

COMING EVENTS

	43°F	50°F
Current DD accumulations		
(Geneva 1/1-4/29):	194	87
(Geneva 1/1-4/29/2012):	405	210
(Geneva "Normal"):	254	120
(Geneva 1/1-5/6 predicted):	249	123
(Highland 1/1-4/29):	270	117

Upcoming Pest Events – Ranges (Normal +/- Std Dev):

Comstock mealybug

crawlers in pear buds	215-441	80-254
European red mite egg hatch	231-337	100-168
Green apple aphid present	111-265	38-134
Green fruitworm flight peak	102-216	39-101
Obliquebanded leafroller		
larvae active	158-314	64-160
Oriental fruit moth 1st catch	225-329	97-167
Pear psylla 1st egg hatch	174-328	60-166
Pear thrips in pear buds.....	118-214	50-98
Redbanded leafroller		

1st flight peak.....	234-368	106-188
Rosy apple aphid		
nymphs present	134-244	56-116
Spotted tentiform leafminer		
1st oviposition.....	143-273	58-130
McIntosh tight pink.....	275-319	125-161

Phenologies

(Geneva): Current / Predicted 5/6

Apple (Mac, Empire): tight cluster / tight cluster-pink

Apple (Red Delicious): 1/2-in green-TC / tight cluster

Pear (Bartlett): early green cluster / green cluster-white
bud

Sweet cherry: bud burst / white bud

Peach: pink / pink

(Highland):

Apple (McIntosh): early pink

Apple (Red Delicious, Crimson Crisp): tight cluster

Apple (Empire, Ginger Gold): pink

Pear (Bartlett, Bosc): green cluster

Pear, Oriental (Hosui): white bud

Plum (Stanley, Shiro): first bloom

Apricot-early (Harcot): petal fall

Apricot-late (Harglow): petal fall

Sweet cherry-early (Danube, Balaton): first bloom

Sweet cherry-late (Regina, Sweetheart): 90% bloom

Peach-early (Red Haven): full bloom

Pest Focus

Geneva: 1st Redbanded Leafroller trap capture 4/25
1st Spotted Tentiform Leafminer trap catch today, 4/29

Highland: 1st Lesser Appleworm trap capture today, 4/29

TRAP CATCHES (Number/trap/day)

Geneva

	4/18	4/22	4/25	4/29
Green Fruitworm	0.0	0.3	0.0	0.1
Redbanded Leafroller	0.0	0.0	0.7*	7.4
Spotted Tentiform Leafminer	0.0	0.0	0.0	0.5*
Oriental Fruit Moth	-	0.0	0.0	0.0

Highland (Peter Jentsch)

	4/8	4/15	4/22	4/29
Green fruitworm	2.1	1.2	1.4	0.9
Redbanded Leafroller	0.1	2.3	4.1	29.4
Spotted Tentiform Leafminer	0.0	0.0	0.6	29.6
Oriental Fruit Moth	-	0.1*	0.4	6.8
Lesser Appleworm	-	-	-	0.4*

* = 1st catch

[Section: INSECTS]

THE PINKS OF THEIR EYES

(Art Agnello, Entomology, Geneva; ama4@cornell.edu)

[Box text: READY, AIM...]

The weekend gave us a foreshadowing of early summer weather, and we're due for some more this week, so most areas should be within hailing distance of pink bud by the weekend. It's therefore not too early to be thinking of pink bud insect management needs now, so as not to be caught off guard in case we get into one of our famous leapfrogging scenarios.

First, if **San Jose scale** is a concern and you have yet to do anything to head it off, there is still a limited window of suitable management tactics available before foliar development progresses too far to permit effective coverage. If you are intending to use oil, a 1% spray through tight cluster can be quite effective provided you're able to thoroughly cover the wood surfaces. Insecticidal options include Centaur (34.5 oz/A), Esteem (4-5 oz/A), Lorsban (4EC or Advanced at 1.5-4 pt/A; or 50WP at 3 lb/A) or Supracide 2EC at 3 pt/A). Remember that you are limited to only 1

application of Lorsban in apples per season, whether prebloom as a foliar or trunk spray, or as a postbloom trunk application.

