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Adoption of Farmers about Pest Management in Maize Crop in Panchmahals District

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A B S T R A C T

Maize (*Zea mays* L) is one of the most versatile emerging crop shaving 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. Maize is grown as main crop in Panchmahals districts of Gujarat state and it is cultivated in approximately 02.70 lakh hectare area in *kharif* season. Research scientists, extension workers and farmers have responsibilities to maximize the production and productivity of maize in per unit area. The low productivity in maize was due to lack of scientific cultivation knowledge, poor nutrient management and lack of knowledge on insect pests and disease management. The study was carried out in Panchmahal district was purposively selected for this study. Panchmahals district comprises seven talukas out of these three talukas viz. Godhra, Kalol, and Halol, were selected purposively. Total 120 maize farmers were constitute the sample for this investigation. The study revealed that More than half of the farmers adopted proper sowing time, used university recommended varieties, seed rate, used readymade treated seed, spacing, FYM, Nitrogen as per the recommendation and less than two fifth of the maize farmers not adopted any chemical for the control of maize stem borer, *Helicoverpa armigera*, andfall armyworm control measures. In case of disease name and their control measures most of the maize farmers not adopted any control measures to control MLB and late wilt. Great majority of the farmers done hand weeding.

Introduction

Maize (*Zea mays* L) is the third most important cereal crop of the world and India after wheat and rice. Maize is an important cereal crop of Gujarat state, which is not only a staple diet of tribal farmers but also fulfill their diversified needs of foods, fuel and fodder. It is usually grown as *kharif* and *rabi* crop in district viz., Panchamahals, Dahod, Mahisagar, Chhotaudepur, Vadodara, Arravali, Sabarkantha and Banaskantha. Maize is predominantly cultivated under rained condition in *kharif* season. The productivity of maize in Gujarat state is about 1478 kg/ha. Which is low as compared to national average productivity (2509 kg/ha). Increasing the productivity and improving the

economic condition of the farmers, depends on the level of knowledge and skills of the farmers.

The average yield after following all the recommended practices is expected to be 45 to 50 q/ha, but average productivity of maize crop in India in general and Gujarat in particular, is low mainly because of low knowledge about improved cultivation practices of maize by the farmers. There is a need to increase maize yield. The present research, therefore, aims to Study the knowledge level of trained farmers about recommended maize production technology.

The main objectives of this study to know the level of adoption of the maize farmers regarding pest management

Materials and Methods

Gujarat state has 33 districts and out of these Panchmahal district purposively selected for this study. Panchmahals district comprises seven talukas out of these three talukas viz. Godhra, Kalol, and Halol, were selected purposively. There are four villages were selected randomly. After selection of villages 10 maize farmers from each village were selected randomly, Thus, in all 120 maize farmers were constitute the sample for this investigation. The data of this study were collected by arranging personal interview. The data was analyzed and interpreted with frequency and percentage.

Results and Discussion

The main purpose of the present investigation was to study the level of knowledge of the maize farmers regarding pest management in Panchmahals district. The results are presented as under.

Table1 indicate that more than half (55.00 per cent) of the maize farmers were found in the middle age group followed by 26.67 per cent in young age group. The rest 18.33 per cent of the maize farmers belonged to old age group.

The data presented in the Table 2 reveal that nearly less than one third(29.17 per cent) of the maize farmers had secondary level of education followed by 25.00 per cent, 21.66 per cent and 17.50 per cent of them who had higher secondary, college level of education and primary level of education, respectively. Only 06.67 per cent of maize farmers were found to be illiterate.

It is observed from Table 3 that more than one third (31.67 per cent) of the maize farmers had medium level of extension contact, while 26.67 per cent and 25.83 per cent of them had low and high level of extension contact, respectively. Only 09.17 per cent and 06.66 per cent of maize farmers had very low and very high extension contact, respectively.

The data given in Table 4 indicate that more than two fifth (44.17 per cent) of the maize farmers had medium exposure to mass media, whereas 30.00 per cent and 10.00 per cent of them had high and low level of mass media exposure, respectively. Only 09.16 and 06.67 per cent of maize farmers were found at the extreme end i.e. with very low and very high exposure to mass media, respectively.

It is obvious from the data presented in Table 5 that more than two fifth (44.17 per cent) of the maize farmers possessed small size of land holding, whereas 29.17 per cent and 20.83 per cent of them possessed medium and marginal size of land holding, respectively. Only 05.83 per cent of them possessed large size of land holding.

Time of sowing

It was observed that more than half (58.33 per cent) of the maize farmers had shown their crop at recommended time, whereas 22.51 per cent and 19.16 per cent of them had sown it early and late, respectively.

Improved varieties

Three fifth (65.00 percent) of the maize farmers used university recommended varieties like GM 6, GM 3, GM 4, Narmada moti, GAYMH 1 and

GAWMH 2 followed by 35.00 per cent of farmers used private company varieties.

