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### Comparative economic analysis of pigeon pea through FPO's member vs non-member farmers in Marathwada region of Maharashtra

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#### Abstract

Farmers Producer Organisation (FPO) is a Producer Organisation (PO) that has farmers as its members. FPOs are supported by the Small Farmers' Agribusiness Consortium (SFAC) to promote their formation. Comparative economics of pigeon pea through FPO's member vs non-member farmers, the physical inputs, costs and profitability were analysed in Marathwada region of Maharashtra. Multistage sampling design was used for the study. From Marathwada region of Maharashtra, the districts viz. Jalna, Sambhajinagar, Nanded, and Latur were purposefully selected. A total of 160 FPO's member farmers and 160 FPO's non-member farmers were selected for the study. To compute the cost and returns descriptive statistics and basic statistical instruments, such as averages and percentages were used. The profitability of pigeon pea farming reveals that member farmers consistently outperform non-members across key financial metrics. Members achieve higher gross returns (₹137,211.91 vs ₹116,917.87), lower production costs and better profitability indicators with farm business income (₹102,792.48 vs ₹79,304.89), family labor income (₹77,431.83 vs ₹57,673.15), and net income (₹71,407.72 vs ₹49,834.35) all favoring members. The output-input ratio for members is 2.09, compared to 1.74 for non-members, indicating higher efficiency.

**Keywords:** Analysis, pigeon pea, FPO's, member vs non-member, cha. Sambhajinagar, etc.

#### Introduction

Since its domestication in the Indian subcontinent at least 3,500 years ago, Tur (*Cajanus cajan* (L.)), a perennial legume belonging to the Fabaceae family, has become a staple meal in Asia, Africa, and Latin America. It is a significant source of protein for the people of the Indian subcontinent and is widely consumed, mostly in south Asia. The most significant pulse crop, red gramme is grown extensively throughout both tropical and subtropical regions. Around 93.18 million hectares of land are planted to pulses worldwide, yielding 89.82 million tonnes at a yield level of 964 kg/ha.

India is the world's largest producer of pulses, with an area under cultivation of around 28 million hectares. With 31 percent and 28 percent, respectively, it leads in both area and production. Tur productivity in 2020-21, at 885 kg/ha, has also increased dramatically over the previous five years. In 2022-2023, the area under irrigation (1.59%) had 12.7 lakh hectares of red gramme, 13.3 lakh tonnes of production, and 1042 kg/ha of productivity in Maharashtra. India is home to about 18% of the world's population despite making up only 2.2% of the planet's land area. For instance, a Farmers Producer Organisation (FPO) is a Producer Organisation (PO) that has farmers as its members.

FPOs are supported by the Small Farmers' Agribusiness Consortium (SFAC) to promote their formation. A Farmer Producer Company may be established by two or more producer institutions, ten or more primary producers, or a combination of the two. These firms were founded under the Indian firms Act of 2013 and are governed democratically, guaranteeing that every member or producer has an equal number of voting rights regardless of their ownership stake. Farmer Producer Organisations (FPOs) are essential to ensuring a farmer's steady income. Through vast networks of small-scale farmers, these important institutions enable the quick spread of information and technology. Strategic government intervention is required to ensure the long-term viability of FPOs. Some strategies to strengthen the FPO ecosystem include increasing management teams' capabilities, encouraging internal learning and development inside FPOs, accelerating loan distribution, and building post-harvest infrastructure.

FPOs were created to help farmers increase productivity by gaining access to better inputs and implementing better management techniques, as well as to help them achieve higher returns through group input procurement, marketing, and processing. Member-based FPOs offer a practical answer to a number of issues that farmers, especially small-

scale producers, encounter. FPO members can acquire financial and non-financial input services, lower transaction costs, access high-value marketplaces, and establish fair relationships with private organisations by using their combined strength and bargaining power.

### Materials and Methods

There are 7374 FPOs registered in India, and Maharashtra is the leading state with 1940 FPOs (Govil Richa *et al.* 2020). The study was conducted in the Marathwada region of Maharashtra state. The Marathwada region of Maharashtra plain zone was selected for study. From Marathwada region of Maharashtra, the districts viz. Jalna, Sambhajinagar, Nanded, and Latur were purposefully chosen for the research as the farmer producer organizations were established earlier in this district. It was vital to assess the effectiveness of the institutes as their establishment in these regions was intended to enhance the financial standing of farmers. From the selected district total of eight Farmer Producer Organizations were selected purposefully because these FPOs were completed five years of establishment. Out of eight FPOs two from Nanded district, two from Latur District, two from Aurangabad district, and two from Jalna district were selected, as they were adequately represented successful and assessable case studies. The major crop undertaken by these FPO was Tur. Therefore this crop was selected for the study. Four Districts from Marathwada region of Maharashtra were selected for the study. Twenty member farmers were selected from each FPO and Twenty non-member farmers were selected from the same area due to the same climatic conditions. A total of 160 member farmers and 160 non-member farmers were selected for the study, and thus total of 320 sample farmers were selected for the study.

