

International Journal of Agriculture Extension and Social Development

Volume 9; SP-Issue 6; June 2026; Page No. 177-182

Received: 18-04-2026
Accepted: 21-05-2026

Indexed Journal
Peer Reviewed Journal

Profile analysis of vegetable growers in Akola district, Maharashtra

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DOI: <https://www.doi.org/10.33545/26180723.2026.v9.i6Sc.3795>

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Abstract

Vegetable cultivation plays a vital role in ensuring nutritional security and improving the livelihood of farmers. Vegetable cultivation offers significant economic returns but it is input-intensive and highly susceptible to pest attacks. The way vegetable growers deal with these challenges is largely associated with their profile characteristics. The present study was conducted in Akola district of Western Vidarbha region of Maharashtra. An exploratory research design was adopted, and 120 respondents were selected for the study, including 60 onion growers from Patur taluka and 60 green chilli growers from Telhara taluka. The data was collected through structured personal interviews. The collected data was tabulated and analysed using appropriate statistical tools to interpret the findings of the study. The findings revealed that the majority of respondents among onion and green chilli growers were middle-aged (55.00% and 60.00%, respectively) and educated up to the higher secondary level (35.00% and 40.00%, respectively). Most onion growers belonged to the semi-medium landholding category (48.33%), whereas green chilli growers were predominantly marginal farmers (38.33%). The majority had vegetable cultivation of their respective crops on up to 1.00 ha of land; onion (58.33%) and green chilli (81.67%). Most onion growers had 11-20 years of vegetable cultivation experience of onion (41.67%), while green chilli growers had up to 10 years of vegetable cultivation experience of green chilli (86.67%). A majority of respondents reported annual income between Rs. 3,00,001 and Rs. 6,00,000 (61.67% of onion growers and 41.67% of green chilli growers), credit facilities accessed (88.33% and 86.67%, respectively), Number of sprayings ranged from 3 to 5 for the majority of onion growers (76.67%) and 23 to 35 for most green chilli growers (68.33%) during the crop season and exhibited a medium level of information source utilization (58.33% and 50.00%, respectively). Most onion growers relied on wells (86.67%) and green chilli growers on tube wells (60.00%) for irrigation. The majority of respondents had not received formal training on recommended insecticide spraying practices (98.33% of onion growers and 93.33% of green chilli growers). The majority possessed moderate knowledge (80.00% and 61.67%, respectively) and a moderately favourable attitude (78.33% and 70.00%, respectively) towards recommended insecticide spraying practices.

Keywords: Vegetable growers, profile, Onion and Green chilli, Insecticide spraying

1. Introduction

Vegetable cultivation plays a crucial role in enhancing the livelihood of farmers and also providing essential nutrient security. In vegetable production India ranks second in the world, with increased vegetable production since 2014-15 to 2023-24 from 169.48 million tonnes to 207.21 million tonnes with Maharashtra contributing 6% share in vegetable production for the year 2023-24. ^[9] The reported vegetable production in the Akola district in the Western Vidarbha region of Maharashtra in the year 2024-25 was 143810.6 Metric Tonnes and among the major vegetables grown, onion ranked first, both in terms of area and production of

7,257.4 hectares and 130,633 metric tonnes respectively and green chilli with area and production of 114 hectares and 1,368 Metric Tonnes, respectively. ^[9]

The vegetable cultivation is important source of income and employment which improves the economy of country though faces many challenges such as frequent pest attacks. The comprehensive profile-based information specific to vegetable growers of Akola district, particularly two economically important but agronomically distinct crops such as onion and green chilli, remains important. As vegetable cultivation in the district continues to grow, the adoption of recommended production and plant protection

practices largely depends on farmer's circumstances and exposure permit, therefore, a focused study of these vegetable growers' characteristics becomes both timely and necessary. The findings of the study are intended to provide useful information for extension workers, researchers, and policymakers in designing practical interventions that are better suited to the actual conditions and needs of vegetable growers.

2. Methodology

In the present study an exploratory research design of social research was used. The Akola district of Western Vidarbha was chosen as study area and among the district Patur and Telhara taluka were selected as a study area on the basis of major area under vegetable cultivation of onion and green chilli, respectively during the last year 2024-25. Four villages from each taluka were randomly selected, resulting in a total of eight study villages. The sample comprised 120 vegetable growers, including 60 onion growers from Patur taluka and 60 green chilli growers from Telhara taluka. Primary data was gathered through face-to-face interviews using a structured and pre-tested interview schedule. The collected data was subsequently tabulated and analysed using suitable statistical tools such as frequency, percentage, mean and standard deviation to interpret the findings of the study.

