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Socio-psychological attributes of the maize growers

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Abstract

This investigation was carried out in three district of Bastar plateau of Chhattisgarh State to assess the level of Socio-psychological attributes of the respondents. 270 farmers were consider as respondents for this study. Respondents were interviewed through personal interview. Collected data were analyzed with the help of suitable statistical methods. The analysis of the results showed that most of the respondents were regarding to their overall knowledge about the maize production technique had medium level of knowledge, favorable opinion, medium level of scientific orientation and risk orientation.

Introduction

Maize (*Zea mays* L.) is one of the most important cereal crops in the world and has the highest production among all the cereals. It is a miracle crop, it has very high yield potential, there is no cereal on the earth which has so immense potentiality and that is why it is called 'queen of cereal'. Besides, maize has many types like normal yellow, white grain, sweet corn, baby corn, pop corn, waxy corn, high amylase corn, high oil corn, quality protein maize, etc. Maize is the most important crop in the world after wheat and rice (Verheys, Undated). It is an important staple food in many countries and is also used as animal feed and many industrial applications. Maize is 3rd major crop in India after rice and wheat (Cox, R., 1956 & Reddy *et. al.* 2013). Maize is important cereal crop which provides food, feed, fodder and serves as a source of basic raw material for a number of industrial products viz, starch, protein, oil, food sweeteners, alcoholic beverages, cosmetics, bio-fuel etc, it is cultivated over 8.12 million hectare area with an annual production of 19.77 million tones and an average productivity of 2,435 kg ha-1 (Langade *et. al.* 2013) [8]. Maize is the third most important food grain in India after wheat and rice. In India, about 28% of maize produced is used for food purpose, 11% as livestock feed, 48% as poultry feed, 12% in wet milling industry (for example starch and oil production) and 1% as seed (AICRP on Maize, 2007). Maize crop in the state has an area of 123430 ha with the production 254134 MT (C.G. Agriculture Statistic Report 2014). The area and production of Maize crop in Kanker district was 11511 ha and 25705 MT respectively, area of maize crop in Kondagaon district is 13586 ha with production of 31831 MT while the coverage of maize in Bastar district is 9560 ha with the production of 22398 (C.G. Ag. statistic Report 2014). The Socio-psychological attributes indicate the social standing or class of an individual or group. It is often measured as a combination of education, income and occupation of respondents. The present study was undertaken with specific objectives to assess the Socio-psychological attributes of the maize growers of Bastar plateau of Chhattisgarh.

Material and Methods

The present study was carried out in Bastar plateau of Chhattisgarh State. Three districts in the zone *i.e.* Kanker, Kondagaon and Bastar were undertaken for the study. Two blocks from each of the selected district Block Antagarh and Koylibeda in Kanker District, Keshkal and Baderajpur in Kondagaon, Bastar and Bakawand in Bastar District. Each selected block 3 villages *viz.* Irrabodi, Amagaon, Godri, in Antagarh Block, Chotekapsi, Kodosalhebhat, Manegaon, in Koylibeda Block, Cherbeda, Toraibeda, Amoda in Keshkal Block, Baderajpur, Toraipara, Khargaon (Manduki) in Baderajpur Block, Ikchapur, Bagmohlai, Dubeumargaon in Bastar Block, Belputi, Khotlapal and Mangnar in Bakawand Block were selected and from each selected village, 15 farmers were selected randomly. In this way total two hundred seventy respondents were selected to response as per the interview schedule designed for the study. Collected data were analyzed by the help of various statistical tools i.e. frequency, percentage, mean, standard deviation, correlation and regression, etc.

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In this study, the Socio-psychological attributes indicate the social standing or class of an individual or group. The scoring procedure was used as follow.

