

INSECTICIDE UPDATE FOR GEORGIA VEGETABLES AND COMMODITY COMMISSION RESEARCH

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Insecticide Update:

Insecticide registrations can change rapidly during the year and it is ultimately the end user who is responsible for following these labels. There were fairly few major changes in 2009 that will effect use decisions in 2010. Expansion of labeling for Portal (Nichino America) now allows its use on fruiting vegetables and melons, the first vegetable registrations for this active ingredient. Portal is primarily used for control of spider mites, but also has good activity against broad mites. Nichino also registered Vetica, a pre-mix insecticide, in 2009. Vetica contains both flubendiamide (active ingredient in Synapse and Belt) and buprofezin (active ingredient in Courier). This combination should provide excellent control of caterpillar pests and play a role in management of silverleaf whitefly. Two insecticides registrations were voluntarily cancelled in 2009. Existing stocks of Monitor and Disyston can be used according to package labeling, but both products will no longer be available after these stocks are exhausted. Additional issues that will be addressed in the presentation include resistance management, with emphasis on the Group 28 insecticides (Coragen, Synapse, and premixes).

Georgia Commodity Commission for Vegetable funded research in 2009:

The Georgia Commodity Commission for Vegetables funded three proposals with Dr. Sparks for insect management tests in 2009. These projects addressed management of caterpillar pests with the diamide insecticides (Coragen, Synapse and HGW86) in cole crops, efficacy of foliar insecticides for whiteflies in snap beans and cucurbits, and insecticide efficacy issues in sweet corn. The following narrative briefly summarizes results of eleven studies partially funded through these grants.

Evaluation of drench application method on efficacy and residual control of diamide insecticides for control of caterpillar pests of cole crops:

This test compared efficacy and residual control of Coragen and HGW86 applied as a greenhouse drench (application to the root ball), transplant drench (applied in transplant water), and a row drench (simulated drip chemigation) against caterpillar pests in collards. Pest pressure was extremely light early and light to moderate through most of the test. Caterpillars did not exceed one per five plants in any treatment until 21 DAT. From 34 DAT, the transplant drench and greenhouse drench generally performed better than the row drench. By 41 DAT caterpillar densities exceeded one per five plants in all but the high rate of Coragen transplant drench and the high rates of Coragen and HGW86 greenhouse drench. Trends in damaged plant counts were very similar to those for insect counts. The row drench treatments appeared to begin “playing out” as early as 22 DAT. The transplant and greenhouse drench treatments maintained less than one damaged plant per plot through 35 DAT. By 42 DAT, only the HGW86 greenhouse drench treatments had less than one damaged plant per plot. Overall, the transplant and greenhouse drenches consistently provided longer residual activity than the row drench.

The row drench treatments appeared to provide less than 3 weeks of strong residual activity; whereas, the transplant drench and greenhouse drench appeared to provide excellent control through at least 35 DAT.

Evaluation of drench timing on efficacy and residual control of caterpillar pests in cole crops:

This test evaluated the efficacy of row-drench applications (simulated drip chemigation) of Coragen and HGW86 applied at 1, 10 and 21 days after transplanting for control of caterpillar pests in collards. Pest pressure was light, thus, separation of treatments was somewhat minor, particularly in direct pest counts. Delayed applications (21 DAT) did show good efficacy at two days after application, indicating either rapid plant uptake or foliar activity. Trends in insect and damage counts support prior data indicating good residual activity of these products when applied to the root zone. The results suggest about three weeks of residual activity with the row-drench applications, which is less than has been demonstrated with transplant applications in prior work.

Evaluation of residual control of caterpillar pests of cole crops with Coragen and Synapse applied with and without surfactant:

This test compared efficacy of Coragen and Synapse against caterpillar pests in collards when applied on a 7 and 14 day schedule with and without DyneAmic. Both caterpillar counts and damage counts showed similar trends. The 7 day schedule provided better control than the 14 day schedule. Caterpillar counts and damage showed good control from 4 to 8 days after an application (irrespective of timing) and showed a numerical (and often statistical) increase at 12 or 13 days (or more) after an application. Statistical suppression of insects and damage was seen for longer periods (up to 20 days), but increases were obvious by 12 to 14 days. Addition of DyneAmic did not consistently affect efficacy or residual activity of either product.

Efficacy of foliar applied insecticides against Silverleaf whitefly in cucumbers:

This test evaluated the efficacy of selected foliar applied insecticides against silverleaf whitefly in cucumbers. All insecticides were applied twice on a seven day schedule then evaluated for efficacy. Pest pressure was heavy in this test. Brigadier and Requiem did not provide significant suppression of silverleaf whitefly. The lack of control with Brigadier is likely a result of pyrethroid resistance in the whitefly population. Coragen, Venom, Movento and HGW86 generally provided good to excellent control with few significant differences among these treatments in whitefly nymph counts, adult emergence from plants, or sooty mold ratings. Efficacy ratings did indicate better control with Movento, which is supported by numerical trends in the other data.

Efficacy of foliar applied insecticides against Silverleaf whitefly in snap bean:

This test evaluated the efficacy of selected foliar applied insecticides against silverleaf whitefly in snap beans. All insecticides were applied twice on a seven day schedule then evaluated for efficacy. Pest pressure was heavy during this test. Trends in insect counts, adult emergence from plants, and visual efficacy ratings were similar. In general, the best control was obtained with Movento followed by Knack and Courier. Knack had fairly high nymph counts and poor efficacy rating (based on presence of nymphs), however, this can be explained by its activity. It works primarily on eggs and last instar

nymphs; thus nymphs are present in direct counts and efficacy ratings (based on nymph presence) but do not emerge (thus low adult emergence). Venom also provided significant suppression (but inadequate control) of large nymphs and emerged adults and was rated as fair control on plot ratings. The lack of control with foliar neonicotinoid insecticides in this crop has been noted previously. Bifenthrin+Orthene provided no control of whiteflies and is likely a result of resistance in the population.

Efficacy of foliar applied insecticides against corn earworm in sweet corn:

Two studies evaluated the efficacy of pyrethroid insecticides applied three times per week during silking versus Radiant, Belt and Coragen applied twice per week during silking for control of corn earworm in sweet corn. Ear damage ratings indicated statistically equal control with all treatments. Trends suggest slightly improved control with the newer chemistries, despite the longer application intervals. This suggests that as newer chemistries are integrated into in management programs application intervals may be extended, making these alternatives more economically feasible. Additional research is need to delineate application frequency needs with these products

Evaluation of insecticide rotations for fall Armyworm and corn earworm:

Two studies were conducted to evaluate the efficacy of insecticide rotations applied during silking in fall grown sweet corn for management of corn earworm and fall armyworm. Insecticides were applied three times per week during silking, with three pyrethroid applications per week compared to a single alternative insecticide alternated with two pyrethroid insecticide applications per week. Alternative insecticides evaluated were Rimon, Radiant, Belt, and Coragen. Ear damage ratings indicated that the rotations with alternative chemistries provided improved ear protection as compared to the straight pyrethroid treatments. Additional research is need to delineate rotations that will provide the level of protection required in this cropping system.

Evaluation of systemic control of corn earworm with Coragen applied as a drench application in sweet corn:

Two studies were conducted to evaluate the potential control of corn earworm with drench applications of Coragen in sweet corn. Drench applications were applied at planting, at planting and 30 days after planting, and at planting and 30 and 60 days after planting. Ear damage ratings indicated no effect on ear damage by corn earworm with any of the treatments.