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Performance of pearl millet [*Pennisetum glaucum* (L). R. Br.] variety MPMH-17 in Village Devla and Jharna, District Jaipur under rainfed condition

A Bhati**Abstract**

An experiment was conducted under Front Line Demonstration (FLD) Project of ACRIP on Pearl millet in Kharif season 2019 to evaluate the performance of the variety MPMH-17 and to demonstrate improved Package of Practices (PoP) of pearl millet cultivation at farmers' fields. The truthfully labeled seeds @ 4.0 Kg per ha of MPMH-17 variety (source-RARI, Durgapura) were distributed among the 10 farmers of the villages (5 each of Devla and Jharna) for 10 hectare area. All the 10 farmers obtained higher grain as well as fodder yields compared to their local variety and local practice of pearl millet cultivation. Overall, 21.50% higher grain yield was obtained due to hybrid variety MPMH -17 over local practice of pearl millet cultivation under rainfed conditions.

Keywords: Pearlmillet, arid region, Rajasthan, MPMH-17, FLD

Introduction

Pearlmillet [*Pennisetum glaucum* (L). R. Br.] is an important kharif cereal crop of arid and semi arid region of North India. It belongs to family Gramineae and native of Africa. Bajra has the nutritional values per 100 gms: energy 360 calories, moisture 12g, protein 12g, fat 5g, mineral 2g, fiber 1 g, carbohydrate 67g, calcium 42mg, phosphorus 242mg, and iron 8mg (Malik, 2015) [3]. The crop is used as grains as cereal for humans consumption and as a fodder for cattle nutrition in hot-dry periods (Yadav *et al.*, 2013). The crop has a very wide adaptability and can grow day lengths, temperature and moisture stress. It is photo-insensitive and requires minimum annual rainfall and dry weather. Majority, the pearl millet is grown in the northern part of India which is characteristically prone to drought stress of unpredictable intensity and unpredictable intensity and duration. These regions also have a high livestock population which is very important component of livelihood and additional source of income. In Rajasthan, pearl millet occupied an area of 3.2 million hectare with grain production of 42.1 million tonnes (Anonymous, 2002) [1]. Barmer, Jodhpur, Nagaur, Churu, Jalore, Sikar, Jaipur, Jhunjhunu, Alwar, Jaipur and Bikaner are major pearl millet growing districts of the state. Pearl millet is largely grown as rainfed cereal crop in Rajasthan, therefore, its production and productivity is highly erratic and varies year after year with the amount and distribution of rainfall. Therefore, a hybrid variety dual purpose variety is needed to grow that are capable of producing good amount of both grain and dry fodder are preferred in the existing crop livestock farming system.

A variety MPMH-17 of pearl millet is capable of producing good amount of both grain and dry fodder under rainfed condition of Jaipur district. MPMH 17 was developed at All India Coordinated Pearl Millet Improvement Project (AICPMIP), Mandor, Jodhpur using male-sterile line ICMA04999 as female parent and restorer MIR 525- 2 as male parent. The line ICMA04999 is based on A1 source of cytoplasmic male-sterility and MIR 525-2 was derived from a cross having parentage of arid-zone adapted materials (Yadav *et al.*, 2013) [5, 7]. According to results of trials tested in the All India Coordinated Pearl Millet Improvement Project during 2009-2011 at 57 locations, MPMH 17 provided grain yield of 2835 kg/ha and stover yield (64q/ha) which was 10-40% higher than yields of four checks (Anonymous, 2017) [1]. Another distinctive advantage of MPMH 17 is its high level of resistance to downy mildew and blast, two most important diseases of pearl millet. The hybrid MPMH 17 matures, on an average, in 79 days and takes 48 days to flower. It is high tillering (2.7 panicles/plant) and produces very compact panicles of 22-24 cm length filled with medium sized grains (seed weight of 8.0 g/1000 grain) of globular shape and grey-brown colour.

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The hybrid attains the height of approximately 180 cm and produces panicles that are, on an average, 2.6 cm thick (Rajpurohit *et al.*, 2013) [5, 7].

