

ENT-15

INSECTICIDE RECOMMENDATIONS FOR TOBACCO - 2017

Lee Townsend, Extension Entomologist

This publication contains only a portion of the important information included on pesticide labels. Always read the product label carefully before buying and using any pesticide. Also, pesticide labels and registrations may change at any time. Any statements in this publication that disagree with the label must be disregarded. Many insecticides are sold under brand names that are not listed in this publication. No endorsement is intended for products mentioned, nor is criticism meant for products not listed. Products in ***bold italics*** are ***Restricted Use*** insecticides.

Insecticides have been placed into numbered Insecticide Mode of Action groups (MOA) based on how they work against insects. Continual use of products from a single group against a pest species can lead to reduced control (resistance) by all products in the group. To minimize control failures due to insecticide resistance, do not apply insecticides within the same group repeatedly. Rotate among groups during the growing season.

Insecticides for Float Plant Pests (Outdoor or Greenhouse)

(Acephate) Orthene 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**. Sprays also should provide some control of adult **fungus gnats and shore flies**, small black gnats that 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 as a foliar spray.

Deadline M-P slug bait (metaldehyde) or Sluggo (iron phosphate) can be used in greenhouses where tobacco transplants are grown to reduce **slug** infestations. This bait is most effective when slugs do not have access to water so it may be less effective in greenhouses.

Pre-Transplant Soil Applications for Tobacco Fields

Pre-plant Insecticides	Labeled Pests
Bifenthrin- <i>Brigade EC</i>	Cutworms, White grubs, Wireworms
Bifenthrin + Imidacloprid - <i>Capture LFR</i>	
Chlorpyrifos - <i>Lorsban 4E</i> and generics	Cutworms, Wireworms

Apply soil insecticides used for **cutworm** or **wireworm** control at least 24 to 48 hours before transplant and immediately disk into the top 2" to 4" of soil. Use a soil insecticide when going into established sod where the risk of wireworm damage is high.

Transplant - Tray Drench Applications

Admire 2F and **Platinum** are systemic insecticides labeled for application as a drench to float trays or flats prior to transplant. Most rates appear in fluid ounces per 1,000 plants. Admire can be applied in the transplant water at the rate of 0.6 to 1.2 fl oz per 1,000 plants to suppress the symptoms of **tomato spotted wilt (TSWV)**. Agitate or mix the insecticide frequently to keep it from settling in the tank. Water plants from above after application to wash the insecticide from the foliage into the potting soil-less media. *Failure to wash the insecticide from the foliage may result in reduced control. Adverse growing conditions may cause a delay in the uptake of the product into the plants and delay control.*

Insecticide Tray Drench	MOA	Comment
Acephate - Orthene 97 and generics	1B	Flea beetles, Cutworms
Imidacloprid - Admire Pro 4F and generics	4A	Aphids, flea beetles, Wireworms
Thiamethoxam - Platinum 2 SC	4A	Aphids, Flea beetles, Japanese beetles, Wireworms

Transplant Water Applications

Insecticide Transplant Water	Comment
Admire Pro 4F and generics (4a)	Aphids, flea beetles, Wireworms
<i>Brigade 2 EC, Capture LFR</i>	Cutworms, Wireworms
Coragen	Budworms and Hornworms
Durivo	Aphids, Budworms, Flea beetles, Hornworms, Thrips, Wireworms
Orthene 97, Acephate, etc.	Flea beetles, Cutworms
Platinum 75 SG or 2 SC	Aphids, Flea beetles, Wireworms (high rate)

Give proper attention to mixing for application equipment that has minimal agitation. Keep the 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. Use of more than the label rate may result in some plant damage.

Foliar Treatments for Tobacco Fields

Below are treatment guidelines for common tobacco pests. Check at least 100 plants per field - 10 groups of 10 or 5 groups of 20 plant for field up to 5 acres. Add 2 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.

1 to 4 weeks after transplant	
Cutworms	<i>5 or more freshly cut plants per 100 plants checked.</i>
Flea Beetles	3+ beetles per plant on new transplants, 10+ on 2-4 week old plants, 60+ or on plants more than four weeks old.
4 weeks after transplant until topping	
Aphids	Colonies of 50 or more aphids on 10% or more of the plants from three weeks after transplant until topping.
Budworms	5 or more budworms per 50 plants.

