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Assessment of planning and supervising ability among members of Agnigarh producer company limited: Evidence from commercial litchi cultivation in Assam

¹Samar Thakuria, ²Pabitra Kumar Das, ³Jungmayangla Longkumer, ⁴Mary N Odyuo, ⁴Saurabh Sharma, ¹Namgyal Wangchuk and ¹Penchen T Bhutia

¹Ph.D. Research Scholar, Department of Agricultural Extension Education, School of Agricultural Sciences, Nagaland University, Medziphema, Nagaland, India

²Professor and Head, Department of Extension Education, Biswanath College of Agriculture, Assam Agricultural University, Jorhat, Assam, India

³Professor, Department of Agricultural Extension Education, School of Agricultural Sciences, Nagaland University, Medziphema, Nagaland, India

⁴Associate Professor, Department of Agricultural Extension Education, School of Agricultural Sciences, Nagaland University, Medziphema, Nagaland, India

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Corresponding Author: Samar Thakuria

Abstract

Farmer Producer Companies (FPCs) serve as vital institutional mechanisms for enhancing collective efficiency among farmers in production, processing and marketing activities. The present study was conducted to assess the planning and supervising ability of members of Agnigarh Producer Company Limited in Sonitpur district with special reference to commercial litchi cultivation. The study area was selected purposively due to the active involvement of the FPC in litchi-based enterprises. A total of 80 respondents were selected from 13 villages using a proportionate random sampling technique. Primary data were collected through personal interviews with a structured schedule during February to June 2023. The findings revealed that a majority of respondents (63.75%) had a medium level of planning ability followed by 25.00 per cent with low and 11.25 per cent with high levels. The mean planning ability score (53.74) indicated a relatively low average level with a standard deviation of 24.39 and a high coefficient of variation (45.39%) suggesting considerable variability among respondents. In contrast, supervising ability showed better performance with 72.50 per cent of respondents having a medium level followed by 16.25 per cent high and 11.25 per cent low levels. The mean supervising ability score (70.93) indicated a relatively high level with a standard deviation of 19.98 and a lower coefficient of variation (28.17%), reflecting greater consistency. The study concludes that while supervising ability among FPC members is relatively strong, planning ability remains weaker and more variable highlighting the need for targeted capacity-building interventions to enhance managerial competencies, improve farm management and increase productivity in commercial litchi cultivation.

Keywords: Farmer producer company (FPC), planning ability, supervising ability, *Tezpur litchi*, commercial cultivation

Introduction

Cooperatives in India have largely been promoted by the state with a primary focus on welfare rather than commercial viability, which has often limited their efficiency and sustainability (Prabhakar *et al.*, 2012) ^[10]. Recognizing these challenges, the Government of India constituted a high-powered committee in 1999 under the chairmanship of Y. K. Alagh to recommend reforms for farmer organizations. The committee, in its 2002 report, proposed restructuring cooperatives into a hybrid model combining the features of cooperatives and corporate entities. As a result, the concept of Farmer Producer Companies (FPCs) was introduced through amendments to Section 581 of the Companies Act, 1956 in 2003. These entities were envisioned to empower farmers by enabling collective action, improved governance, and better access to markets. An FPC is thus defined as a company formed by

primary producers who come together to undertake production, processing and marketing activities collectively (Barman, 2021) ^[1].

There is an increasing need to enhance farmers' access to improved technologies, institutional credit, quality inputs and efficient markets to ensure higher productivity and income. Awareness and adoption of climate-resilient agro-technologies play a crucial role in achieving sustainable agricultural growth (Barman *et al.*, 2024) ^[2]. In this context, Farmer Producer Organizations (FPOs) have emerged as an effective institutional mechanism to strengthen the economic position of small, marginal and landless farmers by improving their bargaining power and market linkages. To promote this approach, the Government of India launched the Central Sector Scheme titled "Formation and Promotion of 10,000 FPOs," with a financial outlay of ₹6,865 crore. Under this initiative, several FPCs have been

established across the country, including 25 FPCs in Assam up to 2022 with financial support from National Bank for Agriculture and Rural Development. These FPCs receive technical and handholding support from Assam Agricultural University, along with assistance from Cluster-Based Business Organizations (CBBOs) and the Programme Implementation Unit (PIU) located at Kahikuchi, Guwahati (PIB, 2021).