Under Front Line Demonstration (FLD) Project of ACRIP on Pearl millet in year 2019 (Kharif season) of 10 Hectare area was conducted at villages Devla and Jharna, Tehsil Mozmadabad (District Jaipur) to evaluate the performance of variety MPMH-17 under rainfed condition.

Materials and Methods

An experiment was conducted Under Front Line Demonstration (FLD) Project of ACRIP on Pearl millet in year 2019 (Kharif season) to evaluate the performance of the variety MPMH-17 and to demonstrate improved Package of Practices (PoP) of pearl millet cultivation at farmers' fields to enhance the productivity of the crop. The truthfully labeled seeds @ 4.0 Kg per hac of MPMH-17 variety (source-RARI,

Durgapura) were distributed among the 10 farmers of the villages (5 each of Devla and Jharna) for 10 hectare area. The seeds were sown in the last week of July, 2019. The improved practices are includes use of improved hybrid, seed treatment, use of micronutrients Fe & Zn (20 kg/ha each of FeSO₄ and ZnSO₄), line sowing, maintaining recommended spacing, manual weed control and soil improving additive gypsum (200 kg/hac). Farmers' practice included use of own seed without following PoP of the crop (Like sowing method - broadcasting). The soil of the area is poor in major as well as micronutrients content.

Results and Discussion

All the 10 farmers obtained higher grain as well as fodder yields as compared to their local variety and local practice of pearl millet cultivation (Table 1).

Table 1: Grain and Fodder Yield of Pearlmillet variety MPMH-17 under Improved Practice and farmer's practice

S. No.	Name of the Farmer	Grain Yield (Kg/Hac)		Fodder Yield (Kg/Hac)	
		Yield under improved practice of FLD	Yield under farmers practice	Yield under improved practice of FLD	Yield under farmers practice
Location: Village Devla & Jharna, Tehsil Mozmadabad (Jaipur)					
1.	Suresh Kumar Samota	1230	1050	3310	3000
2.	Kanha Ram Gurjar	1105	1010	3245	2290
3.	Kalu Ram Gurjar	1350	1240	3800	3590
4.	Gyarsi Devi Gurjar	1120	1030	3267	2940
5.	Gajanand Dulariya	1365	1120	3281	3010
	Mean	1234	1090	3380	2966
6.	Nathu Ram Yadav	1265	1070	3190	2845
7.	Ravi Lal Regar	1130	1005	3164	2810
8.	Ramavatar Sharma	1445	1265	3819	3400
9.	Satyanarayan Gurjar	1360	1150	3650	3345
10.	Harman Lal Choudhary	1390	1200	3600	3280
	Mean	1318	1138	3484	3136
	Overall Mean	1276	1114	3432	3051



Fig 1: Farmer's Field of Pearl Millet variety MPMH -17

All the 10 farmers obtained higher grain as well as fodder yields compared to their local variety and local practice of pearl millet cultivation. The mean grain yield under improved practice of FLD was 1276 Kg/ hac which is higher as compared to 1114 Kg/ hac grain yield under farmers practice. Similarly, the mean fodder yield under improved practice of FLD was 3432 Kg/ hac which is higher as compared to 3051 Kg/ hac grain yield under farmers practice. Over all yields obtained from the crop were satisfactory in all the FLD's. Overall, 21.50% higher grain yield was obtained due to hybrid variety MPMH -17 over local practice of pearl millet cultivation. Therefore, the farmers could achieve best results

by following package of practices and using high yield variety. Results may vary somehow due to annual rainfall. (Ram *et al.*, 2018, Yadav *et al.*, 2013, Jain *et al.*, 2018) [4, 5, 7, 2].



Fig 2: Pearl Millet variety MPMH -17 at Harvesting Stage

Conclusion

The findings indicated that pearl millet hybrid MPMH- 17 can be a boon and good option to farmers in both irrigated as well assured rainfed conditions. By using proven technologies, yield potential of pearl millet crop could be enhanced with increasing the income level of the farmers.

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