Efficacy of Two New Insecticides: Dupont’s Coragen 1.67 SC and Syngenta’s Durivo SC for Control of Tobacco Budworm in Flue-Cured Tobacco

Varnedore,* T. 1, Moore, J.M.* 2, Jones, D.C. 3

1 Jeff Davis County Extension Coordinator, UGA Cooperative Extension, Hazlehurst, GA. 31539
2 Agronomist - Tobacco, UGA Cooperative Extension, Tifton, GA 31793
3 Entomologist (Retired), UGA Cooperative Extension, Mt. Vernon, GA 30445

Abstract:
Two new systemic insecticides, Coragen 1.67 SC (chlorantraniliprole) and Durivo SC (thiamethoxam 17.5% + chlorantraniliprole 8.8%) applied as tray drenches in the greenhouse, as transplant water treatments in the field, and foliar treatments. Coragen and Durivo treatments were compared to several foliar insecticides for tobacco budworm [Heliotis virescens (Fabricius)] control in flue-cured tobacco on two farms in Jeff Davis County, Georgia in 2010. Both Coragen 1.67 SC and Durivo SC were controlling tobacco budworms on both the Williams and Wooten farms 45 days after the tray drench treatments and 40 days after the transplant water treatments. Tobacco budworm control was very good, with no significant differences between foliar treatments four and six days after application of the foliar treatments (Coragen 1.67 SC, Belt 4 SC, Tracer 4 SC, and Denim 1.6 EC). Using Coragen 1.67 SC or Durivo SC as a tray drench or transplant water treatments saved both tobacco growers from one to two insecticide sprays across the field.

Objective:
The objective of this work was to compare Coragen 1.6 SC and Durivo SC, applied as tray drenches in the greenhouse, as transplant water treatments and as foliar treatments, to recommended foliar insecticides for control of tobacco budworm.

Methods:
In 2010, research trials were conducted on the Kenneth Williams farm and the Jerry Wooten farm. All plots were arranged in a randomized complete block design with four replications per treatment at each farm. Each replicate consisted of 4 rows, 117 cm wide and 30.5 meters long. There were approximately 267 plants per plot (18,779 plants per hectare).

Telone II (1,3-Dichloropropene) (56 liters/ha) was applied to all plots on the Wooten farm on March 31 and to all plants on the Williams farm on April 2. Actigard 50 WG (148 ml / 50,000 cells) was applied to all plants in the greenhouse on both farms, using 37.8 liters of spray solution per 100,000 plants on April 16. Admire Pro 4.6 SC (236 ml/1,000 cells) was applied to all plants (except the Durivo treatments) in the greenhouse on both farms, using 37.8 liters of spray solution per 100,000 plants on April 16.

On the Williams farm the flue-cured tobacco plants, variety NC 196, were transplanted on April 21, using a mechanical transplanter, applying 1,216 liters of water per hectare. On the Wooten farm, the flue-cured tobacco plants, variety K 326, were transplanted on April 22, using a mechanical transplanter, applying 1,048 liters of water per hectare. On the Wooten farm the foliar insecticide treatments were made with a tractor-mounted sprayer using the same type of 3-nozzle arrangement over each row, but with 3 TX-12 nozzles. This arrangement allowed the spray to be directed right over the top of the tobacco plants. Two hundred and eighty one liters of spray solution per hectare were applied at 345 kPa on May 29 on the Williams farm with the Wooten farm applications made on June 1.

Evaluations of tobacco budworm control were made by examining every plant in each plot. Plants infested with tobacco budworms were marked with a wire stake and removed after dead tobacco budworms were recorded. The tobacco budworm infestation counts (Table 3) were made by examining 10 plants in each row of the 4 row plots for live tobacco budworms. Production practices recommended by the University of Georgia Cooperative Extension were used in the production of the tobacco on both farms.

Data were analyzed for analysis of variance and means separated, using the Waller-Duncan K-ratio t test, P< 0.05

Results:
By May 29, on the Kenneth Williams farm, (Table 1), all of the foliar treatments had reached the action threshold of 10% or more plants infested with tobacco budworms. Notice that the Coragen 1.67 SC and Durivo SC tray drench and transplant water treatment infestation levels ranged from 3.1% to 5.8%. Forty-five days after the tray drench treatments and forty days after the transplant water treatments, the Coragen 1.67 SC and Durivo SC treatments were still controlling tobacco budworms. In Table 1., four days after the foliar treatments were applied (Coragen 1.67 SC, Belt 4 SC, Tracer 4 SC, and Denim 1.6 EC) tobacco budworm control was very good, with no significant differences between foliar treatments. The percent infestation levels for tobacco budworm after tray drench and transplant water treatments, though lower than the foliar treatments, shows that these treatments were still working when untreated plots (those untreated until the foliar treatments were applied) had reached the treatment threshold. Six days after treatment (Table 2) the foliar treatments gave excellent tobacco budworm control, with no significant differences between foliar treatments. After six days, only the transplant water treatments of Coragen 1.67 SC and Durivo SC were equal to the foliar treatments.

As shown in Table 2. on the Jerry Wooten Farm on June 1, none of the treatments had reached an infestation of 10%. As is typical of many tobacco growers, when they see a few tobacco budworms, they want to spray. Therefore, we sprayed. With the low infestation of tobacco budworm, all treatments, including the tray drench and transplant water treatments, were providing excellent control with no difference between treatments. Six days after treatment (Table 2.) the foliar treatments gave good to excellent control of tobacco budworm. The Coragen 1.67 SC tray drench and transplant water treatments gave similar control of tobacco budworm.

Conclusion:
Coragen 1.67 SC and Durivo SC will control tobacco budworm infestations for at least forty-five days and even longer in some cases. The transplant water treatments of both products were more effective than the tray drench treatments. Using Coragen 1.67 SC and Durivo SC as a tray drench or transplant water treatments saved both tobacco growers from one to two insecticide sprays across the field.

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