Production of Sea Island Cotton is hazardous unless persistent boll weevil poisoning is practiced. Stalk on the left is from an unpoisoned field; stalk on the right is from a field dusted with calcium arsenate.

ENTOMOLOGY

COTTON INSECT INVESTIGATIONS

In cooperation with the United States Department of Agriculture, Bureau of Entomology and Plant Quarantine, Division of Cotton Insect Investigations, experimental work on the control of insect pests of cotton is being conducted. The investigations, while largely devoted to the boll weevil, Anthonomus grandis Boh., also include research on the life history and economic importance of other cotton pests in Georgia.

The boll weevil studies are divided into two subprojects, one a study of boll weevil control methods on upland varieties, or short staple cotton, the other on sea island, or long staple cotton.

Because of the differences in susceptibility to weevil injury and in the growth and fruiting habits of the two types of cotton, weevil control for each is quite different.

Upland Cotton: Work for two years on upland cotton varieties seems to indicate that the major portion of weevil injury to this staple in the Coastal Plain area, is largely done by the hibernated weevils, with the earlier first brood weevils adding to the damage. Tests under way at present are designed to determine the value of control measures, especially the relative values of pre-square poisoning of weevils that emerge from hibernation as compared with dusting with poison after the cotton begins to put on squares. Studies to date have shown that in some years dusting with calcium arsenate to kill weevils that emerge from hibernation will pay, while in other years, with a light initial weevil population, little commercial damage may be expected, and dusting is probably not justified.

Sea Island Cotton: Because of the long period of time during which sea island cotton is susceptible to weevil damage the problem of control is much more difficult than for upland cotton. The one year (1937) in which control measures have been studied was characterized by a light spring weevil population but by favorable weevil conditions throughout
the summer. Of early injury there was practically none, while late injury was very serious in fields that were not treated.

Under conditions that prevailed in 1937, dusting with calcium arsenate late in the season was profitable. Control of weevils was secured in spite of a heavy infestation from migration; bolls were protected from injury, and cotton continued to set fruit in dusted plots well into September. Undusted cotton showed serious losses with no top crop being set after migration late in July with rather severe injury occurring on bolls set during July.

Tests of the so-called Florida WPA method, that is, mopping during the afternoon with a calcium arsenate-syrup-water mixture, showed this treatment totally inadequate to control weevils after squaring had once begun, although it was efficient as a "pre-square" treatment. Spraying with a mixture of 5 pounds of calcium arsenate, 1 gallon of syrup and 49 gallons of water, applied by means of a tobacco sprayer at 25 to 30 gallons per acre, gave fair control of late weevils, but not as good control as dusting with calcium arsenate. It was, however, sufficiently encouraging to make further study in a year of heavier initial boll weevil population seem desirable. Table LXII gives the yields in pounds of seed cotton per acre in the plots treated with the Florida WPA mop method throughout the season, sprayed 5 times with calcium arsenate-syrup-water, "standard" dust with calcium arsenate (beginning dusting when approximately 10 per cent of the squares were infested), and the "heavy" dusting with calcium arsenate (beginning dusting when approximately 5 per cent of the squares were infested). The standard dust plots received 4 applications and the heavy dust plots 6 applications of calcium arsenate.

Considerable defoliation possibly due to the calcium arsenate occurred in the dusted plots. This seemed definitely correlated with fertilizer deficiency. Well fertilized cotton suffered comparatively little injury, while lightly fertilized plots suffered almost complete defoliation. As the Tifton plots were rather lightly fertilized, from 10 per cent to 20 per cent of the late set bolls (after July 15) on the dusted plots were lost because of the defoliation of the plants. Experiments are now outlined to study this phase of the problem.

**TABLE LXII**

**BOLL WEEVIL CONTROL EXPERIMENTS ON SEA ISLAND COTTON AT TIFTON, GEORGIA, IN 1937**

<table>
<thead>
<tr>
<th>Florida WPA Mop</th>
<th>Spray</th>
<th>Standard Dust</th>
<th>Heavy Dust</th>
<th>Check (No Treatment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>413.7</td>
<td>445.3</td>
<td>455.0</td>
<td>496.0</td>
<td>387.5</td>
</tr>
</tbody>
</table>

**Note:** Considering all costs of production, including poisoning, only the spray and standard dust treatments showed a profit.