The pests of greatest concern at pink bud are usually **rosy apple aphid** (RAA), **oriental fruit moth** (OFM), and **tarnished plant bug** (TPB), with **European apple sawfly** and **plum curculio** waiting in the wings. OFM has just made its entrance in the Hudson Valley, so it will not be too long before biofix is established in a number of plantings statewide. In blocks with a history of OFM infestation, 1 or 2 traps checked at least weekly will help indicate the timing and relative size of the first generation population this year. What should be the response when the numbers start building?

In a normal year, the average temperature ranges tend to result in very little egg hatch during pink and bloom, as this usually holds off until petal fall. If we end up with sufficient egg hatch before actual bloom, a pink application of an internal worm material like Altacor, Belt or Delegate would be an option; although this is earlier than we would normally expect to need them, these products would also address codling moth, which would not be far behind an early OFM hatch. For growers wishing to save these A-list products until after

petal fall, a B.t. product would be another option from pink to bloom. Regardless, these "what-if" scenarios underscore the value of using (and frequently checking) pheromone traps to set the clock on OFM and CM development in specific blocks. These first flights of the season give us the best opportunity to get on top of internal worm control, because timing and development of the different stages only gets more complicated (i.e., less synchronized) as the season progresses.

Depending on block history and personal philosophy, RAA and TPB can be either annual challenges, puzzling but token annoyances, or else a complete flip of the coin. Do they occur, do they need to be treated, are they able to be controlled adequately, and does it matter if they're just ignored? These pests also have yet to indicate their potential for problems this season, although it's likely that rosies can be found already in some orchards, given enough inspection. It's possible to scout for RAA at pink, but this is often not practical, considering all the other hectic activity at this time. TPB is not a good candidate for scouting, and if the bloom period is prolonged by cool, wet weather, a pink spray is of little use. You'll need to decide for yourself

whether this bug is of sufficient concern to you to justify treating.

We have seen few orchards in western NY (and only slightly more in the Hudson Valley) where TPB control is warranted, simply because the most effective treatment has been to use a pyrethroid, which: a) kills predator mites, and b) still rarely lowers TPB damage enough to be economically justified. If you elect a spray of Ambush, Asana, Baythroid, Danitol, Pounce, Warrior or Voliam Xpress at pink for plant bug, you'll take care of rosy apple aphid (plus mullein plant bug and STLM) at the same time. If RAA is your main concern, you could elect a pink spray (non-pyrethroid options include Actara, Assail, Beleaf, Calypso, Esteem, Lannate, Lorsban, Thionex, Vydate, Warrior, or Voliam Xpress) if you have the luxury of a suitable application window. Once again, be sure to consider potential impacts on non-target species such as beneficials, and be aware of your bee supplier's concerns about effects on pollinating bees. For more perspective on this issue, see Peter Jentsch's article, below.

Leafrollers are also out there, but only a portion of the population will be active at this time, so although you might get good control of any larvae you spray

now, don't forget that the rest of the population won't be out (and susceptible to sprays) until bloom or petal fall, so it's probably better to wait until then to address this pest.

Finally, if **mites** normally need attention in a given block, and you haven't elected (or been able to use) a delayed-dormant oil application as a part of your early season mite management program, you'll be needing to rely on either: one of the ovicidal acaricides (Apollo, Savey/Onager, Zeal) available for use, whether before or after bloom; a rescue-type product after bloom (add Acramite, Kanemite, Nexter, and Portal to the above list) that can reduce motile numbers later on if they should begin to approach the threshold; or Agri-Mek, which falls somewhere between these two strategies. Like the true ovicides, Agri-Mek should also be considered a preventive spray, as it needs to be applied early (before there are very many motiles) to be most effective, generally within the first 2 weeks after petal fall. Recall that Proclaim is related to Agri-Mek, and also has some miticidal activity, if you expect to use it at petal fall for leafrollers. Parenthetically, as a reminder, Carzol is available, although it is restricted to no later than petal fall, so it may be of limited use in most programs. For any of the rescue products, the

operational threshold (through June) is an *average* of 2.5 motiles per leaf (see the chart on p. 72 of the Recommends).