3. Results and Discussion

The profile of the respondents was studied using selected characteristics and data is presented below in the Table 1.

3.1. Age

From Table 1. it indicates that the majority of respondents among onion growers (55.00%) were middle-aged, followed by 30.00% in the older age group, while only 15.00% were young. Similarly, 60.00% of green chilli growers were middle-aged. However, the proportion of young growers was higher among green chilli growers (33.33%), whereas only 6.67% belonged to the older age group. Thus, majority of middle-aged respondents among both onion and green chilli growers were actively engaged in vegetable cultivation of respective crops. These findings are in line with the results of [4, 23, 26]

3.2. Education

Table 1. shows that most of the onion growers, (35.00%) had completed higher secondary education, followed by secondary education (31.67%). Graduates accounted for 16.67%, middle school (10.00%) primary school (3.33%), while only 1.67% of the respondents were post-graduate and illiterate. A similar trend was observed among green chilli growers. The majority (40.00%) had studied up to higher secondary school, followed by respondents with secondary education and graduation (23.33% each), middle school (8.33%) and post-graduation (3.33%). Only 1.67% were illiterate, and none had education only up to the primary level. Overall, most respondents had completed at least higher secondary education among onion and green chilli growers, which may help them better understand agricultural information and recommended practices. Similar findings were reported by [12, 21]

3.3. Land holding

According to Table1. the distribution of respondents according to their land holding. Among onion growers, nearly half of the respondents (48.33%) belonged to the semi-medium land holding category, followed by 30.00% with medium-sized holdings. Small and marginal farmers constituted 16.67% and 5.00% of the respondents, respectively. None of the onion growers fell under the large land holding category. In contrast, green chilli growers were mostly marginal farmers (38.33%) of the respondents, followed by small farmers (31.67%), while 21.67% and 8.33% belonged to the semi-medium and medium categories, respectively. Similar to onion growers, none of the green chilli growers possessed large land holdings.

The findings highlight a clear difference in the land holding pattern between the respondents. Onion vegetable cultivation was carried out on relatively larger operational holdings, whereas green chilli vegetable cultivation was largely undertaken by marginal and small growers. This variation reflects differences in resource availability, cropping preferences, and farm management practices among the respondents. These findings are in line with the reports of [12, 17, 23]

3.4. Area under vegetable cultivation

It is evident from Table 1. that distribution of respondents according to the area under vegetable cultivation of onion and green chilli crop. Among onion growers, a majority of the respondents (58.33%) cultivated onion on up to 1.00 ha of land. About 36.67% had an area ranging from 1.01 to 2.00 ha, while only 5.00% cultivated onion on more than 2.00 ha.

A similar pattern was observed among green chilli growers, where a large majority (81.67%) cultivated green chilli on up to 1.00 ha of land. The remaining 18.33% had an area between 1.01 and 2.00 ha under green chilli cultivation.

Overall, the findings indicate that most respondents cultivated their respective vegetable crops on relatively small areas of land. This suggests that vegetable cultivation was largely practiced on up to one hectare, reflecting the small-scale nature of vegetable farming among the respondents. Similar results were also reported by [2, 22]

3.5. Experience in vegetable cultivation

The findings in Table 1. show that among onion growers, 41.67% of the respondents had 11 to 20 years of experience, followed by 40.00% with up to 10 years of experience. Respondents with more than 20 years of experience accounted for 18.33% in vegetable cultivation of onion. While, in contrast the green chilli growers, the majority of the respondents (86.67%) had up to 10 years of experience in vegetable cultivation. About 11.67% had 11 to 20 years of experience, while only 1.67% had more than 20 years of experience.

The findings indicate that most onion growers had moderate experience in vegetable cultivation, whereas the majority of green chilli growers had up to 10 years of experience. This suggests that the respondents had varying levels of experience in vegetable cultivation of respective crops, which may influence their cultivation practices and decision-making related to vegetable production. These findings are in line with the results of [18, 19]

3.6. Annual Income

The results in Table 1. show the distribution of respondents according to their annual income. The majority of respondents of onion growers (61.67%) had an annual income between Rs.3,00,001 and Rs.6,00,000. About 30.00% reported an annual income of up to Rs.3,00,000, while only 8.33% reported more than Rs.6,00,000 annually. Among green chilli growers, the largest proportion of respondents (41.67%) also belonged to the annual income category of Rs.3,00,001 to Rs.6,00,000. In addition, 30.00% had an annual income above Rs.6,00,000, while 28.33% reported an income of up to Rs.3,00,000.

