Economics of Organic Agriculture Through Farmer Producer Organisation: A Case Study from Maharashtra

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Abstract

High production cost, low yields, limited market access and high transaction costs remain major hurdles in the adoption of Organic Agriculture (OA). However, OA is important in terms of health benefits as well as for the soil and sustainability of agriculture. One of the measures to overcome the adverse economics of OA is to use a collective mechanism such as the Farmer Producer Organisation (FPO) which can reap the benefits of economies of scale and better bargaining power. In light of this, an attempt is made in this paper to undertake the case study of an FPO, namely, the Real Orgo Farmer Producer Company located in Ahilya Nagar, Maharashtra. The study focuses on the economic viability of organic lemons, organic jowar and organic onions, the three crops supported by the FPO. The findings show that organic cultivation is more profitable than conventional only in case of lemon and onion crop. In case of jowar, the profitablity of conventional jowar is more than three times that of organic jowar. For all the three crops i.e. organic lemon, organic jowar and organic onions, sale through FPO is better for farmers. Increase in profitability due to sale through FPO is 8.58 percent, 15.15 percent and 21.28 percent for organic lemon, organic jowar and organic onions respectively. Thus among the three, organic onion is the most remunerative followed by lemon. Thus, the FPO can be used as an instrument to promote increased production of organic crops especially onions.

Keywords: *Farmer Producer Organisation, Organic Agriculture, Maharashtra, Conventional Cultivation*

1. Introduction :

India's agricultural landscape is mostly composed of small and marginal farmers (Dev, 2012; Singh, Kumar, et al, 2002). These farmers face many obstacles such as fragmented landholdings, limited access to credit and technology, volatile market prices, and vulnerability to climatic uncertainties (World Bank , 2008; Thapa and Gaiha, 2011). These disabilities culminate in distress, and farmers struggle to survive, as is evidenced by the increasing number of farmer suicides, even in relatively developed states like

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Maharashtra (Government of Maharashtra, 2021). Literature indicates that farmers' debt is the primary cause of this distress (Mohanty and Shroff, 2004; Reserve Bank of India, 2006). In addition there are other vulnerabilities too, for instance, deterioration of economic status, crop failure, burden of daughters or sisters marriage etc., which increase the farmer's distress (Mishra, 2006).

To overcome the challenges encountered by small and marginal farmers in India, numerous strategies have been put forth. For instance, co-operative credit societies, contract farming, market committees, local mundi's, etc. were initiated for the betterment of small and marginal farmers. However, with time, these structures were plagued with several lacunae, like political interference and domination by special interests groups (Shivamaggi, 1993; Government of India, 2000), under representation and exclusion of small and marginal farmers from these structures (Sharma, 2010; Pritchard and Connell, 2011).

Consequently, in order to connect small and marginal farmers with the agricultural markets, the Government of India, through the Small Farmers' Agribusiness Consortium (SFAC) in the Ministry of Agriculture, ran a Farmer Producer Organisation (FPO) pilot programme from 2011 to 2012 (Government of India , 2013). This mechanism offers a collective platform, especially for small and marginal farmers, to pool resources, enhance market access, and strengthen their negotiating capacity (Singh and Vatta, 2019; Roy, et al., 2020).

FPOs are typically seen to be engaged in the procurement, processing, and marketing of various agricultural commodities such as cereals, pulses, oilseeds, fruits, vegetables, spices, and dairy products. Additionally, FPOs often venture into niche areas like organic agriculture, floriculture, apiculture, and livestock rearing. Thus, by diversifying their focus across multiple agricultural segments, FPOs not only cater to the diverse needs of farmers but also contribute to the resilience and sustainability of rural economies. FPOs not only empower farmers economically but also foster social cohesion and sustainable agricultural practices.

Organic Agriculture (OA) is important in terms of the health of the consumers as well as the soil and sustainability of agriculture. Consequently OA is one such niche area which needs attention, support and expansion. However, the OA sector is also plagued with numerous challenges such as high cost of production, low yield relative to conventional agriculture, pest infestation, and problems in getting certification (Narayanan, 2005; Rao, 2017). In addition, farmers face significant challenges in obtaining fair prices

for organic products due to a lack of direct linkages with customers (Khurana et al, 2020), and as a consequence, majority of the times, organic products fetch the same price as non-organic products (Singh et al, 2023). For instance, a report by the Chaudhary Charan Singh, National Institute of Agriculture Marketing (CCSNIAM), notes that despite having organic certification, the farmers were unable to get fair prices for organic ginger and turmeric in Sikkim (CCSNIAM, 2016-17). Consequently, the economic feasibility of OA poses a challenge, particularly for small and marginal farmers, thereby impeding the wider adoption of OA in India. In light of these challenges, it would be interesting and useful to know if the FPO mechanism can provide a potential solution for the problems of individual farmers engaged in OA. In pursuance of the same we have scrutinised the literature on Farmer Producer Organisations or Farmer Producer Companies (FPCs) engaged in organic agriculture.

