

**RESEARCH ARTICLE :**

# Constraints encountered by the farmers in adoption of modern maize production techniques

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**SUMMARY :** Maize is the major staple crop of Udaipur (Rajasthan) region. The production of this crop is low compared with average yield of major maize producing areas and as compared to demonstrations. The reasons may be many. The study was conducted with the objective to determine the constraints being encountered by the farmers in adoption of modern maize production techniques. Total 160 farmers from four villages of three Panchyat samities (Girva, Dhariawad and Kherwara), district Udaipur (Rajasthan) were interviewed for data collection. Structured interview schedule was used for the purpose. The findings revealed that untrained farmers encountered more severe constraints in adoption of modern maize production techniques. For 10 defined techniques, untrained framers faced relatively more severe constraints in adoption of modern techniques. It is recommended that Government Department of Agriculture and Universities must intensify the training programmes of farmers, because untrained are constrained more. Techniques, viz., improved seed, seed treatment, soil treatment, method of sowing, seed rate and time of sowing, fertilizer application, chemical control of weeds, plant protection measures, ecological constraints, post-harvest technology and marketing need special emphasis while training the farmers.

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## **BACKGROUND AND OBJECTIVES**

Maize (*Zea mays*) is most important cereal crop and known as queen of cereals due to unparallel productivity among all of the cereal crops. In India, maize occupies third position both in area and production after rice and wheat. The production of maize in the district Udaipur is very low as compared to average national productivity (2,435 kg/ha). Lack of poor knowledge about production techniques are ascribed is the main reasons for low productivity of maize in the district (2009-10).

The importance of this crop is of many folds, as it is being used as food, fodder and for industrial purposes. The basic problem of Indian agriculture is not so much of dearth of natural resource, but under development of human

resources, which is available in abundance. Farmer is the most crucial resource in increasing food production at the desired pace. When the scientific research in agriculture is moving fast and new techniques and measures are coming up in the light. It is essential that the farmers are kept abreast of the dynamic agriculture by an equally dynamic system of extension education. This requires an intensive education to millions of farmers so as to enlighten them and bring home the potentialities of modern techniques.

The training plays an important role in the development of farmers. Such type of training is also provided by various institutional organizations like Krishi Vigyan Kendra. It is universally accepted fact that training plays a vital role in quick transfer of technologies through knowledge generation and skill development. The

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training, must be location specified, need oriented and clientele oriented.

The present empirical study was carried out to determine the extent of severity of the constraints encountered by the trained (through KVKs) and untrained farmers in adoption of modern maize production techniques. The present paper based on the data gathered from the farmers, those who were undergone training (KVKs) and untrained ones.

## RESOURCES AND METHODS

The study was conducted in four villages of three Panchayat Samities, namely Girwa, Dhariyavad, and Kherwara in Udaipur district of Rajasthan (India), where training was imparted by the Krishi Vigyan Kendra, Udaipur. From each village, 20 farmers who had undergone in training were selected randomly. Thus, total 80 trained farmers were interviewed. Equal number *i.e.* 80 untrained maize growers from adjoining villages were also interviewed. Hence, total sample size comprised 160 farmers, interviewed with

specially designed interview schedule. The data were analyzed using statistical tools *viz.*, frequencies, percentage, mean, mean per cent score and rank correlation co-efficient.

## OBSERVATIONS AND ANALYSIS

The findings of the present study as well as relevant discussion have been presented under following heads :

### To study the personal profile of farmers in adoption of modern maize production techniques :

#### Personal characteristics :

In this section the data regarding the personal characteristics of respondent's *viz.*, age, caste, education, land holding, family type, family size and social participation are presented. The results of these have been presented in the Table 1.

