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## **Collaborative Effort: Peanut Rootworm Advisory Developed By Jennifer Curtis**

During the last five years, extension researchers, working in concert with southeastern peanut growers and the Rural Advancement Foundation International (RAFI), have developed a decision-making instrument that can reduce insecticide bills by up to 75 percent, without harming yields or quality.

The Peanut Rootworm Advisory was developed through the collaborative efforts of the Extension Services at North Carolina State University and Virginia Tech and the Pittsboro, NC-based nonprofit organization.

Southern corn rootworm is an annual soil insect found in peanuts and a host of other crops. It starts out the season in corn and then moves through a second, third and sometimes a fourth, generation in peanuts. The pierce holds in developing pods, which can act as entry points for damaging diseases.

### **Standard treatment**

The standard treatment approach is to apply the insecticide Lorsban (chlorpyrifos) as a preventative measure right before pegging. According to Knowles,

*I've seen a few fields devastated by rootworm. Since we don't have any materials to spray later in the season when we see damage, Lorsban has always seemed like pretty cheap insurance.*

The problem with applying Lorsban is that it can cause flare ups in spider mite populations, particularly in dry years. David Mayer, Martin county peanut grower notes,

*In the past, when I applied Lorsban in a dry year, I was forced to treat for spider mites. That just about doubled my insecticide bill.*

Mayer has not been alone in his frustration with the high cost of rootworm management. In the mid-1990s, he and many other growers throughout peanut growing areas in North Carolina were approached by RAFI, who had received a grant from PEW Charitable Trusts, for the purposes of finding ways to reduce pesticide use and costs. Says Knowles,

*At first I was skeptical of RAFI. I figured they were just another group trying to talk us out of using chemicals. But when we got together, I realized they were genuinely interested in helping us.*

Scott Marlow, RAFI's Peanut Project Director notes,

*Our approach has always been to listen to growers, help them identify their priority concerns and build a partnership from there. Peanut growers told us they were really concerned about the high cost of insect management so that's what we focused on first.*

RAFI organized meetings for as many as 60 peanut growers throughout the four major producing counties. When these meetings first started, growers realized they shared a mutual hunch about peanut rootworm populations. Says Knowles,

*The more we talked, the more we began to see that the rootworm is a sporadic pest. It appears to be worse in wet years and in heavier soils. But we couldn't document or confirm our suspicions.*

That's when RAFI helped coordinate grower meetings with entomologist, Rick Brandenburg and county agents from NCSU. Brandenburg had been exploring, in collaboration with entomologist Ames Herbert (VT), different methods for identifying whether or not particular fields are likely to have significant rootworm populations. A graduate student working with Herbert began to notice an association between soil type and rootworm populations. Says Herbert,

*This launched us into an investigation of various factors such as soil texture, drainage class, and planting date and their relationship to rootworm populations.*

But to verify that these were indeed causal factors, Brandenburg and Herbert needed to collect and analyze information from numerous commercial peanut fields. Brandenburg recalls,

*That's where the partnership with RAFI became invaluable. We simply did not have the capacity to organize that many farmers and collect all the necessary samples. Before we met RAFI, we had collected information from about 100 sites. After working together, that number shot up to close to 450 sites.*

The collaboration officially began in 1997 when Rick attended grower meetings and explained the linkage between their research and the growers' desire to reduce costs. RAFI then organized farmers to participate and leave a portion of one or more fields untreated with insecticides. RAFI staff scouted fields, gathered peanut samples at harvest time, and collected background information from growers about production practices and site characteristics. These samples were delivered to Brandenburg's lab to be analyzed. Brandenburg and county agents also met with growers during and after the growing season to discuss test results. Says Brandenburg,

*It was a very productive collaboration working so closely with growers throughout the research process. We developed a real rapport and their feedback was critical for improving both the content and presentation of the Advisory.*

After several years of analysis, Brandenburg and Herbert identified five major factors which are associated with rootworm damage. These include: 1) soil texture, 2) soil drainage class, 3) field history, 4) planting date, and 5) cultivar resistance. These factors are weighted and integrated into the Advisory which acts as a scoring system. Growers fill in a questionnaire, which generates a score for each field that relates to the likelihood of rootworm damage. Based on the score, the Advisory recommends whether treatment is warranted in selected fields. For example, the Advisory would give a low score, and thus recommend no treatment, to a field with sandy,

well-drained soil planted to a rootworm-resistant cultivar after the middle of May. The opposite would be true for a heavy, poorly drained soil planted early in the season.

How has the Advisory fared with growers? Says Mayer,

*I've really changed my approach to rootworm management. This past year, it was so dry that I didn't treat any of my fields with Lorsban. In fact, of the 20 or so growers in my area, I wasn't aware of any who treated. And even last year when it was much wetter, I'd say only 75 percent of the growers treated.*

This adds up to real savings. For Mayer,

*If I can avoid a Lorsban application, I save \$20 per acre. In a dry year, this also means I save \$20 per acre on a miticide application. That's a huge part of my overall spray bill. I'm not saying I never need to treat but I like being able to make an informed decision.*

And for Knowles,

*When I first started using the Advisory, I left Lorsban off my non-irrigated fields. But now I've quit using it entirely. I've only noticed slight damage but it's not enough to make it worth treating.*

Cost savings were not the only outcome of the collaboration. Notes Marlow,

*I think we all learned a lot about the benefits of working as a team. Everyone got something tangible out of it and by the end we established a working partnership that will pay off in the future.*

RAFI and the growers are now expanding their focus to include scouting methods to adapting conservation tillage methods to southeastern peanuts and finding cost effective ways to increase soil quality.

For more information about the Peanut Rootworm Advisory, contact your county agent or look online at: <http://www.isis.vt.edu/cgi-bin/scrRisk>.

For more information about the Rural Advancement Fund International and their peanut project, call 919-542-1396 or look online at <http://www.rafiusa.org>.