

**ANNUAL PROGRESS REPORT  
TO  
NORTH CAROLINA PEANUT GROWERS ASSOCIATION, INC.**

**TITLE:** Enhanced IPM Program Development for Insect Control in Peanut (NC-38) and Seeking New Solutions to Old Problems of Insect Control in Peanut (20-07)

**LEADER(S):** Rick Brandenburg<sup>1</sup> and David Jordan<sup>2</sup>

**DEPARTMENT(S):** Dept. of Entomology and Plant Pathology,<sup>1</sup> Dept. of Crop and Soil Sciences<sup>2</sup>

**REPORT:**

Currently, the development of new insecticide products in peanuts is very limited despite a real need for new products that provide cost effective pest control. In 2020, we had only one agrichemical industry funded insecticide efficacy trial in peanuts. North Carolina peanut growers are facing the loss of key insecticides, the emergence of insecticide resistance, and the development of new pests but have not seen new products emerge that help with this situation. This project has focused on moving the development of new products forward to ensure the consistency of the peanut insect control program.

This project provides increased evaluation of products 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, and funding from USAID. The following objectives are included in this project.

- Continue to determine the most effective use for imidacloprid (Admire Pro) as compared to aldicarb and phorate products in North Carolina for thrips control.
- Develop specific caterpillar control strategies for potential insecticide resistance and populations of budworms using the newer caterpillar insecticides. Develop a more aggressive effort to evaluate rootworm control alternatives for chlorpyrifos (Lorsban) for rootworm control. While there was a temporary reinstatement of chlorpyrifos, it is hard to imagine that chlorpyrifos will remain labelled for peanut use much longer.
- 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 the simplification of the insect control recommendations initiated in 2015 and continued through the 2021 edition.

All trials were conducted in replicated plots (4 rows by 30 ft.) on research stations (Lewiston) and individual grower farms in Martin and Bertie Counties. Thrips management trials, 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), and phorate products. Rootworm control evaluations included chlorpyrifos, bifenthrin granules and a product from Corteva. Caterpillar control trials were conducted in replicated field plots evaluating a new biological chemistry against difficult to control populations (resistant earworms and harder to control tobacco budworms).

## **RESEARCH RESULTS:**

The thrips control studies indicate that aldicarb still provides excellent control of thrips on a consistent basis. Admire Pro (imidacloprid) and Velum Total appear to be declining in performance. There are concerns that Admire Pro and Velum Total are not working as well due to low levels of resistance by thrips and we will continue to monitor resistance levels and performance.

Caterpillar control is difficult due to the presence of budworms and pyrethroid resistant earworms in North Carolina peanut fields. Our research once again indicates that newer, more expensive chemistries control both budworms and pyrethroid-resistant earworms and avoid the need for retreatment. The use of the cheaper pyrethroid insecticides may provide only 60% control due to the budworms and resistant earworms. Cooperation with Virginia Tech indicates the level of resistance in earworms was about 40% in 2020, but this varies from field to field. In 2020, we evaluated the use of a biological insecticide used as a tank mix when applying leafspot fungicides. This product has good efficacy against pyrethroid-resistant earworms and against budworms and the cost is only \$8.00 per acre. While our trials in 2020 were variable, this product does appear to have potential to be a cost effective means to minimize caterpillar populations and it does NOT cause spider mite outbreaks.

We were also able to evaluate a new (and registered) miticide called Portal for spider mite control in peanuts. There were no data on this product for the Virginia-Carolina area and we were fortunate to find a location and conduct a trial. We found this product provided EXCELLENT control of spider mites in peanuts and the cost, relative to other miticides was reasonable (approx. \$25/acre). We will continue to evaluate this product in 2021, but have already added it to our control recommendations.

Rootworm control studies continue to show that the new chemistries do not show any consistent efficacy against southern corn rootworms. Bifenthrin provides limited and inconsistent control of rootworms. We conducted studies with some new formulations and combinations with other insecticides and had fair control with these products.

The consistent funds provided by the N C Peanut Growers Assoc. has made these trials possible and allowed us to keep refining our insect management programs. Control recommendation for 2021 and the Peanut Information 2021 publication were already updated to integrate 2020 research findings in amending pest management recommendations.

## **IMPACT STATEMENT**

The results of this project in 2020 have helped us answer questions regarding thrips resistance to imidacloprid use at plant, alternative strategies to deal with insecticide resistance in caterpillars, and a new and cost-effective approach to spider mite control in peanuts. We have documented the average annual performance of the at plant insecticides and have consistent evidence on the elevated performance of aldicarb as compared to the Admire Pro and Velum Total. The performance of the latter does appear to have declined the past few years. We have provided the initial evaluation of a tank mix biological insecticide that holds promise as a cost effective approach to preventing caterpillar infestations without risking spider mite outbreaks. Finally, we were able to evaluate a new registered spider mite product that gave excellent results. This was the first collection of data on this product in the Virginia-Carolina region and it appears to be a great product to help us manage spider mites. All of this information has been added to our 2021 recommendations and will help peanut growers be more cost effective next year.