TIGR²ESS
Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies

2022

Farmers' Adoption of Organic Farming in Punjab: Experiences, Challenges and Suggestions

UNIVERSITY OF CAMBRIDGE
GLOBAL FOOD SECURITY
GCRF Global Challenges Research Fund

Life of an Organic Farmer

Though mosquitoes suck my blood without my permission,
They rely after all on our blood donation.
The sharp sugar cane leaves do cut my flesh while weeding,
No pain no gain, plants will grow well, thanks to my bleeding.
Horse flies do harass me too, thinking I'm a donkey,
Or because I'm white , they assume I am a Yankee .
Ants hiding behind the leaves bite me mercilessly,
They save themselves, nothing against me personally.
While sweating like a horse, I think life is beautiful,
I don't have to go to the Turkish bath, and that's cool.
Like a soldier, a farmer has to shed sweat and blood.
He may harvest his crop after facing drought or flood .
The monsoon can bring hope, but also devastation,
He prays for it, rains guarantee food for the nation.
A farmer can sow seeds, work hard and hope for the best,
For it is through God's Grace, if one day he can harvest.
In Punjab, wheat and rice are the main cultivation,
The only crops favoured by the green revolution.
Punjabis don't relish rice , it's not their cup of tea,
To grow food we don't eat is a great absurdity.
Organic farmers don't believe in using pesticide ,
To work against nature is like committing suicide .
To pollute soil and water is not sustainable,
And produce pure and safe food, is only sensible.
Multi cropping combined with a wise crop rotation,
Can protect the soil from any deterioration.
Such farming does not rely on petrochemistry,
It provides healthy food for home and the country.
Such farmers who produce their food are self-reliant,
They won't make a fortune, but they are self-sufficient.
Hard work and organic food keep the farmer healthy,
If one stays in poor health, what's the point of being wealthy.
Farmers who feed the world are looked upon with contempt,
But when there is a lockdown, they are self-sufficient.
Do boost your immune system in time of pandemic,
Organic food will help you along with turmeric.

Darshan Singh Rudel
(Raza Farm, Nurpur Bedi)

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About TIGR^{2}ESS

Objectives and Outcomes Jointly Framed by the Consortium Partners

India's Green Revolution produced significant benefits. The greatest positive impact was felt in regions and on farmers who were able to harness benefits from the combination of new technologies, increased inputs and research-led innovation that have characterised agrarian transformation over the last fifty years. Despite these positive outcomes, there is widespread agreement that the 21st century demands new thinking to address new and emergent challenges, driven by changes in migration and settlement patterns, new forms of economic activity, changes in global commodity markets, and significant environmental challenges.

Objectives

1. To define the requirements and set the policy agenda for a second Green Revolution in India, framed by demographic changes affecting rural communities and feminisation of smallholder farming systems.
2. To develop and strengthen alliances across a carefully selected network of UK and Indian experts, to build a collaborative, long-term research partnership in sustainable agriculture that will set India on the path to a second Green Revolution.

Flagship Projects

Objectives were attained through fundamental research, structured into six Flagship Projects.

- **FP1** Sustainable and Transformative Agrarian and Rural Trajectories (START);
- **FP2** Crop Sciences: Water Use and Photosynthesis;
    - Improving Water Use and Yield Stability in Millet and Sorghum;
    - Crop Sciences: Enhancing Photosynthesis;
- **FP3** Heat and Drought Resilience in Wheat;
- **FP4** Water Use and Management in a Changing Monsoon Climate;
- **FP5** Supply Chains: Modelling Water Use for Sustainable Livelihoods;
- **FP6** Impacting Wellbeing in Rural and Urban Communities: Education, Empowerment and Entrepreneurship Leading to Improved Human Nutrition;
    - Education Food, Nutrition and Empowerment (EFNE);
    - Education, Employment, Empowerment and Entrepreneurship (4E);
    - Cross-Cutting FP6 Projects are the Mobile Teaching Kitchens and the Innovation Farm Model.

About the Research Team

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Executive Summary

Organic agriculture as an approach to sustainable agriculture has been taken up worldwide as a holistic production system that sustains the health of soils, ecosystems and people. India is leading in the total area dedicated to organic agriculture in Asia, with the largest number of organic producers in the world. However, there is a great disparity in the state-wise cultivated organic area and the number of producer farmers. Unravelling the experiences and challenges faced by farmers in adopting organic farming practices can ascertain initiatives that can aid in scaling up such practices. This study endeavours to put forth the experiences, challenges and suggestions of organic farmers in six districts of Punjab. The data was collected through personal interviews from full vis-à-vis partial adopters of organic cultivation based on a structured questionnaire and interaction through focus group discussions with stakeholders.

The results show that farmers with smaller land holdings (below 5 acres) are more inclined to not fully adopt, with 92 per cent of them farming organically on 50 per cent or less of their total landholding. Over 75 per cent and 50 per cent of farmers experienced an increase in the cost of cultivation and labour requirements in the current cropping season vis-à-vis the previous one. The part adopters expressed drudgery in adopting organic practices, with 32 per cent facing a drop in the price received for their produce. Further, 42 per cent (49%) of the partial vis-à-vis 31 per cent (45%) of the complete adopters of organic farming reported an increase in crop yield (drop in net farm income). A higher proportion of complete vis-à-vis partial organic farmers cited lack of institutional support, higher labour requirement, a crisis in irrigation water, and low yield as major challenges. They have made several suggestions for scaling up production and cost efficiency, ease of access to quality inputs, eco- and user-friendly technology to improve output and reduce the drudgery of operations, innovative marketing channels and consumer awareness, and institutional support across their value chain.

As a practice, many countries have adopted organics, though their contexts and capacities are shaping the implementation. The vital issue is to balance supply-push and demand-pull actions to achieve sustainable development in support of environmental and rural development goals without undermining market mechanisms. Cues can be taken from the interventions supporting organic farming based on a global analysis of public policies and programs. A participatory approach wherein government can both engage and support non-governmental organisations active in organic agriculture can go a long way in the capacity building of producers and creating consumer awareness.

Acknowledgements

The research presented in this report has been made possible by the Global Challenges Research Fund award by the UK-India Research Councils. Our thanks to the University of Cambridge, U.K., for its engagement and extending their network of partner institutions in the U.K. and India. We acknowledge the support of our parent institution, Panjab University, for this project and the pursuit of a multi-faceted understanding of sustainable farming practices and systems in Punjab. We are thankful for the assistance extended by the School of Organic Farming and the Department of Soil Sciences, Panjab Agricultural University, Ludhiana. We express our appreciation for the work and help provided by Krishi Vigyan Kendras at S.A.S. Nagar and Patiala, Nabha Foundation at Nabha, Kheti Virasat Mission at Faridkot, Punjab Agri Export Corporation Limited (PAGREXCO) at Chandigarh, and Mahatma Gandhi State Institute of Public Administration at Chandigarh.

We would like to acknowledge the unstinting guidance and expertise provided by Siva Muthuprakash K.M. (VikasAnvesh Foundation) in the development of quantitative-cum-qualitative Farm Assessment Index to better capture economic, social, and ecological dimensions of alternate agricultural systems. We are indebted to our colleagues at Panjab University, especially the Department of Public Administration, School of Communication Studies, University Institute of Applied Management Sciences, University Institute of Hotel and Tourism Management, and University Business School, in our pursuit of research across inter-disciplinary issues. Our sincere thanks to Prof. Shailaja Fennell (University of Cambridge), Prof. Sumantra (Shumone) Ray (NNEdPro Global Institute for Food, Nutrition and Health), Prof. Srijit Mishra (IGIDR), Prof. R. Padmaja (ICRISAT) and Dr. Vandana Shiva (Navdanya) for their expert insights and direction.

We have depended on support and advice from numerous stakeholders in each district and village, especially in the field. We are beholden to the wife-husband duo of Khaalis for unravelling the nuances of organics and ethos behind the farmers' collective. We are grateful to our technocrat farmer, Mr. C.S. Grewal (Grewal Farms) and engineer farmer, Mr. Tarjinder Singh (member of the organic grower's group of PAGREXCO), who provided us with a deep insight into farming practices and processes. Their knowledge of organic farming systems and clarity helped in the cost computations. A special thanks goes to our poet farmer, Mr. Darshan Singh Rudel (Raza Farm), who shared his precious and illuminating work titled 'Punjab Bachao (Save Punjab)' and 'Life of an Organic Farmer.' Our deepest thanks to all the farmers who came forth to respond and put forth their perspectives under challenging times of the pandemic and farmers' stir at Delhi borders.

Our young talented research team's consistent perseverance and efforts are highly appreciated. Their multitasking skills contributed to every aspect of research, from field surveys and data collection to analysis

support. It has been a great pleasure to work with them. Co-investigators and the team had the privilege of presenting and discussing their research findings with all our stakeholders at the Final Policy Dissemination Workshop, especially with Mr. Suresh Kumar (TIGR²ESS Policy Fellow). We are most grateful for their well-meaning engagement and thought-provoking suggestions for the way ahead. The creative help of Abhishek Kralia (Department of Geology, Panjab University) in producing maps is acknowledged. We also put on record the administrative support provided to us by the Department of Public Administration, Panjab University.

It is a pleasure to acknowledge our resilient and steadfast Principal Investigator, Prof. Ramanjit Kaur Johal. Her mentorship skills, unstinting spirit, constant nudge, and upfront observations made it possible to work on myriad themes and connect with our roots. I am glad we made such a good team and took our work to another level.

Suveera Gill
29th July 2022

Abbreviations

APEDA	Agricultural and Processed Food Products Export Development Authority
CFAI	Comprehensive Farm Assessment Index
FAI	Farm Assessment Index
IFOAM	International Federation of Organic Agriculture Movements
FiBL	Forschungsinstitut für biologischen Landbau
FPO	Farmer Producer Organisation
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
NPOP	National Programme for Organic Production
PAGREXCO	Punjab Agri-Export Corporation
PGS	Participatory Guarantee System
MSP	Minimum Support Price
PAMETI	Punjab Agricultural Management and Extension Training Institute
PAU	Punjab Agricultural University
NGO	Non-Governmental Organisations
SHG	Self-Help Groups

Conversion Table

Length

1 kilometre (km) = 1000 metres (m)
1 km = 0.6214 miles
1 m = 1.0936 yards
1 m = 3.2808 feet
1 mile = 1760 yards
1 mile = 1.609 km
1 yard = 0.9144 m
1 foot = 0.3048 m

Area

1 km^2 = 100 hectare (ha)
1 km^2 = 0.3861 square mile
1 km^2 = 247.105 acre
1 m^2 = 10.7639 square feet
1 ha = 10.000 m^2
1 ha = 2.4711 acres
1 square mile = 2.59 1 km^2
1 acre = 0.4047 ha
1 acre = 4046.86 m^2
1 acre = 4840 square yard
1 square yard = 9 square feet
1 square yard = 0.8361 m^2
1 square foot = 0.0929 m^2

Weight

1 tonne = 1000kg
1 tonne = 1.1023 US ton
1 US ton = 0.9072 tonnes
1 hg = 100 gram
1 kg = 2.2046 pounds (lb)
1 kg = 35.274 ounce (oz)
1 lb = 0.4536 kg
1 oz = 28.3495 gram

Units

1 crore = 10 million
1 million = 10 lakh
1 lakh = 100000
1 billion = 1000 million

1 Tracing Pathway towards Organic Agriculture

Worldwide agricultural policies have sought to realise food security while ensuring remunerative prices to producers and safeguarding the interest of consumers. Green revolution technologies have contributed substantially to agriculture productivity growth and global food security improvements (Evenson and Gollin, 2003). The increase in food insecurity has been primarily attributed to an ecologically unviable cropping pattern and concomitant commercial fallouts, often worsened by climate-related shocks. However, the pioneers of sustainable agriculture have sought alternative ways to address soil depletion, low food quality, and yields (OrganicNet, 2016). As a result, increasingly, governments across the globe have initiated public policies and programs to support environmentally sustainable production and consumption.

As agriculture based on holistic management and the maximisation of ecosystem services contributes to society's welfare and attains sustainable development goals, the organic movement has gained momentum. The concept of organic agriculture was developed in the twentieth century in a supra-national sphere by producers, interested individuals, and civil society organisations and sustained by consumers through unique markets (Stolze and Lampkin, 2009). Northbourne (1940) first used the term organic farming in his book, *Look to the Land*, which laid the foundation of the worldwide organics movement. The International Federation of Organic Agriculture Movements (IFOAM-Organics International, 2005) define organic farming as "*a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity, and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promotes fair relationships and a good quality of life for all involved.*" The IFOAM proposes four key principles of organic farming – health, ecology, fairness, and care. Thus, organic agriculture should sustain and enhance the health of all living species and the planet, ecological systems and cycles, ensuring fairness to the environment and life opportunities, and in a responsible manner for current and future generations and the environment.

According to IFOAM-Organics International (2019), the characteristic features of organic agriculture include the use of natural alternatives to chemical inputs, such as pesticides, fertilisers, and weedicides. Further, the use of genetically modified organisms is strictly prohibited. To the extent possible, the natural habitat of the farm should be maintained. Considering soil health, good fertility practices like using minimum tillage, compost,

mulching, cover crops, and green manure should be done. Diversification and rotation of cropping patterns using varied types and species should be made. Further, efforts should be made for plant and animal integration on the farm. Good livestock management with an emphasis on organic pastures and restrictions on antibiotics and hormones is a requisite.

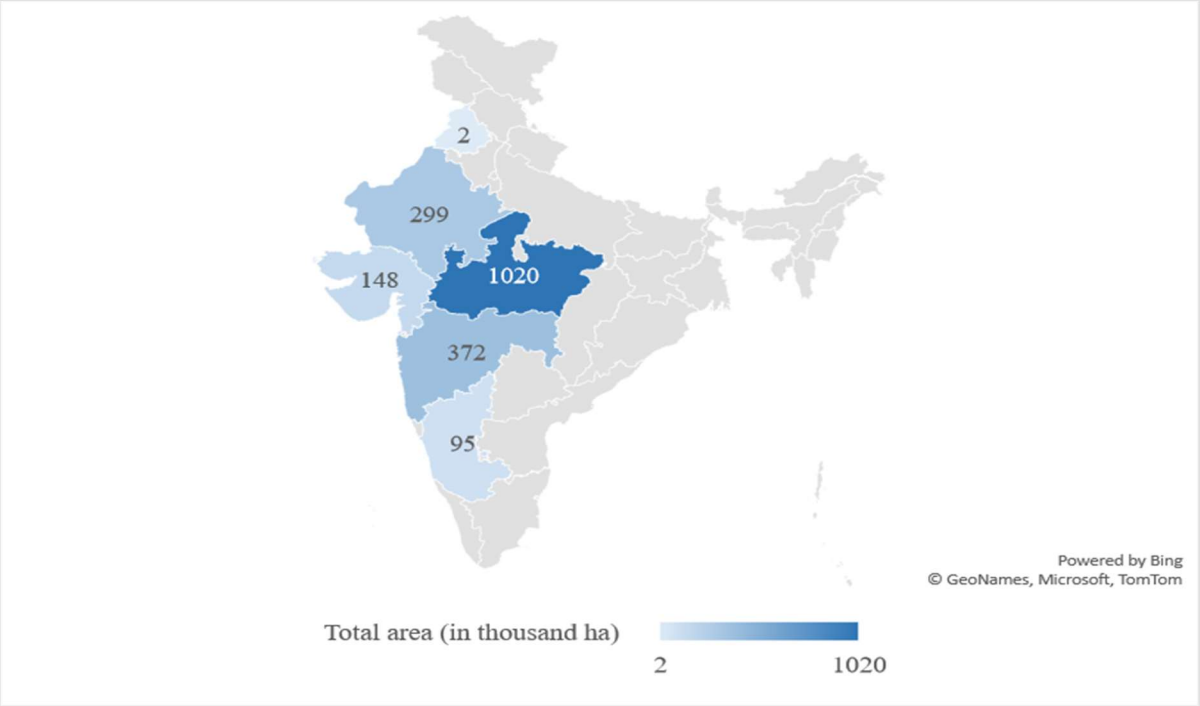
Organic agriculture as an approach to sustainable agriculture has been taken up by prominent ecologists and agronomists worldwide. The underlying principle being a better state of the environment, healthy food, and good quality of life for the producers. Thus, the approach is principally superior to conventional agriculture, which negatively impacts the environment and erodes the competitive position of farmers over the long run. As a practice, many countries have adopted organics, though their contexts and capacities are shaping the implementation. The challenge for policymaking is to engage and create the environment that will help define priorities according to local contexts, assisting farmers in converting to organics.

According to the latest FiBL survey on organic agriculture worldwide (Willer et al., 2022), over 74.9 million hectares of organic agricultural land, including in-conversion areas, were recorded in 2020. This is an increase of 4.1 per cent over the previous year. Regions with the largest organic agricultural land areas, comprising over 70 per cent of total organic farmland, include Oceania (35.9 million hectares) and Europe (17.1 million hectares). Asia accounts for an 8.2 per cent share with 6.1 million hectares. India, with an area of 2.7 million hectares of organic agricultural land, reported the third largest increase of 359,000 hectares in absolute terms in 2020. The organic area share of total farmland is 1.40 per cent. Around 1.78 per cent and 1.17 per cent of the organic area is under the production of cotton and soybeans. There were no less than 3.4 million organic producers in 2020. India has the most producers numbering around 1.60 million. A total of 1.17 million producers are certified under the Participatory Guarantee System. Added, there are 1,703 organic processors. The retail sales of organic produce were about ₹15,735 million in 2020, with organic per capita consumption of about ₹17.[1]

In India, the state-wise total cultivated area under the organic certification process for 2020-21 is the highest for Madhya Pradesh, followed by Maharashtra, Rajasthan, Gujarat, and Karnataka (Figure 1). Punjab is at a distant twenty-ninth (out of a total of 33 states) rank with organic and conversion areas of 879.87 ha and 1141.63 ha, respectively. The total organic farm

[1] The average Euro to Indian rupee exchange rate was 84.6484 INR in 2020.

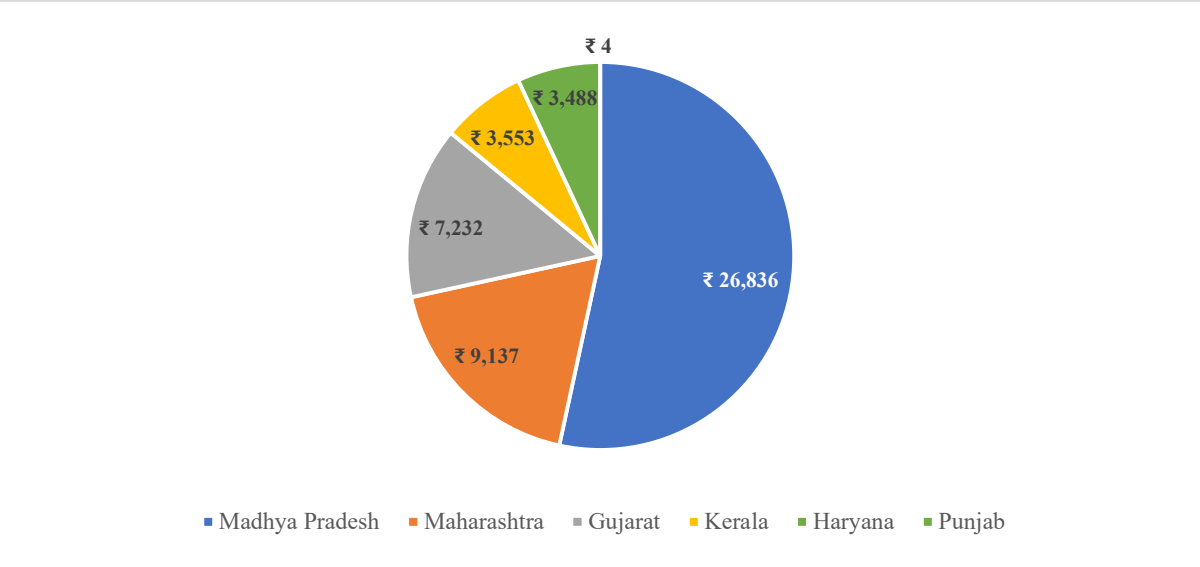
Figure 1 State-wise Cultivated Organic Farm Area (2020-2021)



Source: https://apeda.gov.in/apedawebsite/organic/data.htm.

production was 264.63 million tonnes, 0.008 per cent of the total national organic production. In terms of the state-wise exports of organic produce in 2020-21, Madhya Pradesh exported the highest value (₹26,836 million), as shown in Figure 2. On the other hand, Punjab was a distant nineteenth with a value of ₹4 million, which is a meagre 0.04 per cent of the total organic exports made out of India in 2020-2021. The major products exported were basmati, turmeric powder, and pulses. As seen in Figure 3, the total area under the organic certification process

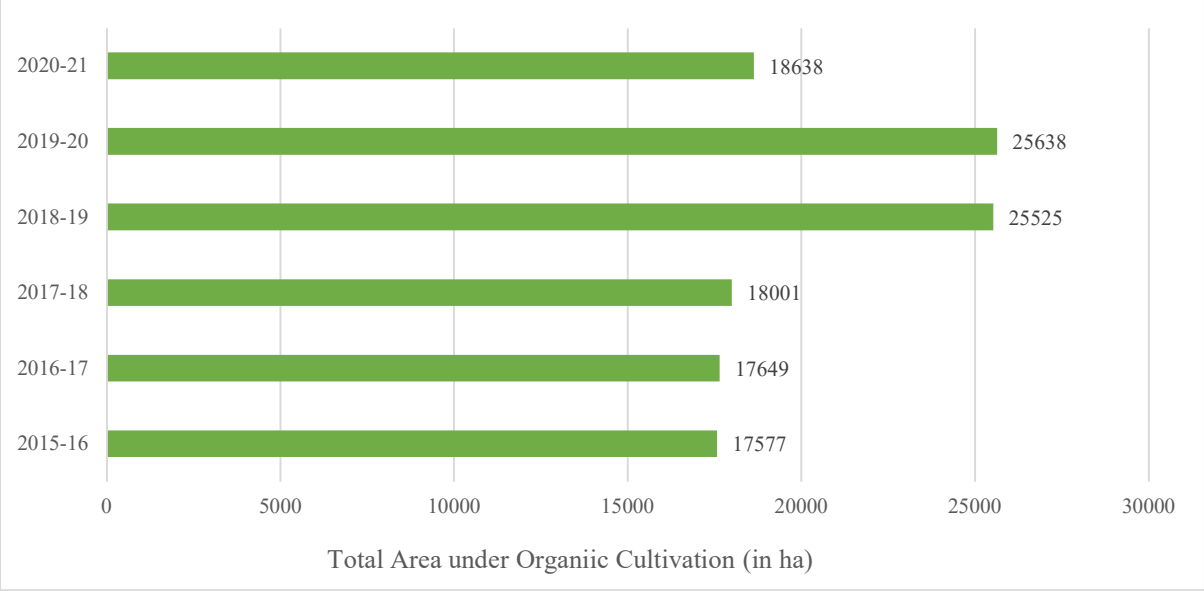
Figure 2 State Wise Export of Organics for 2020-2021 (in millions)



Source: https://apeda.gov.in/apedawebsite/organic/data.htm.