The present study focuses on members of Agnigarh Producer Company Limited, situated in the Sonitpur district of Assam, which specializes in commercial litchi cultivation. Litchi is a high-value horticultural crop with specific climatic requirements, restricting its cultivation to select tropical and subtropical regions. India ranks as the second-largest producer of litchi globally, following China and the crop plays a significant role in providing livelihood security by generating both on-farm and off-farm employment opportunities (Sahni *et al.*, 2020) [12]. During 2020–21, India produced approximately 720,200 metric tons of litchi from an area of 98,000 hectares, while Assam contributed about 60,181 metric tons from 6,095 hectares (Statistical Handbook of Assam, 2022) [16].

Among the litchi-growing regions of Assam, Tezpur is particularly renowned for its superior quality produce and distinct horticultural characteristics. The region cultivates several popular varieties such as Bombay, Bilati, Shahi, Elaichi, Piyaji and China. Tezpur litchi is highly valued for its excellent flavor, attractive color, juicy pulp and small seed size, which distinguish it from other varieties grown in India. Owing to these unique attributes, Tezpur litchi was granted the Geographical Indication status in 2015 (Gogoi *et al.*, 2020) [4]. Following this recognition, the domestic demand for the crop has increased substantially, highlighting the urgent need to enhance its production and productivity within the state to meet growing market demand.

Methodology

The present study was conducted in 2023 in Sonitpur district, which was selected purposively due to the presence of a Farmer Producer Company engaged in commercial litchi cultivation, namely Agnigarh Producer Company Limited. A total sample of 80 respondents was drawn from 13 selected villages using a proportionate random sampling technique to ensure adequate representation. Primary data were collected through personal interviews with the help of a structured and pre-tested research schedule. The data collection period extended from February 2023 to June 2023.

In accordance with the objectives of the study, a total of 19 variables were considered, comprising 18 independent variables and one dependent variable. The independent variables included age, education level, size of operational landholding, area under litchi cultivation, annual net farm income, litchi yield, farm mechanization, irrigated area under litchi cultivation, level of farm wage payment related to litchi cultivation, experience in litchi cultivation, social participation, adoption of recommended litchi production technology, achievement motivation, orientation towards competition, attitude towards modern agriculture, risk orientation, extension contact and exposure to training on litchi cultivation.

The dependent variable of the study was the planning ability

and supervising ability of the members of Agnigarh Producer Company Limited, which was measured using the managerial ability scale developed by Jadav (2005) [5]. The planning ability indicator consisted of nine statements with a maximum score of 27 and a scale value of 8.35. The supervising ability indicator consisted of eleven statements with a maximum score of 12 and a scale value of 6.19. The managerial ability index (MAI) for the planning ability and supervising ability indicator was computed using the following formula:

$$MAI = \frac{\text{Score obtained for indicator} \times \text{Scale value of indicator}}{\text{Maximum score for indicator} \times \text{Scale value of indicator}} \times 100$$

$$MAI = \frac{OS_i \times SV_i}{MS_i \times SV_i} \times 100$$

Where,

OS_i = Obtained score value for i^{th} indicator

SV_i = Scale value of i^{th} indicator

MS_i = Maximum score value of i^{th} indicator
 $i = 1, 2, 3, \dots, n$

On the basis of the mean ($\bar{X}$) and standard deviations (S.D.) of obtained scores, respondents were classified into three categories as follows:

1. Planning ability

Categories	Score range
Low level of planning ability	Below ($\bar{X} - 1. S.D.$)
Medium level of planning ability	($\bar{X} - 1. S.D.$) to ($\bar{X} + 1. S.D.$)
High level of planning ability	Above ($\bar{X} + 1. S.D.$)

2. Supervising ability

Categories	Score range
Low level of supervising ability	Below ($\bar{X} - 1. S.D.$)
Medium level of supervising ability	($\bar{X} - 1. S.D.$) to ($\bar{X} + 1. S.D.$)
High level of supervising ability	Above ($\bar{X} + 1. S.D.$)

Results and Discussion

Socio-economic and psychological profile of the respondents

The socio-economic and psychological profile of the respondents of Agnigarh Producer Company Limited in Sonitpur district revealed that the majority were middle-aged (43.75%) with a mean age of 46.42 years and most had attained higher secondary education (41.25%), indicating a relatively educated farming community, which is in line with findings of Shinde *et al.* (2020) [14], Thakuria *et al.* (2024) [17]. The respondents were predominantly small (41.25%) and marginal farmers (33.75%) with an average landholding of 1.77 ha and half of them (50.00%) cultivated litchi on 0.10–1.5 ha reflecting small-scale commercial orientation, which is in line with findings of Kumar *et al.* (2015) [8], Bhojar *et al.* (2020) [3]. A majority exhibited medium levels of annual farm income (60.00%), litchi yield (60.00%), farm mechanization (70.00%) and irrigated area (77.50%), suggesting moderate resource availability and productivity, which is in line with findings of Li *et al.* (2020) [9]. Similarly, most respondents showed medium

