

## ABSTRACT

Diversity of flowering plants, pollinators and microbial activity was assessed in five farms of Nzoia Sugar Company and one outgrower farm in Western Kenya. The overarching study objective was to determine differences in species diversity in the sugar farms using agrochemicals and those not using. To sample flowering plants, transects were laid along sugar farms with quadrats 20 m apart. Sweep nets captured fauna flying or attached to the flora. Microbial activities were assessed following application of 2,4 D and Hexazinone in soil from an outgrower farm (OGF) where these herbicides had not been applied before. Microbial activity expressed as formazan concentration following triphenyltetrazolium chloride (TTC) reduction in total Dehydrogenase activity (DHA) test. Results indicated that outgrower farm had higher flowering plant species richness than the sugar farms although diversity of both flowering plants and flower visitors in the sugar farms was higher. Results indicated that hexazinone significantly ( $p < 0.05$ ) increased microbial activity in soils to a high of  $172.945 \text{ ug g}^{-1}$  following 7 days incubation while 2,4-D suppressed microbial activity to less than  $2 \text{ ug g}^{-1}$  in first three days of incubation. From this study, it is recommended that bee pastures composed of plants frequently visited by bees should be left to grow around farms to increase pollinators and bee hotel structures for cavity nesting bees erected in agro-ecosystems. Use of pesticides on farms should be minimised and integrated weeds and pest management promoted to increase pollinators and beneficial fauna.

**Key words:** Pollinators, microorganisms, pesticides, out growers, sugarcane.