(cultivated and wild harvest) increased steadily up to 2019-2020. However, there was a sharp fall in 2020-2021 vis-à-vis the previous year of 7,000 ha.

Figure 3 Year-on-Year Total Area under Organic Certification in Punjab (in ha)



Source: https://apeda.gov.in/apedawebsite/organic/data.htm.

Adopting organic farming practices is voluntary and depends on farmers' willingness to adopt sustainable agricultural practices. Unravelling the experiences and challenges faced by farmers in adopting organic farming practices is helpful because it can provide policymakers with the information required to propose effective policy interventions that can stimulate conversion to organic farming. Further, soliciting farmers' suggestions on factors will aid in identifying initiatives that can aid in scaling up sustainable agricultural practices. However, although several studies have measured the perceptual view of the farmers on the conventional vis-à-vis organic farming systems, none have compared those of full vis-à-vis partial adopters. Partial adopters are the ones who practise mixed both organic and conventional (chemical) farming systems. This study endeavours to close this research gap in the context of a sample of 29 fully organic and 65 partly organic farmers in six districts of Punjab.

2 Contextual Research Evidence

Limited literature focuses on determining farmers' experiences in adopting organic farming practices in Punjab. The description of the seven studies with regard to objectives, location, crop type, data, and research method is presented in Annexure A. The underlying research themes are the perspective of farmers adopting organic farming, the economic evaluation of organic vis-à-vis conventional farming, difficulties farmers face while practising organics, and ways and means of overcoming the challenges. The sample number of organic farmers varied

from 60 to 400, from one or more agro-climatic zones, and primarily cultivated wheat and paddy, besides cash crops and vegetables. The response was solicited through survey instruments and structured interviews with bulk using mixed analysis methods.

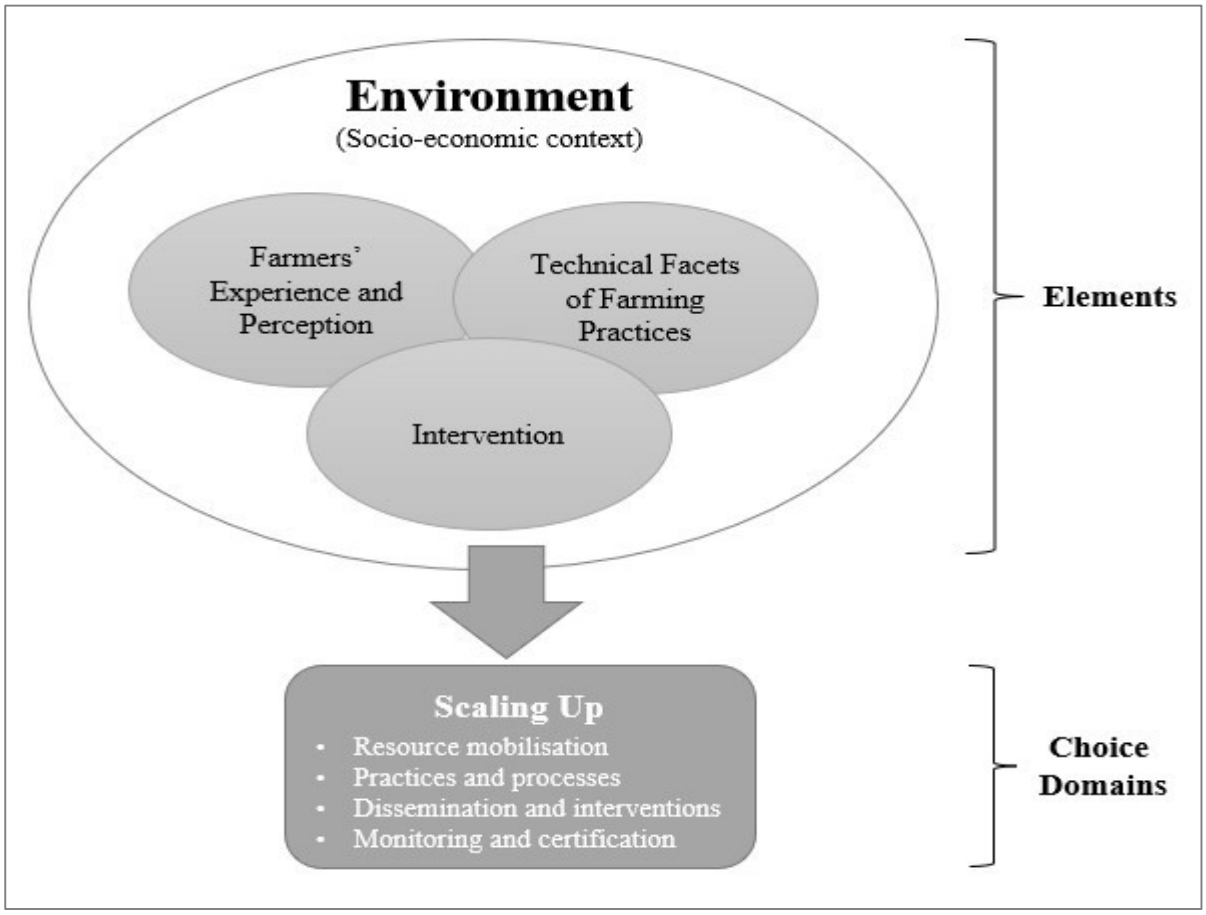
Most of the farmers practising organics have small landholdings and are relatively younger (Singh, 2020; Kalra et al., 2012; Kaur and Kalra, 2019; Singh, 2020). They are educated and relatively more aware of sustainable farming and its concomitant impact on their health and environment. Several farmers have received training on sustainable production methods and post-harvest preservation from governmental and non-governmental organisations. Further, they are receptive to learning new practices and processes. Many factors result in adopting organic farming, including financial competitiveness, income security, availability of technical advice, and social considerations. The bulk of the farmers practised on a small patch of land before fully adopting organic cultivation (Kaur, 2020).

The economic factors have been the foremost dimension researched (Singh, 2010; Tomar, 2019; Kaur, 2020; Singh, 2020), especially when comparing the productivity (yield), input costs, and profitability of organic vis-à-vis conventional farming systems. Depending on the knowledge of the use of organic inputs, such as farmyard manure, compost, and bio-fertilisers, did the yields matter. The findings highlight that the labour costs are significantly higher, with initial (conversion period), yields lower for organic farming. However, the premium charged on sales by farmers made up for yield fallouts and high input costs. Most farmers did not get any government incentive for practising sustainably and found the certification process cumbersome. The biggest challenge faced is marketing, with the bulk of the products sold through personal contacts or unorganised markets.

Beyond economic considerations, social issues affect the adoption of organic agriculture. Kaur and Kalra (2010) observed that not all farmers undertake organic practices purely for financial reasons and that social factors, such as increased social status, can influence conversion decisions. However, most farmers are aware of the ecological benefits of organic over conventional agriculture. Organic farming discourages the use of harmful chemicals and contributes to preserving the natural environment (Tomar, 2019; Kaur, 2020). This also positively impacts the soil fertility and health of the farmers and consumers (Kaur and Kalra, 2010). Further, it has the potential to slow down the climate change process (Singh, 2020). However, they cite biotic factors as one of the significant constraints in adopting organics (Singh, 2010).

Overall, it is evident from the extant research that the adoption and scaling up of sustainable agricultural practices result from the complex interaction between farmers' experience and perception (sustainable practices), intervention (government and other stakeholders), and technical facets of farming practices (resources, operations and production) in context of the given environment, as depicted in the model in Figure 4. A similar framework has been adopted by Muthuprakash et al. (2020) in a study of eleven Indian states to determine the experience and perspectives of the farmers in adopting organic practices. The present study further distinguishes between the perceptual view, challenges and proposed suggestions of complete and partial adopters in Punjab.

Figure 4 Conceptual Model of the Study



Source: Depiction by Gill.

3 Materials and Methods

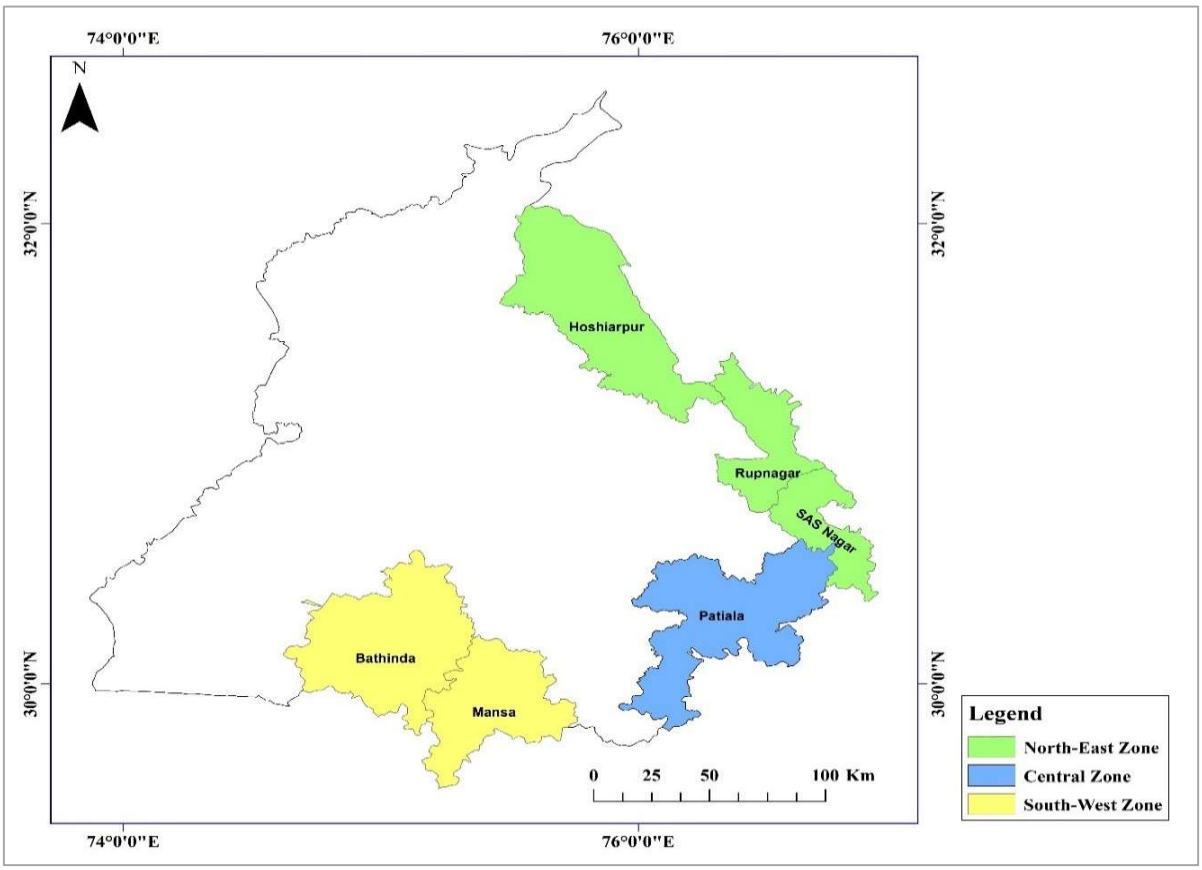
The questionnaire was prepared in conjunction with delineating the conceptual framework to capture various farmers' socio-economic characteristics and agroecological farm facets. Data were collected through personal interviews with farmers based on a structured questionnaire and interaction through focus group discussions with stakeholders. Important decisions relating

to spatial distribution and selection of farmers were taken to initiate data collection. In addition, several steps were taken to clean and validate the data.

3.1 Selection of the agro-climatic zones

Punjab is traditionally classified into three agro-climatic zones primarily based on homogenous factors like climatic conditions, precipitation distribution, soil type, and cropping pattern (World Bank, 2003). The fully and partly organic farming systems for 96 farm plots across three agro-climatic zones – the North-East (Districts of S.A.S. Nagar, Rupnagar, and Hoshiarpur), Central (Patiala District) and South-West (Districts of Mansa and Bhatinda) – were assessed, as depicted in Figure 5. Thus, 29 fully organic and 65 partly organic farm plots were identified from the three zones.

Figure 5 Sample Agro-Climatic Zones under Study



Source: Depiction by Kralia (Department of Geology, Panjab University).

The northeast zone is a sub-mountainous region called the Kandi or wheat-maize belt, covering around 19 per cent of the state's geographical area, with relatively high rainfall (950 mm) and low groundwater levels. On the other hand, the central or wheat-paddy zone covers 47 per cent area with 650 mm rainfall and a depleting groundwater level. Finally, the South-West Zone or wheat-cotton region accounts for 34 per cent area with 400 mm of rain and faces

waterlogging problems. Thus, the research provides an opportunity to capture the spatial variations in agriculture.

3.2 Description of the sample crops

The two cropping seasons – Rabi 2020-2021 and Kharif 2021 – were considered for the purpose of analysis. According to the Punjab Economic Survey (2020-2021), approximately 40 per cent of Punjab's total cultivated land is used to grow rice, an area of 31.42 lakh hectares.[2] Other major Kharif crops include cotton (3.2%), followed by maize (1.5%) and sugarcane (1.2%). Approximately 45 per cent of the total cultivated land, or 35.21 lakh hectares, is used to cultivate wheat, a Rabi crop. Accordingly, wheat, rice and cotton are the major crops of interest in the present study. Wheat is a prime Rabi cereal crop of Punjab, with the optimum sowing time being the first fortnight of November. The crop is harvested in mid-April. Paddy is a significant Kharif crop cultivated in all the districts of Punjab, with the sowing period commencing in June-July and harvesting carried in October-November. Cotton is the second major crop in the Kharif season, with sowing completed by mid-May. The cotton-picking period is from mid-September to November.

3.3 Preparation, administration, and validation of the survey instrument

The survey instrument used is an extended version of the farm assessment index proposed by Muthuprakash (2018). Accordingly, an extensive validated questionnaire was used to collect all the quantitative details of farm inputs (Annexure B). In addition, qualitative parameters were built into the questionnaire to measure the contextual aspects of farming in the national indicator framework of sustainable agriculture (Muthuprakash and Damani, 2019). Each bilingual (English and Punjabi) questionnaire had three parts. In the first section (questions 1 and 2), respondent farmers provided their personal and asset details. The second section (questions 3-12) pertained to soliciting data for constructing a quantitative Comprehensive Farm Assessment Index (CFAI). This was followed by questions (13-18) on getting details about farmers' other sources of income, debt position, and agricultural insurance or subsidies. Finally, the third section (questions 19-22) is related to the general perception of the respondents' on-farm management resources, social interface and extension activities, as well as experiences, challenges and suggestions. This section was framed around one proposed by Muthuprakash and Damani (2019) and Muthuprakash et al. (2020).

[2] https://esopb.gov.in/static/PDF/EconomicSurvey-2020-21.pdf

Farmers' experience on various parameters was captured using an ordinal scale (significant decrease, marginal decrease, no change, marginal increase, and significant increase, don't know) with respect to practices. The nine parameters of interest analysed included the cost of cultivation, labour requirement, drudgery, crop yield, net farm income, number of crops cultivated, number of saleable products, price perceived for the produce, and crop duration. Challenges faced by the farmers in practising organic farming were captured under interventional, personal, and technical characteristics of farming practices. Fifteen factors using a nominal scale (stressed, yes, no, and don't know) were studied, including high leased land rent, difficulty in procuring organic inputs, a crisis in irrigation water, difficulty in access to credit, lack of institutional support, difficulty in marketing, lack of knowledge, more drudgery, price realisation gap, difficulty in livestock management, low yield, higher labour requirement, difficulty in pest and disease control, and difficulty in weed management. Lastly, open-ended questions were framed to solicit suggestions on production, input, technology and process, marketing, certification, institutional intervention, and other imperatives.

The social sciences have been paying increasing attention to the issue of research ethics (e.g., Finch, 1984; Borland, 1991; Hornsby-Smith, 1993; Gilhooly, 2002). Therefore, informed consent was secured from the respondents at the outset after sufficiently informing them about the research objectives and stated outcomes. In addition, a common problem in participative research is that respondents often over-report desirable activities and under-report undesirable ones (Krumpal, 2013). As a result, researchers gather situation-specific information that cannot be generalised. The questionnaire's cover page assured that anonymity would be observed to abate any such problem. Further, the respondents were gently reminded of the value they were potentially bringing to the research. The questionnaires were personally administered and completed on the field by trained facilitators over six months.[3]

As specified earlier, the present work draws from the research work of Muthuprakash (2018), who conducted both the validity and sensitivity analysis of the FAI tool indicators. The current composite index added thirteen additional qualitative indicators based on past research. The validation of the indicators used in developing the index has been carried out through the Delphi technique. As a first step, a focused group discussion cum workshop on *'Exploring Sustainable Farming and Innovative Marketing Practices'* was held in collaboration with

[3] A PU-TIGR^{2}ESS workshop on *'Survey Field Work and Data Collection'* was held on Tuesday 31 August, 2021, for the facilitators by the resource person Dr. Amandeep Singh Sidhu, Agronomist, School of Organic Farming, Punjab Agricultural University, Ludhiana.

Krishi Vigyan Kendra, S.A.S Nagar (Mohali). The discussion cum workshop with farmers and other stakeholders provided insights regarding various indicators and their weightage to different index dimensions. Since the Delphi technique does not call the expert panels representative samples for statistical purposes (Powell, 2003; Thangaratinam and Redman, 2005), three experts were chosen based on their knowledge and experience as a second step in sustainable farming practices and processes. At the end of two rounds, the indicator set and its hierarchy were agreed upon by participating experts.

3.4 Data analysis

The main quantitative characteristics of the sample were explored by applying descriptive statistics, i.e., using the mean and standard deviation of scores between subjects and groups of them. Due to their immediacy, this analysis also employs histograms as well as box and whisker charts to represent varied attributes. Significant differences between the fully and partly organic farming methods were analysed by invoking chi-squared statistics using the SPSS software (version 26).

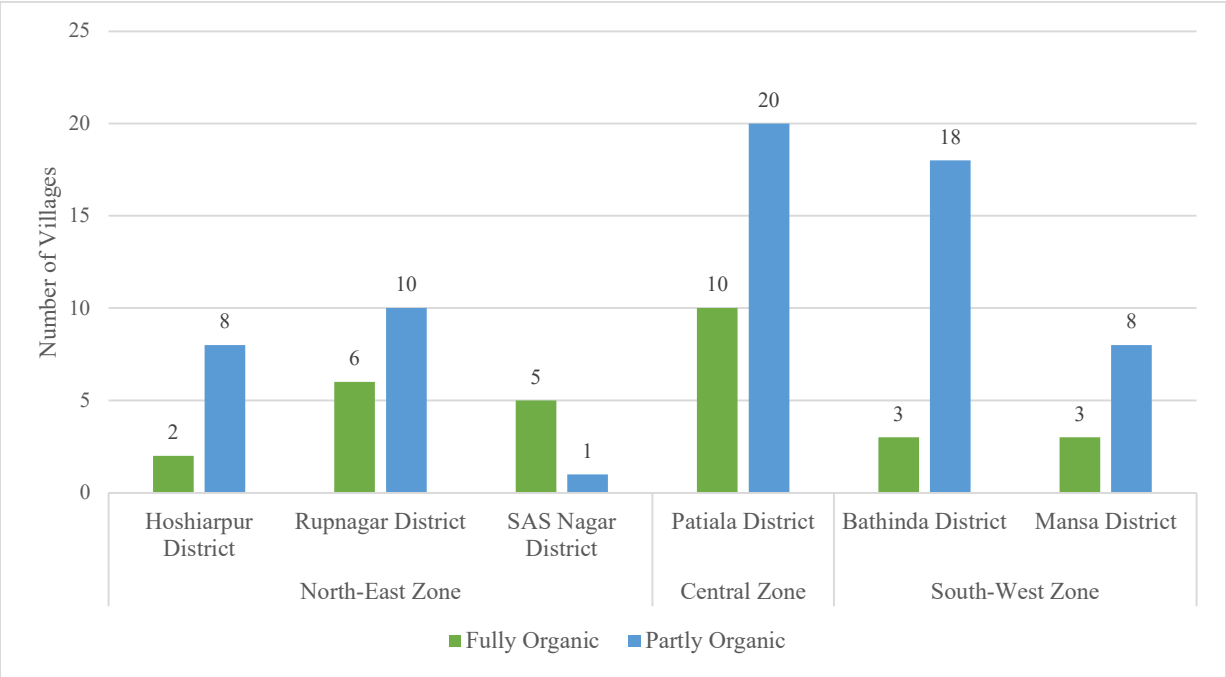
4 Farmer and Farm Profile

A list of organic farmers from the six districts under study was accessed through the database provided by the Kheti Virasat Mission, a non-profit registered trust and Nabha Foundation, a charitable trust. These trusts work with farmers to revive and conserve natural farming practices. Purposive sampling with samples selected based on the population's characteristics and the research objectives was adopted for covering both complete and partially organic farm plots. The main criteria for selecting organic farmers were to ensure that the paired fields have similar farming conditions (e.g., soil, water availability, crop pattern) at the closest possible locations. Organic farmers were shortlisted based on their conversion to organic farming at least three years earlier, irrespective of whether they were certified. Further, part adopters were practising both organic and conventional agriculture.

A total of 94 farmers were interviewed across 61 villages from six districts. The field locations in the North-East Zone of Punjab included five villages in the S.A.S. Nagar district and ten each in the Rupnagar and Hoshiarpur districts. The farm sites in the Central Zone of Punjab comprised twenty-three villages in the Patiala district. Finally, four villages in the Mansa district and nine villages in the Bhatinda district were surveyed from the South-West Zone. The zone- and district-wise distribution of farmers is shown in Figure 6. As apparent, 45 per cent and 29 per cent of full and partial adopters are from the North-East Zone, respectively. The representation from the Central Zone is 34 per cent of complete and 31 per cent of partial

organic farmers. Lastly, from the South-West Zone, 21 per cent and 40 per cent of farmers are completely and partly practising organics, correspondingly.

Figure 6 Zone-and District-wise Distribution of Fully and Partly Organic Farmers



Source: Depiction by Gill.

As can be seen from Table 1, the overall sample has only two per cent of women farmers and that too, in its entirety, practising organic only. Accordingly, the chi-square test of independence results shows that women are significantly more likely than men to adopt organic farming. The average age of the respondents is 48 years, with the youngest and oldest 23 years and 72 years, respectively. A significantly higher percentage of farmers who have entirely adopted organic farming (59%) were 50 years and above compared to partial adopters. The education-wise distribution shows that 65 per cent of farmers (73% and 62% for complete and partial adopters, respectively) are educated higher-secondary level and above. No illiterate farmers are practising full-time organic agriculture. With an average farming experience of 25 years, 65 per cent of entirely organic and 50 per cent of partly organic farmers have an experience of 20 years and more.

