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Gap in Knowledge and Adoption of Improved Maize Production Technologies among Farmers of Agro-Climatic Zone IV A of Rajasthan, India

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A B S T R A C T

The present study was undertaken to assess the Gap in knowledge and adoption of improved maize production technologies by farmers. The study was conducted in two purposively selected districts viz. Udaipur and Chittorgarh of Agro climatic Zone IV-A of Rajasthan. Two panchayat samities from each district were selected purposively and three villages from each panchayat samiti were selected on random basis. Thus, there were total six villages from each district and total 12 villages from both the districts. Fifteen farmers from each village and 90 farmers from each district were selected. Thus, total sample for the present study was 180 respondents. The interview schedule technique was used to know the Gap in knowledge and adoption the farmers. However, the overall adoption (83.99 MPS) was found to be higher as compared to the overall knowledge (70.89 MPS) with a difference of 13.10 per cent.

Introduction

Agriculture plays a vital role in the Indian economy as it contributes about 17 per cent to the total GDP and provide livelihood to 65 to 70 per cent of the total population. The sector provides employment to 58.4 per cent of country's workforce and is the single largest private sector occupation. India's foreign trade is deeply associated with agriculture sector as it accounts for about 14.7 per cent of the total export earnings. Indian agriculture has registered impressive growth over last few decades. The food grain production has increased from 51 million tons in 1950-51 to 250 million tons during 2011-12.However, Indian agriculture is faced with a great diversity of needs, opportunities and prospects. Food demand is expected to be doubled by 2050, while production environment and natural resources are continuously shrinking and deteriorating. Inadequate attention to agriculture has led to steep rise in food prices and increased food riots. Food crisis has aggravated further because of climate change and diversion of arable lands to urbanization, industrialization and also for producing bio-fuel. The challenge

to agriculture in coming years is immense (ICAR Vision, 2030). Technology generation and technology transfer are widely acknowledged as crucial for accelerating production.

However, technology transfer has been given lower priority, perhaps because of deficiencies in technology transfer. Most of the techniques and practices remain confined to four walls of laboratories and research farms and those carried out to the farmers get distorted or lopped off considerably by the time and stage they actually are adopted at final level. Often, adoption of these practices is in piece meal and several necessary components of the package are either not adopted at all or adopted below the recommended levels.

Materials and Methods

The present study was conducted in the Agro-climatic zone IV A *i.e.* Sub- humid Southern Plain and Aravali Hills of Rajasthan State. Zone IV A covers all the tehsils of Bhilwara and Rajsamand districts, all tehsils of Udaipur district except Dhariyawad, Salumber and Sarada, all tehsils of Chittorgarh district and Aburoad and Pindwara tehsils of Sirohi district. Out of these, two districts namely Udaipur and Chittorgarh were selected purposively on the basis of highest production of maize.

Zone IV- A of Rajasthan covers fourteen panchayat samities of Udaipur and eleven of Chittorgarh district. Out of these, two panchayat samities from each district were selected purposively on the basis of highest production of maize. Thus, from Udaipur district, Mavli and *Girwa* panchayat samities and from, *Begu* and *Chittorgarh* panchayat samities were selected. In each district, panchayat samiti wise list of villages was prepared and from the list three villages from each panchayat samiti were selected on random basis. Thus, there were six villages from each district making total 12 villages from both the districts. From Udaipur, Girva panchayat samiti Bhallon Ka Guda, Sakroda, Bichhadi and from Mavli panchayat samiti Khempur, Badgaon and Martadi. From Chittorgarh, Begu panchayat samiti Jainagar, Sonagar, Katunda and from Chittorgarh panchayat samiti Oradhi, Jalampur, Khar villages selected. Collected data were tabulated and analyzed by using mean, frequency, percentage and mean percent score.

Results and Discussion

Gap in knowledge and adoption of improved maize production technologies among farmers

To find out overall and component wise gap in knowledge and adoption of improved maize production technologies by farmers paired t-test was computed. Perusal of table 1 depicts that there was significant difference in overall knowledge and adoption scores of improved maize production technologies of the farmers as the calculated t-values were found to be significant at 1 per cent level of significance.

The overall adoption (83.99 MPS) was found to be higher as compared to the overall knowledge (70.89 MPS) with a difference of 13.10 per cent. The possible reason for such a finding may be that in some of the practices the farmers did not have knowledge but they used to adopt the practice in consultation with Agriculture Supervisor of State Department of Agriculture or KVK personnel.