Overall, the findings indicate that a considerable proportion of respondents in both groups belonged to the middle-income category of Rs.3,00,001 to Rs.6,00,000. This suggests that vegetable cultivation was largely practiced by respondents with moderate income levels, which may influence their ability to invest in agricultural inputs and recommended practices. Similar results were also reported by [3, 8, 12]

3.7. Income from vegetable cultivation

From the findings in the Table 1. among the onion growers, half of the respondents (50.00%) reported an income of up to Rs.2,00,000 from vegetable cultivation of onion. A further 41.67% earned between Rs.2,00,001 and Rs.4,00,000, while only 8.33% reported earnings above Rs.4,00,000. While the green chilli growers, the majority of respondents (61.67%) earned between Rs.2,00,001 and Rs.4,00,000 from green chilli cultivation. About 23.33% reported an income above Rs.4,00,000, whereas 15.00% earned up to Rs.2,00,000. The findings indicate that while most onion growers earned up to Rs.2,00,000 and the majority of green chilli growers reported income in the range of Rs.2,00,001 to Rs.4,00,000 from vegetable cultivation of onion and green chilli. This suggests that vegetable cultivation contributed notably to the livelihood of the respondents and served as an important source of income. Comparable findings were reported by [15, 14]

3.8. Access to credit

According to Table 1. a large majority of the respondents among vegetable growers (88.33%) had accessed credit, while only 11.67% reported not availing any credit facility. A similar pattern was observed among green chilli growers respondents, where 86.67% had accessed credit and 13.33% had not.

Overall, the findings show that most respondents had access to credit facilities. This suggests that credit plays an important role in supporting vegetable cultivation by helping farmers meet expenses related to inputs, labour, and other cultivation operations. Similar observations were reported by [6]

3.9. Number of sprayings

Table 1 shows that the majority of onion growers (76.67%) sprayed insecticides 3 to 5 times indicating moderate level of insecticide use among onion growers. Followed by 15.00% spraying up to 2 times, while 8.33% sprayed above 5 times. A contrasting result was reported by [10]

In case of green chilli growers, insecticide use was comparatively higher. Most respondents (68.33%) sprayed

insecticides 23 to 35 times during the crop season. About 16.67% of the respondents sprayed up to 22 times, whereas 15.00% applied insecticides more than 35 times. It shows that green chilli growers relied more heavily on insecticides for insect pest management. This higher frequency of spraying may be associated with higher pest incidence and the perceived need for repeated applications. Comparable findings were reported by [11, 24]

During the study, it was also observed that some respondents mixed different pesticides in a single spray without considering their compatibility, which may reduce the effectiveness of insecticides and lead to additional spray applications. Excessive use of insecticides can increase production costs and may contribute to pesticide residues in produce, environmental pollution, and potential health risks to both farmers and consumers.

3.10. Sources of information

Table 1. shows that most respondents had a medium level of use of information sources. Among onion growers, 58.33% of the respondents belonged to the medium category, followed by 35.00% in the low category. Only 6.67% were found in the high category.

A similar pattern was observed among green chilli growers. Half of the respondents (50.00%) had a medium level of information source utilization, while 40.00% and 10.00% belonged to the low and high categories, respectively. This points to a moderate but uneven engagement with sources of information, reliance on informal rather than formal sources of information. Similar findings were reported by [3, 5, 8]

3.11. Irrigation facility

The findings in Table 1. show that wells and tube wells were the main irrigation facility used by the respondents. Among onion growers, a large majority (86.67%) depended on wells for irrigation, while 13.33% used tube wells. None of the respondents reported using river water as a source of irrigation.

In the case of green chilli growers, tube wells were the most commonly used source of irrigation, reported by 60.00% of the respondents. Wells were used by 38.33%, whereas only 1.67% relied on river water for irrigation.