Hornworms	5 or more hornworms (1" or longer) per 50 plants from three weeks after transplant until harvest. Do not count hornworms with white cocoons on their backs.
Topping until harvest	
Hornworms	5 or more hornworms (1" or longer) per 50 plants. Do not count hornworms with white cocoons on their backs.

Tobacco aphid infestations generally begin when winged adults fly into fields and deposit live young on plants. This happens about 4 to 6 weeks after transplant. Offspring of these "colonizers" mature in 7 to 10 days and begin to produce 60 to 70 live young each. Aphid numbers can double about every 2 to 3 days. Fields that do not receive a preventive treatment at transplant should be checked weekly by examining the bud area of 10 consecutive plants in at least 5 locations for colonies (clusters) of aphids on the undersides of leaves, especially in shaded areas of the field. *Apply an insecticide for aphid control if colonies are found on 10% or more of the plants that are examined.*

Thorough coverage with sprays directed to the underside of leaves at the top of the plant is essential to obtain satisfactory aphid control. Aphid infestations tend to be higher in later-set fields, where more than minimum recommended rates of nitrogen are used, and when topping is delayed.

Aphid Insecticides	MOA*	Harvest Interval (days)
Acephate - Orthene 97, Acephate, etc.	1B	3
Lannate 90 SP methomyl	1B	14
Bifenthrin - Brigade 2 EC Capture LFR	3	Do not apply later than layby
Acetamiprid - Assail 30 G Assail 70 WP	4A	7
Imidacloprid – Admire Pro and generics	4A	14
Thiomethoxam - Actara 25% WDG	4A	14
Cyhalothrin + Chlorantranilprole - Besiege	3+28	40
Pymetrozine - Fulfill 50 WDG	9	14
Bifenthrin + Imidacloprid - Brigadier, Skyraider	3+4A	Do not apply later than layby
Cyhalothrin + Thiomethoxam Endigo ZC	3+4A	40
Thiomethoxam + Chlorantranilprole - Voliam flexi	4A+28	14
Achromocil - Grandevo	-	0

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Budworm and Hornworm Control

Budworms feed in the buds causing rounded holes in developing leaves. Infestations tend to be greatest in the earliest-set fields in an area. Moths lay single eggs so infestations are scattered randomly over a field. Examine the bud area carefully for the black ground pepper-like droppings, small holes, or the caterpillars. Damage will increase as the caterpillars feed and grow. If the bud is destroyed, the plant will be forced to develop new terminal growth. Direct leaf damage and stunting can reduce yields significantly. Examine the buds for feeding damage and the small green to black worms. *Treat if there are 5 or more live budworms (less than 1-1/4 inches long) per 50 plants, and topping is at least one week away.*

Tobacco plants can compensate for budworm damage so follow treatment guidelines to avoid unnecessary treatments. Do not count the plant as infested if you cannot find a budworm. Sprays are most effective if applied when larvae are small and feeding actively. Use 25 to 50 gallons of water per acre and spray in the morning or early evening when the bud area is open and the budworms are most exposed to sprays. Use the highest labeled rates for heavy populations.

Budworm and Hornworm Insecticides	MOA	Harvest Interval (Days)
Carbaryl - Sevin 80S	1A	0
Methomyl - <i>Lannate SP</i>	1A	14
Acephate - Orthene 97 and generics	1B	Do not make late season applications
Bifenthrin - <i>Brigade EC, Capture LFR</i>	3	Do not apply later than layby
Cyhalothrin - <i>Warrior CS and generics</i>	3	40
Acetamiprid - Assail 30 SG, Assail 70WP	4A	7 Budworm eggs, hornworms
Spinosad – Tracer CS and generics	5	3
Emamectin benzoate - <i>Denim 0.16 EC</i>	6	14
Bt aizawai - Agree WG, XenTari DF	11B1	0
Bt kurstaki - Biobit HP or F, Dipel, Javelin WG, Lepinox	11B2	0
Bifenthrin + Imidacloprid – <i>Brigadier</i>	3+4A	Do not apply later than layby
Cyhalothrin + Thiamethoxam - <i>Endigo ZC</i>	3+4A	40
Cyhalothrin + Chlorantranilprole - <i>Besiege</i>	3+28	40
Thiomethoxam + Chlorantranilprole - Voliam flexi	4A+28	14
Chlorantranilprole - Coragen SC	28	1
Flubendiamide - Belt 4 SC	28	14
Grandevo	-	0

