hundred berries were randomly sampled from each plot to determine fruit maturity and berry weight. Twenty-five upper laterals were taken per vine to determine length of the lateral and number of berries.

The results of the trial are shown in the table. Chlormequat greatly increased the yield compared to the control and other materials. Neither daminozide nor Cytex altered yield.

None of the materials affected the lateral length at the proximal end of the cluster. However, both chlormequat and daminozide increased the number of berries per centimeter of lateral, chlormequat being the most effective. Chlormequat may have stimulated even greater set on distal laterals, which would better account for the increase in yield.

The soluble solids were not affected by any treatment except for chlormequat at the 10 percent significance level. This was probably due to the effect of the increased yield. The sugar yield per vine, the product of the yield times the soluble solids percentage, was doubled by chlormequat as compared to the control. Berry weight was reduced by chlormequat. None of the materials affected total acidity.

Immature leaves at the shoot tip compete with the ovaries for organic nutrients. When the growth retardant chlormequat is applied prebloom, shoot growth is temporarily halted. More adequate nourishment for the developing ovaries leads to improved set. Daminozide is also a growth retardant, but weaker in its action than chlormequat.

In conclusion, yield of *Malvasia bianca* was more than doubled by a prebloom spray of the growth regulator chlormequat (Cycocel). The increase of 4.4 tons per acre (20 pounds per vine) was primarily due to improved berry set. Clusters from treated vines were well filled; those from control vines were loose and straggly, with some clusters setting no fruit at all.

This is a report of work in progress. Until the products and uses discussed in this report appear on a registered pesticide label or other legal supplementary directions for use, it is illegal to use the chemicals as described.

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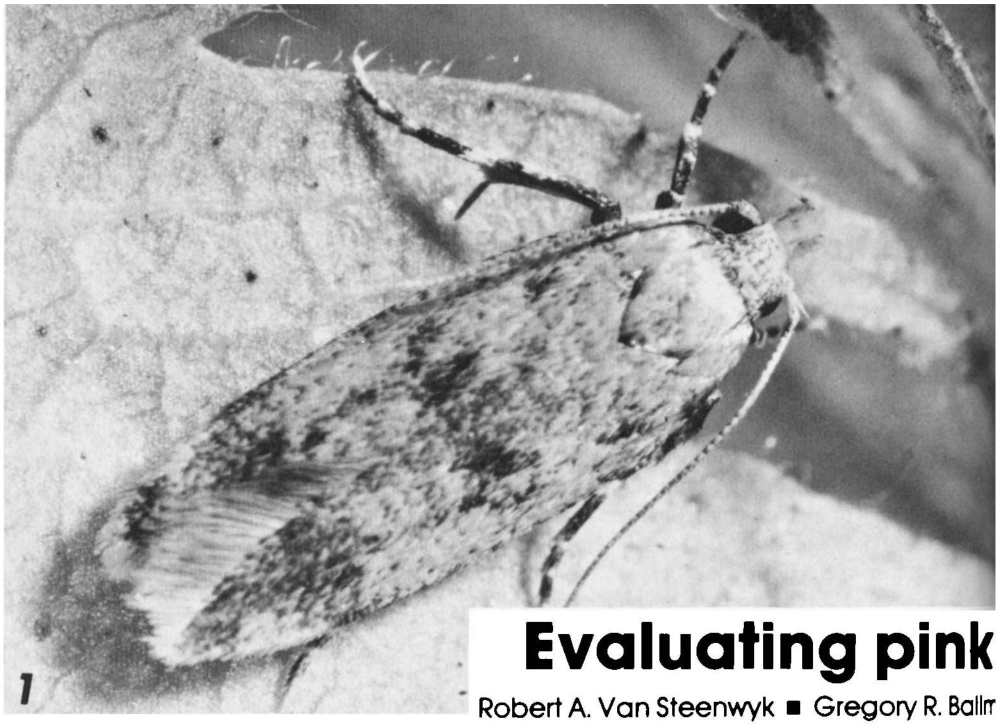

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Evaluating pink

Robert A. Van Steenwyk ■ Gregory R. Ballm

The decision to begin insecticide treatment to control pink bollworm, *Pectinophora gossypiella* (Saunders) (fig. 1 and 2), in cotton is usually based on a Hexalure trap catch or on the percentage of boll infestation. With the trapping method, insecticide application is initiated when a mean of 3.5 or more moths per night are captured in a baited cone trap. Using the percentage-boll-infestation method, an automatic 5- to 7-day treatment schedule is begun when the mean boll infestation reaches 10 to 20 percent.

