

EVALUATION OF GROWTH, YIELD RESPONSE AND POSSIBLE IMPROVING SOME CHEMICAL PROPERTIES OF SALT AFFECTED SOIL WITH SOYBEAN VARIETY MTD-748 (*Glycine max* L.)

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Summary

Salinity intrusion and fresh water resources shortage are agricultural problems that negatively affect soil quality, plant growth and agricultural production in the coastal province of the Mekong delta in recent years. Introduction of salt tolerance up-plant species that can survive in such condition could be the suitable solution to overcome these challenges. The net house experiment was therefore conducted to evaluate the response of growth and yield of salt tolerance MTD-748 soybean (*Glycine max* L.) variety, growing in salt affected alluvial soil and also to test the possibility of such variety for phytoremediation of saline soil. The research was carried out in soil pots (capacity 10 kg) which were arranged in a completely randomized design, 3 replications, including 3 levels of dilute sea water amendment (0‰, 3‰, 6‰). The obtained results showed that there were a less impact of salinity stress (e.g. up to 3-6‰ addition) on growth, development, nutrients uptake (P_2O_5 , Ca^{2+} , K^+) in MTD-478 soybean variety. There was a slight increasing in sodium uptake followed the increasing of soil saline levels. Furthermore, the N uptake and proline accumulation increased significantly in the 6‰ treatment. The yield of grain in the 6‰ salinity amendment treatment obtained the lowest in comparison of that in no saline and 3‰ saline amendment treatments. Therefore, soybean MTD- 748 has the potential to cultivate in salt-affected alluvial soils. The results indicated that MTD- 748 soybean variety showed the great ability to decrease soil salinity such as exchangeable Na^+ , Na^+/Ca^{2+} ratio; particularly for ECe, SAR and ESP on 3‰ and 6‰ salinity amendment treatment in comparison of that before planting. In general, soybean is suggested as a good candidate for cultivation in dry season and phytoremediation of saline soil in coastal provinces of the Mekong delta.

Keywords: Soybean, salt tolerance potential, ECe, Na^+ uptake, proline accumulation, phytoremediation, Mekong delta, MTD-748.