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IDENTIFICATION AND MAPPING OF ACTORS INVOLVED IN ORGANIC AGRICULTURE IN AND AROUND PUDUCHERRY REGION

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IDENTIFYING POTENTIAL GROUPS AND ACTORS INVOLVED IN ORGANIC AGRICULTURE IN PUDUCHERRY

Abstract

The significance of this project lies in identifying the key groups, actors, and sectors involved in organic farming. Given the increasing global demand and consumption rates of organic food products, this study is necessary. The objective of this project is to focus on specific farmer groups and investigate the factors that influence their preference for, or discontinuation of, organic farming practices over an extended period. Furthermore, the project aims to examine the various sectors involved in the entire farming process, from cultivation to consumer demand and perspective. This comprehensive approach will aid in identifying the main obstacles faced by the farming community at all stages, including production, processing, and marketing. By doing so, feasible solutions can be sought for the identified crises and problems. This research primarily revolves around the behavior and attitudes of general farmers towards organic farming in Puducherry's food industry. The aim is to compile and map a comprehensive list of the active sectors and actors involved in the organic agricultural process. The dynamic nature of farmers' preferences and consumer behavior necessitated a research study to investigate changes in organic farming techniques, challenges encountered during farming, and perceptions related to organic food consumption and demand among consumers. The findings of this study will assist in identifying the actors and sectors engaged in agricultural activities, understanding social networking among farmers, identifying hindrances faced by farmers in terms of production, processing, and marketing, and ultimately developing relevant solutions for the identified problems.

Key words Organic farming, Actors, Sectors, Food value chain, Social networking

INTRODUCTION

Organic farming is an agricultural approach that prioritizes the well-being and health of the environment and its interconnected life forms. It emphasizes maintaining a natural course of action and ecological balance. Organic farming practices encompass a combination of effective traditional methods as well as innovative techniques, aimed at preserving the quality of the Earth while also ensuring sustainable livelihoods for farmers over the long term. Various types of organic farming exist, including natural farming, permaculture, biodynamic farming, and integrated farming, each with its own distinct practices, methods, and significance.

In recent years, there has been a notable shift in food preferences and lifestyles worldwide, particularly following the outbreak of the pandemic. People are increasingly inclined towards healthier choices and have developed a greater preference for nutritious organic food. As a result, the global demand for nutritious and organic products has experienced a significant surge (Yang et al., 2022; Tal, 2018) This heightened demand reflects the changing attitudes towards food consumption and the recognition of the potential benefits associated with organic farming practices.

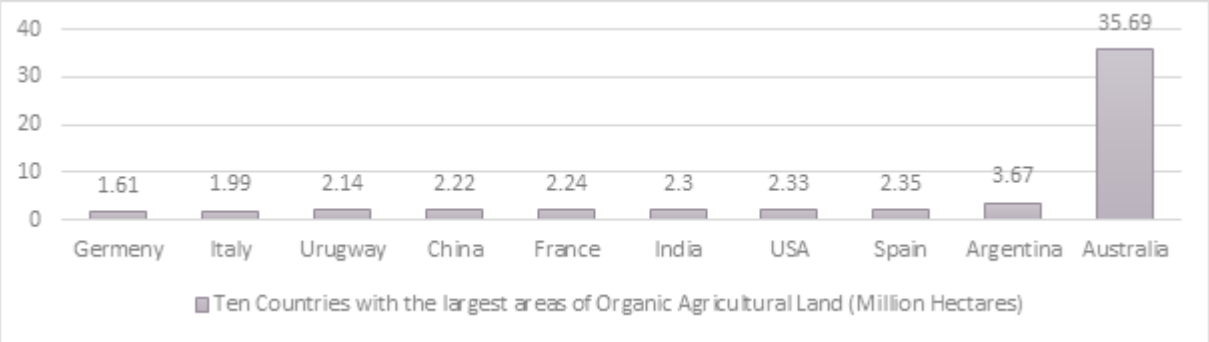
At the end of the 20th century, research articles shed light on the detrimental effects of modern agriculture, revealing that food produced through conventional methods contained toxic substances that posed risks to consumers' health. These substances were found to contribute to health disorders such as obesity, diabetes, hypertension, cancer, anemia, and more (Chen, 2007; Wier et al., 2002). As the public became aware of the potential harm associated with inorganic farming practices, a shift towards organic farming and its products occurred. Organic farming methods prioritize the production of food with high nutritional value and minimal additives (Chen, 2007:1009; Wier et al., 2002:47). This choice allows individuals to prioritize their health and that of their families while minimizing environmental damage. Regular consumption of organic products, including traditional paddy, millets, and vegetables, has been found to aid in the prevention and treatment of various chronic disorders and diseases (Mondelaers et al., 2009:1125; Mie et al., 2017).

In the past decade, there has been a global shift towards and preference for naturally produced organic products through organic farming (Thøgersen, 2010; Golijan, 2018; Hungler et al., 2007). While some countries have made significant progress in terms of production and consumption of organic food products, others lag behind (Thøgersen, 2010:172; Golijan, 2018:129; Hungler et al., 2007).

As of 2021, organic farming is practiced in 190 countries worldwide, covering approximately 74.9 million hectares (ha) of land. This is a significant increase from 11.0 million ha in 1999. Asian countries contribute around 6.33 million ha, accounting for about 9.2% of the global organic land (FiBL, 2021).

According to a survey by FiBL in 2021, organic farming has experienced a growth of 1.1 million hectares, with retail sales of organic products continuing to rise in recent years. Additionally, apart from cultivated lands, non-cultivated areas such as wild plant collection areas, green fodder areas, grazing areas for livestock, forests, aquaculture, and beekeeping areas cover approximately 35 million hectares, bringing the overall organic land cover to around 107.4 million hectares globally (Organic World, 2021).

Figure 01: Top Ten Countries in terms of largest certified organic area



Source: FiBL Survey 2021

In India, organic farming was the predominant agricultural practice until the emergence of modern agriculture and the Green Revolution in the 1960s. With the advent of hybrid crops, mono-cropping, and the widespread use of chemical fertilizers and pesticides, organic farming gradually declined, leading to adverse effects on genetic diversity, environmental health, and human well-being.

However, in the late 1990s, awareness of the negative consequences of chemical-intensive farming practices on nature and human populations prompted a resurgence of sustainable and traditional farming methods in various states of India. The area under organic cultivation has seen significant growth, increasing from 42,000 hectares in 2003-04 to 2.3 million hectares in 2020-21, accounting for approximately 2% of the country's total sown area (FiBL & IFOAM, 2021). India ranks fifth in Asia in terms of organic farming area and holds the first position globally, with 30% of the world's total organic producers (rising from 2 lakhs in 1999 to 1.6 million in 2021). The country also boasts 1,703 organic processors and 745 traders. Many small-scale producers obtain certification through groups such as Farmer Producer Organizations (FPOs) based on an internal control system (FiBL Survey, 2021).

Madhya Pradesh has the highest organic cultivation area in India, covering 0.76 million hectares, followed by Rajasthan and Maharashtra. In 2016, Sikkim achieved a significant milestone by having officially converted its entire cultivated land, spanning over 75,000 hectares, into organic fields.

In the year 2020-2021, India produced approximately 3,496,800.34 metric tons (MT) of certified organic products, including oilseeds, sugarcane, millets, cereals, pulses, spices, condiments, vegetables, and medicinal plants. This production led to export revenue of 888,179.68 MT (25.3%) and $1,040.95 million USD, with organic products being exported to countries such as the USA, Australia, Canada, Britain, among others (APEDA, 2021).

Over the past decade, India has witnessed a significant increase of 194% in organic farming, particularly in the production of oilseeds, which cover around 1.4 lakh hectares (0.5%) of the total organic fields spanning 2.3 million hectares (APEDA, 2021). The preference for oilseeds, pulses, and millets is driven by the fact that approximately 68% of the net cultivated land in 177 districts of India is rain-fed, making these crops suitable due to their lower input and management requirements, while still providing favorable profit margins.

The rising costs of fossil fuels and chemical fertilizers, coupled with the ecological and economic benefits of natural agricultural practices, have further motivated farmers in India to adopt organic farming methods (Gamage et al., 2023; Singh and Singh, 2017). To support and encourage organic farming, the government has implemented various schemes and initiatives. Notable among them are the Network Project on Organic Farming (NPOF, 2004), which aims to promote organic farming practices; the Rashtriya Krishi Vikas Yojana (RKVY, 2007), which focuses on increasing incentives and investments in farming; the National Mission for Sustainable Agriculture (NMSA, 2014), which

supports the establishment of organic and green manure units; the Mission Organic Value Chain Development for North Eastern Region (MOVCDNER, 2015), which emphasizes organic farmer certification through Farmer Producer Organizations (FPOs); the Paramparagat Krishi Vikas Yojana (PKVY, 2015), which promotes cluster-based organic farming with a focus on traditional indigenous species; and the Bhartiya Prakritik Krishi Paddhati (BPKP) sub-scheme of PKVY-2020, which aims to promote and practice traditional indigenous farming methods (Ministry of Agriculture and Farmers' Welfare, Government of India).

STUDY AREA

The Union Territory of Puducherry, governed by the Government of Puducherry, is composed of four small and geographically disconnected districts: Puducherry, Karaikal, Yanam, and Mahé. Puducherry and Karaikal are the largest in terms of area and population. Both districts are enclaves of the state of Tamil Nadu. On the other hand, Yanam shares its boundary with Andhra Pradesh, while Mahé is located on the coast of Kerala. Puducherry district covers an area of approximately 293 square kilometers, with over 200 square kilometers of Tamil Nadu's surrounding region falling within its borders. Karaikal district spans 160 square kilometers, Mahé covers 9 square kilometers, and Yanam spans 30 square kilometers (Government of Puducherry).

Agriculture and related activities form a major source of livelihood for the population in India. According to government records, nearly 70% of the population in Tamil Nadu and 45% in Puducherry depend on agriculture for their regular source of income. In recent years, farmers in Tamil Nadu and Puducherry have increasingly recognized the importance of organic farming practices. These practices involve the use of less expensive inputs, cultivation of indigenous traditional crop varieties, multi-cropping, and integrated pest management (IPM), among others, which are safer for the environment and human health. Influential organic farmers and activists like G. Nammazhvar and "Nel" Jayaram have played a significant role in promoting and disseminating innovative ideas and traditional knowledge related to organic farming. Through training workshops and knowledge-sharing, they have inspired many farmers who are interested in nature and healthy food to adopt these organic farming techniques. These methods have been found to be ecologically and economically sound.

In Tamil Nadu, the area under organic certification has been gradually increasing. According to the Agricultural and Processed Food Products Export Development Authority (APEDA) 2022 report, the organic certified area in Tamil Nadu increased from 10,775.69 hectares in 2016 to 53,388.22 hectares in 2021. Similarly, in Puducherry, the organic certified area was 2.84 hectares in 2016, which significantly increased to 23.45 hectares in 2018 but slightly decreased to 21.51 hectares in 2022. It is important to understand the reasons for the decline in organic farming areas in Puducherry and address any issues identified. By resolving these issues, more farmers can be encouraged to adopt organic and natural farming practices, which would be more beneficial in the long run (APEDA, 2022).

The emergence of organic farming in Puducherry gained momentum in 2004, following the devastating tsunami. Many farmers faced challenges such as land and water salinization, increased pest outbreaks, and crop failures. These difficulties led farmers to transition from conventional farming practices to a more sustainable approach that is affordable, effective, reliable, and environmentally friendly in the long term. Farmers began to revive traditional indigenous knowledge related to organic farming, including the use of local crop varieties, rearing desi cows/cattle, preparing organic manure, implementing Integrated Pest Management, Integrated Nutrient Management Technologies, and practicing agroforestry. The Department of Agriculture, NABARD, KVK, NGOs, and trusts played a crucial role in spreading awareness and knowledge about organic farming through various initiatives and awareness programs.

In 2010, an important milestone was achieved when leading Indian organic farming activists such as Namazhwar, Nel Jayaram, Subash Palekar, along with government and private agriculturists, shared their knowledge and emphasized the significance of organic farming during an event held at a marriage hall in Cuddalore. This event inspired many farmers and generated interest in organic farming. The Department of Agriculture and KVK then conducted training sessions for active and progressive farmers in each village, covering topics related to farming, dairy farming, women empowerment, production, processing, value addition, marketing, and more.

As a result of these initiatives, both the government and private sectors provided support and encouragement to farmers in adopting organic farming practices. Organic farming gradually took root in Puducherry villages such as PS Palayam, Bahour, Karikalampakkam, Abisekhagam, Mangalam, Vinayagampet, Kariamanickam, Irulansandhai, Thiruvandarkoil, and others. Active organic farmers in these regions promote organic farming and its products through initiatives like ATMA (Agricultural Technology Management Agency), PGSI (Participatory Guarantee Scheme) certification, organic farmers' associations, and Farmers Producer Organizations (FPOs) such as U.T. Pondicherry Namazhwar Organic Farmers Association, Nel Jayaram Organic/Natural Multi crop cultivators organization, and Vaedapuri Organic Farmers Association. Trustworthy farmer groups have been organized to undertake organic certification and sell their products, with the support of organizations like SWASAAM and Thirukamaeshwara Farmer Producer Company, which play a significant role in the entire process from production to marketing of agricultural products.

