



Newsletter Extension

Fruit ICM News

Volume 8, No. 25
July 15, 2004

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Tarnished Plant Bug

Lygus lineolaris (Palisot de Beauvois) Steve M. Spangler, Richard W. Weires, Jr., and Arthur M. Agnello, Department of Entomology, New York State Agricult. Experiment Station, Geneva.

(Illustrations are available at the following site)

<http://www.nysipm.cornell.edu/factsheets/treefruit/pests/tpb/tarnishplantbug.html>

The tarnished plant bug is found throughout North America, but it is primarily a pest in temperate nondesert areas. It feeds on more than fifty economically important plants, including alfalfa, cotton, strawberries, brambles, and most tree fruits grown in the United States. It has two to five generations per year, depending on the location. The tarnished plant bug is a true bug (order Hemiptera), with piercing-sucking mouthparts.

Adults

Adults are 6 to 6.5 mm (0.25 in.) long, oval, and somewhat flattened. They are greenish-brown in color, with reddish-brown markings on the wings. A distinguishing characteristic is a small but distinct yellow-tipped triangle in the center of the back, behind the head.

Tarnished plant bugs overwinter as adults under leaf litter, stones, and tree bark and in other protected places. At the end of April, the adults become active and begin laying eggs in crop and weed hosts. The overwintering adult population peaks at about the pink stage of apple (early May in New York State). Two to four indistinct generations can occur annually, with development from egg to adult taking 25 to 40 days. Adults feed throughout the summer, but are found on apple trees from the silver tip stage until 2 to 3 weeks after petal fall.

Eggs:

Eggs are about 1 mm (0.04 in.) long, cream colored, and flask shaped. They are laid in plant tissue so only the small anterior end is visible. Eggs can be laid on fruit crops, but are generally deposited on weeds and grasses. On apple trees, although some early oviposition may take place in the buds, most eggs are laid in the developing fruit starting at bloom.

Eggs hatch into nymphs about 7 days after being laid. Young nymphs are pale green and resemble aphids, except that their legs are more robust, their movements are more rapid, and they have no abdominal cornicles (backward-pointing structures that resemble short stems). Because the tarnished plant bug has incomplete metamorphosis, the nymphs resemble adults without wings. Newly hatched nymphs are about 1 mm (0.04 in.) long and remain greenish throughout their five stages, or instars. Nymphs in later instars turn brown and develop wing pads. They have two black dots on their thorax, two between their developing wing pads, and one in the middle of their abdomen.

Damage:

The tarnished plant bug causes injury to tree fruits when it feeds and lays eggs. Damage occurs primarily in the spring on flower buds, blossoms, and young fruit, although bleeding of sap may result from twig and shoot injury.

The insect feeds first on buds and later on developing fruit. Small droplets of exudate may be present on the surface of injured buds. Within 1 or 2 weeks, the flower clusters may appear dried and the leaves distorted, with a distinct hole where the insect fed.

Generally, later damage to developing fruit is more important than earlier feeding on flower buds. In apples, feeding can cause punctures or deep dimples to form as the fruit develops, and in peaches various deformities known as

The damage to apples caused by egg laying is usually deeper, resulting in more distorted fruit often with blemishes or "scabs". Damage early in the season tends to be near the calyx end of the fruit, and later injuries tend to be elsewhere. Cultivars differ in their susceptibility to damage, with depressions or scabs in some being less pronounced.

Damage to mature trees is slight after June, but much damage can occur to nursery stock throughout the summer. In peach trees, the tarnished plant bug punctures the tips of tender growing shoots, causing the leaves to wilt beyond the point of damage and resulting in trees with a dwarfed and bushy appearance. Damage to peach fruit can occur throughout the summer. Nursery apple trees damaged by the tarnished plant bug have curled leaves and stunted growth.

Monitoring and Control:

From mid-April to early May, look for adults on flowers and foliage or for bleeding wounds on shoots. Adults fly when disturbed and are difficult to observe in the field. Therefore, the use of unbaited, nonreflective, white sticky boards hung low in the trees is an effective monitoring method. The best places to set the traps are in lower areas such as ditch banks and in hedge rows, which are favorable overwintering sites of the adults. White sticky traps are available commercially.