levels of wage payment (80.00%) and farming experience (53.75% with 9–19 years). which is in line with findings of Jakkawad *et al.* (2017) ^[6]. In terms of social and behavioural attributes, a considerable proportion had membership in at least one organization (55.00%), medium adoption of recommended litchi production technologies (70.00%), medium achievement motivation (68.75%), moderate competition orientation (67.50%), favorable attitude towards modern agriculture (63.75%) and medium levels of risk

orientation (67.50%), extension contact (63.75%) and training exposure (50.00%). which is in line with findings of Singh *et al.* (2020) ^[15], Saryam and Jirli (2020) ^[13]. The coefficient of variation indicated relative homogeneity in variables such as age, education, farm mechanization and adoption behavior, while heterogeneity was observed in landholding size, irrigated area, wage payment and training exposure.

Table 1: Socio-economic and psychological profile of the respondents

Sl. No.	Variables	Categories	Score range	Frequency	Percentage
1.	Age	Young	Upto 35 years	16	20.00
		Middle	36-50 years	35	43.75
		Old	51 years& above	29	36.25
2.	Education level	Primary school level	1	4	5.00
		Middle school level	2	12	15.00
		High school level	3	25	31.25
		Higher secondary passed	4	33	41.25
		Graduate/diploma & above	5	6	7.50
3.	Size of operational land holding	Marginal	Up to 1.0 ha	27	33.75
		Small	1.1-2.0 ha	33	41.25
		Medium	2.1-4.0 ha	14	17.50
		Semi-medium	4.1-10 ha	6	7.50
4.	Area under litchi cultivation Mean - 0.83 S.D. - 0.73	Up to 0.10 ha	Up to 0.10	30	37.50
		0.10 to 1.5 ha	0.10-1.5 ha	40	50.00
		Above 1.5 ha	Above 1.5 ha	10	12.50
5.	Annual net farm income Mean – 125403.62 S.D. – 31125.31	Low annual net farm income	Up to Rs. 94278.31	13	16.25
		Medium annual net farm income	Rs. 94278.32-Rs. 156528.93	48	60.00
		High annual net farm income	Above Rs.156528.93	19	23.75
6.	Litchi yield Mean – 100.00 S.D. – 34.40	Low litchi yield	Below 65.50	19	23.75
		Medium litchi yield	65.50- 134.40	48	60.00
		High litchi yield	Above 134.40	13	16.25
7.	Farm Mechanization Mean – 72.36 S.D. – 9.52	Low farm mechanization	Up to 62.84	13	16.25
		Medium farm mechanization	62.84-81.88	56	70.00
		High farm mechanization	Above 81.88	11	13.75
8.	Irrigated area under litchi cultivation Mean – 49.52 S.D. – 31.09	Low irrigated area	Up to 18.43	10	12.50
		Medium irrigated area	18.43-80.61	62	77.50
		High irrigated area	Above 80.61	8	10.00
9.	Level of wage payment related to litchi cultivation Mean – 18891.72 S.D. – 12537.78	Low level of wage payment	Up to 6353.94	4	5.00
		Medium level of wage payment	6353.94-31429.50	64	80.00
		High level of wage payment	Above 31429.50	12	15.00
10.	Experience in litchi cultivation Mean – 13.55 S.D. – 5.26	Up to 8 years	3- 8	25	31.25
		9-19 years	9-19	43	53.75
		20 years & above	20-28	12	15.00
11.	Social participation	Membership in one organization	1	44	55.00
		Membership in more than one organization	2	18	22.50
		Office bearers of one organization	3	12	15.00
		Office bearer of more than one organization	4	6	7.50
12.	Achievement motivation Mean – 17.43 S.D. – 3.08	Low achievement motivation	Up to 14.35	11	13.75
		Medium achievement motivation	14.35-20.53	55	68.75
		High achievement motivation	Above 20.53	14	17.50
13.	Orientation towards the competition Mean – 15.73 S.D. – 3.54	Low orientation towards the competition	Up to 12.19	19	23.75
		Medium orientation towards the competition	12.19-19.27	54	67.50
		High orientation towards the competition	Above 19.27	07	8.75
14.	Attitude towards modern agriculture Mean – 29.66 S.D. – 5.01	Low favorable attitude	Up to 24.65	19	23.75
		Medium Favorable attitude	24.65-34.71	51	63.75
		High favorable attitude	Above 34.7	10	12.50
15.	Risk Orientation Mean – 14.15 S.D. – 3.42	Low risk orientation	Up to 10.73	11	13.75
		Medium risk orientation	10.73-17.57	54	67.50
		High risk orientation	Above 17.57	15	18.50
16.	Extension contact Mean - 13.68 S.D. - 3.07	Low extension contact	Up to 10.61	12	15.00
		Medium extension contact	10.61-16.75	51	63.75
		High extension contact	Above 16.75	17	21.25

