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Factors Affecting Adoption of Maize Cultivation Practices in Rajouri District of Jammu and Kashmir, India

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A B S T R A C T

The present study was undertaken in year 2014 and 2015 to study the factors affecting adoption of Maize cultivation practices in Rajouri district of Jammu and Kashmir. There were 160 Gram panchayats, 385 villages and 4 towns viz. Rajouri, Thanamandi, Nowshera and Sunderbani. The district constitutes 8.81 percent of the geographical area of the state. There are 7 revenue tehsils viz; Rajouri, Thanamandi, Nowshera, Sunderbani, Budhal and Darhal with a total of 9 revenue blocks in district Rajouri. Although agriculture is the main occupation of district Rajouri, but the farming community is perceived to be still following traditional agricultural practices. Therefore, the present study was conducted to examine the knowledge, attitude and extent of adoption of improved package of practices for Maize cultivation and to identify socio-economic and personal factors which can affect the adoption of recommended practices of Maize. The study revealed that the majority of the respondents have low level of adoption and have medium level of attitude towards the cultivation practices of Maize.

Introduction

Maize (*Zea mays* L) is one of the most versatile emerging crops having wider adaptability under varied agro-climatic conditions. Globally, maize is known as queen of cereals because it has the highest genetic yield potential among the cereals. It is cultivated on nearly 150 m ha in about 160 countries having wider diversity of soil, climate, biodiversity and management practices that contributes 36 % (782 m t) in the global grain production. Maize in India is known as 'King of cereals' because of its high

production potential and wider adaptability. The increasing demand for maize and its global advance implies that by 2023, maize will account for the greatest share (34%) of the total crop area harvested (OECD-FAO, 2014). This poses particular challenges to the global capacity to sustainably supply the volumes of maize needed – particularly in low- and middle-income countries.

Indeed, rising demand has often expanded the maize area in these countries and brought new land into cultivation instead of sustainable intensification and increasing yields. Crop area thereby often expands into more marginal lands with potential threats to crop diversity, forests, and erodible hill slopes (Neumann *et al.*, 2010).

In India, maize is the third important food crop after rice and wheat. According to latest data, it is being cultivated on 8.6 m ha with 80% area during *Kharif* season. The current maize production is 21.7 mt, with an average productivity of 2.5 t/ha.

Despite maize being predominantly rainfed crop its productivity is more than rice which is mainly grown under assured irrigated/rainfed conditions. Maize contributes nearly 9 % in the national food basket and more than 400 billion to the agricultural GDP at current prices. In addition it generates employment to over 1000 million man days at the farm and downstream agricultural and industrial sectors. Maize is primarily used for feed (60 %) followed by human food (24%), industrial (starch) products (14%) beverages and seed (1% each).

Maize is the most important and well-adopted cereal crop of Jammu and Kashmir and total areas sown 315.81 M. ha of maize in Jammu and Kashmir (Anon.2015). Being a major crop of the Jammu and Kashmir, it is grown in almost 80 % as rainfed agriculture and forms the major crop in any crop rotation in the state. Maize is the predominant crop in Rajouri district with an area of 46.8 thousand hectare and production and productivity of 136102.4 tonnes and 31.36 kg/ha respectively. The Rajouri district of Jammu & Kashmir state is situated between $32^0$98' and $35^0$52' North latitude and $74^0$01' to $74^0$23' East longitude.

The district touches Poonch, Pulwama, POK in the west and Jammu in the south. There are 160 Gram panchayats, 385 villages and 4 towns viz. Rajouri, Thanamandi, Nowshera and Sunderbani. The district constitutes 8.81 percent of the geographical area of the state. There are 7 revenue tehsils viz; Rajouri, Thanamandi, Nowshera, Sunderbani, Budhal and Darhal with a total of 9 revenue blocks. Keeping in view the above facts the present survey was undertaken to study the factors affecting adoption of Maize cultivation practices in Rajouri district.

Materials and Methods

The agro-climatic zones of Rajouri district ranges from high altitude temperate to subtropical type. Thus, cultivation of crops is possible round the year. The climate of the district varies according to altitude, the temperature rises sometimes as high as 38^0 C and seldom goes below 1.5^0C. Rajouri district lies between 32^0 58/ to $33^0$35/ North latitude and 74^0 to 74^0 40/ East longitude surrounded by 120 km of Actual Line of Control with Pakistan.