The tarnished plant bug has a number of natural enemies, such as other true bugs (nabids, geocorids), ladybird beetles, spiders, and parasitic wasps, but they are not able to control the pest effectively. Satisfactory chemical control is difficult on tree fruits because the frequently long bloom period, when no pesticides can be applied, prevents optimum timing of control sprays. Also, prebloom

pesticide treatments may dissipate during the prolonged period of bloom. The mobility of the tarnished plant bug also makes control difficult.

Despite control efforts, a small amount of fruit injury is often inevitable. Most damage is shallow and undetectable, however, and generally not noticed in normal grading procedures.

Consult your local Cooperative Extension association for recommendations about the proper procedures and materials to use in your area.

Guide to Stages

Stage	Timing	Where to Look
Adult	Overwintering generation--dormant to fruit set of apple	On tree fruit flower buds (look for damage), in alfalfa fields.
	Summer generations--summer to fall	Nursery stock, peach fruit, other hosts (legumes such as alfalfa, clovers)
Egg	Tight cluster to fruit set	Inserted in buds, fruit, or similar soft plant parts
	Summer generations--summer to fall	Other hosts (legumes such as alfalfa, clovers)
Nymph	May through fall	Flower buds, fruit, alfalfa, weedy areas

Produced by Media Services at Cornell University for the New York State Integrated Pest Management Program, jointly sponsored by the New York State Department of Agriculture and Markets and Cornell University.

"Cat-facing" Injury on Peaches

Source: Roy W. Rings, Ohio Farm and Home Research, 1955, Volume 40, pp 28-30

Tarnished plant bugs and several species of stink bugs have been causing mild to severe injury to Ohio Peaches for many years. The significance of such injury has not been recognized until recently because of the much greater damage caused by the plum curculio, oriental fruit moth, and orchard mites.

One of the most common and easily recognized types of injury is represented by the dimpled or deformed appearance of injured fruit, which is usually referred to as "cat-facing". Experiments conducted at Wooster in the 1950's have shown that typical cat-facing may be produced by the tarnished plant bug, the green stink bug, the one-spot stink bug, the dusky stink bug, the northern brown stink bug, the clover stink bug, and two other stink bugs of minor importance. All of these insects are true bugs with sucking mouthparts and may be conveniently referred to as "cat-facing insects" since they cause deformities in the fruit.

Because feeding habits are alike it is impossible to distinguish the injury caused by the different species. When these sucking bugs feed upon fruit or foliage they introduce a salivary enzyme which breaks down the cellular tissue and then they extract the dissolved food material. Although the healthy tissue surrounding the injured area grows at a normal rate, a scar is formed over the damaged area and normal development is slowed down at this point. When this occurs on peaches early in the season, the result is a cat-faced or deformed fruit.

Feeding on the surface of the fruit by plum curculio sometimes results in a mild form of cat-facing and

for this reason the term "cat-facing insects" includes not only the sucking bugs but also the plum curculio.

In addition to cat-facing there are at least five other distinct types of injury produced by sucking bugs which are not generally recognized.

Blossom and fruit drop injury. The blossoms or fruit may drop if they are attacked any time between early bloom and the time the fruit is about one-half inch in diameter. In 1954 cage tests the tarnished plant bug caused 100 percent of the blossoms to drop even when the insects were caged for only 24 hours. Fruits injured by the plum curculio may drop after they have reached one-half inch in diameter but usually this is a result of brown rot infection following feeding.

Cat-facing or dimpling injury. The fruits may be slightly dimpled or severely deformed as a result of insect feeding during the period from petal-fall stage until the fruit reaches one-half inch in diameter. In the case of stink bugs the deformation is usually associated with fuzz removal and the development of brown, scarred and sunken areas. Although deformation is typical in the case of the tarnished plant bug, fuzz removal and scarring are infrequent.

Gummosis injury. In some instances the fruit has gum exuding in droplets or strings from the point of injury. This is known as gummosis injury. During rains these gum droplets or strings are softened and spread out over the surface of the fruit. Usually the gum is blackened by the growth of a sooty fungus which renders the fruit unmarketable. Peaches are susceptible to such injury from the time they are about three-fourth inch in diameter up to about two inches in diameter.

Water-soaked injury. In this case the fruit has dark-green, depressed areas which have a water-soaked appearance where stink bug feeding has taken place. This type of injury may sometimes be associated with gum oozing out, but is recognizable even though the hardened gum may have been removed. This injury occurs when peaches are from one and one-half to two inches in diameter.

