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Profile of Soybean growers in Akola district

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Abstract

The present study on "Adoption gap in soybean cultivation" was conducted in the Akola, Murtijapur and Barshitakli taluka of Akola district of Maharashtra state. The exploratory design of social research was used for the study. Total 150 soybean growers were selected as sample for study by stratified sampling method. The data were collected by conducting personal interview of each soybean growers with help of structured interview schedule. Careful analysis, tabulation and classification of the data were done. The findings of independent variable show that, it is concluded that, 38.67 per cent of the soybean growers had belong to middle age group. 38.70 per cent of soybean growers had completed secondary school. The distribution pertaining to land holding indicates that 40.00 per cent of soybean growers had semi-medium type of land holding of 2 to 4 ha. In case of farming experience, 45.33 per cent of soybean growers had more 20 years for farming experience. 34.66 per cent of the soybean growers had Rs. 50001-1,00,000 annual income. They had medium source of information 83.33 per cent. 38.00 per cent had no source of irrigation for cultivation. In case of psychological variable, they had medium innovativeness and risk orientation it has found to be 72.00 per cent and 74.70 per cent respectively and 43.33 per cent of soybean growers had low social participation. Most important independent variable among the soybean growers is knowledge which had been found to be medium i.e. 65.33 per cent

Among the selected independent variables for study namely age, education, land holding, annual income, area under soybean cultivation, source of irrigation, farming experience, source of information, social participation, innovativeness, risk orientation were found to be negatively non - significant with adoption gap and knowledge only had highly negative significant relationship with adoption gap at 0.01 level of probability therefore the null hypothesis were rejected for knowledge, While other rest above mentioned variables did not show any significant association with the adoption gap, therefore the null hypothesis was accepted for these variables.

Keywords: Adoption gap, soybean cultivation, knowledge, socio-economic factors, innovativeness

Introduction

Soybean (*Glycine max*) is one of the most important oilseed and pulse crops in India, playing a vital role in enhancing farm income, improving soil fertility through nitrogen fixation and supporting the edible oil industry. Maharashtra ranks among the top soybean-producing states in India, with the Vidarbha region-especially Akola district-being a major contributor to its cultivation. Akola district of Maharashtra, has witnessed a significant expansion in soybean area due to its adaptability to rainfed farming and suitability to the region's agro-climatic conditions.

Understanding the profile of soybean growers in Akola district is crucial for enhancing productivity, targeting extension services, and designing location-specific interventions. A farmer's socio-economic profile-including variables such as age, education, landholding, annual income, area under soybean cultivation, source of irrigation, farming experience, source of information, social participation, innovativeness, risk orientation, and knowledge-directly or indirectly influences their agricultural decisions and adoption of improved practices. These factors are especially relevant in soybean farming, where timely sowing, input management, pest and disease control, and harvesting methods determine the final yield and income.

Despite widespread cultivation, the productivity of soybean in Akola remains below its potential due to varying levels of awareness, input use, and socio-economic constraints. Hence, profiling soybean growers provides insight into the current status of farmers, helps identify challenges and serves as a foundation for policy-makers, researchers and extension workers to design suitable development strategies.

Methodology: The present study was conducted in Akola, Murtijapur and Barshitakli taluka of Akola district of

Vidarbha region in Maharashtra state. The exploratory design of social research was used for the study. Total 150 soybean growers from 15 villages of respective taluka were selected as sample for study by stratified sampling method. In the context of present study, data were collected with the help of pre-tested, well-structured interview schedule.

Result

Personal, situational, communicational, and psychological characteristics of Soybean growers

The study of profile was made with reference to age, education, land holding, annual income, area under soybean cultivation, source of irrigation, farming experience, source of information, social participation, innovativeness, risk orientation and knowledge. The findings pertaining to the distribution of soybean growers on these characteristics are presented in the succeeding paragraphs.

Table 1: Distribution of the soybean growers according to Age

Sr. No.	Age	Soybean growers (N=150)	
		Frequency	Percentage
1.	Young	38	25.33
2.	Middle	58	38.67
3.	Old	54	36.00
Total		150	100.00

It was observed from Table no 1 that, 38.67 per cent of the soybean growers were belonged to middle age (36 to 50 years) group category, followed by 36.00 per cent were belonged to old age (above 50 years) group category while 25.33 per cent of the soybean growers were found in young age (up to 35 years).

