Spray Placement in Corn After Layby

R. G. Robinson and R. S. Dunham

A MAJOR weakness in the weed control program on many farms is the production of weed seed in corn fields during August and September after cultivation has stopped. Some of the plants producing this seed grow in the corn row or hill, thus escaping the cultivator; others germinate and grow between the corn rows after layby and produce seed before killing frosts occur in the fall.

Some of the annual weeds frequently found in corn at this time are Setaria faberii, S. viridis, S. lutescens, Echinochloa crus-galli, Abutilon theophrasti, Xanthium spp., Amaranthus retroflexus, and Polygonum spp. These and other weeds can now be controlled fairly well with herbicides applied after layby. Since many of the herbicides effective on these weeds are also very injurious to corn, the placement of the spray is very important. The herbicides should be applied in a directed spray to cover the weeds but avoid as much of the corn plant as possible. In commercial field spraying it is impossible to avoid the corn completely, so it is of practical importance to know how much of the corn plant can be sprayed without causing serious injury.

EXPERIMENTAL PROCEDURE

Four plant coverages with each of four herbicides were compared. They were as follows: 1. unsprayed, 2. lower 6 inches of corn plant sprayed, 3. lower 12 inches of corn plant sprayed, 4. entire corn plant sprayed. Exact spray placement was obtained by moving a single nozzle in normal spraying position along each side of the row in such a manner that the fan-shaped spray would intersect the corn row at the desired height. A plumb bob, fastened to the nozzle and just touching the ground a measured distance from the row, was used to keep the nozzle in correct position for the desired coverage.

After the last cultivation and before spraying, all weeds were pulled so that all plots were weed-free. The weed-free condition made it possible to determine the effect of the herbicides on corn itself without differential numbers of weeds affecting the results.

Herbicides used were 2,4-D alkanolamine salt, TCA sodium salt, CMU, and Endothal. Rates applied were generally higher than usually thought necessary for weed control in order to have some margin of safety in recommending lower rates to farmers. Actual rates per acre were 3, 8.8, 3, and 6 pounds per acre, respectively, of 2,4-D, TCA, CMU, and Endothal. The 2,4-D trials were conducted in 1950; the TCA trials in 1951; and the CMU and Endothal trials in 1953.

Applications were made within 2 or 3 days after cultivation and the corn varied in height from 27 to 42 inches. With 2,4-D and TCA, an additional comparison was made by spraying corn when it was 7 feet tall and ears had formed. A 2 pound per acre rate was included at the 7-foot stage in 1951.

Yields and moisture contents of ear corn were determined on every plot. Percentages of broken stalks were determined on every plot in the 2,4-D trials.