

## DETERMINANTS TO DISCONTINUE GARLIC CULTIVATION

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### ABSTRACT

*India is the land of spices and garlic is an essential ingredient of Indian cuisine. The farmers of some areas in middle Gujarat are leaving the cultivation of garlic crop. Considering this fact, this study was conducted in Lunawada and Santarampur talukas of the Mahisagar district. A total of 100 farmers from 10 villages were selected to identify the factors experienced by them for discontinuing garlic cultivation by employing Ex-Post-Facto research design. It is observed that 'r' computed between factors to discontinuing garlic cultivation and age (0.347), farming experience (0.279) and years left garlic cultivation (0.399) were found to be highly significant at 0.01 level. The 'r' value computed for education (0.207) and landholding (0.221) were found to be significant at 0.05 levels. The information on personal, social, economic, psychological, market-related, labour-related, and situational factors experienced by farmers' respondents is analyzed to have in-depth knowledge of each factor. The analyzed suggestions will help to promote the farmers to cultivate garlic crop. The solution to the problems is not in a few packages but in significant changes in the present policies related to garlic cultivation that need to be focused on.*

**Keywords:** *discontinue, farmers, garlic cultivation, socio-psychological factors*

### INTRODUCTION

India is the land of spices. In every Indian house, spice and condiments are the important and non-replaceable ingredients of their meal course. Garlic is an easily available, cheap and important ingredient of Indian cuisine. Gujarat is in the third position in garlic production. As per the records, the total produce is 151.01 tones with 13.72 per cent of the annual share in India. Garlic is also treated as an herb and is considered one of the main ingredients in many meals. During the globalization period, in the name of increased productivity, indiscriminate application of an enormous quantity of fertilizers, chemicals, over-exploitation of groundwater and natural resources were followed. Due to this, the farm income is increasingly declining, so the majority of farmers went to quit this occupation if an alternate choice is given. Because of this, over the last decade, farmers have been leaving the cultivation of garlic, and this discontinuation of garlic cultivation is significantly increased year by year. Because of this reason, this study is conceptualized with the following objectives.

### OBJECTIVES

- (1) To study the profile of agricultural landholders who discontinue the garlic cultivation

- (2) To identify the factors experienced by agricultural landholders who discontinue the garlic cultivation
- (3) To explore suggestions to motivate farmers toward garlic cultivation

### METHODOLOGY

The investigation was conducted purposively in Mahisagar district. Lunawada and Santarampur taluka of Mahisagar district were selected. Five villages of each taluka and ten farmers from each village were selected randomly. Thus, a total of 100 farmers were selected for this study. Ex-Post-Facto research design is used.

Data were collected through personal interviews using the pre-tested structured interview schedule. The household interview was conducted with the principal decision-maker of the family, especially on personal, social, economic, psychological, market-related, labour-related and situational factors. The study's primary objective was to analyze how these factors were affecting the discontinuation of garlic cultivation.

## RESULTS AND DISCUSSION

### Profile of the respondents

Data presented in Table 1 revealed the complete profile of the respondents from the entire study area comprising of the different personal and socio-economic characteristics. It is evident from Table 1 that half of the respondents (50.00 per cent) were old age, followed by the young (30 per cent) and middle (20.00 per cent) age category. Regarding the education category, little more than two-fifths (41.00 per cent) of the respondents followed by the same number of respondents in higher secondary (27.00 per cent) and degree and above (27.00 per cent) category. Only a few (5.00 per cent) respondents had primary education. About seventy per cent of the respondents had high farming experience, followed by medium (21.00 per cent) and low (9.00 per cent) farming experience. Fourteen per cent of the respondents left garlic cultivation from within last three years while, thirty-nine per cent of the respondents left garlic cultivation from last 4 to 6 years, whereas forty-seven per cent of the respondents left garlic cultivation above six years. We can clearly see that slightly more than two-fifths of the respondents (42.00 per

