

GROWTH, YIELD AND PHYSIOLOGICAL RESPONSES OF BLACK GRAM (*Vigna mungo* L.) GENOTYPES TO WATERLOGGING

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Executive Summary

Waterlogging stress is one of the most atrocious environmental factors restricting the productivity of black gram in tropical and subtropical region. A pot experiment was carried out at the experimental field of Agroforestry and Environmental Science Field Lab, of Sher-e-Bangla Agricultural University during *Kharif II* season, (September 2022-January 2023) to evaluate 6 black gram genotypes in waterlogging condition. The two factor experiment was laid out in the Randomized Complete Block Design (RCBD) with three replications. Factor A was 6 Black gram genotypes V_1 =BARI Mash 1, V_2 =BARI Mash 3, V_3 =DH-14, V_4 =RU-27, V_5 =DHL-4 and V_6 =DHL-5 and Factor B was T_1 =Control (field capacity) and T_2 =7 days waterlogging condition. For waterlogging treatment, earthen pots with 29 days old plants were transferred to house filled with water up to the upper surface (3-5 cm) of soil in the pot. Significant reduction was observed for plant height, number of leaves, SPAD value, nodule number, pod length, seeds per pod and yield per plant in waterlogging stress. Waterlogging condition adversely affected the production of leaf number in black gram plants. Number of leaves and SPAD value were higher in BARI Mash 3 which was 5.0 and 46.03 SPAD units respectively. Waterlogging for 7 days significantly delayed days to 50% flowering than control. The nodule number of plant was found significantly different for waterlogging. The highest (33.667) nodule number of plant was obtained from control in variety BARI Mash 1. Varieties showed significant difference in root length and the longest (8.11cm) was recorded in V_6 =DHL-5. Waterlogging decreased the seed yield significantly over the control. In respect of grain yield, among the 6 genotypes, BARI Mash 1 performed the best (5.04 g/plant) under waterlogging condition, which was followed by BARI Mash 3 (4.58 g/plant). Therefore these varieties can be added as short term waterlogging tolerant genotypes.

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