



GROWTH RESPONSE AND LEAF CHLOROPHYLL CONCENTRATION OF ROMAINE LETTUCE PLANTS (*Lactuca sativa* L. var. *longifolia*) APPLIED WITH MYKOPLUS UNDER VARYING SALINE CONDITIONS

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ABSTRACT – Salinity stress in agricultural lands negatively affects plant's yield and income of farmers. Our study investigated the effects of MykoPlus biofertilizer on the growth response (leaf number, root and shoot length, and plant biomass), photosynthetic activity (chlorophyll concentration), and leaf appearance of Romaine lettuce (*Lactuca sativa* L. var. *longifolia*) subjected to varying saline concentrations in the soil. The 28 day-old lettuce plants without and with MykoPlus biofertilizer application prior to transplanting were grown in saline soil (0 mM [0 dS m⁻¹], 100 mM [11.55 dS m⁻¹], 200 mM [22.46 dS m⁻¹] and 300 mM [31.72 dS m⁻¹] NaCl) for 19 days. Results showed that MykoPlus-applied plants produced higher chlorophyll concentration (4.59 to 9.94 SPAD values) with reduced leaf senescence (less yellowing and browning) and more number of leaves (0.8 to 1.3 leaves), produced longer shoots (10.04 to 30.05 mm) and roots (15.91 to 24.46 mm), and heavier plant biomass (0.03 to 0.06 g) than the plants without MykoPlus under salinity stress condition (up to 300 mM NaCl). Salinity in the soil reduced the lettuce growth regardless of biofertilizer treatments and salinity stress level. Leaf production, shoot and root length, plant biomass, chlorophyll content and leaf appearance were reduced with increasing level of salinity at 33 days after transplanting. The promotive effect of MykoPlus on the growth and photosynthetic activity of salinity-stressed lettuce plants was due to the plant growth promoting microorganisms contained in the biofertilizer. Results indicate that MykoPlus application is an effective way of mitigating the deleterious effects of salinity stress on Romaine lettuce plants.

Keywords: growth response, lettuce, microorganisms, MykoPlus, plant growth promoting, salinity stress



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