cent) are semi-medium farmers followed by small (28.00 per cent), medium (25.00 per cent), marginal (4.00 per cent) and big (1.00 per cent) farmers. According to data given in Table 1, more than two-fifths of the respondents (46.00 per cent) are small farmers, followed by semi-medium (24.00 per cent), marginal (20.00 per cent) and medium (10.00 per cent) farmers in terms of having irrigated land. About the occupation of the respondents, all the respondents have agriculture and animal husbandry as main and subsidiary occupations, respectively. More than two-fifths of the respondents (41.00 per cent) have high livestock possession, followed by low (30.00 per cent) and medium (29.00 per cent) livestock possession. The great majority of the respondents (82.00 per cent) had low social participation, followed by medium (11.00 per cent) and high (9.00 per cent) social participation. According to Table 1, more than three-fifths of the respondents (61.00 per cent) have medium scientific orientation, followed by high (29.00 per cent) and low (10.00 per cent) scientific orientation. Regarding risk-orientation, little more than two-third of the respondents (69.00 per cent) have high-risk orientation followed by medium (24.00 per cent) and low (7.00 per cent) risk orientation.

**Table 1: Personal, socio-economic and psychological characteristics of the garlic cultivators who are discontinuing garlic cultivation (n=100)**

Sr. No.	Variables	Category	Frequency	Per cent
1	Age	Young $\leq 30$ years	30	30.00
		Middle 31-50 years	20	20.00
		Old $> 50$ years	50	50.00
2	Education	Primary	05	05.00
		Secondary	41	41.00
		Higher-secondary	27	27.00
		Degree and above	27	27.00
3	Farming experience	Low ( $\leq 10$ years)	09	09.00
		Medium (11-20 years)	21	21.00
		High ( $> 20$ years)	70	70.00
4	Years left garlic cultivation	Up to 3 years	14	14.00
		3.1-6 years	39	39.00
		Above 6 years	47	47.00
5	Land holding	Marginal ( $< 1$ ha)	04	04.00
		Small (1 ha-2 ha)	28	28.00
		Semi-medium (2 ha- 4 ha)	42	42.00
		Medium (4 ha -10 ha)	25	25.00
		Big ( $> 10$ ha)	01	01.00
6	Irrigated land	Marginal ( $< 1$ ha)	20	20.00
		Small (1 ha-2 ha)	46	46.00
		Semi-medium (2 ha- 4 ha)	24	24.00
		Medium ( $> 4$ ha)	10	10.00
7	Livestock possession	Low (Up to 3)	30	30.00
		Medium (4-6)	29	29.00
		High (Above 6)	41	41.00

Sr. No.	Variables	Category	Frequency	Per cent
8	Occupation	Agriculture + Animal Husbandry	100	100.00
9	Social participation	Low	82	82.00
		Medium	11	11.00
		High	07	07.00
10	Scientific orientation	Low	10	10.00
		Medium	61	61.00
		High	29	29.00
11	Risk orientation	Low	07	07.00
		Medium	24	24.00
		High	69	69.00

**Relationship of the garlic cultivators’ profile and factors responsible for discontinuing garlic cultivation**

The Spearman correlation analysis was conducted to identify the relationship between factors affecting discontinuing garlic cultivation and independent variables. An observation of Table 2 shows that ‘r’ computed between factors to discontinuing garlic cultivation and age (0.347), farming experience (0.279) and years left garlic cultivation (0.399) were found to be significant at 0.01 level of significance. The ‘r’ value computed for education (0.207) and landholding (0.221) with dependent variable were found to be significant at 0.05 level of significance. The remaining variables like occupation, irrigated land, livestock possession, social participation, scientific orientation and risk orientation were found no significant relationship.

**Table 2: Relationship between the garlic cultivators’ profile and factors responsible for discontinuing garlic cultivation** (n=100)

Sr. No.	Variable	Spearman ‘r’ value
X <sub>1</sub>	Age	0.347 **
X <sub>2</sub>	Education	0.207 *
X <sub>3</sub>	Farming experience	0.279 **
X <sub>4</sub>	Years left garlic cultivation	0.399 **
X <sub>5</sub>	Occupation	0.00 <sup>NS</sup>
X <sub>6</sub>	Land holding	0.221 *
X <sub>7</sub>	Irrigation area	0.212
X <sub>8</sub>	Livestock possession	-0.155
X <sub>9</sub>	Social participation	0.185
X <sub>10</sub>	Scientific orientation	0.050
X <sub>11</sub>	Risk orientation	-0.025

\*\* = significant at 0.01 level      \* = significant at 0.05 level

Rationally, the accumulation of age and farming experience among the agricultural landholders with a self-driven urge for the cultivation of less risky and more

remunerative crops do result in avoiding garlic cultivation. Respondents with more education are willing to go for white-collar jobs and crops which require easier cultivation practices. With more landholding size, farmers usually choose crop diversification that includes different crops with or without garlic crop to prevent losses to occur in mono-cropping, i.e., same crop year by year. The remaining characteristics of respondents like irrigated land, livestock possession, social participation, scientific orientation and risk orientation were found to have no significant relationship with factors responsible for discontinuing garlic cultivation.

