

A Case Study

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Psychological characters and knowledge with respect to recommended crop production technology of castor as intercrop with groundnut

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ABSTRACT : Gujarat is leading state in groundnut cultivation in both area and production. Gujarat accounts for 1/3rd of the total area under groundnut in the country. In term of production Gujarat contributes around 30 per cent to the country's groundnut production. Groundnut cultivation in Gujarat predominantly concentrated Saurashtra region. Though, the groundnut is a principal crop of the Saurashtra, there is a wide gap between average yield of common farmers and actual potential yield. Because of knowledge gap of recommended practices of groundnut. To measure the knowledge level of respondents about recommended practices of groundnut and to ascertain the association of knowledge with the selected characteristics of respondents the study was conducted under ex-post facto research design. 4 talukas were randomly selected, from each selected taluka three villages were selected randomly. Thus, 12 villages were selected. Total 120 respondents, 10 respondents from each selected village were selected by using multistage random sampling technique. Data show that majority (65.00%) of the respondents had medium level of knowledge about the recommended crop production technology of castor as intercrop with groundnut and characteristics of the respondents like education, extension participation, innovativeness, risk orientation and cropping intensity had positive and highly significant relationship with the knowledge of respondents about recommended crop production technology of castor as intercrop with groundnut.

Key Words : *Kharif* groundnut, Knowledge, Association, Psychological characters

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Groundnut (*Arachis hypogaea*), is an important crop grown worldwide which is cultivated in more than 100 countries. Groundnut is considered as the world's fourth largest source of edible oil and third most important source of vegetable protein. It is also a major oilseed legume crop in India and meets about 30 per cent of the edible oil requirements in the country. Saurashtra is an oil pouch of the India. Groundnut is cultivated across the region on 1.63 million hectares of land with output of 1.7 million tones nut in shell. All India base, share of Saurashtra is 25 per cent by area and 27 per cent by production. In the *Kharif* season of 2012-13 in Gujarat, the area under groundnut crop was estimated to be about 1.22

million hectares as against 1.434 million hectares in last year. At country level, it is reported to be 3.81 million hectares, about 5 per cent less than last year and only 6,95,000 tonne of *Kharif* groundnut production in Gujarat this fiscal as compared to 17,35,000 tonne in 2011-12 (Anonymous, 2012). During 2012-13, monsoon remained poor in Gujarat and particularly in Saurashtra region. Some groundnut area was also reported to be vitiated. Hence, the production may be very less. Knowledge is the function of an innovation decision process when "the individual is exposed to an innovation existence and gains some understanding of its functions." There are three components of the knowledge viz., 1. "Awareness knowledge"

which refers to the information that innovation exists. 2. “How to knowledge” which refers to the information needed to use an innovation properly. 3. “Principle knowledge” which comprises the functioning. Principles underlying the innovation (Rogers and shoemaker, 1971).

Though, the groundnut is a principal crop of the Saurashtra, there is a wide gap between average yield of common farmers and actual potential yield. The low yield leads to a considerable gap between supply and demand of edible oil in our country. As a result of this gap, the price of the edible oil rise beyond the reach of economically weaker section. The low yield of the groundnut could mainly be attributed to the fact that, the farmers have not still adopted the recommended practices of *Kharif* groundnut. Knowledge concerning the recommended *Kharif* groundnut practices play vital role in adoption of the technologies by the farmers. Moreover, there is low knowledge and adoption comes in the way of recommended *Kharif* groundnut practices which hampered the groundnut production, with this consideration the problem entitled knowledge and adoption of recommended practices of *Kharif* groundnut growers in South Saurashtra agro climatic zone of Gujarat state was undertaken.

RESEARCH PROCEDURE

Area of the study :

The study was conducted in the South Saurashtra Agro Climatic Zone of Gujarat State for the following reasons. 1. The area has ideal conditions for the successful cultivation of *Kharif* groundnut. 2. The soil and climatic conditions are very favorable for the cultivation of *Kharif* groundnut. 3. Similar research study was not conducted in the area under study.

Research design :

The study was conducted under *ex-post facto* research

design. It is systemic empirical enquiry in which the scientist does not have direct control over the independent variables because their manifestations have already occurred or they are inherently not manipulated (Kerlinger, 1969).

Sampling techniques :

A multistage random sampling technique was followed for this study. The sampling technique is described as under.

Selection of the talukas :

The South Saurashtra Zone is consisted of 26 talukas of 5 districts of the state having common agro-climatic conditions. Out of 26 talukas, 4 talukas were randomly selected.

Selection of the villages :

From each selected taluka three villages were selected randomly. Thus, 12 villages were selected.

Selection of the respondents :

Total 120 respondents, 10 respondents from each selected village were selected by using multistage random sampling technique with a condition that the farmers have cultivated *Kharif* groundnut at least since last two years.

The knowledge considered as a body of “understood information” and “how to knowledge” possessed by the farmers about castor as intercrop with groundnut product.

