

## Short Communication

# Introductory trial on hybrid millet (*Pennisetum glaucum* L. R. Br.) at different locations of District Karak, KPK, Pakistan

Inayatullah Khattak<sup>1</sup>, Mohammad Aqeel Khattak<sup>2</sup> and Shahida Naveed<sup>3\*</sup>

<sup>1</sup>NRM Coordinator, Sarhad Rural Support Program (SRSP), Bacha Khan Poverty, Alleviation Program, District Karak, Pakistan.

<sup>2</sup>Agricultural Research Station Ahmad Wala, Karak, Pakistan.

<sup>3</sup>Department of Botany, University of Peshawar, Peshawar, Pakistan.

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**An experiment was conducted on farmers' fields to study the yield performance of hybrid millet "Badshah" at various locations of District Karak during Kharif 2010. The experiment was conducted in 6 union councils at 18 different locations of District Karak representing various micro agro climatic zones of the area. Data on days to flowering, days to maturity, plant population/m<sup>2</sup>, plant height (cm) and grain yield kg/ha were recorded. The investigations revealed that locations significantly affected all the parameters at P = 0.05%.**

**Key words:** Hybrid millet, crop performance, farmers' fields, District Karak, Pakistan.

## INTRODUCTION

Millet is an important cereal grown in many harsh environments in the arid, semi arid and tropical regions of Asia and Africa. In Africa, pearl millet is primarily grown for human consumption serving as the staple food in some of the poorest countries and regions of the continent. The grain is mainly used in three different ways, as grain-like flour, as dough and as gruel (Brunken et al., 1977; Countin and Harris 1968). It is a significant source of dietary energy and nutritional security of poor farmers and consumers in several highly populated regions of sub continent. Millet crop also minimizes the nutritional deficiency of poor masses of the country in southern districts of Khyber Pakhtunkhwa. It is also one of the most important Kharif crops in the rain fed areas of Kohat and DIKhan divisions of Khyber Pakhtunkhwa.

This crop is also grown in the tube well irrigated areas of the province where limited irrigation water is available due to one reason or the other (Din et al., 1988). Being traditional crop millet is grown on an area of 6919 ha annually with a total production of 3463 tones in Khyber Pakhtunkhwa while in Karak district the area is 3099 ha

with a production of 1703 tones (MINFAL 2006-07).

Despite enormous uses to which pearl millet can be put, there are some constraints which limit the production of the crop. Among these are nature of soils, climate of the region, cultural techniques and management practices. Others are diseases, pests, weeds and other practices whose effects seriously affect the yield of the crop (Mustapha, 2007).

It is an admitted fact that the performance of any crop at a particular location depends on the variety and the biotic and a biotic constrains obtainable at that location. This study therefore aims at finding the influence of variety on the growth and yield of the crop in the chosen locations with the view to introduce a high yielding variety for adaptation and suitability to these locations.

## MATERIALS AND METHODS

An imported pearl millet hybrid variety "Badshah" was tested in a field experiment during Kharif 2010. The study was conducted on farmers' fields at 18 different locations covering 6 union councils of District Karak. At each location, a well prepared gross plot size of 4000 m<sup>2</sup> (one acre) was selected and sowing was completed in the last fortnight of July, 2010 using RCB design replicated 4 times. The seeds were sown in lines by pora @ 8 kg/ha. Row to row

\*Corresponding author. Email: [shahidanaveed@live.com](mailto:shahidanaveed@live.com).

**Table 1.** Showing mean values for various characters as recorded in different locations of District Karak regarding an Introductory trial on hybrid millet “Badshah”.

S/No.	Union council	Location	Days to flowering	Days to maturity	Number of plants/m <sup>2</sup>	Plant height (cm)	Grain yield (kg/ha)
1	Sabir Abad	Garoori	56.00 <sup>cd</sup>	79.50 <sup>d</sup>	26.50 <sup>cde</sup>	216 <sup>def</sup>	2692 <sup>cde</sup>
		Ghundi SK	56.50 <sup>bc</sup>	79.75 <sup>cd</sup>	25.75 <sup>def</sup>	213 <sup>fgh</sup>	2668 <sup>cde</sup>
		Deli Mela	55.25 <sup>cd</sup>	79.25 <sup>d</sup>	25.75 <sup>def</sup>	212 <sup>f-i</sup>	25.69 <sup>ef</sup>
2	Jandri	Talab Khel	58.25 <sup>a</sup>	84.50 <sup>a</sup>	29.00 <sup>ab</sup>	224 <sup>ab</sup>	3260 <sup>a</sup>
		Toor Mrach	57.75 <sup>ab</sup>	82.50 <sup>b</sup>	28.75 <sup>ab</sup>	225 <sup>a</sup>	3211 <sup>a</sup>
		Algadi	58.75 <sup>a</sup>	85.00 <sup>a</sup>	29.75 <sup>a</sup>	220 <sup>bcd</sup>	3212 <sup>a</sup>
3	Latamber	Warana	55.00 <sup>cd</sup>	77.25 <sup>e</sup>	25.00 <sup>ef</sup>	211 <sup>ghi</sup>	2717 <sup>b-e</sup>
		Sharifwala	54.50 <sup>de</sup>	77.00 <sup>e</sup>	24.75 <sup>f</sup>	214 <sup>efg</sup>	2766 <sup>bcd</sup>
		Sur Dag	53.25 <sup>ef</sup>	76.75 <sup>e</sup>	25.75 <sup>def</sup>	212 <sup>f-i</sup>	2865 <sup>b</sup>
4	Mita Khel	Mita Khel	55.00 <sup>cd</sup>	81.50 <sup>bc</sup>	26.75 <sup>cd</sup>	221 <sup>abc</sup>	2865 <sup>b</sup>
		Shawal Ada	53.25 <sup>ef</sup>	81.75 <sup>b</sup>	24.75 <sup>f</sup>	222 <sup>abc</sup>	2791 <sup>bc</sup>
		Kanda Karak	52.25 <sup>fgh</sup>	81.75 <sup>e</sup>	25.75 <sup>def</sup>	222 <sup>abc</sup>	2766 <sup>bcd</sup>
5	Chokara	NaraiKhora	51.50 <sup>gh</sup>	76.00 <sup>e</sup>	27.00 <sup>cd</sup>	218 <sup>cde</sup>	2618 <sup>def</sup>
		Chokara	52.00 <sup>fgh</sup>	76.00 <sup>e</sup>	27.50 <sup>bc</sup>	216 <sup>def</sup>	2717 <sup>b-e</sup>
		Ahmadwala	52.50 <sup>fg</sup>	75.75 <sup>e</sup>	25.75 <sup>def</sup>	214 <sup>efg</sup>	2766 <sup>bcd</sup>
6	Teri	Ahmadi Banda	52.25 <sup>fgh</sup>	77.25 <sup>e</sup>	25.50 <sup>def</sup>	209 <sup>hi</sup>	2470 <sup>fg</sup>
		Teri	51.75 <sup>fgh</sup>	76.75 <sup>e</sup>	26.75 <sup>cd</sup>	208 <sup>i</sup>	2371 <sup>g</sup>
		Malik Abad	50.75 <sup>h</sup>	77.25 <sup>e</sup>	24.25 <sup>f</sup>	208 <sup>i</sup>	2371 <sup>g</sup>
LSD			1.714	1.786	1.578	4.584	153.3