1.1 Review of Literature:

Various studies by individual scholars and development institutes like the National Bank for Agricultural and Rural Development (NABARD) indicate that FPOs provide farmers a forum to combine resources, exchange expertise more efficiently, access markets, and strengthen their negotiating position throughout the agricultural value chain (NABARD, 2019; Mondal, 2010). Furthermore, a study by Rondot and Helene-Collion, (2001) suggests that FPO's are occasionally asked to make up for institutional failures in the public or private spheres. According to them members in particular frequently view the FPOs as a substitute for public agencies, private economic operators, and others in times when these fall short of their expectations. In addition, when the government steps away or the commercial private sector takes a while to step up, FPOs frequently step in to fill the void, thus extending the much needed support to the vulnerable farmers.

Manaswi et al (2019) conducted a primary survey of 60 farmers growing organic chillies and associated with FPO and 60 other farmers who were non-members and were growing chillies using conventional cultivation. The study was done in 2018 in 2 districts of Telangana. Their result suggests that the cost of cultivation of organic chillies for member farmers of the FPO was 9.06 percent lower compared to non-members. Their results also indicates that despite lower yields of organic chillies the FPO members could reap nearly 13.86 percent higher gross returns due to assistance in technological issues and market accessibility by the FPO. (Manaswi, et al., 2019, p.1852).

In a study based in four districts of Sikkim, Gurung et al (2024) surveyed 560

organic farming households; of which 280 were FPO members and remaining 280 were non-members. They used propensity score matching (PSM) technique to understand the impact of FPOs on net returns, profits and return on investments. Their results show that profit margin, net returns, and return on investment are all positively and significantly impacted by FPO participation. For instance, their findings indicate that the yearly net returns of FPO members were, on average, greater than those of non-members by ₹ 7,254 to ₹ 8,133. In addition, the results also suggest that FPO members reap a higher return on investment of 4.6 to 4.8 percent and a higher profit margin of 8 to 8.4 percent. The major crops supported by the FPOs are large cardamom, ginger, turmeric, orange, buckwheat, pulses and fruits and vegetables.

2. Objectives:

The brief review of literature undertaken here indicates that FPOs or Farmer Producer Companies (FPCs) do help small and marginal farmers reap higher gross returns as compared to those farmers who are non-members of the FPO and who sell their produce on an individual basis. These higher returns accrue because FPOs membership helps farmers to reduce the transaction costs and get technical assistance. The studies reviewed by us pertain to Sikkim and Telangana and we did not find any study relating to OA through FPO in Maharashtra. Given this we would like to see if FPO is equally effective across different crops and different regions. For this we have undertaken a study of an FPO with the following objectives:

1. To understand the comparative economics of conventional and organic agriculture
2. To analyse the impact of an FPO on the economics of Organic Agriculture

3. Methodology:

This study uses a case study methodology focusing on a single FPO. The FPO selected for this study is 'Real Orgo Farmers Producer Company Limited', a representative organization known for its significant role in supporting farmers to grow organic products, especially lemons, jowar and onions. It is located in Ahilya Nagar (formerly Ahmadnagar) district of Maharashtra, India. This producer company was chosen because it is one of the few that works towards organic agriculture in Maharashtra.

Semi-structured interviews were conducted with the management (chairperson) of the producer company. The interview was conducted on 9th June, 2024.[4]

[4] Informed consent from the chairman was obtained before the interview.

The paper is structured as follows: In Section 1, we describe the working of Real Orgo Farmer Producer Company. In Section 2, we present the economics of organic agriculture under Real Orgo Farmer Producer Company for lemons, jowar and onions. Section 3 presents our findings and concluding remarks.

