

All treatments were replicated four times, with the plots arranged in randomized blocks. Plot size was slightly larger at Zellwood than at Sanford due to the wider row spacing required on the organic soil farm. All plots included four standard rows or two multiple-row beds, 24 feet long. In Experiment 1 on the sand, with rows spaced 30 inches apart, the plots were 10 feet wide. They were 12 feet wide on the peat soil, where standard row spacing is 36 inches.

The semiannual plantings included sweet corn and a wide variety of simazine-sensitive crops. These were utilized to evaluate the activity of the simazine present throughout the eight crop seasons. Plant growth, green weight, and other factors measurable in the field were selected in preference to plant and soil chemical analyses because these led more directly to the desired information. Growth of indicator plants as a measure of herbicide residues remaining in soil also was used by Burschel and Freed (3) and by Rahn and Baynard (13). The latter, working with monuron, reported that bioassays were superior to chemical assays because the latter gave too high values when related to plant toxicity. The fall plantings in each plot usually consisted of four to six frost-hardy crops selected among beets, carrots, endive, lettuce, peas, and several of the crucifers. The latter included cabbage, collards, and turnips. Some of the crucifers also were planted in the spring along with tender crops such as beans, cucumbers, and squash. Oats were used occasionally and were observed to be a good simazine-sensitive indicator crop. This confirmed the work of Burnside and Behrens (1), who listed oat susceptibility in the range of 0.25 ppmw in contrast to 4 to 256 ppmw for corn. The chemical treatments were discontinued after the spring 1960 applications. During the fall of 1960, a uniform planting of oats was made over all of both experimental areas to permit a final evaluation of results.

Data recorded during the course of these experiments include the following:

1. Weed control ratings. Visual estimates of weed stunting and kill on the treated plots were made, comparing them with the untreated check plots. These observations were recorded approximately four weeks after each planting. The ratings were based on a 0 to 10 scale with "0" indicating no control or no effect on the weeds and "10" indicating complete control or weed kill.

2. Crop tolerance ratings. A similar 0 to 10 scale was used for rating crop tolerance, the reverse of crop injury. The "0"