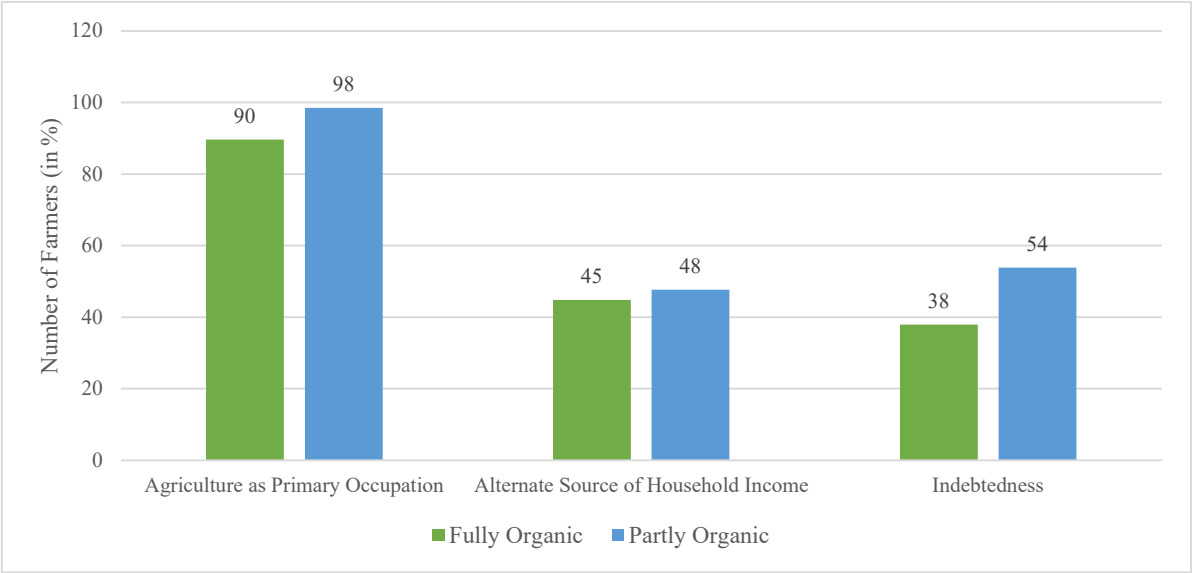
For 97 per cent of the farmers, agriculture is their primary occupation. As depicted in Figure 7, 98 per cent of partly and 90 per cent of complete adopters of organics are predominantly dependent on agriculture for their livelihood. About 45 per cent of the farmers have an alternate source of income, protecting them against the vagaries leading to production let-downs. More than half of the partly organic farmers are in debt and have borrowed primarily

Table 1 Profile of the Farmers and the Farm

Profile		Fully Organic (*n* = 29)	Partly Organic (*n* = 65)	Test Statistics
Gender	Male	27 (93)	65 (100)	X^2 = 4.580**
	Female	2 (7)	0 (0)	
Age (in years)	< 30	2 (7)	7 (11)	X^2 = 11.643**
	30-39	4 (14)	12 (18)	
	40-49	6 (21)	19 (29)	
	50-59	4 (14)	17 (26)	
	60-69	11 (38)	6 (9)	
	> 70	2 (7)	4 (6)	
Education	No formal education	0 (0)	2 (3)	X^2 = 7.806
	Primary	1 (3)	1 (2)	
	Secondary	7 (24)	22 (34)	
	Higher-secondary	8 (28)	17 (26)	
	Graduate	4 (14)	16 (25)	
	Post-graduate	9 (31)	7 (11)	
Farming experience (in years)	< 10	6 (21)	8 (12)	X^2 = 2.519
	10-19	4 (14)	7 (11)	
	20-29	9 (31)	18 (28)	
	30-39	5 (17)	19 (29)	
	40-49	3 (10)	9 (14)	
	≥ 50	2 (7)	4 (6)	
Association with collectives	Yes	25 (86)	58 (77)	X^2 = 0.625
	No	4 (14)	15 (23)	
Farm size (acres)	Marginal (< 2.5)	9 (31)	46 (71)	X^2 = 22.257***
	Small (2.5-4.9)	5 (17)	13 (20)	
	Semi-medium (5.0-9.9)	10 (34)	5 (8)	
	Medium (10-25)	5 (17)	1 (2)	
Farmland ownership	Owned	25 (86)	53 (82)	NA
	Leased-in	1 (3)	0 (0)	
	Leased-out	0 (0)	0 (0)	
	Both owned and leased-in	2 (7)	11 (17)	
	Both owned and leased-out	1 (3)	1 (2)	
Farm certification	Certified	20 (69)	41 (63)	X^2 = 0.305
	Not certified	9 (31)	24 (37)	

Note: *, **, and *** significance at 10%, 5%, and 1% level, respectively; parentheses values are in percentage; NA implies not applicable.
Source: Compilation by Gill.

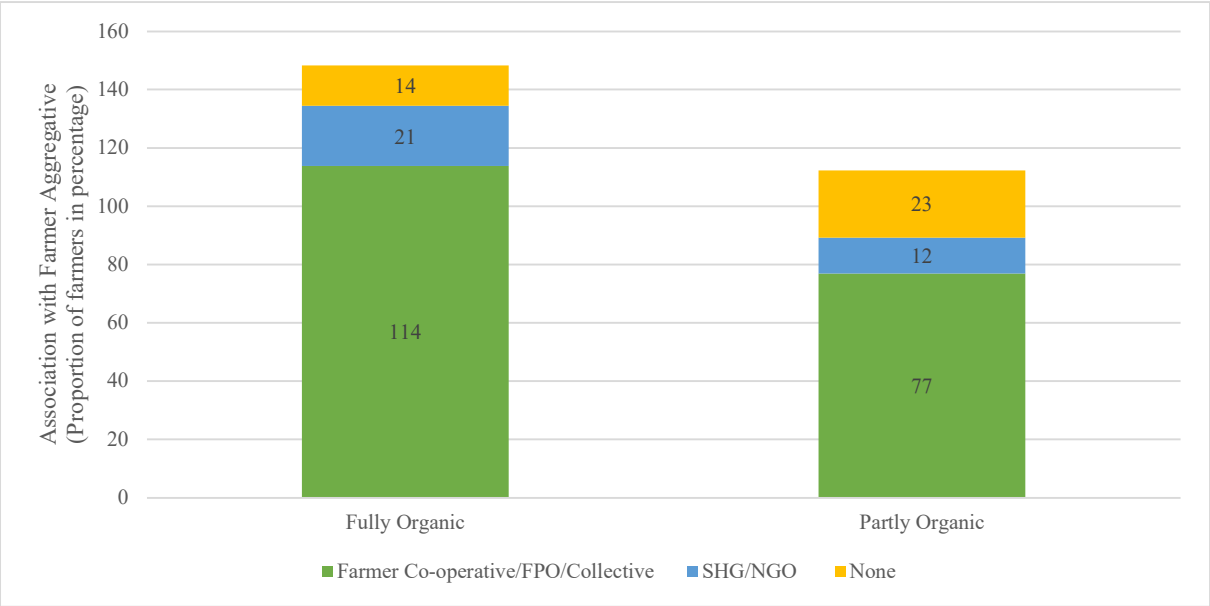
Figure 7 Sources of Income and Indebtedness



Source: Depiction by Gill.

from banks and co-operative societies. Most of the farmers are actively associated with farmer aggregations, such as farmer associations, co-operatives, or farmer producer organisations, as seen in Figure 8. Many farmers are members or associate with more than one collective as the sum of all percentages is greater than 100 per cent. Some of the farmers are also members of self-help groups and non-governmental organisations. Farmers primarily associate with the farmer community or producer groups for support knowledge, inputs, and marketing of their products.

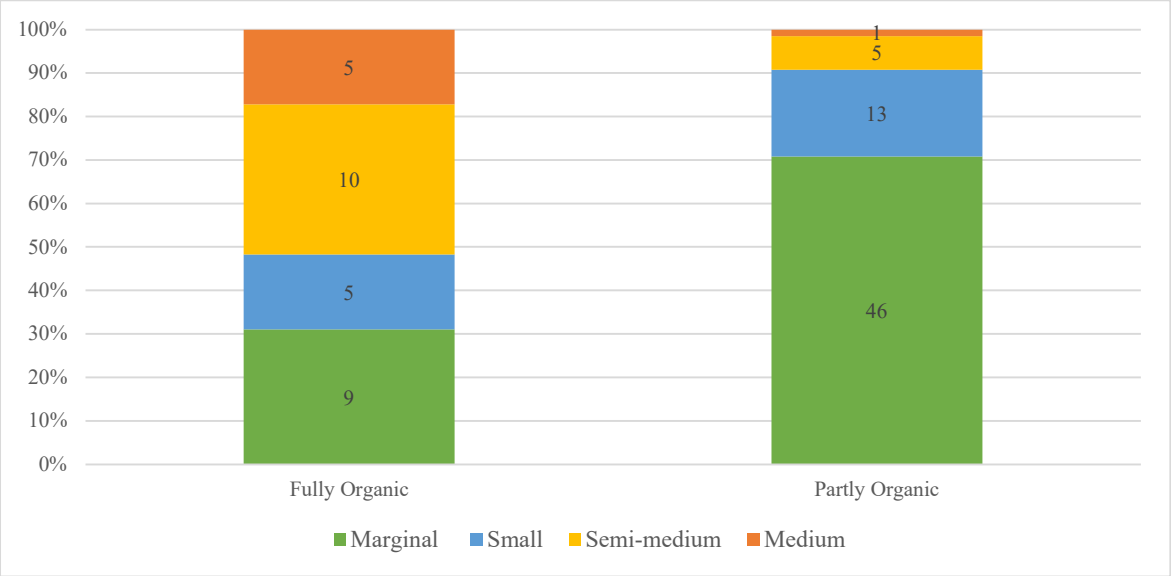
Figure 8 Farmers' Association with Farmer Aggregative



Note: The sum of percentages is greater than 100 per cent as farmers are associated with more than one collective.
Source: Depiction by Gill.

Punjab has a relatively minor share of marginal and small farmers (below 2 hectares) compared to the national averages. However, it was observed that 91 per cent of partly organic farmers in Punjab have marginal and small landholdings, as presented in Table 1 and Figure 9. The chi-square test of independence showed a significant association between farm size and adoption. The results suggest that farmers with smaller land holdings (below 5 acres) are more inclined to undertake partial adoption. Furthermore, 51 per cent of complete adopters have semi-medium to medium-sized farm plots. None of the sample farmers has large landholdings.

Figure 9 Landholdings Across Farm Type

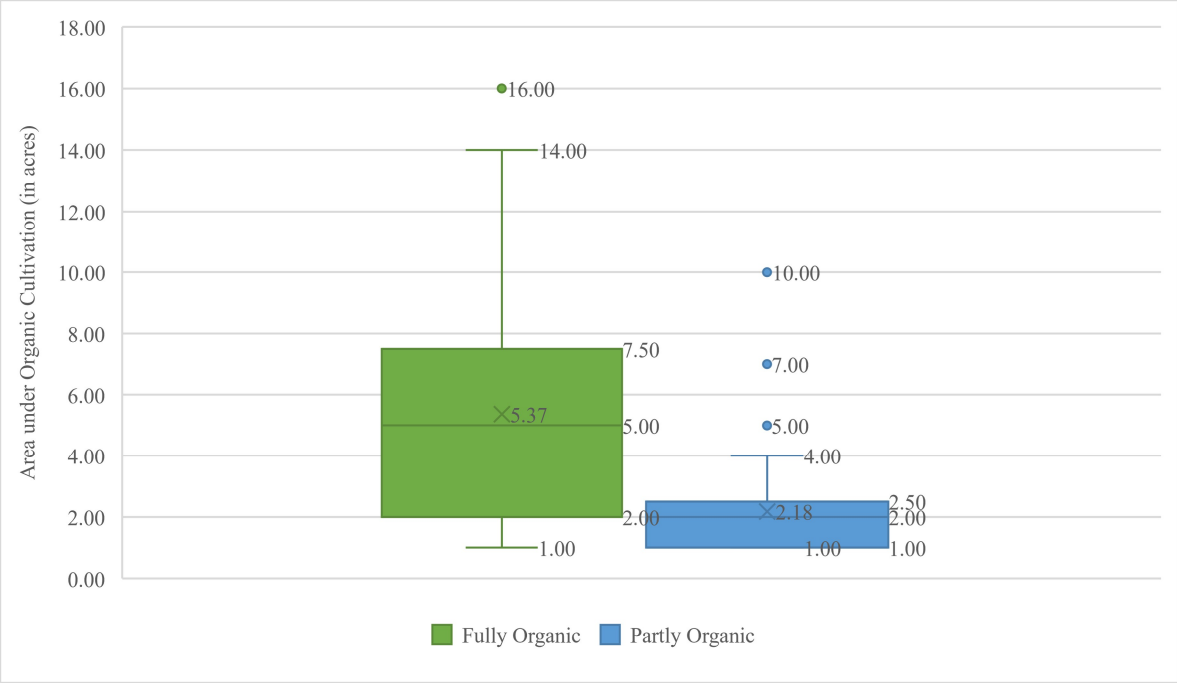


Source: Depiction by Gill.

The area under cultivation varies widely, depending on the extent of adoption of organic farming. As shown in Figure 10, the box plot for partly organic adopters has heavily skewed distributions with a median (2.18 acres) close to the third quartile (2.50 acres). On the other hand, the distribution for completely organic farmers is near normal, with the farm size of an average (median) of 5 acres (5.37 acres). The interquartile range of farm size for completely organic is 5.5 acres vis-à-vis 1.5 acres for their counterparts. Further analysis of land on which organic farming is carried out by partial adopters highlights that 92 per cent of them are farming on 50 per cent or less of their total farm landholding.

Agro-climatic zone-wise distribution of the size of farming plots is shown in Table 2. The average size of fully organic plots in the North-East Zone is 2.29 acres, with minimum and maximum being 1 acre and 5 acres, respectively. The mean, maximum, and minimum farm field size for partly organic farming plots is 2.02 acres, 1 acre, and 7 acres, respectively. Thus,

Figure 10 Distribution of Area under Organic Cultivation



Source: Depiction by Gill.

the plot size of farms for farmers is primarily small and marginal farm plots. However, for the other agro-climatic zones, there is a difference in the average landholding for fully vis-à-vis partial organic plot sizes (5.60 acres vs 2.35 acres and 6.62 acres vs 2.21 acres for the Central and South-West zones, respectively).

Table 2 Zone-wise Distribution of Farm Plot Sizes

	Obs.	Mean	Std. Dev.	Min	Median	Max
Panel A: North-East Zone (Districts of S.A.S. Nagar, Rupnagar, and Hoshiarpur)						
Fully Organic	6	2.29	1.83	1.00	1.25	5.00
Partly Organic	26	2.02	1.46	1.00	1.50	7.00
Panel B: Central Zone (Patiala District)						
Fully Organic	10	5.60	4.20	1.00	5.00	14.00
Partly Organic	20	2.35	1.99	1.00	2.00	10.00
Panel C: South-West Zone (Districts of Mansa and Bathinda)						
Fully Organic	13	6.62	4.12	2.00	6.00	16.00
Partly Organic	19	2.21	1.66	1.00	2.00	7.00

Source: Compilation by Gill.

With 100 per cent of irrigated land, around 86 per cent of the fully organic farmers plough self-owned land compared to 82 per cent of the partial ones. In addition to owning land, the ones practising both organic and conventional farming have relatively leased in more land for farming. Further, 69 per cent of complete and 63 per cent of partial organic farms are

certified organic. Only after the conventional to the organic transition period, which takes three years of chemical-free production, are the farmers accepted by a certifying authority considered organic farmers. In Punjab, for some farmers, the certification is issued by Punjab Agri Export Corporation Ltd. (PAGREXCO), accredited by the Agricultural and Processed Food Products Export Development Authority (APEDA) under the National Programme for Organic Production (NPOP). In contrast, the others follow a collaborative approach which involves farmers and other stakeholders in verifying the authenticity of organic produce through the Participatory Guarantee System (PGS) India.

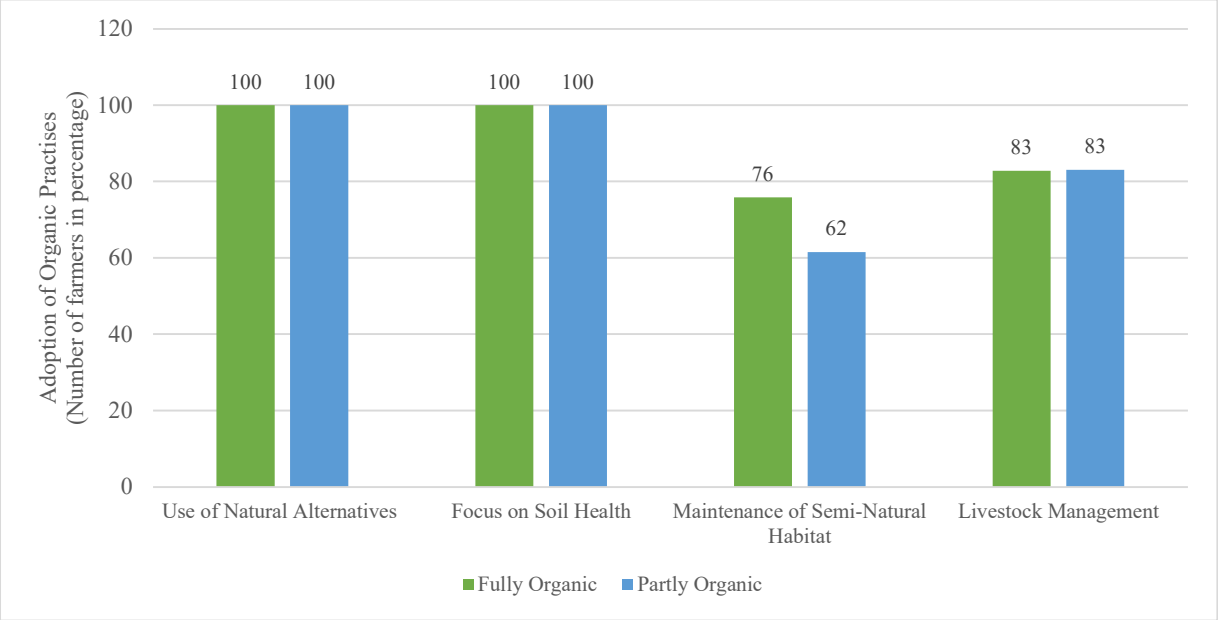
5 Results and Discussion

Assessing why farmers differ in the share of total cultivated crop area allocated to organic practices is essential to facilitate the complete adoption of agroecological holistic farming. Furthermore, the experiences and challenges in adopting and sustaining organic practices and suggestive changes will greatly alleviate impediments and stimulate a conversion towards sustainable farming approaches.

5.1 Experiences of Farmers with Organic Farming

Farmers adhere to many organic principles on their organic plots of farmland, such as the use of natural alternatives (use of farmyard manure, composting, green manuring, bio-fertilisers, -pesticides, and -herbicides) and focus on soil health (mulching, cover cropping, nitrogen-fixing cropping), as shown in Figure 11. However, partly organic adopters also highly use synthetic

Figure 11 Adoption of Organic Practises by Farmers

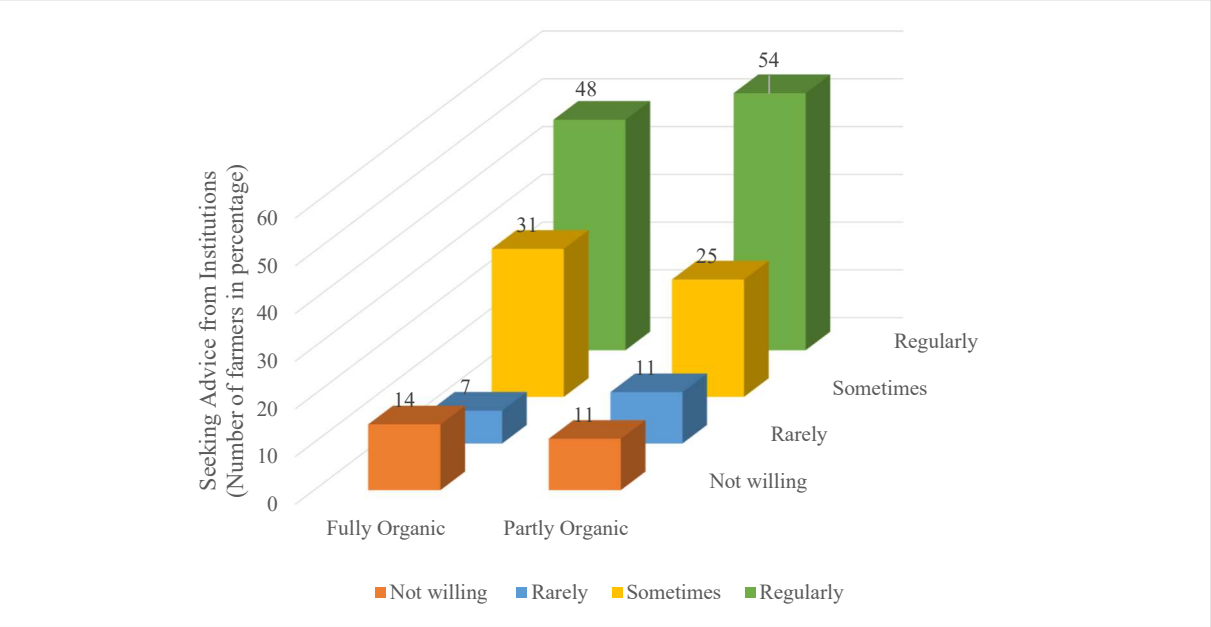


Source: Depiction by Gill.

fertilisers and pesticides on their conventional farm plots. Practices fostering the natural ecosystem that makes up the landscape with associated ecological properties and processes, together with cultivation, positively impact biodiversity, water resources, and soil fertility. Planting a variety of trees, plants and shrubs across the field contributes to plant diversity and associated improvement in ground and surface water levels. Around 76 per cent of the complete and 62 per cent of partial organic adopters apply prudent tree planting and canopy management to provide suitable habitats for flora and fauna. Further, 83 per cent of farmers use integrated crop-livestock systems. Manure from livestock is used as a nutrient source for crops, and crop residues as feed for livestock. Besides, milk and milk products support their livelihood and nutrition needs.