17.	Exposure to training on litchi cultivation	Low training exposure	0-1	10	12.50
		Medium training exposure	2-3	40	50.00
		High training exposure	4-5	30	37.50
18	Adoption of recommended litchi production technology	Low extent of adoption	Up to 26.82	11	13.75
		Medium extent of adoption	26.82-38.44	56	70.00
		High extent of adoption	Above 38.44	13	16.25

1. Planning Ability of the members of Agnigarh Producer Company Limited

Findings revealed that majority of the respondents (63.75%) had medium level of planning ability, followed by 25.00 per cent of the respondents had low level of planning ability and 11.25 per cent of the respondents had high level of planning ability. This finding was in agreement with the findings of

Kumar *et al.* (2021) ^[7]. The mean planning ability score (53.74) indicated that on an average the respondents had low level of planning ability with standard deviation of 24.39. The value of co-efficient of variation (45.39) indicated that the respondents were relatively heterogeneous with respect to their planning ability.

Table 2: Distribution of respondents according to indicator- planning ability

Category	Score Range	Frequency	(%)	Mean	S. D.	C. V.
Low planning ability	Up to 29.35	20	25.00	53.74	24.39	45.39
Medium planning ability	(29.35-78.13)	51	63.75			
High planning ability	Above 78.13	9	11.25			
Total		80	100.00			

2. Supervising ability of the members of Agnigarh Producer Company Limited

Findings revealed that majority of the respondents (72.50%) had medium level supervising ability, followed by 16.25 per cent of the respondents had high level of supervising ability and 11.25 per cent of the respondents had low level of

supervising ability. The mean supervising ability score (70.93) indicated that on an average the respondents had high level of supervising ability with standard deviation of 19.98. The value of co-efficient of variation (28.17) indicated that the respondents were relatively homogeneous with respect to their supervising ability

Table 3: Distribution of respondents according to indicator- supervising ability

Category	Score Range	Frequency	(%)	Mean	S. D.	C. V.
Low supervising ability	Up to 50.59	09	11.25	70.93	19.98	28.17
Medium supervising ability	(50.59-90.91)	58	72.50			
High supervising ability	Above 90.91	13	16.25			
Total		80	100.00			

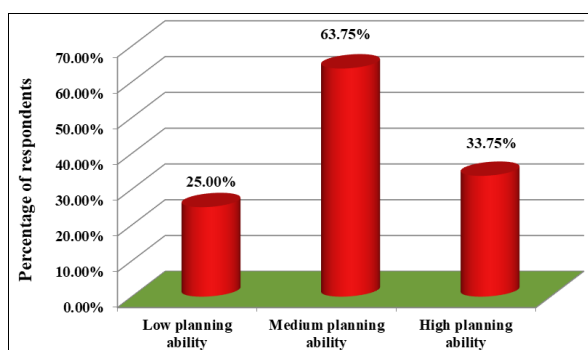


Fig 1: Distribution of respondents according to indicator- Planning ability

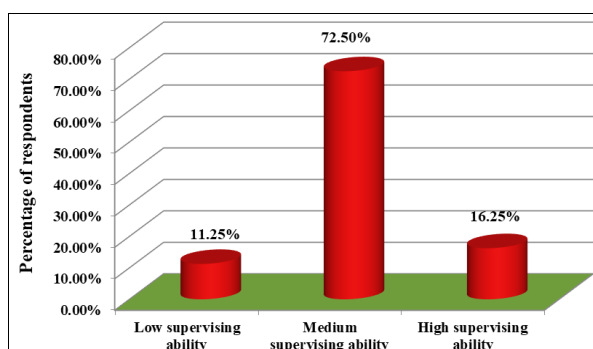


Fig 2: Distribution of respondents according to indicator- Supervising ability

Statements on planning ability and supervising ability of the members of Agnigarh Producer Company Limited

1. Planning ability in litchi orchard

A litchi grower systematically performs the various scientific cultivation practices of litchi orchard. The following 'statements' are related to these aspects. [Maximum score = 27] and [Scale value = 8.35].

a) What are the objectives in planning for the management of litchi orchard?

- To get more income per year (3)
- To maximize overall production of the orchard (2)
- To minimize the total cost (1)

b) Which types of forecast you made in relation to litchi orchard?

