DYNE-AMIC WITH TRACER FOR COTTON INSECT CONTROL

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Abstract

Traditionally, adjuvants have been added to herbicides to improve coverage, deposition, penetration, etc. Adjuvants are not as commonly recommended for use with insecticides, although most insecticides require adequate coverage and deposition to be effective. Research by Dow AgroSciences in 1997 with adjuvants added to Tracer resulted in improved canopy penetration and number of droplets per sq. cm. In 1998, Helena Chemical Company evaluated the adjuvant Dyne-Amic with Tracer for efficacy on bud/bollworms in cotton. Dyne-Amic provided performance enhancement when applied in sub-optimal conditions (low rate of Tracer).

Introduction

As cotton production costs increase and profit margins decrease, it is more important than ever to make each dollar invested in the production of a cotton crop return as much as possible. Management of the cotton plant to produce lint as quickly and uniformly as possible is a never-ending task. It is of utmost importance to protect the fruit from insect damage. The use of insecticides in a timely manner can improve the chance of reaching the most economical yield possible. To get the most from an insecticide, adequate coverage and deposition are required. When less than optimal conditions are present, the use of an adjuvant could provide the edge needed to get the efficacy expected from the insecticide.

Discussion

Traditionally, adjuvants have been added to herbicides to improve coverage, deposition, penetration, etc. Adjuvants are not as commonly recommended for use with insecticides, although most insecticides require adequate coverage and deposition to be effective. Use of low carrier volumes also contribute to coverage and deposition problems which adjuvants address. Dow AgroSciences recognized these needs with Tracer (spinosad) and began research in 1997 to evaluate the effect of adjuvants on uniformity of coverage and enhanced deposition.

Redding et. al., (1998) reported the adjuvant Dyne-Amic provided significantly more drops per square cm and higher percent area covered for top and mid positions combined and for top canopy positions than the other adjuvant systems when applied with TX6 nozzles. Figure 1 shows the results from the water sensitive cards placed in the top canopy.

In 1998, Helena Chemical Company began field studies evaluating the adjuvant Dyne-Amic with Tracer for efficacy on bud/bollworms in cotton. Replicated small plot studies were initiated in NC, SC, GA, AL (2), AR (2), MS, LA, & TX with private cooperators. Treatments included an untreated control, Tracer @ 0.045 lb ai/A alone and with Dyne-Amic @ 0.5%v/v and Tracer @ 0.089 lb ai/A alone. The protocol requested that applications be made using a hollowcone nozzle (TX6) at 60 psi and 5 GPA "if possible". Various combinations of nozzles, pressure, and GPA resulted. Evaluations were made in the top of the canopy of the cotton plants.

In Tillar, AR, one application was made and evaluations made at 3, 5, & 7 days after the treatment (Figure 2). The low rate of Tracer had just over 40% control at 3 DAT and improved to around 70% at 5 DAT. At 7 DAT, control was beginning to weaken. At the high rate, control was over 80% during the 7 days evaluated. The addition of Dyne-Amic to the low rate of Tracer resulted in improved control at the 3 DAT evaluation (80%) and with some improvements at 5 and 7 DAT. In this study, the TX6 nozzle was used at 36 psi delivering 5 GPA.

Figure 3 shows the results from the study in Washington, LA. At 5 DAT, the addition of Dyne-Amic to the low rate of Tracer resulted in control equal to the high rate of Tracer alone. TX5 nozzle was used in this study at 62 psi delivering 8.7 GPA.

In Chula, GA, two applications were made at 7 day intervals. At 7 days after the 2nd application, the Dyne-Amic plus Tracer at the low rate resulted in improved control compared to the Tracer alone at the low rate (Figure 4). Flat Fan 8001.5R nozzle tips at 39 psi delivering 10 GPA were used in this study.

Evaluations five days after one application in Raymondville, TX showed control of over 80% with the addition of Dyne-Amic to the low rate of Tracer. Tracer alone gave just over 70% for the low rate and over 90% for the high rate (Figure 5). Here, TX3 nozzles at 60 psi delivering 5.3 GPA was used.

