representing a wide range of diverse agro-climatic and socio-economic conditions. Despite their varied and distinct contexts, these cases share a common and unifying theme, which is the remarkable ability to leverage natural farming principles in creative and innovative ways to achieve meaningful economic as well as ecological benefits for farming communities.

A highly notable example in this section comes from the Pulwama district of Jammu and Kashmir, where a farmer has successfully developed a Natural Farming Bio-Resource Centre along with a vermicomposting unit, achieving an impressive net income of ₹27.68 lakh. This model clearly demonstrates the significant and largely untapped potential of input production as a profitable enterprise within the natural farming system. By producing quality organic inputs such as compost, vermicompost, and bio-formulations, the farmer meets his own farm requirements while also supplying these inputs to other farmers in the area. This creates a strong multiplier effect, encouraging the wider adoption of Natural Farming practices and ensuring a steady and sustainable source of income.

Further strengthening the theme of input-based entrepreneurship, another inspiring example from Pulwama highlights the concept of bio-entrepreneurship in natural farming, where a committed farmer has developed a sustainable input ecosystem and achieved a notable net income of ₹23.04 lakh. This initiative emphasizes the importance of decentralized and locally managed input supply systems that reduce farmers' dependence on distant and costly external markets. By producing and marketing Natural Farming inputs locally, such entrepreneurs contribute significantly to strengthening the agricultural value chain and supporting other farmers in adopting more sustainable and eco-friendly farming practices.

A compelling example from Nainital district, Uttarakhand, underscores the power of collective action, where a farmer achieved a net income of ₹9.64 lakh through natural farming by actively partnering with Farmer Producer Organizations (FPOs). This case illustrates how well-organized farmer collectives can improve access to markets, inputs, and knowledge, ultimately boosting farm profitability. By enabling small and marginal farmers to aggregate produce, negotiate better prices, and cut transaction costs, FPOs make Natural Farming a far more economically viable option for the broader farming community.

Closely related to this theme, another case from Nainital highlights the dual benefits of natural farming in simultaneously nurturing soil health and promoting human well-being, with a net income of ₹7.80 lakh. This example reflects the growing awareness among farmers and consumers alike about the importance of chemical-free food production and sustainable agricultural practices. By embracing Natural Farming, farmers are not only improving the quality and safety of their produce but also contributing meaningfully to environmental conservation and public health. This shift toward health-conscious, consumer-driven agriculture is steadily opening new market opportunities and fueling rising demand for naturally grown produce.

The case from Jammu and Kashmir's Anantnag district, where a farmer successfully supplemented natural farming operations with apple nursery production to achieve a sustainable net income of ₹3.71 lakh, further exemplifies the theme of diversification and thoughtful integration of related activities. This creative approach demonstrates how crop cultivation and nursery-based businesses can be intelligently combined to create a steady, dependable, and sustainable source of year-round revenue. In addition to providing farmers with significant additional income, nursery production actively promotes the growth of horticulture in the area by continuously supplying other farmers looking to start or grow their orchards with high-quality planting material.

The case from Kangra district, Himachal Pradesh, focuses on building a natural farm centered on consumer health and soil regeneration, yielding a net income of ₹2.54 lakh. Though modest compared to other cases, its true significance lies in its commitment to long-term sustainability and ecological well-being. By prioritizing soil health and chemical-free food production, the farmer makes a lasting contribution to responsible and sustainable agriculture. A defining theme across these miscellaneous cases is strategic income diversification beyond primary crop production. Unlike traditional farming, these models incorporate complementary activities such as input production, nursery management, FPO-driven marketing, and eco-friendly enterprises. This diversification not only boosts overall farm income but also reduces vulnerability to crop failure, market volatility, and climatic uncertainties.

A key theme across these success stories is the transformative role of innovation and entrepreneurial thinking in driving success. Farmers are increasingly adopting a business-oriented approach, identifying new opportunities within Natural Farming and developing value-added enterprises alongside their core activities. This shift from subsistence farming to agribusiness is essential for improving long-term economic viability and attracting younger, educated individuals to agriculture. At the same time, these cases highlight the importance of local resource use and indigenous knowledge in building sustainable and low-cost systems. By combining locally available inputs and traditional practices with modern techniques and market strategies, farmers are enhancing both efficiency and profitability. This balanced integration of traditional wisdom and contemporary innovation defines the success of these Natural Farming models.

Environmental sustainability remains a central and non-negotiable pillar of all these diverse initiatives and enterprises. Natural Farming practices make consistent and meaningful contributions to soil regeneration, biodiversity conservation, and a significant reduction in environmental pollution across agricultural landscapes. The strong and consistent emphasis on the use of organic inputs, systematic recycling of farm residues, and minimal reliance on external resources actively helps in maintaining ecological balance and ensuring the long-term sustainability of farming systems. Additionally, these ecologically sound practices substantially enhance the overall resilience of farming systems to the growing challenges of climate change, making them considerably more adaptable and better prepared to handle extreme and unpredictable weather conditions.

All of these success stories also demonstrate the critical role that institutional support and ongoing capacity building play. Farmers have been able to successfully embrace and significantly scale up their natural farming practices because to well-designed training programs, responsive extension services, and prompt



support from both government and non-governmental groups. For such community-level initiatives to continue to be successful and long-lasting, sustained access to pertinent information, suitable technology, and healthy markets is still crucial. Future growth and replication of these initiatives will depend on continued and increased support in these crucial areas.

In conclusion, the miscellaneous cases presented in this section offer rich insights into the increasingly diverse and evolving landscape of natural farming in India. They convincingly demonstrate that natural farming extends well beyond crop production, encompassing a wide range of complementary activities that collectively advance economic, social, and environmental sustainability in rural communities. These inspiring models powerfully underscore the immense potential of natural farming to build integrated and resilient rural economies, where farmers are not merely producers but also entrepreneurs, innovators, and responsible stewards of the natural resources they depend upon.

Each of these six distinctive and instructive success stories offers significant and useful lessons for farmers, policymakers, and development practitioners working in the field of sustainable agriculture. This section provides a strong and organized framework for a comprehensive and in-depth examination of these stories. When combined, they powerfully and persuasively highlight how crucial innovation, significant diversification, and thoughtful ecosystem development are to fully achieving the transformative potential of natural farming as a reliable and practical route to long-term rural prosperity and sustainable agricultural growth throughout India.

Outstanding Farm Income through Natural Farming Bio-Resource Centre and Vermicomposting Unit

Name : Mr. Mohd. Iqbal Bhat
Address : Vill. Koil, Block-Pulwama, District-Pulwama-192 301 (J&K)
Qualification : Post Graduate in Geography
Contact No. : 9622545160
Landholding : 2.5 acre



Introduction

Mr. Mohd Iqbal Bhat is a visionary farmer from the village of Koil in Pulwama district, Jammu & Kashmir, a region known for its rice and apple orchards but recently burdened by the ecological and economic impacts of chemical-intensive farming. For generations, the farming community in Pulwama relied on the natural fertility of the valley's soil. However, recent adoption of Green Revolution strategies led to heavy, often indiscriminate use of urea, DAP, and a mix of synthetic pesticides to maintain productivity. Initially following this conventional approach, Mr. Mohd Iqbal Bhat began to observe alarming trends on his ancestral land which was once friable, porous, and dark soil was becoming compact and increasingly difficult to till. Water retention declined sharply, causing the soil to dry rapidly and increasing irrigation requirements and energy costs. Despite applying escalating quantities of fertilizers, his crop yields plateaued, and the law of diminishing returns became unmistakably evident. Rising costs of chemical inputs further eroded profit margins, creating a dangerous cycle of debt and dependency. Driven by a deep commitment to environmental stewardship and a desire to secure a sustainable, autonomous future for his family, he sought a fundamental transformation. His journey toward vermicomposting and Natural Farming (NF) was not merely a technical change but a philosophical shift. It began with a pivotal visit to Krishi Vigyan Kendra (KVK) Pulwama, where he received scientific guidance that validated his intuition. Under the mentorship of the scientists of KVK Pulwama, Mr. Mohd Iqbal Bhat redefined his approach to agriculture, transforming his traditional landholding into a self-sustaining ecosystem of organic productivity and intensive resource recycling. This transformation marks a paradigm shift from high-input, low-knowledge farming to knowledge-intensive, zero-input agriculture.

Uniqueness of work related to NF

Mr. Mohd Iqbal Bhat's achievements stem from a set of sophisticated entrepreneurial competencies that



Vermicompost preparations



Practical demonstration of success to other farmers





Apple orchard with use of weeds as mulch

distinguish him as a developer of enriched vermicompost with specific NF bio-agents in Jammu & Kashmir. He demonstrated eco-innovation and opportunity recognition through the ability to perceive agricultural waste such as crop residues, fallen leaves, and livestock dung not as a disposal problem, but as primary raw material for high-grade natural farming and vermicompost. In doing so, he transformed an environmental liability into a high-demand commercial asset in a region dominated by chemical-dependent horticulture.

