plants to determine the reaction of selections and varieties to the rusts, smuts, wheat mosaic, and other diseases. It is being used as the method of planting in the study of physiologic races of loose smut of wheat. This method may be used whenever a small population of plants is sufficient, and individual plant data are not required.—O.T. Bonnett, Illinois Agricultural Experiment Station, and W. M. Bever, Division of Cereal Crops and Diseases, U. S. Dept. of Agriculture, Urbana, Ill.

EFFECTS OF SPRAYING CEREALS WITH 2,4-DICHLOROPHENOXYACETIC ACID

ONE of the important possibilities of 2,4-dichlorophenoxyacetic acid (2,4-D) has been its use as a selective spray in small grains. There is particular interest in such use for controlling certain of the "creeping" perennials. If a crop of grain can be realized while controlling these weeds, the cost of the control program would thus be greatly lessened.

In the work that has been reported the grain treated with 2,4-D had weeds present, and injury to the cereal crop by the chemical may have been compensated for by the reduced competition of weeds in the sprayed plots. The results of use of 2,4-D in cereals by many workers has been summarized.¹ The reported effects varied from (a) no effect on the cereal crop, (b) retardation in flowering of oats, (c) increase in yield, (d) great variability of grain yields of wheat when sprayed in the boot stage, and (e) definite injury to seedling oats.

That injury to grasses may occur is indicated by Marth and Mitchell² who report a temporary depression in growth of lawn grass following spraying with 2,4-D.

If 2,4-D is to be used as a selective spray in cereals, information is needed as to the best time to spray the cereal crop. Such information can then be integrated with the most effective time of spraying the various species of weeds.

In 1946 spring wheat, oats, and barley were planted in nursery rows (four-row plots, rows 10 feet long, 1 foot apart) replicated four times. All plots were kept free from weeds throughout the experiment, and all plots were given three irrigations. Three different concentrations of 2,4-D spray were applied at each of the three dates of treatment (0.10% solution omitted July 18), each plot in the experiment having been sprayed but once during the season. The spray concentrations used were 0.05%, 0.10%, and 0.15% solution of 2,4-D (1 part 2,4-D to 6½ parts "carbowax 1500") in water. The above spray solutions were applied at the rate of 250 gallons per acre, giving an application of 1, 2, and 3 pounds of parent acid per acre, respectively. Most recommendations for perennial weed control come within this range.