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Problems Faced by Extension Field Staff in the Application of Crop Management Practices for Better Maize Crop in District Dir Upper

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SUMMARY

Maize has the highest production potential among all cereals and is cultivated all over the world. Maize crops have the ability to contribute to our socioeconomic condition, nutrition, and livelihood. With this importance in mind, a study was conducted on the problems faced by extension field staff in the application of management practices for bitter maize crops in District Dir Upper, Khyber Pakhtunkhwa, Pakistan. The study area included four union councils, from which four villages were selected using a multistage sampling technique. For this research, primary data was collected from all four nominated villages. A well-structured interview schedule was prepared, and the collected data was analyzed using SPSS V.20 software, using descriptive statistics and a Likert scale. The study had several objectives, such as evaluating the role of extension field staff in management practices for maize crops, assessing the views of respondents regarding the improvement of management practices for maize crops, and formulating recommendations for future planning and implementation. The results of the problems faced by extension field staff in the application of management practices for maize crops showed that pest/disease problems were ranked first, followed by marketing problems in second place, and non-availability of fertilizers problems in third place. Losses due to pests and diseases showed that the majority of the maize crop, 21-30%, was affected by diseases, and the preventive method for these losses was chemical control. The data regarding the area and production under maize crops showed that the majority had cultivated an area of 0-5 kanals of land, and the majority of respondents observed production of up to 900 kg. It is concluded that the area has the potential for maize crop production, but some problems need to be addressed. The study recommended that extension field staff should be well-equipped with knowledge, budget, and trained officers. Extension field staff should also focus on raising awareness through the use of ICTs and radio programs to promote maize crops.

Keyword: Problems, Extension Field Staff, Farmers, Pests diseases

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INTRODUCTION

Wheat, cotton, sugarcane, rice, and maize are among the most important crops, accounting for 21.90 percent of the agriculture firm's revenue generation and 4.06 percent of GDP. Agriculture generates 18.5% of GDP of the country and employs 38.5% of its workers (GoP, 2019). Management is also described as "the process of

arrangement, organizing, controlling and leading the usage of possessions to achieve presentation objectives" (Schermerhorn, 2005). Management encompasses the capacity to manage, organize, command, coordinate, and control (Fayol, 1916). In agriculture, Best Management Practices (BMPs) can boost output. Conservation tillage, pest management, agricultural nutrition management, animal feeding operations, irrigation management, and sediment and erosion control management are some of these activities. When enough technology, inputs, and education are available, this management will be successfully executed.

Agricultural extension services are provided to improve farmers' knowledge and abilities in order to increase yields. The main problems faced by extension field staff, which lead to dissatisfaction of farmers with agriculture extension services, are the poor service delivery of advanced technologies, lack of extension officers and workers, poor transportation infrastructure, adequate budget, trained extension officials, field unit offices, and lack of small farmers' participation in problem solving (Baloch and Thapa, 2018). Agriculture extension field staff face problems of funds for travel costs to visit farmers' communities with significant distances from farmers to farmers and lack of enough field staff for covering large areas (Tata and McNamara, 2018). The management practices that lead to higher productivity are high-quality seed, fertilizers, maize inputs, land, water, labor, manure, organic residue, pesticides, herbicides, irrigation and drainage systems, and transport (Tanumihardjo et al., 2020).

Improper management, uneven fertilizer use, and lack of acceptable production procedures are major causes of farmers failing to produce high-quality seed. Lower quality seed production may also be affected by hailstorms and diseases and insect pests due to long stays in the field (Hussain et al., 1994). Another problem faced by farmers is the loss of soil nutrients by applying synthetic fertilizers (Fred, 1991), and soil fertility is also affected by applying inorganic fertilizers when mixed with the soil surface, which is a big threat to farmers in order to achieve maximum output (Katsunori, 2003). Problems faced by farmers need to be addressed, including inputs such as rainfall, temperature, humidity, solar radiation, crop population density, fertilizer application, irrigation, tillage, type of soil, depth, farm capacity, and soil organic matter. Among these, atmospheric conditions such as precipitation, temperature, soil conditions, topography, and socioeconomic factors are responsible for about 30% of crop growth (Palanivel and Surianarayanan, 2019).