This transformation required calculated risk-taking, as moving away from conventional chemical farming often invites skepticism and social pressure from those fearing total crop failure. Mr. Bhat boldly rejected reliance on commercial inputs and placed his confidence in the long-term resilience of natural farming rather than the short-term fixes offered by synthetic chemicals. This risk was mitigated through rigorous, data-driven consultation with scientific experts, ensuring that his transition was evidence-based and systematic NF.

Systemic Capacity Building

The transformation of Mr. Mohd Iqbal Bhat's farm into a high-tech organic hub was driven by a structured capacity building programme supported by SKUAST-Kashmir and KVK Pulwama. Through advanced training in vermiculture, he gained expertise in managing *Eisenia fetida*, including pre-decomposition techniques to enhance survival and compost quality. His skills were further strengthened through microbial enrichment using beneficial organisms such as *Trichoderma*, *Azotobacter*, and PSB, converting vermicompost into a nutrient-rich, biologically active fertilizer.

An integrated farm design based on permaculture principles linked his vermicompost unit with crop fields to improve efficiency and reduce costs. He now operates 25 vermicompost chambers (15 × 2.5 × 2 ft) under a staggered production system to ensure year-round supply. In addition to compost, he produces vermish and other liquid bio-products, creating multiple income streams. This model generates multiple revenue streams. Firstly, it supplies enriched inputs for his own plot (paddy, maize, and vegetables) at near-zero cost. Secondly, compost, worms, and bio-products are sold to orchardists and nursery owners at a premium price. This diversified income stream buffers his household income against price volatility of traditional cereal crops and climate-related harvest fluctuations.

Major practices under NF

Mr. Mohd Iqbal Bhat follows key Natural Farming practices that focus on soil health restoration and





ecological balance. He regularly prepares fermented microbial formulations such as jeevamrit and ghanjeevamrit to enhance beneficial soil microflora and improve nutrient availability without the use of chemical fertilizers.

Mulching (achhadana) is practiced to conserve soil moisture, regulate temperature, suppress weeds naturally, and maintain favourable conditions for soil organisms. Chemical pesticides have been replaced with botanical formulations such as neemasthra and agniasthra, prepared from locally available materials like neem leaves, garlic, and green chilies, ensuring eco-friendly pest management while protecting beneficial insects. Through continuous addition of organic matter and minimal soil disturbance, he has improved soil structure, aeration, and moisture retention, leading to reduced irrigation requirements and enhanced crop resilience under changing climatic conditions.

Economic analysis

The economic analysis of the NF system reveals a highly efficient enterprise characterized by decreasing cultivation costs and increasing gross returns, driven by a strategic synergy between crop production and a robust vermicompost and bio-products unit. Between 2022 and 2025, the farm transitioned into a high-performance commercial entity, with the overall B:C ratio increasing from 2.23 to 3.42 (Table 1). The total

Table 1: Year-wise economic performance of diversified natural farming system on a 2.5 acre farm

Crops	Area	Production (q/farm)	Cost of cultivation# (₹)	Gross returns (₹)	Net returns (₹)	B:C ratio
2022-2023						
Paddy	0.6	12.0	19,340	62,400	43,060	3.23
Maize	0.4	4.8	6,468	16,070	9,602	2.48
Vegetables*	0.3	18.0	33,099	52,812	19,713	1.60
Total			58,907	1,31,282	72,375	2.23
2023-2024						
Paddy	0.6	13.8	18,715	74,161	55,446	3.96
Maize	0.4	5.4	5,719	18,491	12,772	3.23
Vegetables*	0.3	25.0	31,595	70,425	38,831	2.23
Total			56,029	1,63,077	1,07,049	2.91
2024-2025						
Paddy	0.6	14.4	18,230	77,861	59,631	4.27
Maize	0.4	5.8	5,233	20,609	15,376	3.94
Vegetables*	0.3	28.0	30,993	87,920	56,927	2.84
Total			54,456	1,86,390	1,31,934	3.42
*Vegetables include kale, tomato, cauliflower, cabbage, bean, brinjal, capsicum spinach #Including cost on inputs, operations, labour (hired+family)						





Table 2: Economic performance of vermicompost & bio-products under natural farming system on 1.25 acre (2024-25)

Farm component	Production	Expenditure# (₹)	Gross returns (₹)	Net returns (₹)	B:C Ratio
Vermicompost (q)	2,460	13,72,849	34,44,000	20,71,151	2.51
Jeevamrit (L)	32,266	1,62,103	5,16,256	3,54,153	3.18
Ghanjeevamrit (q)	265	1,34,547	3,44,994	2,10,447	2.56
Total		16,69,499	43,05,250	26,35,751	2.58
# Expenditure including inputs, operations, hired & family labour					

Table 3: Overall farm income generated by the farmer during 2024-25

Farm component	Expenditure# (₹)	Gross returns (₹)	Net returns (₹)	B:C Ratio
Diversified NF system	54,456	1,86,390	1,31,934	3.42
Vermicompost and bioproducts	16,69,499	43,05,250	26,35,751	2.58
Overall farm	17,23,955	44,91,640	27,67,685	2.61

net returns increased from ₹72,375 in 2022–23 to ₹1.32 lakh in 2024–25, reflecting consistent improvement in profitability. Vegetables contributed 43.2 percent of the total net returns, followed by paddy (45.2%) and maize (11.7%), indicating that paddy contributed the highest share to total net returns during 2024–2025 under NF.

The vermicompost and bio-products enterprise, providing consistent liquidity and a high-margin product. The farm's full cycle production reveals a highly profitable venture across all three components of NF viz: vermicompost, jeevamrit, and ghanjeevamrit, that is resulting in a combined total gross return of ₹43.05 lakh against a total production cost of ₹16.69 lakh (Table 2). Vermicompost serves as the primary source of revenue, contributing the largest share of net returns and B:C ratio. However, jeevamrit demonstrates the highest relative efficiency with a superior B:C ratio of 3.18, indicating that for every rupee invested, it generates significantly higher proportional returns compared to the other products. Overall, the integrated production system maintains an aggregate B:C ratio of 2.58, signifying strong financial sustainability and a net profit of ₹26.35 lakh, which underscores the economic viability of bio-product manufacturing in



Maize field under NF





this farm setup.

The integration of diversified NF system with vermicompost and bio-product enterprises substantially enhanced overall farm income. The combined net returns from crop production (₹1.32 lakh) and bio-input production (₹26.35 lakh) amounted to ₹27.68 lakh (Table 3), reflecting strong financial sustainability and reduced dependence on external inputs under the NF system.

Influence and impact on farmers

Mohd Iqbal Bhat's success has significantly influenced the farming community in Pulwama and surrounding areas. His farm now serves as a demonstration unit under SKUAST-K, regularly hosting exposure visits for farmers, students, and officials. By openly sharing his practical experiences, he has built trust and encouraged adoption of vermicomposting and natural farming practices.

His initiative has led to the formation of a small local organic cluster, with more than five farmers establishing their own vermicompost units. This collective shift has strengthened local income generation and reduced dependence on chemical inputs. The model has also demonstrated improvements in soil health and environmentally sustainable farming, reinforcing confidence in climate-resilient agriculture.

Through collaboration with KVKs and scientific institutions, he has ensured that natural farming practices remain technically sound and economically viable, inspiring youth and emerging agri-entrepreneurs to view farming as a sustainable and profitable enterprise.



Visit of KVK Scientists at bio input production center

**Contributors: Syed Shujhat Hussain, Mohammad Saleem Dar and Jahangir Ahmad Magray,
Krishi Vigyan Kendra, Pulwama**



Building a Sustainable Natural Farming Input Ecosystem through Bio-Entrepreneurship

Name : Mr. Bilal Ahmad Sheikh
Address : Vill. Murran, Block Pulwama, Pulwama-192 301 (J&K)
Qualification : M. Tech.
Contact No. : 6005674080
Landholding : 2.5 acre



Introduction

Mr. Bilal Ahmad Sheikh of Murran village, Pulwama district, Jammu and Kashmir, is an agri-entrepreneur who identified a critical bottleneck in the adoption of Natural Farming (NF), namely the limited availability of high-quality microbial inputs. While a large number of farmers in the Kashmir Valley were keen to transition away from chemical-based agriculture, many lacked the necessary infrastructure, livestock, or time to consistently prepare effective bio-input formulations. With a background in traditional farming and a keen understanding of emerging market gaps, Mr. Bilal Ahmad Sheikh decided to shift his focus from producing raw agricultural commodities to supplying biological solutions for NF. He recognized that by manufacturing and supplying standardized NF inputs, he could accelerate the district-wide transition toward sustainable practices while simultaneously developing a scalable, high-growth enterprise. This marked a strategic shift from farming land to cultivating beneficial microorganisms, thereby creating a service-oriented model within the agricultural sector.