4. Results and Findings Based on Three Case Studies:

The results of the study in terms of benefits received through FPO membership for three crops, viz. Organic lemon, organic jowar and organic onions reveal that FPO can be an important instrument to market the produce and enable the farmers to benefit from price advantage and therefore higher profits.

4.1 Case Study of Real Orgo Farmers Producer Company Limited:

In 2006 Mr. Sambhaji Ghute along with five other farmers started group farming in Ghutewadi village of Shrigonda Taluka in Ahilya Nagar (formerly Ahmadnagar) district of Maharashtra. They were engaged in the cultivation of organic jowar (Phule Chitra variety) and continued group farming for seven years. However, more farmers were not joining this informal group farming initiative because the group faced problems of marketing and fetching fair prices for their produce. Thus, to overcome these challenges the 6 farmers established Real Orgo Farmer Producer Company Ltd. on 13th August, 2014. At the time of establishment of the FPO i.e. August 2014 the FPO had 525 members and as on 9th June, 2024 the membership has grown to 836 members from 38 different villages.

The primary purpose of Real Orgo is to aid farmers in producing organic jowar (Phule Chitra variety), lemons, and onions. In order to become a member of Real Orgo FPC, the farmers have to pay ₹ 1100; of which ₹100 is charged as membership processing fees, and the rest is converted towards the shares of the producer company.

The Real Orgo Farmer Producer Company's organisational structure places the foundational unit at the village level, where farmers are grouped into specific farmers' groups. Each of the farmer group has 20 farmers and there are 41 such farmer groups, comprising a total of 836 members. Each of these farmer groups chooses one director, who then joins the board of directors. The 41 members of board of directors supervise the strategic direction and decision-making procedures of the FPO. Their tenure ranges from a minimum period of one year and a maximum period of five years.

The executive body is headed by a CEO, who takes charge of the day-to-day operational management of the FPO and the executive body is advised by the

board of directors. The General Body of the FPC, which is normally made up of all registered farmers of the FPC, is at the top of the organisational structure and is the final decision-making authority. Apart from the Annual General Meetings (AGM), the member farmers meet monthly and discuss their problems and learnings.

Table 1: Annual Turnover of Real Orgo (in Lakh ₹)

Year	Annual Turnover
2018-19	₹ 30,00,000
2019-20	₹ 20,00,000
2020-21	₹ 30,00,000
2021-22	₹ 42,00,000
2022-23	₹ 100,00,000

Source: Primary Survey

A synoptic account of the turnover of Real Orgo has been depicted in Table 1. It is evident that Real Orgo has grown consistently over the last five years; however, they saw a fall in their turnover during the COVID-19 pandemic. Nevertheless, it's interesting to note that in 2022-23, its turnover has grown by five times as compared to 2019-20.

Working of Real Orgo:

To get a good price and market for organic lemon, jowar and onions, Real Orgo procures these products from members and undertakes cleaning, sorting and grading procedures. This ensures maintenance of quality and consistency of packaging which helps in attracting better prices. For instance, onions are graded at 40 millimetres, 50 millimetres and 60 millimetres size categories and are sold according to the demand from the market. Additionally, for Jowar they check the permissible moisture content before accepting the farmers produce for sale. Furthermore, the packaging materials are used as per the demand from the buyers. For instance, grains are packed in jute bags, whereas onions and lemons are packed in plastic bags which ensure brand value creation.

In addition the FPO also supervises its members' agriculture practices to ensure sustainable organic cultivation. The management members visit the farms and monitor the agricultural practices of the members. Majority of the problems are solved or training is given in the group discussions which the

FPO undertakes every month. Moreover experts from Mahatma Phule Agriculture University, Rahuri and officials from the state agriculture department visit the FPO often to guide the member farmers about sustainable organic cultivation practices.

Training for Members:

Real Orgo promotes organic agriculture practices by training farmers in input selection, organic manure and pesticide application, sowing and harvesting techniques and timelines, and motivational visits. For instance, in 2022 the member farmers were taken to Jalgaon district to learn the process of making organic garlic and onion powder. Real Orgo arranges workshops and visits to other districts to expose farmers to new and different agricultural practices. For instance, scientists and professors from Mahatma Phule Agriculture University, Rahuri are invited for guidance on new seeds and organic and sustainable agriculture practices. Furthermore, Real Orgo also helps farmers obtain certifications and informs them about government initiatives for organic agriculture, thereby helping them in strengthening the credibility of their products. These exercises enhance the knowledge and skills of the member farmers and assist them in implementation of sustainable organic agriculture so as to ensure optimal output.

