

Karuri, H.W., Amata, R., Amugune, C.N. and Waturu, C.N. 2013. Nematode diversity in soil from a field trial with decomposing Bt cotton expressing Cry1Ac and Cry2Ab2 protein. Spanish Journal of Agricultural Research, 11:968-979.

ABSTRACT

The quality of decomposing plant materials may affect the soil community structure. The aim of the study was to determine the impact of decomposing Bt cotton and its isoline on soil nematode diversity. Bt cotton (06Z604D), isoline (99M03) and HART 89M (local non-Bt cotton cultivar) were planted for two seasons in a completely randomized block design in a confined field trial at Mwea, Kenya. After harvest the plant material was incorporated into soil and the nematode diversity was determined. The presence of Bt protein was evaluated using ELISA and insect bioassays. Abundance of bacteria feeding nematodes was significantly ($p < 0.05$) high but to a smaller extent in the Bt cotton plots (53.7% and 52% in the first and second season respectively) than in isoline (42.8% and 45% in the first and second season respectively). Insect bioassays detected Bt protein in the Bt cotton plots during the entire decomposition period in both seasons. There were no significant differences in nematode trophic groups composition between isoline and HART 89M. The effect of Cry2Ab2 and Cry1Ac protein in decomposing Bt cotton litter on soil nematodes was minimal. The study provides a basis for future studies on the impact of genetically engineered plants on soil nematodes in Kenyan agroecosystems.

Key words: *Bacillus thuringiensis*; biosafety; *Helicoverpa armigera*; nematodes.