Seed rate

It was also observed that half (50.00 per cent) of the maize farmers had used recommended seed rate where as 30.83 and 19.17 per cent of them used more and less quantity of seed rate than the recommendation, respectively.

Seed treatment

It was also observed that more than half (55.00 per cent) of the maize farmers had used readymade treated where as 28.33 and 16.17 per cent of them treated in correct way by own & used and not adopted seed treatment, respectively.

Spacing

Half (50.83 per cent) of the maize farmers had adopted recommended spacing for sowing the maize crop.

Fertilizer management

In case of application of FYM, more than two fifth 43.33 per cent of the maize farmers applied FMY as per recommendation whereas remaining half (50.00 per cent) and 06.67 per cent of them had used it less and more than recommendation, respectively.

Further In case of application of chemical fertilizers, slightly more than half 55.00 per cent of the farmers applied chemical fertilizers (N) as per recommendation whereas remaining 21.66 per cent and 19.17 per cent of them had used it more and less than recommendation respectively and only 04.17 per cent maize farmers not adopted chemical fertilizer (N). In case of application of chemical fertilizers (P), (44.17 per cent) of the farmers applied chemical fertilizers (P) as per recommendation whereas remaining 25.00 per cent, 16.66 per cent of them had used it more and less than recommendation respectively. Only 14.17 per cent of them not adopted chemical fertilizer (P).

Insect- pest name and their control measure

In case of maize stem borer (37.50 per cent) of the maize farmers adopted as per recommendation pest control measures against maize stem borer following by them 34.17 per cent not adopted, 15.00 per cent of them had pest control measures applied it more than recommendation, 11.67 per cent below recommendation and only 01.66 per cent totally faulty adopted chemicals.

In case of *Helicoverpa armigera* (39.16 per cent) of the maize farmers not adopted pest control measures against *Helicoverpa armigera* following by them 27.50 per cent as per recommendation, 20.00 per cent more than recommendation, 09.17 per cent of them had pest control measures applied it below recommendation and only 04.17 per cent totally faulty adopted chemicals pest control measures against *Helicoverpa armigera*. In case of fall armyworm (38.34 per cent) of the maize farmers not adopted pest control measures against fall armyworm following by them 24.17 per cent as per recommendation, 20.83 per cent more than recommendation, 10.83 per cent of them had pest control measures applied it below recommendation and only 05.83 per cent totally faulty adopted chemicals pest control measures against fall armyworm.

Table.1 Distribution of farmers according to their age

(n=120)

Sr No	Age	Frequency	Percentage
1.	Young Age (up to 30 years)	**32**	26.67
2.	Middle Age (31 to 50 years)	**66**	55.00
3.	Old age (above 50 years)	**22**	18.33

Table.2 Distribution of farmers according to their level of education

(n=120)

Sr. No	Education	Frequency	Percentage
1.	Illiterate	**08**	06.67
2.	Primary Education (up to 7)	**21**	17.50
3.	Secondary Education (8 to 10)	**35**	29.17
4.	Higher Secondary (11 to 12)	**30**	25.00
5.	Graduate	**26**	21.66

Table.3 Distribution of farmers according to their extension contact

(n=120)

Sr. No	Extension contact	Frequency	Percentage
1.	Very low	**11**	09.17
2.	Low	**32**	26.67
3.	Medium	**38**	31.67
4.	High	**31**	25.83
5.	Very high	**08**	06.66

Table.4 Distribution of farmers according to their mass media exposure

(n=120)

Sr. No	Mass media exposure	Frequency	Percentage
1.	Very low	**11**	09.16
2.	Low	**12**	10.00
3.	Medium	**53**	44.17
4.	High	**36**	30.00
5.	Very high	**08**	06.67

Table.5 Distribution of farmers according to their land holding

(n=120)

Sr.no.	Land holding	Frequency	Percentage
1.	Marginal (up to 1.00 ha)	**25**	20.83
2.	Small (1.1 to 2.0 ha)	**53**	44.17
3.	Medium (2.1 to 4.0 ha)	**35**	29.17
4.	Large (above 4.0 ha)	**07**	05.83

Table.6 Distribution of maize farmers according to their adoption of pest management in maize

(n=120)

Sr No	Particulars	Frequency	Percentage
1.	**Time of sowing**		
	At recommended time (15thjuly)	70	58.33
	Early sowing (before 15thjuly)	27	22.51
	Late sowing (after 15thjuly)	23	19.16
2.	**Improved varieties**		
	University recommended	78	65.00

