

eliminate that deficiency. To approach this problem it is necessary to add nutrients singly and in combination at different rates. This approach can not be used on all fields of all farms for all crops because of financial and physical limitations. Information from a limited number of experiments should be helpful in planning a fertilizer program for other fields and farms within a given area. All information about this new situation should be considered carefully and the final recommendation conditioned by the best estimate of the "available" soil nutrient supply and expected yield possibility.

COTTON PRODUCTION - Weed Control

Control of Annual Weeds in Cotton with Preplant-Layby Combinations of Herbicides

(K. C. Hamilton)

During the past year, tests were conducted at Marana, Phoenix, and Yuma to determine herbicide combinations that would control annual weeds for an entire growing season. Herbicide combinations in one or two applications in one season have several advantages over the use of a single herbicide. The proper herbicide combination results in better control of infestations of several annual weeds. Herbicide combinations minimize the build up of weed species resistant to a single herbicide. Herbicide combinations allow the use of lower rates than when only one herbicide is applied. The lower rates result in lower costs, greater safety to cotton, and less herbicide residues in the soil to affect the following crop.

Preplant applications of herbicides followed by layby applications were evaluated at the Cotton Research Center, Phoenix, on the soil averaging 33% sand, 43% silt, 24% clay, and 1.7% organic matter. Weeds present included browntop panicum, watergrass, red sprangletop, Wrights groundcherry, and care-lessweed. Preplant applications of trifluralin (Treflan), DCPA (Dacthal), and prometryne (Caparol) were made in March before furrowing for the preplanting irrigation. In April Deltapine Smooth Leaf cotton was planted in moist soil.

The test area was cultivated until mid-July. The hand-weeded checks were also weeded three times. Layby applications of diuron (Karmex), monuron (Telvar), and prometryne were directed to the soil covering the entire middles and base of cotton plants. Dates and rates of treatments, percent weed control, and cotton yields of selected treatments from two tests are summarized in the table.

All preplant applications of trifluralin stunted cotton for 2 to 3 months. Applications of prometryne caused temporary chlorosis of cotton foliage. Combinations of preplant and layby herbicide applications gave better weed control than either preplant or layby herbicide applications alone.

Yields of cotton receiving preplant and layby applications of herbicides equalled yields of hand-weeded cotton, except for cotton treated with prometryne at layby. Preplant applications of trifluralin or DCPA combined with layby applications of diuron or monuron gave season-long control of annual weeds and increased cotton yields compared to the cultivated checks.

| Preplant | | Treatment | | | Weed control Percent estimated 9/30/64 | | Yield of seed cotton in pounds per acre |
|----------------------------------|------|-----------|--------------------|------|--|---------|--|
| Herbicide | lb/A | Date | Layby Herbicide | lb/A | Broadleaf | Grasses | |
| <u>Test A</u> | | | | | | | |
| trifluralin | 0.75 | | | | 79 | 96 | 2,422 |
| trifluralin | 0.75 | 5/18 | diuron | 1.25 | 94 | 96 | 2,857 |
| trifluralin | 0.75 | 6/18 | diuron | 1.25 | 98 | 98 | 2,721 |
| trifluralin | 0.75 | 7/1 | diuron | 1.25 | 99 | 99 | 2,558 |
| trifluralin | 0.75 | 7/22 | diuron | 1.25 | 97 | 96 | 2,721 |
| trifluralin | 0.75 | 6/18 | monuron | 1.25 | 96 | 94 | 2,585 |
| trifluralin | 0.75 | 6/18 | prometryne | 1.60 | 87 | 77 | 2,313 |
| | | 6/18 | diuron | 1.25 | 95 | 81 | 2,422 |
| | | 6/18 | monuron | 1.25 | 95 | 79 | 2,340 |
| Check-cultivated and hand-weeded | | | | | 99 | 96 | 2,721 |
| Check-cultivated | | | | | 0 | 0 | 1,170 |
| <u>Test B</u> | | | | | | | |
| DCPA | 8.00 | | | | 96 | 94 | 2,885 |
| DCPA | 8.00 | 6/18 | diuron | 1.25 | 99 | 95 | 2,806 |
| DCPA | 8.00 | 6/18 | monuron | 1.25 | 97 | 89 | 2,687 |
| DCPA | 8.00 | 6/18 | prometryne | 1.60 | 94 | 89 | 2,428 |
| prometryne | 1.60 | 6/18 | prometryne | 1.60 | 84 | 69 | 2,408 |
| Check-cultivated | | | | | 0 | 0 | 1,990 |

On-Farm Herbicide Trial Summary

(Henry Brubaker)

Demonstrations with herbicides for cotton weed control were conducted in Yuma, Pima, Pinal, Greenlee and Graham Counties. Yuma County work was primarily with trifluralin, although diuron, Tupersan, and Prometryne were also used. Yuma County tests included layby applications, trifluralin in irrigation water, puncture vine control with trifluralin on sandy soils, and morning-glory control with Prometryne. In the layby applications, trifluralin, Tupersan and diuron gave good weed control except in the skips. Trifluralin in water runs gave some control, but not as much as was hoped. Puncture vines were controlled on sandy soil near Salome with 1/2 and 3/4 pound per acre. The 3/4 pound rate hindered cotton emergence. Prometryne controlled morning-glory for less than two months following layby applications. The pre-plant application of Prometryne with and without trifluralin did not control morning-glory

Prometryne also was tested in Pima County along with trifluralin. These tests gave varying results as to weed control. Stands were damaged by pre-plant applications of trifluralin.

A preplant application test was conducted in Greenlee County using Prometryne and diuron at 1 1/2 and 2 pounds per acre. Both chemicals gave good control with no damage to the cotton.

A pre-plant test was made in Graham County using trifluralin and Prometryne. Both chemicals gave good control. In another test using Prometryne at layby, good control of morning-glory was obtained.