MATERIAL AND METHODS

The study was done in Khyber Pakhtunkhwa's District Dir Upper. District Dir Upper served as the study's universe. It is located in Khyber Pakhtunkhwa's Malakand Division, in the northwest area. It is heavily mountainous, encompassing 3,699 square kilometers and populated by 946,421 people (GoKP, 2017). A multi-stage sampling procedure was used. The first stage involved selecting Tehsil Larjam. The second stage involved the random selection of four Union Councils. The final stage involved selecting one hamlet at random from each Union Council. The fourth stage involved gathering a list of maize growers from the Extension Department who lived in the four designated communities. Thirty percent of farmers were randomly selected using

proportionate sampling technique from each village. Therefore, the total sample size for this study was 112.

Table 1: Village Wise Distribution of the Sample Respondents

Villages	Total Number of Respondents	Sampled Farmers
Batal	156	47
Osherai	74	22
Qala	80	24
Jabaluk	63	19
Total	**373**	**112**

Source: District Population Welfare Office Dir Upper

An interview schedule was constructed as a data collection tool. The collected data was analyzed using SPSS. Descriptive statistics such as frequency and percentages were used to analyze the data. A 4-point Likert scale was used to analyze the problems faced by extension field staff in the application of management practices for maize crop.

RESULTS AND DISCUSSION

Problems of Maize Crops

The respondents in the area were asked to rate the problems with the maize crop, such as marketing, inputs, pest/disease, and fertilizers, etc. People in the study area faced numerous problems related to maize crops. Similar results were found by Pervaiz (2009), who also identified the same problems faced by farmers. The rating of various problems for the maize crop was done using a 4-point Likert scale, with options including 'not at all', 'some extent', 'average extent', and 'high extent'. These options were assigned scores of 1, 2, 3, and 4, respectively. The ranking of different problems was based on their weighted score, calculated by the mean (M) and standard deviation (SD) of the responses from each of the 4 columns of specific problems. The results were then tabulated in Table 1.

The data presented in Table 2 showed that the problem of pests/diseases was ranked I with the highest value of M = 3.49 and SD = 0.838. This was followed by the problem of marketing, which was ranked II with the highest value of M = 3.11 and SD = 1.017. Furthermore, the problem of non-availability of fertilizers was ranked III with the highest value of M = 3.10 and SD = 1.057. The problem of inputs was ranked IV with the highest value of M = 3.07 and SD = 0.937. The problem of low prices was ranked V with the highest value of M = 3.06 and SD = 1.042. The problem of post-harvest handling was ranked VI with the highest value of M = 2.99 and SD = 0.973. The problem of losses during transportation was ranked VII with the highest value of M = 2.95 and SD = 1.089. The problem of crop protection was ranked VIII with the highest value of M = 2.74 and SD = 1.072. The problem of availability of quality seed was ranked XI with the highest value of M = 2.70 and SD = 1.081. Lastly, the problem of soil condition was ranked X with the highest value of M = 2.10 and SD = 1.074.

Table 2: Rating of Maize Crop Problems in the Study Area

Problems	1	2	3	4	Mean	Standard deviation	Ranked order
Marketing	16(14.3)	4(3.6)	44(39.3)	48(42.9)	3.11	1.017	II
Inputs	12(10.7)	9(8.0)	50(44.6)	41(36.6)	3.07	0.937	IV
Pest/ disease	5(4.5)	10(8.9)	22(19.6)	75(64.0)	3.49	0.838	I
Non availability of Fertilizers	15(13.4)	12(10.7)	29(25.9)	56(50.0)	3.10	1.057	III
Losses during transportation	15(13.4)	24(21.4)	25(22.3)	48(42.9)	2.95	1.089	VII
Less price	12(10.7)	21(18.8)	27(24.1)	52(46.4)	3.06	1.042	V
Availability of quality seed	18(16.1)	33(29.5)	26(23.2)	35(31.3)	2.70	1.081	XI
Crop protection	17(15.2)	32(28.6)	18(16.1)	45(40.2)	2.74	1.072	VIII
Post harvests handling	10(8.9)	23(20.5)	37(33.0)	42(37.5)	2.99	0.973	VI
Soil condition	43(38.4)	31(27.7)	22(19.6)	16(14.3)	2.10	1.074	X