Most commercially available composts in the market were of questionable quality, often consisting of partially decomposed organic waste with limited microbial activity. Additionally, many farmers found it labor-intensive and impractical to produce inputs such as jeevamrit or vermicompost at large scale. Mr. Bilal viewed this constraint not as a limitation but as an entrepreneurial opportunity. He converted his 1.25 acre landholding into a Bio-Resource Centre (BRC) dedicated to producing standardized, bio-fortified NF inputs for wider dissemination, effectively professionalizing and strengthening the support system for NF adoption. However, he is producing only beejamrit and jeevamrit at this point in time and rest of the formulations he is planning to produce in the coming years.

Uniqueness of work related to NF

Mr. Bilal's entrepreneurial success is rooted in a distinctive combination of persistence and scientific



Processing of vermicompost



Vermicompost pits





Space utilization under traditional orchard for production of bio-inputs

precision, reflected in the years he devoted to refining microbial enrichment protocols to ensure that his natural inputs could effectively compete with synthetic alternatives. His understanding of specific microbial strains, such as *Trichoderma* and *Pseudomonas*, enabled him to address climate-specific agricultural challenges in the Kashmir region. In addition, his collaboration with Krishi Vigyan Kendra (KVK), Pulwama, strengthened institutional credibility and trust in his enterprise.

The commitment to quality is evident in his rigorous quality-control systems, which ensure that every batch of vermicompost functions as a biologically active medium rich in beneficial fungi and microorganisms. Beyond technical expertise, Bilal demonstrated strong market awareness by identifying the absence of reliable supply chains for NF inputs within the local economy. By successfully scaling production from small experimental batches to high-volume institutional output without compromising quality standards, he effectively bridged the gap between sustainable farming principles and large-scale agricultural practice.

Systemic Capacity Building

Mr. Bilal Ahmad Sheikh's engagement with KVK, Pulwama, began in 2017 through comprehensive training in large-scale vermicomposting and bio-enrichment techniques. Under the mentorship of scientists of the KVK, Bilal mastered bio-fortification processes, learning to inoculate conventional compost with specific fungal and bacterial cultures to convert basic organic manure into a potent, living fertilizer capable of enhancing nitrogen fixation and phosphorus solubilization.

His expertise further expanded to include the operational and logistical management of a BRC. In this phase, he focused on extending the shelf life of liquid microbial formulations through stringent temperature regulation and scheduled aeration protocols. This strong technical foundation enabled his transition from small-scale composting pits to the industrial management of a 50-chamber facility, which required precise control of moisture levels, fermentation temperatures, and earthworm population dynamics.

With continued support from KVK Pulwama in navigating packaging standards, labeling requirements, and regulatory compliance, Bilal successfully transformed his initiative from a backyard activity into a professional and farmer-trusted enterprise. Today, Mr. Bilal Ahmad Sheikh's BRC operates on a decentralized production model that emphasizes accessibility and quality, serving as a critical input backbone for the NF community in the district.

Major practices under NF

Mr. Bilal's NF approach scales traditional practices to an industrial level through a sophisticated vermicomposting system comprising 50 chambers, each measuring $15 \times 2.5 \times 2$ feet. The system utilizes the earthworm species *Eisenia fetida* to convert organic waste into nutrient-rich humus, thereby reducing





landfill accumulation and associated greenhouse gas emissions. The process is further strengthened through targeted microbial enrichment, in which the compost is bio-fortified with nitrogen-fixing, phosphate-solubilizing, and potash-mobilizing microorganisms to deliver a comprehensive biological solution for soil health. To overcome conventional labour constraints, the operation also produces large volumes of concentrated liquid formulations, including jeevamrit and fermented botanical extracts, which are designed for compatibility with modern drip irrigation systems and spray equipment.

This large-scale fermentation process ensures a consistent and verified microbial population across all production batches and is supported by a dedicated unit of indigenous cattle. These native breeds play a crucial role by providing the specific digestive microbes required to maintain the quality, efficacy, and biological integrity of natural farming inputs at scale.

Economic analysis

The primary revenue is generated through the bulk sale of premium enriched vermicompost, beejamrit, and liquid jeevamrit to a diverse client base of more than 200 farmers, ranging from commercial orchardists to local kitchen gardeners. In addition, his waste-to-wealth network provides an essential waste management service within the village by sourcing cow dung and agricultural residues directly from local farms. This system secures high-quality raw materials at minimal cost while simultaneously delivering environmental

Table 1: Year wise economic performance of bio-input production in natural farming system on a 1.25 acre farm

Farm component	Production (q/L)	Expenditure# (₹)	Gross returns (₹)	Net returns (₹)	B:C ratio
2022-23					
Vermicompost	1,018	5,85,350	14,25,200	8,39,850	2.43
Beejamrit	80	44,000	1,20,000	76,000	2.73
Jeevamrit	14,000	80,500	2,24,000	1,43,500	2.78
Total		7,09,850	17,69,200	10,59,350	2.49
2023-24					
Vermicompost	1,618	9,30,400	22,65,200	13,34,800	2.43
Beejamrit	125	68,800	2,00,000	1,31,200	2.91
Jeevamrit	19,000	1,09,300	3,04,000	1,94,700	2.78
Total		11,08,500	27,69,200	16,60,700	2.50
2024-25					
Vermicompost	2,100	12,13,800	30,45,000	18,31,200	2.51
Beejamrit	181	91,900	2,98,650	2,06,750	3.25
Jeevamrit	21,600	1,22,000	3,88,800	2,66,800	3.19
Total		14,27,700	37,32,450	23,04,750	2.61
# Expenditure including inputs, operations, hired & family labour					





benefits. The economic analysis of the 1.25 acre bio-input production unit from 2022 to 2025 presented in Table 1, reveals a highly profitable and increasingly efficient enterprise. Production of vermicompost increased from 1018 q in 2022–23 to 2100 q in 2024–25. Although the expenditure incurred in vermicompost production rose from ₹5.85 lakh to ₹12.13 lakh, gross returns increased more sharply from ₹14.25 lakh to ₹30.45 lakh. As a result, net returns improved from ₹8.39 lakh to ₹18.31 lakh over the three years. The net returns from all the farm components increased from ₹10.59 lakh to ₹23.05 lakh. The B:C ratio remained consistently favourable, ranging between 2.49 and 2.61, indicating strong profitability of the enterprises.

Influence and impact on farmers

Beyond its technical achievements, Mr. Bilal's center has become a central training hub in Pulwama, serving as a key resource for agricultural students, policymakers, and government delegations from institutions such as SKUAST-K and the Department of Agriculture. By converting waste management into a high-tech agricultural service, he has enhanced the role of farmers as essential providers of community resources while generating direct livelihoods for local youth engaged in the processing and transport of biological inputs. Most importantly, by making high-quality biological inputs affordable and readily available, the center has removed major barriers to adoption, acting as a powerful enabler for the widespread uptake of NF practices across the region.

Mr. Bilal's model provides vital lessons in scaling a mission-driven business by identifying and addressing the ecosystem's primary bottlenecks. His success demonstrates that supplying essential biological inputs can be as impactful as farming itself, especially when backed by evidence-based selling through demonstration plots that neighbors can walk through—far more persuasive than a thousand brochures or digital ads. Collaborating closely with scientific institutions such as KVK gives a startup the technical credibility and research backing needed to challenge markets dominated by chemical inputs. Ultimately, his journey proves that consistency through standardization is a brand's most valuable asset, and when applied purposefully, it can drive ecological restoration and community-wide transformation.



Farmers' field grown under Natural Farming

**Contributors: Syed Shujhat Hussain, Mohammad Saleem Dar and Jahangir Ahmad Magray,
Krishi Vigyan Kendra, Pulwama**



Name : Mrs. Maya Negi

Address : Vill. & PO Ginti gaon, Kaladhungi, Nainital-263 159 (UK)

Qualification : Post graduate in Hindi, Sociology and M.S.W.