The agriculture sector of Punjab has great importance not only in the state but also in the nation's economy.[4] Various governmental and non-governmental institutions and agencies support agricultural research, education and extension. The results of the willingness of farmers to seek advice from institutions on different agricultural crop management systems and technologies are presented in Figure 12. As evident, 54 per cent of partly to 48 per cent of fully organic farmers seek advice regularly. However, a good over 20 per cent of the farmers are either unwilling or rarely approach these institutions for advice indicating that individual

Figure 12 Farmers' Willingness to Seek Advice from Institutions

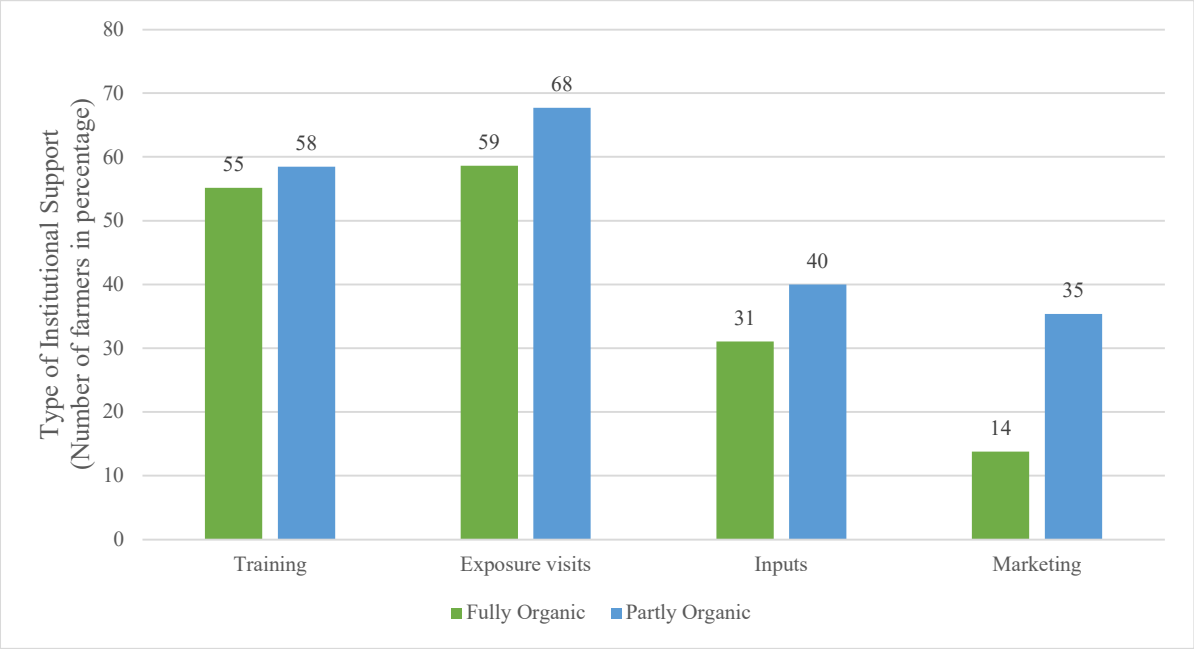


Source: Depiction by Gill.

[4] Agriculture being a State subject, the State Government is primarily responsible for the growth and development of agriculture sector. However, the Government of India supplements the efforts of the state governments through various schemes and programmes (https://www.pib.gov.in/PressReleasePage.aspx?PRID=1741942).

factors are an important factor in the uptake of agricultural extension services. A further probe into the nature of farmers' institutional support highlights that most farmers have attended training workshops/camps or exposure visits facilitated by the institutions. However, a glaring observation is that marketing their organic produce and products is the least sought support. The five top institutions providing support, as cited by the farmers, include the Punjab Agricultural Management and Extension Training Institute (Punjab Agricultural University), Krishi Vigyan Kendra's, Kheti Virasat Mission, Nabha Foundation, and co-operative societies/farmer producer organisations (FPOs) of which they are members.

Figure 13 Type of Institutional Support Taken by Farmers

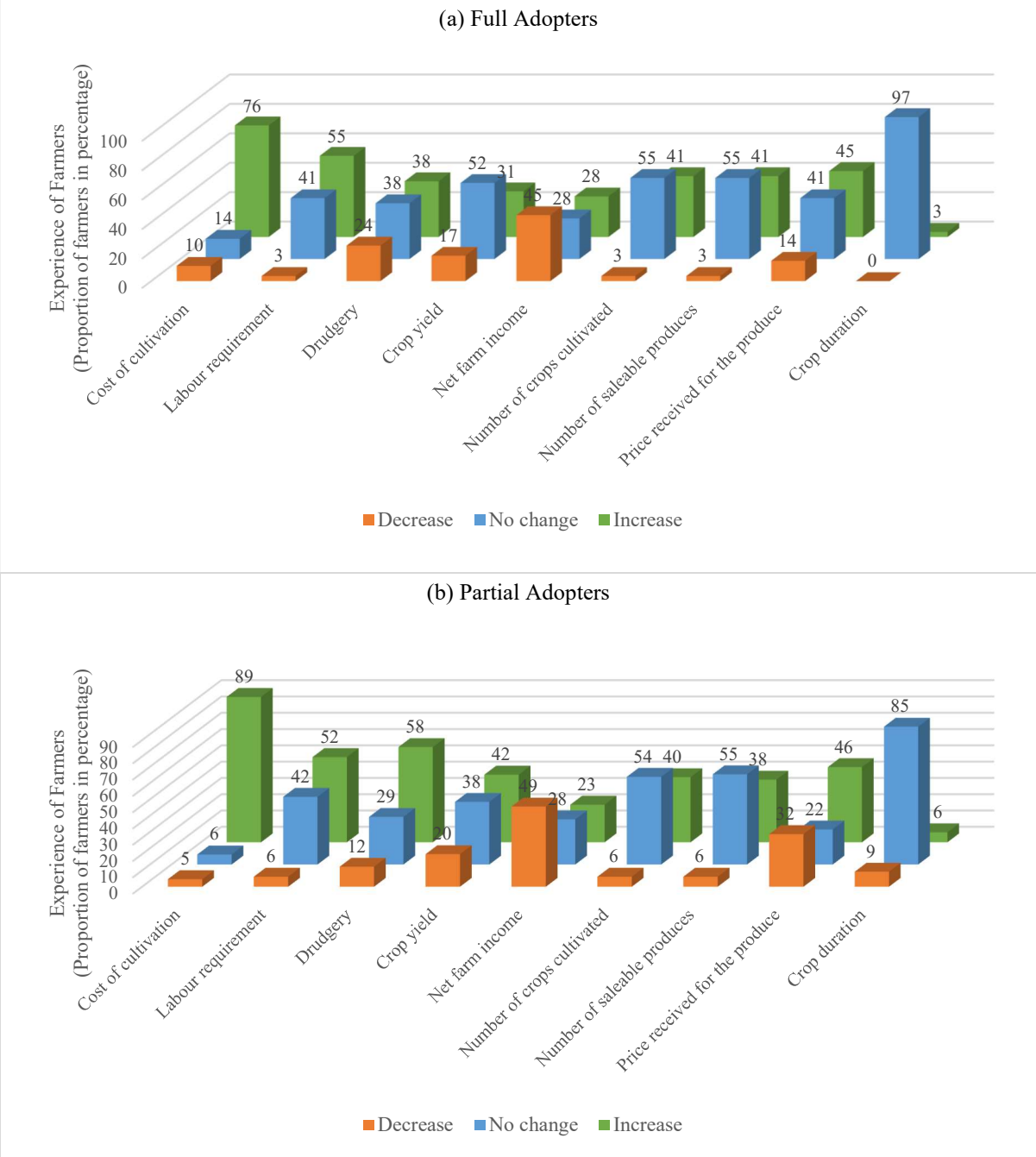


Source: Depiction by Gill.

The experiences of full and partial adopters of organic farming are projected in Figures 14 (a) and (b), respectively. As can be seen, over 75 per cent and 50 per cent of farmers experienced an increase in the cost of cultivation and labour requirements in the current cropping season vis-à-vis the previous one. In addition, the partly organic farmers expressed drudgery in adopting organic farming practices, which is expected compared to their conventional farming operations. On the other hand, 42 per cent of the partial vis-à-vis 31 per cent of the complete adopters of organic farming reported an increase in crop yield. Further, 49 per cent and 45 per cent of the partial and complete adopters experienced a lower realisation of net farm income, respectively. Additionally, 32 per cent of the partial adopters faced a drop in the price received for their produce. Most farmers reported no change in the crop duration,

while around 55 per cent had the same number of cultivated crops and saleable products as in the prior year.

Figure 14 Experience of Organic Farmers in the Current Cropping Season



Source: Depiction by Gill.

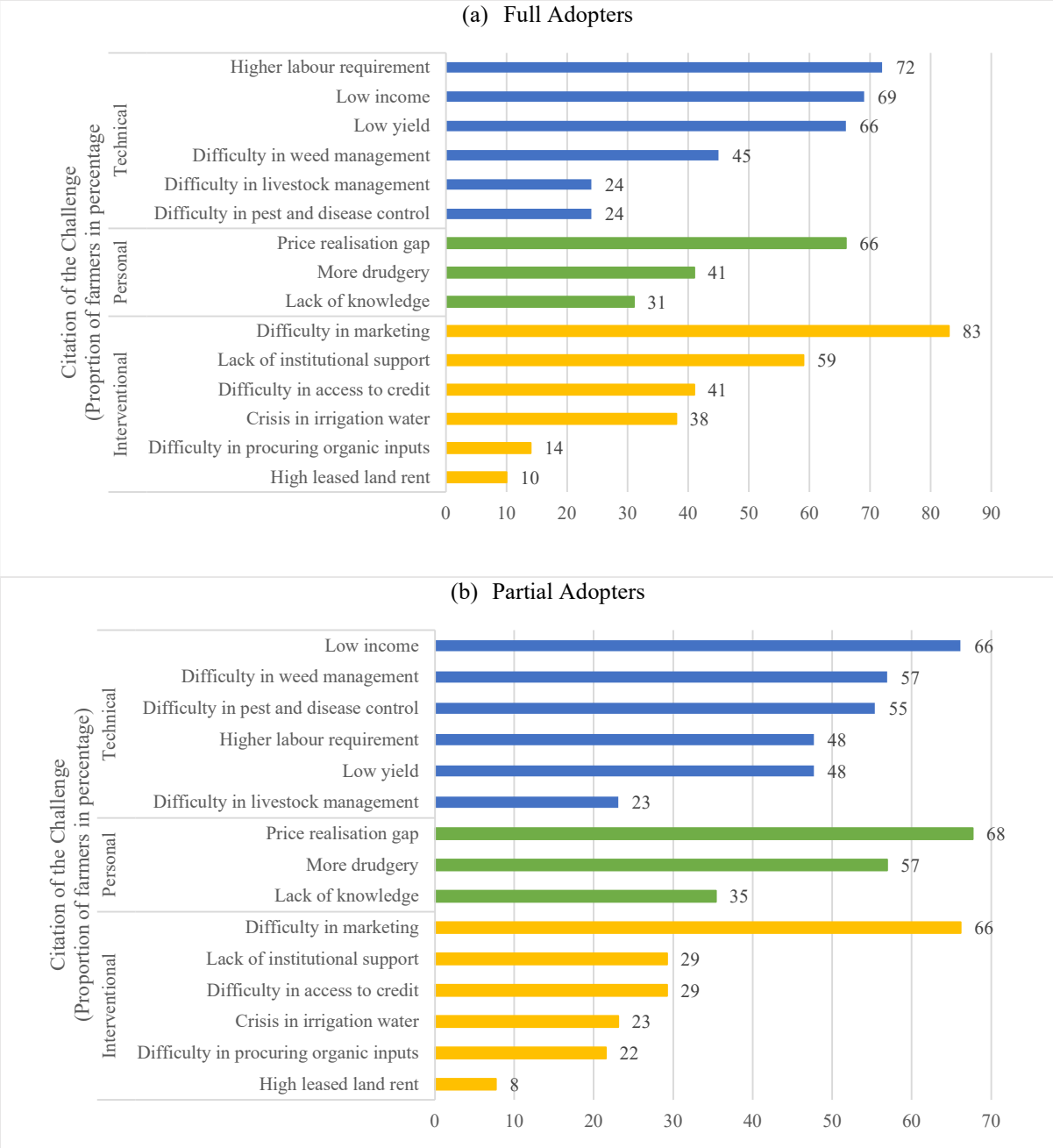
5.2 Challenges Faced by the Organic Farmers

As discussed, the critical barriers to scaling up organic farming practices were grouped under technical issues inherent to the sustainable farming system, personal related to the farmer's characteristics, and interventional regarding promotion and support. The chi-square test statistics show a significantly higher proportion of farmers practising organic farming only

cited lack of institutional support ($\chi^2 = 10.227$; $p < 0.01$), higher labour requirement ($\chi^2 = 4.800$; $p < 0.05$), crisis in irrigation water ($\chi^2 = 3.689$; $p < 0.05$), and low yield ($\chi^2 = 2.842$; $p < 0.10$) as a major challenge.

As can be assessed from Figures 15 (a) and (b), amongst the top three challenges faced on account of technical attributes of practising organics, the complete adopters cited higher labour requirement, low income and low yield, while part adopters named low income, difficulty in weed management, and difficulty in pest and disease control. In terms of personal

Figure 15 Challenges faced by the Organic Farmers



Source: Depiction by Gill.

characteristics, price realisation gap has been cited by both sets as the prime challenge. Similarly, regarding institutional intervention, farmers shared marketing as the biggest hurdle, followed by the lack of institutional support and difficulty accessing credit. Thus, it is apparent that challenges range from the supply-side (e.g., higher labour requirement, more drudgery, low yield, difficulty in pest and disease control and weed management), demand-side (e.g., price realisation gap, low income), and enabling factors (e.g., lack of institutional support, difficulty in access to credit, a crisis in irrigation water).

5.3 Suggestions for Scaling Up Organic Farming

The farmers have made several suggestions for scaling up the production of organics. Suggestions solicited from farmers to alleviate challenges faced by them in practising organic farming have been compiled in Table 3. Farmers engaged in organics in their entirety indicate more about change in the impetus on the more sustainable choice of crops and crop diversification, water management, mechanisation for lower labour costs, and knowledge sharing on improved biological methods of handling pests, diseases, and weed management. Though farmers practising both organic and conventional practices impress on institutional intervention, handholding during the transition period reduces production costs and increases yields. They also advocate the ban on agrochemicals and importing pulses and oil seeds. Both sets of farmers look forward to institutional support to ease access to good quality inputs at a subsidised cost. Complete adopters, however, would like the government to subsidise the purchase of organic inputs and promote the use of indigenous seeds and other inputs. To reduce the fallout of high labour costs, they wish that the funds available under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) should be available to pay for farm labourers' wages.

The farmers are aware of the technology and technological innovations to improve agricultural processes' efficiency and output. They would like training and availability of the technology, whether machinery or processes, at a subsidised cost. Small and marginal farmers express the same be available through co-operatives or farmer producer organisations by machinery/implement bank at the village level. Full adopters look forward to eco- and user-friendly technology for weed management, post-harvest storage and food processing, as well as in-situ waste and energy management. Partial adopters would like an intervention to create awareness of the significance of soil testing for precision farming. Cultivators look forward to extending technology to market their products with innovative marketing channels. Complete

Table 3 Suggestions Made by the Farmers for Scaling Up Organic Farming

Issue	Suggestions	
	Fully Organic Farmers	**Partly Organic Farmers**
Production	• Paddy cultivation should be minimised, and crop diversification and rotation should be encouraged. • Knowledge about companion planting of marigolds and other bright yellow-coloured planters that reduces pests and insects attack should be shared. • Environmentally friendly ways of removing pests from the fields should be encouraged instead of harmful chemicals. • Incentives should be provided for biological control through beneficial insects and birds, which reduces environmental and health hazards. • A better mechanism should be explored for weed management in organic farming. • More mechanisation is needed to increase production and save on labour costs. • Water conservation should be promoted to save depleting water resources.	• As an initiation, organic farming should be encouraged/incentivised on small plots of land. • Government support is required for a complete transition to organic farming. • Hands-on engagement of the farmers is required for good yields. • Government should pay more attention to reducing the production costs of organic farmers. • Harmful pesticides should be banned. • The government should import fewer pulses and oil seeds and incentivise farmers to grow them locally.
Inputs	• A change in the agricultural model is required to stop promoting the unnecessary use of pesticides and fertilisers in the name of yield improvement. • Government should provide subsidies for the purchase of organic inputs rather than chemicals. • The use of organic or natural inputs should be promoted, and reliance on chemical sprays be reduced. • The government should ban agri-chemical manufacturing companies • Organic inputs should be readily available. • Genuineness and quality of the inputs, especially seeds, should be ensured. • The use of indigenous or traditional seeds should be advocated. • Use of indigenous (desi) or farmyard manure should be encouraged. • Drip irrigation to conserve water and pesticide-free cultivation should be propagated. • Using the funds available under the MGNREGA to pay for farm labourers' wages can reduce organic farming costs, especially the cost of manual de-weeding.	• Government and agricultural universities should provide training in sustainable farming practices and processes. • Rising fuel prices have increased the cost of production and should be subsidised for farmers. • Co-operative societies and farmer producer organisations should provide more support in the procurement of inputs.

Issue	Suggestions	
	Fully Organic Farmers	**Partly Organic Farmers**
Technology and Processes	• Universities should focus more on research and development in the sustainable farming system. • The technology cost is high and should be made available at a low cost, especially to organic farmers. • User-friendly machines should replace labour-intensive work. • Machines should be accessible to small farmers directly or through collective associations at reasonable prices. • Eco-friendly technology for weed management should be devised. • Technology must be developed to deal with the problems regarding the storage of organic produce • In-situ waste and energy management technologies should be widely disseminated. • Processing units should be established in the villages, reducing food wastage and providing employment to rural people. • The government should promote traditional technologies of farming.	• Subsidies must be given to farmers to purchase machines, especially for straw management. • Shared machinery and implement banks must be created at the village level for everyone's use. • New crop production varieties should be promoted with a shorter crop duration. • The farmers should be made aware of the importance of soil and water testing before plantation.
Marketing	• Innovative agricultural product network marketing channels for selling organic produce should be facilitated. • Direct selling should be promoted to cut down on intermediaries. • Government, institutions, and self-help groups (SHGs) should play an active role by guiding the farmers in marketing products. • State-level government food-testing centres should be set to certify the authenticity of organic produce. • Authorities should create more awareness amongst the public/consumers regarding the environmental and health benefits of an organic way of life. • Training should be provided on ways to tap consumers through online marketing. • Farm-to-home model should be adopted to balance supply with demand with the participative involvement of consumers. • The government should fund community-based agriculture. • Organic produce should be covered under the minimum support price (MSP) and Midday Meal Scheme • The government should handhold and facilitate the export of organic produce to countries with a demand for the same.	• Marketing channels and facilities should be enhanced and updated with the latest technology. • Timely and transparent information dissemination is at the heart of good marketing; therefore, reliable sources should be available to farmers. • Marketing facilities should be close to the source of production to cut down on production loss and reduce storage and transportation costs. • Agricultural output prices should be market indexed and command a higher premium than conventional prices. • Training for self-processing, labelling, and storing should be provided to the farmers so that their products can compete with other organic labels.

Issue	Suggestions	
	Fully Organic Farmers	**Partly Organic Farmers**
Certification	• Certification should be carried out after complete validation of the farm and farming practices. • Certifying agencies must make timely and regular visits to monitor farms and guide the farmers. • The certification process should be transparent and economical. • Certification documents should be provided to the farmer by the certifying authorities. • Training and workshops on certifying processes and benefits should be conducted in villages.	• Dissemination workshops should be organised at the village level regarding the organic farming certification process and practices.
Institutional Intervention/ Support	• The institutions should be more forthcoming in providing financial, input and marketing support. • Institutions should act as enablers to small and marginal farmers to help them adopt sustainable farming practices. • Institutions must link with farmers at local levels. • Institutional support (subsidies for inputs and irrigation, research and development to produce new varieties of seeds) played a critical role in promoting the green revolution. The institutions should now undo/repay the environmental and health fallouts of the green revolution. • Institutional laboratories should provide support in the conduct of testing required for separate certifications to export to the US, European Union, and Canada. • Institutions should create awareness among consumers to improve the marketability of organic produce.	• More significant intervention in organic farming is required from government institutions than private ones. • Non-governmental institutions must play a role in mediating between farmers and the government. • Institutions and agricultural universities should provide current information and knowledge as well as promote capacity building. • More farmers must associate with Krishi Vigyan Kendras and other institutions to get knowledge, training and better yield • Co-operatives societies should purchase farm equipment and implements for shared usage amongst small and marginal farmers • Agricultural departments have taken no major initiative to contain soil depletion and should devise ways to restore soil fertility.
Other Imperatives	• Government officials should have practical knowledge about sustainable farming practices. • Government should increase its budget to facilitate more research and development in sustainable agriculture.	• Compensation must be given to the farmers in case of crop failure. • The government should devise a workable plan for the sustainable management of paddy straws. • More farming-related employment opportunities must be created for the youth so that they do not migrate abroad • Canal water should be given to farmers by the government • Closing the gender gap by encouraging women's engagement in agriculture.

Source: Compilation by Gill.

organic producers look forward to intervention in developing both the backward- and forward-linkages. They wish that organic produce should be covered under the government promoted MSP and Midday Meal Scheme. Furthermore, they want the government to handhold and facilitate the export of their products together with local facilitation of food testing centres. They also look forward to the state intercession in organics marketing by creating consumer awareness about the environmental and health benefits of organic food and funding community-based agriculture. Based on their conventional farming experience, partial adopters expect contemporaneous information dissemination and market-based pricing fetching a premium. Further, training for self-processing, labelling and storing be provided to compete with other organic products.

The cultivators believe that dissemination workshops on organic farming certification, practices and benefits should be organised at the village level. Beyond this, complete adopters believe that organic integrity should be built through a consistent, timely, cost-effective certification process, improving transparency and product traceability. As put forth, farmers look forward to institutional support in production, accessing inputs and technology, as well as marketing. Moreover, farmers look forward to supporting from non-governmental organisations, especially co-operatives. Other recommendations include an increased budget to facilitate agri-research, engagement of youth by creating rural employment opportunities, and impetus to the involvement of women in agriculture.

5. Conclusion and Recommendations

Organic agriculture as an approach to sustainable agriculture has been taken up by prominent ecologists and agronomists worldwide. The underlying principle is a better state of the environment, healthy food, and good quality of life for the producers. Many countries are setting up policies fostering agroecology and organic agriculture. The Government of India has taken several initiatives to address sustainability issues in agriculture while securing the sector's growth. India is leading in the total area dedicated to organic agriculture in Asia, with the largest number of organic producers in the world. However, agriculture being a state subject has led to varied responses to create enabling environment, assisting farmers in converting to organics.