Scale: 1. Not at all 2. Some extent 3.Average extent 4. High extent

Loss due to pest and diseases on Maize Crop

Accurate estimates of agricultural losses caused by insects are difficult to get since the damage inflicted by these creatures is based on a number of factors, including environmental conditions, plant species grown, farmer socioeconomic status, and technological level. Pests and diseases impact 21-30% of maize harvests, according to 94.6% of respondents in the area, while 5.4% said 0-20% of their maize crop is affected by pests and diseases. A comparable research by Oerke and Dehne (2004) revealed that 13 percent of worldwide potential agricultural output is lost each year owing to pests and illnesses.

Table 3: Loses due to pest and diseases

Village	Loss due to pest and diseases on Maize Crop		Total
	Up to 20 %	21-30%	
Batal	6(5.4)	41(36.6)	47(42.0)
Osherai	0(0.0)	22(19.6)	22(19.6)
Qala	0(0.0)	24(21.4)	24(21.4)
Jabaluk	0(0.0)	19(17.0)	19(17.0)
Total	6(5.4)	106(94.6)	112(100.0)

Control of Pests and Diseases for Maize Crop

IPM stands for Integrated Pest Management, and it is a broad-based strategy for pest and disease control. The use of natural source pesticides/bio-pesticides is strongly supported by the IPM strategy (Sandler, 2018). Table 4 demonstrates the various preventive strategies utilized by respondents in the research region for disease and

pest control. The data show that the majority, 88.4%, follow the chemical control method, while only 11.6% of respondents follow the cultural method.

Table 4: Distribution of the Respondents regarding Control of Pests and Diseases

Village	Control the Pests and Diseases		Total
	Chemical	Cultural	
Batal	43(38.4)	4(3.6)	47(42.0)
Osherai	20(17.8)	2(1.8)	22(19.6)
Qala	19(17.0)	5(4.5)	24(21.4)
Jabaluk	17(15.2)	2(1.8)	19(17.0)
Total	99(88.4)	13(11.6)	112(100.0)

Area and Production under Maize Crop

The production of respondents differed due to various reasons such as variations in land holding sizes, different irrigation systems, and the use of varying doses of fertilizers and pesticides. According to Table 5, the highest percentage of maize crop area cultivated was 39.3%, whereas the lowest was 2.7% for an area of 16-20 kannal. Table 4.4 also displays maize production figures, with the maximum percentage (69.6%) of respondents producing up to 900 kg, while the minimum percentage (0.9%) of respondents produced above 2250 kg.

Table 5: Distribution of the Respondents regarding Area and Production under Maize Crop.

Sr.	Variable	Frequency	Percentages
1	**Area under Maize crop**		
	0-5 kanals	44	39.3
	6-10 kanals	36	32.1
	11-15 kanals	29	25.9
	16-20 kanals	3	2.7
2	**Production**		
	Up to 900 kg	78	69.6
	900-1800 kg	26	23.2
	1800-2250 kg	7	6.3
	Above 2250 kg	1	0.9

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions are based on the prior discussion.

The climatic conditions and fertility of the area had the potential for maize crop production, and the majority of respondents in the area were interested in cultivating maize. However, the residents and the extension field staff faced some problems, such as pest infestations, diseases, marketing, and availability of fertilizers, etc.

Based on research study, the following are recommended for necessary actions by all concerned like the policy makers, administrations, researchers and politicians.

1. Extension field staff should be well equipped with knowledge, budget and trained officers by the government.

2. Extension field staff are covering large areas for dissemination information so number of staff should be increased and offices at nearby areas should be built by the government.
3. Extension field staff should focus on the awareness of ICT technology i.e. awareness about agriculture application on internet and radio programmes.

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