

INSECTICIDE RECOMMENDATIONS FOR TOBACCO BEDS AND FIELDS- 2004 ENT-15

Prepared by Lee Townsend, Extension Entomologist

These recommendations were prepared as a guide and are not intended to replace the manufacturer's label. Before buying and using an insecticide, READ THE ENTIRE LABEL CAREFULLY. Pay special attention to the sections of the label that contain directions for mixing, application, and safety. Products in *bold italics* are *Restricted Use* insecticides.

Float Plant Pests (Outdoor or Greenhouse)

Acephate or Bracket 75 SP (1 tablespoon) or Orthene (acephate) 97 SP (3/4 tablespoon) can be used in 3 gallons of water per 1,000 sq ft of float tray area to control **aphids, cutworms, and flea beetles**. The sprays also should provide some control of adult **fungus gnats and shore flies**. These small black gnats can be found crawling over plants and growth media in the trays. Apply to ensure even coverage. Use of higher than labeled rates may burn the foliage. NOTE: Float bed water should be disposed of in the transplanted field through the transplant water or through foliar spray.

Slugs

Deadline M-P slug bait (metaldehyde) can be used in greenhouses or lathouses where tobacco transplants are grown to reduce slug infestations. Apply at the rate of 1 lb of pellets per 1,100 to 3,600 sq ft. This bait is most effective when slugs do not have access to water so it may be less effective in greenhouses.

Conventional Beds

Pre-seeding Treatments

Di-Syston 15%G (disulfoton) can be applied at the rate of 1 oz per 100 sq ft of bed area (3/5 lb per 9' bed, 3/4 lb per 12' bed) for flea beetle control. Broadcast evenly and incorporate before seeding. *Di-Syston* is highly toxic.

Postseeding Treatments (Rates for 100' of 9'-wide or 12'-wide beds)

INSECTICIDE	RATE	COMMENTS
Sprays Acephate, Bracket, Orthene 75 S Orthene 97	1 Tbs/ gal/ 1,000 sq ft of bed 3/4 Tbs per gal	Aphids, Cutworms, Flea beetles
Granules <i>Di-Syston 15G</i>	1 oz per 100 sq ft of bed area	Flea beetles

Wear protective clothing and gloves during mixing and application.

Deadline M-P (metaldehyde) bait may be used for **slug** control. Damage is most likely on beds adjacent to clover or alfalfa fields. Follow label instructions on rates. Apply in the evening after watering and every 3 to 4 weeks as necessary. Presence of slugs is often indicated by slime trails they leave on the leaf surface. A band of slaked or hydrated lime along margins may reduce slug movement into the bed.

Green June beetle grubs occasionally can cause a problem by uprooting plants in the bed. A soil drench with Sevin or Thiodan can be used to treat the affected areas. See the product label for rates.

Pre-Transplant Soil Applications for Tobacco Fields

Soil insecticides used for **cutworm** or **wireworm** control should be applied at least one to two weeks before transplant and immediately disked into the top 2" to 4" of soil. A soil insecticide should be used when going into established sods. Liquid formulations are more toxic than granular formulations.

Pre-plant applications for Cutworms and Wireworms

Insecticide	Rate/Acre	Comment
Lorsban 15%G <i>Lorsban 4E</i> (chlorpyrifos)	13.5 to 20 lbs 2 to 3 qts	
<i>Mocap 10% G</i> <i>Mocap 15% G</i> <i>Mocap 6 EC</i> (ethoprop)	20 lbs 13 lbs 1-1/3 qts	Wireworms only for G Wireworms only for G From 2 weeks before transplant up to transplant
<i>Di-Syston 15% G</i>	27 lbs	Wireworms only

Aphids and Flea Beetles

<i>Di-Syston 15% G</i> <i>Di-Syston 8EC</i>	13.5 to 26.7 lbs 4 pts	
<i>Furadan 4F</i> *(carbofuran)	1 gallon	Flea beetles only

Broadcast and incorporate spray or granules according to label instructions immediately before transplant.

Transplant Treatments

Tray Drench Applications

Admire 2F (imidacloprid) should be mixed with water and applied at the rate of 1 fl. oz. per 1,000 plants for aphid and flea beetle control or 1.4 to 2.8 fl oz per 1,000 plants for wireworm control. Agitate or mix the spray frequently to keep it from settling in the tank. The plants should be watered from above after application to wash the insecticide from the foliage into the potting media. Failure to wash Admire from the foliage may result in reduced control. Adverse growing conditions may cause a delay in the uptake of Admire into the plants and a delay in control.

Platinum SC (thiamethoxam) should be mixed with water at the rate of 0.8 to 1.3 fl oz /1,000 plants to control aphids, flea beetles, Japanese beetles, or 1.3 fl oz /1,000 plants for wireworms. Thoroughly water the transplants, then apply the insecticide evenly. Immediately after the treatment, spray the transplants with enough water to wash the insecticide off the foliage and into the soil mix. Set transplants into the field within 2 days. Workers handling transplants must wear waterproof gloves. Do not apply Platinum to the float bed water.