For Comparative Economic Analysis of Pigeon Pea fixed and variable costs were used to the acquired data. To compute the output-input ratio and gross returns, descriptive statistics were used. Basic statistical instruments, such as averages and percentages, were employed.

### Per hectare physical inputs and output of Pigeon Pea for Member and Non-Member Farmers of FPO

Table 1. presents a detailed comparison of physical inputs and outputs for Tur cultivation between Member and Non-Member farmers of a Farmer Producer Organization (FPO).

The data is segmented into various categories such as labour, machinery, inputs like seeds and fertilizers, and outputs, to analyze the differences in resource utilization and productivity between the two groups.

In terms of labour, Member farmers generally use fewer man-days for both male and female human labour compared to Non-Member farmers. Specifically, Member farmers utilize 6.99 man-days of male labour and 15.27 man-days of female labour, whereas Non-Member farmers require 8.03 and 17.84 man-days, respectively.

This indicates that Member farmers might be optimizing labour efficiency through better management practices or access to improved farming techniques. Similarly, the usage of bullock labour, machine labour, and family human labour is slightly lower for Member farmers, suggesting that they are likely benefiting from mechanization or better labour management, which helps reduce physical labour requirements.

When examining inputs like seeds, fertilizers, and plant protection, it is noticeable that Member farmers tend to use fewer resources. For example, Member farmers apply 10.02 kg of seed per hectare, compared to 11.96 kg used by Non-Members. Similarly, Member farmers apply lower quantities of nitrogen (22.02 kg vs. 24.15 kg), phosphorus (61.16 kg vs. 64.04 kg), and potash fertilizers (23.63 kg vs. 26.61 kg), indicating a potentially more efficient use of inputs. The slightly lower use of manures and plant protection chemicals also suggests that Member farmers may be practicing more sustainable or efficient farming techniques, such as integrated pest management or organic fertilization.

The output data reveals that despite using fewer inputs, Member farmers achieve higher yields, with a main product output of 17.93 quintals per hectare, compared to 15.85 quintals for Non-Member farmers. The by-product yield is also higher for Member farmers (4.50 quintals vs. 3.49 quintals), highlighting the increased productivity per unit of input. This suggests that membership in the FPO may lead to better resource utilization, access to improved inputs, or enhanced knowledge and practices that lead to higher crop output. The higher productivity of Member farmers underscores the effectiveness of collective farming practices, access to better resources, and possibly the support of the FPO in optimizing agricultural practices.

**Table 1:** Per hectare physical inputs and output of Pigeon Pea for Member and Non- Member Farmers

Sr. No.	Particulars	Physical input	Member	Non- Member
<b>Input</b>				
1	Hired Human Labour Male	man days	6.99	8.03
	Female	man days	15.27	17.84
2	Bullock labour	pair days	4.86	5.21
3	Machine labour	hours	4.28	3.92
4	Seed	kg	10.02	11.96
5	Manures	t.	5.25	4.36
6	Fertilizers N	kg	22.02	24.15
	P	kg	61.16	64.04
	K	kg	23.63	26.61
7	Plant protection	lit.	1.72	1.77
8	weedicide	lit.	1.95	1.78
9	Family Human Labour Male	man days	6.59	8.16
	Female	man days	9.47	11.8
<b>Output</b>				
10	Main product	q.	17.93	15.85
11	By product	q.	4.50	3.49

### Per hectare Cost of Cultivation of Pigeon Pea for Member and Non-Member Farmers of FPO

The table 2 presents the cost of cultivation per hectare of Tur for two categories of farmers: Member and Non-Member farmers of a Farmer Producer Organization (FPO). It breaks down various expenses involved in the cultivation process, categorizing them into different types of costs such as hired labour, machinery, seeds, manure, fertilizers, plant protection, irrigation, and depreciation on implements, along with the corresponding percentage of total cost. Each expense category for both member and non-member farmers is provided in terms of both absolute value (in Rs./ha) and its relative proportion to the total cost.

This comparison highlights the economic differences between these two groups in terms of resource utilization and financial inputs.