Table 2: Distribution of the soybean growers according to Education

Sr. No.	Education	Soybean growers (N=150)	
		Frequency	Percentage
1.	Illiterate	00	Nil
2.	Primary school	05	3.30
3.	Middle school	06	4.00
4.	Secondary school	58	38.70
5.	Higher secondary	52	34.70
6.	College	29	19.30
Total		150	100.00

The results from the Table 2, pertained that, 38.70 per cent of the soybean growers were educated up to secondary school, 34.70 per cent of the soybean growers were educated up to higher secondary school. About 19.30 per cent of the soybean growers have education up to college level, 4.00 per cent of them were educated up to middle school level, and 3.30 per cent were educated up to primary school level. Almost nil percentage of soybean growers had under illiterate education category.

Table 3: Distribution of the soybean growers according to Land holding

Sr. No.	Land holding	Soybean growers (N=150)	
		Frequency	Percentage
1.	Marginal	15	10.00
2.	Small	40	26.66
3.	Semi-medium	60	40.00
4.	Medium	20	13.33
5.	Large Above	15	10.00
Total		150	100.00

It was seen from data presented in Table 3 that, higher 40.00 per cent of the soybean growers had semi- medium size of land holding (2 to 4 ha.), followed by 26.66 per cent of the soybean growers had small size of land holding (1 to 2 ha.), 13.33 per cent of them had medium size land holding (4 to 10 ha.) 10.00 per cent of the soybean growers had marginal (up to 1 ha.) size land holding. It was also noticed that 10.00 per cent of the soybean growers had large size of land holding (above 10 ha) category.

Table 4: Distribution of the soybean growers according to Annual income

Sr. No.	Annual Income	Soybean growers (N=150)	
		Frequency	Percentage
1.	Up to Rs. 50,000/-	08	5.33
2.	Rs. 50,001 to Rs. 1,00,000/-	52	34.66
3.	Rs. 1,00,000 to Rs. 1,50,000	45	30.00
4.	Rs. 1,50,000 to Rs. 2,00,000/-	25	16.66
5.	Above 2,00,000/-	20	13.33
Total		150	100.00

From Table 4 it was observed that, more than one third 34.66 per cent of the soybean growers had annual income Rs. 50,001 to 1,00,000/-, followed by 30.00 per cent of soybean growers had annual income Rs. 1,00,001 to Rs. 1,50,000/-. 16.66 per cent of soybean growers had annual income Rs. 1,50,001 to Rs. 2,00,000/-. Also 13.33 per cent and 5.33 per cent had above Rs. 2,00,000/- and up to Rs. 50,000/- annual income respectively.

Table 5: Distribution of the soybean growers according to their area under soybean cultivation

Sr. No.	Area under soybean cultivation	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	55	36.66
2.	Medium	60	40.00
3.	High	35	23.34
Total		150	100.00

The data presented in table 5 shows that 40.00 per cent of soybean growers having the medium category of area under soybean cultivation followed by 36.66 per cent were having low category of area under soybean cultivation and 23.34 per cent of soybean growers had high area under soybean cultivation.

Table 6: Distribution of the soybean growers according to their Source of irrigation

Sr. No.	Source of irrigation	Soybean growers (N=150)	
		Frequency	Percentage
1.	No source	57	38.00
2.	River	12	8.00
3.	Tube well/ well	45	30.00
4.	Dam / Canal	36	24.00
Total		150	100.00

The data presented in Table 6 revealed that, 38.00 were having no source of water, while 30.00 per cent of the soybean growers having tube well/ well, whereas remaining 24.00 per cent of the soybean growers were having Dam/Canal as their source of irrigation. And 8.00 per cent of the soybean growers having river as source of irrigation.

Table 7: Distribution of the soybean growers according to their Farming experience

Sr. No.	Farming experience	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	18	12.00
2.	Medium	64	42.67
3.	High	68	45.33
Total		150	100.00

It was revealed from Table 7 that, more than one third of the soybean growers 45.33 per cent had farming experience above 20 years, followed by of the soybean growers were having farming experience from 11 to 20 years and 12.00 per cent of them having up to 10 years of farming experience.

Table 8: Distribution of the soybean growers according to their Source of information

Sr. No.	Source of information	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	05	3.33
2.	Medium	125	83.33
3.	High	20	13.33
Total		150	100.00

It was pointed from the Table 8 that, majority 83.33 per cent of soybean growers were using medium level of sources of information. followed by 13.33 per cent of them uses high level of sources of information and remaining 3.33 per cent soybean growers were using low level of sources of information.