Punjab has been a laggard in supporting environmentally sustainable production and consumption, with a distant twenty-ninth rank with organic and conversion areas and nineteenth in exports of organic produce in 2020-21. Further, there is limited literature on farmers' experiences with adopting organic farming practices in Punjab. The present study

endeavours to close this research gap for a sample of 29 fully organic and 65 partly organic farmers in six districts over three agro-climatic zones of Punjab. A framework conceptualised on adopting and scaling up sustainable agricultural practices resulting from an interaction between farmers' experience and perception, intervention, and technical facets of farming practices has been employed to unravel the experiences, challenges and suggestions of those practising organic farming. The data was collected through personal interviews with farmers based on a structured questionnaire and interaction through focus group discussions with stakeholders.

Complete and part adopters of organic farmers were shortlisted based on their conversion to organic farming at least three years earlier, irrespective of whether they were certified. A significantly higher percentage of farmers who have entirely adopted organic practices (59%) were 50 years and above with higher-secondary level and above (73%) education. Furthermore, 65 per cent of complete and 50 per cent of part adopters have experience of 20 years or more. About 45 per cent of the farmers have an alternate source of income, though more than half of the partly practising farmers are in debt. The chi-square test of independence shows that farmers with smaller land holdings (below 5 acres) are more inclined to not fully adopt, with 92 per cent of them farming organically on 50 per cent or less of their total landholding.

Over 75 per cent and 50 per cent of farmers experienced an increase in the cost of cultivation and labour requirement in the current cropping season vis-à-vis the previous one. The part adopters expressed drudgery in adopting organic practices, with 32 per cent facing a drop in the price received for their produce. Further, 42 per cent (49%) of the partial vis-à-vis 31 per cent (45%) of the complete adopters of organic farming reported an increase in crop yield (drop in net farm income). A higher proportion of complete vis-à-vis partial organic farmers cited lack of institutional support, higher labour requirement, a crisis in irrigation water, and low yield as major challenges. In general, farmers have made several suggestions for scaling up production and cost efficiency, ease of access to quality inputs, eco- and user-friendly technology to improve output and reduce the drudgery of operations, innovative marketing channels and consumer awareness, and institutional support across their value chain.

The vital issue is to balance supply-push and demand-pull actions to achieve sustainable development of organic agriculture in support of environmental and rural development goals without undermining market mechanisms. In each context, the right mix of appropriate, cost-effective measures would involve strategic planning resulting in an organic action plan. An

organic action plan may come from the government (top-down) or the sector (bottom-up). The first initiative to develop an organic action plan typically comes from the government; it may be carried out at the national or regional level. Cues can be taken from the interventions supporting organic farming based on a global analysis of public policies and programs classified into push (supply), pull (demand), and enabling (both push and pull) measures at various levels of administration (Annexure C). While some measures are specific to organic farming, others can be integrated into general agricultural policies.

The supply-side policy measures to influence the organic producers should provide them with long-term stable and continuous support. Adequate spending by the government on research and extension has been found to have the most extensive influence on organic farming adoption, irrespective of the development and regulatory context (Wheeler, 2006). An added effort can be made in terms of knowledge dissemination through vocational training and academic programs. Certification reduces information asymmetry by assuring organic produce, building trust between producers and consumers. A national body offering a free or subsidised unencumbered certification process can go a long way to give a fillip to the organic movement. Where not feasible, the government can also financially and technically support private certification bodies. A public intervention to close the supply-demand imbalance will be the most efficient when the vital links in the organic supply chain are developed, especially in a foreign market. Both central and state governments can support organic processing, product development and marketing through investment in processing facilities, developing infrastructure, promoting key market channels, and encouraging product diversification. Lack of integration across the supply chain results in poor traceability with concomitant costs affecting both the quality and safety of organic produce (Colom-Gorgues, 2009).

Addressing demand-side constraints would involve increasing the consumption of organic products, including creating consumer awareness, increasing product appeal, and easing product availability. Consumer awareness campaigns are most efficient when there is a publicly referenced organic guarantee system or a regulation. The awareness campaigns must be sensitive to the target groups to be effective (Tandon et al., 2020). This should ideally be combined with promoting the national organic logo, enabling consumers to identify organic products. Furthermore, public procurement of organic produce and government-run organic outlets have both a strong representative effect and retail uptake. Growing global demand for organic products also provides a significant economic opportunity, which the governments of several countries have tapped. All pull-side initiatives should be sensitive to changing

consumer preferences requiring constant monitoring and review. Policy decisions with targets to increase the share of organic products should therefore be backed by apposite budget provisioning.

The policy measures that target both the supply- and demand-side focus on building an enabling environment for developing the organic sector. Compiling national data on both certified and non-certified organic producers, traders, processors, consumers, and other market intermediaries will benefit the government and other stakeholders. Publication of price and other market information on organic inputs and outputs would also be helpful to organic producers for planning production and sales. However, challenges remain in terms of data gaps and issues related to the definition, classification, standardisation, quality, and access (Zanoli et al., 2014). More organic farmers can be brought under the fold of participatory guarantee systems as an alternative to third-party certification to establish quality assurance systems. Governments have sponsored such systems which are more apt to local markets and short supply chains (Hill, 2016). A participatory approach wherein government can both engage and provide support to non-governmental organisations and associations active in organic agriculture can go a long way in the capacity building of producers and creating consumer awareness. Such public-private partnerships at the policy design and implementation stage have proven to address some of the complex problems of the organic sector.

Any national policy intervention to develop organic agriculture should advance pro-organic programs and mitigate the harmful effects of environmentally unfriendly schemes. Firstly, this can be done by revoking or reducing the support provided through subsidies and waivers, like those available on chemical fertilisers or synthetic pesticides. Secondly, incentivising organic farming by providing suitable grants or compensation, like those provided during the conversion period or for procurement of bio-fertilisers. Finally, the overarching effort should be to ensure policy coherence so that there is no negative repercussion of the general agricultural policy on organic development.

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ANNEXURE A

Description of the Reviewed Studies

Author (Year)	Objective	District (Villages)	Crop Type (Non-crop)	Data (Reference Years)	Research Method (Design)
Kaur and Kalra (2010)	Examine the reactions and reasons of farmers for opting for organic farming and the problems faced by them	Ludhiana, Patiala, Bhatinda and Muktsar	NS	60 farmers engaged in organic farming under Punjab Agro Foodgrain Cooperation (Punjab Agri. Export Corporation) and Sutlej Power Private Ltd were selected out of a list of 115 farmers using a random sampling technique using proportional allocation	Mixed (Personal interviews, frequencies, percentage, cumulative cube root method)
Singh (2010)	Assess the economic evaluation of organic farming in Punjab in comparison with inorganic farming in the context of sustainable agriculture and food security	Patiala, Faridkot (31 villages)	Wheat and paddy	160 farmers in total: 85 organic farmers and 75 inorganic farmers chosen through random sampling (2008-2009)	Mixed (Structured personal interviews, statistical tools such as *Z*-statistics, *t*-test, compound growth rate, regression analysis)
Kalra et al. (2012)	Determine the rationale and philosophy of the farmers engaged in organic farming and their satisfaction levels	Hoshiarpur	Wheat, paddy, sunflower, maize, sugarcane, and vegetables	60 farmers practising organic farming/vermicomposting were selected using random sampling from a list obtained by the Directorate of Extension Education, PAU; Punjab Agricultural Management and Extension Training Institute (PAMETI), PAU; PAU Kisan Club and the office of the Chief Agricultural Officer, Government of Punjab, Hoshiarpur (2008-2010)	Qualitative (Two-part personal interview schedule relating to profile and reactions of farmers)
Kaur and Kalra (2019)	Identify the state and problems of organic farming in Punjab and suggest measures towards improving it.	Patiala, Mansa, Sri Muktsar Sahib, Fazilka, Faridkot, Firozpur, Barnala, Sangrur, Moga, Bathinda, Ludhiana, Tarn Taran and Amritsar, Kapurthala, SBS Nagar	NS	100 organic farmers chosen from 15 districts through convenient sampling	Mixed (Questionnaire and semi-structured personal interviews)

Author (Year)	Objective	District (Villages)	Crop Type (Non-crop)	Data (Reference Years)	Research Method (Design)
Tomar (2019)	Perform an economic analysis of organic wheat farming in Punjab in comparison with inorganic wheat cultivation	Ferozepur, Moga, Patiala, Sangrur, Ludhiana (45 villages)	Wheat	70 organic wheat farmers who also engaged in inorganic wheat farming, categorised as 13 small farmers, 32 medium farmers and 25 large farmers (those working under the guidance of some verified university or organic farming group/club) (2017-2018)	Mixed (Structured personal interviews, factor analysis, marketing system analysis)
Kaur (2020)	Determine factors that may affect the business perspective of organic farming and the problems faced by consumers while buying the organic products	Fatehgarh Sahib, Mohali, Patiala and Sangrur	NS	400 organic farmers and 400 consumers in total: 100 each from each district chosen through multi-stage random sampling (2018)	Mixed (Survey through a structured questionnaire with both open and closed-ended questions, interviews, field observations, scaling done on 5-point Likert Scale, SPSS and Excel used for tabulation, percentage, mean and mode, correlation analysis, factor analysis)
Singh (2020)	Make a comparative analysis of organic and inorganic farming in rural areas of Punjab with reference to per acre productivity, economic impact, marketing facilities, problems and perspectives	Gurdaspur, Pathankot, Hoshiarpur, Roopnagar, Amritsar, Taran Taran, Kapurthala, Jalandhar, SBS Nagar, Ludhiana, Patiala, Sangrur, SAS Nagar, Fatehgarh Sahib, Ferozpur, Fazilka, Faridkot, Moga and Mukatsar Sahib, Bathinda, Barnala and Mansa	Wheat, rice, sugarcane, mustard, and potatoes	300 farmers in total: 150 organic (non-certified only) and 150 inorganic farmers (five units each of organic and inorganic farmers from each of the five zones) selected through purposive sampling; farmers classified into three categories: marginal (less than or equal to 2.5 acres), small (2.5 to 5 acres), and big (more than 5 acres) (2017-2018)	Mixed (Structured questionnaire, personal interviews, average, combined average and percentage methods)

Note: NS for 'not specified'
Source: Compilation from the literature by Malika.

ANNEXURE B

Survey Questionnaire

Sustainability of Farming in the State of Punjab: The Economic, Social and Ecological Analysis

About the Project

Panjab University is partnering on an inter-disciplinary project, *'Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies (TIGR2ESS)'*, as a part of the Global Challenges Research Fund award by the UK-India Research Councils. The project is led by the University of Cambridge, U.K., with multiple partner institutions in India and the U.K. The present research primarily aims to evaluate the sustainability of organic and conventional farming in Punjab.

ਯੂਕੇ-ਇੰਡੀਆ ਰਿਸਰਚ ਕੌਂਸਲਾਂ ਦੁਆਰਾ ਗਲੋਬਲ ਚੈਲੇਂਜਸ ਰਿਸਰਚ ਫੰਡ ਅਵਾਰਡ ਦੇ ਹਿੱਸੇ ਵਜੋਂ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ ਇੱਕ ਅੰਤਰ-ਅਨੁਸ਼ਾਸਨੀ ਪ੍ਰੋਜੈਕਟ, *'ਟ੍ਰਾਂਸਫਾਰਮਿੰਗ ਇੰਡੀਆਜ਼ ਗ੍ਰੀਨ ਰੈਵੋਲਿਸ਼ਨ ਰਿਸਰਚ ਐਂਡ ਐਮਪਾਵਰਮੈਂਟ ਫਾਰ ਸਸਟੇਨੇਬਲ ਫੂਡ ਸਪਲਾਈਜ਼ (TIGR2ESS)'* ਤੇ ਭਾਈਵਾਲੀ ਕਰ ਰਹੀ ਹੈ। ਇਸ ਪ੍ਰੋਜੈਕਟ ਦੀ ਅਗਵਾਈ ਯੂਕੇ ਦੀ ਕੈਂਬਰਿਜ ਯੂਨੀਵਰਸਿਟੀ ਕਰਦੀ ਹੈ, ਜਿਸ ਵਿੱਚ ਭਾਰਤ ਅਤੇ ਯੂਕੇ ਦੀਆਂ ਕਈ ਸਹਿਭਾਗੀ ਸੰਸਥਾਵਾਂ ਹਨ । ਮੌਜੂਦਾ ਖੋਜ ਦਾ ਮੁੱਖ ਉਦੇਸ਼ ਪੰਜਾਬ ਵਿੱਚ ਜੈਵਿਕ ਅਤੇ ਰਵਾਇਤੀ ਖੇਤੀ ਦੀ ਸਥਿਰਤਾ ਦਾ ਮੁਲਾਂਕਣ ਕਰਨਾ ਹੈ ।

Consent and Confidentiality Statement

Your participation is entirely voluntary, and all responses will be kept completely confidential. Individual respondents will not be identified, and results will only be presented in an aggregated or anonymous form. Thank you in advance, and we hope you will agree to participate in this survey to help us understand your farming practices.

I consent to be part of this PU Organic Farming Survey and to be interviewed and photographed.

ਤੁਹਾਡੀ ਭਾਗੀਦਾਰੀ ਪੂਰੀ ਤਰ੍ਹਾਂ ਸਵੈਇੱਛਤ ਹੈ, ਅਤੇ ਸਾਰੇ ਜਵਾਬ ਪੂਰੀ ਤਰ੍ਹਾਂ ਗੁਪਤ ਰੱਖੇ ਜਾਣਗੇ। ਵਿਅਕਤੀਗਤ ਉੱਤਰਦਾਤਾਵਾਂ ਦੀ ਪਛਾਣ ਨਹੀਂ ਕੀਤੀ ਜਾਏਗੀ, ਅਤੇ ਨਤੀਜੇ ਸਿਰਫ ਸਮੂਹਿਕ ਜਾਂ ਅਗਿਆਤ ਰੂਪ ਵਿੱਚ ਪੇਸ਼ ਕੀਤੇ ਜਾਣਗੇ। ਅਗਾ ਧੰਨਵਾਦ, ਅਤੇ ਅਸੀਂ ਉਮੀਦ ਕਰਦੇ ਹਾਂ ਕਿ ਤੁਸੀਂ ਇਸ ਸਰਵੇਖਣ ਵਿੱਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਸਹਿਮਤ ਹੋਵੋਗੇ ਤਾਂ ਜੋ ਤੁਹਾਡੀ ਖੇਤੀ ਦੇ ਤਰੀਕਿਆਂ ਨੂੰ ਸਮਝਣ ਵਿੱਚ ਸਾਡੀ ਮਦਦ ਕੀਤੀ ਜਾ ਸਕੇ।

ਮੈਂ ਇਸ ਪੀ. ਯੂ. ਆਰਗੈਨਿਕ ਫਾਰਮਿੰਗ ਸਰਵੇ ਦਾ ਹਿੱਸਾ ਬਣਨ ਅਤੇ ਇੰਟਰਵਿ ਅਤੇ ਫੋਟੋ ਖਿੱਚਣ ਲਈ ਸਹਿਮਤ ਹਾਂ।

Signature: ਦਸਤਖਤ

Date: ਤਾਰੀਖ਼

THE FARM ASSESSMENT INDEX SURVEY
(ਫਾਰਮ ਅਸੈਸਮੈਂਟ ਇੰਡੈਕਸ ਸਰਵੇਖਣ)

Date of the Survey: _____ **Name of the Interviewer:** _____

Name of the Farmer: _____ **Farmer Code:** _____

Year/Season/Date of Sowing: _____ **Harvest Time for Kharif /Rabi Crop (month/week):** _____

1. BASIC DETAILS **ਬੁਨਿਆਦੀ** ਵੇਰਵੇ

1.1. State ਰਾਜ	**Punjab**	1.2. District ਜ਼ਿਲ੍ਹਾ		1.3 Tehsil ਤਹਿਸੀਲ		1.4. Block/Village ਲਾਕ/ਪਿੰਡ	
1.5. Full name of the cultivator/decision-maker ਕਾਸ਼ਤਕਾਰ/ਫੈਸਲਾ ਲੈਣ ਵਾਲੇ ਦਾ ਪੂਰਾ ਨਾਂ				1.6. Gender (✓): Male ☐ Female ☐ ਲਿੰਗ: ਮਰਦ ☐ ਔਰਤ ☐		1.7. Age (in years): ਸਾਲਾਂ ਵਿੱਚ ਉਮਰ	
1.8. Name of the respondent and relationship with the cultivator ਉੱਤਰਦਾਤਾ ਦਾ ਨਾਮ ਅਤੇ ਕਾਸ਼ਤਕਾਰ ਨਾਲ ਸੰਬੰਧ							
1.9. Total number of members in the family ਪਰਿਵਾਰ ਵਿੱਚ ਮੈਂਬਰਾਂ ਦੀ ਕੁੱਲ ਸੰਖਿਆ	Adults ਬਾਲਗ: Children ਬੱਚੇ:	1.10. No. of family members involved in agriculture ਕੰਮ ਕਰਨ ਵਾਲੇ ਮੇਮ੍ਬਰ ਦੀ ਸੰਖਿਆ ਖੇਤੀਬਾੜੀ				Male ਮਰਦ: Female ਔਰਤ:	
1.11. Complete postal address ਡਾਕ ਪਤਾ				1.12. Mobile/Phone/Email ਫੋਨ/ਮੋਬਾਈਲ/ਈਮੇਲ			
1.13. Primary occupation ਮੁੱਖ ਕਿੱਤਾ				1.14. Secondary occupation ਸਹਾਇਕ ਕਿੱਤੇ			
1.15. Alternate source of household income (Yes/No) ਘਰੇਲੂ ਆਮਦਨੀ ਦਾ ਵਿਕਲਪਿਕ ਸਰੋਤ (ਹਾਂ/ਨਹੀਂ)		1.16. Details, if yes: ਵੇਰਵੇ, ਜੇ ਹਾਂ					
1.17. Farmer's Education ਸਿੱਖਿਆ (✓)	A. No formal education ☐ A. ਅਨਪੜ੍ਹ ☐	B. Primary ☐ B. ਪ੍ਰਾਇਮਰੀ ☐	C. Secondary ☐ C. ਸੈਕੰਡਰੀ ☐	D. Higher-secondary ☐ D. ਉੱਚ-ਸੈਕੰਡਰੀ ☐	E. Graduate ☐ E. ਗ੍ਰੈਜੂਏਟ ☐	F. Post-graduate ☐ F. ਪੋਸਟ-ਗ੍ਰੈਜੂਏਟ ☐	
1.18. Education distribution of household (no.) No. of males with respective age: No. of females with respective age: ਘਰ ਦੀ ਸਿੱਖਿਆ ਵੰਡ (ਸੰ.) ਸੰਬੰਧਤ ਉਮਰ ਵਾਲੇ ਪੁਰਸ਼ਾਂ ਦੀ ਸੰਖਿਆ: ਸੰਬੰਧਤ ਉਮਰ ਵਾਲੀਆਂ ਰਤਾਂ ਦੀ ਸੰਖਿਆ:	A. No formal education ___ D. Higher-secondary ___ A. ਅਨਪੜ੍ਹ _____ D. ਉੱਚ-ਸੈਕੰਡਰੀ ____	B. Primary ___ E. Graduate ____ B. ਪ੍ਰਾਇਮਰੀ _____ E. ਗ੍ਰੈਜੂਏਟ _____	C. Secondary ___ F. Post-graduate _____ C. ਸੈਕੰਡਰੀ _____ F. ਪੋਸਟ-ਗ੍ਰੈਜੂਏਟ _____				
1.19. How long have you been into farming? (experience in years) ਤੁਸੀਂ ਖੇਤੀਬਾੜੀ ਵਿੱਚ ਕਿੰਨੇ ਸਮੇਂ ਤੋਂ ਹੋ? (ਸਾਲਾਂ ਵਿੱਚ ਅਨੁਭਵ)				Total: ਕੁੱਲ:	Conventional: ਰਸਾਇਣਕ:	Organic: ਜੈਵਿਕ:	

1.20. Who in the household takes farm-related decisions like crop/ nutrient/harvest? ਘਰ ਵਿੱਚ ਕੌਣ ਖੇਤੀ ਨਾਲ ਸੰਬੰਧਤ ਫੈਸਲੇ ਲੈਂਦਾ ਹੈ ਜਿਵੇਂ ਫਸਲ/ਪੌਸ਼ਟਿਕ ਤੱਤ/ ਵਾਢੀ	

2. ASSET DETAILS (to the extent relevant) **ਸੰਪਤੀ ਦੇ ਵੇਰਵੇ** (ਸੰਬੰਧਤ ਹੱਦ ਤੱਕ)

S. No.	Particulars ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ	Number ਗਿਣਤੀ	Year of Purchase/Building ਖਰੀਦ/ਇਮਾਰਤ ਦਾ ਸਾਲ	Leased/Rented ਕਿਰਾਏ 'ਤੇ	Source ਸਰੋਤ
2.1.	Tractor ਟਰੈਕਟਰ				
2.2.	Trolley ਟਰਾਲੀ				
2.3.	Diesel engine ਡੀਜ਼ਲ ਇੰਜਣ				
2.4.	Submersible pump ਸਬਮਰਸੀਬਲ ਪੰਪ				
2.5.	Spray pump ਸਪਰੇਅ ਪੰਪ				
2.6.	Electric motor ਇਲੈਕਟ੍ਰਿਕ ਮੋਟਰ				
2.7.	Generator ਜਨਰੇਟਰ				
2.8.	Leveller ਲੇਵਲਰ				
2.9.	Rotavator ਰੋਟਾਵੇਟਰ				
2.10.	Disc harrow ਡਿਸਕ ਹੈਰੋ				
2.11.	Cultivator ਕਾਸ਼ਤਕਾਰ				
2.12.	Seed drill ਬੀਜ ਦੀ ਮਸ਼ਕ				
2.13.	Thresher ਥ੍ਰੈਸ਼ਰ				
2.14.	Combine ਕੰਬਾਈਨ				
2.15.	Store drum ਸਟੋਰ ਡ੍ਰਮ				
2.16.	Happy seeder ਹੈਪੀ ਸੀਡਰ				
2.17.	Others* ਹੋਰ*				
2.18.	Cattle shed ਪਸ਼ੂ ਬਸੇਰਾ				
2.19.	Implement shed ਇਮਪਲੇਮੈਂਟ ਸ਼ੇਡ				
2.20.	Storage shed ਸਟੋਰੇਜ ਸ਼ੈੱਡ				

Note: *Includes reaper, ranger, chopper, planter, harvester, etc. *ਰੀਪਰ, ਰੇਂਜਰ, ਹੈਲੀਕਾਪਟਰ, ਪਲਾਂਟਰ, ਹਾਰਵੈਸਟਰ, ਆਦਿ ਸ਼ਾਮਲ ਹਨ