The hired human labour costs for male and female workers are higher for non-member farmers compared to members. For instance, the cost of male labour for non-members is Rs. 4518.64 per hectare, which is about 20% more than the Rs. 3757.13 per hectare for member farmers. Similarly, the female labour costs are also higher for non-members (Rs. 4909.03) as compared to members (Rs. 4002.11). This difference could be attributed to varying access to labour

markets or differing relationships and agreements for hired labour between member and non-member farmers. This suggests that non-members might be paying more for labour, either due to less bargaining power or a higher dependency on external labour sources.

In terms of machinery charges, the table shows a higher cost for member farmers (Rs. 2941.17) as compared to non-members (Rs. 2742.78). This discrepancy could reflect differences in the availability or usage of machinery in these two categories. Member farmers might have more access to collective resources like shared machinery through the FPO, but may also incur additional costs associated with maintenance or leasing. Non-members, conversely, might depend on renting machinery from local service providers, potentially leading to slightly lower costs, albeit with reduced flexibility or efficiency.

A significant portion of costs for both groups is attributed to plant protection and seed. The cost of plant protection chemicals is higher for non-members (Rs. 4807.78) than for members (Rs. 4364.46), which could indicate non-members using more or different chemicals, possibly due to a lack of guidance or support on optimal pest management practices. Seed costs for non-members are also notably higher (Rs. 3776.13) compared to members (Rs. 2935.86).

**Table 2:** Per hectare Cost of Cultivation of Pigeon Pea for Member and Non-Member Farmers of FPO (Rs./ha)

Sr. No.	Item	Member		Non-member	
		Rs.	Percent	Rs.	Percent
1	Hired human labour(male)	3757.13	5.71	4518.64	6.74
	Hired human labour (Female)	4002.11	6.08	4909.03	7.32
2	Bullock labour	3575.60	5.43	3949.34	5.89
3	Machinery Charges	2941.17	4.47	2742.78	4.09
4	Seed	2935.86	4.46	3776.13	5.63
5	Manure	1706.72	2.59	1485.98	2.22
6	Fertilizers	388.65	0.59	464.16	0.69
		1187.73	1.80	1283.36	1.91
		528.60	0.80	696.12	1.04
7	Plant protection	4364.46	6.2	4807.78	6.71
8	Weedicide	2379.00	3.62	2180.50	3.25
	Irrigation Charges	2652.80	4.03	2702.13	4.03
9	Land revenue	239.25	0.36	234.67	0.35
10	Depreciation on implements	1812.07	2.75	1733.33	2.58
	Total WC	32471.16	49.35	35483.94	52.90
11	Interest on working capital @6%	1948.27	2.96	2129.04	3.17
12	Cost A	34419.43	52.31	37612.98	56.07
13	Rental value of land	22868.65	34.75	19486.31	29.05
14	Interest on fixed capital @10%	2492.00	3.79	2145.43	3.20
15	Cost B (Cost A+13+14)	59780.08	90.85	59244.72	88.31
16	Family human labour (Male)	3542.13	5.38	4591.80	6.84
	Family human labour (Female)	2481.99	3.77	3247.01	4.84
17	Cost C i.e. Total cost per ha.	65804.19	100.00	67083.52	100.00

This could suggest that member farmers benefit from subsidized or bulk purchasing of seeds through their FPO, resulting in lower costs per hectare.

Lastly, the table distinguishes between Total Working Capital (WC) and Total Cost per hectare (Cost C), providing a comprehensive view of both direct and indirect costs involved in cultivation. Member farmers have a Total WC of Rs. 32471.16 (49.35% of the total cost), compared to Rs. 35483.94 (52.90%) for non-members. This suggests that non-member farmers are more reliant on working capital,

possibly reflecting higher upfront costs or less access to credit facilities. In contrast, Cost C, which includes all operational and fixed costs, shows a marginal difference, with member farmers' total cost per hectare at Rs. 65804.19 and non-members at Rs. 67083.52. The smaller difference in overall cost suggests that while member farmers might have some cost advantages due to collective bargaining, the differences are not extreme, and other factors like land value and family labour inputs contribute to the overall cost structure for both categories of farmers.

