LEPIDOPTERAN PESTS IN NORTHEAST LOUISIANA COTTON DURING 1997-98: A SUMMARY OF SELECTED TESTS

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Abstract

Several Lepidopteran insect pests can reduce the profitability of cotton by reducing crop yields and by increasing the cost of control with insecticides. The most common members of this pest complex include the tobacco budworm, Heliothis virescens (F.), bollworm Helicoverpa zea (Boddie), beet armyworm, Spodoptera exigua (Hubner), fall armyworm, Spodoptera exigua (J. E. Smith) and soybean looper, Pseudoplusia includens (Walker). The tobacco budworm and bollworm are the most common Lepidopteran cotton pests in Louisiana. However, beet armyworm and soybean looper infestations can cause devastating yield losses. Transgenic Bacillus thuringiensis var. kurstaki Berliner (Bt) cotton has provided satisfactory control of tobacco budworm and reduced economic injury from many of the other cotton Lepidopteran pests. However, foliar insecticides are still required to manage several of these pests on Bt and conventional cotton. Therefore, the field performance of several registered (pyrethroids, various companies; Tracer 4SC, Dow AgroSciences) and novel experimental insecticides (Pirate 3SC, American Cyanamid; Intrepid 80WP, Rohm & Haas Co.; S-1812, Valent USA Corp.; Steward 1.25SC, DuPont E. I. de Nemours; and emmamectin benzoate 0.16EC, Novartis Crop Protection) were evaluated against infestations of cotton Lepidopteran pests in Louisiana.

Tobacco budworm populations in Louisiana during 1998 were highly resistant to pyrethroids. In all tests that included a pyrethroid as a standard treatment, numbers of damaged fruiting forms and infestations of larvae were not statistically different from those in the untreated controls when the tobacco budworm was the dominate Heliothine species. In those same tests, all of the experimental insecticides at one or more rates generally provided satisfactory control that was comparable to that of Tracer. Louisiana bollworm populations are still effectively controlled with pyrethroids. None of the experimental insecticides demonstrated efficacy levels greater than that provided by the pyrethroids against bollworm, regardless of application timing and larval size. All of the experimental insecticides significantly reduced beet armyworm and soybean looper infestations below that in the control plots by 2 days after treatment. Experimental insecticide efficacy was generally comparable to that of Tracer against these insect pests. All of the novel insecticides, except for Intrepid, tested against L1 stage fall armyworm on treated leaves and flowers produced mortality levels >75 and >85%, respectively. However, none of the registered and experimental insecticides demonstrated satisfactory control of late-instar fall armyworm larvae on insecticide-treated bolls. Fall armyworm mortality (L1 and late-instar stages) in the pyrethroid treatment was similar to that produced by Tracer and the experimental insecticides. These insecticide efficacy data support the development and registration of the experimental insecticides against cotton Lepidopteran pests.

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