Contact No. : 9410373379

Landholding : 5 acre



Introduction

Mrs. Maya Negi, a 52-year-old farmer from Ginti village, Block Kotabagh in Nainital district of Uttarakhand, has transformed her land into a model Natural Farming (NF) enterprise. Coming from a farming family, she modernized traditional practices with eco-friendly methods after realizing the drawbacks of chemical farming, such as high input costs and soil degradation. Her NF journey began in 2021 and was strengthened after receiving the Mahila Krishak Samman Award from Kisan Kalyan Parishad and completing training at Prakritik Krishi Prashikshan Sansthan, Kurukshetra. For over two decades, she has worked with more than 5,000 women farmers through various SHGs, diversifying into Basmati rice, vegetables, value addition, handicrafts, candle making, and dhoop preparation. Her efforts have earned her several honors, including the Women Achievers Award (2015), Navonmeshi Krishak Award, Mahila Krishak Award, and Uttarakhand Ratna Award (2021).

Driven by the goal of reducing input dependency and improving soil health, she developed an integrated farming system combining crops, horticulture, and livestock. With technical support from scientists of KVK, Nainital, she overcame initial challenges like low yields and limited knowledge of bio-formulations. Mrs. Maya Negi also manages two Farmer Producer Organizations (FPOs). Kisan Utpadan Samiti, active for over 20 years, has 400 members and an annual profit of about ₹1 crore, engaging over 5,000 women farmers in diversified farm and value-added activities. The second, a Dairy FPO under the NANARD-PODF-ID Scheme, has 100 members and supports dairy-based livelihoods through collective processing and marketing.

Uniqueness of work related to NF

Mrs. Maya Negi's work in NF is unique for its strong integration of on-farm production, value addition, and



Mrs. Maya Negi participating in different training programs under NF





Mrs. Maya Negi participating in training programs under NF and motivating other farmers

market linkage development. She addressed the operational challenges of NF by establishing a dairy-based processing unit under the NABARD scheme for the preparation of natural and organic fertilizers and pesticides, ensuring consistency in bio-input quality while reducing labour dependence. By institutionalizing input preparation and streamlining farm operations, she strengthened the reliability and scalability of NF practices. To overcome the absence of price differentiation in local markets, she developed direct marketing channels through a collection centre and extended sales to metropolitan markets, where chemical-free produce commands premium prices. This combination of decentralized input production, women-centered organization, and assured market linkage represents a distinctive NF model that enhances economic viability while maintaining ecological integrity.

Systematic Capacity Building

Mrs. Maya Negi strengthened her skills through exposure visits to organic and natural farms in Kannur (Kerala) and drip irrigation systems in Maharashtra. She also collaborated with the National Centre for Organic and Natural Farming, Ghaziabad, on rice and other crops, mushroom cultivation, and bio-agent production. In 2023 and 2025, she attended specialized training programmes on NF conducted by KVK, Nainital, which provided her with practical knowledge of using local, low-cost resources for sustainable crop production. Through hands-on training and mentoring, she learned the preparation and application of bio-inputs such as beejamrit, jeevamrit, ghanjeevamrit, dashparni ark, and neemastra, enabling her to replace costly chemical fertilizers and pesticides.

She also developed expertise in intercropping, mulching, livestock integration, and recycling crop residues for soil enrichment, which enhanced the productivity and sustainability of her farm. With the support of KVK Nainital, she gained valuable exposure through visits to the Natural Farming Testing Center, Gurukul Kurukshetra, and interactions with progressive farmers in Uttarakhand, which broadened her perspective and inspired innovations on her farm. To extend these benefits to others, she established a training centre with financial support from NABARD and regularly participates in farmer training programmes, Kisan Melas, and demonstrations under the CFLD project on oilseeds and pulses, promoting organic and NF across the region.

Major practices under NF

Mrs. Maya Negi has successfully developed a diversified NF model that integrates crops, horticulture, livestock, fish production, value addition, and handicrafts, including organic dhoop and candle making, for enhanced sustainability and profitability. On her farm, she cultivates vegetables such as beans, tomato, colocasia, brinjal, and chilli, along with innovative intercrops like beans with ginger, turmeric, and capsicum, as well as peas with garlic. Her horticultural component includes aonla, mango, citrus, chikoo, peach, plum,





Natural Farming produce of Mrs. Maya Negi's field

guava, and pear orchards, all managed entirely under NF practices. To strengthen soil fertility and reduce dependency on external inputs, she maintains five cows and two cattle that provide dung, urine, and other raw materials for cow-based formulations. Additionally, she adds value by processing fruits into juices, jams, and related products while also marketing bio-inputs. Her produce is sold directly in cities such as Delhi, Bengaluru, and Bihar, ensuring better returns.

Economic analysis

The economic details in Table 1 highlight the robustness of Mrs. Maya Negi's NF model, which relies on diversification to maximize income and manage costs. The farm recorded an annual gross income of ₹15.93 lakh, largely driven by fruit cultivation that alone contributed ₹10.54 lakh, while vegetables and other crops added ₹5.38 lakh. On the cost side, total expenditure was maintained at ₹3.64 lakh, including inputs and hired labour cost. As a result, the enterprise generated net returns of ₹12.29 lakh per year





excluding family labour. After considering the contribution of 560 man-days of family labour valued at ₹2.65 lakh, the net income still stood at ₹9.64 lakh. This analysis underlines how a well-managed natural farming system can deliver high returns with controlled production costs.

Table 1: Income and cost structure of Mrs. Maya Negi's Natural Farming system

Crops	Gross returns (₹)	Expenditure # (₹)	Family Labour (₹)	Total cost (₹)	Net returns (₹)	
					Excluding family labour	Including family labour
Vegetables*	5,38,440	2,51,056.50	1,61,650	4,12,707	2,87,384	1,25,734
Fruits**	10,54,190	1,12,793.50	1,03,350	2,16,144	9,41,397	8,38,047
Total	15,92,630	3,63,850	2,65,000	6,28,850	12,28,780	9,63,780
* Vegetables include beans, tomato, colocasia, brinjal, and chilli						
** Fruits include aonla, mango, citrus, chikoo, peach, plum, guava, and pear						
# Expenditure incurred on inputs, operations & hired labour						

Influence and impact on farmers

Mrs. Maya Negi has made significant contributions to promote NF in Uttarakhand. With the support of KVK Nainital, GBPUAT Pantnagar, NABARD, and the National Centre for Natural and Organic Farming, Ghaziabad, she has taken on the role of a master trainer, further strengthening her outreach and farmer-to-farmer extension. Her farm recorded a marked improvement in soil health, with organic carbon levels rising from 0.93 to 1.55, demonstrating the effectiveness of bio-inputs and sustainable practices. More than 1,000 farmers have visited her farm, and 30 have already adopted NF under her guidance. Beyond her field, she has delivered over 50 lectures at AMTA and various SAUs, sharing practical insights and motivating farmers. As a mentor and trainer, she actively supports knowledge dissemination, consumer awareness, and community adoption, making her a regional leader in NF.

Contributors: Kanchan Nainwal and Sanjay Choudhary, Krishi Vigyan Kendra, Nainital



Name : Mr. Devender Bisht
Address : Vill. Gangapur, Teh. Haldwani, Nainital-263 139 (UK)
Qualification : Graduate
Contact No. : 9012847720
Landholding : 2.5 acre



Introduction

Mr. Devender Bisht, a progressive farmer from Gangapur village in Nainital district, chose farming as his profession after graduation to support his aged parents. Until 2010, he practiced chemical farming of cereals, pulses, oilseeds, millets, vegetables, and horticultural crops. However, due to health problems caused by agrochemicals and high production costs on his 2.5 acre land, he shifted to organic farming after being motivated by KVK Nainital during an awareness programme.

He began vermicomposting in 2010 and gradually adopted Natural Farming (NF) for better soil health and quality produce. In 2022, he attended a three-day Master Trainers' training on NF at Gurukul, Kurukshetra, and received the Progressive Farmer Award at Kisan Mela, GBPUAT, Pantnagar. KVK Nainital provided hands-on training on beejamrit, ghanjeevamrit, and neemastra preparation, which he now produces and uses regularly. Mr. Bisht has successfully grown arbi, garlic, onion, turmeric, ginger, and potato under NF. He also manages a 0.4 acre orchard with mango, litchi, citrus, guava, pomegranate, banana, papaya, and jackfruit using the Subhash Palekar Natural Farming approach, producing high-quality and chemical-free crops.

Uniqueness of work related to NF

The uniqueness of the farmer's work in NF lies in his successful standardization and adoption of cost-effective, chemical-free agro-techniques under field conditions. By preparing natural inputs such as jeevamrit on his own farm using minimal purchased materials like gram flour and jaggery, he significantly reduced the cost of cultivation while maintaining crop quality. Despite initial challenges in managing pests and diseases, particularly in tomato, he refined his practices through continuous experimentation and guidance, enabling the successful open-field cultivation of vegetables such as tomato, potato, peas, and



Demonstrating preparation of NF inputs to farmers



Preparation of NF inputs at his farm





French beans. His ability to produce high-quality natural produce that fetches better market prices highlights the practical viability and economic sustainability of NF.