At Elko, SC, evaluations were expressed as a summary of all evaluations (3, 5, & 7 DAT after each of 3 applications). Again the Dyne-Amic with Tracer at the low rate resulted in control near that of the high rate of Tracer alone (Figure 6). In this study, flat fan 8001 nozzles at 35 psi delivering 10 GPA were used.

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Summary

The addition of Dyne-Amic to the low rate of Tracer provided performance enhancement over the low rate of Tracer alone. This low rate was considered to be below the rate needed for optimal control. The different nozzles had little effect due to evaluations only being made in the upper portion of the canopy.

Additional research will include other adjuvants, nozzle combinations, and alternate carriers or combinations of carriers.

References

Redding, Kent D., Barb A. Nead-Nylander, Doug J. Porteous and Gary D. Thompson, 1998; Nozzle configuration and Adjuvant systems to Improve the Deposistion and Coverage of Spinosad Applied to Cotton; Fifth International Symposium on Adjuvants for Agrochemicals, 442-445.

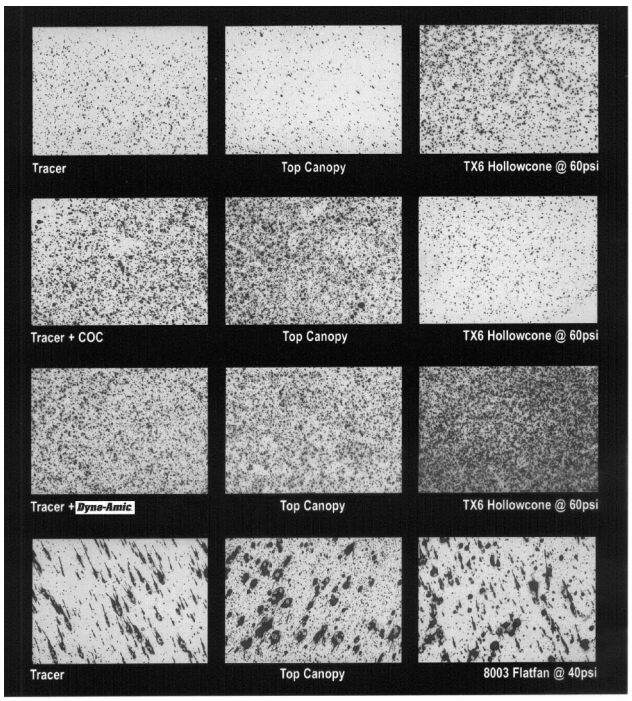

Figure 1; Water sensitive cards showing the droplets per sq cm from different adjuvants.

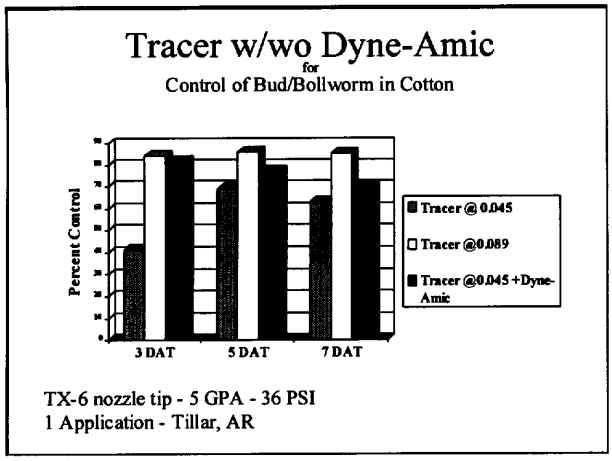

Figure 2; Cotton insect control, Tillar, AR.

