



FACTORS RELATED TO ADOPTION OF MAIZE PRODUCTION TECHNOLOGY IN COOCH BEHAR DISTRICT OF WEST BENGAL

KEYWORDS

Adoption, Maize, Production Technology.

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ABSTRACT *Despite huge economic value, being C4 plant maize can resist the changing global climatic condition. In this aspect of great value of maize and its continuously increasing area and production scenario in Cooch Behar District of West Bengal this study has been undertaken to measure the adoption behavior of farmers towards maize cultivation. This work had been conducted with the dependent variable adoption behaviour of farmers and twenty two causal independent variables. Total 100 farmers from the four villages were selected randomly as respondents & interviewed through well structured interview schedule and results had been analyzed by co-efficient of correlation and multiple regression analysis. From the Correlation, it is found that except caste, family size and family type all other variables are having significant relationship with adoption behavior of farmers. From Multiple Regression analysis category of farmers, education and risk orientation are come out as the most important factors which influence the farmers for adoption of maize. On the other hand Climatic hazards, drying and extraction of cobs has found to be most problematic according to respondents while they have suggested availability of subsidies regarding inputs and need more technical help for increasing the production per unit area.*

INTRODUCTION:

Maize is a versatile crop grown over a range of agro climatic zones. It has yield potential far higher than any other cereal and that's why it is sometimes referred to as the miracle crop or the "Queen of Cereals". Before green revolution maize was spontaneously cultivated especially in hilly & Terai region of North Bengal. Due to its hardy nature and potentiality to give satisfactory yield in low fertile land with less applied fertilizer and irrigation facility and even in adverse climatic condition, most of the farmers of this region preferred to cultivate it. But North Bengal farmers shifted their focus on cereals (like rice, wheat etc.), jute and vegetables cultivation from maize after introduction and popularization of different kinds of chemical fertilizers and pesticides. This resulted in reduced production and area under maize. But from 2004-2005 the farmers especially of Cooch Behar district again have started cultivation of maize on commercial basis due to the assured market and good price. To identify the reason behind such adoption behavior after a considerable lapse of time and its resulted effect on farmers socio-economic conditions this study has been conducted in four villages namely Andaran Phulbari from Tufanganj I Block, Madhupur and Poschim Dhandhinghuri each from Cooch Behar II block and Moamari from Cooch Behar I block of Cooch Behar district. In such a research niche the present study has undertaken to measure the adoption behavior of farmers towards maize cultivation.

METHODOLOGY:

Four villages namely Andaran Phulbari from Tufanganj I Block, Madhupur and Poschim Dhandhinghuri from Cooch Behar II block and Moamari from Cooch Behar I Block of Cooch Behar district were purposively selected for the study. 100 farmers who were cultivating maize in their own field or having tenancy status were selected randomly as respondents. The respondents were interviewed through personal interview method with the help of well structured interview schedule, which was developed and pre tested for the study.

After an intensive review work and consultation with different experts, the different variables were selected for this study. Adoption of Maize Cultivation was considered as dependent variable and other variables are categorized in three different factors viz. socio- personal factors which include age, caste, family type, family size, education, land, category of farmer, house type, farm power, material possession, annual income, social participation, socio-psychological factors such as attitude towards aromatic rice cultivation, knowledge about maize cultivation, market orientation, production orientation, risk orientation, economic motivation, innovation proneness and extension communication factors like mass media exposure, personal cosmopolite and personal localite were taken as independent variables in this study.

RESULT AND DISCUSSION:

Correlation of Co-efficient and Multiple Regression analysis with the help of SPSS (Statistical Package for Social Science) were calculated for interpretation of the result.

Table: 1 Correlation Co-Efficient Between Adoption Behaviour of Maize Cultivators and 22 Independent Variables

Variables	'r' Value (Pearson)	'p' Value (Spearman)
Age (X1)	-0.227*	-0.253 *
Caste (X2)	0.026	0.017
Family type(X3)	0.123	0.169
Family size(X4)	0.274	0.269**
Education(X5)	0.814**	0.855**
Land holding(X6)	0.389**	0.329**
Category of farmers(X7)	0.647**	0.561**
House type(X8)	0.404**	0.394**
Farm power (X9)	0.514**	0.494**
Material possession (X10)	0.544**	0.558**
Annual income (X11)	0.571**	0.525**
Social participation (X12)	0.321**	0.368**

Attitude towards maize cultivation (X13)	0.763**	0.766**
Knowledge level (X14)	0.668**	0.729**
Market orientation (X15)	0.701**	0.715**
Production orientation (X16)	0.591**	0.544**
Risk orientation (X17)	0.712**	0.745**
Economic motivation (X18)	0.604**	0.641**
Innovation proneness (X19)	0.521**	0.638**
Mass media exposure (X20)	0.577**	0.641**
Personal Cosmopolite (X21)	0.513**	0.550**
Personal Localite (X22)	0.425**	0.494**