Ripe fruit injury. This type of injury is rather rare and most often associated with the green stink bug. The fruit has small, depressed areas on the surface as a result of stink bugs sucking juices from the ripening fruits.

Since most of the sucking bugs breed upon plants other than peach, it is evident that the most effective control measure is to get rid of these host plants growing in and around the orchard. Many species of weeds such as horse-weed, white cockle, tall ironweed, and common mullein are natural hosts for stink bugs and plant bugs and should be removed or mowed frequently if they are in or near peach orchards. Fence rows containing elderberry, wild cherry, black locust, and honey locust may support large populations of the green stink bug and should be removed or sprayed where practicable.

Cover crops do not seem to be as important as weed patches and fence rows as harboring and breeding places for cat-facing insects. Legumes, such as alfalfa, red clover, and soybeans, however, serve as breeding places for the tarnished plant bug and most species of stink bugs. If the use of these crops in areas adjacent to the orchard is avoided the hazard of cat-facing damage can be reduced. Cover crops such as soybeans within the orchard seem to offer little hazard, probably because they receive enough drift during normal spraying operations to control these pests.

Since the relative importance of sucking bugs may vary from one orchard to another, no standard insecticidal schedule can be recommended for the control of these insects.

The tarnished plant bug, which is probably the most important member of this group, is most abundant on peaches from the pink to the petal-fall stage. Next spring, consult the 2002 Commercial Tree Fruit Spray Guide for current recommendations for these stages.

The insecticidal control of stink bugs is complicated by variations in their habits, life history, and relative abundance in different orchards and in different sections of the state. In general, stink bugs have one generation each year although a partial second generation seems to occur quite frequently. Adult stink bugs which have overwintered in debris and fence rows enter the orchard at the full bloom stage. They are abundant for a period of about six weeks after bloom. Products which control plum curculio at petal fall will also control adult stink bugs.

Special Thanks to Fruit Tour Sponsors

Source: Susan Gaughan, Ohio Fruit Growers Society Program Assistant

A special thanks goes out to the sponsors of the recent Summer Fruit Tour. They included DuPont Plant Protection, George F. Ackerman Co., Jim Colville Crop Insurance, Ohio Grape Industries Program, Micro Flo Company, Putnam Plastics Inc., Summit Tree Sales, and Syngenta Crop Protection.

Degree Day Accumulations for Ohio Sites July 14, 2004

Location	Degree Day Accumulations Base 50F	
	Normal	Actual
Akron-Canton	1332	1279
Cincinnati	1809	1742
Cleveland	1375	1242
Columbus	1747	1469
Dayton	1660	1523
Kingsville	1228	1140
Mansfield	1334	1262
Norwalk	1437	1247
Piketon	1793	1702
Toledo	1412	1243
Wooster	1449	1185
Youngstown	1260	1149

Pest Phenology

Coming Events	Degree Day Accum. Base 50F
San Jose scale 2 nd flight begins	1000 - 1294
Dogwood borer flight peak	1001 - 1327

Codling moth 2 nd flight begins	1018 - 1540
Apple maggot 1 st oviposition punctures	1021 - 1495
Obliquebanded leafroller 1st flight subsides	1021 - 1495

Thanks to Art Agnello, Cornell Entomologist

Fruit Observations & Trap Reports

Insect Key
AM: apple maggot
CM: codling moth
ESBM: eye-spotted budmoth
LAW: lesser apple worm
LPTB: lesser peachtree borer
OBLR: obliquebanded leafroller
OFM: oriental fruit moth
PTB: peachtree borer
RBLR: redbanded leafroller
SJS: San Jose scale
STLM: spotted tentiform leafminer
TABM: tufted apple budmoth
VLR: variegated leafroller

Site: Waterman Lab, Columbus

Dr. Celeste Welty, OSU Extension Entomologist

Apple 7/7 to 7/14/04	
Redbanded leafroller	6 up from 3
Spotted tentiform leafminer	3040 up from 3453
San Jose scale	731 down from 792
Codling moth	17.0 up from 6.3
Lesser appleworm	16 up from 5
Tufted apple budmoth	1 same as last wk.
Variegated leafroller	3 up from 0

Obliquebanded leafroller	2 up from 1
Apple maggot (3 trap sum)	4 same as last week