TARNISHED PLANT BUG BIOLOGY AND MANAGEMENT CONSIDERATIONS IN 2013

(Peter Jentsch, Entomology, Highland;pjj5@cornell.edu)

[Box text: BAD REP]

Moderate winter temperatures and good snow cover this season provided good conditions for overwintering success of most apple insect pests. From this we can presume that overwintering success will mostly give rise to high pressure this year. It's very likely that tarnished plant bug (TPB) will have strong adult populations that will emerge during the latter part of this week given the predicted warming trends.

The tarnished plant bug is a true bug (order Hemiptera), with piercing-sucking mouthparts such as in the cicadas, aphids, leafhoppers and mullein plant bug. Tarnished plant bug overwinters in the adult stage under leaf litter, in stone walls, tree bark and other protected places along the edge of orchards. 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 the Hudson Valley).

Adults are 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 bug will move to buds and developing clusters as temperatures increase, moving back to suitable ground cover as temperatures fall. Maintaining the area beneath tree canopies as "weed-free and keeping the fescue-based sod in alleyways mowed will prevent buildup of flowering plants and reduce TPB activity.

This insect 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. On apple trees, some early egg-laying may take place in the buds. However, most eggs are laid in the developing fruit starting at bloom. We have not seen TPB injury on apple yet, but do anticipate movement to

trees to begin this week as temperatures move into the lower 70s.

TPB begins feeding first on buds and later on developing fruit. Small droplets of sap may be present on the surface of injured buds. Within 1 or 2 weeks after feeding, 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 "catfacing" occur.

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.

The use of unbaited, nonreflective, white sticky boards hung low in the trees to effectively monitor TPB can help in determining TPB activity. The best places to set the traps are in lower areas such as ditch banks and

in hedgerows, which are favorable overwintering sites of the adults. White sticky traps are available commercially. Getting out in the early morning to look for bleeding sites is also recommended.

A biological control parasite introduced into the Northeast from Europe has been attributed to reduced TPB populations in both apple and alfalfa. This wasp parasite of the TPB, *Peristenus digoneutis* (Hymenoptera: Braconidae) is believed to have reduced both damage and occurrence of the TPB by as much as 63% in New Hampshire.

TPB management considerations

A number of methods can be used to determine whether TPB is present and if management for this insect should be considered:

- If pack-out had greater than 2% culls or significant downgrades in high valued fruit from TPB in previous years, an application is likely warranted this season, given temperature forecasts for this week.

- If white sticky traps placed along hedgerows and weedy areas capture ≥ 5 cumulative adults per trap, an application to manage TPB is likely warranted this season. The above economic thresholds are employed

in PA, MA and Ontario, Canada. NY, however, does not have a trap threshold for TPB.

- In general, sustained temperatures of $\geq 70^{\circ}\text{F}$ for three or more days can act as a threshold in orchards that experience economic losses from TPB. During this temperature range, scouting for injury is your best indication of presence and subsequent need for control. The occurrence of 5 TPB adults/100 flowering clusters can be used as an economic threshold.

- Waiting until after this extended warm period for TPB management will most likely miss the window for effective control.

- The pyrethroid class of insecticides has been found to be most effective against the TPB on apple. However, their use will significantly reduce natural enemies such as *T. pyri*, used for biological mite management.

- The neonicotinoids such as Calypso and Assail are moderately effective against TPB, although not as strong as the pyrethroids. Avaunt is also moderately effective. There has been opposition by beekeepers to the use of the neonicotinoids near bloom. If commercial bees are used for pollination, it would be sensible to discuss their use with your beekeeper.