Hornworms eat large amounts of tobacco foliage. The first brood appears in June and is active throughout the remainder of the growing season. A second, usually much larger brood is active from late July through late August. Weekly field checks will allow detection of infestations that would benefit from treatment. Examine the upper third of the plant for holes or hornworms hanging from the underside of leaves. 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, and topping is at least one week away.* 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 up to 90% of the hornworm population may be parasitized.

Hornworms pose the greatest threat at the end of the growing season. Those present on plants at harvest will continue to feed on wilting and curing tobacco. Check fields for hornworms about one week before harvest. Apply a short residue insecticide if necessary to prevent taking significant numbers to the barn. There are no treatments to control hornworms effectively on housed tobacco.

Tobacco flea beetles are present in every field each season. Damage tends to be most severe in fields that are set first, especially following a mild winter when beetle survival is greatest. Flea beetles move frequently, chewing small round holes (shot holes) in the leaves. Extensive damage can occur when beetles feed in the bud of the plant. This injury can add to transplant stress and slow plant establishment. Flea beetles can be controlled with systemic insecticides applied in the transplant water or by a foliar spray if a preventive treatment was not used. *An average of 3 or more beetles per plant is enough to cause significant damage. 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.*

Flea Beetle Insecticides	MOA	Harvest Interval (Days)
Carbaryl - Sevin 80S	1A	0
Methomyl - Lannate SP	1A	14
Acephate - Orthene 97 and generics	1B	Do not make late season applications
Bifenthrin - Brigade EC, Capture LFR	3	Do not apply later than layby
Cyhalothrin - Warrior CS and generics	3	40
Acetamiprid - Assail 30 SG, Assail 70WP	4A	7
Bifenthrin + Imidacloprid – Brigadier	3+4A	Do not apply later than layby
Cyhalothrin + Thiamethoxam - Endigo ZC	3+4A	40
Cyhalothrin + Chlorantranilprole - Besiege	3+28	40
Thiomethoxam – Actara 25% WDG	4A	14
Thiomethoxam + Chlorantranilprole - Voliam flexi	4A+28	14

Grasshoppers usually remain in hayfields and along waterways but under dry conditions they may move from these into tobacco. 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.

Grasshopper Insecticides	MOA	Harvest Interval (Days)
Methomyl - Lannate SP	1A	14
Acephate - Orthene 97 and generics	1B	Do not make late season applications
Bifenthrin - Brigade EC, Capture LFR	3	Do not apply later than layby
Cyhalothrin - Warrior CS and generics	3	40
Bifenthrin + Imidacloprid – Brigadier	3+4A	Do not apply later than layby
Cyhalothrin + Thiamethoxam - Endigo ZC	3+4A	40
Cyhalothrin + Chlorantranilprole - Besiege	3+28	40

Occasional Pests

Armyworms may be present in no-till tobacco fields transplanted into burned-down grass or small grain cover crop. Belt, **Besiege**, Brigade, Brigadier, Capture, and **Skyraider** are labeled for control.

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. Cutworms feed at the base of transplants and can cut them off at ground level. Moths are active in March and April, laying their eggs on low, spreading weeds. Damage potential is highest in late-set fields where there has been a flush of winter annual weeds. Cutworms will begin to feed on the weeds and switch to transplants when the weed growth is removed. A foliar spray should be applied if 5 or more cut plants are found per 100 plants checked. Belt, **Besiege**, Brigade, Brigadier, **Endigo ZC**, Orthene 97, **Skyraider**, or **Warrior 1 CS** can be used as a broadcast spray. Proxol 80S, applied in a 12" band over the row can be used as a rescue treatment. Rescue treatments are generally less effective when damage is confined to the underground portion of the plant.