The majority of the respondents belonged to middle age group, 59.37 per cent of them were of scheduled tribe and

**Table 1 : Distribution of maize growers according to their personal attributes**

(n=160)

Sr. No.	Personal attributes	Trained farmers (n <sub>1</sub> =80)		Untrained farmers (n <sub>2</sub> =80)		Pooled	
		f	%	f	%	f	%
<b>Age</b>							
(i)	Young (below 33 years)	15	18.75	17	21.25	32	20.00
(ii)	Middle (33-52 years)	59	73.75	45	56.25	104	65.00
(iii)	Old (above 52 years)	6	07.50	18	22.50	24	15.00
<b>Caste</b>							
(i)	Scheduled caste / scheduled tribe	52	65.00	43	53.75	95	59.37
(ii)	Other backward class/ general caste	28	35.00	37	46.25	67	40.63
<b>Education</b>							
(i)	Up to Primary	23	28.75	41	51.25	64	40.00
(ii)	Up to Middle	25	31.25	18	22.50	43	26.87
(iii)	Up to Secondary	20	25.00	12	15.00	32	20.00
(iv)	High Secondary and above	12	15.00	9	11.25	21	13.13
<b>Size of land holding</b>							
(i)	Marginal (< 1 ha.)	10	12.50	16	20.00	26	16.25
(ii)	Small (1-2 ha.)	19	22.75	30	37.50	49	30.62
(iii)	Big (> 2 ha.)	51	63.75	34	42.50	85	53.13
<b>Family type</b>							
(i)	Nuclear	54	67.50	28	35.00	82	51.25
(ii)	Joint	26	32.50	52	65.00	78	48.75
<b>Family size</b>							
(i)	Small	54	67.50	28	35.00	82	51.25
(ii)	Large	26	32.50	52	65.00	78	48.75
<b>Social participation</b>							
(i)	No member of any organization	27	33.75	43	53.75	70	43.75
(ii)	Members of organization	39	48.75	24	30.00	63	39.37
(iii)	Office bearer	14	17.50	13	16.25	27	16.88

f = frequency; %= Percentage

40.00 per cent respondents educated up to primary level. Further, more than 50 per cent respondents had big land holding and family type, family size. About 44 per cent respondents were not the member of any organization.

In case of trained respondents majority of them were also of middle age group, 65.00 per cent of them were of scheduled tribe, 31.25 per cent of them were educate up to middle. Further, more than 60 per cent of them had big land holding, nuclear family type, small family size. Around half of them were members of organization.

It was also observed that 56.25 per cent of untrained respondents belonged to middle age group, equal numbers of them were of scheduled tribe and educate up to primary. 65 per cent had joint family type and large family size. More than half of them were not member of any organization.

**The extent to which constraints encountered by the farmers in adoptions of modern maize production techniques :**

The extent of severity of constraints perceived by the trained and untrained farmers in adoptions of modern maize cultivation techniques is presented in Table 2.

It is obvious from Table 2 that majority of the total farmers 79(49.38 %) encountered moderate extent of severity of constraints, 43(26.87 %) encountered constraints with high severity whereas, remaining 23.75 per cent faced constraints with low severity regarding adoption of modern techniques

of maize production.

The data in Table 2 further indicate that only 13.75 per cent of trained and 40.00 per cent of untrained farmers realized constraints highly. Further, 50.00 per cent trained and 48.75 per cent of untrained farmers faced constraints moderately, while, 36.25 per cent of trained and only 11.25 per cent untrained respondents felt lesser constraint in adoption of modern maize production.

**Practicewise constraints encountered by the farmers in adoption of modern maize production techniques :**

The practicewise constraints encountered by the farmers in adoption of modern maize production techniques are presented in Table 3.

The data in Table 3 reveal that from among the ten defined of constraints; ecological constraint was encountered with highest severity. This was followed by post-harvest technology, marketing, chemical control of weeds, soil treatment and plant protection measures by total (trained and untrained) farmers. Further, fertilizer application, method of sowing, seed rate and time of sowing, seed treatment and improved seed were sensed as least severe by the trained as well as untrained farmers.