Systematic Capacity Building

Systematic capacity building played a crucial role in strengthening the farmer's NF journey. Agronomists from KVK provided regular field visits, technical backstopping, and problem-specific solutions, particularly for pest and disease management. With their support, a capsule of agro-techniques tailored to his agro-climatic conditions was developed for diversified crop production under NF. To address marketing challenges, KVK facilitated linkages with agencies involved in promoting and marketing natural farm produce. Through continuous training, exposure, and institutional support, the farmer evolved from a learner to a successful practitioner, and now actively motivates and connects other farmers, including those from Uttarakhand, to organized marketing platforms for promoting NF.

Major practices under NF

As per the suggestions and recommendations of KVK scientists during training, he started using beejamrit, jeevamrit, ghanjeevamrit, and natural liquid sprays. Initially, jeevamrit was applied once a week, followed by a mixture of jeevamrit and sour buttermilk (khatti lassi) in alternate weeks. This schedule was followed regularly. Agniastra and neemasthra were used for insect-pest control. NF improved soil fertility and reduced the incidence of insect-pests and diseases in both his polyhouse and open fields. He was highly encouraged by the positive results of these natural inputs.

Economic analysis

Table 1 highlights the strong economic viability of Mr. Devender Bisht's NF system. The enterprise generated gross returns of ₹9.10 lakh, with vegetables and field crops contributing ₹5.50 lakh and fruit crops adding ₹3.60 lakh. The annual expenditure including inputs & hired labour was ₹2.27 lakh and including family labour was ₹1.45 lakh. As a result, the farm realized net returns of ₹6.83 lakh when family labour was excluded. Even after accounting for family labour, the net returns remained substantial at ₹5.38 lakh. The figures clearly demonstrate that diversified natural farming ensures high profitability through

Table 1: Economic performance of Mr. Devender Bisht's diversified NF enterprise

Crops	Gross returns (₹)	Expenditure # (₹)	Family Labour## (₹)	Total cost (₹)	Net returns (₹)	
					Without family labour	With family labour
Vegetables*	5,50,120	1,63,764	94,250	2,58,014	3,86,356	2,92,106
Crops**	4,68,290	1,32,886	92,344	2,25,230	3,35,404	2,43,060
Fruits***	3,59,850	63,686	50,750	1,14,436	2,96,164	2,45,414
Total	13,78,260	3,60,336	2,37,344	5,97,680	10,17,924	7,80,580

* Vegetables include arbi, garlic, onion, turmeric, ginger, potato, tomato, and pea

** Crops include paddy, mustard, gram, wheat, maize, and soybean

***Fruits include mango, litchi, citrus, guava, pomegranate, banana, papaya, and jackfruit

Expenditure including inputs, operations & hired labour

Family labour @460 man-days/year





Mr. Devender Bisht at his farm with different crops grown under Natural Farming

reduced input costs and multiple income streams, making the system economically sustainable and resilient.

Influence and impact on farmers

The farmer is content as NF has not only reduced his expenditure on chemicals but also enriched the soil with beneficial microorganisms. Above all, he feels immense satisfaction in feeding his family and consumers with safe and healthy food. He has also established a mixed fruit orchard comprising mango, guava, litchi, banana, papaya, jackfruit, aonla, pomegranate, and grapes under NF conditions. This diversification has reduced his dependence on chemicals, lowered the cost of cultivation, and provided additional income through intercropping.

The farm of Mr. Devender Bisht has now become a model for NF. A large number of farmers, students, and agricultural professionals frequently visit his fields to observe the production technologies he practices. He plays an instrumental role in disseminating these techniques among fellow farmers, who are also benefiting from his scientific approach. His work has been recognized on several platforms, and many dignitaries, including the Governor of Uttarakhand, Chief Minister of Uttarakhand, Chief Agriculture Officer and Chief Horticulture Officer of Nainital, Vice-Chancellor of GBPUAT, Pantnagar, and the Director of Extension Education, Pantnagar, have appreciated his efforts.



Awareness program at village Gangapur



Farmer receiving award by CAO, Agriculture

**Contributors: Kanchan Nainwal, Sanjay Choudhary and Deepali T. Pandey,
Krishi Vigyan Kendra, Nainital**



Name : Mr. Waseem Amin Malik

Address : Vill. Lisser, PO Buchoo, Kokernag, Anantnag-192 202 (J&K)

Qualification : Postgraduate

Contact No. : 7889926595

Landholding : 1.5 acre



Introduction

Mr. Waseem Amin Malik, a postgraduate progressive farmer from Lisser, Kokernag, Jammu & Kashmir, has emerged as a successful practitioner of natural farming by transforming his 1.5 acre farm into a sustainable and eco-friendly production system. Coming from a traditional farming background, he initially faced challenges such as low farm income, limited technical knowledge, and heavy dependence on chemical inputs. With motivation to improve his livelihood and ensure safe food production, he approached Krishi Vigyan Kendra (KVK), Anantnag for scientific guidance.

Through continuous technical support and capacity building, he gradually shifted from conventional farming to natural farming practices. His efforts have resulted in improved soil health, reduced cost of cultivation, and production of chemical-free vegetables and planting material. Today, his farm serves as a model of sustainable agriculture and a source of inspiration for farmers in the region.

Uniqueness of work related to NF

The uniqueness of Waseem Amin's work lies in the holistic integration of crops, livestock, soil health management, and on-farm resource recycling under natural farming. He cultivates seasonal vegetables such as brinjal, chilli, turnip, and radish. In addition, he manages an apple rootstock nursery on 0.5 acre, which provides high-value horticultural income. Key natural farming practices include intercropping with pulses, mulching with crop residues for moisture conservation, whapasa method for soil moisture



Preparation of NF concoctions (jeevamrit and beejamrit)





management, and integrated livestock farming. Livestock provides dung and urine for the preparation of beejamrit, jeevamrit, neemastra, and other bio-inputs, making the system self-reliant and environmentally sustainable.

Systematic Capacity Building

Systematic capacity building played a crucial role in the adoption of natural farming by Mr. Waseem Amin. With continuous support from KVK-Anantnag, he received hands-on training on natural farming principles, crop planning, soil health management, and preparation of bio-inputs. He also developed an Area Renovation and Resource Development Centre on his farm that serves as a demonstration and training hub for nearby farmers, promoting awareness and adoption of natural farming practices.

Major practices under NF

The success of Mr. Waseem Amin's farming model is attributed to the systematic adoption of core Natural Farming practices focusing on soil health restoration, ecological balance, and self-reliance in farm inputs. All chemical fertilizers, pesticides, and herbicides were completely eliminated, and crop nutrition and protection were managed exclusively through natural bio-inputs, resulting in reduced cultivation costs and production of safe, residue-free produce. On-farm inputs such as beejamrit for seed treatment, jeevamrit for enhancing soil microbial activity and nutrient availability, and neemastra and other botanical formulations for eco-friendly pest management were prepared using locally available resources like cow dung, cow urine, jaggery, pulse flour, and neem leaves.

Soil fertility was maintained through biological means, leading to improved soil structure, organic carbon content, moisture retention, and crop vigor. Mulching with crop residues and organic biomass helped conserve moisture, suppress weeds, regulate soil temperature, and enhance soil organic matter. The whapasa method was adopted to maintain optimal air–water balance in the soil through controlled irrigation, promoting healthy root growth and reducing soil-borne diseases. A diversified cropping pattern involving brinjal, chilli, turnip, and radish ensured year-round production. Livestock integration played a vital role by supplying dung and urine for bio-input preparation, enabling nutrient recycling and reducing dependence on external inputs. Efficient recycling of farm waste and crop residues further strengthened ecological sustainability. Collectively, these practices resulted in improved soil health, lower production costs, stable and enhanced yields, reduced pest and disease pressure, and production of chemical-free vegetables, demonstrating a scientifically sound, economically viable, and easily replicable Natural Farming model for small and marginal farmers.



**Scientists of KVK monitoring the performance
of fruit rootstock nursery**

Economic analysis

Adoption of Natural Farming (NF) significantly improved the economic performance of the farming enterprise. The complete elimination of chemical fertilizers and pesticides substantially reduced the cost of cultivation, while the use of on-farm bio-inputs such as jeevamrit and beejamrit ensured





Mr. Waseem demonstrating the preparation of NF concoctions (jeevamrit and beejamrit)

sustained soil fertility and crop productivity. Diversification into high-value vegetable crops along with a fruit rootstock nursery provided year-round income and enhanced livelihood security.