The area of Rajouri district according to village records is about 253340 hectares. The gross irrigated area is 7385 hectares which is only 8% of the total cultivable area. This shows that farming community is mostly dependent on rains for the cultivation of 92% cultivable area. It is estimated that 90% population is residing in the rural areas and is mostly dependent on agriculture sector. The Rajouri district was purposively selected to be the area under investigation, because it was

true representative district of Jammu and Kashmir on the basis of technological facilities available for Maize cultivation. Random samplings procedure were used for selection of research area and for selection of village clustered random sampling procedure were used.

Farm families were taken to be the unit of the study and the heads of the family as the respondents. 20 farmers from 5 villages were finally selected as respondents for the study. Accordingly from the five sample villages only 100 respondents finally selected for investigation. The data was collected with the help of interview schedule which was specially prepared for the study incorporating number of standard tools developed by different extension scientist in India, of course making necessary modifications of minor nature which were considered to be essential. In addition number of items of the interview schedule was developed by the author with the help of guide.

The purpose of the study was clearly explained to the respondents at the time of data collection. The data so collected were coded, classified, tabulated and analysed in the light of the objectives.

Results and Discussion

The present study are summarised below under relevant heads.

Personal Attributes by Maize growers

According to present study majority of respondents i.e. 34 per cent 'middle age' group. Most of them were educated to 'medium level'.

Technical Knowledge about improved Maize Production Technology by Maize growers

The level of Knowledge about the improved farm practices of the Respondents were 'Medium level' i.e 58 percent. 27 per cent respondents had 'Low Level' of knowledge and only 15 per cent respondents had 'high level' knowledge about the improved farm practices.

Extent of adoption of components of improved Maize Production Technology by Maize growers

Majority of respondents were widely adopted to Local variety of maize i.e. 36 per cent and percentage of recommended varieties C-8, Kanchan, KH-517, Pro Agro 4794, PG Hybrid, Double deklab were 15 per cent, 19 per cent, 6 per cent, 4 per cent, 8 per cent and 12 per cent respectively.

The adoption index shows that the high majority of respondents i.e., 48 per cent adopted to Maize cultivation at 'Low level' and 39 per cent were adopted to it at 'Medium Level' at least only 13 per cent of respondents grow to 'High Level'.

Attitude towards improved Maize Production technology by Maize growers

Majority of the respondents belongs to 'medium level' of attitudes i.e., 74 per cent, 18 per cent of farmer's having 'low level' of attitudes and only 8 per cent of respondents having 'High attitudes' towards improved Maize production technology.

Extension Contact

Majority of respondents belong to 'medium group' of extension contact i.e. 50 per cent. 27 per cent respondents had 'high' contact group and only 23 per cent respondents had 'low' extension contact towards improved Maize production technology.

Table .1 Farmers distribution of Maize growers on socio-economic status

Categories	Levels	Respondents	Percentages
13-20	***Very low***	7	7
20-27	Low	24	24
27-34	Medium	30	30
34-41	High	34	34
41-48	Very High	5	5
	Total	100	100

Table.2 Farmers knowledge of respondents about improved farm practices of Maize in Rajouri

Categories	Level	Number	Percentage
5-10	Low	27	27
10-15	Medium	58	58
15-20	High	15	15
	Total	100	100

Table.3 *Farmers extent of adoption of Maize varieties.*

S.No.	Name of variety	Number	Percentage
1.	Local	36	36
2.	C-8	15	15
3.	Kanchan-612	19	19
4.	KH-517	6	6
5.	Pro Agro 4794	4	4
6.	PG Hybrid	8	8
7.	Double Deklab	12	12
	Total	100	100

Table.4 Farmers Adoption Index of the Maize.

Categories	Level	Number	Percentage
1-8	Low	48	48
8-16	Medium	39	39
16-24	High	13	13
	Total	100	100

Table.5 Farmers Attitudes of Respondents

S.No.	Categories	Level	No. of Respondents	Percentage
1.	34-38	Low	21	21
2.	38-42	Medium	69	69
3.	42-46	High	10	10

Table. 6 Distribution of respondents on the basis of Extension contact

S.No.	Categories	*Level*	No. of Respondent	Percentage
1.	0-5	Low contact group	22	22
2.	5-10	Medium contact group	48	48
3.	10-15	High contact group	30	30
		Total	100	100

