



Research Article

KNOWLEDGE LEVEL OF FARMERS ABOUT RECOMMENDED PRACTICES OF PEARL MILLET CULTIVATION: A STUDY OF ALIGARH DISTRICT OF UTTAR PRADESH

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Abstract: The study to assess the knowledge level of farmers about recommended practices of hybrid pearl millet cultivation for grain in *Kharif* season with sample size of 120 pearl millet growers of district Aligarh of Uttar Pradesh showed that the majority of the respondents were educated up to high school and intermediate. Land holding of majority of the respondents was between two to four acres. Major source of irrigation was electricity operated tube-well. Friends/relatives, fellow farmers, agricultural inputs dealers/shopkeepers, officers/ extension functionaries of state department of agriculture were the most frequently used information sources for agricultural information. Few farmers also participated in the extension activities organized by the different agencies engaged in agricultural development of the district. Maximum numbers of farmers were having knowledge about suitable varieties, mechanical method of weed management, seed rate and appropriate time of sowing of pearl millet. However, most of the farmers were lacking in knowledge about the insect-pest and disease management, and nutrient management in the pearl millet crop.

Keywords: Information sources, agricultural information, knowledge level, pearl millet cultivation practices, extension activities

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Introduction

Pearl millet (*Pennisetum glaucum*) is one of the most extensively cultivated cereals in the world, ranking sixth after rice, wheat, maize, barley and sorghum in terms of area. It is rich in calcium, potassium, magnesium, iron, zinc, manganese, riboflavin, thiamine, niacin, lysine and tryptophan [1]. High content of iron and zinc of pearl millet may help in increasing the haemoglobin level. High fibre content of pearl millet is helpful in dealing with problem of obesity and constipation. Pearl millet is helpful in management of diabetes mellitus and has antioxidants compounds [2]. In ready-to-eat pearl millet-based breakfast cereals, the utilization of whole grain has positive nutritional implications because the bran is retained in the product [3]. Pearl millet is low water consuming crop and requires less water (350 mm) than other crops except pulses (300 mm) [4]. It can be grown in harsh environment on marginal soils. The crop can tolerate temperature up to 42°C whereas other cereals like maize (40°C), rice (32°C) and wheat (30°C) cannot handle the heat [5]. During year 2015-16 in India total area under pearl millet cultivation was 7.67 million hectares with a production of 9.1 million tone and average yield was 1188 kg/ha. In Uttar Pradesh during year 2015-16 area under pearl millet cultivation was 0.98 million hectares with a production of 0.178 million tones and average yield was 1821 kg/ha [6]. As per year 2011-12 figures, the area under pearl millet cultivation in Aligarh district of Uttar Pradesh was 90701 hectares with average productivity of 1943 kg/ha [7]. More emphasis on rice and wheat has shrunken the diversity of food crop options. Due to high nutritive value, health benefits, low water requirement and climate resilience properties of the pearl millet, in the current scenario the crop is getting importance which implies that there is need to enhance the production and productivity of pearl millet. Besides improved varieties, the cultivation practices like seed treatment, sowing method, optimum plant population, nutrient management, insect-pest management, disease management, water management and weed management are crucial to augment productivity.

Farmers cannot apply these practices until and unless they have knowledge about these. Assessment of knowledge level of farmers is essential for designing messages and developing extension strategy to promote the scientific cultivation practices of pearl millet. Keeping these facts in view, the present study was conducted to assess the general profile of pearl millet growing farmers including the extent of use of information sources and participation in extension activities along with the knowledge level of farmers about the improved practices of hybrid pearl millet cultivation for grain in *kharif* season.

Materials and Methods

The study was conducted in purposively selected Aligarh district of Uttar Pradesh. There are total twelve blocks in the district, of which six blocks were selected. From each selected block two villages were selected. From each selected village total ten pearl millet farmers were selected randomly for the data collection making a total of 120. Personal interview schedule was used to collect the data. The interview schedule comprised of four parts viz. general profile of the farmers, extent of use of sources of agricultural information by the farmers, participation of farmers in extension activities and knowledge level about the hybrid pearl millet cultivation practices for grain in *kharif* season. Extent of use of agricultural information sources were ranked according to their weighted mean score. Extent of participation of farmers was measured on five points continuum. To assess the knowledge level, a test was developed based on recommended package of practices for hybrid pearl millet cultivation for grain in western Uttar Pradesh. Sixteen items were selected from package of practices for pearl millet cultivation after reviewing the recommendations and discussion with the scientists of the University. Each selected practice was put in question form to obtain responses from the farmers. The correct answer was given a score of 'one' and incorrect responses 'zero'. The maximum and minimum obtainable score from each respondent was 16 and 0, respectively.

