



# NC State Tobacco Connection

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## USING SOIL INSECTICIDES

*Hannah Burrack, Entomology*

### **Are preplant pesticides necessary?**

Soil applied insecticides have a place in tobacco pest management. Considered broadly, soil applied insecticides include neonicotinoids (Admire Pro (imidacloprid) and Platinum (thiamethoxam)) in addition to the materials labeled for pretransplant or transplant water applications. Growers are now deciding whether pretransplant applications are worth investing in. Important considerations for this decision are: 1. What soil pests are present? and 2. What materials are available for use against these pests?

Many insect pests are controlled by the systemic greenhouse applications of Admire Pro and Platinum (and generics) made by most growers. Treatments beyond neonicotinoids are probably not needed for aphids, flea beetles, and if a field has no history of wireworms. An additional soil applied treatment may be

necessary if a field has a known history of wireworms, vegetable weevils, sod webworms, or white-fringed beetle. If damage is observed in field post transplant and you are unsure what insect is responsible (or if an insect is responsible), confirm the diagnosis to aid in treatment decisions next year. None of these insects are effectively controlled after transplant, so treatment decisions must be made beforehand.

### **Available pesticides**

The available preplant or soil applied pesticides have changed in recent years. The currently registered insecticides include: Furadan (carbofuran, 4E and LFR), Lorsban (chlorpyrifos, 15G and Advanced), Mocap (ethoprop, 15G), and Capture (bifenthrin, LFR). The special local needs permit which allowed for use of Temik (allicarb) on tobacco has expired, so this material is no longer avail-

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## TRANSPLANT WATER FERTILIZERS

*Sandy Stewart and Loren Fisher, Crop Science*

The use of transplant water fertilizer receives some attention every year. This can be especially true in a cool, wet spring when producers may feel that transplanting is a little later than normal and rapid, early growth is seen as way to make up for a perceived loss of time. The use of transplant water fertilizer in North Carolina has never been viewed as critical or part of an overall recommended fertilization program.

Results from transplant water fertilizer trials in North Carolina and other tobacco-producing states have been variable. Consistent increases in yield and quality have not been demonstrated. Moreover, a hastening of maturity has also not been observed. The following points warrant consideration when deciding whether or not to use transplant water fertilizer for tobacco:

- **The addition of phosphorous (P) can often result in more rapid early-season growth.** Better early-season growth can lead to better stress tolerance,

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### Quick Tips

- Treatments beyond neonicotinoids are probably not needed for aphids, flea beetles, and if a field has no history of wireworms.
- In low pressure wireworm infestations standard applications of imidacloprid are probably sufficient to suppress damage.
- For cutworms, good post transplant scouting and use of a rescue treatment is recommended if damage approaches 10%.
- Early season growth responses to transplant water fertilizer are most often observed when as little as 5 pounds of P2O5 is applied to soils that have a high soil test P index.
- On soils with a low soil test P index, a dry fertilizer applied in a band is more effective than attempting to supply the needed P through transplant water fertilizer.

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“None of these insects are effectively controlled after transplant, so treatment decisions must be made beforehand”

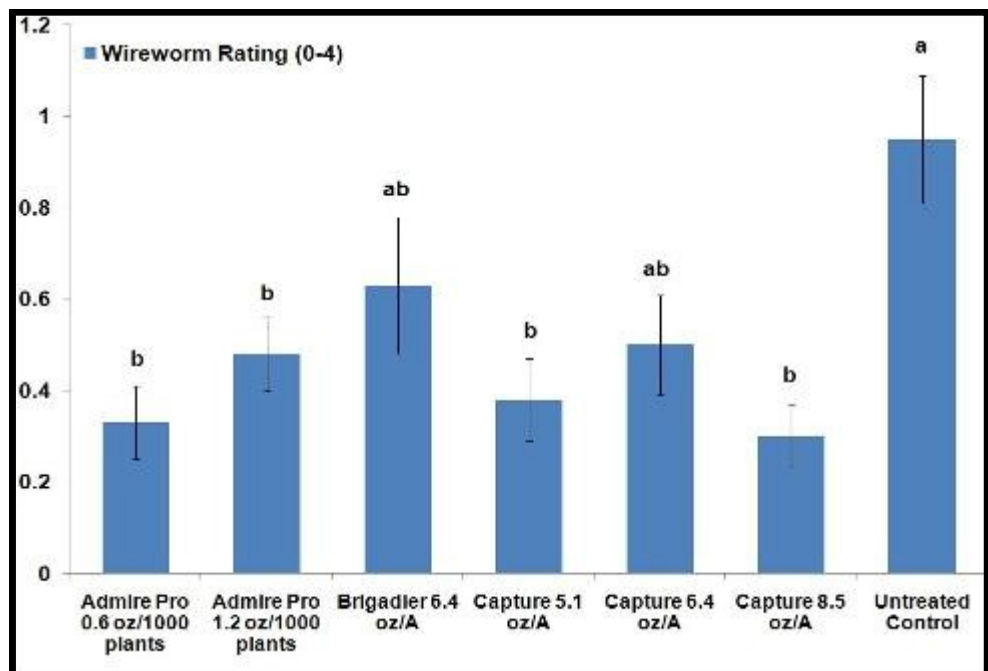
## USING SOIL INSECTICIDES (CONT'D)