**Personal factors for discontinuing garlic cultivation**

**Table 3: Personal factors for discontinuing garlic cultivation** (n=100)

Sr. No.	Statements	Mean score	Rank
1	I was interested to grow other crops	3.72	V
2	I desired to avoid garlic cultivation as it is a drudgery-oriented work	3.96	I
3	I intended to avoid to work in harsh weather condition	3.81	III
4	I had poor skill in garlic cultivation	3.75	IV
5	I had health issues to avoid garlic cultivation	3.82	II
6	Old age had made me unable for farm work	3.26	VI

The information about personal factors for discontinuing garlic cultivation experienced by farmers is depicted in Table 3. After perceiving difficulties in garlic cultivation, the respondents initiated many alternatives to make their farming stabilized and sustainable. The data in Table 3 revealed that major personal factors faced by respondents to avoid garlic cultivation as it is drudgery-oriented work (rank I) followed by health issues to discontinue garlic cultivation (rank II), avoid working in harsh weather conditions (rank

III), poor skill in garlic cultivation (IV) were significant personal factors. The responsible reason might be that garlic farming includes such physical activities, the occurrence of health problems, and poor interest in garlic farming.

### Social factors for discontinuing garlic cultivation

It can be observed from Table 4 about social factors for discontinuing garlic cultivation. The majority of the

respondents in the study expressed that; family members did not support continuing garlic cultivation (rank I), labour refused to work in this crop (rank II) as it is more laborious crop and respondents had to distribute garlic to relatives and neighbors with free of cost (rank III). The reasons were evident that people do garlic cultivation that is not capable of giving expected results and the government failed to provide a remunerative price (MSP) to farmers.

**Table 4 : Social factors for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	My family members did not support me to continue garlic cultivation	4.09	I
2	Labour refused to work in this crop	4.05	II
3	Every year I had to distribute garlic to relatives and neighbors with free of cost	3.95	III

### Economic factors for discontinuing garlic cultivation

In recent day's farmers facing many problems in their garlic cultivation, it may be a climatic aberration, high input cost, the low market price for their produce, *etc.* and their situational conditions are restricting them to take up any adjustments in their farming due to internal as well as external factors. With this background, efforts have been made to know

the economic factors experienced by farmers to discontinue garlic cultivation. Ranks have been given based on the responses. From Table 5, it can be revealed that high cost of production (rank I), it is an uncertain market dependent crop (rank II), insufficient funds for garlic cultivation (rank III) were the principal economic factors influencing discontinue garlic cultivation.

**Table 5: Economic factors for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	Productivity of my farm was very low	3.88	IV
2	I experienced high cost of production	4.00	I
3	There was high risk because as it is uncertain market dependent crop	3.95	II
4	Fertilizer's cost was high	3.8	VII
5	I experienced high-cost agrochemicals	3.83	VI
6	I had insufficient funds for garlic cultivation	3.91	III
7	I faced difficulties with accessing agricultural loan with the reasonable interest rate	3.85	V
8	There is no crop insurance system for garlic cultivation	3.78	VIII

### Psychological factors for discontinuing garlic cultivation

The data presented in Table 6 revealed that poor risk-bearing capacity in garlic cultivation (rank I), followed by poor innovativeness to apply in technologies in garlic cultivation (rank II), poor confidence in adoption of scientific garlic cultivation (rank III) and poor marketing intelligence to

sell garlic (rank IV) were the primary psychological factors. It was observed that psychological factors play a significant role in one's decision making. Here, the majority of the respondents lost interest and had less confidence to take up garlic cultivation, which may be due to previous years' negative experience.