distance of 60 cm and plant to plant distance was maintained 15 cm just to thin the crop 3 weeks after sowing by pulling out the weaker and less developed seedlings. A dose of 90 kg/ha N and 30 kg/ha P<sub>2</sub>O<sub>5</sub> was uniformly applied to all the plots. Full dose of phosphorus and half dose of nitrogen was applied at sowing time while the remaining half dose of nitrogen was side dressed about 30 to 35 days after sowing. Weeding was done with hand-held hoe as and when required. Data were recorded on a number of parameters like, days to flowering, days to maturity, plant population/m<sup>2</sup>, plant height (cm) and grain yield (kg/ha) and statistically analyzed using LSD test at 0.05 p according to Gomez and Gomez (1984).

### Geography and climate

District Karak is sub mountainous in topography and mainly rain fed, which lies in the arid zone of the province. It can be separated in two main zones on the basis of rainfall and soil texture. The Thall zone which is comparatively hot area of the district is the low rainfall area which received less than 500 mm annual rainfall. This is the southwestern part of the district having purely sandy soils, where in the month of June and July the temperature reaches up to 42-45°C.

The medium rainfall zone which receives 500 to 750 mm of annual rainfall includes the central and Northeastern area of tehsil Karak, known as Chountra and the whole area of B.D. Shah tehsil. The major portion of the cultivable soil of this zone is sandy clay-

loam.

## RESULTS AND DISCUSSION

### Days to flowering and days to maturity

From Table 1, there is clear evidence that differences exist among the locations in terms of days to flowering and days to maturity. The means show that at all the three locations of union council Jandri, the crop took the maximum days to flowering and maturity as well. The plants took (58.75 days) to initiate flowers and 85 days to maturity at Algadi of the said union council while the minimum (50.75 days) were taken to flowering at Malik Abad in union council Teri and 76 days to maturity at all the three locations in union council Chokara. The results obtained are in conformity with those already published by Mustapha and Mustapha (2007) who said that millet crop usually takes 70 to 87 days to maturity. Similarly Pal (1973) and Balyan (1982) reported that generally delay in 50% flowering was noted in later sowing which resulted in prolonged physiological maturity with poor seed set. This

is another important trait from breeding point of view that untimely sowing of a crop caused delay in flowering and maturity as well.

### Plant population/m<sup>2</sup>

The differences in the mean values of plant population calculated for different locations were highly significant. Statistically equal and the maximum plant population (29 plants/m<sup>2</sup>) was noted in union council Jandri. This reflects that traditionally grown crops can attain an acceptable plant population in the same area. Similar observations were reported by Hassan and Abdullah (2007) and Bakhsh et al. (2006) by investigating the variability of chick pea varieties grown under the various ecological conditions while the minimum 24.25 plant at Malik Abad in union council Teri closely followed by Sharifwala (24.75 plants/m<sup>2</sup>) in union council latamber.

### Plant height (cm)

Short plant height is a desirable character to reduce logging in crop plant but in millet tall plants are liked by the farmer's community to get more straw yield for their cattle feeding. It is the 2<sup>nd</sup> most important character after yield in this crop. In this study, plant height was significantly influenced by different locations. The tallest plants were found in Jandri and Mita Khel union councils ranging between 222 to 225 cm while the shortest plants of 208 cm were observed at Ahmadi Banda and Malik Abad in union council, Teri. The results obtained are in conformity with those already published by Saleem et al. (2008) and Hakim (2006), where the genotypes of chick-pea have expressed their genetic potential at different locations and shown their effect on plant height. So most of the farmers liked the variety because, it can fulfill their purpose of grain and hay as well.

### Grain yield (kg/ha)

Grain yield is the first and last important trait of any crop. Generally, the grain yield of millet crop from local varieties can be varied at different locations. The local varieties produce 750 to 1100 kg/ha grains from locations to locations. Here in this experiment also, grain yield was significantly influenced by locations. The range in mean values due to locations was 2371 to 3260 kg/ha. The

lowest yield of 2371 kg/ha was recorded in union council Teri while the highest grain yield of 3260 kg/ha was observed at Talab Khel in union council Jandri.

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