Market Access and Value Chain:

Earlier FPOs were not issued marketing licences by government to market agriculture produce under their brand name and packaging. They could only procure the produce and sell it in unbranded form. However, Real Orgo FPC was amongst the first few FPC's which procured such a marketing licence from government of Maharashtra to market their organic products under their brand name.

This enabled Real Orgo to market their produce through various channels such as (a) government through the National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED), (b) private traders and stockist within Shrigonda taluka, (c) Agriculture Produce Market Committee (APMC) markets of Pune and Mumbai district and (d) Nineteen retail outlets of their own known as 'CopShop' located in residential societies in Mumbai (Powai).[5]

[5] They specifically targeted only those societies which had 1000 or more residential units. However, Real Orgo was forced to close all of the retail locations i.e. their 'CopShop' retail stores due to unpredictability of demand following the COVID-19 pandemic.

Membership and the Area under Cultivation:

As far as the impact of Real Orgo on farmers is concerned the numbers of member farmers have remained stagnant over the period from 2021-22 to 2023-24, which stands at 836 member farmers as on 9th June 2024. Furthermore, if we scrutinise the area under cultivation the area under cultivation for organic lemon remains stagnant at 988.42 acres between the periods 2021-22 and 2023-24. On the other hand, the area under cultivation for jowar has gone down by 247.10 acres. It was 2965.26 acres in 2021-22 and has declined to 2718.16 acres in 2023-24. However, the area under cultivation for organic onion has continuously increased from 7413.16 acres in 2021-22 to 11119.74 acres in 2022-23 and 11861.06 acres in 2023-24. This indicates that organic onion cultivation could be giving better returns than other two crops.

Table 2: Area under cultivation of Organic Lemon, Jowar and Onion

Crop / Year	Area Under Cultivation* (Acres)		
	2021-22	2022-23	2023-24
Lemon	988.42	988.42	988.42
Jowar	2965.26	2718.16	2718.16
Onion	7413.16	11119.74	11861.06

Note: * This refers to the area under cultivation of all members.

Source: Primary Survey

4.2 Economics of Organic Agriculture through FPO

To understand the economics of organic cultivation, we have examined the data on the cost of production per acre; yield and the market price of three crops supported by Real Orgo —lemon, jowar and onion. This is examined for both, the conventional and organic agriculture methods under an FPO.

Under the cost of production, four main components of cost of production namely labour, seeds, fertiliser, pesticides and irrigation are considered. For the analysis of price we focus on the price differential that exists between organic and conventional products and also present the prices and the difference in the prices if the products are sold directly to the market by the farmer vis-à-vis their prices if sold through the FPC.

4.2.1 Economics of Organic Lemon Cultivation

Lemon crop is planted during July to August every year while the produce is

harvested during November to March. The lemon crop spacing is 4 feet by 4.5 feet and usually in the first two years of planting intercropping is possible primarily because the tree starts giving out fruits in 3 to 4 years time after plantation. An interesting point to note here is that for both organic and conventional lemon cultivation methods, no chemical pesticides or fertilisers are applied because the application of these leads to the death of the lemon shrub. In case of organic lemon cultivation organic manure or cow-dung is applied to the farm. On the contrary in case of the conventional method, bio-fertilisers are applied though drip irrigation.

Cost of Cultivation

In Table 3 we have presented the per acre production cost of lemon in Shrigonda, Maharashtra. We note that, compared to the conventional method, the production cost of organic lemon is much higher. Notably, for organic lemon cultivation, the cost o f organic manure is five thousand rupees per tractor trolley and normally 8 such tractor trolleys per acre are required. This escalates the cost of organic production of lemons to forty thousand rupees.

Table 3: Per Acre Cultivation Cost of Lemon, Shrigonda, Maharashtra, 2023-24

Production Input	Production Cost (₹) per Acre	
	Organic	Conventional
Labour	20,000	6000
Seeds	300	300
Fertilisers	40,000	1000
Pesticides	N.A	N.A
Irrigation	15,000	40,000
Total	75,300	47,300

Source: Primary Survey

The cost of production of organic lemon is nearly 1.6 times higher compared to the conventional. This difference is because of the huge labour costs involved in the application of manure in organic cultivation compared to conventional methods where the bio-fertilizers are usually given through drip irrigation.

