

428/  
1479  
2016

ANNUAL REPORT  
TO  
**NORTH CAROLINA PEANUT GROWERS ASSOCIATION, INC.**  
FOR PROJECT NC 33

## **Enhanced IPM Program Development for Insect Control in Peanut**

Insecticide development in peanuts has been very limited the past ten years despite a growing need for new products for pest control. Peanut growers have faced the loss of key insecticides, the emergence of insecticide resistance, a transition to new peanut-producing areas, and the development of new pests but have not been provided with new options for insect suppression. Currently, there are very specific needs for further insecticide evaluations to help farmers make cost effective decisions regarding insecticide use in North Carolina peanuts. This project ensures the consistency of the peanut insect control program.

This project provided increased evaluation of recently-developed products and product use beyond what the agrichemical industry has been willing to support the past ten years. Funding from this project is combined with the limited agrichemical industry funding, funding from USAID, and funding from the USDA Crop Protection and Pest Management Program. The following objectives are included in this project.

- Determine the most effective use and return on investment for imidacloprid (Admire Pro), and acephate (particularly 3 week post applications) as standard control for thrips and tomato spotted wilt virus (TSWV) at-plant management programming. Potential use of generic aldicarb will also be evaluated. Investigate role of Admire Pro in reducing later season leafhopper damage and its relationship to TSWV.
- Develop specific caterpillar control strategies for treatment thresholds, potential insecticide resistance, populations of budworms, and new cultivars plantings. Evaluate damage threshold for worms on the new cultivar Sullivan.
- Evaluate rootworm control alternatives for chlorpyrifos (Lorsban) for rootworm control and the impact on leafhoppers and spider mites.
- Develop a comprehensive insect management plan based on insect control levels, cost effectiveness, off-target effects, impact on tomato spotted wilt virus, and integration with other practices. Continuation of simplification of control recommendations initiated in 2015.

All trials were conducted in replicated plots (2 rows by 30 ft) on research stations (Lewiston, Rocky Mount, and Whiteville) and individual grower farms. Thrips management trials evaluated

planting date, twin vs. single row, variety, in-furrow and post-emergent treatment rates for thrips control, stand, emergence, tomato spotted wilt virus, and yield. Treatments included acephate, generic aldicarb, and imidacloprid (Admire Pro) products as well as cyazapyr. Rootworm control evaluations will include chlorpyrifos, bifenthrin granules and chlorantraniliprole (Prevathon) for rootworm control. Caterpillar control trials will be conducted in replicated field plots evaluating the newest chemistries against difficult to control populations (resistant earworms and harder to control tobacco budworms). Threshold levels will be monitored (through reduced doses of insecticides to establish varying population levels) in Bailey, Sullivan and Wynne cultivars to determine tolerance of newer varieties with varying canopies. Fields were sampled for species composition to help understand the level of budworm infestations. Cooperation with Virginia Tech allowed us to monitor pyrethroid resistance levels in corn earworms. In addition, data will be used to develop a new caterpillar control program based on species, resistance management and thresholds.

**RESEARCH RESULTS:** The thrips control studies indicate there are cost effective alternatives to aldicarb that provide excellent control of thrips on a consistent basis. Admire Pro (imidacloprid) and acephate provide excellent control of thrips. TSWV also remained low in all plots treated with Admire Pro and acephate. There is evidence that Admire Pro may be providing some midseason suppression leafhoppers. A second tier of treatment evaluated the additional application of acephate at three weeks post plant and this approach has consistently demonstrated a return on the investment through higher yields. Thimet (phorate) remains a good at plant thrips insecticides, but growers avoid its use due to concerns over phytotoxicity. Generic aldicarb could not be obtained in 2016, but will be included in 2017 trials.

Caterpillar control is complicated due to the presence of budworms and pyrethroid resistant earworms in North Carolina peanut fields. Our research indicates that newer chemistries (which are significantly more expensive than pyrethroids) control both budworms and pyrethroid resistant earworms. The use of pyrethroid insecticides (which are much less expensive) often provide only 60% control due to the budworms and resistant earworms. Cooperation with Virginia Tech researchers provides us with data indicating the level of resistance in earworms is often between 30-40% but varies significantly among fields. The occurrence of budworms is typically low (<20%) but also varies across fields. These research data were used to develop a revised caterpillar control program for North Carolina peanut farmers in 2017 based upon acceptable risks. Comparisons of caterpillar feeding damage was not assessed as economic populations of caterpillars did not occur in comparison plots.

Rootworm control studies determined that the new chemistry Prevathon (chlorantraniliprole) does not show any consistent efficacy against southern corn rootworms despite its effectiveness against other soil insect pests such as lesser cornstalk borer. Bifenthrin provides limited and inconsistent control of rootworms. However, the EPA ruled this spring that Lorsban (chlorpyrifos) registration will not be terminated at this time and this product (which is effective against southern corn rootworms) will be available, at least in the near future. This recent ruling does not alter the need to seek alternatives to Lorsban for the future. The weather patterns in

2016 did not permit evaluations of the impact of these treatments on leafhoppers and spider mites.

Control recommendation for 2017 and the Peanut Information 2017 publication were all updated during the winter of 2016-2017 to integrate 2016 research findings in amending pest management recommendations.

## **IMPACT STATEMENT**

The data developed over the past two years have provided the necessary information to complete an overhaul of the peanut insect control recommendations over the past two years. The new control recommendations focus on cost effectiveness and the move towards newer chemistries and move away from the “old standards” that no longer provides the return on investment. The new recommendations are in place in all extension publications for 2017. All changes in recommendations provide a more comprehensive approach to pest control and integrate newer varieties and their inherent qualities and resistance to pest pressure.