Organic/Natural Farmers Association (Reg.No.305/2015) and Organic/Natural Multi crop cultivators organization (Reg.No.280/2018) are in P.S.Palayam comprises of more than 70+ members, who are involved I organic farming, marketing and and its trading

Vaedapuri Organic/Natural farmers Association (Reg.No.60/2021) are in Thondamanatham comprises of more than 40+ farmers who are involved in organic products food chain starting from production to sales and consumption

Thirukamaeshwara Hitech Agro Farmer Producer Company started in 2011 has more than 750+ farmers as members involved in various agricultural related activities like guidance, information sharing providing needed agricultural inputs, marketing the final products etc.,

SWAASAM Global Farmer Producer Company limited I P.S.Palayam formed in 2016 by a group of framers and are currently involved in various agricultural and animal husbandry services and activities.

Selection of Villages-Study sites

The total cultivated land area in Puducherry spans 27,483 hectares and supports approximately 61,370 individuals, including farmers and agricultural workers (Agri Department, Government of Puducherry). Puducherry district is comprised of 71 villages distributed across five communes and two blocks.

For the purpose of the current study, villages Aranganoor, Ariyankuppam, Karikalampakkam, Bahour, Soriyankkuppam, Kuruvinatham, Irinalsandhai, Kindanmaedu, Chettipatu, Embalam, Kondur, Mannadipattu, Pornakuppam, P.S. Palayam, Ramanathapuram, S. Palayam, Thondamanatham Thirubhuvanai, and Uruvayar were selected and an in-depth survey of pioneer organic farmers with different crops or varieties was interviewed. This approach allowed us to gain insights into the challenges faced by farmers in their specific localities and crop cultivation practices. The general list of organic farmers per association in each village are given in Table 1.

Table 1. Represents the List of Organic farmers per Association in villages of Pondicherry

district (as per the President of concerned farmers association) . Other than this villages there are also some people doing organic farming in the form of terrace gardening in the cities or towns like Lawspet, , Krisha nagar, Murgapakkam Rainbow nagar etc.,

No	Village Name	NOF	VOF
1	Aranganoor		3
2	Bahour	32	17
3	Embalam	6	3
4	Irulansanthai	5	1
5	Karaiyamputhur	7	2
6	Karikkalampakkam	2	5
7	Kothapurinatham	8	0
8	Kuruvinatham	3	1
9	Kuchipalayam	4	2
10	Madukarai	3	1
11	Pandasozhanur	5	2
12	Pillaiyarkuppam	7	2
13	Soriankuppam	4	0
14	Ariyankuppam	6	1
15	Nallavadu	2	0
16	Pooranankuppam	4	2
17	P.S.Palayam	22	6
18	Nonakuppam	3	1
19	Chettypet	12	2
20	Madagadipet Palayam	10	0
21	Manalipet	16	2
22	Mangalam	7	1
23	Mannadipet	12	2
24	Pillaiyarkuppam	5	1
25	Ramanathapuram	5	3
26	S.KPalayam	3	7
27	Sathamangalam	2	3
28	Sellipet	9	2
29	Sorapet	5	0
30	Thirubuvanai	0	2
31	Thiruvandarkoil	4	1
32	Thondamanatham	18	15
33	Uruvaiyar	1	2
34	Vadanur	5	1
35	Villianur	10	4

*Study sites were highlighted in red color; *NOF-Nammazhwar organic farmers association and VOF Vaedapuri organic farmers association. There are other few organic farmers association yet these 2 are the old and important ones.

Karikalampakkam (KP) is a village located in Nettapakkam Tehsil in the Pondicherry. It is situated 13 km from Nettapakkam and 10 km from Puducherry town. The name Karikalampakkam translates to "the place of complete darkness" in the local language. During the period when Pondicherry was under French rule, the village earned its name due to the dense forest cover that blocked sunlight throughout the day. The village is chosen for study because it is home to the ATMA (only women) group and Mrs. Bagyavathy, winner of the "Mahila Kisan Award – 2019." Mrs. Bagyavathy is a highly inspiring and pioneering organic farmer known for her cultivation of traditional paddy. By studying the women farmers in this village, we can gain valuable insights into the role of women in farming, the challenges they face, and their contributions to their families and society.

Bahour commune (B) consists of four non-contiguous areas, including three of the nine true enclaves of Puducherry. The region is home to the Bahour Eri/lake, which is the second largest and oldest irrigation lake in the area and has existed since the Chola period. Although the region has significant lignite deposits, they remain unexploited due to their proximity to the sea, which can contaminate groundwater with saltwater intrusion. Bahour is renowned as the "rice bowl of Puducherry" due to its suitability for paddy (rice) cultivation. Additionally, vegetable cultivation is observed along the banks of the Thenpennaiyar River. The villages of Aranganur (AR), Bahour, Irulansanthai, Kundnamaedu, Soriyankuppam (SK), and Kuruvinatham (KN) are selected for the study as they have a few organic farmers and former organic farmers. By interviewing them, we can gain a better understanding of the reasons behind the continuation or discontinuation of organic farming practices in the region.

Thondamanatham (TDN) is located in the Villianur taluk of Puducherry. It is situated 6 km away from the Villianur tehsildar office and 15 km away from Puducherry town, near Ossudu lake. The village covers a total geographical area of 319.65 hectares. In Thondamanatham, there are a few pioneering organic farmers who have provided valuable insights into organic farming, including its benefits as well as the challenges faced in terms of production and marketing of the products.

Figure 2 Location of the study sites (will be included later)

RESEARCH DESIGN

The research study employed a mixed-methods approach to gather data from selected respondents. Individual interviews were conducted with the respondents in the local Tamil language, using a combination of open- and close-ended questionnaires. These interviews were followed by specific probing questions based on the respondents' answers to gather detailed information on the topics of interest. In-depth interviews were also conducted with the heads of households using pre-tested structured questionnaires.

Focus Group Discussions (FGDs) were conducted among various groups, including women, innovative organic farmers, ex-organic farmers, and inorganic/conventional farmers. The participants for FGDs were selected using the snowball sampling method. Open-ended discussions were facilitated during the FGDs, allowing participants to share their perspectives on various aspects related to farming, such as actors involved, sectors, utilities, constraints, interests, perceptions, and difficulties faced throughout different stages of farming, from land preparation to marketing the products. Household socio-economic attributes and site diversity characteristics were also documented as part of the study.

The research study was conducted from July 2022 to June 2023, focusing on selected villages. A total of 50 farmers were interviewed and their responses were documented. Among the participants, there were 33 organic farmers, 10 inorganic farmers, and 7 ex-organic farmers. Additionally, the responses of the farmers' spouses regarding their work, agricultural problems, and their role within the household were also recorded. Table 1a provides key details of the farmers interviewed.

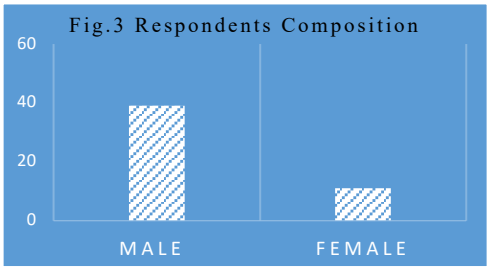
RESULTS and DISCUSSION

Demographic Details

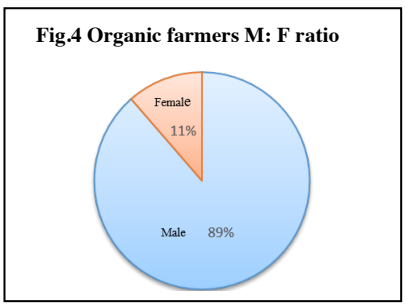
The study included a total of 50 respondents (Tab.2), comprising 66% organic farmers (include only organic farmers and the farmers who are doing both organic farming and conventional farming but in separate fields) and 34% inorganic farmers (including ex-organic farmers). Among the respondents, 78% were male and 22% were female (Fig.3).

This information is valuable as it offers an understanding of the composition of the farmer sample in terms of farming methods and gender distribution. By including both organic and inorganic farmers, the study aims to capture a diverse range of perspectives and practices within the agricultural community.This demographic information provides an overview of the composition of the farmer sample and highlights the gender distribution within the organic and inorganic farming groups. It is important to consider these demographic factors as they may influence various aspects of farming practices, decision-making, and resource allocation within households.

Tab.2 Composition of farming practises among the respondents	Frequency	Percentage
Organic Farming	17	34
Inorganic Farming	17	34
Organic + Inorganic	16	32



In the case of organic farming (Fig.4), the majority of land ownership and major decision-making responsibilities were held by men, accounting for approximately 89% of the respondents. These men had been successfully engaged in organic farming for over 15 years. Conversely, in the case of inorganic farmers, nearly 90% of the women were involved in agricultural activities in some capacity, although they did not hold significant decision-making authority within their families, despite some being legal landowners.



It is noteworthy that most of these women acquired land ownership around 2005, following the implementation of notification No.8834/Rev-C3/2004 dated 17.12.2004 by the Revenue Department of Pondicherry. Under this notification, the Government of Pondicherry granted a 50% reduction in stamp duty for women who acquired properties. This incentive prompted more individuals to register properties under the names of their female family members, aiming to reduce the expense associated with land registration fees. Although women legally owned the land in many cases, they were not the primary decision-makers within their families, particularly regarding agricultural activities. However, they actively participated in agricultural work alongside their regular household chores and cattle management responsibilities.

These findings highlight the gender disparities in land ownership and decision-making within farming households, emphasizing the need for further examination of gender roles and empowerment in agricultural contexts. This data underscores the importance of addressing these gender disparities and promoting gender equality in farming communities. Initiatives focused on enhancing women's access to and control over resources, such as land and decision-making power, can contribute to more inclusive and equitable agricultural systems. Additionally, efforts should be made to challenge traditional gender norms and promote the meaningful participation of women in agricultural decision-making processes. By recognizing and addressing these gender inequalities, farming households and communities can harness the full potential and expertise of all members, leading to more sustainable and prosperous agricultural practices.

Age: The farmers in the study were categorized into different age groups (Fig.5): below 30 (4%), 30-45 (18%), 45-60 (58%), and above 60 (20%). Among organic farmers, the youngest farmer was 29 years old, while the oldest was 72 years old, with a mean age of 51 years. In case of inorganic farmers age they all are around 45-60 (70%) and above 60 (30%)

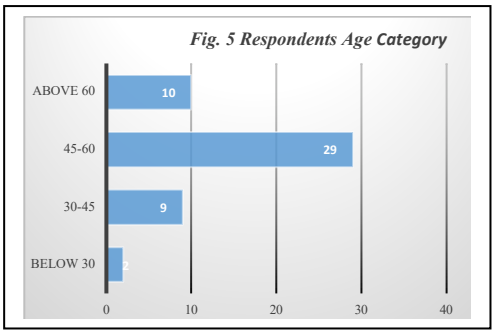
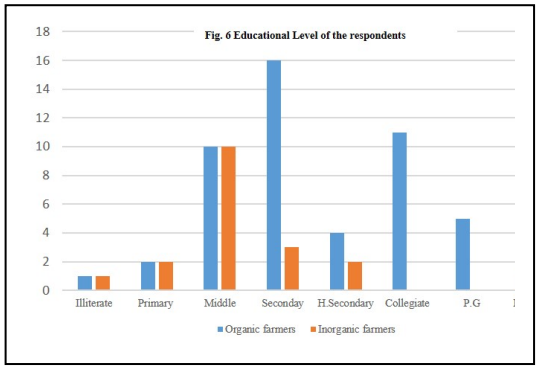


Fig. 5 Respondents Age Category

The age distribution among the organic farmers in the study reveals a higher representation of middle-aged and older individuals, with the majority falling within the 45-60 age group (60%). The range of ages within the organic farming group highlights the diversity and generational transfer of knowledge within that specific subset. The data suggests a potential need for strategies to engage younger individuals in farming and ensure the sustainability of the agricultural sector. Understanding the age demographics within the farming community is essential for developing targeted interventions, policies, and programs that address the specific needs and challenges faced by different age groups in agriculture.

Household members the average number of household members of organic farmers (OF and both) ranged from 15 to 4 persons per family, with an overall average of 4.84 ± 2.06 per family and in case of inorganic farmers average of 4.0 ± 1.06 per family

Education The education levels of the farmers in the study were categorized from Illiterate to Doctorate. The distribution of farmers' education levels was as follows (Fig.6: Illiterate (2%), Primary (4%), Middle (20%), Secondary (32%), Higher secondary (8%), Collegiate (22%), Post-Graduate (10%), and Doctorate (2%).



Inorganic farmers' education levels are as follows: Illiterate (2%), Primary (4%), Middle (20%), Secondary/Higher secondary (10%).