Site: Medina, Wayne, and Holmes Counties
Ron Becker, IPM Program Assistant

Apple: 6/23 to 6/30/04	
Redbanded leafroller	Holmes: 18.5 up from 1.5
	Wayne: 13.3 up from 8
	Medina: 7.3 down from 12.7
Spotted tentiform leafminer	Holmes: 440 down from 540
	Wayne: 493 up from 300
	Medina: 440 down from 720
Oriental fruit moth	Holmes: 0 same as last wk.
	Wayne: 0 same as last wk
	Medina: 0 same as last wk
Codling Moth	Holmes: .67 down from 1.16
	Wayne: 3.44 up from 1.75
	Medina: .1 down from 1.3
Lesser appleworm	Wayne: 3 down from 5

Peach: 6/23 to 6/30/04	
Peachtree borer	Holmes: 1 up from 0
	Wayne: 5 up from 1
	Medina: 0 same as last wk. (Using mating disruption)
Lesser peachtree borer	Holmes: 0 down from 2
	Wayne: 15 down from 26
	Medina: 0 same as last wk. (Using mating disruption)

Apple: 6/30 to 7/7/04	
Redbanded leafroller	Holmes: 10 down from 18.5
	Wayne: 9 down from 13.3
	Medina: 8 up from 7.3
Spotted tentiform leafminer	Holmes: 420 down from 440
	Wayne: 360 down from 493

	Medina: 450 up from 440
Oriental fruit moth	Holmes: 0 same as last wk.
	Wayne: 0 same as last wk
	Medina: 0 same as last wk
Codling Moth	Holmes: 1.3 up from .67
	Wayne: 2 down from 3.44
	Medina: .3 up from .1
Lesser appleworm	Wayne: 8 up from 3

Peach: 6/30 to 7/7/04	
Peachtree borer	Holmes: 0 down from 1
	Wayne: 6 up from 5
	Medina: 0 same as last wk. (Using mating disruption)
Lesser peachtree borer	Holmes: 0 down from 2
	Wayne: trap down
	Medina: 0 same as last wk. (Using mating disruption)

Apple: 7/7 to 7/14/04	
Redbanded leafroller	Holmes: 4 down from 10
	Wayne: 2.67 down from 9
	Medina: 1.5 down from 8
Spotted tentiform leafminer	Holmes: 120 down from 420
	Wayne: 60 down from 360
	Medina: 135 down from 450
Oriental fruit moth	Holmes: 0 same as last wk.
	Wayne: 0 same as last wk
	Medina: 0 same as last wk
Codling Moth	Holmes: .67 down from 1.3
	Wayne: 0.2 down from 2.0
	Medina: .08 down from .3
Lesser appleworm	Wayne: 2 down from 8

Peach: 7/7 to 7/14/04	
Peachtree borer	Holmes: 0 down from 1
	Wayne: 4 down from 6
	Medina: 0 same as last wk. (Using mating disruption)

Lesser peachtree borer	Holmes: 0 same as last wk.
	Wayne: 6 down from 15
	Medina: 0 same as last wk. (Using mating disruption)

Site: West District; Huron, Ottawa, Richland, and Sandusky Counties

Lowell Kreager, IPM Scout/Technician

Apple 7/6 to 7/13/04	
Apple maggot (3 trap sum)	0.0 same as last week
Codling moth	0.4 up from 0.6
Lesser appleworm	2.5 up from 2.3
Oriental fruit moth	0.8 down from 1.3
Redbanded leafroller	15.6 same as last week
San Jose scale	0.0 same as last wk
Spotted tentiform leafminer	382 down from 879
Peach 7/6 to 7/13/04	
Lesser peachtree borer	1.7 down from 3.3
Oriental fruit moth	2.1 up from 1.7
Peachtree borer	0.0 down from 0.3
Redbanded leafroller	28.6 up from 22.6

Site: East District; Erie and Lorain Counties

Jim Mutchler, IPM Scout/Technician

Apple 7/6 to 7/13/04	
Apple maggot (3 trap sum)	0.0 same as last week
Codling moth	0.8 down from 1.5
Lesser appleworm	5.9 down from 7.1
Oriental fruit moth	3.7 up from 0.8
Redbanded leafroller	6.4 down from 10.0
San Jose scale	18 up from 0.0
Spotted tentiform leafminer	725 down from 783
Peach 7/6 to 7/13/04	
Lesser peachtree borer	6.3 up from 5.8
Oriental fruit moth	4.3 up from 1.3
Peachtree borer	2.8 up from 2.2
Redbanded leafroller	6.0 up from 7.3

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