

traces of simazine, if any, remained in the plant at harvest time. Both tolerant and susceptible species absorb the chemical and break it down, but, according to Davis, Funderburk, and Sansing (5), high levels of degradation products remain in the sensitive crops. With oats, cucumbers, cotton, and corn, the amount of non-metabolized simazine or its C¹⁴-containing degradation products accumulating in the plants was correlated with the relative susceptibility of the four species (5,17).

Many factors appear to be related to the rate of simazine dissipation from soil. Even though it resists leaching, Sheets (15) observed that simazine moves downward faster in sandy soil than in clay loam. In spite of this, several workers have found that this herbicide disappears much faster in the finer textured soils such as clays. Soils high in organic matter responded similarly to clays in tests conducted by Burnside and Behrens (1). This reduced phytotoxicity of simazine in high organic matter soils appears analogous to that of several other herbicides, such as 2,4-dichlorophenoxyacetic acid (2,4-D) reported early by Meadows and Smith (8) and 3-(*p*-chlorophenyl)-1-1-dimethyl urea (monuron) reported by Rahn and Baynard (13). Ogle and Warren (11) attributed this effect to the high absorptive capacity of these soils. On the other hand, Chandra, *et al.* (4) suggested that these effects were due to greater chemical and microbial activity. Additional factors supporting this, including high soil temperature, high soil moisture, and cultivation, have been cited for their influence on the depletion of herbicide residues (1, 6, 13, and 14).

There appear to have been few studies relative to the accumulation of toxic residues in soils from repeated herbicide applications. In one study, Rahn and Baynard (13), working with monuron applied to a loamy sand in Delaware, observed that semiannual applications of 1.6 pounds per acre did not persist from one year to the next over a three-year period. When 3.2 pounds were used, a residue remained from year to year, but there was no accumulation in the soil from the repeated treatments.

MATERIALS AND METHODS

Two long-range experiments—one on Leon fine sand and the other on Everglades mucky peat—were set up during 1957 to study the activity of simazine residues remaining after the use of this herbicide on corn crops. This activity, evaluated by measuring the growth response of sensitive crops and weeds subse-