Organic farmers' education levels are as follows: Secondary/Higher secondary (30%), Collegiate (22%), Post-Graduate (10%), and Doctorate (2%).

Research has shown that education plays a crucial role in the success and adoption of organic farming practices. Studies have found that farmers with higher levels of education exhibit a broader understanding of agricultural concepts, including organic farming, and are more likely to overcome challenges and risks associated with transitioning to organic methods (Paltasingh and Goyari, 2018; Jha, C.K. and Gupta V, 2021)

In this regard, it is noteworthy that a significant proportion of organic farmers possess secondary/higher secondary education (30%), collegiate education (22%), and even advanced degrees such as post-graduate (10%) and doctorate (2%) qualifications. These educational backgrounds enable organic farmers to grasp the complexities of organic farming, comprehend its ecological and economic benefits, and develop the necessary skills to establish successful organic farms.

Majority of conventional farmers and they are more favored to apply the knowledge of agriculture confined to conventional farming techniques passed down from previous generations, primarily learned from their fathers (Paltasingh and Goyari, 2018; Jha, C.K. and Gupta V, 2021). This limited exposure to alternative farming methods, coupled with a lack of interest in exploring the depth of knowledge surrounding organic farming, contributes to their reluctance in adopting organic practices. Additionally, conventional farmers may exhibit a lower level of confidence and self-trust in their ability to navigate the risks and uncertainties associated with organic agriculture (Maini et al., 2021).

Therefore, it is evident that education plays a pivotal role in the development of self-confidence and self-trust among farmers who aspire to engage in organic farming. By broadening their knowledge base and instilling the necessary skills, education empowers farmers to embrace organic farming practices and realize the potential ecological and economic benefits it offers.

Size of land and occupation

Farmers in India are classified based on the size of their land holdings and occupation, as defined by the Government of India. The categorization includes Marginal or sub-marginal farmers (with less than 1 hectare of land), Small farmers (1-

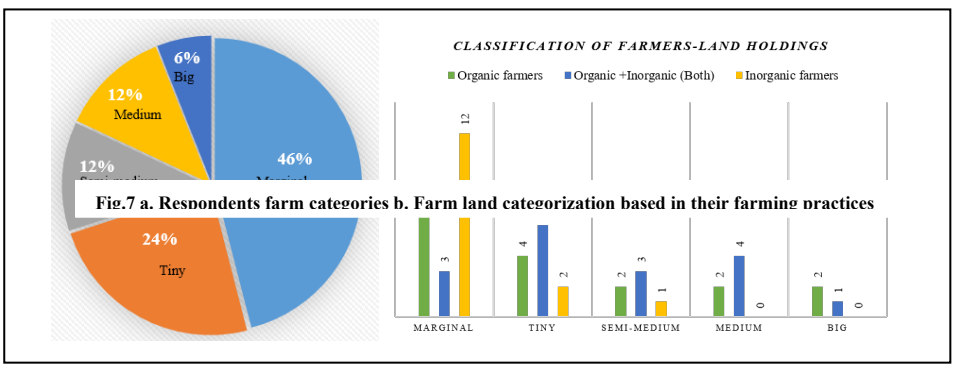


Fig.7 a. Respondents farm categories b. Farm land categorization based in their farming practices

2 hectares), Semi-medium farmers (2-4 hectares), Medium farmers (4-10 hectares), and Big or large farmers (more than 10 hectares). The majority of farmers (Fig7 a.) belong to the category of Marginal farmers (46%), followed by Tiny farmers (24%), Semi-medium farmers (12%), Medium farmers (12%), and Big or large farmers (6%) respectively (Government of India, year).

The findings highlight the diverse distribution of farmers in the study based on the size of their land holdings and occupation (Fig.7 b). It indicates that a substantial number of farmers are in Marginal and Tiny categories, which signifies the prevalence of small-scale farming. These farmers may face distinct challenges related to resource constraints, limited access to technology and markets, and economic sustainability.

Tab.3 Farming Practises	Primary Occupation	Secondary Occupation
Organic Farming	19.61	15.69
Both	17.65	13.73
Inorganic farming	29.41	0

Understanding the categorization of farmers based on land holdings is crucial for formulating targeted policies, interventions, and support mechanisms that cater to the specific needs of different farmer groups. It can help in designing strategies to enhance agricultural productivity, promote equitable land distribution, improve access to resources and markets, and uplift the livelihoods of small and marginal farmers. The result emphases the significant presence of Marginal and Tiny farmers and the need for tailored approaches to support their agricultural endeavors and address their unique challenges.

In terms of *occupation*, the majority of inorganic farmers (Tab.3) are engaged in marginal farming (about 24%), followed by tiny farmers (4%) and medium farmers (2%). Agriculture serves as their primary occupation and serves as the main source of income for their families. These farmers tend to prefer inorganic farming as it provides them with a sense of assurance regarding yield and better marketing opportunities. This allows them to avoid unnecessary financial risks for their families.

In terms of occupation, among organic farmers, marginal farmers account for 16% where agriculture is their secondary occupation (Tab.3). They primarily use organic products for their own consumption and only sell the surplus to relatives, friends, and neighbors. Tiny organic farmers comprise 8% of the group, while semi-medium and medium organic farmers make up 4% each. These orgniac farmers benefit from additional financial stability (Tab.4) through regular business ventures or support from government officials/retired individuals (mean 1.37±0.7) within their families, ensuring a steady cash flow and minimizing financial

Tab.4 Additional Financial Aid-OF	Frequency	Percentage
Government job	15	30
Private company jobs	14	28
Professional jobs	14	28
Business	13	26
Government	10	20

risks. They primarily produce agricultural goods for their own families, with any excess surplus being sold through local to regional marketing channels.

Among the big organic farmers (4%), who possess larger land holdings and have been practicing organic farming for many years, they have established their own secured marketing networks and outlets at regional to international levels, including exporting to other countries. These farmers enjoy better financial stability, enabling them to hire both temporary and permanent laborers to carry out necessary agricultural work efficiently and on time. On the other hand, marginal and tiny organic farmers rely mostly on family members to perform the required tasks. Semi-medium and medium-scale organic farmers hire additional laborers as needed, apart from relying on their family members.

The findings indicate that the occupation and financial stability of organic farmers play a significant role in their farming practices and marketing strategies. While marginal and tiny farmers prioritize self-sufficiency and limited local sales, larger-scale organic farmers have the resources to establish wider marketing networks and access international markets. Additionally, the ability to hire laborers can significantly impact the efficiency and productivity of organic farming operations.

Two scenarios were observed among farmers engaged in both organic and inorganic farming. Firstly, for those whose primary occupation is agriculture (6% marginal farmers and 12% tiny farmers), they primarily use organic products for their own consumption, selling only the excess produce. They also practice inorganic farming separately in their other fields, which provides financial stability by ensuring immediate and guaranteed financial returns during harvest seasons. This is achieved through securing crop yields and taking advantage of common marketing opportunities through agents, brokers, and agricultural communities.

Secondly, for farmers where agriculture is a secondary occupation, although they have a constant cash flow, they engage in organic farming partially and primarily for their own use. This is done to prioritize producing healthy food for their families. Any excess organic produce is sold. In the remaining areas, these farmers resort to inorganic farming due to time constraints in terms of preparing and applying organic manure, as well as monitoring the crops. Additionally, they may lack a separate marketing outlet, network, or channel for organic products.

These two scenarios highlight the different motivations and practices of farmers engaged in both organic and inorganic farming. It reflects how financial considerations, time constraints, and availability of marketing opportunities influence their decision to adopt either organic or inorganic methods in their farming practices.

It can be observed that farmers from low economic to middle-class backgrounds are willing to engage in organic farming even on small areas if they are assured of financial stability and have no financial risks involved. However, if this stability is not achieved, these farmers are hesitant to take the risk of transitioning to organic farming and continue with conventional chemical-based practices. It is evident that for these farmers, economic considerations play a crucial role in their decision-making process. Once farmers attain financial stability, their focus shifts to prioritizing the health and well-being of themselves and their families by providing healthy, high-quality food. This often leads them to embrace organic farming practices, as they are perceived to be safer for all living beings and the environment.

Around 22% of inorganic farmers (and 10% of former organic farmers) have agriculture or related occupations as their primary source of income, serving as the sole means of livelihood for them and their families. On the other hand, among organic farmers, nearly 90% have some form of regular income or financial aid from various sources, such as government job pensions, permanent private jobs, and other means. This financial stability ensures a consistent cash flow for these farmers. The remaining

10% of organic farmers, who are mostly medium to large-scale farmers and also involved in inorganic farming, have achieved a better financial situation. They are able to generate regular income by selling both organic products (gradually) and inorganic products (sold once or a few times a year) throughout the year.

Average organic farming area (based on the surveyed organic farmers)

Based on the survey of 33 organic farmers, the average organic land area was found to be 0.85±0.45 acres (excluding big organic farmers). However, when including the big organic farmers in the calculation, the average organic land area increased to 5.67±11.91 acres.

The result finding focuses on the average organic land area among surveyed organic farmers, both when excluding and including big organic farmers in the calculation. The data reveals two distinct averages based on these considerations.

Firstly, when excluding big organic farmers from the calculation, the average organic land area was found to be 0.85±0.45 acres. This suggests that among the surveyed organic farmers, the majority possessed relatively smaller land areas dedicated to organic farming. This result aligns with the common understanding that organic farming can be practiced on a smaller scale, often emphasizing sustainable and environmentally friendly practices.

However, when including the big organic farmers in the calculation, the average organic land area increased significantly to 5.67±11.91 acres. This inclusion of big organic farmers implies that there are organic farmers who operate on a larger scale, managing significantly larger land areas for organic cultivation. These big organic farmers contribute to the higher average organic land area when considering the entire group of organic farmers surveyed, as major portion their fields being fruit orchids of Sapota, Guava, Mango, Papaya etc.,

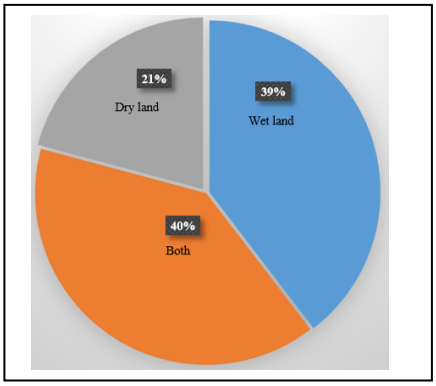
The contrasting averages highlight the diversity within the organic farming community in terms of land area. While the majority of organic farmers in the survey had relatively small land areas, the presence of big organic farmers with significantly larger land holdings demonstrates that organic farming is not limited to small-scale operations. It indicates the potential for organic farming practices to be implemented on a larger scale, suggesting that organic agriculture can be viable across different land sizes and farming systems.

It is important to note that the wide range and standard deviation in the average organic land areas (11.91 acres) when including big organic farmers signify significant variations in land holdings among the surveyed group. This variability may be influenced by factors such as regional differences, economic conditions, farming traditions, and individual choices and preferences.

Overall, the result finding underscores the diverse nature of organic farming in terms of land area. While many organic farmers operate on relatively smaller land areas, there are also organic farmers who manage larger plots of land. These findings highlight the flexibility and adaptability of organic farming practices to different scales and suggest that organic agriculture can be practiced on both small and large scales, depending on the individual farmer's circumstances and resources available.

Fig.8 Nature of Agricultural fields

Nature of the land



Surveyed inorganic farmers predominantly had wetlands as their land, which made it more suitable for cultivating major crops such as paddy and sugarcane. In contrast, organic farmers possessed a mix of wetland, dryland, and intermediate soil types that are suitable for a diverse range of field crops and horticultural crops. This diverse land composition provides organic farmers with the opportunity to explore and cultivate a wide variety of crops.

The ability of organic farmers to cultivate diverse crops is an advantage as it promotes crop rotation, biodiversity, and sustainable farming practices. By utilizing a mix of wetlands, drylands, and intermediate soil types, organic farmers can reduce the risk of crop diseases, pests, and soil degradation associated with monoculture farming. Moreover, the cultivation of a variety of crops can contribute to food security, income diversification, and ecosystem resilience. Understanding the land types and their influence on crop choices is essential for farmers to make informed decisions regarding crop selection, resource management, and sustainability. It also emphasizes the importance of tailoring agricultural practices to suit specific land characteristics, contributing to more resilient and environmentally conscious farming systems.

Farm Equipment's and machines

Regarding farm equipment and machinery (Tab.4), it was found that only 41% of the surveyed farmers own their own tractor, rotator, paddy planting machines etc., the majority of farmers, both organic and inorganic, rely on renting machines and vehicles on an hourly basis. Private tractors, rotators, cultivators, and harvest machines are available for rent at rates ranging from Rs.1500-2500 per hour. It is worth noting that if farmers are active members of the ATMA group or Agricultural Cooperative, lower-caste farmers receive a 100% subsidy, while others receive a 50% subsidy.