Yield

The yield per acre of organic and conventional lemon is presented in Table 4 below. The comparison of yield per acre for organic and conventional lemon shows that for the organic method the yield remains 200 kilograms lower than the yields of the conventional lemon which is about 3.84 percent lower yields per acre.

Table 4: Yield Per Acre of Lemon, Shrigonda, Maharashtra, 2023-24

Cultivation Method	Yield Per Acre (Kgs)
Organic Lemon	5000
Conventional Lemon	5200

Source: Primary Survey

Price

The data presented in Table 5 illustrates the price differential that exists between organic and conventional lemon. Despite the higher price for organic lemon, farmers fail to realise this price because of the obstacles caused by their restricted ability to bargain on an individual basis.

Table 5: Price Per Kilogram of Lemon in Shrigonda, Maharashtra, 2023-24

Cultivation Method	Price per Kg (June, 2024)
Organic Lemon	₹ 60
Conventional Lemon	₹ 40

Source: Primary Survey

The data presented in Table 6 depicts the price that farmers get when they sell their produce directly to the market vis-à-vis the price they get if they sell their produce through Real Orgo. It is evident that for organic lemons, the farmers can get 6 percent more prices per kilograms through the aid of Real Orgo compared to selling them individually in the market.

Table 6: Price Per Kilogram Realised by Farmer For Organic Lemon, 2023-24

Channel of Sale	Price per Kilogram
When Sold Directly by Individual Farmer	50
When Sold Through Real Orgo	53

Source: Primary Survey

When the Real Orgo member gets ₹ 53 per kilogram for organic lemon the actual market price realised by Real Orgo is higher at ₹ 60 per kilogram. Real Orgo makes some deductions from this. These deductions are shown in Table 7.

Table 7: Farmer's Share of Final Price of Per Kilogram of Organic Lemon Shrigonda, Maharashtra (2023-24)

Price Received and Deductions Made	Share	
	In ₹	In %
Price received by Real Orgo	60.00	100.00
1. Weight loss and Cleaning	1.00	1.66
2. Transportation and Storage	3.00	5.00
3. Packing, Marketing and Overhead Costs	2.00	3.33
4. Deductions for Tax Liabilities	0.30	0.50
5. Other Miscellaneous costs	0.70	1.16
Price Paid to Member Farmer	53.00	88.33

Note: It is difficult to ascertain the farmers share in the final selling price of the Organic Products because the procurement prices vary substantially based on demand and supply, seasonality and other relevant factors. The percentage shares of these also vary, however the share of taxation remains the same.

Source: Primary Survey

Profitability of Organic Lemon Cultivation

The revenue and profits per acre of organic lemon has been depicted in Table 8, which suggests that farmers reap better revenues when they sell their organic produce through the aid of an FPO. Profits per acre are ₹ 15000 more if farmers sell it through the help of an FPO compared to selling it directly to the market on an individual basis. Despite higher prices for organic lemon in the market the farmers selling directly to the market fails to reap the higher

prices because their costs incurred on various processes like transportation, cleaning , sorting, grading etc remains relatively high compared to an FPO. In addition, due to low quantities of output small farmers lack the bargaining power in selling of output.

Table 8: Profitability of Organic Lemon, Shrigonda, Maharashtra, 2023-24

Method	Yield per Acre (Kg)	Price per kg (₹)	Revenue per Acre (₹)	Cost Per Acre (₹)	Profits Per Acre (₹)
Organic sold through FPO	5000	53	2,65,000	75,300	1,89,700
Organic sold directly by Farmer	5000	50	2,50,000	75,300	1,74,700
Conventional	5200	40	2,08,000	47,300	1,60,700

Source: Author's Calculations based on data collected from Primary Survey

4.2.2 Economics of Organic Jowar Cultivation

The second crop which Real Orgo procures and markets is organic jowar. Jowar cultivation happens in both the seasons i.e. Kharif (July- October) and Rabi (October-March). For both the organic and conventional methods of jowar cultivation weeding and hoeing is essential. Jowar is considered to have good draught tolerance. An interesting point to note here is that despite being one of the crucial staple food grains of India, Jowar is also being used as an input in non-food products like adhesives, starch and paper production.

Cost of Cultivation

In Table 9 below we have presented the cost of production of jowar through organic and conventional methods of cultivation. In general, the total cost of production for jowar is marginally higher for the organic method of cultivation as compared to conventional.

