TRACER INSECT CONTROL—1996 EUP RESULTS

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Abstract

Tracer is a new broad-spectrum Lepidoptera control compound for cotton from DowElanco. It was applied to over 270 different sites throughout the Delta region. Most plots were over 40 acres in size and comparisons were made between Tracer and the farmer standard. As bollworms were the most common Lepidoptera pest, the standards most commonly applied were pyrethroids. Across the region, Tracer's performance was better or comparable to the standards. Tracer also allows conservation of beneficials. Data were collected on big-eyed bugs, minute pirate bugs, lady beetles, lacewings, imported fire ants, spiders, predator mites and parasitic wasps. Little or no deleterious effect was noted on these species. Data from Texas and Oklahoma show that aphids are not flared after application of Tracer. Finally, beet armyworm efficacy was examined under both threshold and outbreak situations. Across all locations Tracer was comparable to the commercial standard. In conclusion, Tracer was validated in large scale trials throughout the south, providing broad spectrum worm control with conservation of beneficials. These properties, combined with the novel mode of action, make Tracer an excellent choice for resistance management.

Introduction

Tracer is a new broad-spectrum Lepidoptera control compound for cotton. After several years of small plot field testing, it was tested throughout the cotton growing region in large scale EUP plots during 1996. Data were also collected from University and field trials concerning beneficial conservation.

Discussion

The 1996 large-plot EUP trials were designed to test against multiple species of Lepidopterous pests. However, as bollworm was the only pest Lepidoptera in many areas, the reality was that 95% of the trials were completed against this pest. Sixty-five percent of the trials were by aerial application. Across all of the trials, insect control was equivalent or superior to the standards used against cotton bollworm, budworm, armyworms, and loopers. Figure 1 shows Tracer sales EUP plot acreage by state. Most plots were 40 acres in size. Aerial application volumes ranged from 2-5 GPA while ground volume ranged from 5-20 GPA. A wide array of standards were chosen for comparison by the growers. Since it was a bollworm year, the majority of commercial standards used by the grower were pyrethroids or pyrethoid mixtures. In some areas, there simply was not enough insect pressure to warrant a spray. Figure 2 shows the results from all Delta trials. Tracer was numerically the same in pre-application eggs and pre-application larvae in terminals. After application, Tracer numerically outperformed the standard in larvae in terminals and damaged squares. Results from the southwest plots (Figure 3) show the Tracer plots had more larvae in terminals compared to the standards. However, this difference in Tracer plots was reduced in regards to damaged squares. This difference could reflect the fact that when Tracer counts are made before 4 days after application, worms that are no longer feeding may still be counted as "live". In the southeast (Figure 4), the Tracer plots started with slightly more larvae in the terminal, but after application the Tracer plots had fewer larvae compared to the standards.

A further objective for the 1996 field season was to examine the relationship between Tracer and beneficials. Specifically, we wanted to demonstrate tolerance of beneficial insects to Tracer relative to the standards and to measure the value of beneficials in a Tracer cotton pest management program. Figure 5 shows that Tracer is softer on beneficials than the chemical standards (Pirate, Decis, Karate, and Orthene). The data were collected on Big eyed bugs, Minute Pirate Bug, Lady Beetles, and Lacewings. In all cases Tracer conserved a much larger proportion of the beneficials. Most would agree that conserving beneficials is a good thing, but what real value does it bring to the grower? In the high Plains area, aphid flaring is a great concern and is one of the primary reasons that bollworm economic thresholds are set so high. However, since Tracer does not reduce beneficials, aphids were not flared after these applications. In another example of beneficial conservation, samples were made of *Cotesia* and *Trichogramma* parasitoids. Both parasitize Lepidoptera in the field. If they occur in high enough numbers, they can be very effective in reducing the overall populations of bollworms/budworms. If these parasitoids (and other Hymenoptera) come in direct contact with the spray there can be mortality. Once the spray is dry, however, they are no longer susceptible. In comparison to Decis and an untreated check, Tracer was quite comparable to the check, but conserved higher numbers than the standard.