Table 5 Nature of operation	Organic farmers	Both	Inorganic farmers
Rented	25	16.18	13.73
Both	10	11.57	15.69
Owned	1	2.92	0

For seedling planting, farmers have the option of using a seedling planting machine at a cost of Rs.25 per tray or resorting to hand planting, which costs Rs.250 for female workers. Some farmers own a cono weeder, but a significant proportion (66.7%) do not know how to operate it. As a result, they hire laborers (priced between Rs.250-400 per day) to drive the equipment, or they resort to manual weeding. Laborers are typically hired at rates ranging from Rs.150 for female workers to Rs.250 for male workers per day.

Regarding spraying and applying manures/pesticides, the average cost is Rs.35 per tank, with the number of tanks required per acre varying depending on the specific needs of the crops.

These result findings provide insights into the utilization patterns and costs associated with farm equipment and machines among the surveyed farmers. The relatively low ownership rate of farm equipment highlights the reliance on rental services, indicating that access to machinery can be a significant barrier for many farmers because of competition, services may not be available in time ; dependence on others. And family members are no longer helping unlike in the past.

The availability of subsidies for certain farmer groups through ATMA groups or agricultural cooperatives suggests that there are support mechanisms in place to alleviate the financial burden for specific categories of farmers. This can potentially enhance their access to farm machinery and equipment.

The data also showcases a mix of mechanized and manual practices in different farming activities such as seedling planting and weeding. This indicates variations in the level of adoption of mechanization and highlights the need for training and skill development programs to improve farmers' capacity to use and operate farm machinery effectively.

Understanding the availability and affordability of farm equipment is crucial for farmers to make informed decisions about resource allocation and enhance productivity. It underscores the importance of policies and initiatives that promote the accessibility and affordability of farm machinery, particularly for small-scale and marginalized farmers.

Additionally, the data emphasizes the potential benefits of knowledge-sharing and training programs to enable farmers to maximize the use of available machinery and optimize their agricultural practices.

Tab.8 Nature of work	Organic farming	Inorganic farming
Seed planting	18.57	7.86
Weeding	17.86	7.14
Manure application	17.14	5.71
Agricultural vehicle		

Details and Nature of family and hired workers

Tab.6a Family Workers/ Acre for each work	Mean	Median	Mode	Standard deviation
Organic farmers	2.38	2	2	1.85
Inorganic farmers	2.07	2	2	1.03

Tab.6b Hired workers/ Acre	Mean	Median	Mode	Standard deviation
Organic farmers	12.38	5	7	2.85
Inorganic farmers	6.07	5	7	1.03

In both organic farming and inorganic farming (Tab.6a), the use of family labor was found to be relatively similar. However, when it came to hired labor, the number of laborers was significantly higher in organic fields compared to inorganic fields. This can be attributed to the greater need for manual labor in organic farming, especially during the early years of transitioning to organic practices. Tasks such as planting, weeding, and harvesting often require more labor-intensive approaches in organic farming compared to conventional farming practices (Tab.7).

The significant difference in the number of hired laborers between the two farming systems highlights the distinct labor requirements and practices associated with organic farming (Tab.6b). The reliance on hired labor in organic fields is indicative of the additional effort and attention needed to maintain organic standards and practices. These findings suggest that organic farming demands a greater investment in labor resources, which can impact the overall cost and management of organic farms.

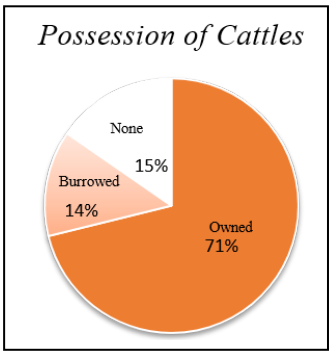
It is important to consider the labor dynamics and associated costs when comparing organic and inorganic farming systems. The higher demand for manual labor in organic farming may affect the financial aspects and feasibility of adopting organic practices, particularly for farmers who heavily rely on hired labor. Understanding the labor dynamics and associated costs is crucial for farmers, policymakers, and stakeholders involved in promoting sustainable agricultural practices. It can help in assessing the feasibility and potential barriers of adopting organic farming methods. Moreover, it

highlights the need for support mechanisms, such as training programs and policy incentives, to assist farmers in managing the labor-intensive nature of organic farming and ensuring its long-term sustainability.

Possession of cattle

Cattle are significant in agriculture, particularly in organic farming. Cattle products, such as dung and urine, are essential for the preparation of organic manures like Jeevamirtha, Panchakavya, and Amirtha karisal. These organic manures contribute to soil fertility, nutrient availability, and overall crop health. However, it is worth noting that there are alternative organic manures available for organic farming, such as Meein amilam, Mutaikarisal, and EM (Effective Microorganisms).

Fig.9 Cattle Possession



The possession of cattle among the surveyed farmers (Fig.9) was observed in 71% of cases, indicating that a significant portion of organic farmers still value the role of cattle in agriculture. These farmers rely on their own cows to obtain cow dung and urine for organic manure production. However, it is interesting to note that 14% of organic farmers borrow cow dung and urine from their neighbors or friends in exchange for providing cow fodder or other forms of assistance. This indicates a collaborative approach among farmers in utilizing cattle resources and highlights the community aspect of organic farming practices.

On the other hand, 15% of the farmers in the survey did not possess any cattle. The reasons mentioned by the respondents are limited space for cattle rearing, increased prices and shortages of dry straw and cattle feed, and the perception of cattle rearing as a dirty and labor-intensive task. Additionally, some farmers reported problems with neighbors, and there was a reluctance among women to engage in the cleaning and maintenance of cows and cow sheds.

The findings reflect the challenges and constraints associated with cattle possession and management in agriculture. The reluctance to keep cattle can be attributed to economic factors, space limitations, labor requirements, and social factors. It highlights the need for addressing these challenges and finding alternative solutions to ensure the availability of organic manure for farmers who do not possess cattle.

It is important to note that while cattle and their products play a significant role in organic farming, there are alternative organic manure options available for farmers. These alternatives can provide viable options for farmers who face limitations in cattle possession or are unwilling to engage in cattle rearing.

In all, the findings emphasize the importance of considering the role of cattle and alternative organic manure options in organic farming. It highlights the need for promoting sustainable agricultural practices that address the challenges associated with cattle possession and management while ensuring the availability of organic inputs for crop production.

Number of cows

Tab.9 Nature of farming	Mean	Median	Mode	Standard deviation
Organic farmers	4.20	2.50	15.00	9.52
Inorganic farmers	2.44	2.00	5.00	3.64

The result findings (Tab.9) indicate that organic farmers tend to own a higher number of cows (4.20±9.5) compared to inorganic farmers (2.44±3.64). This can be attributed to the belief among farmers that desi cows are essential components for farming, particularly in the context of organic farming. The presence of cows is considered crucial for organic farming practices, as their products, such as dung and urine, play a significant role in the preparation of organic manures.However, the survey also reveals a decline in the population of cattle reared by villagers in recent years. Several factors contribute to this decline, including the shrinking of agricultural lands, lack of profitability in cattle rearing (where the expenses for cattle care exceed the income generated by the cattle, such as milk production), increased demand and prices of fodder and feeds, and the changing demographic landscape with more individuals from non-agricultural backgrounds.

Additionally, the study highlights the reluctance of women, particularly young women with higher education and non-rural backgrounds, to engage in cattle farming and dairy farming. In contrast, women above the age of 45 from agricultural rural backgrounds with less education show more interest and willingness to take care of cows. This suggests a shift in traditional gender roles and a changing attitude towards cattle farming among different generations and educational backgrounds.

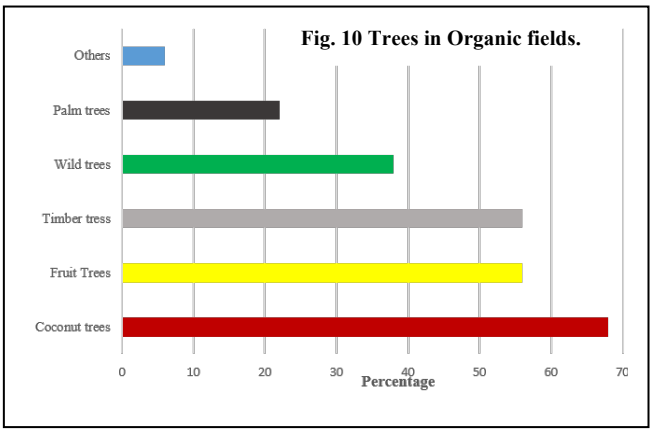
Nature of Agro-forestry

The study reveals that around 68% of the fields of organic farmers have trees while approximately 32% of fields belonging to inorganic farmers have trees (Tab.10). Inorganic farmers cited various reasons for not encouraging tree growth in their fields, including concerns about conflicts with neighboring farmers, shading of trees on their crops, damage to footpaths or hedges, and complications during farming activities. On the other hand, organic farmers show interest in growing trees that provide economic benefits, such as coconut trees, fruit trees, and timber trees. The farmers prefer (Fig.10) coconut trees the most followed by fruit and timber trees (they were economically beneficial for the farmers) and wild and palm trees (as they were found in the hedges or boundary of land as bio-shield or nearby water shed bund/footpath stabilizers).However, only a few organic farmers prioritize the growth of wild trees, which may have less economic value but hold great ecological value. These wild trees are often used by organic farmers for preparing organic manure or pest repellents, and they also attract beneficial pollinators such as bees, butterflies, and birds. The preference for economically valuable trees among farmers indicates their inclination towards additional income generation through the sale of fruits or timber. However, it is encouraging to see that some farmers prioritize the conservation of the environment, nature, and biodiversity by growing wild trees. These trees provide ecological benefits, contribute to organic farming practices, and attract pollinators, thus promoting sustainable agricultural systems (Altieri, M.A., 1999; Perfecto, I., et al., 2015).

Research studies have consistently shown that organic fields have approximately 30% more biodiversity in terms of flora and fauna compared to conventional farming. This is primarily due to the absence of harmful pesticides and fertilizers in organic fields, which attract and support a wide range of living organisms. The presence of trees in farmers' fields plays a significant role in enhancing biodiversity and ecological balance (Bengtsson,et al., 2005). Organic farmers, who prioritize nature's safety and the positive interactions of insects, birds, and animals, tend to have a better understanding and appreciation of the role of biodiversity in agriculture. It is essential to raise awareness among farmers about the significance of biodiversity and the role of trees in agricultural ecosystems. Promoting agroforestry practices and highlighting the benefits of wild trees in terms of ecological services and organic farming practices can help farmers make informed decisions about tree planting and conservation.

Tab.10 Presence of trees in/around agricultural fields

Farmers Response	Frequency	Percentage
Yes	34	68
No	16	32



Seasonal vegetables

The shift towards HYVs and "english vegetables" in the market resulted in the decreased availability and popularity of locally grown seasonal vegetables, despite their higher nutritional value, mineral content, and fiber. However, with the reemergence of organic farming, public awareness of the harmful effects of inorganic farming and the support for HYVs has increased (Drescher et al., 2016; FAO. 2010; Reijntjes, C et al., 1992). As a result, some farmers are once again focusing on indigenous and traditional varieties of paddy, seasonal vegetables, and fruits.

It is worth noting that the economic profitability of growing seasonal vegetables is limited due to the low demand and popularity of these traditional varieties among the public. Only a few consumers who recognize the value and importance of these seasonal vegetables (brinjal, tomato, ladys finger etc.,);almost most of the people preferably young generation has changed their vegetable preferences (prefer more carrot, cauliflowere ect.,) and eating habits due to this most of the traditional native seasonal vegetable were gradually declining in their diversity and production. Consequently, the market for these vegetables is relatively small, making them economically less profitable for most farmers, thus only 70% of the respondents (Table 11) seems to grow seasonal vegetables throughout the year and the remaining respondents were not much supportive of this ideas. However, organic farmers, comprising 66% of this respondents, prioritize growing seasonal vegetables to provide nutritious food for their families and maintain their health.

Table 11. Seasonal vegetables availability throughout the year	Frequency	Percentage
Yes	35	70
NO	15	30

The results indicate that organic farmers have a preference for growing seasonal vegetables, particularly in small areas of land. By growing these vegetables, organic farmers are able to provide quality produce for their families throughout the year, leading to cost savings and the availability of nutrient-rich vegetables tailored to specific seasons. This practice of growing seasonal vegetables has been followed by generations, but the introduction of high-yielding varieties (HYVs) in the mid-nineties led to a decline in indigenous seasonal vegetable varieties. Additionally, some organic farmers demonstrate an interest in collecting and conserving indigenous seeds, indicating their commitment to preserving traditional crop varieties and maintaining agricultural biodiversity.

The limited prevalence of inorganic farmers growing vegetables solely for their own use (4%) suggests that it is not a common practice among the respondents. Possible reasons for this may include a lack of interest, unsuitability of the land for vegetable cultivation, or other personal circumstances.