*Significant at 0.05 level of probability

**Significant at 0.01 level of probability

It was found from Pearson correlation analysis, (Table 1) that except caste(X2), family type(X3) and family size(X4) all other independent variables had positive and significant relationship with the dependent variable(adoption of maize cultivation).Only variable age(X1) is negatively significant at 0.05 level of probability with the adoption behaviour of maize growers. It indicates that the younger generations of the farmers are interested in growing maize in their field more than the older farmers. In Spearman correlation family size is also found to be positively and significantly related with the dependent variable.

This finding supports the findings of Dhakane *et al* (2009), Ekature *et al* (2009), Mote and Wadnerkar (2009) and Ghoshal *et al* (2010).

Table: 2 Multiple Regression Analysis (By Stepwise Method of Multiple Regression Equation) of the Adoption Behaviour (Y) with the other 22 Causal Variables:

Variables	Un-standardized co-efficient		Standardized co-efficient	
	'b' value	Standard error of 'b'	β	't' value
Adoption (Y)	-29.087	13.518		-2.157
Category of farmers(X7)	8.118	2.798	0.222	2.902**
Education (X5)	3.393	1.476	0.291	2.298*
Risk orientation(X17)	1.187	0.593	0.196	2.00*

Standard error of intercept=6.661; R=0.898, R2=0.807, Adjusted R2=0.755

*Significant at 0.05 level of probability

**Significant at 0.01 level of probability

Table 2 presents that category of farmers(X7), education (X5), risk orientation(X17) retain after eliminating the other trivial variables in the preceding steps. Here the R² value is 0.807; it is infer that the 3 variables together explain 80.7% variation embedded with the predicted variable of adoption of maize cultivation technology.

FARMERS PERCEPTION OF THE PROBLEMS FACED DURING MAIZE CULTIVATION

Through PLA, the differential perception of some selected problems has been estimated in table 3, to create the problem matrix. Similarly, the farmers' suggestions regarding the problem faced by them were recorded and pre-

sented in the Table 4.

Table: 3 Problems in Maize Cultivation Perceived by the Farmers (Through Open-ended questionnaire)

SL No.	Perceived Problems	Frequency	Percentage	Rank
1.	Climatic hazard mainly hailstorm	80	80	I
2.	Problem of drying of cobs	78	78	II
3.	Extraction problem of cobs	75	75	III
4.	Lack of experts support & guidance	70	70	IV
5.	Lack of training facilities	64	64	V
6.	High cost of seeds	55	55	VI
7.	Interference of middleman	50	50	VII
8.	Lack of soil testing facility	46	46	VIII
9.	Scarcity of irrigation water	42	42	IX
10.	Lack of store house	38	38	X

Table: 4 Solutions to the Problems as Suggested by the Farmers (Through Open-ended questionnaire)

SL No.	Suggested Measures	Frequency	Percentage	Rank
1.	Availability of subsidies regarding production inputs	88	88	I
2.	More assistance from agricultural experts	80	80	II
3.	Proper training facilities	74	74	III
4.	Avoidance of middleman	70	70	IV
5.	Soil testing at low cost	61	61	V
6.	Availability of storage house	58	58	VI
7.	Availability of value adding facilities	50	50	VII
8.	Provision of electricity for irrigation purpose	40	40	VIII

CONCLUSION:

Adoption is a complex and multi-dimensional process and it depends on many factors. In farming community adoption implies farmer's behavioural preference and economic gains and in general point of view it is all about quantitative expansion of new crop or new variety with updated recommendation. Adoption depends on complex interplay of resource, knowledge, institutional initiatives, skill, risk taking attitude, price and easy market of the crops/cereals as the case may be.

The observations and findings are not certainly conclusive in nature. They are at best indicative and exploratory. There is scope for undertaking more elaborate and comprehensive research with larger sample and in-depth investigation focusing on the impact of many other variables. In the context of West Bengal, adoption of maize is important for diversification of cropping patterns and for economic well being of the farming community. And the future efforts should focus on extensive adoption of maize all through West Bengal. More efforts should be given on public extension so that poorest of the poor, farmers

in tribal areas would also be benefitted through available technologies. This study also reveals that intensive technical support is one of the important suggestions given by farmers which can help to increase the production and profit from maize cultivation. There is need to work hand in hand with all partners (e.g. Krishi Vigyan Kendras, State Department of Agriculture, NGOs, researchers, farmers etc.) of technology dissemination for increasing maize production, removing hunger, generating employment opportunities, and augmenting income levels of farmers.

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