The chemical termination appeared to have increased yields slightly; this is due in part to a better defoliation in the chemically terminated plots.

These results show that the number of diapause PBW larvae can be significantly reduced by termination of fruiting in the fall without adversely affecting yields. Observations will continue to be made in this field next spring to determine the effects on the population of moths that successfully overwinter and subsequently infest cotton.

BIOLOGICAL CONTROL

A. Stoner and R.E. Weeks

Biology of Copidosoma truncatellum--Developmental time of the parasite Copidosoma truncatellum (Dalman) in the host Trichoplusia ni (Hübner) was studied at constant temperatures of 14.8, 20.2, 23.5, 25.0, and 28.9° C; egg to first adult emergence was 122.9, 48.8, 35.8, 29.6, and 22.4 days, respectively. At 32.3° C the unparasitized host develops, but the parasitized host and parasites die. At 35.6° C the host eggs will not hatch. Duration of adult C. truncatellum emergence from the host at 14.8, 20.2, 23.5, 25.0, and 28.9° C is 10.8, 4.6, 3.6, 3.0, and 2.9 days, respectively. The duration of a generation ranges from 162.7 days at 14.8° C to 31.2 days at 28.9° C.

Adult longevity of C. truncatellum fed water and solutions 20% levulose, and 20% and 49% artificial cotton nectar was investigated. Longevity was greatest on 20% levulose which was similar to 20% artificial cotton nectar. Survival on 49% artificial cotton nectar was poor by comparison. Levulose was superior because of longest survival, only one sugar to weigh and handle, and it was the least expensive.

Emergence counts of C. truncatellum according to constant temperature have shown average adult emergence from the host T. ni to be 2045 (414 males, 1631 females) at 20.2° C, and 1835 (348 males, 1486 females) at 25° C.

Calco oil red N-1700® was incorporated into the host (T. ni) diet to tag C. truncatellum adult parasites as a survey method for recovery and identification of field released, laboratory reared parasites. The dye was readily taken into the parasites and could be recovered by a chromatographic method in most specimens. A method of squashing and viewing under magnification for the dye was misleading due to red pigment in the eyes of the parasite. Also, parasites stored in a preservative fluid which came from undyed hosts contained a red color in the body due to some action of the preservative. Squashing under magnification would be much more rapid than the chromatographic method, but a color other than red would have to be used.

GENETICS

A.C. Bartlett, P.A. Langley, and L.J. Lewis

Release and recovery of dark body color cabbage looper males in the field--Release of a recessive lethal mutation into field populations can cause a theoretical reduction in the population of up to 40%. A cabbage looper strain exists which

contains a recessive lethal mutation, dark body color. Laboratory tests of this strain showed no significant differences between dark moths and normal moths in developmental times, mating ability, or competitiveness.

Field releases of dark males were made at rates up to 900 per week on a 700 acre cotton farm. Released males were recaptured in pheromone traps up to 3 nights after time of release. Following cessation of release, progeny of the released moths were captured in light traps and as larvae in the field.

These results show that if rearing facilities were available, this dark strain could be used as a suppression measure for cabbage looper populations.

Genetic markers in the pink bollworm--Genetic linkage and interaction tests have been carried out for 7 markers in the pink bollworm. No linkage has been demonstrated for any of the markers but interesting eye color interactions have been found. Strains now in culture are: rust eye, garnet eye, dark eye, spectacle eye, orange eye, white eye, sooty body color, and black body color. Strains are also being maintained in selection for temperature sensitive lethal mutations and non-diapausing mutations.

PHYSIOLOGY

B.J. Cook, R.T. Staten, E. Miller and W.D. Shelton

Chemical attractants of the pink bollworm--An olfactory maze and a wind tunnel bioassay system were set up to determine the effectiveness of various attractant chemicals on both male and female pink bollworm moths. In addition, an air delivery system and various electrophysiological devices were assembled to measure antennal responses to attractant chemicals.

Results--The olfactory maze was used to test the attractive properties of the cotton plant (in various stages of development) to both male and female pink bollworm moths. Results to date indicate that the moth is not attracted to the cotton plant by an odor gradient established by simple diffusion.

However, the male moth showed a sensitivity to a 10 ng source of gossyplure in the wind tunnel, and the antennae of the male gave an electrical response when exposed to a 500 ng source of the sex pheromone placed 50 mm away.

INSECT STERILITY

H.M. Flint and B. Wright

Mating competitiveness of labeled irradiated male pink bollworm moths in the laboratory--The results of mating competitiveness of irradiated (20 Krad) and unirradiated males indicated that P^{32} did not affect the mating frequency of the labeled males. The percentage of untreated females with labeled spermatophores was similar when either unirradiated or irradiated males bore the P^{32} label, indicating equal competitiveness of both types of males.

Production of F_1 progeny by irradiated pink bollworms--Irradiation of both parents with doses ranging from 10-17.5 Krad resulted in the production of F_1 progeny at all dose levels. Lengthening of the time from egg to adult, sex ratio distortion