Cropping pattern

The study showed that crop rotation is more prevalent among organic farmers, with 66% of them following a regular sequence of cropping patterns. Crop rotation involves changing the types of crops grown in a particular field over successive seasons or years. It offers several benefits, including improved soil fertility, reduced pest and disease pressure, and enhanced nutrient cycling. By alternating crops, organic farmers can maintain a balanced nutrient profile in the soil and minimize the risk of pests and diseases that can build up when the same crop is grown continuously (Reganold, J. P., and Wachter, J. M. 2016).

In contrast, the study found that only 34% of inorganic farmers are not practiced crop rotation. Instead, they tended to engage in mono-cropping, primarily focusing on paddy cultivation. Mono-cropping refers to the practice of growing a single crop repeatedly in the same field without alternating with other crops. While mono-cropping can offer certain advantages in terms of specialization and ease of management, it can also lead to soil degradation, nutrient imbalances, and increased vulnerability to pests and diseases.

The use of green manure, known as "pala thaniya vidaiepu," is a notable practice among organic farmers. Green manure involves growing specific plant species, typically legumes or other nitrogen-fixing plants, and incorporating them into the soil while they are still green and actively growing. Green manure adds organic matter to the soil, improves soil structure, and enhances nutrient availability. Organic farmers typically include green manure in their crop rotation plan, growing it once a year to enrich the soil and maintain its fertility.
In contrast, inorganic farmers were found to grow green manure less frequently, with some doing it once every two years or even sporadically. This indicates a lower emphasis on soil fertility management and the use of organic inputs among inorganic farmers.

The preference for crop rotation (Fig.11) and the integration of green manure in organic farming practices align with the principles of sustainable agriculture. These practices contribute to soil health, reduce reliance on synthetic inputs, and promote long-term productivity and environmental sustainability. By adopting crop rotation and incorporating green manure, organic farmers demonstrate a holistic approach to farming that focuses on soil conservation, nutrient cycling, and overall ecosystem health (Tuck, S. L et al., 2016; Altieri, M. A., 1999).
Organic farmers T. Paddy or Paddy/Oil seeds+Pulses or Millets/Green manure
Inorganic farmers Paddy/Paddy/Paddy (Occasionally green manure)

Organic farmers (Figure 11): Crop rotation of Traditional paddy, Paddy or Sugarcane (Table 2) in samba, followed by oil seeds+pulses, millets (ragi/kambu), green manure and seasonal vegetable cultivation throughout the years for their own purposes.

Wet land: Paddy, Sugarcane; *Dry land*: Oil seeds, Pulses, Millets, Vegetables, Fruits

Intermediate soil type (Both): Paddy, Sugarcane, Oil seeds, Pulses, Millets, Vegetables, Fruits

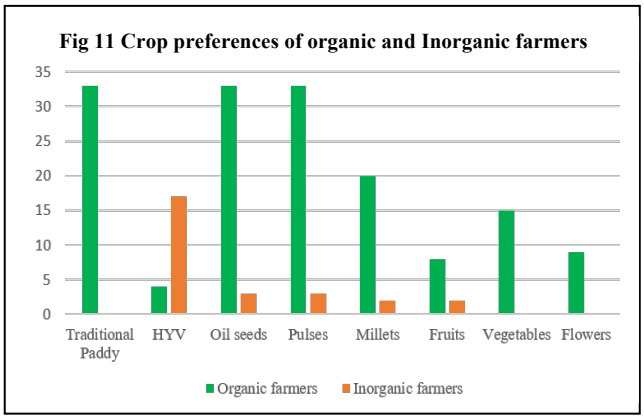


Table 12 Cash Expenditure per crop per acre in farming practices

Cost of Expenditure per acre (aprx.)	**Organic farming**	**Inorganic farming***
Paddy	Rs.8,000-Rs.10,000	Rs.20,000-Rs.30,000
Sugarcane	Rs.20,000-Rs.25,000	Rs.40,000-Rs.45,000
Vegetables	Rs.15,000-Rs.20,000	Rs.25,000-Rs.30.000
Pulses	Rs.3500-Rs.4,000	Rs.5500-Rs.6,000
Oilseeds	Rs.4000-Rs.5,000	Rs.5000-Rs.7,500
Millets	Rs.3000-Rs.4,000	Rs. Rs.3000-Rs.4,000
Fruits	Rs.30,000 (initial expense), Yearly Rs.10,000	Rs.45,000 (initial expense), Yearly Rs.30,000
Flowers	Rs.12,000 (initial expense), Yearly Rs.5,000	Rs.25,000 (initial expense), Yearly Rs.10,000

Table 13 Crop yield and price of organic products from organic farming

Crops	**Yield per acre**	**Price per bag or kg**
Traditional Paddy (colored)	30±3 bags	Rs.4000±1000/bag as paddy) Rs.90-120/kg as rice
Traditional Paddy (white)	30±3 bags	Rs. 2700±500/bag as paddy) Rs.70-90/kg as rice
Oil seeds (Ground nut, Sesame)	12,3±2 bags	min.Rs.8000±1000/bag Rs.100-110/kg
Pulses	5±2 bags	Rs.4500±750/bag; Rs80-90/kg
Millets	6±2 bags	Rs.5000±2000/bag
Vegetables	80±35 kg	Rs.40±25/kg
Fruits	50±15 kg	Rs.50±25/kg
Flowers	70±25 kg	Rs.800±350/kg

Inorganic farmers: Paddy cultivation 3/year in between once a year they might grow green manure (depending on farmer's preference).

HYV - Variety: Ponni, Payriya ponni, Ponmani, PPT, 90, 21- 30-35 sack/acre (37-41 kg of rice/sack)

Ponni, PPT, Chinna Ponni (samba) ADT 37, 90, 21 (next term)

Price different as per the variety and market demand Rs. 1000-1500/sack

Purpose of Organic farming, Value addition of organic products and

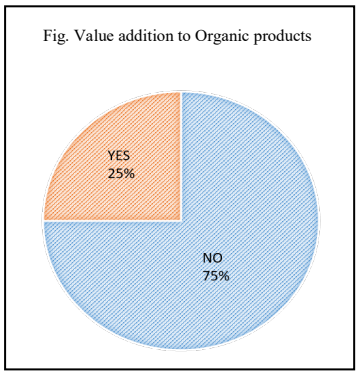
Tab.14 Purpose of organic farming	Frequency	Percentage
Own + marketing in large scale	4	12.5
Own + marketing in small scale	25	75
For own use only	4	12.5

The results (Tab.14) indicate that a portion of organic farmers (12.5%) engage in organic farming solely for their own use, typically owning less than 1 acre of land and considering agriculture as a secondary occupation. These farmers focus on producing organic crops for their own consumption, reflecting a self-sufficiency approach to farming.

On the other hand, a significant majority of organic farmers (75%) market their produce at a small-scale level. These farmers, ranging from tiny to semi-medium landholders, practice both organic and inorganic farming in separate fields. This allows them to retain surplus organic produce for marketing, while also fulfilling their own consumption needs. These farmers often have limited land holdings and engage in diversified farming practices.

Medium and large-scale organic farmers with better financial stability and established marketing networks are able to sell their produce on a larger scale. They have the capacity to market their organic products more extensively due to their resources and infrastructure. Additionally, some farmers engage in value addition by processing their organic produce into products such as rice, flattened rice, oil, pulses, millet flakes, broken pulses (with or without skin), oil seeds to oil (Ground oil- Rs.280/kg, Sesame Rs.380/kg, Coconut oil Rs.350/kg), milk to panner, ghee, butter etc., by value adding their products the farmers were able to increased their sales and border their marketing network due to assorted variety and availability of various products. By doing value addition farmers can easily double or triple their profit level. eg. if the products sold at the rate of Rs. 10,000 means as it is and once its value added can be sold at the rate not less than Rs,20,000 to 25,000. Value addition enables them to diversify their product range, increase sales, and expand their marketing networks. Farmers who engage in value addition can significantly increase their profits by offering processed products with higher market value.

In case of value addition (Fig.12) of their organic produces farmers with larger land holdings, better financial stability and larger marketing network (25%) value add their products, then sell through different marketing channels from local to International level. However, it is noteworthy that a significant portion (75%) of organic farmers prefer to sell their produce as it is, without engaging in value addition. This may be attributed to various factors such as limited production due to small land holdings, reluctance to take on the risk and complexity associated with storing and processing, competition from branded products, and the lack of reliable and accessible marketing channels.



The diverse land composition of organic farmers, including wetlands, drylands, and intermediate soil types, offers them the advantage of cultivating a wider variety of crops. This diversity allows for crop rotation, which helps to maintain soil fertility, reduce pest and disease pressure, and promote sustainable farming practices. By harnessing the potential of different soil types, organic farmers can grow a range of field crops and horticultural crops, contributing to crop diversity, biodiversity, and resilience in their farming systems.

The ability of organic farmers to cultivate diverse crops aligns with the principles of sustainable agriculture. It not only enhances soil health and productivity but also contributes to food security, income diversification, and the conservation of agrobiodiversity. By embracing the flexibility provided by diverse land composition, organic farmers can adapt to market demands, implement effective crop rotation strategies, and explore a range of crops suitable for their specific farming conditions (Vandermeer, J et al., 2010).

AUTO CONSUMPTION BEHAVIOR AMONG FARMERS

The self-sustaining or self-consumption of organic products was prevalent among all organic farmers, with a mean value 30.3±26.9%. of their production. This suggests that organic farmers were able to financially benefit by reducing their monthly grocery expenses to some extent, while also enjoying the health and nutritional advantages of providing quality food for their families. Organic farmers typically preferred to use and store their own products, including traditional paddy, pulses, oilseeds, fruits, vegetables, and millets, for personal consumption. Any excess or remaining organic products, with or without processing, were either stored or sold over time.

To ensure the safe storage of these organic paddy/pulses products and prevent attacks from beetles and insects, they were packed along with dry leaves of neem/vitex, red chilies, and coal ash after sun drying. They were then stored in dry and well-aerated areas. Additionally, most organic farmers processed their organic products, such as paddy rice and oilseeds, with the assistance of their family members, primarily women. They would then take these products to rice mills and oil mills in locations like Aranganur, Karikalampaakkam, Kangana Kuppam, and Kariya Manikkam for dehusking (priced at Rs. 250-300 per sack of paddy) and grinding (priced at Rs. 10 per kilogram).

Paddy was typically sold in three forms: as seeds (Rs. 60 per kilogram), rice (varying prices depending on the variety, ranging from Rs. 60-130 per kilogram), and flattened rice. Pulses were sold as is (priced at Rs. 90-100 per kilogram), while oilseeds such as groundnut and gingelly were sold either as raw products (Rs. 50 per kilogram) or processed into oil (sold at Rs. 230-250 per liter and Rs. 275-300 per liter, respectively). Most of the organic products price margin were set as 30% more than market price for perishable products (like fruits vegetables), for pulses 20 % for pulses and paddy this price margin are set by the organic farmers association based upon the demand and cost expenditure of the crop per that season.

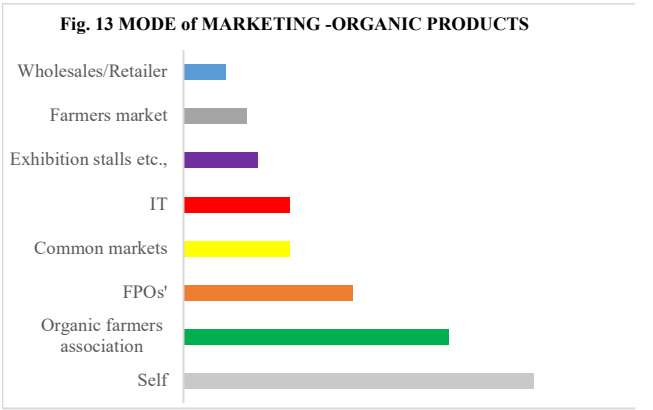
Apart from seasonal vegetables grown by organic farmers for their own consumption throughout the year, commercially produced organic vegetables like brinjal, lady's finger, and chili (yielding 60 kg to over 100 kg per acre per day) were predominantly sold in local markets or larger markets in Pondy or Cuddalore. This selling process was facilitated through agents or brokers, with a commission price of Rs. 10 paise per kilogram based on the day's market price (eg. For 10 kg vegetable commission price is 1 rupee). However, the lack of a separate market and price for perishable organic products like fruits, flowers, and vegetables posed a significant setback. As a result, many organic farmers limited their vegetable and fruit production to personal use rather than engaging in large-scale commercial selling.

The absence of a dedicated market and price for perishable organic products limited commercial production and favored self-consumption by organic farmers

Only a few inorganic farmers use their own products for consumption, especially paddy/rice. The majority of them prefer to sell their yields to agents or committees once the harvest is over and buy rice from local stores whenever needed. However, farmers growing vegetables, pulses, and oilseeds tend to use their own products. Consequently, the auto-consumption rate among inorganic farmers is approximately 12.5±15.73% of their own produced products.