**Table 6: Psychological factors for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	I had poor risk bearing capacity in garlic cultivation	4.22	I
2	I had poor knowledge of garlic cultivation	3.74	VI
3	I lost interest in garlic cultivation	3.76	V
4	I had poor marketing intelligence to sell garlic	3.83	IV
5	I had poor confidence in adoption of scientific garlic cultivation.	3.89	III
6	I had poor innovativeness to apply in technologies in garlic cultivation	3.96	II

**Market-related factors for discontinuing garlic cultivation**

The data in Table 7 revealed that market-related factors experienced by the farmers for discontinuing garlic cultivation were inappropriate market facility (rank I), followed by unavailability of value addition and processing industries nearby garlic cultivation area hence no scope for

contract farming or direct selling (rank II), very high price fluctuation (rank III), unavailability of a system for farmers to decide price for garlic products (rank IV) were primary market-related reasons. Other reasons like unfair return due to unorganized market system and dominance of intermediaries in garlic marketing.

**Table 7: Market-related factors for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	There was an inappropriate market facility for garlic cultivation	4.55	I
2	Very high price fluctuation	4.19	III
3	Unavailability of system for farmers to decide price for garlic products	4.15	IV
4	I experience unfair return due to an unorganized market system	4.01	VI
5	There were not value addition and processing industries nearby garlic cultivation area hence no scope for contract farming or direct selling	4.30	II
6	There was not storage facility for getting good price during off season	4.12	V
7	I experienced the dominance of intermediaries in garlic marketing	3.97	VII

**Labour-related factors for discontinuing garlic cultivation**

It could be observed from Table 8 that labour-related factors were another reason for discontinuing garlic cultivation. The majority of the labours were migrated from villages to nearby cities. Because in district headquarters, they can get the job faster and get a good salary by joining wage work in the factories and other places. The majority of the migrated people were working in the factory, followed by

garments, engaged in real estate business and as a carpenter. This shows that marginal and small farm families were more prone to discontinue garlic cultivation than big farmers. Some of the reasons were unavailability of skilled labours (rank I) followed by dominance of labour due to industrialization (rank II), village labours wanted to do other work than farm labour work (rank III) and laborers were avoiding drudgery-oriented farm work (rank IV) were the major labour-related factors.

**Table 8: Labour-related factors for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	I experienced unavailability of skilled labours	4.26	I
2	I experienced dominance of labour due to industrialization	4.17	II
3	MANREGA created problem in availability of labour on my farm	3.97	VI
4	I experienced labourers were avoiding drudgery-oriented farm work	4.08	IV
5	Unavailability of farm labours as and when I needed	4.01	V
6	In my village, labours wanted to do other work than garlic farm labour work.	4.16	III
7	I had fewer family human resources for family activity	3.91	VII

**Situational factors for discontinuing garlic cultivation**

The information on the situational factors experienced by agricultural landholders is depicted in Table 9. Erratic weather conditions led me to discontinue garlic cultivation (rank I), followed by fragmentation of land into unconventional size leads to poor mechanization in garlic cultivation (rank II), soil degradation led me to discontinue garlic cultivation (rank III) and inadequate electricity facility

at farm (rank IV) were significant situational factors. The probable reason for this might be that they expressed that it is highly challenging to make a profit by cultivating garlic under the erratic climatic condition in the locality. Hence, they shifted to other remunerative crops. Garlic cultivation is not only gambling with climatic factors but also internal and external factors. These situational issues need to be addressed by the government through farmer’s friendly policies.

**Table 9: Situational factors for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	I had a lack of irrigation facility for garlic cultivation	3.95	IV
2	Fragmentation of land into unconventional size leads me to poor mechanization in garlic cultivation	4.04	II
3	I have an inadequate electricity facility at my farm	3.86	V
4	There was high competition from large farmers	3.75	VI
5	Soil degradation leads me to discontinue garlic cultivation	4.01	III
6	Erratic weather conditions lead me to discontinue garlic cultivation	4.14	I
7	I had an inadequate storage facility to store garlic	3.49	VII

**Major reasons expressed by the garlic cultivators for discontinuing garlic cultivation**

The information on major reasons experienced by farmers for discontinuing garlic cultivation was collected and depicted in Table 10. Data revealed that there was an inappropriate market facility for garlic cultivation (rank I) followed by experienced unavailability of skilled labours (rank II), poor risk-bearing capacity in garlic cultivation (rank III), costly transport facility to sell my garlic to the nearby market (rank IV), price fluctuation in garlic made me to quit

farming (rank V) were the major reasons. Other major factors were dominance of labour due to industrialization, labour wanted to do other work than farm work, unavailability of a system for farmers to decide the price, erratic weather conditions and absence of value addition units, *etc.* The probable reason might be recent years farming taking place in small scale with low per capita land availability, low-income group, lack of the support by the family members and society. In this situation, it is highly difficult for farmers to continue cultivating garlic crop.