**Table 3:** Comparative profitability of Pigeon Pea of member & non - member farmers (Rs./ha)

Sr. No.	Particular	Member	Non - member
1	Return from main produce	135959.60	115946.08
2	Return from by-produce	1252.31	971.79
3	Gross return	137211.91	116917.87
4	Cost-A	34419.43	37612.98
5	Cost-B	59780.08	59244.72
6	Cost-C	65804.19	67083.52
7	Farm Business Income (Gross returns minus Cost-A)	102792.48	79304.89
8	Family Labour Income (Gross returns minus Cost-B)	77431.83	57673.15
9	Net Income (Gross returns minus Cost-C)	71407.72	49834.35
10	Output-Input ratio (Gross returns divided by Cost-C)	2.09	1.74
11	Per quintal cost of production Cost C (Cost-C minus value of by-produce & dividing by quantity of main produce)	3600.21	4171.08

### Comparative profitability of Pigeon Pea of member & non - member farmers

The table 3 presents a comparative analysis of the profitability between member and non-member farmers in the context of Pigeon Pea (a type of leguminous crop) farming. The data reveals that member farmers achieve higher financial returns across all key metrics. The return from the main produce is higher for members (₹135,959.60) compared to non-members (₹115,946.08), suggesting that member farmers may have more efficient production practices or better access to markets. Additionally, the gross return for members (₹137,211.91) exceeds that of non-members (₹116,917.87), a result that is driven by both higher returns from the main produce and by-produce. However, while non-members also show positive returns, their cost structure is slightly higher, with Cost-A (₹37,612.98), Cost-B (₹59,244.72), and Cost-C (₹67,083.52) being more significant than for members, indicating that non-members might face inefficiencies or higher input costs.

When evaluating profitability metrics, member farmers significantly outperform non- members. The farm business income (gross return minus Cost-A) for members is ₹102,792.48, while for non-members, it stands at ₹79,304.89, which is a notable difference. Similarly, the family labour income (gross returns minus Cost-B) is higher for members at ₹77,431.83 compared to ₹57,673.15 for non-members, suggesting better utilization of family labour. Moreover, net income (gross return minus Cost-C) for members is ₹71,407.72, while non- members earn ₹49,834.35. The output-input ratio, which is an efficiency indicator, is also more favorable for members at 2.09 compared to 1.74 for non-members. Finally, when analyzing the per quintal cost of production (Cost-C adjusted for by-produce), members incur a cost of ₹3,600.21, which is lower than the ₹4,171.08 for non-members, implying that member farmers benefit from more cost-efficient production methods.

### Conclusion

The comparison between member and non-member farmers' Pigeon Pea cultivation reveals significant differences in both input utilization and profitability, highlighting the advantages of cooperative membership. Member farmers demonstrate more efficient resource management, utilizing less seed, slightly higher manure, and better access to modern machinery, which results in higher main product and by-product yields. While non-members incur higher costs for many inputs, such as seeds and fertilizers, member

farmers benefit from lower overall production costs, likely due to subsidized inputs, technical support, and access to favorable financial terms. The financial analysis shows that member farmers achieve higher gross returns, farm business income, family labour income, and net income, with a more favorable output-input ratio and lower per quintal production costs. These findings suggest that cooperative membership not only enhances agricultural efficiency but also leads to greater profitability and sustainability, corroborating prior studies on the economic advantages of such membership.

### References

- Asmatoddin MV, Jawale SV, Ghulghule JN. Economic analysis of pulses medium farms in Marathwada region of Maharashtra. *Internet J Com Bus Manage*. 2009;2(1):37-9.
- Holmukhe SS, Kadam RP, Chavan RV. Study on cost of cultivation and economic returns from red gram BDN 711 crop in Marathwada central region of Maharashtra. *Int J Res Agron*. 2024;SP-7(8):185-9.
- Kumar K, Reddy MD, Sivasankar A, Reddy NV. Yield and economics of maize (*Zea mays*) and soybean proportions. *Indian J Agric Sci*. 2003;73(2):69-71.
- Nale VA. Economics of production of soybean varieties JS-335 vis-à-vis MAUS-81 in Marathwada region [MSc thesis]. Parbhani: MAU; 2005.
- Nirmal VK. Production and marketing of major pulses in Rajnandgaon District of Chhattisgarh [MSc thesis]. Raipur: Indira Gandhi Agricultural University; 2008. Thesis No.: IGAU-T-2146\_2008.
- Pawar BR, Pawar BB. Technique of evaluation in economics of blackgram and greengram production. *Int J Agric Sci*. 2007;3(1):21-4.
- Pawar ND. Economics of production and resource use productivity of blackgram in Vidarbha region of Maharashtra state. *J Maharashtra Agric Univ*. 2006;31(1):100-3.
- Pawar ND, Patil HN, Bhosale TG. Economics of soybean cultivation in Western Maharashtra. *J Maharashtra Agric Univ*. 2000;25(1):52-4.
- Thakare SS, Naphade SA, Vitonde AK. Economics of production and marketing of cowpea. *Indian J Agril Mktg*. 2011;25(2).
- Thombre A. Economics of production, marketing and processing of major pulses in Marathwada region of Maharashtra state [PhD thesis]. Parbhani: Vasant Rao Naik Marathwada Krishi Vidyapeeth; 2008.