

VARIETAL PERFORMANCE OF BARI BLACKGRAM IN COMPARISON TO LOCAL CULTIVATED VARIETY AT BOGRA REGION OF BANGLADESH

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ABSTRACT

The experiment was conducted during *Kharif 2* season of 2017-18 in the farmer's field of Dolirkandi and Boisaki sites under the upazila Sariakandi and Dhunut of Bogura district. Two varieties of blackgram viz. BARI Mash-3 and Local (check) were tested in both locations. The experiments were laid out in RCB Design with three replications having plot size 1320 m². The highest plant height was found in local cultivar than that of BARI Mash-3 in both of the locations, which is one the strong ground to achieve more yields in blackgram. The performance was best up to 35% for pod characteristics and about 47% more yields were acquired from BARI Mash-3 compared to local/cultivated variety in Dolirkandi site. On the other hand the performance was best up to 34% for pod characteristics and about 13% more yields were acquired from BARI Mash-3 compared to local/cultivated variety in Boisaki site.

Key words: Black gram, varietal performance, BARI Mash-3, local variety, yield.

Introduction

Blackgram (*Vigna mungo*) belongs to the family leguminosae, is one of the important pulse crops in Bangladesh. It is used in various forms such as grain for human consumption and fodder for cattle, green manure, cover crop and short-lived forage. It is a fast growing, short season, drought tolerant, (Pillai and Arasuya, 1997) and low input promising crop for south East Asia. The national average yield of black gram in Bangladesh is low. This low yield may be due to the cultivation of the low yielding local varieties, incidence of diseases and insects, lack of technical knowledge etc. BARI already developed some high yielding blackgram varieties. These varieties have potential to help generate farmers' income in very short period of time. Great circulation of these varieties in different areas of Bangladesh is perquisite in respect of grain crop security in Bangladesh. Hence, the present study was undertaken to evaluate the performance of the BARI variety under farmer's field condition and make popularized among the farmers to promote their adoption in char land of Bogura.

Materials and Methods

The experiment was conducted during *Kharif 2* season of 2017-18 in the farmer's field of Dolirkandi and Boisaki sites under the upazila Sariakandi and Dhunut of Bogura district. Two varieties of blackgram viz. BARI Mash-3 and Local (check) were tested in both locations. The experiments were laid out in RCB Design with three replications having plot size 1320 m². Seeds were sown on 22nd September 2017 in Dolirkandi and 28th September 2017 in Boisaki. Soil was fertilized with NPK at the rate of 20.74, 20 and 20 kg/ha⁻¹, respectively. The crop was harvested during 14th December 2017 in Dolirkandi and 20th December 2017 in Boisaki. At harvest, 10 randomly selected plants from each plot were carefully uprooted to record plant height (measured from the root-stem junction to the top of the shoot), number of pods/plant, number of seeds/pod, 1000 seed weight and seed yield. The yield per plot was recorded and converted into yield per hectare. Collected data were analyzed statistically by using MSTAT software packages and mean differences for each character were compared by Least Significant Differences (LSD) test (Gomez and Gomez. 1984).

Results and Discussion

The yield and yield contributing performance of black gram are presented in Tables 1-2. Significant variation was found between the varieties for all the studied characters except plant height in both of the locations. The highest plant height was found in local cultivar (Tables 1-2) than that of BARI Mash-3 in both of the locations, which is one the strong ground to achieve more yields in blackgram. The performance was best up to 35% for pod characteristics and about 47% more yields were acquired from BARI Mash-3 compared to local/cultivated variety in Dolirkandi site (Table 1). Similar observation was recorded by Duhan and Singhm (2002); Gupta *et al.* (1995); Haq *et al.* (2005). On the other hand the performance was best up to 34% for pod characteristics and about 13% more yields were acquired from BARI Mash-3 compared to local/cultivated variety in Boisaki site (Table 2). The highest seed yield was 1.34 tha^{-1} in Dolirkandi site and 0.961 tha^{-1} in Boisaki site. The lowest seed yield was found in local variety of both locations. The study also recorded more yield at Boisaki site than that of Dolirkandi site for both of the local as well as BARI Mash-3 (Tables 1-2).

Table 1. Yield and yield contributing characters of black gram at Dolirkandi site during *Kharif*-2 of 2017-18

Treatments	Plant height (cm)	Pod plant ⁻¹ (no)	Seed pod ⁻¹ (no)	1000 Seed wt. (g)	Seed yield (kg m ²)	Seed yield (t ha ⁻¹)
BARI Mash-3	36.10	46.56	6.95	6.95	0.134	1.34
Local variety	38.36	36.26	5.16	5.16	0.091	0.91
t-value	2.68	8.45	3.14	3.49	4.48	20.63
Level of significance	NS	**	*	*	*	**

**= Significance at 1% level, *= Significance at 5% level, NS= Not significant

Table 2. Yield and yield contributing characters of black gram at Boisaki site during *Kharif*-2 of 2017-18

Treatments	Plant height (cm)	Pod plant ⁻¹ (no)	Seed pod ⁻¹ (no)	1000 Seed wt. (g)	Seed yield (kg m ²)	Seed yield (t ha ⁻¹)
BARI Mash-3	40.86	47.13	7.03	42.00	0.142	1.41
Local variety	43.73	35.33	5.23	39.00	0.125	1.25
t-value	1.78	8.54	3.16	3.50	4.41	4.34
Level of significance	NS	**	*	*	*	*

**= Significance at 1% level, *= Significance at 5% level, NS= Not significant

The economic performance is presented in Tables 3-4. The highest gross return (Tk. 120600 ha^{-1}) and gross margin (Tk. 94130 ha^{-1}) was calculated from BARI Mash-3 in Dolirkandi, site. The highest gross return (Tk. 126900 ha^{-1}) and gross margin (Tk. 100430 ha^{-1}) was recorded in Boisaki site. The lowest gross return and gross margin was found from local variety in both locations, which are also supported by Ahgayarkanni and Ravichandran (2001).

Table 3. Cost and return analysis of black gram at Dolirkandi site during *Kharif*-2 of 2017-18

Treatments	Yield (t ha ⁻¹)	Gross return (Tk. ha ⁻¹)	Total variable cost (Tk. ha ⁻¹)	Gross margin (Tk. ha ⁻¹)
BARI Mash-3	1.34	120600	26470	94130
Local variety	0.91	81900	26470	55430

Market price of blackgram Tk.90 kg^{-1}

Table 4. Cost and return analysis of black gram at Boisaki site during *Kharif-2* of 2017-18

Treatments	Yield (t ha ⁻¹)	Gross return (Tk. ha ⁻¹)	Total variable cost (Tk. ha ⁻¹)	Gross margin (Tk. ha ⁻¹)
BARI Mash-3	1.41	126900	26470	100430
Local variety	1.25	112500	26470	86030

Market price of blackgram Tk.90 kg⁻¹

Pest incidence: Hairy caterpillar was observed in some plots. The pest was controlled by destroying early instar larvae with handpicking and Karate@ 1 ml/L was sprayed in the field.

Farmers' opinion: Previously farmers of the area were cultivated local variety. They are very happy to see the new variety and interested to grow BARI Mash-3 due to its higher yield.

Conclusion

BARI Mash-3 gave the attractive yield and economic return in the char land of Sariakandi and Dhunut of Bogra, which may be expanded in other char land or suitable land of Bangladesh.

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