The value of rank order correlation (r) was observed to be 0.63, it indicates positive correlation. The calculated value of ‘t’ (1.01) was higher than its tabulated value at 5 per cent level of significance, which led to the conclusion that there

**Table 2 : Extent of severity of constraints encountered by the farmers in adoptions of modern maize production techniques (n=160)**

Sr. No.	Extent of severity	Trained farmers (n <sub>1</sub> =80)		Un trained farmers (n <sub>2</sub> =80)		Pooled	
		f	%	f	%	f	%
1.	Low (< 51 score)	29	36.25	9	11.25	38	23.75
2..	Moderate (51-72)	40	50.00	39	48.75	79	49.38
3.	High (> 72 score)	11	13.75	32	40.00	43	26.87
	Overall	80	100	80	100	160	100

f = frequency; %= Percentage

**Table 3 : Practicewise constraints encountered by the farmers in adoption of modern maize production techniques (n = 160)**

Sr. No.	Practice	Trained farmers (n <sub>1</sub> = 80)		Untrained farmers (n <sub>2</sub> = 80)		Pooled	
		MPS	Rank	MPS	Rank	MPS	Rank
1.	Improved seeds	26.29	9	27.12	10	26.70	10
2.	Soil treatment	41.36	5	63.27	4	52.32	5
3.	Seed treatment	25.18	10	32.88	9	29.03	9
4.	Method of sowing, seed rate and time of sowing	35.11	8	48.24	8	41.67	8
5.	Fertilizer application	35.46	7	66.02	3	50.74	7
6.	Chemical control of weeds	45.06	3	60.99	7	53.02	4
7.	Plant protection measures	41.33	6	61.84	5	51.51	6
8.	Ecological	58.81	1	61.70	6	56.15	1
9.	Post-harvest technology	45.43	2	66.39	2	55.91	2
10.	Marketing	41.65	4*	69.93	1**	54.75	3
	Overall	39.56		55.83		47.18	

Note: \* r=0.63; \*\*t = 1.01; MPS= mean per cent score, r= Rank correlation; \* = Significant at 5% level of significance

was highly significant relationship in realization of constraints between trained and untrained maize growers. More clear, the constraints encountered by both the categories of farmers were prioritized in the similar manner.

The findings reveal that untrained farmers faced more constraints in adoption of modern maize production techniques as compared with trained farmers. Practiceswise (marketing, post harvest technology, fertilizer application, soil treatment, plant protection measures, ecology, chemical control of weeds, method of sowing, seed rate and time of sowing, seed treatment and improved seeds) constraints of untrained farmers were also recorded severe. The findings were similar with the findings of Khade *et al.* (1998), Patel *et al.* (2003), Acharya and Agarwal (1987), Aaker and Day (1980) and Panse and Sukhatme (1987).

These findings are in the line with the findings of Intodia and Bareth (1999) and Geengar (2006), who found following major constraints in adoption of maize cultivation practices: ecological constraints (53.28 %), chemical control of weeds (41.62 %), post-harvest technology (40.85 %), plant protection measures (40.42 %) and chemical fertilizer (33.71 %).

#### Conclusion :

Majority of trained and untrained farmers were middle age group, belongs to scheduled tribe, educated above primary level, joint family type, large family size and member of any organization.

Out of ten defined constraints, ecological constraint was the major encountered by the maize growers. This was followed by post-harvest technology and marketing. While relatively lesser severe constraints perceived by them were chemical control of weeds, soil treatment and plant protection measures. Least perceived constraints were fertilizer application, method of sowing, seed rate and time of sowing, seed treatment and improved seeds.

On the whole, constraints encountered by the trained farmers were low (MPS 39.56) as compared with untrained farmers (MPS 55.83).

The rank order correlation coefficient indicates that both trained and untrained farmers prioritized constraints with similar trend.

#### Recommendations :

It is recommended that Government Department of

Agriculture and KVKs must pay due attention on the proper training of all the framers because untrained farmers encountered severe constraints. Further, techniques of modern maize production *viz.*, improved seeds, soil treatment, seed treatment, method of sowing, seed rate and time of sowing, fertilizer application, chemical control of weeds and plant protection measures need special attention for training of both the categories of farmers.

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