3. LANDHOLDING DETAILS ਜ਼ਮੀਨ ਦੇ ਵੇਰਵੇ

3.1 What is the total landholding of the farmer (in acres)? ਕਿਸਾਨ ਦੀ ਕੁੱਲ ਜ਼ਮੀਨ (ਏਕੜ ਵਿੱਚ) ਕੀ ਹੈ? _____

Description	Plot 1	Plot 2	Plot 3
3.2. Plot size (in acres) ਪਲਾਟ ਦਾ ਆਕਾਰ (ਏਕੜ ਵਿੱਚ)			
3.3. Plot type ਪਲਾਟ ਦੀ ਕਿਸਮ: i. Owned ਮਲਕੀਅਤ ਹੈ ii. Leased-in (with rent in Rs./annum) ਠੇਕੇ ਤੇ ਲਿੱਤਾ (ਕਿਰਾਏ ਦੇ ਨਾਲ/ਰੁਪਏ ਵਿੱਚ) iii. Leased-out (with rent in Rs./annum) ਠੇਕੇ ਤੇ ਦਿੱਤਾ (ਕਿਰਾਏ ਦੇ ਨਾਲ/ਸਾਲਾਨਾ ਵਿੱਚ)			
3.4. Irrigated area (in acres) ਏਕੜ ਵਿੱਚ ਸਿੰਚਾਈ ਵਾਲਾ ਖੇਤਰ			
3.5. Source of irrigation (e.g., tube well, main canal, branch canal/other) ਸਿੰਚਾਈ ਦਾ ਸਰੋਤ (ਉਦਾਹਰਨ ਲਈ, ਟਿਬਵੈੱਲ, ਮੁੱਖ ਨਹਿਰ, ਸ਼ਾਖਾ ਨਹਿਰ/ਹੋਰ)			
3.6. Rainfed area (in acres) ਏਕੜ ਵਿੱਚ ਮੀਂਹ ਵਾਲਾ ਖੇਤਰ			
3.7. Land under ecological/organic farming (in acres) ਵਾਤਾਵਰਣਕ/ਜੈਵਿਕ ਖੇਤੀ ਅਧੀਨ ਜ਼ਮੀਨ ਦੀ ਹੱਦ (ਏਕੜ ਵਿੱਚ)			
3.8. If organic, is it certified? (Yes/No) ਜੇ ਜੈਵਿਕ, ਕੀ ਇਹ ਪ੍ਰਮਾਣਤ ਹੈ? (ਹਾਂ ਜਾਂ ਨਹੀਂ)			
3.9. If certified, what is the source (name of the agency/group) and cost? ਜੇ ਪ੍ਰਮਾਣਤ ਹੈ, ਸਰੋਤ ਕੀ ਹੈ (ਏਜੰਸੀ/ਸਮੂਹ ਦਾ ਨਾਮ) ਅਤੇ ਲਾਗਤ?			
3.10. Soil type (coarse loamy, coarse & fine loamy, fine loamy, other) ਮਿੱਟੀ ਦੀ ਕਿਸਮ (ਸੈਂਡੀ, ਸੈਂਡੀ ਲੋਮ, ਲੋਮੀ, ਲਾਲ, ਕਾਲਾ, ਹੋਰ)			
3.11. Main crop (variety) ਮੁੱਖ ਫਸਲ (ਕਿਸਮ)			
3.12. Previous harvest crop (variety) ਪਿਛਲੀ ਵਾਢੀ ਦੀ ਫਸਲ (ਕਿਸਮ)			
3.13. Do you have a Soil Health Card? (Yes/No) (Click photo, if handy) ਕੀ ਤੁਹਾਡੇ ਕੋਲ ਸੋਇਲ ਹੈਲਥ ਕਾਰਡ ਹੈ? (ਹਾਂ/ਨਹੀਂ) (ਫੋਟੋ 'ਤੇ ਕਲਿਕ ਕਰੋ, ਜੇ ਸੌਖਾ ਹੋਵੇ)			
3.14. If yes, then specify ਜੇ ਹਾਂ, ਤਾਂ ਨਿਰਧਾਰਤ ਕਰੋ: i. Soil Organic (micro-nutrients) ਮਿੱਟੀ ਜੈਵਿਕ (ਸੂਖਮ-ਪੌਸ਼ਟਿਕ ਤੱਤ) ii. Nitrogen (N) ਨਾਈਟ੍ਰੋਜਨ (ਐਨ) iii. Phosphorus (P) ਫਾਸਫੋਰਸ (ਪੀ) iv. Potassium (K) ਪੋਟਾਸ਼ੀਅਮ (ਕੇ) v. Soil pH ਮਿੱਟੀ pH vi. Soil salinity ਮਿੱਟੀ ਦੀ ਲੂਣਤਾ			

4. LAND PREPARATION PROCESSES **ਜ਼ਮੀਨ ਤਿਆਰੀ ਪ੍ਰਕਿਰਿਆਵਾਂ**

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Description	Plot 1	Plot 2	Plot 3
NOP 1: Ploughing **ਹਲਣਾ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
NOP 2: Harrowing **ਤਰਿਆਂ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
NOP 3: Puddling **ਕੱਦੂ ਕਰਨਾ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
NOP 4: Other (Name: _____) **ਹੋਰ** (ਨਾਮ: _____)	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**

Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			

5. BASAL MANURE APPLICATION ਬੇਸਲ ਰੂੜੀ ਦੀ ਵਰਤੋਂ

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Description	Plot 1	Plot 2	Plot 3
Fertilizer/Manure 1: Broadcasting/ Placement/Fertigation/ Mulching/Tilling (✓) **ਖਾਦ/ਖਾਦ 4: ਪ੍ਰਸਾਰਣ/ਪਲੇਸਮੈਂਟ/ਫਰਟੀਗੇਸ਼ਨ/ਟਿਲਿੰਗ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Source (home-made/market/govt.) ਸਰੋਤ (ਘਰੇਲੂ ਉਪਯੋਗ/ਮਾਰਕੀਟ/ਸਰਕਾਰ)			
Total quantity (with unit) ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.) ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨਰੀ (diesel and hours)			
Fertilizer/Manure 2: Broadcasting/ Placement/Fertigation/ Mulching/Tilling (✓) **ਖਾਦ/ਖਾਦ 4: ਪ੍ਰਸਾਰਣ/ਪਲੇਸਮੈਂਟ/ਫਰਟੀਗੇਸ਼ਨ/ਟਿਲਿੰਗ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Source (home-made/market/govt.) ਸਰੋਤ (ਘਰੇਲੂ ਉਪਯੋਗ/ਮਾਰਕੀਟ/ਸਰਕਾਰ)			
Total quantity (with unit) ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.)			

ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨਰੀ (diesel and hours)			
Fertilizer/Manure 3: Broadcasting/ Placement/Fertigation/ Mulching/Tilling (✓) **ਖਾਦ/ਖਾਦ 4: ਪ੍ਰਸਾਰਣ/ਪਲੇਸਮੈਂਟ/ਫਰਟੀਗੇਸ਼ਨ/ਟਿਲਿੰਗ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Source (home-made/market/govt.) ਸਰੋਤ (ਘਰੇਲੂ ਉਪਯੋਗ/ਮਾਰਕੀਟ/ਸਰਕਾਰ)			
Total quantity (with unit) ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.) ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨਰੀ (diesel and hours)			
Fertilizer/Manure 4: Broadcasting/ Placement/Fertigation/ Mulching/Tilling (✓) **ਖਾਦ/ਖਾਦ 4: ਪ੍ਰਸਾਰਣ/ਪਲੇਸਮੈਂਟ/ਫਰਟੀਗੇਸ਼ਨ/ਟਿਲਿੰਗ**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Source (home-made/market/govt.) ਸਰੋਤ (ਘਰੇਲੂ ਉਪਯੋਗ/ਮਾਰਕੀਟ/ਸਰਕਾਰ)			
Total quantity (with unit) ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.) ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			

Machine ਮਸ਼ੀਨਰੀ (diesel and hours)			

6. SOWING, RESOWING, TRANSPLANTING etc. **ਬਿਜਾਈ, ਮੁੜ ਬੀਜਾਈ, ਟ੍ਰਾਂਸਪਲਾਂਟਿੰਗ ਆਦਿ (All three activities combined)**

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Description	Main crop ਮੁੱਖ ਫਸਲ	Inter crop 1 ਅੰਤਰ ਫ਼ਸਲ 1	Inter crop 2 ਅੰਤਰ ਫ਼ਸਲ 2	Inter crop 3 ਅੰਤਰ ਫ਼ਸਲ 3	Inter crop 4 ਅੰਤਰ ਫ਼ਸਲ 4
Plot 1: Seed Broadcasting/Transplanting/ Seed Planting ਬੀਜ ਪ੍ਰਸਾਰਣ/ਟ੍ਰਾਂਸਪਲਾਂਟਿੰਗ/ ਬੀਜ ਲਾਉਣਾ (✓)	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Name of the crop ਫਸਲ ਦਾ ਨਾਮ					
Seed variety name ਬੀਜ ਦੀਆਂ ਕਿਸਮਾਂ ਦਾ ਨਾਮ					
Seed type (Bt/hybrid/improved/traditional) ਬੀਜ ਦੀ ਕਿਸਮ (ਬੀਟੀ/ਹਾਈਬ੍ਰਿਡ/ਸੁਧਾਰੀ/ਰਵਾਇਤੀ)					
Source (home/govt./pvt/fellow farmers) ਸਰੋਤ (ਘਰ/ਸਰਕਾਰ/ਪ੍ਰਾਈਵੇਟ/ਸਾਥੀ ਕਿਸਾਨ)					
Seed quantity ਬੀਜ ਦੀ ਮਾਤਰਾ (no. of kgs/acre)					
Seed cost per unit ਬੀਜ ਦੀ ਦਰ (Rs./per kg.)					
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)					
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)					
Machinery ਮਸ਼ੀਨਰੀ (diesel and hours)					
For commercial/personal consumption ਵਪਾਰਕ/ਨਿੱਜੀ ਖਪਤ ਲਈ					
Plot 2: Seed Broadcasting/Transplanting/ Seed Planting ਬੀਜ ਪ੍ਰਸਾਰਣ/ਟ੍ਰਾਂਸਪਲਾਂਟਿੰਗ/ ਬੀਜ ਲਾਉਣਾ (✓)	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Name of the crop ਫਸਲ ਦਾ ਨਾਮ					
Seed variety name ਬੀਜ ਦੀਆਂ ਕਿਸਮਾਂ ਦਾ ਨਾਮ					
Seed type (Bt/hybrid/improved/traditional) ਬੀਜ ਦੀ ਕਿਸਮ (ਬੀਟੀ/ਹਾਈਬ੍ਰਿਡ/ਸੁਧਾਰੀ/ਰਵਾਇਤੀ)					
Source (home/govt./pvt/fellow farmers)					

ਸਰੋਤ (ਘਰ/ਸਰਕਾਰ/ਪ੍ਰਾਈਵੇਟ/ਸਾਥੀ ਕਿਸਾਨ)					
Seed quantity ਬੀਜ ਦੀ ਮਾਤਰਾ (no. of kgs/acre)					
Seed cost per unit ਬੀਜ ਦੀ ਦਰ (Rs./per kg.)					
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)					
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)					
Machinery ਮਸ਼ੀਨਰੀ (diesel and hours)					
For commercial/personal consumption ਵਪਾਰਕ/ਨਿੱਜੀ ਖਪਤ ਲਈ					

7. TOP DRESSING ਚੋਟੀ ਦੇ ਡਰੈਸਿੰਗ

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Description	Plot 1	Plot 2	Plot 3
Fertilizer ਖਾਦ 1 (Name): _____	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Source (home/govt./pvt. trader) ਸਰੋਤ (ਸਰਕਾਰ/ਘਰ/ਪ੍ਰਾਈਵੇਟ ਵਪਾਰੀ)			
Total quantity with unit ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.) ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit (ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ)			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
Fertilizer ਖਾਦ 2 (Name): _____	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**

Source (home/govt./pvt. trader) ਸਰੋਤ (ਸਰਕਾਰ/ਘਰ/ਪ੍ਰਾਈਵੇਟ ਵਪਾਰੀ)			
Total quantity with unit ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.) ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit (ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ)			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
Fertilizer ਖਾਦ 3 (Name): _____	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**	**Self ਸਵੈ (No.):** **Hired ਕਿਰਾਏ ਤੇ (No.):**
Source (home/govt./pvt. trader) ਸਰੋਤ (ਸਰਕਾਰ/ਘਰ/ਪ੍ਰਾਈਵੇਟ ਵਪਾਰੀ)			
Total quantity with unit ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Unit description (in kg.) ਕਿੱਲੋ ਵਿੱਚ ਇਕਾਈ ਦਾ ਵਰਣਨ			
Cost per unit (ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ)			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			

8. WEEDING/INTER-CULTIVATION ਬੂਟੀ/ਅੰਤਰ-ਉਪਜ

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Description	Plot 1	Plot 2	Plot 3
Weeding Round 1: Manual De-Weeding /Herbicide/Inter-Cultivation (✓) ਨਦੀਨਾਂ ਦਾ ਰਾਡ 1: ਮੈਨੁਅਲ ਡੀ-ਵੈਡਿੰਗ ਜਾਂ ਜੜੀ-ਬੂਟੀਆਂ ਜਾਂ ਅੰਤਰ-ਕਾਸ਼ਤ			
Crop name ਫਸਲ ਦਾ ਨਾਮ (if particular)			
Name of the agro-chemical, if herbicide ਐਗਰੋ-ਕੈਮੀਕਲ ਦਾ ਨਾਂ, ਜੇਕਰ ਜੜੀ-ਬੂਟੀਆਂ ਦਾ ਖਾਤਮਾ ਹੋਵੇ			
Source (Home/Govt/Pvt/Fellow farmers) ਸਰੋਤ (ਘਰ/ਸਰਕਾਰ/ਪ੍ਰਾਈਵੇਟ/ਸਾਥੀ ਕਿਸਾਨ)			
Total quantity (with unit) ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
Weeding Round 2: Manual De-Weeding /Herbicide/Inter-Cultivation (✓) ਨਦੀਨਾਂ ਦਾ ਰਾਡ 2: ਮੈਨੁਅਲ ਡੀ-ਵੈਡਿੰਗ ਜਾਂ ਜੜੀ-ਬੂਟੀਆਂ ਜਾਂ ਅੰਤਰ-ਕਾਸ਼ਤ			
Crop name ਫਸਲ ਦਾ ਨਾਮ (if particular)			
Name of the agro-chemical, if herbicide ਐਗਰੋ-ਕੈਮੀਕਲ ਦਾ ਨਾਂ, ਜੇਕਰ ਜੜੀ-ਬੂਟੀਆਂ ਦਾ ਖਾਤਮਾ ਹੋਵੇ			
Source (Home/Govt/Pvt/Fellow farmers) ਸਰੋਤ (ਘਰ/ਸਰਕਾਰ/ਪ੍ਰਾਈਵੇਟ/ਸਾਥੀ ਕਿਸਾਨ)			

Total quantity (with unit) ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			

9. DETAILS OF IRRIGATION (ਸਿੰਜਾਈ ਦੇ ਵੇਰਵੇ)

Description	Plot 1	Plot 2	Plot 3
No. of irrigations/watering applied ਸਿੰਚਾਈ/ਸਿੰਚਾਈ ਦੀ ਸੰਖਿਆ ਲਾਗੂ ਕੀਤੀ ਗਈ			
Method of irrigation (Flood/Sprinklers/Drip/Piped) ਸਿੰਚਾਈ ਦੀ ਵਿਧੀ (ਹੜ੍ਹ/ਛਿੜਕਾਅ/ਡ੍ਰਿਪ/ਪਾਈਪਡ)			
If by pump, horsepower (HP) of pump used ਜੇ ਪੰਪ ਦੁਆਰਾ, ਪੰਪ ਦਾ ਐਚਪੀ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ			
If by pump, inch diameter of the pipe used ਜੇ ਪੰਪ ਦੁਆਰਾ, ਪਾਈਪ ਦਾ ਇੰਚ ਵਿਆਸ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ			
Depth of the tubewell ਟਿਯੂਬਵੈੱਲ ਦੀ ਗਹਰਾਹੀ			
Tubewell Age (how old is the tubewell?) ਟਿਯੂਬਵੈੱਲ ਦੀ ਉਮਰ ਕਿੰਨੀ ਹੈ?			
Estimated time in minutes to irrigate field each time ਰ ਵਾਰ ਖੇਤ ਦੀ ਸਿੰਚਾਈ ਲਈ ਮਿੰਟਾਂ ਵਿੱਚ ਅਨੁਮਾਨਤ ਸਮਾਂ			
Estimated quantity of water for each irrigation (in litres) ਲਿਟ ਵਿੱਚ ਹਰੇਕ ਸਿੰਚਾਈ ਲਈ ਪਾਣੀ ਦੀ ਅਨੁਮਾਨਤ ਮਾਤਰਾ			
Cost of water/irrigation ਪਾਣੀ/ਸਿੰਚਾਈ ਦੀ ਲਾਗਤ			

10. PESTS AND DISEASES ਕੀੜੇ ਅਤੇ ਬਿਮਾਰੀਆਂ

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Description	Plot 1	Plot 2	Plot 3
Kind of Pest ਕੀੜਿਆਂ/Disease ਬਿਮਾਰੀਆਂ 1: _____ **Spraying ਛਿੜਕਾਅ/Drenching ਡ੍ਰੈਂਚਿੰਗ (✓)**			
Severity (High/Medium/Low) ਗੰਭੀਰਤਾ (ਉੱਚ/ਮੱਧਮ/ਘੱਟ)			
Crop name (if particular) ਫਸਲ ਦਾ ਨਾਮ (ਜੇ ਖਾਸ ਹੋਵੇ))			
Name of the agro-chemical ਐਗਰੋ-ਕੈਮੀਕਲ ਦਾ ਨਾਮ			
Source ਸਰੋਤ			
Total quantity with unit ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			
Kind of Pest ਕੀੜਿਆਂ/Disease ਬਿਮਾਰੀਆਂ 2: _____ **Spraying ਛਿੜਕਾਅ/Drenching ਡ੍ਰੈਂਚਿੰਗ (✓)**			
Severity (High/Medium/Low) ਗੰਭੀਰਤਾ (ਉੱਚ/ਮੱਧਮ/ਘੱਟ)			
Crop name (if particular) ਫਸਲ ਦਾ ਨਾਮ (ਜੇ ਖਾਸ ਹੋਵੇ))			
Name of the agro-chemical ਐਗਰੋ-ਕੈਮੀਕਲ ਦਾ ਨਾਮ			
Source ਸਰੋਤ			
Total quantity with unit ਯੂਨਿਟ ਦੇ ਨਾਲ ਕੁੱਲ ਮਾਤਰਾ			
Cost per unit ਲਾਗਤ ਪ੍ਰਤੀ ਯੂਨਿਟ			
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)			

Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)			
Machine ਮਸ਼ੀਨ (type) (if any)			
Hours ਘੰਟੇ			
Diesel consumed ਡੀਜ਼ਲ ਦੀ ਖਪਤ			

11. HARVESTING AND MARKETING ਵਾਢੀ ਵੇਚਣਾ ਅਤੇ ਮਾਰਕੇਟਿੰਗ

Wage Rate for Men: ₹……/day
ਪੁਰਸ਼ਾਂ ਲਈ ਤਨਖਾਹ ਦਰ: ₹……/ ਦਿਨ

Wage Rate for Women: ₹……/day
ਔਰਤ ਲਈ ਉਜਰਤਾਂ ਦੀ ਦਰ: ₹……/ਦਿਨ

Machine hire cost: ₹……/hour
ਮਸ਼ੀਨ ਕਿਰਾਏ ਦੀ ਲਾਗਤ:……/ਘੰਟਾ

Plot 1	**Main crop** **ਮੁੱਖ ਫਸਲ**	**Inter crop 1** **ਅੰਤਰ ਫ਼ਸਲ 1**	**Inter crop 2** **ਅੰਤਰ ਫ਼ਸਲ 2**	**Inter crop 3** **ਅੰਤਰ ਫ਼ਸਲ 3**	**Inter crop 4** **ਅੰਤਰ ਫ਼ਸਲ 4**
Harvesting Process Machine/Manual ਕਟਾਈ ਪ੍ਰਕਿਰਿਆ (ਮਸ਼ੀਨ/ ਮੈਨੁਅਲ) (✓)					
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)					
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)					
Machine hours ਮਸ਼ੀਨ ਦੇ ਘੰਟੇ					
If machine, diesel consumed in litres ਜੇ ਮਸ਼ੀਨ, ਡੀਜ਼ਲ ਲੀਟਰ ਦੀ ਖਪਤ ਹੁੰਦੀ ਹੈ					
Post-Harvesting Process ਕਟਾਈ ਤੋਂ ਬਾਅਦ ਦੀ ਪ੍ਰਕਿਰਿਆ **Threshing/Drying/Milling** **ਥਰੈਸ਼ਿੰਗ/ਸੁਕਾਉਣਾ/ਮਿਲਿੰਗ (✓)**					
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)					
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)					
Machine/livestock (ਮਸ਼ੀਨ/ਪਸ਼ੂਧਨ)					
Hours (ਘੰਟੇ)					
Diesel consumed (ਡੀਜ਼ਲ ਦੀ ਖਪਤ)					
Sales & Transportation					

ਵਿਕਰੀ ਅਤੇ ਆਵਾਜਾਈ					
Sources of information on price trends (PY/local market/traders/ Neighbours/ internet/mobile) ਕੀਮਤ ਦੇ ਰੁਝਾਨਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇ ਸਰੋਤ (ਪੀਵਾਈ/ ਸਥਾਨਕ ਬਾਜ਼ਾਰ/ਵਪਾਰੀ/ ਗੁਆਂਢੀ /ਇੰਟਰਨੈਟ/ਮੋਬਾਈਲ)					
Place of sale (Mandi/Farmgate - direct or contract/FCI/Other) ਵਿਕਰੀ ਦਾ ਸਥਾਨ (ਮੰਡੀ/ਫਾਰਮਗੇਟ- ਸਿੱਧਾ ਜਾਂ ਇਕਰਾਰਨਾਮਾ/ਐਫਸੀਆਈ/ਹੋਰ)					
Mode of travel ਯਾਤਰਾ ਦੇ ਸਾਧਨ					
Distance travelled (in kms.) ਯਾਤਰਾ ਕੀਤੀ ਦੂਰੀ (ਕਿਲੋਮੀਟਰ ਵਿੱਚ)					
Diesel consumption ਡੀਜ਼ਲ ਦੀ ਖਪਤ					
Total cost ਕੁੱਲ ਲਾਗਤ					
Plot 2					
Harvesting Process Machine/Manual **ਕਟਾਈ ਪ੍ਰਕਿਰਿਆ (ਮਸ਼ੀਨ/ ਮੈਨੁਅਲ) (✓)**					
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)					
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)					
Machine hours ਮਸ਼ੀਨ ਦੇ ਘੰਟੇ					
If machine, diesel litres consumed ਜੇ ਮਸ਼ੀਨ, ਡੀਜ਼ਲ ਲੀਟਰ ਦੀ ਖਪਤ ਹੁੰਦੀ ਹੈ					
Post-Harvesting Process ਕਟਾਈ ਤੋਂ ਬਾਅਦ ਦੀ ਪ੍ਰਕਿਰਿਆ **Threshing/Drying/Milling**					