The findings suggest that most respondents depended on groundwater sources for irrigation. The notable use of wells and tube wells indicates their important role in meeting the water requirements of vegetable crops in the study area. Comparable findings were reported by [7]

3.12. Labour availability

The findings in Table 1. reveal that among onion growers, 85.00% reported that labour was not available when needed, while only 15.00% indicated timely availability. Further, 60.00% of the respondents stated that the available labour was insufficient, whereas 40.00% considered it sufficient for their operations.

Also, among green chilli growers, more than half of the respondents (53.33%) also faced difficulties in obtaining labour on time, while 46.67% reported timely availability. Similarly, 55.00% of the respondents felt that labour availability was insufficient, compared to 45.00% who reported having sufficient labour.

Overall, the results suggest that labour availability remains a

major concern for vegetable growers. Shortages of labour and delays in its availability may affect the timely performance of operations and increase the workload on vegetable growers. Similar observations were reported by ^[5]

3.13. Distance from market for inputs

Table 1. shows the distribution of respondents according to their distance from the nearest input market. The majority of onion growers (55.00%) reported that the input market was located 3 to 4 km away, while the remaining 45.00% had to travel more than 4 km to access market for inputs. While in green chilli growers, a majority of the respondents (73.33%) had an input market only within 2 km of distance. The remaining 26.67% had between 3 to 4 km of distance, and none reported a distance of more than 4 km.

The findings suggest that respondents of green chilli growers had easier access to input markets than onion growers. Better accessibility to input markets can facilitate timely purchase of agricultural inputs and support the smooth management of vegetable cultivation activities. A similar finding was observed by ^[25]

3.14. Training received

The findings in Table 1. indicates that very few respondents had received formal training related to recommended insecticide spraying practices. Among onion growers, almost all respondents (98.33%) reported that they had not attended any training programme, while only 1.67% had received training. Similarly, among green chilli growers, 93.33% of the respondents had not undergone any training, whereas only 6.67% reported participation in training programmes.

The findings suggest that exposure to formal training was very limited among the respondents. This lack of training may reduce farmers' opportunities to gain technical knowledge and improve their understanding of recommended practices. These findings are in line with the results of ^[1, 20]

3.15. Knowledge

The results presented in Table 1. indicate that most respondents possessed a medium level of knowledge regarding recommended insecticide spraying practices. Among onion growers, a large majority (80.00%) were under the medium knowledge category, while respondents with low and high levels of knowledge were 10.00% each. In case of green chilli growers, where 61.67% of the respondents had a medium level of knowledge. In addition, 28.33% were categorized as having high knowledge, while only 10.00% belonged to the low knowledge category.

Overall, the findings suggest that the majority of respondents had a moderate understanding of recommended insecticide spraying practices. This indicates that most farmers were aware of the basic recommendations, although there remains scope for improving their knowledge through extension interventions. Similar findings were reported by ^[4, 5, 7]

3.16. Attitude

The findings in Table 1. highlight the attitude of respondents towards recommended insecticide spraying practices. Among onion growers, the majority of respondents (78.33%) exhibited a moderately favourable attitude, followed by 13.33% with a highly favourable attitude. Only 8.33% of the respondents were found to have an unfavourable attitude. Similarly, among green chilli growers, 70.00% of the respondents had a moderately favourable attitude towards the recommended practices. About 16.67% showed an unfavourable attitude, while 13.33% expressed a highly favourable attitude.

The findings indicate that the majority of respondents belonged to the moderately favourable category rather than the highly favourable category, thus there remains scope for further improvement through awareness programmes, training, and extension efforts aimed at strengthening farmers' confidence in recommended insecticide spraying practices. Comparable findings were reported by ^[3, 16]

Table 1: Distribution of the respondents according to their selected characteristics.

Sr. no.	Profile of the vegetable growers	Onion growers (n=60)		Green chilli growers (n=60)	
1	Age				
	Young age (Up to 35 years)	9	15.00	20	33.33
	Middle age (36 to 50 years)	33	55.00	36	60.00
	Old age (Above 50 years)	18	30.00	4	6.67
2	Education				
	Illiterate	1	1.67	1	1.67
	Primary School	2	3.33	0	0.00
	Middle School	6	10.00	5	8.33
	Secondary School	19	31.67	14	23.33
	Higher Secondary School	21	35.00	24	40.00
	Graduation	10	16.67	14	23.33
	Post-graduation	1	1.67	2	3.33
3	Land Holding				
	Marginal (Up to 1.00 ha)	3	5.00	23	38.33
	Small (1.01 to 2.00 ha)	10	16.67	19	31.67
	Semi-Medium (2.01 to 4.00 ha)	29	48.33	13	21.67
	Medium (4.01 to 10.00 ha)	18	30.00	5	8.33
	Large (more than 10.00 ha)	0	0.00	0	0.00
4	Area under vegetable cultivation				
	Up to 1.00 ha	35	58.33	49	81.67
	1.01 to 2.00 ha	22	36.67	11	18.33
	Above 2.00 ha	3	5.00	0	0.00

