

HEXAZINONE PERSISTENCE IN TWO DIFFERENT TYPES OF SOILS

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ABSTRACT

Two identical studies were conducted to determine soil persistence of hexazinone(3-cyclohexyl-6-(dimehtylamino)-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione) under actual field conditions. Hexazinone (Velpar 90W), at 2 and 4 kg/ha, was applied with a tractormound boom sprayer to the sites at Opelika, Alabama (Pacolet clay) and Auburn, Alabama (Uchee loamy sand) in the Spring of 1978. The experiments were laid out in a randomized complete-block design with 3 replications. Each plot was 7m x 14m and separated by 1 meter buffer zone.

A canposite soil sample consisting of 30 cores (1.9 an in diameter) was taken from each herbicide-treated plot. Sampling dates were 0, 4, 8, 16, 24, 36, and 49 weeks after treatment. Each soil core was divided into 3 increments: 0-8 cm, 8-16 cm, and 16-24 cm. All soil samples were air dried, screened through a 2 mm sieve, stored in a glass jar, and refrigerated until analysis. Both oat (*Avena fatua* var. Florida 501) shoot dry weight bioassay and gas-liquid chromatographic analysis (GC) were used to determine the concentrations of hexazinone in the soils.

For both oat bioassay and GC analysis, the half-life of hexazinone was about 4-6 weeks in Pacolet clay. In Uchee loamy sand, the half-life of hexazinone was less than 4 weeks according to both methods.

In addition to residual hexazinone in the soils, the concentrations of hexazinonemetabolite A(3-(4-hydroxycyclohexyl)-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione) and hexazinone metaboilte B (3-cyclohexyl-6-(methylamino)-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione) were also determined by GC. Generally both soils had higher concentrations of metabolite B than metabolite A.