Table-1 General profile of the respondents, n= 120

SN	Aspect of general profile		No. of respondents	Percentage
1.	Age			
	i.	25 and less than 25	8	6.67
	ii.	26 to 35 years	9	7.50
	iii.	36 to 45 years	31	25.83
	iv.	46 to 55 years	31	25.83
	v.	56 to 65 years	31	25.83
	vi.	Above 66 years	10	8.33
2.	Educational level			
	i.	Illiterate	12	10.00
	ii.	Primary	6	5.00
	iii.	Middle	19	15.83
	iv.	High School	29	24.17
	v.	Intermediate	34	28.33
	vi.	Graduate	14	11.67
	vii.	Post Graduate	6	5.00
3.	Family Size			
	i.	Small (Up to 4 members)	16	13.33
	ii.	Medium (5 to 8 members)	67	55.83
	iii.	Large (< 8 members)	37	30.83
4.	Land holding			
	i.	Up to 2 acre	26	21.67
	ii.	>2 and ≤ 4 acre	45	37.50
	iii.	>4 and ≤ 6 acre	20	16.67
	iv.	>6 and ≤ 8 acre	10	8.33
	v.	>8 and ≤ 10 acre	11	9.17
	vi.	>10 and ≤ 12 acre	3	2.50
	vii.	Above 12 acre	5	4.17
5.	Source of irrigation			
	i.	Tube-well with electricity	80	66.67
	ii.	Tube-well with diesel pump set	32	26.67
	iii.	Canal	10	8.33
	iv.	Nil	8	6.67

Table-2 Extent of use of sources of agricultural information by the respondents

SN	Source of information	Weighted mean score	Rank order
1	Friends/ relatives	3.408	I
2	Fellow farmers	3.366	II
3	Shopkeepers of agricultural inputs	2.800	III
4	Officers/ Extension functionaries of department of agriculture	2.540	IV
5	Agricultural magazines	2.410	V
6	Agricultural extension literature	2.133	VI
7	Scientists of Krishi Vigyan Kendra	2.125	VII
8	Television	2.108	VIII
9	Representatives of private agricultural inputs companies	2.025	IX
10	Radio	1.700	X
11	Kisan mobile advisory service (mKisan)	1.690	XI
12	Internet	1.680	XII
13	Kisan Call Centre	1.625	XIII
14	News paper	1.525	XIV
15	Scientists of Agricultural Research Station	1.450	XV
16	Representatives of NGOs	1.425	XVI

Table-3 Extent of participation of respondents in extension activities

SN	Extension activity	Extent of participation					Weighted mean score	Rank Order
		Always	Often	Sometimes	Seldom	Never		
1	Krishak Gosthies (Farmers meetings)	09	20	44	30	17	2.780	I
2	Kisan Mela (Farmers fairs)	14	9	47	22	28	2.658	II
3	Farmers Training programmes	5	15	28	35	37	2.300	III
	Exposure visits	4	13	31	29	43	2.216	IV
4	Field Demonstrations	0	2	30	40	48	1.883	V
5	Field days	0	1	25	45	49	1.791	VI

Results and Discussion

General profile of the respondents

Data pertaining to general profile of the respondents presented in [Table-1] shows that near about one-fourth of the respondents were from age group of 36 to 45 years. Educational level of 28.33 percent of respondents was up to intermediate, followed by high school (24.17 percent). Family size of nearly half of the respondents was medium (5 to 8 members) followed by large (<8 members) and small (up to 4 members), respectively. The land holding of majority of the

respondents (37.50 percent) was between two to four acres. Source of irrigation of most of the respondents was electricity operated tube-well, followed by diesel pump set and canal.

Extent of use of sources of agricultural information by the respondents

It is clear from the data presented in [Table-2] that friends/relatives, fellow farmers, shopkeepers of agricultural inputs, officers/ extension functionaries of department of agriculture and agricultural magazine were the most frequently used information

Table-4 Knowledge level of the respondents regarding pearl millet cultivation practices

SN	Technology	Number of respondents	Percentage	Rank order
1.	Suitable varieties	76	63.33	I
2.	Seed treatment and sowing			
	i. Seed treatment	18	15.00	XIV
	ii. Seed rate	70	58.33	III
	iii. Time of sowing	68	56.67	IV
3.	Nutrient management			
	i. Application of fertilizers on the basis of soil testing	56	46.67	V
	ii. Recommended dose of phosphorus	31	25.83	IX
	iii. Recommended dose of potash	21	17.5	XII
	iv. Recommended dose of nitrogen	39	32.50	VIII
	v. Time for application of fertilizers	48	40.00	VII
4.	Critical stages of irrigation	52	43.33	VI
5.	Insect Pest and disease management			
	i. Management of termite	29	24.17	XI
	ii. Management of shoot fly	15	12.50	XV
	iii. Management of Downy mildew	08	6.67	XVI
	iv. Management of Ergot	08	6.67	XVI
6.	Weed management			
	i. Chemical method	30	25.00	X
	ii. Mechanical method	71	59.17	II

sources for agricultural information by the respondents with the weighted mean score of 3.408, 3.366, 2.800, 2.540 and 2.410, respectively. Agricultural extension literature occupied the sixth position in rank order followed by the scientists of Krishi Vigyan Kendra, television, representatives of private agricultural input companies and radio, respectively. Kisan mobile advisory service (mKisan), Internet, Kisan Call Centre, newspapers, scientists of Agricultural Research Stations and representatives of NGOs were least used information sources, as these were placed on last six positions in the rank order.