Socio-psychological Attributes
Knowledge
Knowledge about innovations may be an important factor affecting the adoption behaviours of respondents. Knowledge is of three types namely awareness knowledge, how to knowledge and principle knowledge (Rogers, 1983) [13]. In the present study operational knowledge was used as the actual knowledge of the respondents regarding selected improved cultivation practices namely selection of suitable land, improved variety, seed rate, seed treatment, sowing time, thinning, fertilizer application (organic manure and chemical fertilizer), Micronutrient, weed control, irrigation, plant protection, harvesting and threshing.

A device was developed to measure the knowledge level of respondents regarding to recommended maize production technique by adopting the scale suggested by Paikra (2014) and categorised as follow.

Categories	Score
Incomplete knowledge	0
Partial knowledge	1
Complete knowledge	2

A knowledge index was worked out to assess the level of knowledge of each respondent with the help of following equation.

$$KI = \frac{O^i}{S} \times 100$$

Where,
K.I. = Knowledge index of I^{st} respondent
O^i = Total score obtained by the I^{st} respondent
S = Total obtainable score

Considering the knowledge score of the respondents were categorized in to following groups on the basis of knowledge index.

Category	Score
Low	Up to 33.33%
Medium	33.34-66.66%
High	Above 66.66%

Opinion about maize production
Opinion refers to a judgment, viewpoint or statement of respondents. Present study was carried out on the basis of respondents keeping in mind the maize production.
To measure the opinion of respondents regarding maize production formulating 6 statements was used. The opinion regarding each of the 6 statements from each of the 270 respondents was measured on five point response continuum, viz. strongly favourable, favourable, neutral, unfavourable and strongly unfavourable. The scoring pattern adopted for above response continuum for the statements was 5,4,3,2 and 1. The score for opinion towards maize production was obtained by summing score of all statements. Maximum score 30 and minimum score was 6. Considering opinion about the maize production of the respondents score, categories into

three groups namely 'less favorable', 'favorable' and 'more favorable' by using mean and standard deviation. Opinion about maize production was measured by using the scale fallowed by Nayak. (2016) with slight modifications and categorised as follow on the basis of mean and SD.

Categories	Score
Less Favourable	Up to 18
Favourable	19 – 27
More Favourable	Above to27

Scientific orientation
It is the degree to which respondents were oriented to the use of scientific methods in decision-making and farming. This variable was measured by using the scale developed by Supe (2007) with slightly modification. The scale consisted of 6 items. The first 5 statements were positive and statement number 6 was negative. The responses were to be recorded on five point continuum from strongly agree, agree, undecided, disagree and strongly disagree. The scoring procedure was used as follow.

Particulars	Response				
	SA	A	UD	DA	SDA
Score for positive statement	5	4	3	2	1
Score for negative statement	1	2	3	4	5

SA- Strongly Agree, A- Agree, UD- Undecided, DA- Disagree. SDA- Strongly Disagree
Considering the scientific orientation score of the respondents were categorized into following groups on the basis of mean and SD.

Categories	Score
Low level of scientific orientation	< 20
Medium level of scientific orientation	20 to 26 score
High level of scientific orientation	>26

Risk orientation
Farmers differ in the degree to which they accept risk, make decisions every day that affect farming operations and production. Risk orientation is the degree to which respondents were oriented towards risk, uncertainty and courage to face the problems in farming. The risk orientation was measured by using the scale developed by Supe (2007) with slight modifications. This scale consisted of 6 statement first 4 statements were positive and 5, 6 were negative. The responses were to be recorded on five point continuum from strongly agree, agree, undecided, disagree and strongly disagree. The scoring procedure was used as fallow.

Particulars	Response				
	SA	A	UD	DA	SDA
Score for positive statement	5	4	3	2	1
Score for negative statement	1	2	3	4	5

SA- Strongly Agree, A- Agree, UD- Undecided, DA- Disagree. SDA- Strongly Disagree
Considering the risk orientation score of the respondents were categorized into following groups on the basis of mean and SD.