Table 9: Per Acre Cultivation Cost of Jowar in Shrigonda, Maharashtra, 2023-24

Production Input	Production Cost (₹) per Acre	
	Organic	Conventional
Labour	13,000	12,000
Seeds	600	400
Fertilisers	600	120
Pesticides	600	1200
Irrigation	15,000	15,000
Total	29,800	28,720

Source: Primary Survey

Yield

The yield per acre of organic and conventional jowar differs substantially. Table 10 indicates that organic method of cultivation gives only half of what the conventional method gives per acre.

Table 10: Yield Per Acre of Jowar in Shrigonda, Maharashtra, 2023-24

Cultivation Method	Yield Per Acre (Kilograms)
Organic Jowar	1000
Conventional Jowar	2000

Source: Primary Survey

Price

If we look at the price per kilogram of organic and conventional jowar, the difference is substantially higher as can be seen from Table 11. Organic jowar gets ₹10 or 23.80 percent higher price compared to conventional jowar.

Table 11: Price per Kilogram of Jowar in Shrigonda, Maharashtra, 2023-24

Cultivation Method	Price per Kilogram
Organic Jowar	₹ 52
Conventional Jowar	₹ 42

Source: Primary Survey

Given the price differentials the farmers can attract better prices if they sell their produce through Real Orgo. This has been illustrated in Table 12 where we can see that organic jowar can fetch 4.65 percent higher price per kilograms through the aid of a Real Orgo compared to selling them individually in the market.

Table 12: Price Per Kilogram Realised by Farmer For Organic Jowar 2023-24

Channel of Sale	Price Per Kg
When Sold Directly by Individual Farmer	43
When Sold Through Real Orgo	45

Source: Primary Survey

We have also analysed how much of the selling price of organic products goes to the farmer by examining how the Real Orgo's costs are distributed across different processes in the case of organic jowar. When the Real Orgo member gets ₹ 45 per kilogram for organic jowar the actual market price realised by Real Orgo is higher at ₹ 52 per kilogram. Real Orgo makes some deductions from this. These deductions are the cost incurred by Real Orgo on various processes, including cleaning, transportation, and storage, as well as government taxes. The deductions and the prices paid to the member farmers are depicted in Table 13 below.

Table 13: Farmer's Share of Final Price of Organic Jowar Shrigonda, Maharashtra, 2023-24

Price Received and Deductions Made	Share	
	In ₹	In %
Price Received by Real Orgo	52.00	100.00
1. Weight loss and Cleaning	1.00	1.92
2. Transportation and Storage	3.00	5.76
3. Packing, Marketing and Overhead Costs	2.00	3.84
4. Deductions for Tax Liabilities	0.26	0.50
5. Other Miscellaneous costs	0.74	1.45
Price Paid to Member Farmer	45.00	86.53

Note: It is difficult to ascertain the farmers share in the selling price of the Organic Products because the procurement prices vary substantially based on demand and supply, seasonality and other relevant factors. The percentage shares of these also vary, however the share of taxation remains the same.

Source: Primary Survey

Profitability of Organic Jowar Cultivation:

The revenue and profits per acre of organic jowar has been depicted in Table 14, which shows that farmers reap better revenues when they sell their organic produce through the aid of an FPO. However, in case of jowar this difference is marginal i.e. ₹ 2 per kilogram. Despite higher prices for organic jowar in the market the farmers selling directly to the market fail to reap the higher prices because their costs incurred on various processes like transportation, cleaning, sorting, grading etc remains relatively high compared to an FPO. Thus, farmers reap ₹ 2,000 more per acre by selling it through the aid of an FPO compared to selling it on an individual basis. However, given the profits per acre of conventional and organic jowar cultivation, the conventional method provides much greater revenue and profits to the farmers compared to the organic method. In fact the revenue is double that of organic farming, and in case of profits, the profits from cultivating conventional jowar is more than three times that of organic jowar.

