

## GENERATED TECHNOLOGIES FOR WHITE MAIZE CULTIVATION IN BANGLADESH

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### Abstract

A 3-year project was implemented jointly by Sher-e-Bangla Agricultural University, Dhaka; Agrarian Research Foundation, Dhaka; and Bangladesh Wheat and Maize Research Institute, Dinajpur during 2015 to 2017 to find out better performing varieties out of 47 and generate technologies for white maize production in Bangladesh under a project named 'Collection, Evaluation and Introduction of White Maize for Consumption in Bangladesh' using the funds of Krishi Gobeshona Foundation. The project was implemented by Sher-e-Bangla Agricultural University, Dhaka and WRSS, Dinajpur) both on stations and in farmers field of six different agro climatic zones (Dhamrai, Rangpur, Dinajpur, Barisal, Bandarban, Nilphamari). In Rabi season, the varieties (PSC-121, Changnuo-1, Q-Xiangnuo -1, Changnuo-6, Yangnuo-30 , BRAC Uttoron, BRAC-2622, Yangnuo-3000, Shuvra, Yu2, CIMMYT lines 15003,15010, 15009, 15007, 14003, 15006, 15008) ) significantly yielded higher (7.160-12.948 t/ha) in Dhaka region in rabi season. At Rangpur, the variety Changnuo-1 produced significantly higher yields showing seed yield range of 6.348-12.165 t/ha). At Bandarban: varieties PSC-121 showed higher seed yields (7.717-9.103 tons/ha), while the CIMMYT lines (14003, 15003, 15008, 15010) produced significantly higher seed yields (13.122-14.074 t/ha). At Dinajpur, the varieties PSC-121, Yangnuo-30 and Changnuo-6 proved to be better giving yield up to 8.61-11.749 t/ha, while the CIMMYT lines 15001, 15003, 15010 and 14003 gave significantly higher yields from 14.373-15.041 t/ha. At Nilphamari, the variety PSC-121 showed the highest seed yield of 10.590 t/ha. At Barishal, PSC-121 and KS-510 produced yields 6.422 and 7.585 tons/ha, respectively. In Kharif season, the variety Yangnuo-3000 and PSC-121 were consistent showing seed yields of 5.353-5.915 t/ha in Dhaka region. Almost in all the regions, using 100-125% of the fertilizer dose as recommended for the HYVs by BARI had significantly higher seed yield (8.284-11.635 t/ha) as compared to lower doses. But in Nilphamari, significantly the highest yield was obtained using 150% more dose. At Dhamrai: Fertilizer dose 125% had the highest seed yield (7.901 t/ha). But at Rangpur fertilizer dose 100-125% had higher seed yield. Planting configuration using row to row spacing from 50 cm x 25 cm were proved to be optimum. Nutritional analyses showed that the local white maize varieties had highest protein content (11.75%) than the exotic and inland HYVs (7.11-8.22%). On an average, white maize had higher

protein content than the yellow ones. Maximum fat content was obtained with Suvra (4.39%), while the fiber with PSC-121 (2.93%), ash with local (1.69%) and carbohydrate with Changnuo-1. The maximum apparent amylose content (AAC) was with Changnuo-1 and Suvra (around 24.5%) while the least in local (6.83%). The highest glycemic index (GI) was obtained with Yangnuo-7 and local maize (71%) while other varieties showed glycemic index a bit over 60%. Leaf clipping trials showed that removal of uppermost three leaves had no significant effect on the yield reduction of maize. Irrigation lesser than four (25DAS+50DAS+75DAS+100DAS) reduced seed yields significantly. Spraying antitranspirant 'Kaolin' at vegetative stage with 1%, while at tasseling stage with 3% increased seed yields significantly as compared to no application. Alternate furrow irrigation reduced seed yield (by 14%) significantly. Seedling transplanting reduced the seed yield by 15% as compared to the direct sown crops (6.035 vs 5.141 t/ha). Results from two different herbicides (aryl triazolinones and Pendimethalin) showed that moistening upper soil layer with a post emergence application of Pendimethalin 1.5 between two adjacent lines yielded the highest (8.817 t/ha). Weeding experiments showed that weeding at 60 DAS and complete weeding treatments had identical seed yields (9.675 and 9.213, respectively).

**Key words:** generated, technologies, cultivation, white maize, production