5	Experience in vegetable cultivation				
	Up to 10 years	24	40.00	52	86.67
	11 to 20 years	25	41.67	7	11.67
	Above 20 years	11	18.33	1	1.67
6	Annual Income				
	Up to Rs.300000	18	30.00	17	28.33
	Rs.300001 to Rs.600000	37	61.67	25	41.67
	Above Rs.600000	5	8.33	18	30.00
7	Income from vegetable cultivation				
	Up to Rs.200000	30	50.00	9	15.00
	Rs. 200001 to Rs. 400000	25	41.67	37	61.67
	Above Rs. 400000	5	8.33	14	23.33
8	Access to credit				
	Credit accessed	53	88.33	52	86.67
	Credit not accessed	7	11.67	8	13.33
9	Number of sprayings				
	A. Onion				
	Up to 2	9	15.00	-	-
	3 to 5	46	76.67	-	-
	Above 5	5	8.33	-	-
	B. Green chilli				
	Up to 22	-	-	10	16.67
	23 to 35	-	-	41	68.33
	Above 35	-	-	9	15.00
10	Sources of information				
	Low	21	35.00	24	40.00
	Medium	35	58.33	30	50.00
	High	4	6.67	6	10.00
11	Irrigation facility				
	No source	0	0.00	0	0.00
	Well	52	86.67	23	38.33
	Tube well	8	13.33	36	60.00
	River	0	0.00	1	1.67
12	Labour availability				
	A. Timely available				
	Yes	9	15.00	28	46.67
	No	51	85.00	32	53.33
	B. Sufficient or not				
	Yes	24	40.00	27	45.00
	No	36	60.00	33	55.00
13	Distance from market for inputs				
	Up to 2 km	0	0.00	44	73.33
	3 to 4 km	33	55.00	16	26.67
	Above 4 km	27	45.00	0	0.00
14	Training received				
	Training not received	59	98.33	56	93.33
	Training received	1	1.67	4	6.67
15	Knowledge				
	Low	6	10.00	6	10.00
	Medium	48	80.00	37	61.67
	High	6	10.00	17	28.33
16	Attitude				
	Unfavourable	5	8.33	10	16.67
	Moderately favourable	47	78.33	42	70.00
	Highly favourable	8	13.33	8	13.33

4. Conclusion

The profile of vegetable growers revealed that the majority of respondents in both onion and green chilli growers were middle-aged, educated up to higher secondary level, cultivated their respective vegetable crop on area up to 1.00 hectare of land, had annual income between Rs.300001 to Rs.600000, had access to credit facilities, exhibited a medium level of sources of information utilization, faced challenges in labour availability, most respondents reported

no training received, had medium knowledge, and showed a moderately favourable attitude towards recommended insecticide spraying practices.

However, some notable differences were observed among respondents of onion and green chilli growers. The majority of onion growers belonged to the semi-medium land holding category, while green chilli growers were predominantly marginal farmers. Predominantly onion growers possessed 11-20 years of experience in vegetable cultivation of onion,

whereas green chilli growers mainly had up to 10 years of experience of green chilli cultivation. Most onion growers reported an income of up to Rs.2,00,000 from vegetable cultivation of onion, whereas green chilli growers reported an income ranging from Rs.2,00,001 to Rs.4,00,000 from green chilli cultivation.

The majority of onion growers sprayed insecticides 3 to 5 times, whereas most green chilli growers applied insecticides 23 to 35 times during the crop season. Mainly onion growers reported using wells as their primary source of irrigation, while most green chilli growers utilized tube wells for irrigation purposes. Most respondents of green chilli growers also had better proximity to input markets compared to onion growers.

Overall, the findings provide an understanding of the selected characteristics of vegetable growers of onion and green chilli and serve as a useful basis for planning need-based developmental and extension programmes.

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