For measuring the knowledge of groundnut growers about recommended practices of groundnut, the teacher made knowledge test was used. The knowledge was measured by asking the questions regarding recommended practices of groundnut. Then, with the help of mean and standard deviation, the respondents were categorized about knowledge level of the groundnut cultivation practices. A unit score was given to correct and zero to incorrect response. The total score obtained by individual respondent for all the statements was calculated.

Sr. No.	Name of talukas	Name of villages	Number of selected respondents
1.	Maliya Hatina	Bhanduri	10
		Pinkhor	10
		Maliya	10
		Farangata	10
2.	Mangrol	Sheel	10
		Sarsali	10
		Samadhiyala	10
3.	Upleta	Varjangaliya	10
		Mekhatimbi	10
		Khunpur	10
4.	Kutiyana	Mandava	10
		Thepada	10
Total			120

The knowledge was calculated by using following formula :

$$Ki = \frac{X_1 + X_2 + \dots + X_n}{N} \times 100$$

where,

Ki = Knowledge index

$X_1 + X_2 + \dots + X_n$ = Total number of correct answers *i.e.* Total score

N = Total number of items in the test.

Psychological characteristics :

Innovativeness :

Innovativeness is operationally defined as the degree to which a farmer is relatively earlier in adoption of new ideas. The procedure developed by Singh (1977) was used to measure the innovativeness of a farmer. The questions were asked as:

“When would you prefer to adopt an improved practice in farming?”

- As soon as it is brought to my knowledge (3 score)
- After I have seen some other farmers using successfully (2 score)
- Prefer to wait and take my own time (1 score).

Risk orientation :

The scale developed by Singh and Supe (1969) was used

with slight modification to measure the risk orientation of the respondents.

The scale consisted 6 statements out of which two were negative. The respondents were asked to respond on three point continuum rating scale as agree, undecided and disagree giving 3, 2 and 1 score, respectively for positive statements and 1, 2 and 3, score, respectively for negative statements. The total score was calculated by summing up the scores obtained for each statement by the respondents. The respondents were classified into three categories on the basis of mean and S.D.

RESEARCH ANALYSIS AND REASONING

From the Table A and Fig. 1, it is clear that 65.00 per cent of the respondents were from medium level knowledge group with respect to recommended crop production technology of castor as intercrop with groundnut. The considerable amount (20.00 and 15.00 %) of respondents were in low and high knowledge group, respectively.

This might be due to fact that the respondents had medium social participation, medium risk orientation and medium extension participation. These factors had favorably helped the respondents in getting more knowledge about recommended crop production technology of castor as

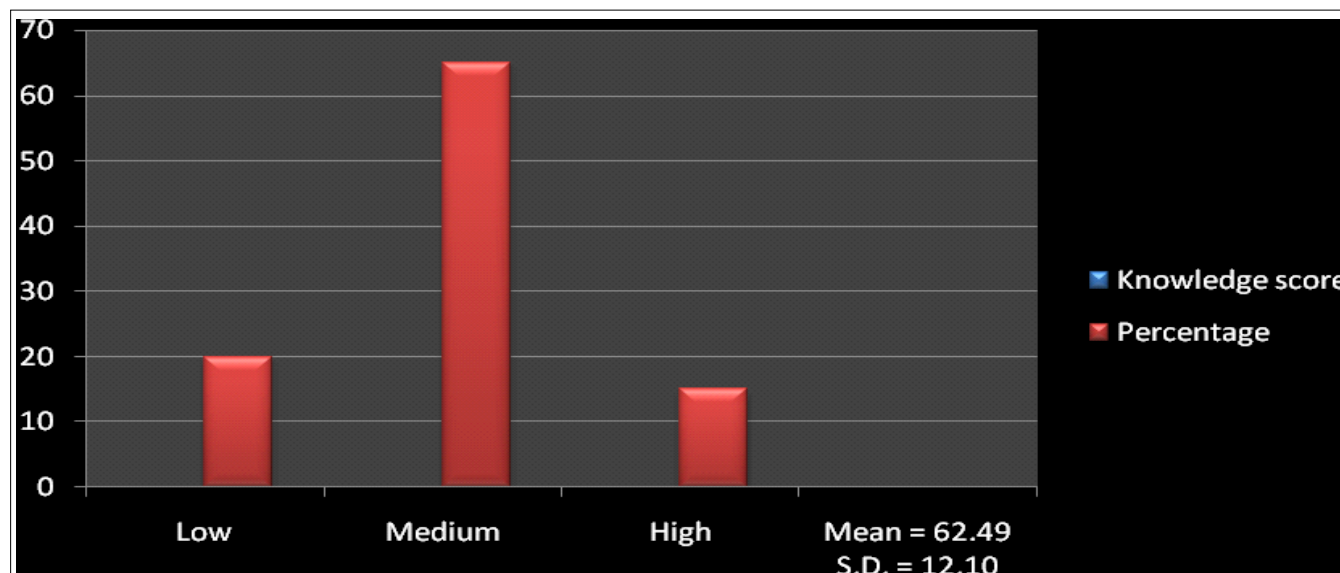


Fig. 1 : Distribution of respondents based on their knowledge about recommended crop production technology of castor as intercrop with groundnut

Categories	Knowledge score	Frequency	Percentage
Low	Below 50.39	24	20.00
Medium	50.39 to 74.60	78	65.00
High	Above 74.60	18	15.00
Mean = 62.49 S.D. = 12.10			

intercrop with groundnut.