Although 95% of the trials did go out on bollworm, several applications were made on beet armyworm. The examinations were made on threshold and outbreak populations. Fields were selected for known beet armyworm activity. In the outbreak scenario, "worse case" situations were desired with mixed ages and large numbers. Eight locations with threshold populations were sprayed with Tracer (2 oz) and Pirate (6 oz). Numerically there was some fluctuation between the two compounds, but across

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the board they were quite comparable. In outbreak situations at four locations Tracer (3 oz) was again very favorable to Pirate (8 oz). For beet armyworm control at threshold levels, a rate range of 2.2-2.8 oz would be recommended depending on the number of worms and the growth stage of the cotton. For outbreak situations with mixed populations, past results have shown that two applications at lower rates would be more effective than a single higher rate.

Summary

The Tracer 1996 EUP season was, therefore, successful in generating useful data on multiple Lepidoptera species. It was shown to be effective as an aerial application. When insecticides for plant bugs or boll weevil control were mixed with Tracer, no compatibility problems were noted. In summary, Tracer provides broad spectrum worm control while conserving beneficials. With its unique mode of action, Tracer offers a valuable tool for resistance management within cotton agriculture. Further, with its excellent toxicological profile, it is a good fit in most areas with environmental concerns.

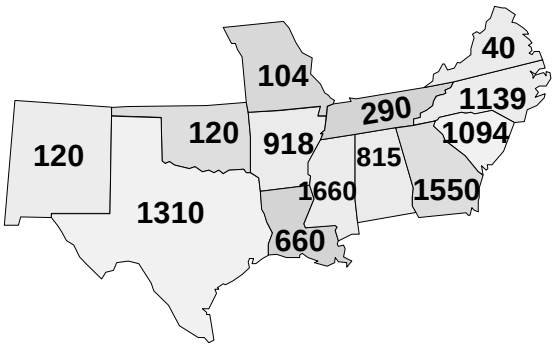

Figure 1: Tracer* Sales EUP Plot Acreage by State

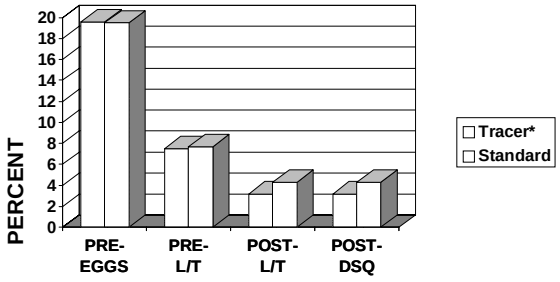

Figure 2: Results All Delta Trials (n =176)

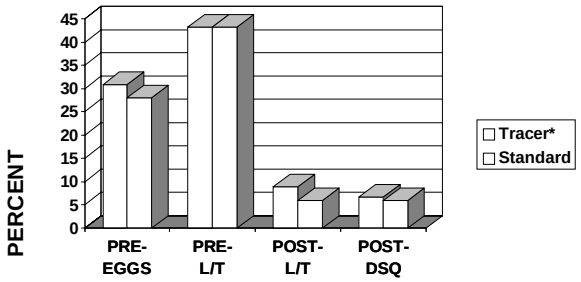

Figure 3: Results All TX, OK, & N.M. Trials (n=35)

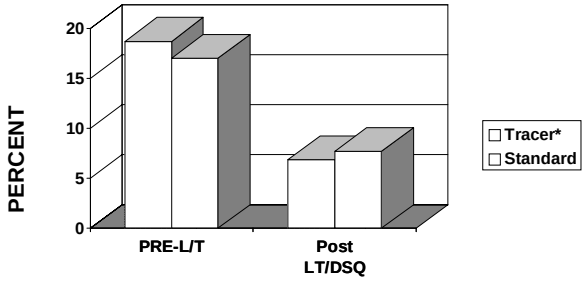

Figure 4: Results GA & S. AL (n=92)

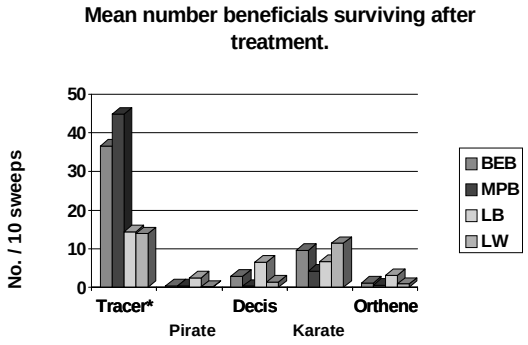

Figure 5: Beneficial Arthropod Conservation

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