ਥਰੈਸ਼ਿੰਗ/ਸੁਕਾਉਣਾ/ਮਿਲਿੰਗ (✓)					
Man power ਮਨੁੱਖ ਸ਼ਕਤੀ (number × days)					
Women power ਔਰਤ ਸ਼ਕਤੀ (number × days)					
Machine/livestock (ਮਸ਼ੀਨ/ਪਸ਼ੂਧਨ)					
Hours (ਘੰਟੇ)					
Diesel consumed (ਡੀਜ਼ਲ ਦੀ ਖਪਤ)					
Sales & Transportation **ਵਿਕਰੀ ਅਤੇ ਆਵਾਜਾਈ**					
Sources of information on price trends (PY/local market/traders/ Neighbours/ internet/mobile) ਕੀਮਤ ਦੇ ਰੁਝਾਨਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇ ਸਰੋਤ (ਪੀਵਾਈ/ਸਥਾਨਕ ਬਾਜ਼ਾਰ/ਵਪਾਰੀ/ ਗੁਆਂਢੀ /ਇੰਟਰਨੈਟ/ਮੋਬਾਈਲ)					
Place of sale (Mandi/Farmgate- direct or contract/FCI/Other) ਵਿਕਰੀ ਦਾ ਸਥਾਨ (ਮੰਡੀ/ਫਾਰਮਗੇਟ- ਸਿੱਧਾ ਜਾਂ ਇਕਰਾਰਨਾਮਾ/ਐਫਸੀਆਈ/ਹੋਰ)					
Mode of travel ਯਾਤਰਾ ਦੇ ਸਾਧਨ					
Distance travelled (in kms.) ਯਾਤਰਾ ਕੀਤੀ ਦੂਰੀ (ਕਿਲੋਮੀਟਰ ਵਿੱਚ)					
Diesel consumption ਡੀਜ਼ਲ ਦੀ ਖਪਤ					
Total cost ਕੁੱਲ ਲਾਗਤ					

12. YIELD DETAILS (ਉਪਜ ਵੇਰਵੇ)

Plot 1	Main crop ਮੁੱਖ ਫਸਲ	Inter crop 1 ਅੰਤਰ ਫ਼ਸਲ 1	Inter crop 2 ਅੰਤਰ ਫ਼ਸਲ 2	Inter crop 3 ਅੰਤਰ ਫ਼ਸਲ 3	Inter crop 4 ਅੰਤਰ ਫ਼ਸਲ 4
Main product quantity produced (in kg.) ਮੁੱਖ ਉਤਪਾਦ ਮਾਤਰਾ ਦਾ ਉਤਪਾਦਨ ਕੀਤਾ ਗਿਆ ਹੈ, ਜਿਸਦਾ ਜ਼ਿਕਰ ਇਕਾਈਆਂ ਨਾਲ ਕੀਤਾ ਗਿਆ ਹੈ					
Description of unit ਯੂਨਿਟ ਦਾ ਵੇਰਵਾ					
Quantity sold ਮਾਤਰਾ, ਜੇ ਵੇਚੀ ਜਾਵੇ (in kg.)					
Selling price per unit ਪ੍ਰਤੀ ਯੂਨਿਟ ਕੀਮਤ ਵੇਚੀ ਗਈ					
Market price ਮਾਰਕੀਟ ਕੀਮਤ					
Byproduct ਉਪ -ਉਤਪਾਦ **1**: _____					
Quantity produced ਪੈਦਾ ਕੀਤੀ ਮਾਤਰਾ (in kg.)					
Description of unit ਯੂਨਿਟ ਦਾ ਵੇਰਵਾ					
Removed/Burned/Mixed in the soil ਹਟਾਇਆ/ਸਾੜਿਆ ਗਿਆ/ਮਿੱਟੀ ਵਿੱਚ ਮਿਲਾਇਆ ਗਿਆ (✓)					
Quantity, if sold ਮਾਤਰਾ, ਜੇ ਵੇਚੀ ਜਾਵੇ (in kg.)					
Selling price per unit ਪ੍ਰਤੀ ਯੂਨਿਟ ਕੀਮਤ ਵੇਚੀ ਗਈ					
Byproduct ਉਪ -ਉਤਪਾਦ **2**: _____					
Quantity produced ਪੈਦਾ ਕੀਤੀ ਮਾਤਰਾ (in kg.)					
Description of unit ਯੂਨਿਟ ਦਾ ਵੇਰਵਾ					
Removed/Burned/Mixed in the soil ਹਟਾਇਆ/ਸਾੜਿਆ ਗਿਆ/ਮਿੱਟੀ ਵਿੱਚ ਮਿਲਾਇਆ ਗਿਆ (✓)					
Quantity, if sold ਮਾਤਰਾ, ਜੇ ਵੇਚੀ ਜਾਵੇ (in kg.)					
Selling price per unit ਪ੍ਰਤੀ ਯੂਨਿਟ ਕੀਮਤ ਵੇਚੀ ਗਈ					
Plot 2					
Main product quantity produced (in kg.) ਮੁੱਖ ਉਤਪਾਦ ਮਾਤਰਾ ਦਾ ਉਤਪਾਦਨ ਕੀਤਾ ਗਿਆ ਹੈ, ਜਿਸਦਾ ਜ਼ਿਕਰ ਇਕਾਈਆਂ ਨਾਲ ਕੀਤਾ ਗਿਆ ਹੈ					

Description of unit ਯੂਨਿਟ ਦਾ ਵੇਰਵਾ					
Quantity sold ਮਾਤਰਾ, ਜੇ ਵੇਚੀ ਜਾਵੇ (in kg.)					
Selling price per unit ਪ੍ਰਤੀ ਯੂਨਿਟ ਕੀਮਤ ਵੇਚੀ ਗਈ					
Market price ਮਾਰਕੀਟ ਕੀਮਤ					
Byproduct ਉਪ -ਉਤਪਾਦ **1**: _____					
Quantity produced ਪੈਦਾ ਕੀਤੀ ਮਾਤਰਾ (in kg.)					
Description of unit ਯੂਨਿਟ ਦਾ ਵੇਰਵਾ					
Removed/Burned/Mixed in the soil ਹਟਾਇਆ/ਸਾੜਿਆ ਗਿਆ/ਮਿੱਟੀ ਵਿੱਚ ਮਿਲਾਇਆ ਗਿਆ (✓)					
Quantity, if sold ਮਾਤਰਾ, ਜੇ ਵੇਚੀ ਜਾਵੇ (in kg.)					
Selling price per unit ਪ੍ਰਤੀ ਯੂਨਿਟ ਕੀਮਤ ਵੇਚੀ ਗਈ					
Byproduct ਉਪ -ਉਤਪਾਦ **2**: _____					
Quantity produced ਪੈਦਾ ਕੀਤੀ ਮਾਤਰਾ (in kg.)					
Description of unit ਯੂਨਿਟ ਦਾ ਵੇਰਵਾ					
Removed/Burned/Mixed in the soil ਹਟਾਇਆ/ਸਾੜਿਆ ਗਿਆ/ਮਿੱਟੀ ਵਿੱਚ ਮਿਲਾਇਆ ਗਿਆ (✓)					
Quantity, if sold ਮਾਤਰਾ, ਜੇ ਵੇਚੀ ਜਾਵੇ (in kg.)					
Selling price per unit ਪ੍ਰਤੀ ਯੂਨਿਟ ਕੀਮਤ ਵੇਚੀ ਗਈ					

13. **MISCELLANEOUS OUTPUTS (Peripheral trees, like poplars, eucalyptus, etc.) ਅਨੇਕ ਉਤਪਾਦ: ਕੀ ਫਾਰਮ ਵਿੱਚ ਪੈਰੀਫਿਰਲ ਰੁੱਖ ਹਨ (ਜਿਵੇਂ ਪੋਪਲਰ, ਯੂਕੇਲਿਪਟਸ)**

S. No.	Tree/plant name	Number	Cost incurred (in ₹)	Product name	Quantity produced, with unit mentioned	Quantity sold	Sale Price per unit	Unit description

14. **EXPENSES ON LIVESTOCK** ਪਸ਼ੂਧਨ ਤੇ ਖਰਚਾ

Type of Animal/Bird ਪਸ਼ੂ ਜਾਂ ਪੰਛੀ ਦੀ ਕਿਸਮ	Type ਕਿਸਮ 1: Number (ਗਿਣਤੀ) : Breed (ਨਸਲ):			Type ਕਿਸਮ 2: Number (ਗਿਣਤੀ) : Breed (ਨਸਲ):			Type ਕਿਸਮ 3: Number (ਗਿਣਤੀ) : Breed (ਨਸਲ):		
Cost	**Number**	**Calculation**	**Amount (₹)**	**Number**	**Calculation**	**Amount (₹)**	**Number**	**Calculation**	**Amount (₹)**
Infrastructure annual maintenance cost ਬੁਨਿਆਦੀ ਢਾਂਚਾ ਕਾਇਮ ਰੱਖਣ ਦੀ ਕੀਮਤ									
Cost of feed/fodder purchased ਖਰੀਦੇ ਗਏ ਫੀਡ/ਚਾਰੇ ਦੀ ਲਾਗਤ									
Imputed Labour cost (own) ਬਾਹਰੀ ਲੇਬਰ ਦੀ ਲਾਗਤ (ਆਪਣਾ)									

Labour cost (hired) ਬਾਹਰੀ ਲੇਬਰ ਦੀ ਲਾਗਤ (ਕਿਰਾਏ 'ਤੇ)									
Veterinary cost ਵੈਟਰਨਰੀ ਲਾਗਤ									
Cost of marketing produce ਮਾਰਕੀਟਿੰਗ ਉਤਪਾਦਾਂ ਦੀ ਲਾਗਤ									
Total Cost ਕੁੱਲ ਲਾਗਤ									

15. **INCOME FROM LIVESTOCK ਪਸ਼ੂਧਨ ਤੋਂ ਆਮਦਨੀ**

Type of Animal/Bird ਪਸ਼ੂ ਜਾਂ ਪੰਛੀ ਦੀ ਕਿਸਮ	**Type ਕਿਸਮ 1**: **Number (ਗਿਣਤੀ) :** **Breed (ਨਸਲ):**			**Type ਕਿਸਮ 2**: **Number (ਗਿਣਤੀ) :** **Breed (ਨਸਲ):**			**Type ਕਿਸਮ 3**: **Number (ਗਿਣਤੀ) :** **Breed (ਨਸਲ):**		
Product Type ਉਤਪਾਦ ਦੀ ਕਿਸਮ									
Income ਆਮਦਨ	**Number**	**Calculation**	**Amount (₹)**	**Number**	**Calculation**	**Amount (₹)**	**Number**	**Calculation**	**Amount (₹)**
Yearly yield (total with unit) ਇਕਾਈ ਦੇ ਨਾਲ ਸਾਲਾਨਾ ਉਪਜ (ਕੁੱਲ)									
Sales price of unit produce ਇਕਾਈ ਉਤਪਾਦਾਂ ਦੀ ਵਿਕਰੀ ਕੀਮਤ									
Total Income ਕੁੱਲ ਆਮਦਨ									

16. **INDEBTEDNESS, IF ANY** (only for crop investment, and not for capital investments)
ਕਰਜ਼ਾ ਨਿਵੇਸ਼, ਜੇ ਕੋਈ (ਸਿਰਫ ਫਸਲੀ ਨਿਵੇਸ਼ ਲਈ, ਅਤੇ ਰਾਜਧਾਨੀ ਨਿਵੇਸ਼ ਲਈ ਨਹੀਂ)

1. Did you borrow any money for agricultural investment for your farming this season (This includes credit for the purchase of external inputs)
ਕੀ ਤੁਸੀਂ ਇਸ ਸੀਜ਼ਨ ਵਿੱਚ ਆਪਣੀ ਖੇਤੀ ਲਈ ਖੇਤੀਬਾੜੀ ਨਿਵੇਸ਼ ਲਈ ਕੋਈ ਪੈਸਾ ਉਧਾਰ ਲਿਆ ਸੀ(ਇਸ ਵਿੱਚ ਬਾਹਰੀ ਇਨਪੁਟਸ ਦੀ ਖਰੀਦ ਲਈ ਕ੍ਰੈਡਿਟ ਸ਼ਾਮਲ ਹੈ)?: **Yes** □/**No** □
2. If yes, what is it for? (mention details) ਜੇ ਹਾਂ, ਤਾਂ ਇਹ ਕਿਸ ਲਈ ਹੈ? (ਵੇਰਵਿਆਂ ਦਾ ਜ਼ਿਕਰ ਕਰੋ)
_____
3. If yes, what is the total amount borrowed ਜੇ ਹਾਂ, ਤਾਂ ਉਧਾਰ ਲਈ ਗਈ ਕੁੱਲ ਰਕਮ ਕੀ ਹੈ?
ਰੁਪਏ?:_____
4. Source of Credit ਕ੍ਰੈਡਿਟ ਦਾ ਸਰੋਤ: (A) Friend □ (B) Relative □ (C) Moneylender □ (D) Input Dealer □ (E) Bank □ (F) Coop Society □ (G) Others □ _____
5. Interest Rate (%) (ਵਿਆਜ ਦਰ): .....%

17. **INSURANCE, IF ANY** (only for crop investment, and not for capital investments)
ਬੀਮਾ, ਜੇ ਕੋਈ ਹੋਵੇ (ਸਿਰਫ ਫਸਲੀ ਨਿਵੇਸ਼ ਲਈ, ਅਤੇ ਰਾਜਧਾਨੀ ਨਿਵੇਸ਼ ਲਈ ਨਹੀਂ)

1. Did you take any insurance on crops ਕੀ ਤੁਸੀਂ ਫਸਲਾਂ ਦਾ ਕੋਈ ਬੀਮਾ ਲਿਆ ਸੀ? **Yes** □ **No** □
2. If yes, what is the insured amount and premium ਜੇ ਹਾਂ, ਤਾਂ ਬੀਮਾ ਰਕਮ ਅਤੇ ਪ੍ਰੀਮੀਅਮ ਕੀ ਹੈ?

_____

18. **SUBSIDIES** availed ਸਬਸਿਡੀਆਂ ਦਾ ਲਾਭ (only for the current crop)

Name	Source	Amount (₹)
i. Fertilizer ਖਾਦ		
ii. Power ਬਿਜਲੀ		
iii. Irrigation ਸਿੰਚਾਈ		
iv. Other (name) ਹੋਰ (ਨਾਮ)		

19. **FARM MANAGEMENT AND RESOURCES** **ਖੇਤ ਪ੍ਰਬੰਧਨ ਅਤੇ ਸਰੋਤ**

19.1	What is the reason for selecting a crop ਫਸਲ ਦੀ ਚੋਣ ਕਰਨ ਦਾ ਕੀ ਕਾਰਨ ਹੈ? (✓)	
	i. Conventional/habit ਰਵਾਇਤੀ/ਆਦਤ	
	ii. Experienced ਤਜਰਬੇਕਾਰ	
	iii. Lead farmers ਕਿਸਾਨਾਂ ਦੀ ਅਗਵਾਈ	
	iv. Based on market trend ਬਾਜ਼ਾਰ ਦੇ ਰੁਝਾਨ ਦੇ ਅਧਾਰ ਤੇ	
	v. Based on various knowledge from groups/institutions ਸਮੂਹਾਂ/ਸੰਸਥਾਵਾਂ ਦੇ ਵੱਖੋ ਵੱਖਰੇ ਗਿਆਨ ਦੇ ਅਧਾਰ ਤੇ	
	vi. Minimum Support Price (MSP) (ਐਮ.ਐਸ.ਪੀ)	
19.2	How willing is the farmer to learn about new agricultural practices and information? ਕਿਸਾਨ ਖੇਤੀ ਦੇ ਨਵੇਂ ਤਰੀਕਿਆਂ ਅਤੇ ਜਾਣਕਾਰੀ ਬਾਰੇ ਸਿੱਖਣ ਲਈ ਕਿੰਨਾ ਤਿਆਰ ਹੈ? (✓)	
	i. Not willing ਇੱਛੁਕ ਨਹੀਂ	
	ii. Willing but apprehensive ਇੱਛੁਕ ਪਰ ਚਿੰਤਤ	

	iii. Willing to try once ਇੱਕ ਵਾਰ ਕੋਸ਼ਿਸ਼ ਕਰਨ ਲਈ ਤਿਆਰ	
	iv. Willing to try always ਹਮੇਸ਼ਾਂ ਕੋਸ਼ਿਸ਼ ਕਰਨ ਲਈ ਤਿਆਰ	
19.3.	What is the basis for a decision to apply fertiliser ਖਾਦ ਲਾਗੂ ਕਰਨ ਦੇ ਫੈਸਲੇ ਦਾ ਆਧਾਰ ਕੀ ਹੈ? (✓)	
	i. Based on personal conjecture ਵਿਅਕਤੀਗਤ ਅਨੁਮਾਨ ਦੇ ਅਧਾਰ ਤੇ	
	ii. Advise by shop keeper ਦੁਕਾਨਦਾਰ ਦੁਆਰਾ ਸਲਾਹ	
	iii. Based on experience ਤਜ਼ਰਬੇ ਦੇ ਅਧਾਰ ਤੇ	
	iv. Based on expert recommendation ਮਾਹਰ ਦੀ ਸਿਫਾਰਸ਼ ਦੇ ਅਧਾਰ ਤੇ	
	v. Based on soil testing and advise ਮਿੱਟੀ ਪਰਖ ਅਤੇ ਸਲਾਹ ਦੇ ਅਧਾਰ ਤੇ	
	vi. Based on yield and profitability ਉਪਜ ਅਤੇ ਮੁਨਾਫੇ ਦੇ ਅਧਾਰ ਤੇ	
19.4.	What is the basis for deciding which pesticide to apply? ਕਿਹੜੀ ਕੀਟਨਾਸ਼ਕ ਦਵਾਈ ਨੂੰ ਲਾਗੂ ਕਰਨਾ ਹੈ, ਇਸਦਾ ਅਧਾਰ ਕੀ ਹੈ? (✓)	
	i. Based on personal estimation ਵਿਅਕਤੀਗਤ ਅਨੁਮਾਨ ਦੇ ਅਧਾਰ ਤੇ	
	ii. Based on experience ਤਜ਼ਰਬੇ ਦੇ ਅਧਾਰ ਤੇ	
	iii. Based on shopkeeper ਦੁਕਾਨਦਾਰ 'ਤੇ ਅਧਾਰਤ	
	iv. Based on expert suggestion or training ਮਾਹਰ ਦੇ ਸੁਝਾਅ ਜਾਂ ਸਿਖਲਾਈ ਦੇ ਅਧਾਰ ਤੇ	
19.5.	When do you decide to apply pesticides? ਤੁਸੀਂ ਕੀਟਨਾਸ਼ਕਾਂ ਨੂੰ ਲਾਗੂ ਕਰਨ ਦਾ ਫੈਸਲਾ ਕਦੋਂ ਕਰਦੇ ਹੋ? (✓)	
	i. At regular interval/stage of the crop ਫਸਲ ਦੇ ਨਿਯਮਤ ਅੰਤਰਾਲ/ਪੜਾਅ' ਤੇ	
	ii. At first sighting of the pest ਕੀੜੇ ਦੇ ਪਹਿਲੀ ਨਜ਼ਰ ਤੇ	
	iii. After visible symptoms of infestation ਲਾਗ ਦੇ ਦਿਖਾਈ ਦੇਣ ਵਾਲੇ ਲੱਛਣਾਂ ਦੇ ਬਾਅਦ	
	iv. Only if it appears to get severe and create significant loss ਸਿਰਫ ਤਾਂ ਹੀ ਜੇ ਇਹ ਗੰਭੀਰ ਹੁੰਦਾ ਜਾਪਦਾ ਹੈ ਅਤੇ ਮਹੱਤਵਪੂਰਣ ਨੁਕਸਾਨ ਪੈਦਾ ਕਰਦਾ ਹੈ	
	v. Never or very rarely ਕਦੇ ਜਾਂ ਬਹੁਤ ਘੱਟ	
19.6.	What can help farmers improve their handling of pesticides? ਕੀਟਨਾਸ਼ਕਾਂ ਦੇ ਪ੍ਰਬੰਧਨ ਨੂੰ ਬਿਹਤਰ ਬਣਾਉਣ ਵਿੱਚ ਕਿਸਾਨਾਂ ਦੀ ਕੀ ਮਦਦ ਹੋ ਸਕਦੀ ਹੈ? (✓) (can select more than one option)	
	i. Knowledge support ਗਿਆਨ ਦਾ ਸਮਰਥਨ	
	ii. Equipment support ਉਪਕਰਣ ਸਹਾਇਤਾ	
	iii. Skilled labour ਹੁਨਰਮੰਦ ਕਿਰਤ	
	iv. Market incentives ਮਾਰਕੀਟ ਪ੍ਰੋਤਸਾਹਨ	
	v. Subsidies ਸਬਸਿਡੀਆਂ	
19.7.	What is the level of knowledge about different methods like drip/sprinkler ਡਰਿਪ/ਸਪ੍ਰਿੰਕਲਰ ਵਰਗੇ ਵੱਖੋ ਵੱਖਰੇ ਤਰੀਕਿਆਂ ਬਾਰੇ ਗਿਆਨ ਦਾ ਪੱਧਰ ਕੀ ਹੈ? (✓)	
	i. None ਕੋਈ ਨਹੀਂ	
	ii. Some knowledge ਕੁਝ ਗਿਆਨ	
	iii. Good knowledge ਚੰਗਾ ਗਿਆਨ	
	iv. Good knowledge and practice ਚੰਗਾ ਗਿਆਨ ਅਤੇ ਅਭਿਆਸ	
19.8.	What is the usual irrigation timing ਆਮ ਸਿੰਚਾਈ ਦਾ ਸਮਾਂ ਕੀ ਹੈ? (✓)	
	i. Irrigate during evening ਸ਼ਾਮ ਨੂੰ ਸਿੰਚਾਈ ਕਰੋ	
	ii. Irrigate early morning ਸਵੇਰੇ ਜਲਦੀ ਸਿੰਜਾਈ ਕਰੋ	
	iii. Depends on power supply ਬਿਜਲੀ ਸਪਲਾਈ 'ਤੇ ਨਿਰਭਰ ਕਰਦਾ ਹੈ	

	iv. Irrigate in daytime ਦਿਨ ਵੇਲੇ ਸਿੰਚਾਈ ਕਰੋ	
19.9.	What are the sources of information on price trends ਕੀਮਤ ਦੇ ਰੁਝਾਨਾਂ ਬਾਰੇ ਜਾਣਕਾਰੀ ਦੇ ਸਰੋਤ ਕੀ ਹਨ? (✓) (can select more than one option)	
	i. Previous year trend ਪਿਛਲੇ ਸਾਲ ਦਾ ਰੁਝਾਨ	
	ii. Local market scenario ਸਥਾਨਕ ਬਾਜ਼ਾਰ ਦਾ ਦ੍ਰਿਸ਼	
	iii. Neighbours ਗੁਆਂਢੀ	
	iv. Traders ਵਪਾਰੀ	
	v. Media ਮੀਡੀਆ	
	vi. Internet/mobile ਇੰਟਰਨੈਟ/ਮੋਬਾਈਲ	
19.10.	Does the farmer face any issue in getting labour for the farm work? ਕੀ ਕਿਸਾਨ ਨੂੰ ਖੇਤ ਦੇ ਕੰਮ ਲਈ ਲੇਬਰ ਪ੍ਰਾਪਤ ਕਰਨ ਵਿੱਚ ਕਿਸੇ ਸਮੱਸਿਆ ਦਾ ਸਾਹਮਣਾ ਕਰਨਾ ਪੈਂਦਾ ਹੈ? (✓)	
	i. Mostly self-labour ਜਿਆਦਾਤਰ ਸਵੈ-ਕਿਰਤ	
	ii. Sufficient supply ਲੋੜੀਂਦੀ ਸਪਲਾਈ	
	iii. Seasonal ਮੌਸਮੀ	
	iv. Poor labour supply ਖਰਾਬ ਲੇਬਰ ਸਪਲਾਈ	

