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RESEARCH PAPER

Effect of vermicompost and micronutrients fertilization on the growth, yield and nutrients uptake by sesame (*Sesamum indicum* L.) in coastal saline soil

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Abstract : A field experiment was conducted in the farmer's field during January-April 2015, to study the effect of vermicompost and micronutrients fertilization on the growth, yield and nutrients uptake by sesame in coastal saline soil. Texturally, the experimental soil was sandy and taxonomically classified as *Typic Udipsamments* with initial soil characteristics (0-15 cm layer) of the experimental site were, pH–8.37 and EC–1.58 dS m^{-1}. The soil registered low organic carbon status of 2.31 g kg^{-1}, 134.56 kg ha^{-1} of alkaline $KMnO_4$–N; 9.43 kg ha^{-1} of Olsen–P and 159.31 kg ha^{-1} of NH_4OAc-K, respectively. The DTPA extractable Zn and Mn was 0.69 mg kg^{-1} and 0.94 mg kg^{-1}, respectively. The various treatments imposed in the study included T_1–Control (RDF alone), T_2–RDF + vermicompost (VC) @ 5 t ha^{-1}, T_3–RDF + $ZnSO_4$ @ 25 kg ha^{-1} soil application (SA) + $MnSO_4$ @ 5 kg ha^{-1} (SA), T_4–RDF + $ZnSO_4$ @ 0.5% foliar application (FA) + $MnSO_4$ @ 0.5% (FA), T_5–RDF + ($ZnSO_4$ + $MnSO_4$) SA + ($ZnSO_4$ + $MnSO_4$) FA, T_6–RDF + VC ($ZnSO_4$ + $MnSO_4$) SA, T_7–RDF + VC + ($ZnSO_4$ + $MnSO_4$) FA, T_8– RDF + VC + ($ZnSO_4$ + $MnSO_4$) SA + ($ZnSO_4$ + $MnSO_4$) FA, T_9– RDF+VC + (50% $ZnSO_4$ + 50% $MnSO_4$) SA and T_{10}–RDF + VC + (50% $ZnSO_4$+ 50% $MnSO_4$) SA+($ZnSO_4$+ $MnSO_4$) FA @ 0.5 per cent. The experiment was carried out in a Randomized Block Design (RBD) with three replications and tested with sesame var. TMV 7 as test crop. The results of the study clearly indicated that the combined application of RDF + VC + 50% recommended $ZnSO_4$ @ 12.5 kg ha^{-1} + 50% $MnSO_4$ @ 2.5 kg ha^{-1} through soil application along with foliar spray of $ZnSO_4$ + $MnSO_4$ twice @ 0.5 per cent significantly increased the growth, yield and nutrient uptake by sesame. This treatment recorded the highest seed and stalk yield of 792 kg ha^{-1} and 1713 kg ha^{-1} which was 45.32 and 36.77 per cent increased seed and stalk yield, respectively over recommended dose of fertilizer alone (RDF).

Key Words : Coastal saline soil, Vermicompost, RDF, Zinc, Manganese, Soil application, Foliar application, Sesame, Yield, Uptake

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