Component wise examination of the data reveal that there was significant difference in knowledge and adoption scores in all the components except seed rate, inter cultivation

and inter cropping, weed management and improved agricultural implements in which the difference was found to be non-significant. In depth analysis of the data depict that in high yielding varieties, adoption score (100 MPS) was significantly higher than the knowledge score (91.67 MPS) with a difference of 8.33 per cent. The possible reason for higher adoption was that some of the farmers did not know the exact name of hybrid /composite varieties but in actual practice they were sowing hybrid varieties of maize as suggested by the input dealers or Agricultural Supervisor.

In field preparation, the knowledge (90.56 MPS) was significantly higher than the adoption (36.11 MPS) with a wide gap of 54.44 per cent. Low adoption of practices related to field preparation was due to the reason that though majority of the farmers knew that field preparation in maize requires three sequential steps viz. one ploughing with MB plough followed by 2-3 ploughing with deshi plough and harrowing and cross-cultivation planking. However, in actual practice majority of the farmers were doing only one ploughing with deshi plough. This was due to the reason that the farmers were not aware about advantages of proper field preparation and hence, they were not convinced to follow the recommended practice. In case of land treatment also significant difference in knowledge and adoption was observed. Knowledge of the farmers was higher (MPS 78.15) then the adoption (71.67MPS). This was due to the reason that inspite of having knowledge about soil testing and treatment of saline soil, some of the respondents have not adopted these practices due to absence of soil testing facility at the village level and poor economic condition.

Gap in scores between knowledge (MPS 55) and adoption (MPS 100) was observed in component seed treatment with adoption significantly higher than the knowledge. This was due to the reason that all the farmers were using hybrid seeds of maize which were already treated and there is no need of further seed treatment. Significant difference in knowledge and adoption was observed in time of sowing with knowledge (100 MPS) higher than the adoption (90.00MPS). During discussion, the farmers reported that maize is a rainfed crop and many a times they have to wait for the monsoon which causes delay in sowing of maize.

The adoption in manure and fertilizers was significantly higher than knowledge with a gap of 13.56 per cent. This was due to the reason that without knowing the name and quantity of manure and fertilizers to be applied in maize crop, some of the respondents were applying the recommended dose by taking advice from the extension personnel of Agricultural Department. Similarly in case of cultural operations and insect pests and disease control the adoption score were significantly higher than the knowledge score with the gap of 11.28 and 35 per cent, respectively.

Wide gap in knowledge and adoption score (25.14%) was found in component irrigation management with knowledge score significantly higher than adoption score. Such findings could be attributed to the reason that though the farmers knew about correct stages of irrigation in maize crop however, due to absence of adequate irrigation facility they could not follow the recommended schedule of irrigation.

In component seed rate, inter cultivation and inter cropping, weed management and improved agriculture implements difference in knowledge and adoption score was non-significant which means that the knowledge and adoption of these practices by the farmers were more or less the same.

Table.1 Gap in knowledge and adoption of improved maize production technologies among farmers

n = 180

S. No.	Components	Knowledge(MPS)	Adoption(MPS)	Gap (%)	t values
1.	High yielding varieties	91.67	100.00	8.33	13.38**
2.	Field preparation	90.56	36.11	54.44	18.70**
3.	Land treatment	78.15	71.67	6.48	2.99**
4.	Seed treatment	55.00	100	45.00	34.03**
5.	Time of sowing	100.00	90.00	10.00	6.69**
6.	Seed rate	73.33	75.00	1.67	0.56 NS
7.	Inter cultivation and intercropping	72.38	75.00	2.62	0.86 NS
8.	Manure and fertilizers	80.61	94.17	13.56	7.05**
9.	Weed management	77.33	76.11	1.22	0.35 NS
10.	Cultural operations	80.67	91.94	11.28	8.26**
11.	Insect pest and disease control	49.17	84.17	35.00	17.54**
12.	Irrigation management	90.42	65.28	25.14	6.95**
13.	Improved agriculture implements	82.50	83.06	0.56	0.18 NS
	Over all	**70.89**	**83.99**	**13.10**	**9.52****

** Significant at 1% level of Significance
NS Non Significant

In conclusion, there was significant difference in overall knowledge and adoption scores of improved maize production technologies of the farmers as the calculated t-values were found to be significant at 1 per cent level of significance. The overall adoption (83.99 MPS) was found to be higher as compared to the overall knowledge (70.89 MPS) with a difference of 13.10 per cent. The possible reason for such a finding may be that in some of the practices the farmers did not have knowledge but they used to adopt the practice in consultation with Agriculture Supervisor of State Department of Agriculture or KVK personnel. Component wise examination of the data reveal that there was significant difference in knowledge and adoption scores in all the components except seed rate, inter cultivation and inter cropping, weed management and improved agricultural implements in which the difference was found to be non-significant.

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