

## PERFORMANCE OF PROSO MILLET VARIETIES AT CHAR LAND AREAS IN BOGURA DISTRICT OF BANGLADESH

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### ABSTRACT

A field trial was conducted at Khabuliar char, Sonatola, Bogura during *Rabi* season of 2021-2022 to evaluate the performance of modern proso millet variety under farmers' field condition. BARI Cheena-1 gave the satisfactory yield (2.42  $\text{tha}^{-1}$ ) in charland area of Sonatola, Bogura over local variety (1.73  $\text{tha}^{-1}$ ). This variety ensured the low price, enough availability having less risk and water requirement, easily grown without modern technology. Attractive gross margin (Tk. 83100  $\text{ha}^{-1}$ ) was also obtained from the tested variety over local control.

**Key words:** Proso millet, performance, charland area.

### Introduction

Millet crops are grown on marginal lands and under low-input agricultural conditions or situations in which major cereal crops often produce low yields (Amadou *et al.*, 2013). Proso millet is rich in protein, minerals, vitamins and micronutrients such as iron, zinc, copper and manganese and its nutritive parameters are comparable or better than common cereals (Kalinova and Moudry, 2006). The area under Cheena and Kaon production in Bangladesh is about 2920 acres with a production of 1229 m tons (BBS, 2018). The land of Bogura district termed as the most Cheena and Kaon production area of Bangladesh is covering 385 acres area with production of 120 MT (BBS, 2018). "Charland" is the Bengali term, its English meaning is "Riverine island" for mid-channel island that emerges periodically from riverbed as a consequence of accretion (Elahi, 1991). In Bangladesh the char lands can be divided into five sub areas (The Jamuna, The Ganges, The Padma, The upper Meghna and the lower Meghna River) where Tista and old Brahmaputra also constitute some char land areas (Islam *et al.*, 2012). These char land areas are the best habited for the millet and groundnut production. BARI has already developed some improved Cheena varieties like BARI Cheena-1 and BARI Cheena-2, but the farmers of charland area are mostly sown only local cultivar (Rahman *et al.*, 2020). Now a day's farmers' of Bangladesh is very much fascinated to grow high yielding variety along with resistance early maturity characters. The present study was therefore undertaken to evaluate the performance of BARI released improved variety under farmer's field condition and popularize the variety among the farmers to promote their adoption in char land areas of Bogura district.

### Materials and Methods

The experiment was conducted in the farmer's field of Khabuliar char, Sonatola, Bogura during *Rabi*, 2021-2022. One proso millet variety BARI Cheena-1 and Local (check) were tested in the experiment. The experiments were laid out in RCB Design with three replications having plot size 1320  $\text{m}^2$ . One farmer considered as each replication. Seeds were sown on 12<sup>th</sup> December, 2021. Fertilizers were applied at the rate of 40-14-30-6-0.7  $\text{kg ha}^{-1}$  NPKSZn as urea, triple super phosphate (TSP), muriate of potash (MOP), gypsum and Boron. 1<sup>st</sup> half of N and all other fertilizers applied as basal (FRG, 2018). Rest N was applied at 30-35 DAS. Two irrigations were applied at 25 and 50 DAS, respectively. The crop was harvested during 27<sup>th</sup> March, 2022. 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), panicle length, grain

panicle<sup>-1</sup>, 1000 grain weight and grain yield. The yield per plot was recorded and converted into yield per hectare. Data were analyzed by using T-test.

**Pest incidence:** There is no any pest incidence of the crop both local and BARI Cheena-1.

### Results and Discussion

The yield and yield contributing performance of proso millet are presented in Table 1. Significant variation was found among the treatments of all characters. The highest plant height (78.81 cm) was obtained from BARI Cheena-1 and lower (65.95 cm) in local variety. The highest panicle length was 19.10 cm in BARI Cheena-1 and the lowest (16.17 cm) from local variety. The highest number of grain panicle<sup>-1</sup> was (285.08) in BARI Cheena-1. The grain panicle<sup>-1</sup> was 177.07 in local cultivar. The highest 1000 grain weight was (4.62 g) recorded from BARI Cheena-1, whereas the lowest (4.23 g) was detected in local variety. The highest grains as well as straw yield were measured as 2.42 and 3.15 tha<sup>-1</sup>, respectively in BARI Cheena-1. The lowest grain yield (1.73 tha<sup>-1</sup>) and straw yield (2.68 tha<sup>-1</sup>) were found in local variety.