- About rainfall (3)
- About the natural calamity i.e. wind, storm, frost (2)
- About the outbreak of disease and pest (1)

c) On what basis you decide the future plan for litchi orchard

- Based on commodities prices /market (3)
- Based on the number of bearing litchi tree (2)
- Based on resources available (1)

d) Which points you are considering while planning for the management of litchi orchard?

- Recommendation of litchi production technology (4)
- Past experience (3)
- Availability of capital (2)
- Availability of resources (1)

e) What are the main strategies do you think while planning for the management of litchi orchard?

- Adopting /including new recommended litchi practices (4)
- To adopt new variety (3)
- Value addition (2)
- Marketing (1)
- As usual (0)

f) Do you plan about the amount of irrigation, manure, fertilizer and protection chemicals needed for cultivation of litchi orchard?

- Always (2)
- Rarely (1)
- Never (0)

g) To whom you consult while planning?

- Agricultural expert (4)
- Gram Sevak (3)
- Progressive litchi orchard growers (2)
- Family members (1)
- Not anyone (0)

h) Are you think that planning in litchi orchard increases the yield.

- Always (2)
- Rarely (1)
- Never (0)

i) Are you planning about the marketing strategies/ tie-up to sale litchi production?

- Always (2)
- Rarely (1)
- Never (0)

2. Supervising ability in litchi orchard

A litchi grower performs various roles in supervising various activities in litchi orchard. The following 'statements' are related to these aspects. [Maximum score 24) and [Scale value=5.84].

a) How do you supervise the activities in your orchard?

- With personal interest (2)
- Indirect supervision (1)
- No interest at all (0)

b) What are the innovations do you want to incorporate in your litchi orchard?

- Recommendation regarding the new cultural practices (4)
- Use of growth regulators (3)
- Recommendation for new pesticides (2)
- Recommendation about intercropping (1)

c) Do you supervise your orchard with the right intensity?

- Always (2)

- Rarely (1)
- Never (0)

d) To whom you consult while taking the decision?

- Consult others in the family (2)
- Consult the progressive litchi orchard grower (1)
- Discussion with labour (0)

e) Do you assess the information regarding orchard?

- Always (2)
- Rarely (1)
- Never (0)

f) Do you appraise the performance and bring shortcomings for effective management of litchi orchard?

- Always appraises (2)
- Sometimes (1)
- Not at all (0)

g) Do you think that year-wise assessment is necessary in the management of litchi orchard?

- Always (2)
- Rarely (1)
- Never (0)

h) Do you always supervise the irrigation of your litchi orchard?

- Always (2)
- Rarely (1)
- Never (0)

i) Do you keep watch for nutrient deficiency in your litchi orchard?

- Always (2)
- Rarely (1)
- Never (0)

j) Do you keep watch for insect/pest and disease attack on your litchi orchard?

- Always (2)
- Rarely (1)
- Never (0)

k) Do you supervise spraying operations in your litchi orchard?

- Always (2)
- Rarely (1)
- Never (0)

Conclusion

The study highlights the diverse socio-economic and psychological profile of members of Agnigarh Producer Company Limited engaged in commercial litchi cultivation in Assam. The majority of respondents were middle-aged, educated up to higher secondary level and belonged to marginal and small landholding categories indicating a predominantly smallholder production system. Most respondents exhibited medium levels of annual farm income, litchi yield and farm mechanization suggesting moderate productivity and resource utilization. A

considerable proportion had adequate experience in litchi cultivation along with medium levels of social participation, achievement motivation, risk orientation, attitude towards modern agriculture and exposure to training, reflecting a favorable environment for adoption of improved practices. With regard to managerial competencies, the findings revealed that the majority of respondents possessed a medium level of planning ability with a relatively low mean score and high variability indicating inconsistency in planning skills among members. In contrast, supervising ability was found to be relatively stronger with most respondents exhibiting a medium to high level and a comparatively higher mean score with lower variability indicating greater uniformity and efficiency in supervising farm operations. This suggests that while farmers are capable of effectively managing and supervising routine agricultural activities, they face limitations in strategic planning and decision-making processes. The study underscores the need for targeted capacity-building programmes, skill-oriented training and extension interventions to strengthen planning ability while further enhancing supervising skills among FPC members. Improving these managerial competencies can lead to better farm management, efficient resource utilization and increased productivity in commercial litchi cultivation. Support from government agencies and institutions in the form of timely guidance, technical assistance and access to modern inputs and machinery will further empower farmers to adopt scientific practices. However, the study is limited to a single district and one FPC due to constraints of time and resources. Therefore, future research should include multiple districts across different agro-climatic zones with larger sample sizes to generate more comprehensive and generalizable findings.

Authors' Contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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