Table 9: Distribution of the soybean respondents according to their Social participation

Sr. No.	Social Participation	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	65	43.33
2.	Medium	58	38.67
3.	High	27	18.00
Total		**150**	**100**

It was observed from Table 9 that, 43.33 per cent of soybean growers had low level of social participation, followed by 38.67 per cent of soybean growers had medium social participation. And 18.00 percent of soybean growers had high social participation.

Table 10: Distribution of the soybean growers according to their Innovativeness

Sr. No.	Innovativeness	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	19	12.70
2.	Middle	108	72.00
3.	High	23	15.30
	Total	150	100.00

It was observed from Table 10 that, nearly 72.00 per cent of soybean growers exhibited a medium level of innovativeness, followed by 15.30 per cent of soybean growers had high level of innovativeness.12.70 per cent of soybean growers had low level of innovativeness.

Table 11: Distribution of the soybean growers according to Risk orientation

Sr. No.	Risk Orientation	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	14	9.30
2.	Medium	112	74.70
3.	High	24	16.00
Total		150	100.00

It was observed from Table 11 that, almost all 74.70 per cent of soybean growers exhibited medium level of risk orientation, while 16.00 per cent of soybean growers had a high level of risk orientation and only 9.30 per cent of soybean growers possessed a low level of risk orientation.

Table 12: Distribution of the soybean growers according to Knowledge

Sr. No.	Knowledge level	Soybean growers (N=150)	
		Frequency	Percentage
1.	Low	30	20.00
2.	Medium	98	65.33
3.	High	22	14.67
Total		150	100.00

It was observed from Table 12 that, most of the soybean growers 65.33 per cent were having medium level of knowledge regarding the recommended practices of soybean cultivation followed by 20.00 per cent were having low level of knowledge and very few soybean growers 20.00 per cent were having low level of knowledge category.

Table 13: Distribution of soybean growers according to their practice-wise knowledge about the recommended cultivation practices of soybean.

Sr. No.	Recommended Cultivation Practices	Knowledge - Yes	Knowledge - No
1	Selection of SoilWell drained and fertile loam soil	145 (96.66%)	5 (3.33%)
2	Preparatory Tillagea. One deep ploughingb. Two to three harrowing	a. 135 (90.00%)b. 140 (93.33%)	a. 15 (10.00%)b. 10 (6.66%)
3	Varieties (e.g., PDKV Amba, JS-335, etc.)	150 (100.00%)	0 (Nil)
4	Seed Rate (65-75 kg/ha)	140 (93.33%)	10 (6.66%)
5	Spacing (45 × 10 cm)	130 (86.66%)	20 (13.33%)
6	Depth of Sowing (3-4 cm)	135 (90.00%)	15 (10.00%)
7	Seed Treatment(e.g., Vitavax, Evergol, Xelora)	77 (51.33%)	73 (48.66%)
8	Sowing Time (15th June - 15th July)	121 (80.66%)	29 (19.33%)
9	Interculture Operationsa. 1st hoeingb. 2nd hoeing if necessary	a. 117 (78.00%)b. 109 (72.00%)	a. 33 (22.00%)b. 41 (27.30%)
10	Intercropping Systems(e.g., Tur + Soybean 1:2)	125 (83.33%)	25 (16.67%)
11	Fertilizer Application (30:60:30 NPK/ha)	90 (60.00%)	60 (40.00%)
12	FYM Application (5 ton/ha)	80 (53.33%)	70 (46.66%)
13	Important Pestsa. Stem flyb. Girdle beetlec. Hairy caterpillard. Whitefly	a. 87 (58.00%)b. 96 (64.00%)c. 95 (63.33%)d. 80 (53.33%)	a. 63 (42.00%)b. 54 (36.00%)c. 55 (36.66%)d. 70 (46.66%)
14	Important Diseasesa. Charcoal rotb. Yellow mosaic virusc. Rhizoctonia blightd. Pod blight	a. 91 (60.67%)b. 145 (96.66%)c. 72 (48.00%)d. 81 (54.00%)	a. 59 (39.33%)b. 5 (3.33%)c. 78 (52.00%)d. 69 (46.00%)
15	Pest Control Measures	a. 84 (56.00%)b. 75 (50.00%)c. 92 (61.33%)d. 83 (55.33%)	a. 66 (44.00%)b. 75 (50.00%)c. 58 (38.66%)d. 67 (44.66%)
16	Disease Control Measures	a. 78 (52.00%)b. 140 (93.33%)c. 60 (40.00%)d. 85 (56.66%)	a. 72 (48.00%)b. 10 (6.66%)c. 90 (60.00%)d. 65 (43.33%)
17	Harvesting Signs(Yellow leaves, brown pods)	150 (100.00%)	0 (Nil)
18	Yield (20-30 quintal/ha)	120 (80.00%)	30 (20.00%)