The crop-wise economic analysis clearly reflects the profitability, efficiency, and sustainability of the Natural Farming system. Cultivation of vegetables during both kharif and rabi seasons ensured optimal utilization of land and labour resources, resulting in continuous cash flow throughout the year.

Table 1: Crop-wise economic performance under natural farming

Crop		Brinjal	Dry chilli	Turnip	Radish	Apple nursery	Total
Variety		Pusa purple long	Kashmir long-1	Purple top white globe	White round	Root stock	—
Area (acre)		0.25	0.63	0.63	0.25	0.50	—
Production (q)/(plants)		15.40	3.53	48.03	18.34	4,200.00	—
Hired labour (₹)		463	1,548	1,842	556	6,480	10,890
Family labour (₹)		3,394	11,355	13,507	4,080	47,520	79,856
Total labour (₹)		3,856	12,904	15,349	4,637	54,000	90,746
Cost of Cultivation (₹)		5,356	17,922	21,318	6,440	75,000	1,26,036
Gross returns (₹)		23,174	83,610	85,746	24,068	2,01,000	4,17,598
Net Income (₹)	Without family labour	21,212	77,043	77,935	21,708	1,73,520	3,71,418
	With family labour	17,818	65,688	64,428	17,628	1,26,000	2,91,562





Among vegetable crops, chilli recorded the highest net income, followed closely by turnip, indicating their suitability as high-value crops under Natural Farming conditions. Brinjal and radish also generated substantial returns with relatively low cultivation costs, highlighting the economic advantage of short-duration vegetable crops under NF.

The apple rootstock nursery emerged as the most profitable enterprise, generating a net income of ₹1.26 lakh from 0.5 acre. This component not only diversified income sources but also reduced overall financial risk, making the farming system more resilient and sustainable. Overall, cultivation on 2.25 acre under natural farming generated gross returns of ₹4.17 lakh with a net income of ₹2.91 lakh including family labour and 3.71 lakh excluding family labour (Table 1), demonstrating the strong economic viability of the system. The relatively low cost of cultivation across all enterprises highlights the key strength of natural farming reduced dependency on external inputs and enhanced use of on-farm resources.

The economic analysis confirms that natural farming, when combined with diversification and scientific guidance from KVK, results in reduced cost of cultivation, higher net returns, improved income stability, better risk management, enhanced soil health and long-term sustainability. This model clearly establishes natural farming as a profitable, sustainable, and replicable livelihood option for small and marginal farmers.

Influence and impact on farmers

Mr. Waseem Amin's success has created a strong demonstration effect in the region. His farm has become a learning site for neighboring farmers who regularly visit to understand the preparation and application of natural bio-inputs, crop management without chemicals, and integration of livestock for nutrient recycling. Many farmers have shown interest in adopting natural farming after observing the low cost of cultivation, improved soil health, and premium-quality produce. His journey highlights how scientific support, farmer motivation, and natural resource management can create a sustainable and profitable model of natural farming.

Contributors: Shabeer Ahmad Ganaie and Ishtiyag A. Khan, Krishi Vigyan Kendra, Anantnag



Name : Mr. Harbans Lal

Address : Vill. Basnoor, PO-Basnoor, Shahpur, Kangra-176 021 (HP)

Qualification : Post Graduate

Contact No. : 9891988225

Landholding : 3.75 acre



Introduction

Mr. Harbans Lal is a progressive farmer from village Basnoor, located about 20 km from the Kangra district headquarters. He began his professional career as a Software Engineer with the reputed company Dell, but his deep-rooted interest in agriculture led him to take up farming as a full-time profession. While diversifying his farming activities to improve profitability, he realized that excessive dependence on chemical inputs was increasing production costs, degrading soil health, and limiting net income.

His approach to farming changed after attending an awareness programme organized by Krishi Vigyan Kendra (KVK), Kangra, where he learned about Natural Farming (NF). Motivated by its benefits, he initially experimented with NF in his kitchen garden and later adopted it on a larger scale. Currently, he practices NF on about 3.75 acre of land with support from the Department of Agriculture, producing high-quality crops such as turmeric, red rice, black rice, ginger, potato, black wheat, and kasturi basmati rice. His sustainable farming efforts have earned recognition from several dignitaries and serve as an inspiration to other farmers.

Uniqueness of work related to NF

The uniqueness of Mr. Harbans Lal's NF model lies in its scientific, system-driven, and self-innovated approach that transformed initial constraints into strengths. Starting with limited practical exposure, he overcame early challenges through continuous handholding by KVK Kangra, regular field-level problem solving, and gradual standardization of NF agro-techniques across cereals and cash crops. His work is distinguished by the precise scheduling of bio-inputs such as jeevamrit, neemastra, and agniasta, tailored to crop stages, which significantly improved soil fertility and reduced pest and disease incidence without chemical dependence. Further adding to the model's uniqueness, he developed an automatic system for



Mr. Harbans Lal in his Farm at Basnoor



Paddy grown through NF





Mr. Harbans Lal in his turmeric field

preparation and application of bio-formulations, reducing labour requirements and operational costs. By successfully integrating diversified crops with low external inputs and market linkages for NF produce, his farm has emerged as a sustainable, replicable, and economically viable natural farming model for hill agriculture.

Systematic Capacity Building

Mr. Harbans Lal attended a comprehensive NF training at CSK HPKV, Palampur, and systematically adopted the practice under KVK Kangra's guidance. Over the years, he participated in rigorous training programmes, actively engaging with experts to acquire technical skills for cereal and vegetable cultivation, and consistently applied these technologies in his own fields.

Beyond formal training, he joined exposure visits to KVK Kullu and IARI Regional Station, Katrain, and attended follow-up on-campus programmes to refine his expertise. He received continuous guidance in preparing and applying key inputs such as beejamrit, jeevamrit, neemastra, dashparni ark, brahmastra, saptdhanyunkar, and khatti lassi, along with essential resources like seeds, seedlings, and mulching material. Through his sustained efforts and close association with KVK Kangra, Mr. Harbans Lal has developed a sustainable and replicable natural farming model for cereals and vegetables.

Major practices under NF

Mr. Harbans Lal follows a well-defined NF schedule on his farm. He raises nurseries of red rice, black rice, and kasturi basmati during May and completes transplanting by the end of June. Sowing of ginger and turmeric is also undertaken in May. During the rabi season, he sows black wheat, garlic, and potato in November in accordance with seasonal suitability. Before sowing and transplanting, he applies jeevamrit to activate soil microbial activity. He maintains proper plant-to-plant and row-to-row spacing for each crop to





ensure optimum growth. A systematic schedule of natural liquid formulations is followed, wherein jeevamrit is applied weekly during the initial growth stage and subsequently alternated with a mixture of jeevamrit and sour buttermilk (khatti lassi). for managing insect pests, he uses agniastra and neemasthra as need-based interventions. Through consistent adoption of these practices, soil fertility has improved and the incidence of pests and diseases has been considerably reduced on his farm.

Economic analysis

The financial performance of an entrepreneur is a vital indicator of long-term sustainability. For Mr. Harbans Lal, annual income has shown steady growth, increasing from ₹1.25 lakh to ₹2.5 lakh (Table 1), supported by KVK interventions such as training programmes, exposure visits, and continuous handholding under the project. Motivated by these attractive returns, he has gradually expanded the area under natural farming enterprises, further strengthening his position as a successful agri-entrepreneur.