- If Lorsban is used for SJS management, it will have little impact on the TPB.

It's important to determine the value of your commodity in TPB pest management decision-making. A high-value variety will have a lower economic threshold than lower-valued varieties.

[Section: HORTICULTURE]

TAKING CARE OF APPLE TREES BEFORE, DURING AND AFTER PLANTING

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[Box text: THE WHOLE NINE YARDS]

Only a relatively small proportion of Western NY fruit growers had optimal soil moisture conditions for early tree planting. A few of them also successfully incorporated the use of GPS-guided apple planting for precisely straight rows. We congratulate those growers who were able to plant trees early and those who are adopting more precise orchard management practices.

The majority of trees in WNY are still waiting to be planted. It is now extremely important to keep your trees in good condition while waiting to plant. We

recommend the following: (1) when you receive trees, open the boxes and the plastic box liner to prevent fungal development on the trees and to allow trees to breathe, (2) inspect trees for quality and condition, contact the nursery immediately if anything is wrong, (3) check to see that roots are moist and covered; if not, water well, (4) store in a cooler or cold room at 34°F. The room should have been well aired to remove any ethylene remaining from stored apples, (5) if a cold room is not available, find a root cellar or common storage that stays as cold as possible. Do everything you can to prevent nursery trees breaking dormancy before planting; trees already growing in the box will use limited reserves to re-grow those shoots in the field, (6) never store nursery stock with apples. The ethylene gas will severely damage trees, (7) plant as soon as soil conditions warrant, and (8) do not plant if the soil is still too wet.

There are different ways to plan, prepare, and establish a successful high-density apple orchard. However, the decisions made now and methods used this year for establishing that orchard will have consequences for the next 20 years. We stress the importance of (1) advance planning for a minimum of two years to get the proper tree with the right

rootstock and to prepare the soil well the year before, (2) the use of nursery trees of excellent quality, whether they are bought or produced on the farm, (3) early spring or fall planting to allow early root establishment and maximum tree growth in the first year, (4) quick installation of trellis support and irrigation lines soon after planting, and (5) optimal leader growth of 18–24" for each of the first 2–3 years as a result of a balanced nutritional program, irrigation, excellent weed control and overall good orchard management.

Today a modern high-density planting must be supported with **12-foot posts** so trees are properly supported to quickly reach the top trellis wire (10 feet) by the end of the second or third year. A good, strong, and tall support system for a high-density orchard must be viewed as an investment (rather than just an orchard establishment cost!) that allows fruit production in the early years while preserving the vertical tree structure (without ever allowing the top to bend if unsupported!) and developing a full canopy for future large, mature yields from the bottom to the top of the tree.

Planting the Young Apple Tree Carefully

The roots of a young Tall Spindle apple tree contain much stored nitrogen, hormones, and other elements, which are used in forming both new root growth and new top growth. Any broken or injured roots should be trimmed off, but the root system should not be reduced more than necessary prior to planting. Once your soil has dried out sufficiently and you are able to plant, keep your trees out of the sun and protected from drying winds (never allow the roots of the tree to dry out). If possible, soak roots for a couple of hours before planting using a pond, tub or barrel. Growers should plant trees with at least 4–6 inches of rootstock out the ground. The soil should be packed firmly around the roots in order to establish good contact. At about two weeks after planting, the trees should receive a small dose of nitrogen (1/4 lb of calcium nitrate) carefully applied in a doughnut shaped band around each tree.

Pruning and Managing the Tall Spindle Apple Tree after Planting

If you plant a Tall Spindle apple block, you should not head the leader. Heading of the leader of a young apple tree after planting is undesirable, as it removes a significant portion of the tree structure already produced in the nursery. Even if a whip is planted, the leader is not pruned or headed at planting for the Tall

Spindle system. Heading the leader disrupts and changes forever the natural growth and branching patterns of a young apple tree on a dwarfing rootstock intended to be grown as a Tall Spindle tree. Instead of heading a whip, we recommend applying Maxcel (500 ppm) to stimulate branching of an "unheaded" whip to obtain a more "calm tree" without much new upright growth as a result of the heading cut. The Maxcel should be applied at a rate of 6.4 ounces/gallon with a backpack sprayer using a single nozzle to the leader from the tip down to 24 inches above the soil at 10–15 days after bud break. To improve branching even more, you may combine the Maxcel treatment at 10–15 days after bud break with scoring (at bud swell) above every other bud along the leader from 24 to 45 inches high.