20. **SOCIAL INTERFACE ਸਮਾਜਿਕ ਇੰਟਰਫੇਸ**

20.1.	Are you associated with any community or producers' group? ਕੀ ਤੁਸੀਂ ਕਿਸੇ ਭਾਈਚਾਰੇ ਜਾਂ ਉਤਪਾਦਕਾਂ ਦੇ ਸਮੂਹ ਨਾਲ ਜੁੜੇ ਹੋਏ ਹੋ? (✓) (can select more than one option)	
	i. Good rapport with adjacent/neighbouring farmers ਨੇੜਲੇ/ ਗੁਆਂਢੀ ਕਿਸਾਨਾਂ ਨਾਲ ਚੰਗਾ ਸੰਬੰਧ	
	ii. Part of SHGs/NGO	
	iii. Part of farmer association/co-operative/farmer producer organisations ਕਿਸਾਨ ਐਸੋਸੀਏਸ਼ਨ/ਸਹਿਕਾਰੀ/ਕਿਸਾਨ ਉਤਪਾਦਕ ਸੰਸਥਾਵਾਂ ਦਾ ਹਿੱਸਾ	
	iv. Others (name):	
	v. None	
20.2.	What is the benefits farmer gain from the groups he belongs to? ਕਿਸਾਨ ਉਨ੍ਹਾਂ ਸਮੂਹਾਂ ਤੋਂ ਕੀ ਲਾਭ ਪ੍ਰਾਪਤ ਕਰਦਾ ਹੈ ਜਿਨ੍ਹਾਂ ਨਾਲ ਉਹ ਸੰਬੰਧਤ ਹਨ? (✓) (can select more than one option)	
	i. Knowledge like crop selection, weather, etc. ਗਿਆਨ ਜਿਵੇਂ ਫਸਲ ਦੀ ਚੋਣ, ਮੌਸਮ, ਆਦਿ.	
	ii. Input support ਇਨਪੁਟ ਸਹਾਇਤਾ	
	iii. Market support like access, transport etc. ਮਾਰਕੀਟ ਸਹਾਇਤਾ ਜਿਵੇਂ ਪਹੁੰਚ, ਆਵਾਜਾਈ ਆਦਿ.	
	iv. Capacity building activities ਸਮਰੱਥਾ ਨਿਰਮਾਣ ਗਤੀਵਿਧੀਆਂ	
20.3.	What is the strength and composition of the group ਸਮੂਹ ਦੀ ਤਾਕਤ ਅਤੇ ਰਚਨਾ ਕੀ ਹੈ? (✓) (can select more than one option)	
	i. Very good or equal participation from women ਔਰਤਾਂ ਦੀ ਬਹੁਤ ਚੰਗੀ ਜਾਂ ਬਰਾਬਰ ਭਾਗੀਦਾਰੀ	
	ii. Equivalent voice and participation from majority of members ਬਹੁਗਿਣਤੀ ਮੈਂਬਰਾਂ ਦੀ ਸਮਾਨ ਆਵਾਜ਼ ਅਤੇ ਭਾਗੀਦਾਰੀ	
	iii. Different caste ਵੱਖਰੀ ਜਾਤ	
	iv. Different religion ਵੱਖਰਾ ਧਰਮ	

21. **DETAILS OF EXTENSION SUPPORT RECEIVED DURING THE PAST SEASON ਪਿਛਲੇ ਸੀਜ਼ਨ ਦੌਰਾਨ ਪ੍ਰਾਪਤ ਹੋਏ ਐਕਸਟੈਂਸ਼ਨ ਸਪੋਰਟ ਦੇ ਵੇਰਵੇ**

21.1.	What are the sources of information and knowledge on farming? ਖੇਤੀ ਬਾਰੇ ਜਾਣਕਾਰੀ ਅਤੇ ਗਿਆਨ ਦੇ ਸਰੋਤ ਕੀ ਹਨ? (✓)	
	i. Family knowledge/experience ਪਰਿਵਾਰਕ ਗਿਆਨ/ਅਨੁਭਵ	
	ii. Formal education ਰਸਮੀ ਸਿੱਖਿਆ	
	iii. Neighbouring farmers ਗੁਆਂਢੀ ਕਿਸਾਨ	
	iv. State extension services ਰਾਜ ਵਿਸਥਾਰ ਸੇਵਾਵਾਂ	
	v. Television/Radio ਟੈਲੀਵਿਜ਼ਨ/ਰੇਡੀਓ	
	vi. Newspaper/Magazines ਅਖ਼ਬਾਰ/ਮੈਗਜ਼ੀਨ	
	vii. Mobile/internet ਮੋਬਾਈਲ/ਇੰਟਰਨੈਟ	
21.2.	Have you ever taken advice regarding the farming practice from any institution ਕੀ ਤੁਸੀਂ ਕਦੇ ਕਿਸੇ ਸੰਸਥਾ ਤੋਂ ਖੇਤੀ ਦੇ ਅਭਿਆਸ ਬਾਰੇ ਸਲਾਹ ਲਈ ਹੈ? (✓)	
	i. Not willing (No trust) ਤਿਆਰ ਨਹੀਂ (ਕੋਈ ਭਰੋਸਾ ਨਹੀਂ)	
	ii. Not aware ਪਤਾ ਨਹੀਂ	
	iii. Rarely ਬਹੁਤ ਘੱਟ	
	iv. Sometimes ਕਈ ਵਾਰ	
	v. Regularly ਬਾਕਾਇਦਾ	

21.3.	**Type of Support**	**Received (Yes/No)**	**Who provided support? (A) NGO/SHG (B) Govt organisation (C) PAU (D) Farmers Association/Co-operative (E) Others (mention):……**
	i. Training ਸਿਖਲਾਈ		
	ii. Exposure visits ਐਕਸਪੋਜ਼ਰ ਦੌਰੇ		
	iii. Input support ਇਨਪੁਟ ਸਹਾਇਤਾ		
	iv. Marketing support ਮਾਰਕੀਟਿੰਗ ਸਹਾਇਤਾ		
	v. Any other support ਕੋਈ ਹੋਰ ਸਹਾਇਤਾ: _____		

22. **EXPERIENCE, CHALLENGES, AND SUGGESTIONS (ਅਨੁਭਵ, ਚੁਣੌਤੀਆਂ, ਅਤੇ ਸੁਝਾਅ)**

22.1 Experience of farmers in this cropping season *vis-à-vis* previous crop (ਪਿਛਲੀ ਫਸਲ ਦੇ ਮੁਕਾਬਲੇ ਇਸ ਫਸਲ ਦੇ ਸੀਜ਼ਨ ਵਿੱਚ ਕਿਸਾਨਾਂ ਦਾ ਤਜਰਬਾ (✓)

Parameters	Significant decrease	Marginal decrease	No change	Marginal increase	Significant increase	Don't know
i. Cost of cultivation ਕਾਸ਼ਤ ਦੀ ਲਾਗਤ						
ii. Labour requirement ਕਿਰਤ ਦੀ ਲੋੜ						
iii. Drudgery ਸਖਤ ਕੰਮ ਜਾਂ ਥਕਾਵਟ ਵਾਲਾ ਕੰਮ						
iv. Crop yield ਫਸਲ ਦੀ ਪੈਦਾਵਾਰ						
v. Net farm income ਸ਼ੁੱਧ ਖੇਤੀ ਆਮਦਨ						
vi. Number of crops cultivated ਕਾਸ਼ਤ ਕੀਤੀਆਂ ਫਸਲਾਂ ਦੀ ਸੰਖਿਆ						
vii. Number of saleable produces ਵੇਚਣਯੋਗ ਉਤਪਾਦਾਂ ਦੀ ਸੰਖਿਆ						
viii. Price received for the produce ਉਪਜ ਲਈ ਪ੍ਰਾਪਤ ਕੀਮਤ						
ix. Crop duration ਫਸਲ ਦੀ ਮਿਆਦ						
x. Any Other:_____						

22.2 Contribution of women in different agricultural operations ਵੱਖ -ਵੱਖ ਖੇਤੀ ਕਾਰਜਾਂ ਵਿੱਚ ਔਰਤਾਂ ਦਾ ਯੋਗਦਾਨ (✓)

Operation	All	Maximum	Equal	Minimum	Nil	Don't Know
i. Land preparation ਜ਼ਮੀਨ ਦੀ ਤਿਆਰੀ						
ii. Sowing (nursery, transplantation) ਬਿਜਾਈ (ਨਰਸਰੀ, ਟ੍ਰਾਂਸਪਲਾਂਟੇਸ਼ਨ)						
iii. Fertilizer application ਖਾਦ ਦੀ ਅਰਜ਼ੀ						
iv. Weeding ਬੂਟੀ						
v. Pest control ਕੀੜਿਆਂ ਦਾ ਨਿਯੰਤਰਣ						
vi. Irrigation ਸਿੰਚਾਈ						
vii. Harvesting ਕਟਾਈ						
viii. Post harvesting operations ਕਟਾਈ ਤੋਂ ਬਾਅਦ ਦੇ ਕੰਮ						
ix. Marketing ਮਾਰਕੀਟਿੰਗ						
x. Any Other:_____						

22.3 Challenges faced by farmers ਕਿਸਾਨਾਂ ਨੂੰ ਦਰਪੇਸ਼ ਚੁਣੌਤੀਆਂ (✓)

Parameters	Stressed	Yes	No	Don't Know
i. Low yield ਘੱਟ ਉਪਜ				
ii. Pest and disease ਗ ਅਤੇ ਕੀੜੇ				
iii. Weed management ਬੂਟੀ ਪ੍ਰਬੰਧਨ				
iv Access to organic inputs ਜੈਵਿਕ ਇਨਪੁਟਸ ਤੱਕ ਪਹੁੰਚ				
v. Lack of knowledge ਗਿਆਨ ਦੀ ਘਾਟ				

vi. Higher labour requirement ਵਧੇਰੇ ਕਿਰਤ ਦੀ ਲੋੜ				
vii. Drudgery ਸਖਤ ਕੰਮ ਜਾਂ ਥਕਾਵਟ ਵਾਲਾ ਕੰਮ				
viii. Marketing challenges ਮਾਰਕੀਟਿੰਗ ਚੁਣੌਤੀਆਂ				
ix. Price realization ਕੀਮਤ ਦੀ ਪ੍ਰਾਪਤੀ				
x. Credit requirements ਕ੍ਰੈਡਿਟ ਲੋੜਾਂ				
xi. Net income ਸ਼ੁਧ ਆਮਦਨੀ				
xii. Difficulty in livestock management ਸ਼ੂਧਨ ਪ੍ਰਬੰਧਨ ਵਿੱਚ ਮੁਸ਼ਕਲ				
xiii. Lack of institutional support ਸੰਸਥਾਗਤ ਸਹਾਇਤਾ ਦੀ ਘਾਟ				
xiv. Irrigation constraints ਸਿੰਚਾਈ ਦੀਆਂ ਕਮੀਆਂ				
xv. Rented land ਕਿਰਾਏ ਦੀ ਜ਼ਮੀਨ				
xvi. Any Other:_____				

22.4 Suggestions to resolve the constraints faced by farmers (ਕਿਸਾਨਾਂ ਨੂੰ ਦਰਪੇਸ਼ ਮੁਸ਼ਕਿਲਾਂ ਦੇ ਹੱਲ ਲਈ ਸੁਝਾਅ) (✓)

Constraints (ਪਾਬੰਦੀਆਂ)	**Suggestions (ਸੁਝਾਅ)**
i. Production ਉਤਪਾਦਨ	
ii. Input ਇਨਪੁਟ	
iii. Technology and Process ਤਕਨਾਲੋਜੀ ਅਤੇ ਪ੍ਰਕਿਰਿਆ	
iv. Marketing ਮਾਰਕੀਟਿੰਗ	
v. Certification ਸਰਟੀਫਿਕੇਸ਼ਨ	
vi. Institutional ਸੰਸਥਾਗਤ	
vii. Any Other:_____	

ANNEXURE C

Overview of Potential Policy Interventions Supporting Organic Farming

Category	Measures	Political Justification	Suitable Contexts	Implementation Modalities	Major Challenges
Push (Supply)	Organic research and extension	Considerable impact on public goods and services, as well as on markets	Suitable at any development stage, regulatory context, policy goals, and culture of government intervention	Research and extension services by state advisories, public research institutes, universities, and specialised research organisations. Services through organic farming associations, private organisations, organic field schools, NGOs, consultancies using public funds	The amount and continuity of public support; the right level of stakeholder involvement; international cooperation; paucity of comparative research, hiring of new additional staff for public extension services
	Organic input development and use	Reduction of chemical use in agriculture to address sustainability in agriculture	Suitable at any development stage, regulatory context, and policy goals	Grants to support companies in doing R&D, dedicated special research funds, government develop and provide free or subsidised rates, subsidise the purchase	Policies aimed at supporting input availability might be detrimental to the organic sector; too much implementation in the hands of the government
	Organic certification	Guarantee in the marketplace, enabling consumers to identify which producers conform to certain standards	Suitable to all contexts and all policy objectives	Set up a national certification body that offers certification free of charge or at a reduced cost	Subsidies can present challenges in terms of access, especially for smallholders; credibility and competence of the government agency
	Organic vocational training and academic programs	Organic agriculture is knowledge-intensive.	Suitable to all contexts and all policy objectives	Mainstreaming through compulsory courses in all agricultural education programs with offering specialised diplomas and degrees	Top-down decisions regarding the curriculum may face resistance from the lecturers and staff of universities; availability of qualified organic trainers
	Conversion and maintenance of areas under organic production	Encourage a wider adoption of organic agriculture amongst farmers and attempt to "internalise" externalities (environmental and societal benefits)	Most effective in early development stages but can link well with the various logics of policy support	Multi-year subsidy schemes, commonly embedded in more general agri-environmental policy schemes	Lack of sufficient government budget resources; difficulty for farmers to apply and for governments to administer; may accentuate the most productive land to conventional farming while organic farming becomes more concentrated on marginal and less productive land

Category	Measures	Political Justification	Suitable Contexts	Implementation Modalities	Major Challenges
	Agri-environmental practices compatible with organic production	Support the production of positive externalities by agriculture or impose regulations, fees or taxes to limit negative externalities	Suitable to all contexts but not relevant if the only policy objective to support organic is to earn foreign currency	Subsidies for agri-environmental measures that are highly compatible with organic production	Agri-environmental subsidies compete with organic subsidies if the set-up is such that the measures are not combinable
	Tax breaks for organic operators	Incentivise organic businesses and favour private investment in organic operations	Suitable at all development stages, wherein organic regulation or an officially referenced organic guarantee system is prevalent and all policy objectives	Tax breaks can be applied to various types of taxes to give a small financial advantage to the organic sector.	Not effectively implemented due to lack of uptake by the responsible ministries and complex administrative procedures involved in setting up
	Organic farm investment	Support sector growth by facilitating the conversion	Suitable at all development stages, but easier wherein organic regulation or an officially referenced organic guarantee system is prevalent	Various policy instruments, including subsidies, grants, loans with reduced interest rates, tax credits	Ensure that the beneficiaries stay in the organic sector
	Farm income diversification and agro-tourism	Support rural development as well as enhance the natural, cultural and social integrity of rural areas	Suitable in all organic regulatory contexts except at early development stages and to earn foreign currency	Incentives (grants, subsidies, loans with zero or low interests, etc.) can be used to support farm diversification and eco-tourism	Not suitable for all regions
	Organic processing, product development and marketing	Considered to have had a strong positive contribution to the development of the organic production	Suitable at any development stage, wherein organic regulation or an officially referenced organic guarantee system is prevalent and all policy objectives	Financial support can be provided to organic companies or co-operatives for processing and marketing ventures.	Risk when integrated into more general agricultural policy support, eligibility requirements may represent a potential barrier to the uptake of the support scheme by organic operators
	Supply chain development projects	Achieve the government's sustainable economic development objectives	Suitable to all development stages, regulatory context, and policy goals	Supply chain facilitation should be flexibly defined depending on the circumstances.	Risk of the choice of one or more commodities to support; require broad competence and stakeholder involvement
	Organic management in public areas and publicly-owned land	The organic approach is both achievable and effective as it reduces the exposure of citizens to the potentially harmful effects of pesticides	Suitable to all development stages and regulatory contexts but relevant only to societal policy goals	Originate from elected local decision-makers or the public employee managing the cities' green spaces.	Similar to those of managing agricultural land organically
	Prohibition of agrochemical use in naturally sensitive areas	Facilitate conversion and produce environmental	Suitable at all development stages, regulatory contexts, and policy goals	Banning the use of agrochemicals in sensitive areas in municipalities	Resistance amongst the farming community

Category	Measures	Political Justification	Suitable Contexts	Implementation Modalities	Major Challenges
		benefits across a wide territory			
Pull (Demand)	Consumer education and promotion campaigns	Increasing consumer awareness about organic products across the board.	Suitable in all development stages and regulatory contexts except to earn foreign currency	Takes place under various policy instruments.	Spending a lot of but still missing the target
	Public procurement	Raising awareness about organic food consumption	Suitable at any development stage and regulatory context, but does not serve all objectives for policy support to organic	Sourcing organic products in public canteens at various levels ranging from the individual canteen to municipality, region and up to a national government policy	Increase in the cost of canteen ingredients; continuity of political commitment
	Domestic trade and retail uptake	Boosting organic consumption by increasing the visibility of organic products	Suitable at any development stage, wherein organic regulation or an officially referenced organic guarantee system is prevalent but not to earn foreign currency	Facilitating the uptake of organic products in the various domestic market channels can be done in as many ways as there are different market channels	The difficulty of ensuring a reliable supply chain in a niche sector
	National/common logo for organic products	Serves as a decisive element in fostering consumer recognition of and trust in organic products and is a very efficient tool for promotion and market development	Suitable at any development stage, wherein organic regulation or an officially referenced organic guarantee system is prevalent and all policy objectives	A common organic logo may not be necessarily linked to an organic regulation, but it should be accompanied by a certain set of criteria for the underlying product	Identifying the best territorial level at which the logo should be developed; extra costs or complicated procedures to get access to the logo
	School organic gardening and curricula	Potential to shape the values and expectations of children and their families about organic agriculture systems and food supplies	Suitable to all contexts	Governments can and should take the lead in providing appropriate political signals and resources for developing school organic gardens and curricula.	Many projects disappear from public view after they are launched. Mistakes and failures, which could be instructive, are seldom published.
	Export support	Increasing the export of organic products is a way for countries to earn foreign currency and improve their trade balance.	Suitable in all organic regulatory contexts except where the importing country has not well developed local organic production despite high domestic demand and is less relevant to the objectives of increasing self-sufficiency and access to healthy food	Funding or subsidising organic companies to exhibit in, or attend, international organic trade fairs	The hurdles for exports of organic products are the same as for conventional. Added, products don't meet the volumes or quality expectations of the large foreign traders

Category	Measures	Political Justification	Suitable Contexts	Implementation Modalities	Major Challenges
	Organic trade agreements and equivalence	For a country with full organic regulation and reached a significant number of organic exports, negotiating an equivalence agreement can be a way to facilitate exports further.	Suitable in later development stages and wherein national organic regulation is prevalent	Organic equivalency recognition with another country can be pursued in several ways (unilateral, bilateral)	Countries whose domestic organic sector is too weak and/or recently established and not yet credible will not manage to gain recognition from their target market
Enabling (Both Push-Pull)	National data production and dissemination	The existence of consolidated data on the national organic sector is a significant enabling factor for the growth of the sector	Suitable to all contexts	In the early stage of development, governments may conduct or finance a national survey/study on the situation of organic agriculture in the country	Data gaps and issues related to the definition, classification, standardisation, quality, and access
	Institutional development of organic associations	Organic associations play a decisive role in the development of the organic sector	Suitable to all contexts except in cultures of no government intervention in the agricultural sector	Funding organic associations to implement activities, such as consumer education, capacity building of producers, or participation in policy design.	The top-down approach of the government may put to risk the representativeness and the sustainability of the national organic organisation
	Building organic expertise within the public sector	Building capacity of government staff is a prerequisite for further policy design and implementation	Suitable to all contexts	Pursue a strategy to increase organic agriculture literacy throughout its personnel or hire experts.	Risk for the competent authority to think it represents or fully understands the interests of the organic sector without proper consultations.
	Development of the Participatory Guarantee Systems (PGS)	PGS share a common objective with third-party certification systems in providing a credible guarantee for consumers seeking organic products.	Suitable to all contexts except where there is an organic regulation in place which excludes PGS	It is crucial that, if organic agriculture is regulated, the regulation does not hinder PGS development by not including them, thereby making these systems illegal.	The risk of government involvement in PGS support is that of having an inflexible top-down approach, which is contrary to the PGS concept.
	Urban and collective gardening	Produces local food with a very low carbon footprint and contributes to local, sustainable production	Suitable in all development stages and regulatory contexts except to earn foreign currency through organic exports	Municipalities have a strong role to play in terms of urban zoning policies, in making public land available, in remediating contaminated land, and in providing financial and other types of support	Space is a major constraint besides urban soils can be heavily contaminated, to the extent that growing crops in the soil is not recommended

Source: Compilation by Gill from IFOAM (2017). 'Guidelines for Public Support to Organic Agriculture', Germany: IFOAM. Available at https://www.ifoam.bio/our-work/how/regulation-policy/global-policy-toolkit.

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