Optimization of humic acid application rate by evaluating the response of mung been (Vigna radiata) yield, growth components and soil properties in western region of Saudi Arabia.


Abstract:

Discriminate use of fertilizers gradually damaging biological and physical properties of soil as well as bioavailability of nutrients and organic matter resulting results in low crop yield. So there is needed to equilibrate the application of inorganic fertilizer with organic fertilizers especially in arid region of Saudi Arabia to sustain and conserve soil resources for long term and better yield results. A field experiment was carried out at the Agriculture Research Station of King Abdulaziz University to investigate the effect of different rates of humic acid application along with inorganic fertilizers on growth components of mung bean (Vigna radiata) crop and soil properties. The design of the experiment was a completely randomized design with four replications. Three treatments of humic acid (HA 20, 20kg/ha; HA 40, 40kg/ha and HA 60, 60kg/ha) along with control (HA 0) was applied. Results indicates that humic acid application caused significant improvement in the growth parameters of mung bean crop at all levels and (HA 40) proved to be optimum application rate for growth improvement. Regarding soil parameters, a significant decrease in pH was observed at (HA 40), while significant decrease in EC was observed at (HA 40). For soil fertility parameters, HA 40 (40 kg/ha) and HA 60 (60 kg/ha) significantly increase the availability of primary macronutrients (N, P and K) in the soil. The results suggested that application of humic acid at optimum rate HA 40; 40 kg/ha) improves plant and soil attributes to play an important role in sustainable agriculture.

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