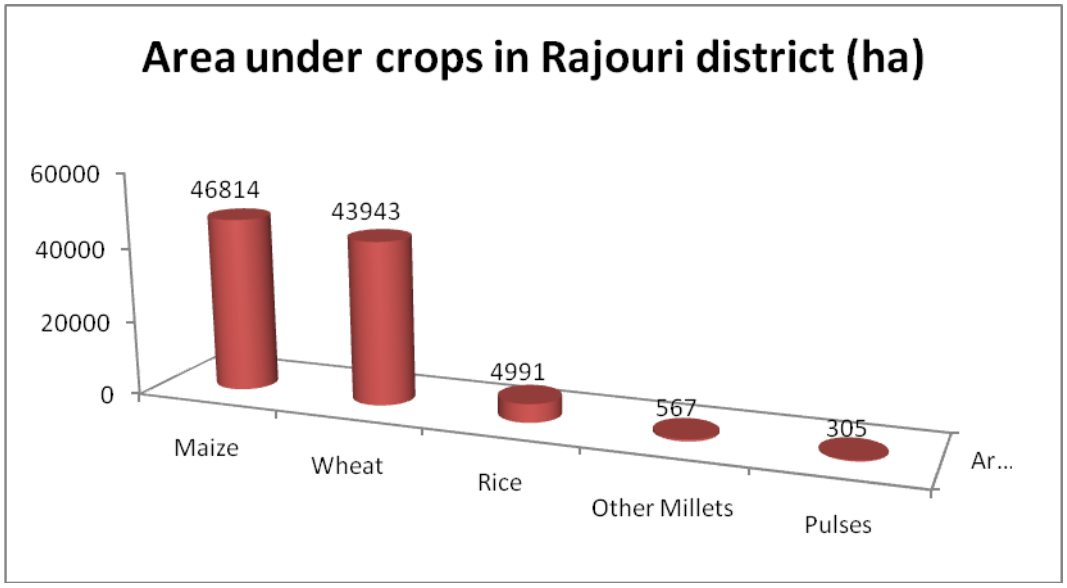
Table .7 Distribution of respondents according to mass media Exposure

Categories	Levels	Respondent	Percentage
0-2	Low	30	30
2-4	Medium	42	42
4-6	High	28	28
	Total	100	100

Table.8 *Problem's faced by Maize growers*

S.No.	Problems of Respondents	Number	Percentage
1.	Lack of improved and Resistant varieties.	89	89
2.	Unavailability of government facilities.	85	85
3.	High cost of improved seeds.	80	80
4.	High cost of manure and fertilizers.	78	78
5.	High cost of insecticides and pesticides.	78	78
6.	High losses in Maize by animals.	78	78
7.	Inadequate credit facilities.	76	76
8.	Lack of knowledge about improved practices.	74	74
9.	Negative role of Extension workers.	73	73

Fig.1



Mass Media Exposure by Maize growers

Majority of the respondents belongs to 'medium level' of mass media exposure i.e. 38 per cent. 37 per cent of farmer having 'low level' of mass media exposure and only 25 per cent respondents had 'high level' of mass media exposure.

It is clear from the study that respondents have knowledge about cultivation of Maize but their productions were not up to mark. The reason in order of importance for non-adopter of Package of practices of Black-Gram were lack of knowledge, lack of Encouragement by Extension Personnel, high cost of inputs and non availability of seeds of improved varieties and fertilizers in time.

Problem faced by Maize growers

Majority of respondents reported that the main problems of Maize growers were negative role of extension worker, lack of knowledge about improved Practices, inadequate credit facilities, high losses in Maize crop by animals, high cost of insecticide and pesticides, high cost of manure and fertilizers, high cost of improved seeds, problems of government facilities and lack of improved and resistant variety. Their percentage being 73 per cent, 74 per cent, 76 per cent, 78 per cent, 78 per cent, 79 per cent, 80 per cent, 85 per cent and 89 per cent respectively.

Majority of the farmers belong to 'middle age group' and most of them educated to 'medium level'. They have 'medium level' of knowledge about the improved farm practices of Maize. Majority of respondents were live in joint family and no member of any organizations. Most of the respondents belong to 'medium' caste and agriculture is the main occupation. Majority of respondents had 'medium level' of knowledge about improved farm practices of Maize. Most of respondents used the local variety of Maize. The adoption index shows that majority of respondents were not interested in cultivation of Maize. Majority of the respondents belongs to 'medium level' of attitudes towards improved Maize Production Technology. Majority of the respondents belongs to 'medium group' of extension contact towards improved Maize production technology. Majority of the respondents belongs to 'medium level' of

mass media exposure. Majority of respondents also indicated that the main problems of Maize cultivation were lack of knowledge about improved practices, inadequate credit facilities, high losses in Maize crop by animals, high cost of insecticides and pesticides, high cost of manure and fertilizers, high cost of improved seeds, unavailability of government facilities and lack of improved and resistant varieties.

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