Table 1: Year-wise economic performance of diversified cropping system

Particular	Red Rice	Black Rice	Kasturi Basmati	Wheat	Black Wheat	Ginger	Potato	Turmeric	Total
2021-22									
Area (acre)	1	1	1	2.5	0.7	0.2	0.2	0.2	--
Production (q/farm)	8	8	7	20	5	8	8	7	--
Cost of cultivation (₹/ farm)	14,525	16,515	14,500	37,455	10,550	11,310	12,260	11,400	1,28,515
Gross income (₹/ farm)	40,250	36,420	28,080	50,110	12,500	32,000	24,135	31,515	2,55,010
Net income (₹/ farm)	25,725	19,905	13,580	12,655	1,950	20,690	11,875	20,115	1,26,495
B:C ratio	2.77	2.21	1.94	1.34	1.18	2.83	1.97	2.76	1.98
2022-23									
Area (acre)	1	1	1	2.5	0.7	0.2	0.2	0.2	--
Production (q/ farm)	8.5	8	8	20.5	5	8.5	8.5	7.5	--
Cost of Cultivation (₹/ farm)	13,420	15,650	13,345	35,200	9,500	10,560	11,500	10,300	1,19,475
Gross income (₹/ farm)	42,530	36,085	32,080	51,250	12,500	34,280	25,520	33,750	2,67,995
Net income (₹/ farm)	29,110	20,435	18,735	16,050	3,000	23,720	14,020	23,450	1,48,520
B:C ratio	3.17	2.31	2.40	1.46	1.32	3.25	2.22	3.28	2.24
2023-24									
Area (acre)	1.00	1	1	2.5	0.7	0.2	0.2	0.2	--
Production (q/ farm)	8.5	8.5	8	21	6	8.5	9	7	--
Cost of cultivation (₹/ farm)	12,450	14,610	12,150	34,730	9,555	9,820	11,360	9,810	1,03,550
Gross income (₹/ farm)	42,500	38,250	36,045	52,500	15,150	34,075	31,500	56,050	3,06,070
Net income (₹/ farm)	30,050	23,640	34,830	17,770	5,595	24,255	20,140	46,240	2,02,520
B:C ratio	3.41	2.62	29.67	1.51	1.59	3.47	2.77	5.71	2.96
2023-24									
Area (acre)	1.00	1	1	2.5	0.7	0.2	0.2	0.2	--
Production (q/ farm)	9.5	9.5	8.5	22	6	9.5	9.5	8	--
Cost of cultivation (₹/ farm)	12,285	14,330	12,510	34,200	9,425	9,620	11,200	9,625	1,13,195
Gross income (₹/ farm)	47,530	47,500	42,550	66,320	18,060	47,535	33,250	64,320	3,67,065
Net income (₹/ farm)	35,245	33,170	30,040	32,120	8,635	37,915	22,050	54,695	2,53,870
B:C ratio	3.87	3.31	3.40	1.94	1.92	4.94	2.97	6.68	3.24





Influence and impact on farmers

Mr. Harbans Lal expresses high satisfaction with his journey in NF, as it has significantly reduced expenditure on chemical inputs while enriching the soil with beneficial microorganisms. Beyond crop production, he takes pride in providing safe and healthy food to his family and consumers. He has also diversified into goat farming, which serves as an additional source of income. Owing to the visible success of his NF practices, his farm has emerged as a model unit and is frequently visited by farmers, students, and agricultural professionals to observe and learn about the technologies he has adopted.

Through regular interactions, field demonstrations, and experience sharing, Mr. Harbans Lal plays a key role in motivating and guiding fellow farmers, many of whom are adopting NF based on his scientific and innovative approach. He has presented his work on multiple platforms, and several dignitaries have visited his farm to observe natural cultivation practices for cereals and vegetables. Today, he is recognized not only as a successful farmer but also as a master trainer and key resource person for NF, supporting farmers across Himachal Pradesh and neighbouring states. His farm is now a regular destination for exposure visits organized by Krishi Vigyan Kendras and the Department of Agriculture.

Limitations and policy support

Despite the demonstrated benefits of Natural Farming, the productivity of Mr. Harbans Lal remains modest, largely due to structural constraints arising from his small landholding of 3.75 acre. The highly diversified cropping system, while ecologically resilient, results in small volumes of marketable surplus for each crop, restricting remunerative price realization. Moreover, the absence of a dedicated and assured marketing system for chemical-free and NF produce forces farmers to sell at prices comparable to conventionally grown crops. To enhance economic viability, policy support is required in the form of compensation for ecological benefits, facilitation in the form of more dedicated space and locations for selling chemical free agri-products, particularly for small and diversified NF farmers.

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CONCLUSIONS AND POLICY RECOMMENDATIONS

The collective insights drawn from the diverse success stories featured in this book present a compelling, evidence-based narrative that natural farming is not merely an ecological alternative but a transformative and scalable approach to revitalizing rural livelihoods. Spanning a wide range of agro-climatic regions, from the cold deserts of Ladakh and the mid-hills of Himachal Pradesh to the fertile plains of Punjab and the mountainous landscapes of Uttarakhand and Jammu & Kashmir, the experiences of farmers affirm that economic prosperity can indeed be achieved in harmony with ecological restoration.

A comprehensive synthesis of the six thematic sections highlights several key learnings that together form the foundation of a new agricultural paradigm that is resilient, regenerative, and distinctly farmer-centric. These learnings span the following interconnected dimensions, each of which reinforces the case for natural farming as a viable and transformative agricultural model.

1. Integration as the Cornerstone of Sustainability in Natural Farming

The cases under Integrated Natural Farming Systems clearly highlight that diversification and integration are essential for achieving stability and resilience in farming. Farmers who moved beyond monocropping



systems like maize and wheat and adopted integrated models involving crops, livestock, horticulture, and allied enterprises such as beekeeping and agro-processing were able to significantly enhance their incomes, with some achieving net returns exceeding ₹20 lakh annually.

Integration reduces dependency on a single source of income and spreads risk across multiple components. It also ensures efficient recycling of farm resources: crop residues feed livestock, livestock waste enriches soil, and diversified cropping systems improve soil fertility. This circular approach lowers input costs and builds long-term sustainability.

These systems are particularly well-suited to small and marginal farmers, as they yield more from less land while ensuring year-round income flow. The success of farmers in regions like Bilaspur, Kullu, and Kargil demonstrates that even under challenging conditions, integrated natural farming can deliver robust and sustainable livelihoods.

2. High-Value Horticulture to Unlock Income Potential

The second and third sections of the book underscore the significant potential of horticulture, covering both perennial and annual crops, when combined with natural farming practices. Income levels achieved in kiwifruit, apple, and dragon fruit cultivation illustrate that natural farming is not a limitation but an enabler of high-value agriculture. Particularly noteworthy is the adaptability of these models across diverse environments. From high-altitude apple orchards in Lahaul and Spiti to low-chill apple cultivation in Dehradun, farmers have successfully tailored their practices to local conditions. Annual horticultural crops such as vegetables and off-season peas have similarly provided reliable income streams, especially in regions with limited cropping windows.



Taken together, these cases reflect a meaningful shift from subsistence agriculture to market-oriented production, achieved without compromising soil health or local ecosystems. By focusing on quality, diversity, and seasonality, farmers have been able to access premium markets and improve profitability.

3. Value Addition for Income Empowerment

A key insight emerging from this compilation is the critical role of value addition in enhancing farm income. Farmers who moved beyond primary production and engaged in processing, branding, and direct marketing achieved significantly higher returns than those relying solely on raw produce. The success stories from Una, Amritsar, and Shimla demonstrate how value addition can convert agricultural produce into higher-earning products, capturing a larger share of the final consumer price. Whether through processing fruits into jams and juices, producing traditional food items, or selling natural produce directly to consumers, these initiatives have opened new and reliable avenues for income generation.

Equally important is the role of entrepreneurship in driving this process. Farmers who embraced innovation, built market linkages, and adopted consumer-oriented approaches were able to develop enterprises that are both profitable and enduring. This shift from producer to agripreneur represents a meaningful step toward greater income security and self-reliance at the farm level.

4. Low-Budget Natural Farming to Eliminate Financial Distress

The success stories under low-budget natural farming provide a powerful message that sustainable agriculture does not require high capital investment. Farmers with limited resources have demonstrated that by utilizing locally available inputs and adopting natural farming principles, it is possible to achieve both productivity and profitability. These models are particularly significant for marginal farmers, who often face



financial constraints and are vulnerable to debt cycles. By reducing dependency on external inputs such as chemical fertilizers and pesticides, natural farming lowers the cost of cultivation and enhances net income.

Furthermore, these cases emphasize resilience in the face of adversity. Farmers in regions like Kargil, Chamoli, and Bandipora have overcome climatic challenges, resource limitations, and socio-economic constraints through innovation and determination. Their experiences highlight that natural farming is not only an agricultural practice but also a pathway to self-reliance and empowerment.

5. Emerging Ecosystems, Beyond the Farm

The miscellaneous cases presented in the final section broaden the scope of natural farming beyond individual farms to encompass entire ecosystems. Initiatives such as bio-resource centers, vermicomposting units, farmer producer organizations (FPOs), and input-based enterprises illustrate how natural farming can generate employment and entrepreneurship opportunities at the community level.

These models play a critical role in supporting the adoption and scaling of natural farming. By providing access to inputs, knowledge, and markets, they create an enabling environment for farmers. The success of bio-entrepreneurs in Pulwama and the role of FPOs in Nainital demonstrate that collective action and institutional support are essential for long-term sustainability.

6. Gender Empowerment as an Important Catalyst of Futuristic Change

A recurring theme across multiple sections is the active participation and leadership of women in natural farming. From managing integrated farming systems to leading value addition enterprises, women farmers have emerged as important drivers of both innovation and change at the farm and community level.