Transplant Water Applications

Admire 2 F- For application equipment which has minimal agitation, such as tobacco transplanters, give proper attention to mixing. Keep the Admire - water suspension agitated or mix regularly to avoid settling in the transplant tank. Adverse growing conditions may cause a delay in the uptake of Admire into the plants and a delay in control.

Premix **Orthene 97** in water to form a slurry before putting it into the transplant water tank. If premixing is not done, allow time for the product to dissolve. Using more than the label rate may result in some phytotoxicity to the plants. Orthene 97 has a 2ee label for a transplant water tank mix with Admire. See the label for more information.

Transplant water applications

Admire 2F (imidacloprid)	1 fl oz / 1,000 plants 1.4 to 2.8 fl oz / 1,000 plants	aphids, flea beetles wireworms
Orthene 97 Acephate, Bracket, Orthene 75S	3/4 lb per acre 1 lb per acre	flea beetles, cutworms
Platinum 2 SC (thiomethoxam)	0.8 to 1.3 fl oz / 1,000 plants 1.3 fl oz / 1,000 plants	aphids, flea beetles, Japanese beetles wireworms

Foliar Treatments for Tobacco Fields

The treatment guidelines listed on the next page allow proper timing of insecticide applications. Weekly field scouting is necessary to collect the information needed to use them. Check at least 100 plants per field - 10 groups of ten or 5 groups of twenty up to 5 acres. Add two locations for each additional 5 acres of field size. Pick your locations randomly. Examine the plants carefully for damage or live insects. Record your counts, calculate the average, and compare them to the table values. Keep these counts so that you can look for trends in insect numbers during the season.

Treatment Guidelines for Key Tobacco Insect Pests

Insect	Treatment Guidelines
Aphids	Colonies of 30 or more aphids on at least 1 upper leaf of 20% of the plants from 3 weeks after transplant until topping.
Budworms	5 or more budworms per 50 plants from 3 weeks after transplant plants reach button stage.
Cutworms	5 or more freshly cut plants per 100 plants checked.
Flea Beetles	3+ beetles per plant on new transplants, 10+ beetles on 2 to 4 wk old plants, 60+ beetles on plants more than 4 weeks old.
Grasshoppers	Grasshoppers active along field margins or 10+ grasshoppers per 50 plants.
Hornworms	5 or more hornworms (1" or longer) per 50 plants from 3 weeks after transplant until harvest. Do not count hornworms with white cocoons on their backs.

Tobacco aphids may infest tobacco plant beds but populations are usually highest following the flight of winged aphids into fields in mid- to late June. Look on the undersides of mid and upper level leaves, especially in shaded areas of the field. Thorough spray coverage is essential to obtain satisfactory aphid control.

Insecticide	Rate/Acre Small plants	Rate/Acre Large plants	Harvest Interval (days)
Acephate, Bracket, Orthene 75 SP Orthene 97	2/3 lb 2/3 lb 3/4 lb	1 lb 2/3 lb 3/4 lb	3
Fulfill 50 WDG (pymetrozine)	2.75 oz	2.75 oz	14
Golden Leaf Tobacco Spray, Phaser 3E, Thiodan 3E (endosulfan)	2/3 qt	1-1/3 qt	5*
Lannate 90 SP (methomyl)	½ lb	½ lb	14
Provado 1.6 F (imidacloprid)	2 to 4 fl oz	2 to 4 fl oz	14

* Application of products containing endosulfan within 28 days of harvest can lead to increased residue on the on the crop. Do not spray in the heat of the day.

Budworm and Hornworm Control

Budworms feed in the buds of young tobacco plants causing rounded holes in developing leaves. Tobacco plants may be topped by these pests resulting in early sucker growth. Examine the buds for feeding damage and the small green to black worms. Treat if there are **5** or more live budworms per **50** plants. Do not count the plant as infested if you cannot find a budworm.

The potential for budworm problems is greatest on early-set tobacco. *Bacillus thuringiensis* baits have given excellent control of this insect in flue-cured areas but there are no efficient ways to apply baits to large acreages. Bt sprays are most effective if applied when larvae are small and feeding actively. Use high rates for heavy populations.

Hornworms eat large amounts of tobacco foliage. They first appear in June and are active throughout the remainder of the growing season. Examine the entire plant for signs of damage and live worms. Treat if there are **5** or more hornworms (1" or longer) per **50** plants. Treatments applied before most worms exceed 1-1/2 inches in length will greatly reduce yield loss. Hornworms with white egg-like cocoons on their back are parasitized by a small wasp. These worms will not contribute to yield loss. By late August or early September as much as 90% of the hornworm population may be parasitized. Check fields for hornworms about one week before harvest. Apply a short residue insecticide if necessary to prevent taking significant numbers of this pest to the barn. There are no treatments to control hornworms effectively on housed tobacco.

