

Residues of some pesticides on some

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Spearmint and roselle plants were treated with thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos at the rate of 400, 500 and 1050 grams active ingredient per feddan using the dry flowable, the emulsifiable concentrate and the sus-pension concentrate formulations, respectively. The spray was conducted 189 and 136 days after planting spearmint and roselle, respectively, at the farm of Faculty of Agriculture, Moshtohor, Zagazig University, Kalyobia Governorate on September 28, 1983. Representative samples of fresh and air dried spearmint herb, roselle leaves, roselle flower buds and roselle calyces were taken at different intervals after treatment. Samples were subjected to the chemical analysis for residue estimation by gas liquid chromatograph. When the rate of persistence of the tested pesticides on and in spearmint and roselle plants were studied, results indicated that thiodi-carb was the most persistent insecticides in and on fresh spearmint plants and roselle leaves while tetrachlorvinphos was the most persistent in and on roselle flower buds. Deposits were reduced to 10.97, 2.15 and 7.93 % on and in fresh spearmint plants, to 14.87, 0.02 and 4.68 % on and in roselle leaves and to 4.75, 0.02 and 7.08 % on and in roselle flower buds, 15 days after treatment with thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos, respectively. The results indicated the following:

A- Residues on and in spearmint

Plant 1-The initial deposits were 67.72, 28.32 and 169.76 ppm on and in fresh spearmint herb and 55.99, 23.17 and 160.36 ppm on and in air dried spearmint herb where thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos were applied, respectively. Deposits were reduced to 7.43, 0.61 and 13.47 ppm indicating the rate of loss 89.03, 97.85 and 92.07 % of the initial deposits, respectively, on and in fresh spearmint herb and to 1.39, 0.48 and 6.78 ppm, respectively, on and in air dried spearmint herb, 15 days after treatment with thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos, respectively.

2-Tetrachlorvinphos had the highest initial deposits indicating the relationship between the amount of the active ingredient applied of the insecticide and the amounts of residues detected on the plant.

3-The residue half life values of thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos on and in fresh spearmint herb as determined were 74.4, 16.8 and 146.4 hours, respectively. The residue half life value of tetrachlorvinphos was the longest period while the residue half life value of chlorpyrifos-methyl was the lowest period.

4-Spearmint oil extracted from the harvested fresh crop, 15 days after application was contaminated with thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos residues and the values detected were 240.55, 80.52 and 814.2 ppm, respectively, as well as 3.85, 3.72 and 66.50 ppm respectively, found in oil extracted from air dried spearmint plants.

B- Residues on and in roselle plant

1-The initial deposits were 16, 9.12 and 85.08 ppm on and in roselle leaves and 10.52, 2.97 and 23.59 ppm on and in roselle flower buds where thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos were applied, respectively. Deposits were reduced to 2.83, 0.002 and 3.98 ppm indicating the rates of loss 85.13, 99.98 and 95.32 % of the initial deposits, respectively, on and in roselle leaves and 0.5, 0.0006 and 1.67 ppm indicating the rates of loss 95.25, 99.98 and 92.92 % of the initial deposits, respectively, on and in roselle flower buds, 15 days after treatment with thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos, respectively.

2-The highest levels of residues were found on and in roselle leaves while the lowest were that on and in roselle flower buds indicating the relationship between the treated surface and the amount of residue deposited.

3-The residue half life values of thiodi-carb, chlorpyrifos-methyl and tetrachlorvinphos were 19.2, 13.2 and 108 hours, respectively, on and in roselle leaves and 69.6, 12.48 and 57.6 hours on and in roselle flower buds.

4-Roselle calyces taken

from the air dried harvested crop, 40 days after treatment were devoid of any detectable amounts of chlorpyrifos-methyl residues according to the sensitivity of the procedure followed for determination. At the mean time the amounts of thiodicarb and tetrachlorvinphos residues were exactly the same i.e. 0.06 ppm. Concerning health hazards, the established tolerances for chlorpyrifos-methyl and tetrachlorvinphos on edible plants are 0.2 and 10 ppm, respectively. No tolerance has been yet established for thiodicarb, but it would not be higher than 0.2 ppm, the established tolerance for its major metabolite methomyl. According to the data obtained, we can recommend that -a- Thiodicarb, chlorpyrifos-methyl and tetrachlorvinphos should not be recommended for use on spearmint plants. Other pest control methods other than the use of insecticides should be managed for spearmint plants. b- Air dried roselle calyces crop could be marketed safely for human consumption, 40 days after treating the roselle plants with thiodicarb, chlorpyrifos-methyl and tetra-chlorvinphos.