Research Paper Agriculture

Correlates of Adoption and Constraints Faced by the Gram Farmers in Adoption of Improved Cultivation Practices

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ABSTRACT

Findings of relational analysis revealed that, in respect to adoption, it was found that education, land holding, annual income, extension contact, scientific orientation, subscription of farm literature, area under gram, availability of input were positively and significantly correlated with the adoption of improved gram cultivation practices. further multiple regression analysis of adoption showed that land holding and extension contact were positively and significantly associated with adoption. However, all the independent variables (81.14%) variation in adoption about improved cultivation practices in gram.

In case constraints it was found that majority (81.66%) of the respondents reported that they have very less knowledge about scientific plant protection measures. While 74.16 per cent of respondents reported that they have less unavailability of chemical fertilizers in season followed by 71.66 and 70.83 per cent of respondents had Lack of knowledge about seed treatments and High cost of pesticides and insecticides.

The majority of the respondents 68.33 per cent faced the constraint of lack of scientific knowledge about FYM preparation followed by 66.66 and 65.00 uncertainty of rainfall and High prices of improved seeds.

Keywords : adoption, constraints, multiple regression

INTRODUCTION:

Role of pulses in Indian agriculture needs hardly any emphasis. India is a premier pulse growing country. The pulses are an integral part of the cropping system of the farmers all over the country because these crops fit in well in the crop rotation and crop mixtures followed by them. Pulses are important constituents of the Indian diet and supply a major part of the protein requirement.

Gram (*Cicer arientinum* L.) is leguminous pulse crop which belongs to leguminasae family and chromosome number is 2n=14, 16. It is best pulse crop from nutrition point of view. Pulses are main source of protein in vegetarian diet. Legume has unique role in human and animal nutrition as well as in improvement of soil fertility by improving physico chemical and biological properties of the soil.

In India, major states growing chickpea are Madhya Pradesh, Rajashtan, Bihar, Maharashtra and Uttar Pradesh etc. Among these states Maharashtra ranks third in acreage under chickpea after Madhya Pradesh and Rajasthan. Madhya Pradesh produces the major share of 40 per cent of total India production. In Maharashtra, it constitute 1.29 million ha area producing 1.11million tones with the productivity of 863 kg/ha. in 2009-10. The area under chickpea in Maharashtra contributes about 15.80 per cent of total area under chickpea in India and production of chickpea has share of 14.90 per cent in the total production in chickpea in India (Economic Survey of Maharashtra 2009-10).

In Maharashtra, during 2010-11 the area under chickpea was 13.95 lakh hectare whereas the production was 13.01 lakh tons. In Vidarbha during 2010-11 the area under chickpea was 3.65 lakh hectare and the production was 3.55 lakh tons. In Vidarbha Akola, Amravati, Yavatmal, Buldhana, Nagpur and Washim are the major districts which growing chickpea on large area.

METHODOLOGY:

Locale of study

The study was conducted in three Panchayat Samities of Akola district namely, Akola, Barshitakli and Akot, in Vidarbha region of Maharashtra State having large area under Gram cultivation.

The exploratory design of social research was used for present study.

Selection of villages:

Villages were selected on the basis of maximum area under Gram crop. Four villages from each Panchayat Samiti were selected randomly. Amongst Akola tahsil, Khadaki, Kanadi, and Sangvi-Mohadi Sukoda whereas in Barshitakli tahsil, Vijhora Hatoda Kherada Katarkhed and in Akot tahsil Varur Akoli Kunarkhed and Adgaon villages were selected.

Selection of respondents:

Ten respondents were selected from each village by random sampling method, making a sample size of 120 in total.

Measurement of Adoption

Adoption is operationally defined as degree of actual use of improved cultivation practices by Gram growers.

It was measured with the help of teacher made scale. It was measured on three point continuum as full adoption, partial adoption and non-adoption by assigning the score of 2, 1 and 0, respectively. The adoption score was then converted into

adoption index by applying following formula..

$$\text{Adoption index} = \frac{\text{Obtained adoption score}}{\text{Maximum Obtainable adoption score}} \times 100$$

Later on respondents were categorized as low adoption, medium adoption and low adoption respectively

Results and Discussions:
Correlation analysis

Adoption
The correlation between personal, socio-economical and communication characteristics and adoption of improved cultivation practices of gram have been presented in Table 1.

Table 1: Correlation coefficients of characteristics of the respondents with their adoption.

