

INVESTIGATION OF MORPHO-PHYSIOLOGY, GROWTH AND YIELD OF SOME WINTER VEGETABLES UNDER DIFFERENT LEVELS OF LIGHT INTENSITY

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Executive Summery

Due to over increasing population and drastic climate change, agricultural land of Bangladesh is declining gradually. Agroforestry is a climate-smart agricultural practice where productivity is higher than the sole crop. In agroforestry system mainly vegetables are cultivated under tree where they face lack of light. So, identification of partial shade tolerant vegetables is urgent to increase production as well as ensure nutritional food security. To evaluate the morphological, physiological and yield performance of tomato and brinjal varieties under reduced light condition and identify the most suitable variety for agroforestry system. Seedlings of 3 tomato and 3 brinjal varieties were sown in plastic pot and exposed to different light intensities (maintained by white net) in Sher-e-Bangla Agricultural University during November 2019 to April 2020. The experiment was replicated thrice following CRD and data were taken at different day's interval. The present study was carried out to evaluate the performance and identify the most suitable tomato (BARI Tomato-2, -15 and -16) and brinjal (BARI Begun-1, -4 and -9) varieties under different light intensities [S_0 - 100% (Full sunlight-control), S_1 -75%, S_2 -50%, S_3 -25% PAR]. Light stress S_2 and S_3 substantially hampered the plant growth, development and yield of both tomato and brinjal varieties. Low light stress primarily reduced the photosynthetic performance (lower SPAD value) of plants which contribute in reduction of plant height, number of primary branches and leaves of all tomato and brinjal plants. Moreover, low light intensity negatively affects the fresh and dry weight. It can also decrease number of fruits, fruit length, fruit diameter and individual fruit weight in all varieties. As a result, tomato and brinjal production hampered seriously. However, in contrast to other varieties under T_3 treatment BARI Begun-1 performed well but BARI Begun-4 performed well against T_1 and T_2 treatments. On the other hand, BARI Tomato-2 performed significantly higher in contrast to other tested varieties under all level of light stresses.

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