It is evident from table 13 that, soybean growers had excellent knowledge regarding soil and preparatory field operations. A high percentage of growers 96.66 per cent were aware that well-drained and fertile loam soil is ideal for soybean cultivation, reflecting their familiarity with basic soil requirements. Similarly, 90.00 per cent of farmers had knowledge about deep ploughing, and 93.33 per cent were aware about the necessity of two to three harrowing before sowing. Impressively, 100.00 per cent of the soybean growers were well aware of the different soybean varieties, suggesting successful dissemination of varietal information by extension agencies to them.

Sowing practices also showed relatively high levels of awareness among soybean growers. About 93.33 per cent of growers had accurate knowledge of the recommended seed rate, 90.00 per cent knew the proper depth of sowing and 86.66 per cent were informed about the required spacing between rows and plants. These figures suggest that soybean growers possess good technical knowledge in this phase, which could result in optimum plant population and better crop stand. However, knowledge about seed treatment was comparatively low 51.33 per cent to soybean growers being aware of its importance. This indicates a major gap, as untreated seeds may lead to poor germination or vulnerability to seed-borne diseases.

In terms of sowing time and intercultural operations, the data reveals a moderate level of knowledge. About 60.66 per cent of soybean growers knew the correct time for sowing, which is relatively low and could adversely affect crop performance if planting is not synchronized with the monsoon. Intercultural operations, such as hoeing, were better understood. Approximately 78.00 per cent of soybean growers knew about the first hoeing, while 72.00 per cent were aware of the need for a second hoeing if required. Moreover, 83.33 per cent of growers had knowledge of intercropping practices, indicating a good understanding of sustainable farming techniques.

When it comes to nutrient management, soybean growers exhibited moderate awareness. 60.00 per cent of soybean growers had knowledge of the application of chemical fertilizers, while 53.33 per cent knew about the role of farmyard manure (FYM). These figures suggest a significant knowledge gap in soil fertility management. Improved awareness and training on balanced nutrient use can directly contribute to higher yields and better soil health.

A concerning finding in the study was the level of knowledge related to pest and disease identification. Only 58.00 per cent of soybean growers were aware of stem fly, 64.00 per cent knew about soybean girdle beetle, 63.30 per cent identified the hairy caterpillar, and just 53.33 per cent recognized whitefly. Similarly, knowledge about major diseases showed wide variation. Large number 96.66 per cent of the growers were familiar with yellow mosaic virus—a disease with visible symptoms and high impact—only 60.67 per cent knew about charcoal rot, 54.00 per cent about pod blight, and just 48.00 per cent could identify Rhizoctonia aerial blight. This suggests the need for targeted training on less visually obvious but damaging diseases.

Control measures for both pests and diseases were also not well understood. More than 56.00 per cent of respondents knew how to control stem fly, 50.00 per cent for girdle beetle, 61.33 per cent for hairy caterpillar, and 55.33 per cent for whitefly. Regarding disease management higher 93.33 per cent knew how to control yellow mosaic virus, knowledge of control for other diseases was significantly lower—52.00 per cent for charcoal rot, 56.66 per cent for pod blight, and a mere 40.00 per cent for Rhizoctonia aerial

blight. This indicates that even when soybean growers can recognize a pest or disease, they may not have sufficient knowledge of control measures, widening the gap between identification and action.

On a more positive note, knowledge about harvesting was found to be universal. All soybean growers 100.00 per cent were aware of the correct harvesting time, which is encouraging as timely harvesting is critical for maintaining quality and minimizing post-harvest losses. Additionally, 80.00 per cent of soybean growers had knowledge regarding the expected yield of soybean, suggesting a fair understanding of production potential, though a segment still lacked yield estimation skills, which could affect planning and marketing.

Conclusion

The study on the "Adoption gap in soybean cultivation" in Akola district revealed that the majority of soybean growers were in the middle age group with secondary to higher secondary education, had semi-medium landholdings, and moderate annual income. Most soybean growers had medium level of farming experience, innovativeness, risk orientation, and source of information, but low social participation and limited irrigation sources. While growers showed good knowledge about basic cultivation practices like soil selection, seed rate, and sowing methods, significant knowledge gaps existed in seed treatment, pest and disease identification, and their control measures. These findings highlight the critical need for focused extension efforts to enhance technical knowledge, particularly in plant protection and input management, to bridge the adoption gap and improve soybean productivity in the region.

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