EFFECT OF MALATHION ON BENEFICIAL INSECTS

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Abstract

Susceptibility of four natural enemies, *Geocoris punctipes* (Say), *Cotesia marginiventris* (Cresson), *Bracon mellitor* Say, and *Cardiochiles nigriceps* Vierick, to several insecticides was determined. In topical toxicity tests, malathion ultra-low-volume (ULV) (95 %) was applied undiluted at 1.36 and at 1.02 kg (AI)/ha with cottonseed oil in a total volume of 1.17 liter/ha. Fipronil and cyfluthrin were applied at 0.043 and 0.037 kg (AI)/ha, respectively, plus cottonseed oil in a total volume of 1.17 liter/ha. Emulsifiable concentrate (EC) formulations of malathion and fipronil at 1.12 and 0.043 kg (AI)/ha, respectively, also were applied with water in a total volume of 93.5 liter/ha. All of the insecticides were highly toxic to all five insect species when applied topically. In insecticide residue tests, undiluted malathion ULV at 1.36 kg (AI)/ha, and fipronil and cyfluthrin at 0.028 and 0.022 kg (AI)/ha, respectively, plus Orchex® 796 was applied in a total volume of 1.17 liter/ha. Toxicity of residues of these insecticides to the five insect species was determined at 0, 24, and 48 h after treatment. Residues of malathion ULV were highly toxic to all five insects 48 h after treatment except for *C. nigriceps* which was affected only slightly less by this insecticide than the other four species at 48 h after treatment. Residues of fipronil were less toxic to *C. nigriceps* than to the other natural enemies 0 to 48 h after treatment. Residues of cyfluthrin were less toxic to all insects than the other two insecticide treatments for each time regime. In a rate residual test conducted in the same manner as the above residue test, malathion ULV (95 %) was applied at 1.36 and 0.85 kg (AI)/ha plus cottonseed oil in a total volume of 1.17 liter/ha. Residues of undiluted malathion ULV were highly toxic to the insects through 48 h after treatment except for *C. nigriceps* while residues of malathion ULV with cottonseed oil were highly toxic to only *B. mellitor* and *C. marginiventris* at 48 h after treatment.

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