Extent of participation of respondents in extension activities

Data pertaining to extent of participation of the respondents in extension activities organised by different extension service providers in the district is presented in [Table-3]. It is clear from the data that only few farmers 'always' participate in extension activities. Majority of the farmers participate in extension activities 'sometimes' followed by 'seldom'. Among the extent of participation in extension activities, participation in the *Krishak Gosthies* (Farmers meetings) occupied the first position in the rank order. Participation in the *Kisan Melas* (Farmers Fairs) secured second position followed by Farmers Training Programmes, Exposure Visits and Field Demonstrations having the weighted mean score of 2.658, 2.3, 2.216 and 1.883, respectively. Amongst the extent of participation in extension activities, the respondents' participation in the field days was observed on last position in the rank order.

Knowledge of the respondents regarding pearl millet cultivation practices

It is evident from the [Table-4] that maximum numbers of the respondents (63.33 percent) were having the knowledge about suitable varieties of pearl millet followed by mechanical method of weed management, seed rate and appropriate time of sowing. A sizeable number of respondents (46.67 percent) were aware about the fact that fertilizers in the crop must be applied on the soil test value. Percentage of the respondents having knowledge about critical stages of irrigation was 43.33. Forty percent respondents were having knowledge about appropriate time for application of fertilizers. One-third of the respondents were having knowledge about recommended dose of nitrogen followed by recommended dose of phosphorus. One-fourth of the respondents were having the knowledge about chemical method of weed management in the crop followed by knowledge about management of termite. Very few farmers were having the knowledge about management of shoot fly insect and downy mildew and ergot diseases of pearl millet crop.

Pray and Nagarajan, (2009) [8] reported that at India level, 82% of the total seed supply of pearl millet and 75% of the sorghum is by private sector companies. It might be a reason that shopkeepers of agricultural inputs at third rank after friends/relatives and fellow farmers in rank order of sources of agricultural information. Officers/extension functionaries of department of agriculture,

agricultural magazines and extension literature are also preferred sources of agricultural information of pearl millet growers of the district Aligarh. Few Pearl millet growers of the district are also participated in *Krishak Gosthies* (farmers meetings). Pearl millet growers of the district Aligarh are lacking in knowledge about nutrient, insect-pest and diseases management in the crop. On the basis of these found facts it might be proposed that to enhance the knowledge level of pearl millet growers of district Aligarh shopkeepers of agricultural inputs must be trained in scientific cultivation practices of the crops being grown in their area thus they can give right information to the farmers. Extension literature on complete scientific cultivation practices of pearl millet must be provided to the farmers with seed packets. More *Krishak Gosthies* (farmers meetings) must be organised with special emphasis on nutrient, insect-pest and disease management aspects of crop production.

Conclusion

On the basis of present study, it can be concluded that, the maximum number of pearl millet growing farmers were educated up to intermediate, having land up to four acres with irrigation facility. Family size of most of the pearl millet growing farmers was medium (5 to 8 members). Major sources of agricultural information for pearl millet growing farmers were friends/relatives, fellow farmers, shopkeepers of agricultural inputs and officers/extension functionaries of department of agriculture. Few farmers participated in the extension activities organised by different extension service providers in the district. The study further indicates that there is low knowledge level of farmers about the cultivation practices of pearl millet. Farmers were lacking in knowledge about the nutrient, insect-pest and disease management in pearl millet. It can be stated on the basis of the study that shopkeepers of agricultural inputs must be trained in insect- pest, disease and nutrient management of pearl millet crop and motivated to provide the right information to the farmers when farmers come to them. Extension literature on insect- pest, disease and nutrient management of pearl millet crop must be developed and distributed amongst farmers. Developed extension literature must also be distributed through shop keepers of agricultural inputs as farmers also seek agricultural information from them. The agencies engaged in agricultural development of the district must give more emphasis on insect- pest, disease and nutrient management of pearl millet crop in their extension activities. Bridging the knowledge gap in pearl millet cultivation practices might lead to further increase in the production and productivity of the crop in the study area.

Application of research: Findings of the study will be helpful in designing messages and developing extension strategy for promoting scientific cultivation practices of pearl millet in the study area.

Research Category: Agricultural extension, agricultural communication

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Cultivar / Variety / Breed name: Pearl millet (*Pennisetum glaucum*)

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