Table 1. Yield and yield contributing characters of proso millet during *Rabi* season of 2021-2022

Variety	Plant height (cm)	Panicle length (cm)	Grain panicle <sup>-1</sup>	1000 grain wt. (g)	Grain Yield (t ha <sup>-1</sup> )	Straw Yield (t ha <sup>-1</sup> )
BARI Cheena-1	78.81	19.10	285.08	4.62	2.42	3.15
Local variety	65.95	16.17	177.07	4.23	1.73	2.68
t-value	15.64	4.12	5.33	2.56	2.18	4.39
Level of significance	**	*	**	*	**	*

\*\*= Significance at 1% level    \*= Significance at 5% level

The economic performance is presented in Table 2. The highest gross return (Tk.103100 ha<sup>-1</sup>) and gross margin (Tk.83100ha<sup>-1</sup>) were calculated from BARI Cheena-1 and the lowest from local variety. The highest benefit cost ratio was 5.16 from BARI Cheena-1 and the lowest (3.73) in local cultivar.

Table 2. Cost and return analysis of proso millet at Khabuliar char, Sonatola, Bogura during *Rabi* season of 2021-2022

Variety	Yield		Gross return (Tk. ha <sup>-1</sup> )			Total variable cost (Tk. ha <sup>-1</sup> )	Gross margin (Tk. ha <sup>-1</sup> )	BCR
	Grain	Straw	Grain	Straw	Total			
BARI Cheena-1	2.42	3.15	96800	6300	103100	20000	83100	5.16
Local variety	1.73	2.68	69200	5360	74560	20000	54560	3.73

Market price of Proso millet @Tk.40 kg<sup>-1</sup> and straw @Tk .2.00kg<sup>-1</sup>

The graphically presented of increased percent grain yield and gross margin in Fig.1. The higher grain yield (39.88%) and gross margin (52.3%) were obtained from BARI Cheena-1 over local cultivar. Rahman *et al* (2020) conducted an experiment at the charland area of Jamalpur during rabi 2018 to know the yield performance and popularize proso millet in charland areas. Treatments included in the experiment were: BARI Cheena-1, Local- 1 and Local-2. Yield level of different proso millet varieties/cultivar was similar except BARI Cheena-1. Islam *et al.* (2012) reported that the proso millet easily grown in the different charland area of Bangladesh. It was also revealed from their study that all the proso millet varieties/cultivar might be cultivate in char land because of low price, availability of its seeds, less risk and water requirement.

**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 Cheena-1 for its higher yield and economic return. It can achieve by pilot production program or demonstrations through Department of Agricultural Extension (DAE), On Farm Research Division, BARI and different NGOs.

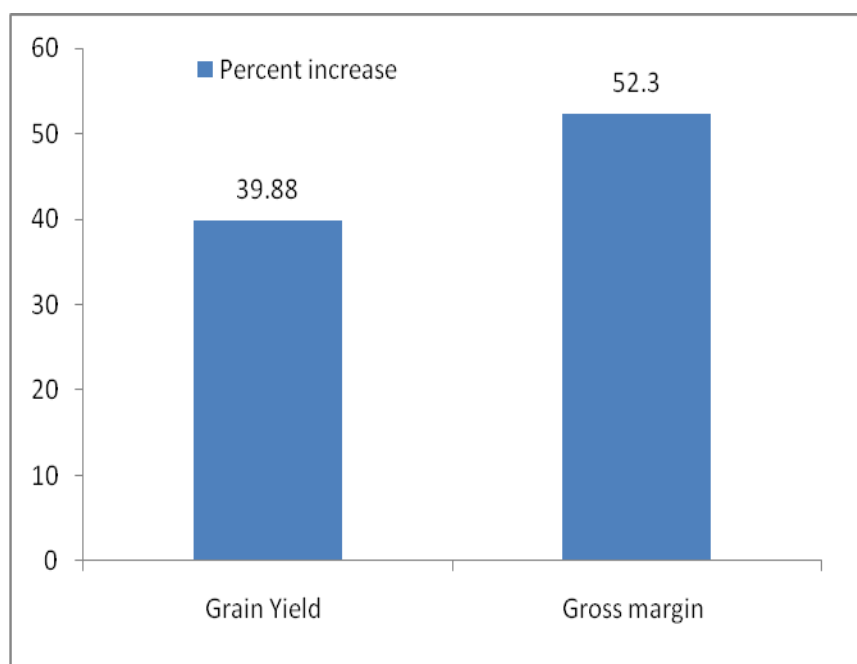


Fig. 1. Percent increase grain yield and gross margin between the varieties

### Conclusion

BARI Cheena-1 gave the attractive yield and economic return in the Char land of Khabolia, Sonatola, Bogura. Therefore, the BARI Cheena-1 was recommended for large scale production in the charland area of Bogura district.

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