**Table 10: Major reasons expressed by the garlic cultivators for discontinuing garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	There was an inappropriate market facility for garlic cultivation	4.55	I
2	Garlic processing and value addition units were not there in surroundings my village	4.30	II
3	I experienced unavailability of skilled labours	4.26	III
4	There was a costly transport facility to sell my garlic to the nearby market	4.20	IV
5	Price fluctuation in garlic made me to quit farming	4.19	V
6	I experienced dominance of labour due to industrialization	4.17	VI
7	In my village labours wanted to do other work than farm labour work.	4.16	VII
8	Unavailability of system for farmers to decide price for garlic products	4.15	VIII
9	Erratic weather conditions lead me to discontinue garlic cultivation	4.14	IX
10	I had poor risk-bearing capacity in garlic cultivation	4.12	X

**Farmers' suggestions to continue garlic cultivation**

An attempt was made to ascertain suggestions from farmers to overcome the various constraints faced by them. The respondents were requested to give their preference about various suggestions. The suggestions given by respondents are presented in Table 11. Workable farmers' friendly specific crop insurance system should be implemented ranked first, followed by the processing and preservation units should start nearby garlic cultivation area (rank II), encouraging policy should be developed to accelerate youth (rank III), adequate and timely supply of electricity (rank IV) and

government should have control over input suppliers to make timely availability of agricultural inputs especially for garlic production/commodity (rank V). Other suggestions given by respondents are workable farmers' friendly storage facility should be provided to support farmers to earn better profit in garlic cultivation, low-cost implements should be developed for different sizes of farm holders to reduce labour problems in garlic cultivation, presence of special policy for small and marginal farmers assured marketing facilities for the garlic production/commodity and credit facilities should be farmers' friendly to encourage garlic cultivation.

**Table 11: Farmers' suggestions to continue garlic cultivation**

(n=100)

Sr. No.	Statements	Mean score	Rank
1	A workable farmers' friendly specific crop insurance system should be implemented.	3.92	I
2	Credit facilities should be farmers' friendly to encourage garlic cultivation	3.15	X
3	Adequate and timely supply of electricity	3.37	IV
4	There should be special policy for small and marginal farmers	3.29	VIII
5	Government should have control over input suppliers to make timely availability of agricultural inputs, especially for garlic production/commodity	3.34	V
6	Assured marketing facilities for the garlic production/commodity	3.16	IX
7	Low-cost implements should be developed for different size of farm holders to reduce labour problems in garlic cultivation	3.31	VII
8	Workable farmers' friendly storage facilities should be provided to support farmers to earn better profit in garlic cultivation	3.32	VI
9	Encouraging policy should be developed to accelerate youth involvement in garlic cultivation	3.40	III
10	Processing, value addition and preservation units should be started nearby garlic cultivation area	3.42	II

**CONCLUSION**

Garlic is one of the important herbs and spice crops are grown in India. The production of garlic involves risk economically because of its market price volatility and lack of processing and value addition units. Due to the risky nature of garlic production, farmers are discontinuing garlic farming. Many factors are contributing to the discontinuation of garlic cultivation, i.e., personal factors, social factors, economic factors, psychological factors, market-related factors, labour-related factors and situational factors. The only remedy to the discontinuation of garlic production is to do all that is possible to make garlic cultivation a profitable business and to encourage farmers to continue garlic production. As an effort towards this direction, the government should augment its investment in garlic production promotion and its allied areas, including value addition and processing units, , transport, communication, marketing, rural infrastructure, storage processing and farm research should be considerably increased and the government should aim at today integrated development of rural areas considering the socio-economic characteristics of farmers. The solution to the problem is not in a few packages like promotional incentives, but drastic changes in the present economic policies related to garlic cultivation need to be done. All agrarians, agricultural labourers, societies, government, and farmers' organizations should work collectively to revive the situation back to normal.

**CONFLICT OF INTEREST**

This is to declare that there is "No conflict of interest" among researcher.

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