Sr. No.	Variables	' r ' values
1	Age	-0.3960*
2	Education	0.5403**
3	Land holding	0.8800**
4	Annual income	0.8636**
5	Extension contact	0.6992**
6	Scientific orientation	0.4191**
7	Source of information	-0.049^{NS}
8	Economic motivation	-0.0348^{NS}
9	Subscription of farm literature	0.5871**
10	Cropping pattern	0.1711^{NS}
11	Area under gram	0.8177**
12	Availability of input	0.5065**

** = significant at 0.01 probability level

NS = Non significant, *= Negatively significant

It is observed from Table 1 that education (0.5403), land holding (0.8800), annual income (0.8636), extension contact (0.6992), scientific orientation (0.4191), subscription of farm literature (0.5871), area under gram (0.8177), availability of input (0.5065) were positively and significantly correlated with the adoption level of the respondents. The relationship was significant at 0.01 level of probability. Age (- 0.4095) was found to be negatively and significantly related with the adoption level of the respondents. However, relationship of source of information (-0.049), economic motivation (-0.0348) and cropping pattern (0.1711) was found to be non-significant with adoption level of respondents.

Multiple regression analysis
Multiple regression analysis of independent variables with adoption

The results furnished in Table 2 indicated that out of twelve variables the regression coefficient of land holding and Extension contact were positively significant with 0.01 and 0.05 level of probability, respectively.

Table 2: Multiple regression analysis of independent variables with adoption

Sr. No.	variables	Regression coefficient	SE (B)	' t ' value
1	Age	-0.2055	0.1763	-1.1655
2	Education	0.2723	0.5834	0.4668
3	Land holding	3.3230	1.1028	3.0131**
4	Annual income	0.0001	0.0001	1.0304
5	Extension contact	0.5667	0.4423	1.2813*
6	Scientific orientation	0.3421	0.3376	1.0133
7	Source of information	-0.3285	0.1654	-1.9860
8	Economic motivation	0.0413	0.2194	0.1883
9	Subscription of farm literature	-1.1222	2.0719	-0.5416
10	Cropping pattern	-0.0478	0.5342	-0.0894
11	Area under gram	0.7147	1.2639	0.5655
12	Availability of input	0.3032	0.3999	0.7582

R^2=0.8114 'F' value= 38.37

** = significant at 0.01 probability level.

*= significant at 0.05 probability level.

It was further observed that out of twelve variables land holding was significant at 0.01 level of probability and extension contact was significant at 0.05 level of probability.

The other variables did not contribute to the variation in adoption of improved cultivation practices of gram. All these variables jointly could explain a variation of 81.14 per cent in possessing the adoption about improved cultivation practices of gram an indicated by R^2 value (0.8114). The 'F' value (38.37) for R^2 was also found to be significant at 0.01 level of probability.

It indicated that out of total contribution twelve variables land holding were positive contribution in explaining the variation in knowledge of the respondents about improved cultivation practices of gram.

Table 3. Constraints faced by gram growers in adoption of improved technology.

Sr. No.	constraints	Frequency n=120	Percentage
1	Lack of scientific knowledge about FYM preparation	82	68.33
2	Unavailability of seed within time	70	58.33
3	High prices of improved seeds	78	65.00
4	Lack of knowledge about seed treatments	86	71.66
5	Unavailability of chemical fertilizers in season	89	74.16
6	Less knowledge about scientific plant protection measures	98	81.66
7	High cost of pesticides and insecticides	85	70.83
8	Less information about recommended varieties	75	62.50
9	Uncertainty of rainfall	80	66.66
10	Unavailability of laborers	70	58.33

It is observed from Table 3 that majority 81.66 per cent of the respondents reported that they have very less knowledge about scientific plant protection measures. While 74.16 per cent of respondents reported that they have less unavailability of chemical fertilizers in season followed by 71.66 and 70.83 per cent of respondents had Lack of knowledge about seed treatments and High cost of pesticides and insecticides.

The majority of the respondents 68.33 per cent faced the constraint of lack of scientific knowledge about FYM preparation. Followed by 66.66 and 65.00 uncertainty of rainfall and High prices of improved seeds.

The other constraints like less information about recommended varieties (62.50), unavailability of seed within time (58.33%), and unavailability of laborers (58.33%).

It could be concluded that a lack of information about appropriate insecticide/ pesticides, lack of knowledge about pest and diseases resistant variety, lack of knowledge about seed treatments, unavailability of chemical fertilizers in season

were the main constraints in adoption of improved cultivation practices of gram. The information on improved cultivation practices may be provided to the gram growers with a view to increase the use of improved cultivation practices in gram crop.

Conclusion:

The major constraints like lack of knowledge about scientific plant protection measures to control various pest and diseases, lack of knowledge about seed treatments , non adoption of improved technology by other farmers and lack of proper guide line and training by various extension agencies expressed by the gram growers.

Hence, it is suggested that to overcome these constraints more efforts need to be taken though Farmers Field School, by extension agencies which will help to increase interest, focus and knowledge of gram growers towards improved technology. Inputs should be made available to the gram growers in time, provision of subsidies and policies by government should be provided.

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