Categories	Score
Low level risk orientation	<17
Medium level risk orientation	17 to 21score
High level risk orientation	>21

Table 1: Extent of knowledge of the respondents regarding recommended practices of maize cultivation

S. No.	Category	Frequency	Percentage
1	Low (Up to 33.33%)	30	11.11
2	Medium (33.34-66.66%)	197	72.96
3	High (Above 66.66%)	43	15.93
	Total	270	100.00

Result and Discussion

The result and discussion of the present study have been summarized on the basis of response of respondents regarding to Socio-psychological attributes among the respondents are represented in the following.

Socio-psychological Attributes
Knowledge

The extent of overall knowledge of the respondent's data showed in Table No.1. It indicated 72.96 percent respondents had medium level of knowledge, followed 15.93 percent respondents were high level of knowledge and 11.11 percent respondents had low level of knowledge about the maize production. The data indicates among the respondents regarding recommend practices of maize production was observed medium level of knowledge. Similar findings were supported by yadav (2014) who reported 68.83 percent respondents had belong to medium level of knowledge about the improved tomato production technology in the study area.

The extent of knowledge had been tested with suitable parameters and represented in Table No. 2. The knowledge about the improved technology of maize cultivation from the different respondents had been analyzed and interpreted. It was observed that majority of the respondents of about 54.44 percent had partial knowledge about the selection of suitable land for maize cultivation and only 35.19 percent of the respondents had clear knowledge about the suitable land selection for the maize crop. The extent of knowledge about the selection of improved varieties and seed rate was comparatively higher as 45.93 and 51.50 percent respectively while, 43.70 percent and 44.40 percent of the respondents had partial knowledge about the improved varieties and seed rate, respectively. Poor knowledge of seed treatment was exhibited from the respondents. Only 0.74 percent of the respondents had complete knowledge of seed treatment and rest had shown the incomplete or partial knowledge.

Table 2: Distribution of the respondents by their extent of knowledge regarding to recommended practices of maize cultivation

S. No.	Practice	Extent of knowledge					
		Compl.		Partial		Incom.	
		F	Percentage	F	Percentage	F	Percentage
1	Selection of suitable land	95	35.19	147	54.44	28	10.37
2	Improved varieties	124	45.93	118	43.70	28	10.37
3	Seed Rate	139	51.50	120	44.40	11	4.10
4	Seed Treatment	2	0.74	5	1.85	263	97.41
5	Sowing Time	205	75.93	36	13.33	29	10.74
6	Thinning	9	3.33	51	18.89	210	77.78
	Fertilizer Application						
7	Chemical Fertilizer	45	16.67	218	80.74	7	2.59
	Organic Manure	11	4.10	220	81.50	39	14.40
8	Micronutrient	13	4.80	112	41.50	145	53.70
	Weed Control						
9	Manual	209	77.40	47	17.40	14	5.20
	Chemical	94	34.81	45	16.67	131	48.52
10	Irrigation	56	20.74	158	58.52	56	20.74
11	Plant Protection	19	7.04	145	53.70	106	39.26
	Harvesting						
12	Cob form	112	41.48	2	0.74	156	57.78
	Grain	261	96.67	7	2.52	2	0.74
	Threshing						
13	Maize Sheller	0	0.00	2	0.74	268	99.26
	Maize Thresher	261	96.67	7	2.52	2	0.74

The knowledge about the selection of suitable land 54.44 percent of respondents had partial knowledge of proper selection. Variety and seed rate of maize 45.93 and 51.50 percent of respondents had complete knowledge. Majority of the respondents lack of knowledge about the seed treatment (97.41%).The knowledge about the right time of sowing was expressed by the respondents. It was observed that majority (75.93%) of respondents had complete knowledge of appropriate time of sowing. Majority of the respondents lack of knowledge about the thinning and exhibited as 77.78 percent as incomplete knowledge.
Poor knowledge of nutrient management in maize crop was

exhibited by the respondents. Majority of the respondents had partial knowledge of chemical fertilizer and organic manure to be applied in maize crop as 80.74 and 81.50 percent respectively. Similarly the knowledge about the micronutrient application in maize crop exhibited incomplete knowledge of 53.70 percent.
The data was revealed by respondents for the weed management practices in maize crop, the 77.40 percent of the respondents were well aware about the manual weeding, majority of the respondents lack the knowledge about herbicide application under chemical weed control. Partial knowledge of irrigation in maize crop as 58.52 percent was

expressed by the respondents. Poor knowledge of plant protection measures for maize crop was observed. It was found that 53.70 percent of the respondents had partial knowledge of suitable plant protection measures for maize crop whereas, 39.26 percent of the respondents had incomplete knowledge.