	Private company	42	35.00
3.	**Seed Rate**		
	As per recommendation	60	50.00
	Less than recommendation	23	19.17
	More than recommendation	37	30.83
4.	**Seed treatment**		
	Not adopted	20	16.17
	Used readymade treated seed	66	55.00
	Treated in correct way by own & used	34	28.33
5.	**Spacing**		
	As per recommendation	61	50.83
	At narrow	59	49.16
	At wider spacing	00	00.00
6.	**Fertilizer Management**		
	FYM		
	As per recommendation	52	43.33
	Less than recommendation	60	50.00
	More than recommendation	08	06.67
	Chemical fertilizers		
	N		
	No-adoption at all	05	4.17
	Less quantity than recommended dose (Kg)	23	19.17
	As per recommended dose (Kg)	66	55.00
	More quantity than recommended dose	26	21.66
	P		
	No-adoption at all	17	14.17
	Less quantity than recommended dose (Kg)	20	16.66
	As per recommended dose (Kg)	53	44.17
	More quantity than recommended dose	30	25.00
	Plant protection Measures in maize		
7.	**Insect –pest name and their control measure**		
	1. Maize stem borer		
	No-adoption at all	41	34.17
	Totally faulty adoption of chemicals	02	1.66
	Below recommended dose of concentration.	14	11.67
	As per recommended dose of concentration.	45	37.50
	More than recommended dose of concentration.	18	15.00
	2. *Helicoverpaarmigera*		
	No-adoption at all	47	39.16

	Totally faulty adoption of chemicals	05	04.17
	Below recommended dose of concentration.	11	09.17
	As per recommended dose of concentration.	33	27.50
	More than recommended dose of concentration.	24	20.00
	3. Fall armyworm		
	No-adoption at all	46	38.34
	Totally faulty adoption of chemicals	07	05.83
	Below recommended dose of concentration.	13	10.83
	As per recommended dose of concentration.	29	24.17
	More than recommended dose of concentration.	25	20.83
	4. Hairy caterpillar		
	No-adoption at all	57	47.50
	Totally faulty adoption of chemicals	06	05.00
	Below recommended dose of concentration.	07	5.83
	As per recommended dose of concentration.	27	22.50
	More than recommended dose of concentration.	23	19.17
	5. Aphid		
	No-adoption at all	61	50.83
	Totally faulty adoption of chemicals	04	03.33
	Below recommended dose of concentration.	09	07.50
	As per recommended dose of concentration.	25	20.84
	More than recommended dose of concentration.	21	17.50
8.	**Disease name and their control measure**		
	1. Maydis leaf blight (MLB)		
	Totally faulty adoption of chemicals	0	00.00
	No-adoption at all	83	69.17
	Below recommended dose of concentration.	13	10.83
	As per recommended dose of concentration.	19	15.83
	More than recommended dose of concentration.	05	04.17

	2. Late wilt		
	Totally faulty adoption of chemicals	0	00.00
	No-adoption at all	75	62.50
	Below recommended dose of concentration.	16	13.33
	As per recommended dose of concentration.	24	20.00
	More than recommended dose of concentration.	05	04.17
9.	**Weed management**		
	Manual	107	89.17
	Hand weeding & Use of herbicide	13	10.83

In case of hairy caterpillar (47.50 per cent) of the maize farmers not adopted pest control measures against hairy caterpillar following by them 22.50 per cent as per recommendation, 19.17 per cent more than recommendation, 05.83 per cent of them had pest control measures applied it below recommendation and only 05.00 per cent totally faulty adopted chemicals pest control measures against hairy caterpillar.

In case of aphid (50.83 per cent) of the maize farmers not adopted pest control measures against aphid following by them 20.84 per cent as per recommendation, 17.50 per cent more than recommendation, 07.50 per cent of them had pest control measures applied it below recommendation and only 03.33 per cent totally faulty adopted chemicals pest control measures against aphid.

Disease name and their control measure

Maydis leaf blight (MLB) (69.17 per cent) of the maize farmers not adopted disease control measures against maydis leaf blight (MLB) following by them 15.83 per cent as per recommendation, 10.83 per cent below recommendation, 04.17 per cent of them had pest control measures applied it more than recommendation.

In case of late wilt (62.50 per cent) of the maize farmers not adopted disease control measures against late wilt following by them 20.00 per cent as per recommendation, 13.33 per cent below recommendation, 04.17 per cent of them had pest control measures applied it more than recommendation.

More than half of the farmers adopted proper sowing time, used university recommended varieties, seed rate, used readymade treated seed, spacing, FYM, Nitrogen as per the recommendation and less than two fifth of the maize farmers not adopted any chemical for the control of maize stem borer, *Helicoverpa armigera*, and fall armyworm control measures, while nearly half and more than half of the maize farmers not adopted any control measures of hairy caterpillar and aphid. More than half of the maize farmers used chemical control for stem borer, *Helicoverpa armigera* and fall armyworm, while less than half of the maize farmers used chemical control for hairy caterpillar and aphid but only few of them used as per the recommendation. In case of disease name and their control measures most of the maize farmers not adopted any control measures to control MLB and late wilt. Great majority of the farmers done hand weeding.

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