

EFFECTS OF SALT STRESS ON GERMINATION, GROWTH, YIELD AND ION CONTENTS OF MUSTARD

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Executive Summary

Bangladesh has been facing acute shortage of edible oil for the last several decades. For that it needs to import oil and oilseeds to meet up the deficit of edible oil. Mustard seed contains about 40-45% oil and by increasing production of mustard we can meet up the shortage of edible oil. Salinity is one of the major environmental stresses affecting plant growth and development and results in severe agricultural losses. So, plant species/varieties tolerant to high level of salt are essential for the utilization of the highly salt affected soils. A pot experiment was undertaken in November, 2019 to February 2020 in the net house of Agricultural Chemistry Department, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh to study the effects of salt stress on germination, growth, yield and ions content of mustard. The experiment was conducted using two cultivars (SAU Sarisha-1 and BARI Sarisha-9) and five salinity levels (0, 3, 6, 9 and 12 dSm⁻¹). The experiment was set in Completely Randomized Design (CRD) having two factors with three replications. The results indicated that germination percentage of seed, population density, plant height, branches plant⁻¹, total dry matter, siliquae plant⁻¹, length of siliqua, number of seeds siliqua⁻¹, seed yield was influenced by the variety. The maximum germination percentage of seeds, plant population per pot were found in BARI Sarisha-9 and the tallest plant found in SAU Sarisha-1. The BARI Sarisha-9 achieved maximum branches plant⁻¹, total dry matter, siliquae plant⁻¹, length of siliqua, number of seeds siliqua⁻¹ and seed yield (4.69 g pot⁻¹). Among different salinity levels, the highest growth, yield contributing characters and seed yield (6.13 g pot⁻¹) found at 0 dSm⁻¹ salinity. When combined effects of varieties and salinity levels were considered, the highest seed yield (6.29 g pot⁻¹) was found in BARI Sarisha-9 at 0 dSm⁻¹ salinity and at 3, 6, 9 and 12 dSm⁻¹ salinity levels, BARI Sarisha-9 should better result than SAU Sarisha -1. Among the two varieties, K content was highest in BARI Sarisha-9 than SAU Sarisha -1. In both varieties K content decreased significantly with the increasing salinity levels. The Na content was higher in SAU Sarisha-1 than BARI Sarisha-9 and Na content increased significantly with the increasing salinity. The BARI Sarisha-9 had better expression of morphological, yield and yield contributing characters than SAU Sarisha -1.

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