

# A shift in strategy: How diversification fuelled Nanak Farms' growth

Sarvpriya Singh<sup>1\*</sup>, Vinay Singh<sup>2</sup> and Nav Prem Singh<sup>3</sup>

<sup>1</sup>Farm Advisory Service Centre (Punjab Agricultural University), Gurdaspur, Punjab 143 521

<sup>2</sup>Krishi Vigyan Kendra (Punjab Agricultural University), Pathankot, Punjab 145 023

<sup>3</sup>Punjab Agricultural University, Ludhiana, Punjab 141 001

*This case study documents the transformation of Nanak Farms, located in Kaljharani village of Bathinda district, Punjab, from a conventional cereal-based farming system to a diversified, high-value cash crop enterprise. Under the leadership of farmer-cum-entrepreneur Ravdeep Singh, the farm transitioned from rice-wheat cultivation to the adoption of strawberries, parthenocarpic cucumbers, potato, tomatoes, and other vegetables through open-field and protected cultivation systems. The study highlights the role of innovation, resilience, and informed decision-making in overcoming financial, climatic, and market-related challenges. High-value crops such as strawberry and parthenocarpic cucumber significantly enhanced farm profitability. The overall benefit-cost ratio improved from 2.8 under conventional crops to 3.0 after diversification, demonstrating superior economic efficiency. Integration of beekeeping for pollination, adoption of organic practices, efficient water management, and direct marketing strategies further strengthened sustainability and income stability. The findings underscore the immense potential of crop diversification, protected cultivation, and institutional support in improving farm income, resilience, and resource-use efficiency.*

**Keywords:** Crop diversification, Farm profitability, Protected cultivation, Sustainable agriculture

**N**ESTLED in the vibrant agricultural belt of Punjab, Nanak Farms in Kaljharani, Bathinda, stands as a testament to resilience and innovation. Established and maintained by Ravdeep Singh and his family, the farm's journey is one of the transformations from conventional farming to a model of sustainable agriculture.

Ravdeep, born and raised in rural family indicating his farming background, initially aspired to settle abroad and pursued IELTS to fulfill his dream. However, a pivotal decision changed his course—he chose to stay in India and explore the untapped potential in high value crops. In 2022, he received training in protected cultivation from Krishi Vigyan Kendra (KVK), Bathinda. This experience laid the foundation

for his journey in agricultural innovations.

## **Embracing challenges and rediscovering agriculture**

Returning home during the COVID-19 pandemic, Ravdeep rediscovered his passion for farming. His curiosity led him to hydroponics, where he built a cost-effective DIY hydroponic Nutrient Film Technique (NFT) system to cultivate cherry tomatoes. Through hands-on learning in plumbing, chemistry, and agronomy, he set the stage for broader agricultural experiments. Encouraged by PAU KVK-Bathinda, he expanded his focus to include open-field strawberry cultivation and parthenocarpic cucumber production in polyhouse. This shift marked a significant step toward sustainable and profitable farming.

## **Innovation meets dedication: The strawberry initiative**

In 2022, Ravdeep identified strawberries as a high-value crop with immense market potential. He sourced the variety 'Winter Dawn' from Himachal Pradesh and Maharashtra. Overcoming challenges in packaging and marketing, he devised creative selling strategies, including direct sales through a vending cart near a university and farm-gate sales, ensuring higher profit margins. Additionally, he incorporated beekeeping into his operations, enhancing pollination efficiency, yield, and fruit quality. Motivated by PAU KVK experts, he started planning for in-house propagation of strawberry planting material using tissue culture techniques to

reduce dependency on external sources.

By 2023, Ravdeep expanded his strawberry cultivation to one acre, complementing it with infrastructure advancements such as a 2,500,000 L water-harvesting tank for efficient irrigation systems. The farm also diversified into parthenocarpic cucumber cultivation in polyhouses, ensuring year-round vegetable production. Despite these achievements, nature posed relentless challenges. In March 2024, hailstorms and strong winds severely damaged his crops, including strawberries, vegetables, and wheat. However, Ravdeep's resilience and proactive approach enabled him to navigate these setbacks and sustain the farm's growth.

In 2024, Nanak Farms embarked on a mission toward organic farming. With proper guidance, soil solarisation, manure application, and organic input preparation became integral in practice. Strawberry cultivation expanded to over two acres, while additional crops such as tomatoes, eggplants, and onions were introduced, diversifying income sources and strengthening the farm's reputation. Ravdeep continued to enhance farm infrastructure by installing advanced sprinklers for optimising water use, and reducing logistical and



Ravdeep showing his strawberry crop to KVK expert



Strawberries ready to market

financial constraints while aligning operations with sustainability goals.