The extent of knowledge about the harvesting of maize crop showed the results majority of the respondents lack the appropriate harvesting of cob form maize, whereas they exhibited the sufficient knowledge about the harvesting of grain from maize crop, similarly appropriate knowledge about the adoption of maize thresher was exhibited by the respondents, about 96.67 percent of the respondents showed the complete knowledge about the maize threshing. Poor knowledge of maize Sheller was exhibited among the various respondents majority of the respondents of about 99.26 percent showed the incomplete knowledge.

Opinion about maize production

Suitability of maize crop in the study area was assessed on the basis of opinion of the respondents. Overall opinion about the maize cultivation as suitable venture is compiled and depicted in the Table No. 3A. It is cleared from the data that 77.4 percent of the respondents expressed the favourable opinion about the maize cultivation, while of the respondents expressed that maize cultivation is less favourable for them. Least number of respondents (6.3%) expressed that maize cultivation is more favourable for them. The similar findings were reported by Sahu (2008) who reported 58.89 percent respondents were favourable opinion about the cultivation of miner millets in the study area.

Table 3: A Distribution of the respondents on the basis of their opinion

S. No.	Category	Frequency	Percentage
1	More Favourable (Above 27)	17	6.30
2	Favourable (19 – 27)	209	77.40
3	Less Favourable (Up to 18)	44	16.30
	Total	270	100.00
		Mean-22.6	SD- 4.15

Statement of opinion of the different respondents were collected and tabulated in Table no 3B. Suitability of the maize crop in the study area were assessed on the basis of the statement of the respondents and further ranked.55.93 percent of the respondent's opinion that maize cultivation was strongly favourable for them for improving their socio-economic status of the family followed by 37.78 percent respondent's opinion was favourable pertaining to maize cultivation. It was observed that least percentage of 4.81 and 1.48 percent respondents expressed that maize cultivation was unfavourable and strongly unfavourable respectively for them to improve their socio-economic status of the family.

Among the different opinion collected from different respondents about the maize cultivation. The statement of opinions viz. maize crop production is helpful in improving the socio-economic status of the family, use of improved technique of maize are helpful in increasing productivity, continues cultivation of maize crop is beneficial and maize crop can perform better even under less moisture condition are lied and scored under the category of favourable and strongly favourable and very few respondents expressed it as unfavourable or strongly unfavourable. Among the statement of opinion i.e. maize is potent crop to give better yield even in less fertile soil are scored 51.85 percent as favourable and 25.56 and 14.07 percent of the respondents scored as unfavourable and favourable opinion respectively. The opinion about the following of maize cultivation trends as prevail in the village scored 27.8 percent as unfavourable and only 24.80 percent of the respondents scored it as strongly favourable.

The ranking of the opinions of the respondents on different points of suitability of maize crop was carried out on the basis of scores attended by each statement of the opinion. Among different opinions the opinion, maize crop production is helpful in improving the socio-economic status of family ranked first fallowed by the opinion, use of improved production techniques of maize are helpful increasing productivity and maize crop can perform better under less moisture condition. Less weightage was scored on the opinion, maize is potent crop to give better yield even in less fertile soil compared to other statement of opinion

Table 3: B Distribution of the respondents on the basis of their statement wise opinion