Budworms and Hornworms

Insecticide	Budworms	Hornworms	Harvest Interval (Days)
Acephate, Bracket, Orthene 75 SP Orthene 97	2/3 lb 3/4 lb	1 lb ½ lb	3
Agree WG (3.8% Bt aizawai)	1 to 2 lbs	1 to 2 lbs	0
Biobit HP (6.4% Bt kurstaki)	½ to 1 lb	1/4 to ½ lb	0
Denim 0.16 EC emamectin benzoate	8 to 12 fl oz	8 to 12 fl oz	14
Dipel 10 G (Bt kurstaki)	5 to 10 lbs		0
Dipel DF (10% Bt kurstaki)	½ to 1 lb	½ to 1 lb	0
Dipel ES (3.5% Bt kurstaki)	1 to 2 pts	½ to 1 pts	0
Golden Leaf Tobacco Spray, Phaser 3E or Thiodan 3E	2/3 to 1-1/3 qt	2/3 to 1-1/3 qt	5*
Javelin WG (7.5% Bt kurstaki)	1/8 to 1-1/4 lb	1/8 to 1-1/4 lb	Hornworm only 0
Lannate SP	½ lb	½ lb	14
Lepinox WDG (15% Bt kurstaki)	1 to 2 lbs	1 to 2 lbs	0
Sevin 80S	1-1/4 lbs	2-1/2 lbs	0
Tracer 4SC* (spinosid A and D)	1.4 to 2.9 fl oz*	1.4 to 2.9 fl oz*	3
Warrior 1 CS (lambda cyhalothrin)	1.92 to 3.84 fl oz	1.92 to 3.84 fl oz	40
XenTari DF (10.3% Bt aizawai)	½ to 2 lb	½ to 2 lb	0

Flea beetles cause "shot hole" feeding damage to tobacco leaves. This injury can add to transplant stress and slow plant establishment. Treat if there are 3 or more beetles per plant during the first 2 weeks after transplant. Established plants rarely need protection from this insect.

Insecticide	Rate/Acre Small plants	Rate/Acre Large plants	Harvest Interval (days)
Acephate, Bracket Orthene 75 SP Orthene 97	2/3 lb ½ lb	1 lb ½ lb	3
Golden Leaf Tobacco Spray, Phaser 3 E, Thiodan 3E	2/3 qt	1-1/3 qt	5*
Lannate 90 SP	½ lb	½ lb	14
Provado 1.6 F	4 fl oz	4 fl oz	14
Sevin 80S	1-1/4 lbs	2-1/2 lbs	0
Warrior 1 CS (lambda cyhalothrin)	1.92 to 3.84 fl oz	1.92 to 3.84 fl oz	40

* Application of products containing endosulfan within 28 days of harvest can lead to increased residue on the on the crop. Do not spray in the heat of the day.

Occasional Pests

Cutworms may be present in tobacco fields because of early season weed growth. Often these insects are relatively large by the time tobacco is set in the field. Rescue treatments are generally less effective when damage is confined to the underground portion of the plant. Orthene 97 at 3/4 lb (Orthene 75S at 1 lb) or **Warrior 1 CS** at 1.92 to 3.84 fl oz per acre can be used as a broadcast spray. Proxol 80S, applied in a 12" band over the row can be used as a rescue treatment.

Grasshoppers usually remain in forage fields and fence rows. Under dry conditions they may move from these areas into tobacco late in the growing season. Treatment of field borders to prevent mass migration into the field should be considered. When selecting an insecticide for this use consider the possibility of residues and time from application to cutting or grazing of hay.

Insecticide	Rate/Acre Small plants	Rate/Acre Large plants	Harvest Interval (days)
Acephate, Bracket, Orthene 75 SP Orthene 97	1/3 lb 1/4 to ½ lb	2/3 lb 1/4 to ½ lb	3
Golden Leaf Tobacco Spray, Phaser 3E, Thiodan 3E	2/3 qt	1-1/3 qt	5*
Lannate 90 SP	½ lb	½ lb	14
Warrior 1 CS (lambda cyhalothrin)	1.92 to 3.84 fl oz	1.92 to 3.84 fl oz	40

Japanese beetles and **green June beetles** can be found on tobacco. Japanese beetles occasionally feed on the plants but green June beetles do not. The damage usually appears worse than it actually is. Sevin 80 S may be used for control at 1-1/4 to 2-1/2 lbs /a if Japanese beetles are causing significant damage. Orthene 97 and **Warrior 1 CS** are labeled for Japanese beetle control. Provado 1.6 F can be used at the rate of 4 fl oz per acre.

Stink bugs can feed on tobacco and cause the wilting or collapse of individual leaves which can become scalded. Generally the symptoms do not show until a day or two after feeding. The damage usually appears worse than it actually is. Acephate, Bracket, Orthene 75S and Orthene 97, several products containing endosulfan (Phaser and Thiodan) and **Warrior 1 CS** are labeled for stink bug control. Treatment is not justified unless stink bugs are found in the field.

Restricted Entry Intervals for Insecticides Labeled for Tobacco (hours)

Acephate, Bracket, Orthene	24	Bt Products	4
Denim	48	Fulfill	12
Golden Leaf/Phaser/Thiodan	24	Lannate	48
Sevin	12	Tracer	4
Warrior	24		