Japanese beetles can feed on tobacco. The damage usually is confined to a small number of plants. Actara, **Besiege**, Brigadier, **Endigo ZC**, Orthene, Provado, Sevin 80S, Voliam flexi, or **Warrior** maybe used if Japanese beetles are causing significant damage.

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, **Besiege**, **Brigade**, **Brigadier**, Orthene, **Skyraider**, or **Warrior** are labeled for stink bug

control. Treatment is not justified unless stink bugs are found in the field.

Thrips can feed on tobacco plants but usually are only a temporary problem. Several insecticides are labeled as foliar sprays for thrips control including **Skyraider**, and Tracer.

Some generic insecticides by active ingredient

Amounts of active ingredients in and application sites of generic products may differ from those in name brands. Check labels carefully before purchase.

Acephate (Orthene) – Acephate, Bracket

Bifenthrin (Capture)– Bifen, Bifenthrin, Bifenture EC, Fanfare, Sniper, Revere, Tailgunner, Tundra

Bifenthrin + imidacloprid – Skyraider, Swagger, Tempest

g-Cyhalothrin (Warrior) – Declare, Proaxis

I-Cyhalothrin – Grizzly, Kaiso, Kendo, LambdaT, Lambds-cy, Lambdastar, Lamcap, Province, Silencer, Tiaga, Willowood Lambda

Chlorpyrifos (Lorsban)– Chlorpyrifos, Govern, Hatchet, Saurus, Vulcan, Warhawk, Whirlwind, Yuma

Cyfluthrin (Baythroid) - Tombstone

Imidacloprid (Admire) – Advise, Alias, Amtide Imidacloprid, Couraze, Kendo, Kilter, Macho, Malice, Mana Alias,

Midash, Nuprid, Pasada, Prey, Sherpa, Widow, Wrangler

Spinosad (Tracer) – Blackhawk

Information Summary Table for Tobacco Insecticides

This table is provided for a quick comparison of insecticides labeled on tobacco. Insecticides are listed alphabetically by pesticide common name (usually present in the active ingredients section of the product label). One or more brand names are included along with the Restricted Entry Interval (REI) and Mode of Action Group number. Brand names of Restricted Use pesticides appear in ***bold italics***.

Use pesticide products only in accordance with their labels and with the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval. Check the label for Personal Protective Equipment required for early entry to treated areas that is permitted under the Worker Protection Standard and involves contact with anything that has been treated, such as plants, soil, or water.

Common name	Brand Name	REI*
Acephate	Acephate 97, Bracket, Orthene	24
Acetamiprid	Assail 30 G, Assail 70 WP	12
Achromocil	Grandevo	4
Bifenthrin	<i>Bifen 2 AG, Bifenture, Brigade 2E, Capture LFR, Fanfare, Swagger, Revere</i>	12
Bifenthrin + imidacloprid	<i>Brigade 2EC</i>	12
Bt aizawai	Agree WG, Xentari DF	4
Bt kurstaki	Dipel DF, Javelin WG Lepinox WDG, etc.	4
Carbaryl	Sevin XLR Plus	12
Chlorantranilprole	Coragen	4
Chlorantranilprole + Cyhalothrin	<i>Besiege</i>	
Chlorpyrifos	<i>Lorsban. Govern, Hatchet, Nufos Whirlwind, Saurus, Yuma</i>	24
Clothianidin	Belay 16 WSG	12
Flubendiamide	Belt 4 SC	12
I-Cyhalothrin	<i>Warrior, Declare, Grizzly Province</i>	24
Emamectin benzoate	<i>Denim EC</i>	48
Imidacloprid	Admire Pro, Advise, Alias, Couraze, Kendo, Kilter, Macho, Malice, Montana, Nuprid, Pasada, Prey. Sherpa, Wrangler	12*
Methomyl	<i>Lannate</i>	48
Pymetrozine	Fullfill	12
Spinosad	Blackhawk, Tracer	4
Thiamethoxam	Actara, Platinum	12
Thiamethoxam + chlorantranilprole	Durivo, Voliam flexi	12
Thiamethoxam + I-cyhalothrin	Endigo ZC	24

*Restricted entry interval - hours