S. No.	Statement	SF	F	N	UF	SUF	Mean Score	Rank
1	Maize crop production is helpful in improving the socio-economic status of family.	151 (55.93)	102 (37.78)	0 (0.00)	13 (4.81)	4 (1.48)	4.41	I
2	Use of improved production techniques of maize is helpful in increasing productivity.	87 (32.22)	148 (54.81)	20 (7.41)	15 (5.56)	0 (0.00)	4.13	II
3	Continues cultivation of maize crop is beneficial.	95 (35.19)	102 (37.78)	0 (0.00)	38 (14.07)	35 (12.96)	3.68	IV
4	Maize is potent crop to give better yield in less fertile soil.	21 (7.78)	140 (51.85)	2 (0.74)	69 (25.56)	38 (14.07)	3.13	VI
5	Maize crop can perform better under less moisture (water) condition.	88 (32.60)	144 (53.30)	6 (2.20)	27 (10.00)	5 (1.90)	4.04	III
6	Following of maize cultivation trends as prevail in village.	67 (24.80)	57 (21.10)	37 (13.70)	75 (27.80)	34 (12.60)	3.17	V

Note SF-StronglyFavourable, F-Favourable, N-Neutral, UF-Unfavourable, SUF- Strongly Unfavourable

Scientific orientation

Scientific orientation of the respondents was scored and categoriesd in different groups depicted in Table No. 4 A. The data on scientific orientation of the respondents revealed that 77.77 percent of the respondents showed medium level of scientific orientation followed by 15.57 percent as high level

of scientific orientation. Only 6.66 percent of the respondents showed low level of scientific orientation. Similar findings were reported by Paikra (2014) in the study area who observed 75 percent respondents were medium level of scientific orientation.

Table 4: A Distribution of the respondents on the basis of their scientific orientation

S. No.	Category	Frequency	Percentage
1	Low level of scientific orientation (less than 20 score)	18	6.66
2	Medium level of scientific orientation (20 to 26 score)	210	77.77
3	High level of scientific orientation (Above 26 score)	42	15.57
	Total	270	100.00
		Mean – 23.46	SD – 2.90

The data on scientific orientation of the respondents about the maize production technology based on the six statements and five points of scales, which is depicted in Table No.4B. Scientific orientation based on statement viz. new methods of maize production give better results to a farmer than old methods, even a farmer with lots of experience hold use new methods of maize production, though it takes time for a farmer to learn new methods in maize production it is worth the efforts, A good farm experiments with new ideas in maize production and traditional methods of maize production have to changed in order to raise the level of living of a farmer falls under scale category of strongly agreed and agreed and less weightage was scored towards disagreement. The statement of scientific orientation i.e. the way of farmers fore fathers farmed is still the best way to farm today was scaled 55.56 percent of the respondents showed the disagreement.

On the basis of mean scores and weightage of statement of scientific orientation i.e. though it takes time for a farmer to learn new methods in maize production it is worth the efforts ranked first followed by the statement, New methods of maize production give better results to a farmer than old methods. The least ranking among the different statement of scientific orientation was placed under the statement, the way of farmers fore-fathers farmed is still the best way to farm today.

Table 4: B Distribution of the respondents on the basis of their statement wise scientific orientation

S. No.	Scientific orientation	SA	A	UD	DA	SDA	Mean Score	Rank
1	New methods of maize production give better results to a farmer than old methods.	111(41.11)	156 (57.78)	2 (0.74)	1 (0.37)	0 (0.00)	4.39	II
2	Even a farmer with lots of experience should use new methods of maize production.	136 (50.40)	109 (40.40)	13 (4.80)	12 (4.40)	0 (0.00)	4.36	III
3	Though it takes time for a farmer to learn new methods in maize production it is worth the efforts.	202 (74.80)	40 (14.80)	1 (0.40)	23 (8.50)	4 (1.50)	4.52	I
4	A good farmer experiments with new ideas in maize production.	79 (29.26)	161 (59.63)	11 (4.07)	15 (5.56)	4 (1.48)	4.09	IV
5	Traditional methods of maize production have to be changed in order to raise the level of living of a farmer.	62 (22.96)	173 (64.07)	15 (5.56)	20 (7.41)	0 (0.00)	4.02	V
6	The way of farmer's fore-fathers farmed is still the best way to farm today.	150 (55.56)	42 (15.56)	5 (1.85)	61 (22.59)	12 (4.44)	2.04	VI