Table 14: Profitability of Organic Jowar, Shrigonda, Maharashtra, 2023-24

Method	Yield per Acre (Kg)	Price per kg (₹)	Revenue per Acre (₹)	Cost Per Acre (₹)	Profits Per Acre (₹)
Organic sold through FPO	1000	45	45,000	29,800	15,200
Organic sold directly by Farmer	1000	43	43,000	29,800	13,200
Conventional	2000	42	84,000	28,720	55,280

Source: Author's Calculations based on data collected from Primary Survey

4.2.3 Economics of Organic Onion Cultivation

The third crop which Real Orgo deals with is onion. Onion transplanting[6] generally happens in both Kharif (July-August) and Rabi (December-January) seasons. The Kharif season crop is harvested during December to January and the Rabi season crop is harvested during March to May. Sometimes depending on the weather conditions late Kharif (October-November) transplantation also takes place and the crop is harvested during January to March. Onion cultivation is highly labour and fertiliser intensive. This is because onion transplantation is a labour intensive work. Also, the cost of fertiliser is more for conventional onions because farmers apply higher quantities of fertilisers in case of conventional method to reap larger size onions in the output.

Cost of Cultivation:

Table 15 exhibits the per acre production cost of onions in Shrigonda Maharashtra. The per acre production cost of organic onions is about 14.52 percent less compared to conventionally cultivated onions mainly due to the higher cost of fertilisers for conventionally cultivated onions.

[6] Onion seedlings are planted and grown on a bed in the field or in a nursery. After a few weeks these onion plants are shifted to the prepared onion field. This process is called as onion transplantation.

Table 15: Per Acre Production Cost of Onion Cultivation in Shrigonda, Maharashtra, 2023-24

Production Input	Production Cost (₹) per Acre	
	Organic	Conventional
Labour	13,000	12,000
Seeds	3,500	3,000
Fertilisers	10,000	18,000
Pesticides	600	1,250
Irrigation	15,000	15,000
Total	42,100	49,250

Source: Primary Survey

Yield

The yield per acre of organic and conventional onions is presented in Table 16 below. The comparison of yield per acre for organic and conventional onions shows that for the organic method the yield remains 3000 kilograms lower than the yields of the conventional onion. Thus, organic method of onion cultivation gives yields which are 20 percent less than the conventional methods of cultivation.

Table 16: Yield Per Acre of Onion Cultivation in Shrigonda, Maharashtra, 2023-24

Cultivation Method	Yield Per Acre (Kgs)
Organic Onion	12,000
Conventional Onion	15,000

Source: Primary Survey

Price

The data presented in Table 17 illustrates the price differential that exists between organic and conventional onion. It is evident that organic onion fetches a substantially higher price than conventionally cultivated onions.

Table 17: Price per Kilogram of Onion in Shrigonda, Maharashtra, 2023-24

Cultivation Method	Price per Kilogram
Organic Onion	₹ 40
Conventional Onion	₹ 25

Source: Primary Survey

Table 18 shows the price disparity between what farmers can get if they sell organic onions on an individual basis and what they get when they sell it through Real Orgo Farmer Producer Company. Farmers can get 18.52 percent higher prices per kilogram through the aid of Real Orgo as compared to selling organic onions on an individual basis in the market.

Table 18: Price Per Kilogram Realised by Farmer, Organic Onion 2023-24

Channel of Sale	Price Per Kg
When Sold Directly by Individual Farmer	27
When Sold Through Real Orgo	32

Source: Primary Survey

In addition we have also analysed how much of the selling price of organic products goes to the farmer by examining how the Real Orgo's costs are distributed across different processes in the case of organic onions. When the Real Orgo member gets ₹ 32 per kilogram for organic Onions the actual market price realised by Real Orgo is higher at ₹ 40 per kilogram. Real Orgo makes some deductions from this. These deductions are the cost incurred by Real Orgo on various processes, including cleaning, transportation, and storage, as well as government taxes. The deductions and the prices paid to the member farmers are depicted in Table 19 below.

Table 19: Farmer's Share of final Price of Organic Onion Shrigonda, Maharashtra, 2023-24

Price Received and Deductions Made	Share	
	In ₹	In %
Price Received by Real Orgo	40.00	100.00
1. Weight loss and Cleaning	1.00	02.50
2. Transportation and Storage	4.00	10.00
3. Packing, Marketing and Overhead Costs	2.00	5.00
4. Deductions for Tax Liabilities	0.20	0.50
5. Other Miscellaneous costs	0.80	2.00
Price Paid to Member Farmer	32.00	80.00

Note: It is difficult to ascertain the farmers share in the selling price of the Organic Products because the procurement prices vary substantially based on demand and supply, seasonality and other relevant factors. The percentage shares of these also vary, however the share of taxation remains the same.