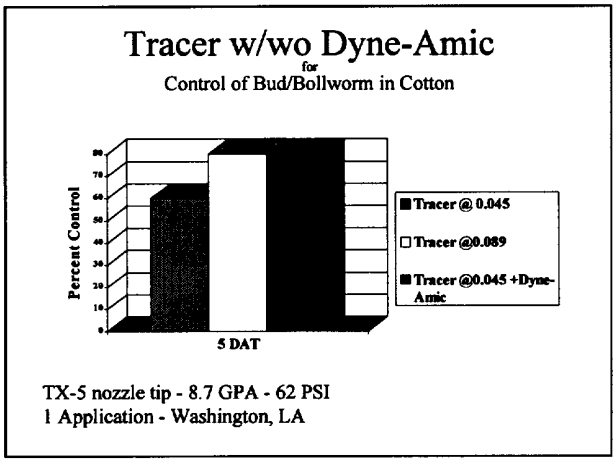

Figure 3; Cotton Insect control, Washington, LA.

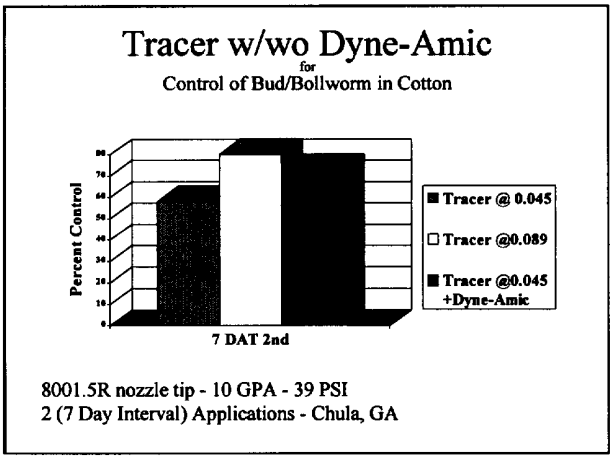

Figure 4; Cotton insect control, Chula, GA.

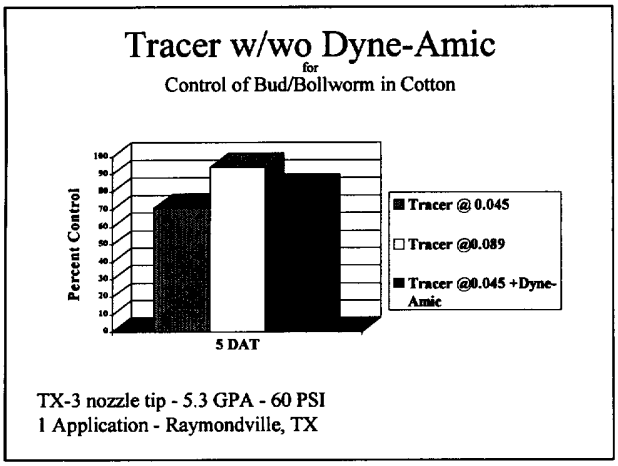

Figure 5; Cotton insect control, Raymondville, TX.

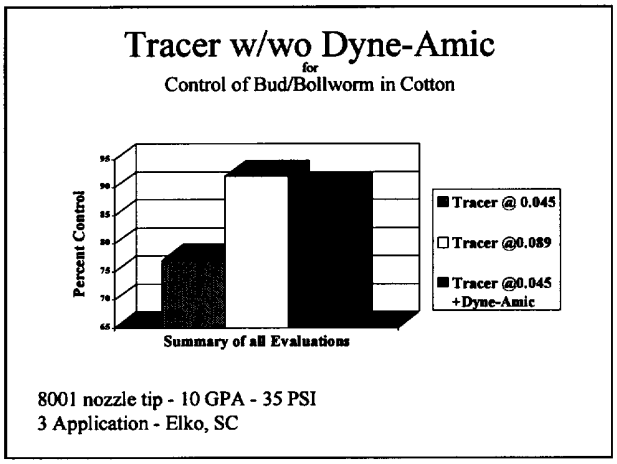

Figure 6; Cotton insect control, Elko, SC.