Their contributions extend beyond economic gains. They strengthen household nutrition, carry forward sustainable practices, and play a meaningful role in community development. In many of the documented cases, women have been not just participants but initiators, demonstrating that their empowerment is central, not incidental, to the success of natural farming. Providing women with training, access to resources, and market opportunities is therefore essential for the long-term growth and wider adoption of natural farming.

7. Environmental and Social Impact

Beyond economic benefits, natural farming delivers meaningful environmental advantages. Improved soil health, enhanced biodiversity, reduced chemical usage, and better water conservation are common outcomes across the documented cases. These gains are particularly significant in ecologically fragile regions such as the Himalayas, where practices that degrade soil and deplete water resources can have consequences that extend across generations.

The social impact is equally substantial. The production of chemical-free, nutritious food reduces pesticide exposure and supports better dietary outcomes for farming households and consumers alike. More broadly, natural farming strengthens community resilience by reducing farmer indebtedness, preserving traditional knowledge, and fostering a culture of self-reliance. In this way, it moves agricultural practice closer to the goals of public health, social well-being, and long-term ecological balance.

Key Lessons and Way Forward

The collective evidence presented in this book points to several key lessons:

- Diversification and integration are essential for resilience and income stability

- Natural farming is economically viable across diverse agro-climatic conditions
- Value addition and market linkages are critical for maximising farm income
- Low-cost models can make sustainable agriculture accessible to marginal farmers
- Institutional support and community-based approaches are vital for scaling adoption
- Women's participation significantly enhances the impact and reach of farming systems

Looking ahead, the challenge lies in scaling these models while preserving their ecological and social foundations. This requires coordinated efforts from policymakers, researchers, extension agencies, and farmer organisations, backed by sustained investment in capacity building, infrastructure, and market development. The stories documented in this book are more than individual successes. They represent a collective movement toward a new vision of agriculture, one where farming is not a struggle for survival but a dignified and profitable enterprise, where the health of the soil, the farmer, and the consumer are interconnected, and where ecological well-being and economic prosperity reinforce each other. Natural farming, as demonstrated through these diverse cases, holds the promise of transforming agriculture into a system that is productive, inclusive, and environmentally sound. The path ahead calls for translating these experiences into policy, adapting them to local contexts, and scaling them with the urgency that a resilient agricultural future demands.

Policy Recommendations:

The documented success stories across Himachal Pradesh, Punjab, Uttarakhand, Jammu and Kashmir, and Ladakh clearly demonstrate that natural farming is not only ecologically sustainable but also economically viable across diverse agro-climatic conditions. Based on these insights, the following policy recommendations are proposed to promote large-scale adoption and long-term sustainability.

1. Promote Integrated Natural Farming Systems (INFS):

The high incomes achieved through integrated natural farming models highlight the importance of diversification. Policymakers should encourage crop-livestock-horticulture integration through targeted schemes, while providing more attractive incentives for on-farm resource recycling through composting, bio-inputs, and bio-resource centres. Additionally, region-specific integrated natural farming models should be developed for hills, plains, and cold arid regions. This approach enhances income stability, reduces risk, and improves resilience against climate variability.

2. Strengthen Value Addition and Market Linkages:

Evidence from the field consistently shows that moving beyond raw produce and investing in value addition can substantially improve farm incomes. To build on this, policy efforts should prioritise setting up processing facilities at the village level, helping farmers brand, certify, and package their natural products effectively, and expanding direct market access through avenues such as farmer markets, online platforms, and farm-to-consumer supply chains. A government-supported branding initiative for naturally grown produce could further enable farmers to position their products in premium market segments and command better prices.

3. Facilitate Access to Training and Extension Services:

Adoption of natural farming requires sustained knowledge and skill development. Policies should focus on establishing dedicated natural farming training centres at district and block levels, promoting farmer-to-farmer learning models using successful case studies, and strengthening extension systems with practical, field-based demonstrations. Special attention should be given to capacity building of women farmers and youth, who have shown strong leadership across several documented cases.

4. Support Low-Budget Natural Farming for Smallholders:

The strong performance of low-cost natural farming models across the documented cases affirms that this approach is particularly well suited to the needs and constraints of small and marginal farmers. Rather than perpetuating dependence on chemical inputs through input subsidies, policy support should be reoriented toward providing foundational assistance in the form of training, knowledge transfer, and access to basic resources.

Encouraging the preparation and use of locally sourced bio-inputs such as Jeevamrit and Beejamrit can further reduce the cost burden on resource-limited households. Alongside this, promoting millet-based and traditional cropping systems offers a dual advantage, strengthening both nutritional security and long-term agricultural sustainability. Together, these measures have the potential to meaningfully lower the cost of cultivation and improve net returns for farmers operating with limited capital and land.

5. Develop Natural Farming-Based Horticulture Clusters:

The high returns achieved from apple, kiwi, dragon fruit, and other high-value crops indicate strong and replicable potential. Policies should focus on creating crop-specific clusters for natural horticulture, supporting nursery development and access to quality planting material, and promoting off-season and high-value crop cultivation suited to specific regions. A cluster-based approach can improve efficiency across production, processing, and marketing.

6. Encourage Agri-Entrepreneurship and Rural Enterprises:

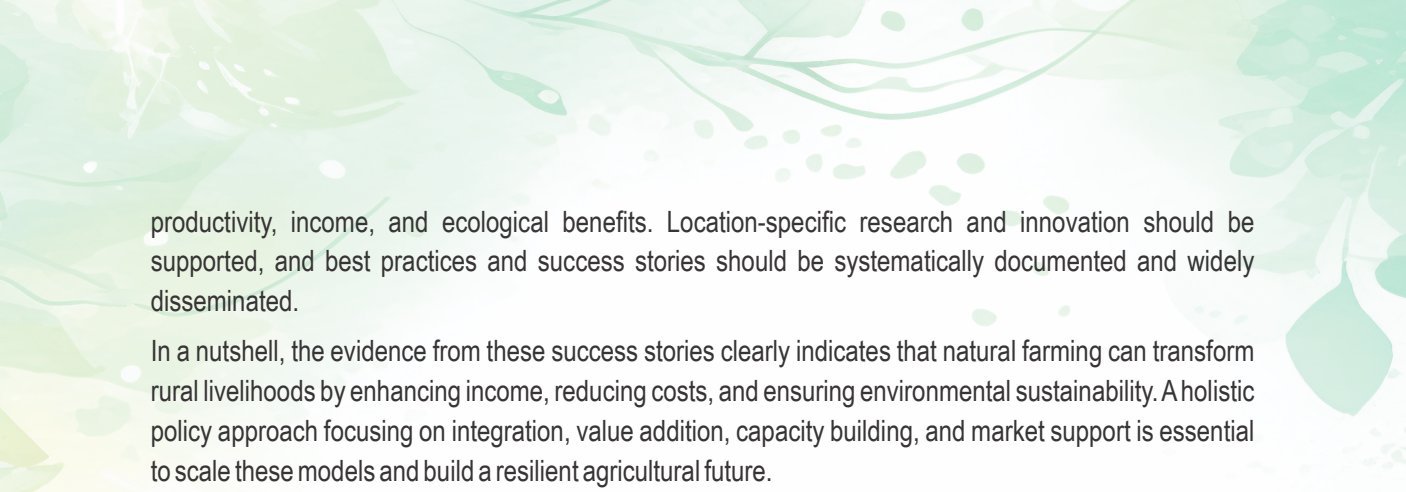
Several cases demonstrate the potential of entrepreneurship in bio-inputs, nurseries, and value-added products. Policymakers should provide startup support and credit access for agri-entrepreneurs, promote bio-resource centres and input production units, and facilitate the formation and strengthening of Farmer Producer Organisations. These steps will generate rural employment and strengthen the broader natural farming ecosystem.

7. Integrate Natural Farming into Climate and Health Policies:

Natural farming contributes meaningfully to soil regeneration, water conservation, and chemical-free food production. It should therefore be integrated into climate resilience and carbon farming programmes, linked with public health and nutrition initiatives, and supported through incentives for ecosystem services such as soil health improvement and biodiversity conservation.

8. Establish Monitoring, Research, and Data Systems:

To ensure scalability and long-term credibility, robust data systems should be developed to track



productivity, income, and ecological benefits. Location-specific research and innovation should be supported, and best practices and success stories should be systematically documented and widely disseminated.

In a nutshell, the evidence from these success stories clearly indicates that natural farming can transform rural livelihoods by enhancing income, reducing costs, and ensuring environmental sustainability. A holistic policy approach focusing on integration, value addition, capacity building, and market support is essential to scale these models and build a resilient agricultural future.

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