

Belowground Influence of Rhizobium Inoculant and Water Hyacinth Composts on Yellow Bean Infested by *Aphis fabae* and *Colletotrichum lindemuthianum* under Field Conditions

Abstract

Rhizobium inoculant has been developed for bean production in Lake Victoria basin. Two types of compost have been developed, water hyacinth compost with cattle manure culture (H+CMC) or with effective microbes (H+EM). Influence of *Rhizobium* and composts on *Aphis fabae* and *Colletotrichum lindemuthianum* were investigated in the field. *Rhizobium* and hyacinth composts increased nodulation (x2 to 5); while *Aphis fabae* population increased (x2) on *Rhizobium*-inoculated plants with H+EM. Incidence of *C. lindemuthianum* was high in *Rhizobium*-inoculated plants. Plants that received diammonium phosphate (DAP) fertilizer had few nodules, reduced germination, slow growth and low yields. In conclusion, the water hyacinth composts contain beneficial microbes that promote root nodulation by *Rhizobium*, which is necessary for nitrogen fixation, while enhancing tolerance to aboveground infestations by *A. fabae* and *C. lindemuthianum*. We raise questions on our results to stimulate research, considering that bean breeding programs in Africa have mainly focused on microbial pathogens, and not insect pests.

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