Farmers with smaller land holdings (less than 1 to 1 acre) primarily grow crops to meet their family's food requirements. This scenario is observed among both organic and inorganic farmers. On the other hand, farmers with larger land holdings choose to grow crops for commercial purposes, allowing them to expand their opportunities by marketing their products, either with or without value addition, on a small or large scale. Larger landholding farmers, regardless of organic or inorganic practices, prioritize commercial production to market their products, as they were able to produce more. Marketing opportunities allow farmers with larger landholdings to explore and potentially expand their agricultural activities. Value addition, such as processing or adding value to products, may be considered by farmers engaged in commercial production. The distinction between auto-consumption and commercial production patterns highlights the different approaches taken by farmers based on their land size and market considerations.

Mode and Level of Marketing Organic products



Tab.14 Level of Marketing	Frequency	Percentage
Locally (Marginal/Tiny farmers)	33	66
Regional (Tiny/Semi-medium)	13	26
National (other states) (Medium)	3	6
Exports (Big farmers)	2	4

According to Figure 13, the most preferred marketing method among organic farmers is self-marketing. They prefer to sell their products directly to consumers, including those who approach them directly. The second preferred method is selling through their farmer networks in Organic Farmers Associations or Farmer Producer Organizations (FPOs) using platforms like WhatsApp messages and videos. Some farmers with a wide social network and a significant number of regular customers utilize social media platforms like Facebook and Instagram to popularize their products and find new customers. Additionally, organic farmers may utilize exhibition stalls, wholesalers, retailers, or processors to sell their agricultural goods.

Tab.14 provides insights into the level of marketing among different categories of organicfarmers. The table highlights the different levels of marketing engagement among farmers based on their scale of operations. Marginal to tiny farmers predominantly focus on local-level marketing, accounting for 66% of the sample. This indicates their limited scope and market reach. Tiny, semi-medium, and medium-scale farmers comprise 26% of the sample and have expanded their marketing efforts to regional markets, reaching a wider customer base. A smaller proportion of farmers (6%) engage in national-level

marketing, expanding their reach beyond their own state. This category typically consists of medium-scale farmers. Big farmers, representing 4% of the sample, have the capacity to export their products. Their broader marketing networks and higher production volumes allow them to tap into global markets.

The availability and utilization of self-marketing, Organic Farmers Associations, FPOs, and online platforms demonstrate the increasing use of technology and collective marketing initiatives by farmers across different scales. As farmers move from marginal/tiny to larger scales, their marketing opportunities and potential for reaching a wider consumer base increase significantly. The diversification of products among big farmers enables them to cater to various markets and consumer preferences.

Overall, organic farmers tend to prefer direct selling to consumers, aiming to minimize the involvement of middlemen or third-party sectors. This approach helps them maintain profit levels and the quality of their organic products. Retaining consumer trust and attracting new customers are crucial factors for organic farmers, and minimizing intermediaries plays a significant role in achieving these goals. The findings emphasize the importance of collective marketing efforts, technological platforms, and the role of organic farmers associations and FPOs in expanding market reach. As farmers progress from smaller scales to larger operations, their marketing capabilities and potential for growth expand, allowing them to tap into regional, national, and even international markets.

When it comes to inorganic farmers (Tab.15), the majority of paddy cultivators, followed by vegetable cultivators, rely on agents, brokers, merchants (middlemen), government committees, and nearby large markets as their primary marketing sources. This preference is driven by the possibility of quickly selling all their goods at a reasonably competitive price. By doing so, farmers can avoid unnecessary transportation expenses and reduce their workload, ultimately saving time and energy.

Tab.15 Mode of Marketing Inorganic products	Inorganic farmers (%)
Agents/Broker	43.82
Government Committee	27.05
Common Market	16.46
Processors (Rice mill/sugar mill)	5.06
Self or Direct selling	2.53
Retailers (small shops, woman selling from homes etc.,)	2.54
FPO's	2.54

Paddy cultivators constitute the majority among inorganic farmers, and they heavily rely on the identified marketing sources. Vegetable cultivators also rely on similar marketing sources, indicating a common trend among different types of inorganic farmers. The key reasons for inorganic farmers to prefer agents, brokers, and government committees are the convenience of selling all their goods at once and the possibility of obtaining a reasonable price. Avoiding transport expenditure, reducing workload, and saving time and energy are additional factors that influence the preference for the identified marketing sources. The convenience and efficiency of selling all goods at once are primary factors driving this preference. In contrast, self or direct selling, retailers, and FPOs play a smaller role in the marketing strategies of inorganic farmers.

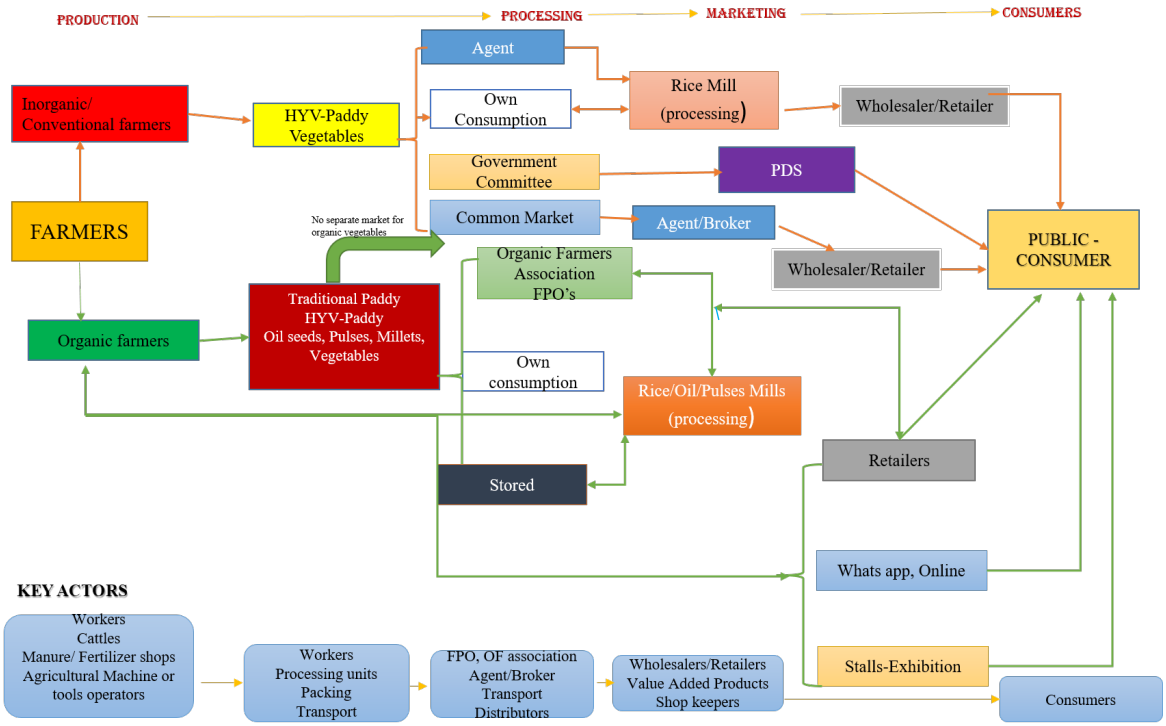
FOOD VALUE CHAIN OF AGRICULTURE PRODUCES

In the food value chain of agricultural products various active actors and sectors involved ~~during the~~ in both organic and inorganic agricultural processing are detailed in Figure 14, the following are the interpretation of the figure.

- ✓ Almost all organic farmers are involved in self-marketing or collaborating with organic farmers' FPOs.
- ✓ Organic farmers prioritize selling their products directly to consumers, bypassing intermediaries or agents.
- ✓ Organic products are stored and sold gradually or in small quantities, either through direct customer interactions or retailers.

- ✓ Only a few organic farmers are exclusively involved in the processing or value addition of raw organic products.
- ✓ Most organic farmers establish their individual marketing chains using mobile communication platforms like WhatsApp, voice calls, and rely on word-of-mouth referrals. They often depend on their friends, relatives, and fellow organic farmers for marketing. Occasionally, they participate in government or private exhibitions and organic agriculture festivals by setting up stalls.
- ✓ Organic perishable items like vegetables, fruits, and greens do not have dedicated marketing storage or facilities. Consequently, they are sold in the common market without significant added value or price.
- ✓ Organic products are not typically sold to government committees, public distribution systems (PDS), or wholesalers.
- ✓ Inorganic paddy is commonly sold directly to agents or government committees, and it subsequently reaches the public through channels like the PDS or private wholesalers.

Figure 14. Comparative Food Value chain of produces in organic and Inorganic farming practices in Pondicherry



Most of the organic farmers prefer for self-marketing and collaboration with organic farmers FPOs. This approach allows them to have more control over the marketing process and maintain direct relationships with consumers. By avoiding intermediaries or agents, organic farmers can potentially earn higher profits and ensure the quality and integrity of their products. The practice of storing and gradually selling organic products aligns with the limited supply and seasonal availability of certain items. This approach also enables farmers to maintain a steady flow of sales and reduce waste. The mention of a few organic farmers being involved in processing or value addition suggests a potential avenue for diversification and adding value to their products.

The reliance on mobile communication platforms and personal networks showcases the resourcefulness of organic farmers in establishing marketing channels. Participating in exhibitions and festivals allows

them to showcase their products to a wider audience and attract new customers. The absence of dedicated marketing facilities for organic perishable items poses a challenge for organic farmers. This can result in limited value addition and pricing options for these products.

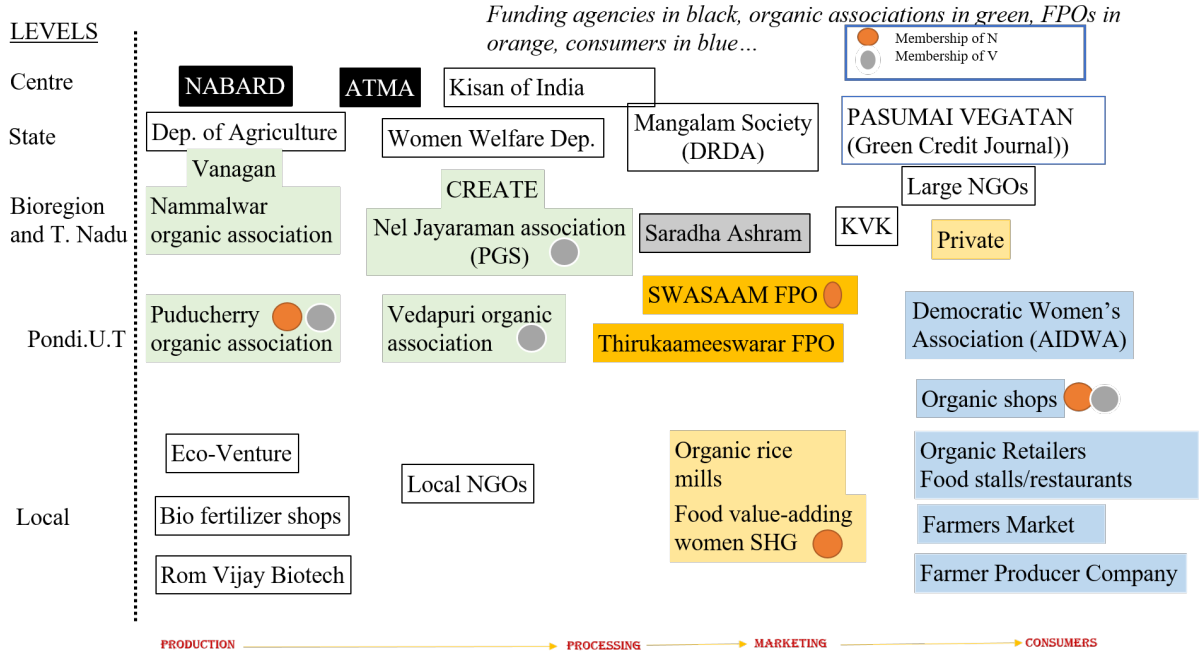
The exclusion of government committees, PDS, and wholesalers as marketing channels for organic products indicate a deviation from conventional marketing practices. Organic farmers ~~may~~ prioritize direct consumer sales and alternative distribution methods.

In contrast to organic farmers, inorganic paddy producers typically follow a more traditional marketing approach by selling their products to agents or government committees. The subsequent distribution to the public occurs through established channels like the PDS or private wholesalers.

Overall, the observations highlight the distinct marketing practices and preferences of organic farmers. They strive for direct sales, rely on personal networks and mobile communication, and face challenges regarding storage and marketing facilities for perishable items. These insights shed light on the strategies and considerations involved in marketing organic products in the agricultural sector.

ACTORS AND STAKEHOLDERS IN ORGANIC FARMING

Fig.15 **A CHART OF ORGANIC ACTORS AND STAKEHOLDERS IN PONDICHERRY REGION**



*Most of the organic farmers are members in both Namazhwars and Vaedapuri organic farmers association, due to some internal conflict they stared a separated organic farmers associations as Vaedapuri, yet they remain as non-active members in Namazhwars organic farmers association.

In Fig.15, the list of departments and associations under the production and processing categories are illustrated. These entities play a crucial role in guiding, supporting, and assisting farmers in various agricultural activities through training programs, workshops, and exposure trips. Their efforts are aimed at promoting organic farming, integrated pest management, biological pest control, and other practices within the farming community. There is a particular emphasis on empowering and improving the living standards of women farmers, with various resources provided such as training, funding, and necessary inputs.