Whichever method is used in initiating treatment, the percentage of boll infestation must be estimated to evaluate the effectiveness of the control measures. However, there has been some question as to the age or size of bolls to examine. Thus, a study was conducted to learn how age, size, and moisture percentage of cotton bolls are related to susceptibility to pink bollworm attack.

Bolls inspected

In an untreated field at Meloland, California, 100 white flowers (Delta Pine 16 cotton variety) were marked at weekly intervals from June 15 through July 26, 1974. On July 19, ten bolls of age 7, 14, 21, and 28 days were removed from the plants. Thereafter, ten bolls from all age categories were removed weekly until only open bolls remained. The sampled bolls were measured, weighed, and inspected for pink bollworm larvae. Then the bolls were dried and reweighed.

Also, in another untreated cotton field, 100 white flowers (Delta Pine 61 cotton variety) were marked every 2 days from July 14 through August 11, 1975. On August 14, all marked bolls were measured, weighed, and inspected for pink bollworm larvae and exit holes and then dried and reweighed.

In the 1974 preliminary study, first to third instars (white larvae) were found in bolls of all age categories but were most abundant in bolls 14 to 21 days old (fig. 3). The fourth and fifth instars (red larvae) were found only in bolls 21 or more days old and were most abundant in those 28 days old. Boll growth was nearly complete after 14 days, but moisture content continued to decrease with increasing boll age.

In 1975, a more extensive study produced results similar to the 1974 study. Bolls 15, 17, and 21 days old contained the greatest number of first to third instars; bolls 25 and 27 days old contained the greatest number of older larvae (fig. 4). Exit holes first appeared in bolls 23 days old, and the number in-

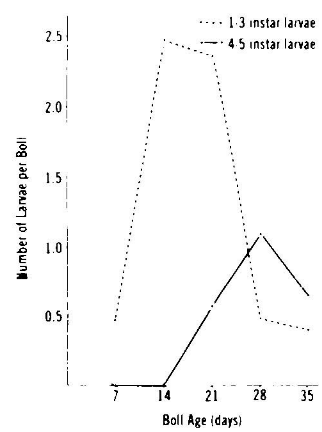
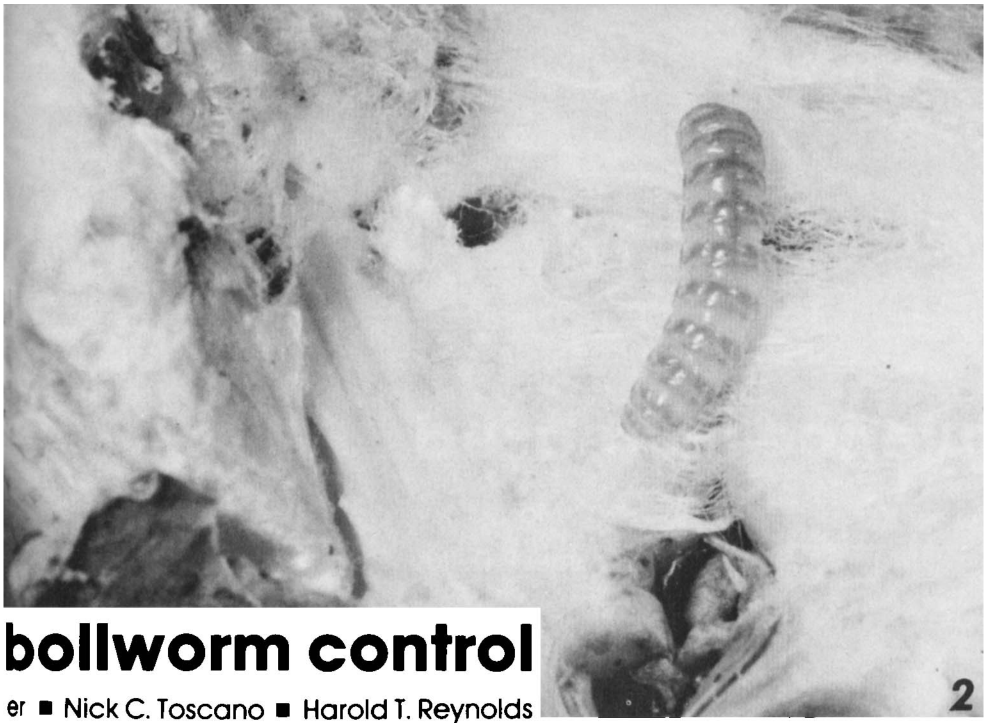


Fig. 3. Mean number of pink bollworm larvae per cotton boll at different boll ages, Meloland, California, 1974.



bollworm control

er ■ Nick C. Toscano ■ Harold T. Reynolds

With experience, field workers can identify cotton bolls that are at the right stage of development for evaluation of control measures.