#### Financial growth and impact of diversification

The economic analysis clearly demonstrated the substantial financial gains achieved at Nanak Farms following the adoption of crop diversification with high-value horticultural crops. Under the pre-adoption scenario, the farm followed a conventional rice-wheat cropping system on one acre, where wheat (HD 3086) and rice (PB 1718) recorded moderate yields of 19.5 and 18 quintals, respectively. The

gross income from these crops remained limited, resulting in net returns of ₹28,662.5 from wheat and ₹41,900 from rice, with a benefit-cost (B:C) ratio of 2.83, reflecting modest profitability and high dependence on external factors such as irrigation availability and market price.

Post-adoption, the farm diversified into multiple high-value crop rotations across varying land areas, leading to a marked improvement in overall farm economics. Strawberry, cultivated on one acre, emerged as a highly remunerative crop with a substantially higher gross income

**Table 1.** Pre- and post-adoption economic metrics of crop diversification with high-value cash crops

Particulars	Pre-adoption		Total (A)	Post-adoption							Total (B)	Increment (%) = [(B-A)/A] × 100
	Crop rotation 1			Crop rotation 1	Crop rotation 2		Crop rotation 3		Crop rotation 4			
	(Area: 1 acre)		(Area: 1 acre)		(Area: 1 acre)		(Area: 2 acres)		(Area: 6 acres)			
	Wheat	Rice		Strawberry	Parthenocarpic cucumber	Parthenocarpic cucumber	Potato	Rice	Wheat	Basmati		
	HD 3086	PB 1718		Winter Dawn	Hybrid	Hybrid	Kufri Pukhraj	PR 126	PBW 826	PB 1718		
Yield (q)	19.5	18	-	62	387	285	167	32	23.1	20.5	-	-
Rate (₹/q)	2,275	3,600	-	15,000	1,700	2,500	950	2,300	2,275	3,650	-	-
Cost of cultivation (₹/q)	15,700	22,900	38,600	475,000	150,000	150,000	52,000	25,769	15,684	22,958	891,411	95.7
Gross income (₹/q)	44,362.5	64,800	109,163	930,000	657,900	712,500	158,650	73,600	52,552.5	74,825	2,660,027.5	95.9
Net income (₹/q)	28,662.5	41,900	70,562.5	455,000	507,900	562,500	106,650	47,831	36,868.5	51,867	1,768,616.5	96.0
B: C	2.83	2.83	2.83	1.96	4.39	4.75	3.05	2.86	3.35	3.26	3.00	



Healthy parthenocarpic cucumbers of Nanak Farms



KVK experts inspecting cucumber crop

and net returns despite increased production costs, highlighting its economic superiority over conventional cereals. Similarly, parthenocarpic cucumber grown under protected cultivation recorded strong financial performance. On one acre, cucumber cultivation generated high gross returns, while expansion to two acres further improved net income and achieved B:C ratios ranging from 3.45–3.72, indicating efficient resource utilisation and good remuneration.

The diversified system also incorporated potato (cv. Kufri Pukhraj), wheat, rice, and basmati rice across larger areas, contributing to income stability and risk mitigation. Potato cultivation recorded a favourable B:C ratio of 3.05, confirming its suitability as a complementary crop within the diversified system. Overall, the total cost of cultivation under the diversified system increased to

₹891,411; however, this investment resulted in a total gross income of ₹2,660,027.5 and a net income of ₹1,768,616.5. The incremental increase of over 95% in gross and net income clearly validates the economic advantage of crop diversification with high-value crops. These findings conclusively demonstrate that diversification not only enhances profitability but also improves resilience and sustainability of farming systems.

#### Vision, growth, and community impact

Today, Nanak Farms is not just an agricultural enterprise but a beacon of modern, sustainable farming. Ravdeep has transitioned to a strategic role, focusing on marketing, packaging, and value addition. Collaborating with government agencies, experts, and labourers, he fosters a sense of community and innovation. Inspired by PAU KVK's motivation,

he plans to propagate his own strawberry planting material and adopt tissue culture techniques for cost-effective and high-quality plant production. His long-term vision includes transforming Nanak Farms into a resource hub, offering farmers access to seeds, training, and sustainable farming guidance.

Looking ahead, Nanak Farms aspires to become a model for organic and sustainable agriculture, inspiring farmers to adopt similar practices. Ravdeep's commitment to environmental preservation, societal change, and economic prosperity reflects his dedication to harmonising agriculture with ecology.

#### SUMMARY

The story of Nanak Farms is not just about overcoming obstacles—it's about redefining agricultural possibilities. From protected cultivation of parthenocarpic cucumbers to pioneering strawberry farming and embracing sustainability, Ravdeep Singh has turned his family's farm into a symbol of modern agriculture. Through perseverance, innovation, and a long-term vision, Nanak Farms serves as a replicable model for farmers seeking sustainable livelihood enhancement through high-value diversified crop system in Punjab and similar agro-ecological regions.

\*Corresponding author email: sarvpriya90@pau.edu

**Beat Plastic Pollution**  
If you can't reuse it, refuse it!