Source: Primary Survey

Profitability of Organic Onion Cultivation:

Calculations shows that organic onions sold through the FPC are more profitable than conventionally onions. Farmers realize Rs. 16,150 more per acre on organic onions sold through the FPC as compared to conventional onion. Thus, the FPO can ensure a good return for onions and this can incentivise farmers to take up organic onion cultivation.

Table 20: Profitability of Organic Onions, Shrigonda, Maharashtra, 2023-24

Method	Yield per Acre (Kg)	Price per kg (₹)	Revenue per Acre (₹)	Cost Per Acre (₹)	Profits Per Acre (₹)
Organic through FPO	12000	32	3,84,000	42,100	3,41,900
Organic directly by Farmer	12000	27	3,24,000	42,100	2,81,900
Conventional	15000	25	3,75,000	49,250	3,25,750

Source: Author's Calculations based on data collected from Primary Survey

The analysis in the preceding paragraphs indicates that compared to the conventional methods of cultivation, organic method in general and organic lemon and organic jowar in particular have a higher production cost and a lower yield. However for all three crops, profits are higher when the produce is sold through the FPC rather than by the individual farmer. The increase in profits per acre which accrue if the produce is sold through Real Orgo, as against sale by the individual farmer, is shown in Table 21. The data in Table 21 clearly indicates that the difference in the profits realized is the maximum in case of onions. The analysis, presented in Tables 8, 14 and 20, shows that farmers get better prices and thus higher revenues and profits for their organic produce if they sell it through the aid of the FPC. Thus, Real Orgo does help member farmers to overcome the obstacles caused by their restricted ability to bargain on an individual basis. Hence we can say that FPC Real Orgo is able to ensure increased profitability for all three crops.

Table 21: Increase in Profits Per Acre Due to Sale Through FPO Sale (Percent)

S.No	Crop	Profits (Percent)
1.	Organic Lemon	8.58
2.	Organic Jowar	15.15
3.	Organic Onion	21.28

Source: Authors' calculations based on data collected from Primary Survey

5 Conclusions:

Our case study undertaken of the Real Orgo Farmer Producer Company generates the following findings:

1. We find that the area under cultivation by members has increased over the years for organic onions, has remained stagnant for organic lemon and has declined for organic jowar.
2. We find that organic cultivation is more profitable than conventional cultivation only in case of lemon and onion crop.
3. In case of jowar, conventional method of cultivation is much more profitable than organic method of cultivation; in fact the profitability of conventional jowar is more than three times that of organic Jowar. This explains the reduction in acreage of organic jowar shown in Table 2.
4. For all the three crops, namely organic lemon, organic jowar and organic onions, sale through FPO is better for farmers. By selling through Real Orgo, farmers get Rs 2000 more profits per acre for organic jowar, Rs.15,000 more per acre for organic lemons and Rs. 60,000 more per acre

for organic onions. In terms of percentages, farmers get 8.58 percent, 15.15 percent and 21.28 percent higher profits for organic lemon, organic jowar and organic onion respectively if they sell through Real Orgo. Thus among the three crops organic onion is the most remunerative followed by lemon.

5. We find that the benefit of the FPC is greatest in case of onion.
6 In case of jowar, though the benefit of FPC is substantial, organic jowar is much less profitable than conventional jowar. So, there is very little incentive for farmers to take up organic jowar cultivation.

To summarize, in case of lemon and onions we note that organic cultivation is profitable and so the area under cultivation is increasing. Moreover, using the FPC this advantage gets enhanced and so farmers get a substantially greater return per acre for these crops. Thus, this will incentivise farmers to take up organic cultivation of these crops and sell them through the FPC. However, area under lemon cultivation has not shown much increase. This may be because the difference in profits between selling individually and selling through FPO is not very high in case of lemon.

It is seen that organic jowar is not a feasible option for the farmers whether with or without the aid of Real Orgo. Conventional jowar gives a much higher profitability. For farmers cultivating organic jowar, the FPC does bring higher profits, but the increased profits are relatively small at ₹ 2000 per acre. Thus, we see that the area under cultivation of organic jowar of Real Orgo members has decreased over the years. Hence if increased organic jowar cultivation is desired some kind of government intervention may be needed.

Overall we see that wherever organic farming is profitable compared to conventional farming, the FPO can be an important instrument to market the produce and enable the farmers to get the appropriate price and greater profits. Thus, the FPO can prove to be a very useful instrument to promote increased production of organic crops especially onions in Maharashtra.

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