Eco-venture, Eco pro, Rom vijay Biotech and other fertilizer shops are assisting the farmers by proving organic manures like EM, microbes (ie.azospirillam, phospo bacteria etc.,) and inspect farmers' fields occasionally and give needed guidance and suggestion in their farming and manure application activities.

Under the processing category, farmers utilize processing units such as rice mills and oil mills, as well as local mills or processing units, to upgrade and add value to their agricultural products. These processed goods are used for personal consumption and are also sold to others. Organic farmers associations and FPOs (Farmer Producer Organizations) play a significant role in facilitating agricultural inputs, guidance, certification, and the sale of farmers' products, both with and without value addition. They serve as intermediaries between farmers and customers, including other FPOs, farmers, and the general public.

Customers, as the final and important stakeholders, have the opportunity to obtain authentic organic products, with or without certification. They place their trust in the farmers and acquire products from various outlets, including direct purchases from farmers, farmers' markets, FPOs, organic farmers associations, organic stalls, organic food shops, and restaurants. By doing so, the public believes that they are purchasing genuine products that contribute to improving their own and their family's health. In return, they feel they are supporting the struggling farming community and promoting environmental protection by endorsing organic farming and organic farmers.

In whole it underscores the efforts of departments, associations, and organizations in providing guidance, training, and support to farmers. The involvement of processing units and local mills demonstrates the farmers' commitment to value addition and enhancing the quality of their agricultural products. The role of organic farmers associations and FPOs in facilitating certification, marketing, and sales highlights their importance as intermediaries in connecting farmers with customers.

PARTICIPATION IN SOCIAL ORGANIZATIONS

Almost all organic farmers actively participate in one or multiple social organizations or associations. These include the Agriculture department, KVK (Krishi Vigyan Kendra), farmers' help centers, Agriculture co-operative society/bank, PGS (Participatory Guarantee System)/Organic farmers association, ATMA (Agricultural Technology Management Agency), co-operative milk society, FPOs (Farmer Producer Organizations), and others such as NGOs and trusts. By being members of these organizations, organic farmers gain access to updated information about agriculture, government loans, schemes, and more. Additionally, they can establish contacts with other organic farmers in their region and beyond, thereby expanding their social network and sharing valuable information, such as government or private training programs and conferences.

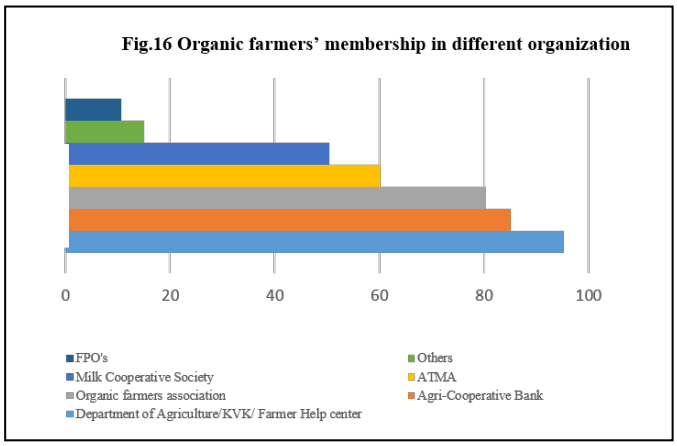


Fig.16 Organic farmers' membership in different organization

Organic farmers have a strong desire to gain recognition and establish themselves as reputable organic farmers. They seek to build a stable and influential network, earning recognition and approval from the public, government officials, and politicians. Formal meetings between farmers and government, societies, or associations are more common among organic farmers, while informal meetings are more limited.

In contrast, inorganic farmers typically participate in social organizations such as Agriculture co-operative societies/banks and co-operative milk societies, with rare involvement in other associations like ATMA. This indicates that their opportunities for social interaction with others are relatively

limited. General farmers, who use conventional farming methods, are more inclined towards informal meetings or gatherings in places like temples or agro-clinics. Their participation in formal meetings with government bodies, societies, or associations is limited, further restricting their opportunities for social interaction.

The Fig.16 highlights the active involvement of organic farmers in various social organizations and associations. It underscores the benefits they derive from such participation, including access to information, networking opportunities, and the possibility of recognition. The emphasis is placed on the organic farmers' pursuit of establishing a strong and influential network and their active engagement in formal meetings with government bodies and organizations.

The differences in social participation between organic and inorganic farmers, underscore the active engagement and networking efforts of organic farmers in their pursuit of recognition and influence.

Social Networking: Information seeking and Knowledge sharing extent

Most farmers actively seek information and knowledge through training programs and various sources. After receiving training in organic farming (Tab.15) from entities such as the Agriculture department, KVK, private training programs, NGOs, and online platforms (social media, YouTube channels, TV shows, and informative magazines like Pasumai Vikatan), interested and progressive farmers continue practicing organic farming. These progressive farmers then share their guidance and encouragement with other farmers and the public through various communication platforms like direct visits, phone calls, WhatsApp messages, etc.

Tab.15 Training Undergone by	Organic farmers (%)
KVK/Department of Agriculture	15.17
NGO's-Private Trusts	11.8
Private organic farming activist training	10.67
Magazines/Newspapers	10.11
IT (You tube, Face book etc.,)	7.87
Radio/TV	6.74

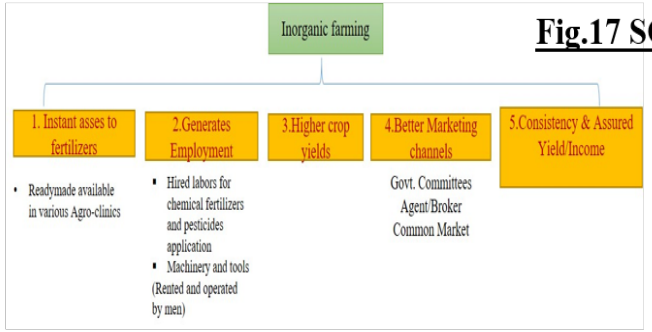
Organic farmers engage in various modes of communication (Tab.16) to connect with other farmers and share information. The most common mode of communication among organic farmers is through mobile phones, with a percentage of 21.56. They also value direct visits, where they personally meet and interact with other farmers, accounting for 20.64 percent. Formal meetings conducted by government, private organizations, and NGOs are also important, with 14.22 percent of organic farmers participating in such meetings.

Informal gatherings, such as functions, temple visits, and interactions at agro-agencies and shops, contribute to communication among farmers, representing 12.32 percent. Association meetings provide another platform for farmers to exchange ideas and information, with 12% percent of organic farmers participating. Furthermore, farmers benefit from communication during training programs, which accounts for 11.01 percent. National and international conferences serve as opportunities for organic farmers to expand their network and knowledge, with a percentage of 3.97.

Tab.16 Mode of Communication	Organic farmers (%)
Mobile phones	21.56
Direct visits	20.64
Formal meetings in Govt./Private/NGO's	14.22
Informal meetings (functions/temple/Agro- agencies_ shops etc.,)	12.32
Association meetings	11.93
Training programs	11.01
National/International Conferences	3.97

The result highlights the different modes of communication employed by organic farmers, emphasizing the importance of personal interactions, formal meetings, and both formal and informal gatherings. These communication channels enable organic farmers to share knowledge, experiences, and information, ultimately contributing to the growth and development of organic farming practices. By actively sharing their knowledge, the progressive farmers play a crucial role in disseminating information about organic agriculture practices, pest control, marketing, training programs, loans, and schemes. This knowledge-sharing contributes to practical and effective utilization of the information, benefiting the farmers and the general public in terms of economic, environmental, and health perspectives.

Fig.17 SOCIAL NETWORKING AND KNWOLEDGE SHARING AMONG ORGANIC FARMERS



Inorganic Farming

Not Interested

Department of Agriculture

KVK

NGO

Village Field officers Field Coordinators

Local Progressive Representative Farmer (Interested/ Talented)

FARMERS

Interested

IT (TV, Media, Magazines)

Organic Farming

Lack of Family and Financial Support

Ex-Organic farmers

Family and Financial Support

Successful Organic farmer

ATMA

Cooperative Milk Society

Informal Gathering (Functions, Temples etc.,)

Training Programs

FPO's Farmers Producers Organization

Organizations common for both organic and Inorganic farmers

Transfer of Knowledge

OTHER FARMERS and PUBLIC

Organic farming Benefits

1. Inexpensive
Least Expensive and locally available organic Inputs
Doesn't require costly external inputs

3.Eco-Friendly
Concept of Sustainability
Chemical/Pollution free Environment

5.Better Profit/Income
High demand for Organic products
Increased income by direct marketing.

2.Generates Employment
Labour Intensive Require more man power for weeding/ manure preparation
Machinery and tools (Rented and operated by men)

4.Healthiest and Nutritious food
Helps to prevent or controls several diseases and health dis-orders.

Organic farmers Association

NGO/Trust

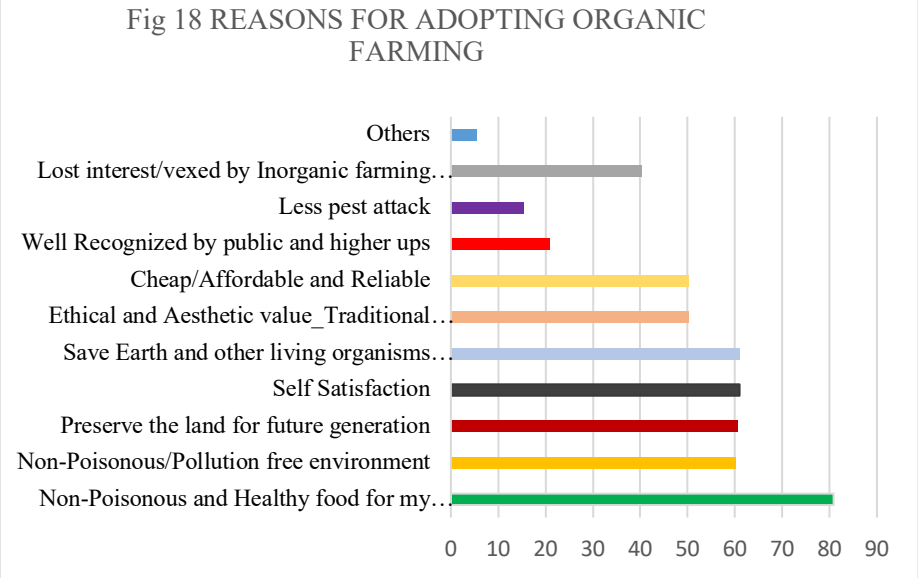
Stalls/Exhibitions

Associations and outlets for Organic farmers

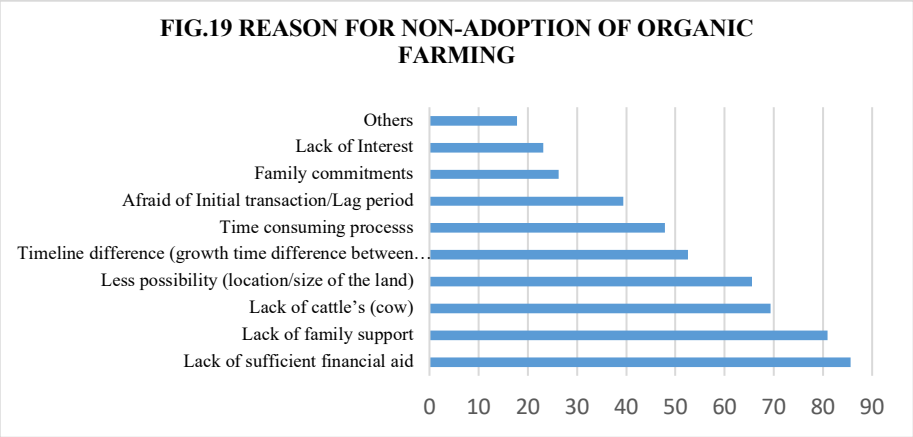
Transfer of Knowledge

Training → Reasons for Practicing and Non Practicing OF → Details of Membership & Sources of Knowledge sharing

REASONS FOR THE ADOPTION OF ORGANIC FARMING

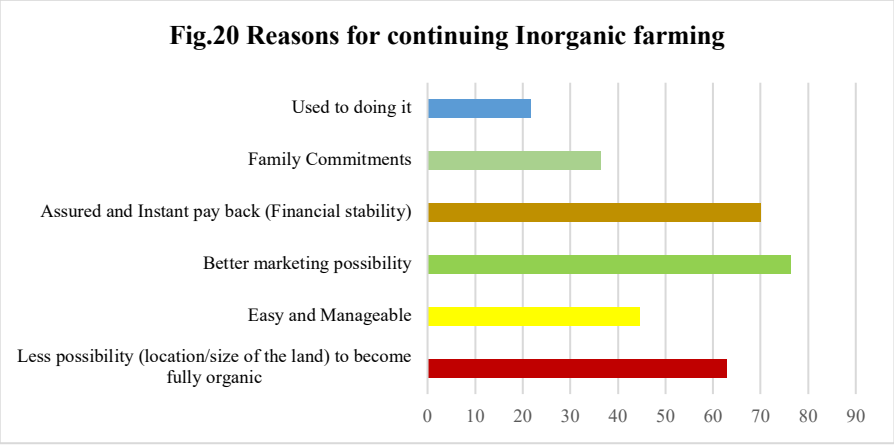


REASONS FOR NON-ADOPTION OF ORGANIC FARMING (Inorganic farmers view)



REASONS FOR CONTINUING INORGANIC FARMING

(Organic farmers doing inorganic farming in separate fields)



GENERAL PROBLEMS FACED BY FARMING COMMUNITIES DURING FARMING: PRODUCTION TO MARKETING

The table 17 highlights the various challenges faced by organic farmers, encompassing marketing, labor, pricing, natural factors, government support, pests, wildlife, storage, and transportation. Addressing these hindrances is crucial for promoting and sustaining organic farming practices.

