

Karuri, H.W., Amata, R., Amugune, C.N. and Waturu, C.N. 2010. Occurrence and distribution of soil nematodes in cotton production areas of Kenya. *African Journal of Agricultural Research*, 5:1889-1896.

ABSTRACT

A baseline survey was conducted to determine the occurrence and distribution of soil nematodes associated with cotton in major growing areas in Kenya. Such baseline data on soil nematode abundance, diversity and ecosystem function in cotton ecosystems are valuable in providing a basis for comparison with organisms from transgenic cotton fields. Transgenic cotton plants expressing Cry1Ac and Cry2Ab proteins, from the soil bacterium *Bacillus thuringiensis* (Bt), provide effective control of lepidopteran pests. However, the potential effects of these proteins on soil nematofauna are unknown in Kenya. Soil samples were collected from nine locations of western (Odiado, Angorom and Ochundo locations), coast (Baharini, Mpeketoni and Witu locations) and central (Kajiji, Tebere and Nyangati locations) Province. Nematodes were extracted and recovered from soil samples using the Whitehead and Hemming tray method and identified under a light microscope according to their morphological characters. They were classified according to their feeding habits. Twenty seven genera of plant parasites, bacteriovores, fungivores, predators and omnivores were identified. Bacterial, fungal feeding and parasitic nematodes were the most abundant trophic groups across all Provinces. There were significant differences in the numbers of bacteriovores (P 0.01) and plant parasites (P 0.05) between the Provinces but no difference was observed in the numbers of fungal feeding nematodes. There was a significant difference in genus richness within locations in western and coast Provinces (P 0.001). The combined maturity index (MI) did not vary significantly within the locations. The Shannon index (H') showed variations within locations in western (P 0.001) and coast Province (P 0.01). Soil texture, P and K were correlated with abundance of some nematode genera. The bacteria feeders, *Acrobeles* and *Rhabditis* showed positive correlations to K ($r = 0.592$, P 0.05 and $r = 0.128$, P 0.05) and P ($r = 0.406$, P 0.05, and $r = 0.252$, P 0.05) while *Aphelenchus* was positively correlated to P ($r = 0.375$, P 0.05). The plant parasitic genera *Meloidogyne* and *Pratylenchus* showed significant negative correlation to N ($r = -0.513$, P 0.05 and $r = -0.226$, P 0.05). It is clear from this baseline data that plant parasitic and free living nematodes are widespread in cotton fields and any potential effects of Bt cotton on these nematodes may affect the nematode community structure and their ecosystem functions.

Key words: Cotton, soil nematodes, survey.