able to tobacco growers. Formulation changes have resulted in rate changes for chlorpyripos on tobacco, halving the rate of AI per acre from 2lb to 1lb. We do not have good information for insect control in tobacco with this reduced rate, but it is worth noting that we also did not have an overwhelming amount of data on the previous rate either. The material selected will depend upon the insect being treated.

festated white-fringed beetles, however, it may be most practical to remove it from tobacco rotation. The good news, however, is that white-fringed beetles are flightless and spread very slowly, so they are not a wide spread problem in NC tobacco fields.

### Wireworms

In low pressure wireworm infestations (Figure 1), standard applications of imidacloprid are probably sufficient to



**Figure 1. Wireworm injury rating (0 = no damage, 1 = surface/collar feeding, 2 = small tunnels, 3 = extensive tunneling, 4 = dead plant). Values indicated by the same letter are not significantly different from each other ( $\alpha = 0.05$ ) via Tukey's HSD. This trial had very low wireworm pressure, with an average rating of 1 in the UTC. Under these conditions, Admire Pro treatments performed similarly to Capture treatments. Adapted from Burrack & Chapman (Arthropod Management Tests 2009, Vol. 34, doi: 10.4182/amt.2009.F80).**

### White-fringed beetles and vegetable weevil

There is very little data on vegetable weevil and white-fringed beetle control, but the data that we do have indicates that chlorpyripos provides some control. If a field is heavily in-

suppress damage. In fields with known, high wireworm populations, however, bifenthrin is a good choice. This is an easier material to work with than many of the alternatives and is effective against wireworms in several systems.

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## USING SOIL INSECTICIDES (CONT'D)

### Cutworms

I am concerned that our locally high cutworm populations in 2009 will encourage some growers to use preventative treatments when they may not be needed. A soil applied treatment of chlorpyrifos is limited in longevity, so even if cutworm populations move in at or near transplant, additional treatment may be required. I suggest, instead



Figure 2. Sod webworm injury on tobacco seedling.

of preplant applications for cutworm, good post transplant scouting and use of a rescue treatment (such as Warrior/Karate) promptly if damage approaches 10%.

In general, I think there are few situations where pre-plant, soil applied insecticides are required in NC tobacco. A good knowledge of field history will help narrow down these situations.



Figure 3. White-fringed beetle larvae and damage.

## TRANSPLANT WATER FERTILIZERS (CONT'D)

pest avoidance, and field uniformity; however, more rapid early-season growth from transplant water fertilizers has not been shown to translate into increased yield or quality at the end of the year.

- **Early season growth responses to transplant water fertilizer are most often observed when as little as 5 pounds of  $P_2O_5$  is applied to soils that have a high soil test P index**, which most North Carolina tobacco soils have. Although this may seem counter-intuitive, a small amount of P in the transplant water fertilizer can supply the plant's early season growth needs until the root system can explore more of the soil profile and take up P already in the soil.
- **On soils with a low soil test P index, a dry fertilizer applied in a band is more effective than attempting to supply the needed P through transplant water fertilizer.** Supplying all of the P needs in transplant water fertilizer is rarely cost effective and will likely carry more Nitrogen (N) than is needed, depending on fertilizer source.
- **Anytime fertilizer, particularly N, is applied in the transplant water, the likelihood of fertilizer salts injury is increased.**
- **Agitation is important with transplant water fertilizers because they are heavier than water and will settle.** Therefore, they are best mixed in a nurse tank before adding to a saddle tank on the tractor. When repeatedly mixed in a saddle tank, concentrations can increase over successive tanks because of settling, especially when the saddle tanks are not completely drained.
- **The addition of UAN liquid fertilizers (30%, 28%, etc), even at low rates, to transplant water will result in severe injury and transplant death.**
- Several products with little or no actual nutrient content have been promoted for use in transplant water to stimulate early growth. In most cases, replicated trials have either not been conducted or have not substantiated these claims.

