I. Cotton Production: Weed Control

PRE-Emergence Herbicides for Cotton Weed Control

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The cotton plant varies in its tolerance to pre-emergence herbicides used for weed control. The selection of a herbicide for cotton should take into consideration the characteristics of the herbicide so that adequate weed control is achieved without unnecessary injury to the cotton plant.

Secondary root development of the cotton seedling may be inhibited in soil treated with trifluralin (Treflan) and nitralin (Planavin). The cotton seedling is very tolerant to bensulide (Prefar) and DCPA (Dacthal). To avoid reduced seedling vigor and possible stand reductions from preplanting applications of Planavin and Treflan, plant when growing conditions are favorable, avoid incorporation of the herbicide to unnecessary depths, plant the seed so that the cotton seedling will not grow through an extensive layer of treated soil, and control seedling diseases.

A test was established on the Boswell Farm, Section 4-P, near Beardsley, Maricopa County, to illustrate these differences in tolerance of cotton to some of the pre-emergence herbicides. Prefar, Treflan, and Planavin were applied to the soil prior to listing at the rate of 2.4, .75, and .75 lb. per acre respectively. Plot size was eight-40 inch rows wide and 1/4 mile long in solid planted cotton. There were 4 replications each of Prefar and Treflan. There were 2 replications of Planavin.

The beds were mulched and planted to Hopicala April 16, 1967. There was sufficient soil moisture present so that the cottonseed was planted 2 to 4 inches above the original soil line. Therefore, the cotton seedling grew through several inches of treated soil.

The weather conditions during emergence were cold and damp. The seed had been treated for seedling disease.

Table I. Cotton Plants Per Foot of Row* May 27, 1967

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Plants/foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>3.8</td>
</tr>
<tr>
<td>Planavin</td>
<td>1.1</td>
</tr>
<tr>
<td>Treflan</td>
<td>1.3</td>
</tr>
<tr>
<td>Prefar</td>
<td>3.6</td>
</tr>
</tbody>
</table>

* Average of 12 locations for each treatment.

Cotton stands were reduced by over 66% in the Treflan and Planavin treated areas. The cotton seedlings that survived in the Treflan and Planavin treated
areas were stunted early in the season. Later on these plants made normal
growth. There were no differences in stand or seedling vigor between the
Prefar and the untreated area.

Table II. Yield of Seed Cotton - October 28, 1967

<table>
<thead>
<tr>
<th>Treatment</th>
<th>1b/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check</td>
<td>2234</td>
</tr>
<tr>
<td>Planavin</td>
<td>2247</td>
</tr>
<tr>
<td>Treflan</td>
<td>2221</td>
</tr>
<tr>
<td>Prefar</td>
<td>2404</td>
</tr>
</tbody>
</table>

There was no significant difference in the yield of seed cotton due to
the herbicide treatments as evaluated in this test. The cotton plants
appeared to compensate where the stands were thinned. Because all of the
cotton was harvested at the same time it was impossible to evaluate any
possible effect upon the maturity of the cotton due to the herbicide treat­
ments.

Weed control was not evaluated for each herbicide because of the incon­
sistency of weed stands in the plots.

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HERBICIDE APPLICATION WITH THE BEDSHAPER-PLANTER

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Six different herbicides were incorporated with the bedshaper-planter.
The objectives were to apply the herbicides broadcast and plant the seed
beneath the layer of chemical. Some herbicides, particularly diuron, are
quite toxic to cotton seedlings unless physical separation is maintained.
There was no reduction in plant population due to treatment. Weed control
was nearly perfect throughout the season. The check did have an early
infestation of weeds. However, there was no significant difference in yield
in any of the treatments.

Indications are that any number of herbicides when separated from the
seed and root zone give excellent weed control with no resulting damage to
the plant. Treatments were as follows:

1. Trifluralin (Treflan) 3/4 lb/A + Diuron (Karmex) 1 lb/A.
2. DCPA (Daconil) 9 lb/A + Diuron 1 lb/A.
3. Bensulide (Prefar) 2 lb/A + Diuron 1 lb/A.
4. Planavio 3/4 lb/A + Diuron 1 lb/A.