

CARBOFURAN ADSORPTION, LEACHING AND ACCUMULATION IN EDIBLE TISSUES IN THREE SELECTED SOILS IN TROPICS

N. Gnanavelrajah and T. Kandasamy

Department of Agricultural Chemistry, Faculty of Agriculture, University of Jaffna

ABSTRACT

Carbofuran is moderately mobile in soil which could lead to ground water pollution and accumulation in plant tissues. A study was carried out to investigate the adsorption, leaching and accumulation of carbofuran in edible tissues in three soil series of Sri Lanka namely *Chankanai*, *Inuvil* and *Navatkuli*. For the adsorption study, soil samples were shaken with carbofuran having 625µg for 2 hours. Soil suspension was centrifuged at 22000 rpm for 20 minutes and the supernatant was removed and analyzed for carbofuran. A pot experiment using *Amaranthus* sp was also carried out to analyze the carbofuran leaching and accumulation in edible plant tissues. Soils from three series were treated with formulated commercially available carbofuran. All the experiments were conducted in Complete Randomized Design (CRD) with four replicates. Adsorption of carbofuran was highest for *Chankanai* series soil and lowest for *Navatkuli* series soil. Percentage adsorption of carbofuran for *Chankanai*, *Inuvil* and *Navatkuli* soil series was 37.6, 19.2 and 5.6, respectively. In the pot experiment, the highest carbofuran leaching was observed in *Navatkuli* series soil, whereas the lowest leaching was observed in *Chankanai* series soil. *Navatkuli* soil significantly differed from rest of the soils; however, there was no significant difference in leaching between *Inuvil* and *Chankanai* soils. Amount of carbofuran residue in plant samples varied from 0.011-0.016 mg/100g, however, no significant difference was observed in carbofuran residue in plant tissues amongst these three soils. All samples in pot experiment accumulated less than 0.12mg per 100g carbofuran indicating there is no chance of accumulating carbofuran at risk levels in *Amaranthus* when farmers apply recommended dosages