Note SA-Strongly Agree, A-Agree, UD - Undecided, DA-Disagree, SDA-Strongly Disagree

Risk orientation

Overall risk orientation of the respondents about the maize production are categorised and represented in Table No. 5.A. It is evident from the table that majority of the respondents (74.81%) falls under the category medium level risk orientation followed by high level risk orientation. Least number of respondents falls under the category low level of risk orientation. Similar findings were reported by Narbariya (2017) in the study area, 61.34 percent respondent exhibited to medium level of risk orientation.

Table 5: A Distribution of the respondents on the basis of their risk orientation

S. No.	Category	Frequency	Percentage
1	Low level risk orientation (Less than 17score)	21	7.78
2	Medium level risk orientation (17 to 21 score)	202	74.81
3	High level risk orientation (Above 21score)	47	17.41
	Total	270	100.00
		Mean-19.67	SD – 2.17

Data pertaining to risk orientation of the respondents showed in Table No.5B. The statements of respondents viz . a farmer who is willing to take greater risk than the average farmer, usually do better financially, it is good for a farmer to take risk when he know his chance to success is fairly high, trying an entirely new method in maize production by a farmer involves risk, but it is worth doing it, a farmer should grow large number of crops to avoid greater risks involved in growing one or two crops and it is better for a farmer not to try new maize production method unless most other farmers have used them with success, fall in the category under strongly agreed and agreed. While statement i.e. a farmers should rather take more of a chance in making a big profit an to be contented with a smaller, but less risky profit observed that majority of the respondents expressed the strong agreement whereas, 30percent of the respondents showed the strong disagreement.

On the basis of mean score of the scales under different categories of risk orientation, the statement a farmer who is willing to greater risk than the average farmer, usually do better financially ranked first followed by statement trying an entirely new method in maize production by a farmer involves risks but it is worth doing it. The mean score of the statement a farmer should grow large number of crops to avoid greater risk involved in growing one or two crops found least among all categories and ranked last.

Table 5: B Distribution of the respondents on the basis of their statement wise risk orientation

S. No.	Risk orientation	SA	A	UD	DA	SDA	Mean Score	Rank
1	A farmer should rather take more of a chance in making a big profit than to be contented with a smaller, but less risky profit.	117 (43.33)	47 (17.41)	5 (1.85)	81 (30.00)	20 (7.41)	3.59	IV
2	A farmer who is willing to take greater risk than the average farmer, usually do better financially.	143 (53.00)	89 (33.00)	25 (9.00)	10 (4.00)	3 (1.00)	4.33	I
3	It is good for a farmer to take risk when he knows his chance to success is fairly high.	71 (26.00)	96 (36.00)	57 (21.00)	41 (15.00)	5 (2.00)	3.69	III
4	Trying an entirely new method in maize production by a farmer involves risk, but it is worth doing it.	84 (31.11)	153 (56.67)	23 (8.52)	10 (4.00)	0 (0.00)	4.15	II
5	A farmer should grow large number of crops to avoid greater risks involved in growing one or two crops.	80 (29.63)	167 (61.85)	4 (1.48)	17 (6.30)	2 (0.74)	1.87	VI
6	It is better for a farmer not to try new maize production method unless most other farmers have used them with success.	128 (47.41)	75 (27.78)	2 (0.74)	57 (21.11)	8 (2.96)	2.04	V

Note SA-Stronglyagree, A-Agree, UD - Undecided, DA-Disagree, SDA-Strongly Disagree

Conclusion
From the above research findings it can be concluded that most of the respondents were overall knowledge about the maize production technique had medium level of knowledge, favorable opinion, medium level of scientific orientation and risk orientation.

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