In order to ascertain the relationship between the level of knowledge (dependent variable) of the farmers and each of their selected characteristics (independent variables), the correlation co-efficient ('r') were calculated. The empirical hypotheses were stated for testing the relationship and its significance on zero order correlation are given in Table 2.

The characteristics of the respondents like education, extension participation, innovativeness, risk orientation and cropping intensity had positive and highly significant relationship with the knowledge of respondents about recommended crop production technology of castor as intercrop with groundnut. The characteristics of the respondents like size of land holding, social participation, localite-cosmopolite value orientation, mass media exposure and irrigation potentiality were positively and significantly related with the knowledge of farmers about recommended crop production technology of castor as intercrop with groundnut. There was no significant relationship with the knowledge about recommended crop production technology of castor as intercrop with groundnut and their annual income. Age was

negatively and significantly related with the knowledge of respondents about recommended crop production technology of castor as intercrop with groundnut.

Innovativeness :

It is apparent from the Table 3 that 49.17 per cent of the respondents were found to have medium innovativeness, whereas 35.83 and 15.00 per cent of them had high and low innovativeness, respectively. Out of total 85.00 per cent had medium and high innovativeness is found in this area because the farmers of this area are educated and progressive in nature.

Risk orientation :

The data presented in Table 3 clearly indicated that 67.50 per cent respondents belonged to medium risk orientation group followed by 19.17 and 13.33 per cent respondents were from low and high risk orientation, respectively. Therefore, it can be concluded that majority of the respondents opted for medium risk in adoption of recommended crop production technology of castor as intercrop with groundnut. Reddy *et al.* (1965) reported that growing castor mixed with groundnut

Table 2 : Correlation between knowledge of the respondents about recommended crop production technology of castor as intercrop with groundnut and independent variables (n =120)

Sr. No.	Name of the independent variables	'r' value
1.	Age	-0.1987*
2.	Education	0.2743**
3.	Size of land holding	0.2244*
4.	Annual income	0.1258 ^{NS}
5.	Social participation	0.1961*
6.	Localite-cosmopolite value orientation	0.2107*
7.	Extension participation	0.3961**
8.	Mass media exposure	0.2046*
9.	Innovativeness	0.3364**
10.	Risk orientation	0.2925**
11.	Irrigation potentiality	0.1806*
12.	Cropping intensity	0.2688**

* Significant at P=0.05 level r = 0.1740, ** Significant at P=0.01 level r = 0.2280, NS = Non-significant

Table 3 : Distribution of the respondents according to their psychological characteristics (n = 120)

Sr. No.	Characteristics	Frequency	Percentage
1.	Innovativeness		
	Low innovativeness	18	15.00
	Medium innovativeness	59	49.17
2.	High innovativeness	43	35.83
	Risk orientation		
	Low risk orientation (Below 7.69)	23	19.17
	Medium risk orientation (7.69 to 14.16)	81	67.50
	High risk orientation (Above 14.16)	16	13.33

Mean = 10.92 S.D. = 3.23

was better than raising a pure crop of castor, and monetary returns were 61.9 per cent higher than pure castor. They also reported that the yield of castor was more when it was grown mixed with groundnut compared to castor grown mixed with greengram, cowpea, *Setaria*, millet or sorghum. In East Africa, Evans and Sreedharan (1962) showed that there was a clear increase in production when castorbean and groundnuts were planted together compared to sole cropping. Tarhalkar and Rao (1975) reported that intercropping of castor/ groundnut gave monetary returns up to Rs. 4394 per hectare compared with Rs. 3317 per hectare obtained from a pure castor crop.

Conclusion :

Majority (65.00 %) of the respondents had medium level of knowledge about the recommended crop production technology of castor as intercrop with groundnut. Whereas, 20.00 per cent and 15.00 per cent respondents had low and high levels knowledge about recommended crop production technology of castor as intercrop with groundnut, respectively.

The characteristics of the respondents like education, extension participation, innovativeness, risk orientation and cropping intensity had positive and highly significant relationship with the knowledge of respondents about recommended crop production technology of castor as intercrop with groundnut. Nearly fifty per cent (49.17 %) and 67.50 per cent of the respondents were found to have medium innovativeness and risk orientation group, respectively.

Extension personnel should make use of the level of knowledge on different aspects about recommended crop production technology of castor as intercrop with groundnut, while conducting respondents training programmes in general and particularly in this area. To raise the respondents' knowledge and adoption of recommended crop production technology of castor as intercrop with groundnut they should

be facilitated with latest technical know – how and motivate them to participate in the extension activities.

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