Tab. 17 Hindrances faced by Organic farming	Farmers Responses %
Lack separate or proper marketing channel	24.6
Lack of man-power/labours	17.19
Lack of special prices	16.06
Natural Calamities	12.5
Lack of Government support and encouragement	10.94
More weeds or pests attack	8.36
Wild animals, birds	3.12
Lack of storage facilities	3.11
Robbing of crops	1.55
Transport problem	1.56
Others	1.01

Lack of separate or proper marketing channel: This is the most common hindrance reported by organic farmers, with a response rate of 24.6%. It suggests that farmers face challenges in finding dedicated marketing channels for their organic produce, which can affect their ability to reach target consumers and receive fair prices.

Lack of manpower/labor approximately 17.19% of farmers identified this as a challenge. Organic farming often requires labor-intensive practices, and the lack of available manpower can hinder farmers' ability to carry out necessary farming activities efficiently.

Lack of special prices: Around 16.06% of farmers reported that they encounter difficulties in obtaining fair and favorable prices for their organic products. This indicates that farmers may struggle to find markets or buyers who appreciate the value of organic farming and are willing to pay premium prices.

Natural calamities: Natural calamities, such as floods, droughts, or storms, were cited by 12.5% of farmers as a hindrance to organic farming. These events can lead to crop damage, loss, or reduced yields, impacting the overall productivity of organic farms.

Lack of government support and encouragement: 10.94% of farmers expressed that they face challenges due to insufficient government support and encouragement for organic farming practices. This can include a lack of subsidies, inadequate policy measures, or limited access to resources and training.

More weeds or pests attack: 8.36% of farmers identified increased weed or pest attacks as a hindrance to organic farming. Organic farming practices rely on natural methods for pest control, and if these methods prove ineffective, farmers may face difficulties in managing pests and protecting their crops.

Wild animals, birds: Approximately 3.12% of farmers reported that wild animals and birds pose a hindrance to organic farming. These animals can damage crops, leading to losses for farmers.

Lack of storage facilities: Both lack of storage facilities and robbing of crops were reported by a smaller percentage of farmers, at 3.11% and 1.55%, respectively. Insufficient storage facilities can impact the shelf life and quality of organic produce, while crop robbing refers to theft or unauthorized harvesting of crops.

Transport problem: Lastly, transport problems were cited by 1.56% of farmers. Difficulties in transportation can hinder the timely delivery of organic products to markets or buyers, impacting the freshness and quality of the produce.

The table 18 highlights the key problems faced by all farmers encompassing issues related to intermediaries, government support, labor, natural factors, theft, wildlife, transportation, storage, and processing delays. Addressing these challenges is crucial to improve the agricultural ecosystem and support farmers in their endeavors.

Tab. 18 Problems faced by general farmers	Farmers Responses (%)
Agent/Broker/Processors interference	24.55
Lack of Government support and encouragement (esp. Committee)	20.97
Lack of man-power/labours	16.13
Natural Calamities	14.9
Robbing of crops	6.46
Birds and animals attack	5.65
Transport problem	4.84
Lack of storage facilities	5.65
Others	0.85

Agent/Broker/Processors interference: This problem was identified by 24.55% of farmers. It suggests that farmers face challenges due to interference or exploitation by agents, brokers, or processors in the agricultural value chain. Such interference can lead to unfair pricing, delays in payments, or other unfavorable practices that affect farmers' profitability.

Lack of Government support and encouragement (especially Committee): Approximately 20.97% of farmers reported a lack of government support and encouragement, particularly in the context of committees. This could include insufficient assistance, inadequate policies, or limited access to resources and incentives provided by government committees that impact farmers' operations and livelihoods.

Lack of man-power/laborers: Around 16.13% of farmers identified a lack of manpower or labor as a significant problem. This shortage can impede farming activities and hinder the efficient management of agricultural operations.

Natural calamities: Natural calamities, such as floods, droughts, or storms, were reported by 14.9% of farmers as a problem. These events can lead to crop damage, loss, or reduced yields, affecting farmers' productivity and income.

Robbing of crops: Approximately 6.46% of farmers mentioned the issue of crop robbery. This refers to theft or unauthorized harvesting of crops, resulting in financial losses for farmers.

Birds and animals attack: Around 5.65% of farmers reported challenges related to birds and animals attacking their crops. Such attacks can cause significant damage and result in reduced yields for farmers.

Transport problem: Approximately 4.84% of farmers identified transportation issues as a problem. Difficulties in transportation can lead to delays in delivering agricultural products to markets or processing units, impacting the freshness and market value of the produce.

Lack of storage and drying yard facilities: A lack of storage facilities was reported by 5.65% of farmers. Inadequate storage options can lead to difficulties in preserving harvested crops, reducing their shelf life and quality like shortage of machines, tools etc., also include region-specific challenges or unique issues faced by individual farmers.

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THE PUBLIC WILL PREFER ORGANIC PRODUCTS IF…….

The table 19 emphasizes the importance of factors such as availability, awareness, affordability, and variety in influencing consumers' decisions to choose organic products. It indicates that consumers are more likely to opt for organic options when they are easily accessible, when consumers are well-informed about organic practices, and when the products are reasonably priced. This insight can be valuable for farmers, producers, and retailers in understanding consumer preferences and tailoring their marketing strategies accordingly.

Easily available: This reason was cited by 88% of the respondents (farmer's), indicating that the easy availability of organic products is a significant factor in consumers' decision-making process. The accessibility of organic products allows consumers to conveniently choose and purchase them, increasing their preference for organic options.

More awareness and understanding of organic products: Approximately 86% of respondents reported that increased awareness and understanding of organic products influenced their choice. This suggests that consumers who are knowledgeable about the benefits of organic farming methods, such as reduced chemical use or environmental sustainability, are more likely to opt for organic products.

Tab. 19 Reasons	Percentage
Easily available	88
More awareness and understating of organic products	86
Affordable	66
Assortment or variety	16
Others	14

Affordable: About 66% of respondents considered affordability as a reason for choosing organic products. This implies that consumers perceive organic products to be reasonably priced and within their budget, making them a viable option for purchase.

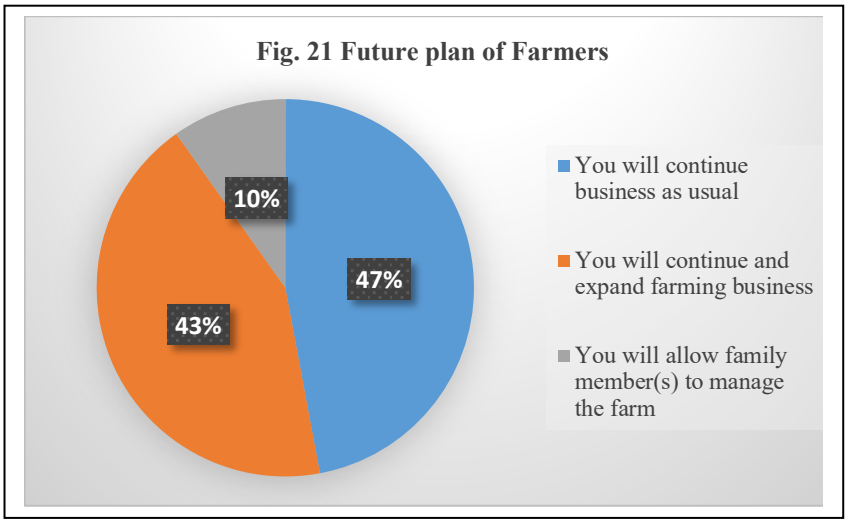
Assortment or variety: A smaller percentage, 16%, mentioned assortment or variety as a factor influencing their choice of organic products. This suggests that consumers appreciate the availability of a diverse range of organic options, allowing them to choose from different types of products.

Others: The remaining 14% of respondents provided other reasons such as quality, taste, personal preferences, health concerns, ethical considerations, or recommendations from others.

FUTURE PLAN OF FARMERS

The Fig.21 presents the future plans of farmers, indicating the percentage of farmers who responded to each option.

You will continue business as usual: The majority of farmers, accounting for 47.06%, expressed their intention to continue their farming business without significant changes. This suggests that these farmers are satisfied with their current operations and plan to maintain the status quo in terms of their farming practices and scale of production.



You will continue and expand farming business: A significant percentage, 43.13%, expressed their plans to continue farming and expand their operations. This indicates that these farmers have a positive outlook and aim to grow their farming business, potentially increasing the scale of production, diversifying their crops, or exploring new markets.

You will allow family member(s) to manage the farm: A smaller percentage, 9.81%, indicated their intention to hand over the responsibility of managing the farm to family members. This suggests that these farmers may be considering retirement or a reduced role in day-to-day farming activities, passing on the farm's management to the next generation.

The figure provides insights into the future plans of farmers and highlights their diverse perspectives. While a significant portion intends to continue and expand their farming business, some farmers may choose to maintain their current operations without major changes or involve family members in managing the farm. These future plans are influenced by factors such as personal goals, financial considerations, and the availability of resources. Understanding farmers' future intentions can be helpful for policymakers, agricultural organizations, and other stakeholders in providing appropriate support, guidance, and resources to farmers based on their specific needs and goals.

CONCLUSION

The Green Revolution of the 1960s transformed agriculture in India by promoting the use of hybrids, high-yielding seeds, and fertilizers to increase food production and ensure food security. However, this approach came with significant drawbacks. It led to the depletion of soil fertility, environmental pollution, and the accumulation of toxic elements. These consequences pose a threat to all living organisms, including humans, who are at the top of the food chain. Furthermore, changes in lifestyle and food habits have contributed to increased health disorders and diseases. Organic farming presents a reliable solution to address these issues while maintaining ecological balance and long-term resource sustainability. As per the report most of the successful organic farmers are those who possess a better financial stability and marketing possibilities, making it difficult for farmers with no or less continuous cash flow to adapt or continue organic farming.

The demand for organic foods has been steadily rising, and the organic food industry is experiencing rapid growth and high profitability. Ensuring food security for the growing population while preserving natural resources for future generations is essential. Prioritizing environmental sustainability and consuming non-toxic nutritious foods can help prevent diseases and disorders caused by toxic residues in the body.

However, it is true that organic products have traditionally been priced higher than ordinary products, making them more accessible to higher economic social class individuals such as central/state/professional workers with good financial stability. These individuals are more willing to invest in their health by choosing nutritious, non-toxic foods. On the other hand, lower and middle economic class individuals may prioritize satisfying their basic needs and saving money, leading them to opt for lower-priced food commodities available in the market or through Public Distribution Systems (PDS). This disparity in access to organic products highlights an aspect of "food democracy," where those with better financial stability have greater access to healthier food choices, while the less fortunate may prioritize food security over quality.

Organic farming offers a harmonious and balanced approach between the environment and the livelihoods of farmers, mitigating the risks associated with conventional agricultural practices. However, organic farmers still face numerous challenges throughout the farming process. To encourage more farmers to adopt organic farming, solutions need to be found for the identified problems, such as the lack of support prices and proper marketing infrastructure for organic crops and products. Promoting certification systems, participatory guarantee systems, Farmer Producer Organizations (FPOs), and local organic farmers' groups can help expand organic farming practices and increase awareness among consumers.

Addressing these aspects will contribute to the continued growth and success of organic farming, benefiting both farmers and the environment. Encouraging farmers without middlemen and implementing better marketing strategies will likely lead to increased production of organic products, resulting in more availability in the market and potentially reducing prices. This, in turn, could make organic foods more affordable to individuals across all economic classes, ultimately promoting food democracy and improving food security at every level of society, contributing to overall societal health and efficiency.

In conclusion, a shift towards organic farming and consumption is beneficial for the environment, public health, and the livelihoods of farmers. However, ensuring food democracy and food security for all economic classes will require addressing the pricing disparity and improving access to organic products through supportive measures and awareness campaigns. Collaboration among stakeholders, including farmers, consumers, and policymakers, will play a crucial role in fostering a sustainable and healthier future for all.

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