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BOLLWORM/BUDWORM MANAGEMENT IN VIRGINIA: SPECIES RATIOS, PYRETHROID RESISTANCE LEVELS, AND EFFICACY OF FOLIAR AND PLANT-DELIVERED INSECTICIDES

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Abstract

Fifty-two Heliothine egg samples were collected from growers' cotton fields in 12 of the major cotton-growing counties in Virginia from July 22 through September 8, 2004. Each sample consisted of 24 eggs and 22 were tested for species identification using the Agdia Hel-ID egg testing kits. Averaged across all samples, 9.9% were *Heliothis virescens* and 90.1% were *Helicoverpa zea*. *H. virescens* reached its highest percentages in late July (ca. 37%) and late August (ca. 46%).

A total of 2,540 *H. zea* moths were captured from June 18 to September 13 using pheromone-baited traps located in 6 locations across the coastal plain region of Virginia. Each was tested for resistance to pyrethroids using standard cypermethrin vial testing procedures. Percent survival for the untreated control, and 5µg and 10µg cypermethrin rates was 97.0, 1.8 and 0.4 respectively. An additional 684 *H. zea* larvae were collected from corn fields during late July, reared to the adult stage, and vial tested. Percent survival was 97.9 (control), 5.6 (5µg) and 2.5 (10µg).

Four field tests were conducted to evaluate efficacy of foliar and plant-delivered insecticides against the bollworm/budworm complex. Products tested included Steward, Asana XL, Karate Z, Baythroid, Mustang Max, S-1812 35WP, V-10132, Tracer, Prolex, and Leverage at different rates and application numbers, and the varieties FM 989 RR, SG 215 BR, DP 424 BGII/RR, PHY 410R, and PHY 470WR. Peak percent boll damage in the untreated controls reached a range of 36 to 55%, depending on test location. All products tested resulted in a significant ($P<0.01$) reduction in the level of boll damage compared with the untreated controls. The overall yield range for treatments was 932 to 1461 lb lint/acre. In general, pyrethroid treatments such as Baythroid resulted in higher yields than non-pyrethroids, such as Steward and Tracer. Of the pyrethroids evaluated, Baythroid at the high rate (1.8 oz/acre at egg threshold followed by 3.2 oz/acre in 5-7 days) resulted in the highest yield and was significantly higher than all other products, with the exception of Karate (1.6 oz/acre followed by 2.56 oz/acre) and Mustang Max at the high rate (3.6 oz/acre followed by 3.6 oz/acre). Pyrethroid treatments resulted in significantly higher yields in Bollgard cotton (SG 215BR) and Bollgard II cotton (DP 424BGII/RR) compared with those same varieties left untreated. Widestrike cotton (PHY 470WR) also responded similarly to pyrethroid treatments.