# CORAGEN® LABELED FOR USE ON NC TOBACCO

*Hannah Burrack, Entomology*

Coragen® insecticide (Rynaxypyr® or chlorantraniliprole), from DuPont, has recently been registered for use in tobacco in North Carolina. Coragen is the second Group 28 (ryanodine receptor inhibitor) insecticide to be registered for use in tobacco, with Belt™ (fluebendiamide, Bayer CropScience) being the first registered in the group. Both Coragen® and Belt™ act on insect muscles, resulting in feeding cessation and death.

Because Coragen®'s registration timing was unsure when the 2010 Flue Cured Tobacco Guide was produced, this article provides information on this new insecticide in comparison to our standards. You can find the supplemental label for Coragen® on tobacco: [http://www2.dupont.com/Production\\_Agriculture/en\\_US/label\\_msds\\_info/labels/R1090.pdf](http://www2.dupont.com/Production_Agriculture/en_US/label_msds_info/labels/R1090.pdf).

Two application methods are labeled, foliar and transplant water applications, and the rate range is 3.5 to 7.5 fl oz/acre. We have compared a range of foliar application rates of Coragen® to Tracer (spinosad, Dow AgroSciences) and Belt™, and found them to be as effective to these materials. DuPont is recommending a rate of 5 fl oz/acre for foliar applications of Coragen®, and at this rate, this product should be at least as effective as Tracer or Belt™. We anticipate a greater degree of residual control with both Belt™ and Coragen® than we currently see with Tracer or Orthene (acephate), two of our standard foliar insecticides. We conducted longevity trials on these products in 2009, but we need at least one more year of data before we can draw conclusions.

For the time being, I recommend good post treatment scouting with the anticipation that additional treatments may not be required. Good scouting is always of benefit, because in some years, no budworm treatments may be needed, and in 2009, several locations did not need to treat for hornworms because populations were late and smaller than normal. Scouting will also allow to maximize the potential savings of these products by reducing the total number of treatments if continued suppression is observed.

For growers interested in transplant water applications, DuPont is recommending 7 fl oz/acre in a minimum of 100 gallons per acre, or 2 fl oz/plant. Water volume is important, and I would not recommend using any less than 100 gal/acre for a transplant water application of this or other insecticides. Not only are smaller volumes

much more difficult to calibrate, they may not adequately wet the root zone. We have included transplant water treatments of the active ingredient in Coragen® in research trials, but at a lower rate than 7 fl oz/acre. In these trials, we saw very good control with transplant applications, but again, the data are limited.

I have gotten several questions from agents and growers about transplant water tank mixes with fertilizer and other insecticides (such as Admire Pro or Platinum). I do not anticipate issues with combining Coragen® and Admire Pro or Platinum. We have combined these materials in research trials and have observed no adverse plant effects. We have not, however, combined Coragen® with a fertilizer tank mix, so although I also do not anticipate an issue with this application method, I cannot speak from first-hand experience. No matter how many research methods we come up with, growers always devise new ways to use a material, so we will be exploring some of these questions in 2010 at both grower and research station locations.

Do not hesitate to contact me with additional questions. It is much more interesting to have new materials to learn about than the opposite scenario, and it is encouraging that 2 new active ingredients have been labeled on tobacco in the last 2 years. Signs point to there being more to come over the next several years.



**Tobacco budworm larvae**

## Extension Personnel Working With Flue-Cured Tobacco

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Bertie	Jacob Searcy	252-794-5317
Bladen	Ryan Harrelson	910-862-4591
Brunswick	Al Hight	910-253-2610
Caldwell	Seth Nagy	828-757-1290
Carteret	Ray Harris	252-728-8421
Caswell	Joey Knight	336-694-4158
Chatham	Sam Groce	919-542-8202
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Davie	Phil Rucker	336-753-6100
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Stokes	Tim Hambrick	336-593-8179
Surry	JoAnna Radford	336-401-8025
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Wake	Brent Henry	919-250-1107
Warren	Paul McKenzie	252-257-3640
Washington	Lance Grimes	252-793-2163
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