

WHITEFLY

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In the field, whitefly adults overwintered on cheeseweed, Malva parviflora L.; prickly lettuce, Lactuca serriola L.; and sunflower, Helianthus annuus L. By the end of March, the whiteflies left the weed hosts and became established on squash, watermelon, and canteloupe. In mid-July, after movement into cotton plantings, whitefly adult populations were highest in cotton fields in areas where these crops had been grown. Populations in cotton in all areas increased after mid-July at an exponential rate, doubling every six to 10 days, until mid-August in most areas.

PERMETHRIN RESISTANCE IN THE TOBACCO BUDWORM

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Selection for Permethrin Resistance

Selection of tobacco budworm, Heliothis virescens, (TBW) larvae with permethrin at the LD₈₀ level produced strong tolerance toward this compound (Table 1). The response by larvae to permethrin selection progressed through a series of changes that closely resemble a population demonstrating increased resistance to a selecting agent. The LD₅₀ and LD₉₅ levels of the F₁ generation were 4.8 and 37 ug/g, respectively. These values have been typical for field-collected TBW in Arizona since 1978 with control in the field readily achieved. After 11 generations of continuous selection pressure, the LD₅₀ in the F₁₂ generation increased 37-fold compared to the LD₅₀ of the F₁.

If the permethrin-selected strain from the present study (LD₅₀=180) is compared to a standard susceptible laboratory strain (LD₅₀=0.28 in 1979) from Tucson, Arizona, the difference in LD₅₀'s for permethrin is 600-fold. But field strains have a much higher "tolerance" than laboratory strains due to a cross-resistance to other insecticides to which the laboratory strain has never been exposed.

Repression of Resistance by Chlordimeform

TBW larvae were selected with a (1:1 permethrin:-chlordimeform mixture at the LD₈₀ level during 10 of 11 generations (Table 1). By the F₁₂ generation, the degree of resistance to either permethrin or the mixture was scarcely different from levels established in the F₁.