Fig. 1. Adult pink bollworm moth.

Fig. 2. Fifth instar pink bollworm larva feeding in cotton boll.

creased with boll age. Boll development was nearly complete after 15 days; moisture content continued to decrease with increasing boll age.

Evaluating control

These studies indicate that bolls 14 to 21 days old contain the greatest mean number of first to third instars per boll. The percentage of infestation followed the same pattern as the number of larvae per boll. Thus, to evaluate the effectiveness of a control measure, one should examine bolls 14 to 21 days old. However, it is impractical to mark enough bolls to determine the percentage of infestation in bolls of this age.

Bolls 14 to 21 days old can be identified by their moisture. They are full size with 79 to 83 percent moisture. A practical way to estimate boll age in the field is to test boll firmness, because this has been found to be a function of moisture percentage. Firmness, determined by squeezing the boll between the thumb and forefinger, is a subjective quality that each field worker must individually determine by first testing several bolls of known age.

Lint is another indication of boll age. Bolls less than 14 days old are watery with poorly developed lint; those more than 21 days old are dry with well developed lint; and those 14 to 21 days old are in an intermediate condition (fig. 5). Bolls 14 to 21 days old also should contain no pink bollworm exit holes and few fourth to fifth instars.

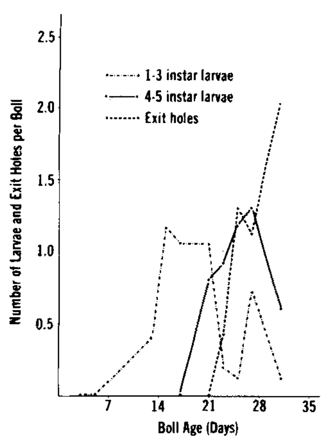


Fig. 4. Mean number of pink bollworm larvae and exit holes per cotton boll at different boll ages, Meloland, California, 1975.

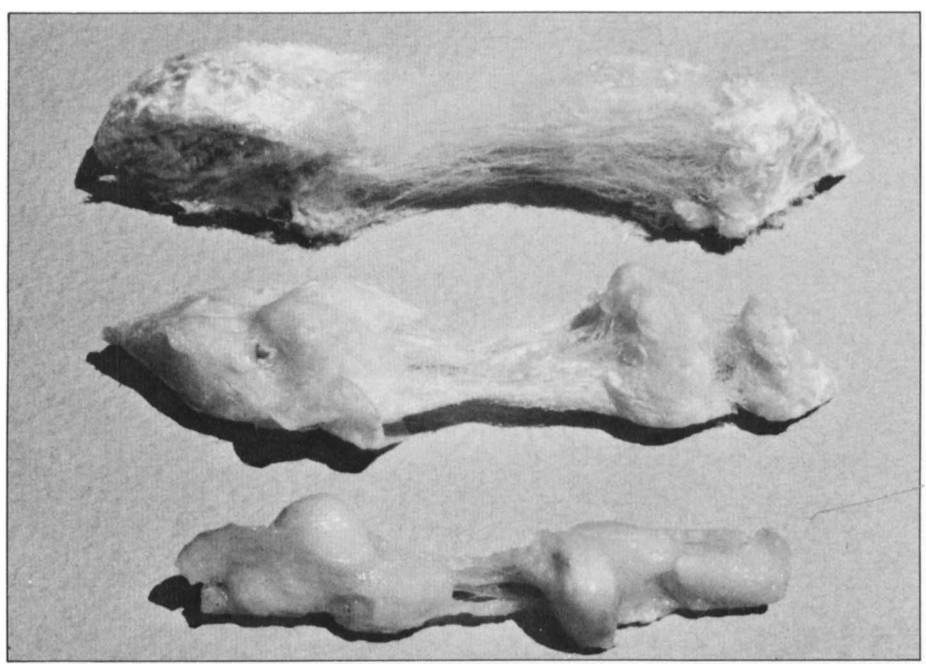


Fig. 5. Cotton locules showing lint development. Top, 30 days old; center, 18 days old; bottom, 10 days old.

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