If you plant a Tall Spindle apple block with feathered trees, you should remove any feathers larger than $\frac{2}{3}$ the diameter of the leader with a bevel cut; if there are less than three feathers, remove them with a bevel cut and treat the tree as a whip as described above.

Branch Management of Moderate and Highly Vigorous Apple Trees

It is essential with Tall Spindle orchards planted at 3 feet in-row spacing to tie down the feathers below horizontal soon after planting (before mid-June). Growers should invest the necessary time and effort to manage feathers of a young Tall Spindle orchard if the trees are growing vigorously. For example, all feathers on Fuji or Macoun (two vigorous apple cultivars) should be tied or weighted down below the horizontal at planting or before mid-July to induce cropping and to prevent them from developing into large lower scaffolds. Tying is best done within one month of planting, but can also be done in June, July, and even until August. The following materials are particularly suitable for tying down feathers below horizontal for the Tall Spindle system: (1) a strip of 5/8"-wide Avis-strap nailed or tied from the base of the trunk, then split into strands and tied to each of the lower feathers, (2) a pre-cut 20-inch black annealed wire (sold in 1000 pieces/bundle), each hooked around the feather directly down to the trellis wires, the conduit pipe or bamboo supporting pole, or the main trunk, and (3) a 4-inch long ghent rubber band (six-month-life with 880 rubber bands per bag) where the rubber band is tied on the trunk and the feather is placed through the band when it is stretched out. After about 4–6 months, the rubber band stretches and is less effective for strong

feathers, while Avis-strap strings and the pre-cut black annealed wire are suitable for bending both weak and vigorous feathers.

Ensuring Great Tree Growth the First Year

After the trees are planted, the graft union height is adjusted, the trees are pruned and feathers are tied down, growers should focus on the basics of good tree management the first year: 1) Excellent weed control through the end of August, (2) regular small doses of nitrogen (1/4 lb of CaNO_3 every month for the first 4 months), and (3) good water supply to minimize water stress of the young tree. Using trickle irrigation, apply small amounts of irrigation water (3–5 gallons per week) each week of the growing season unless sufficient rain falls that week. Growers can now precisely determine how much water to apply to newly planted apple orchards using the Cornell apple irrigation website on the NEWA webpage at: <http://newa.cornell.edu/index.php?page=apple-irrigation>.

SIMPLE PRUNING RULES FOR A MATURE AND EFFICIENT PEACH TREE

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[Box text: FIT AND TRIM]

There are 4 general peach pruning rules that apply to all peach trees in New York State:

1. Prune during dry weather and warmer temperatures at pink or bloom stages. Pruning under these weather conditions limits the spread of *Cytospora* canker. *Cytospora* canker is a cool weather disease that is most active in the spring and fall; it infects during cool, wet conditions. Try to select an extended period of dry weather during bloom. Trees are growing rapidly and wounds will heal quickly, effectively sealing out the fungal spores. This is especially important in blocks near existing peaches, cherries, or hedgerows where the fungi are always present. There are no chemical controls for *Cytospora*, only cultural management! The first step in pruning a peach tree in NY is to remove all visible cankers throughout the tree. If they occur on the trunk or main scaffolds, consider "surgery" to remove infected tissue back to the wood. Lastly, pruning at bloom also allows you to assess the crop and make intelligent decisions about how much wood can

be taken off and still preserve a full crop and encourage good shoot growth.

2. In general, do not leave stubs when pruning peaches. Stubs commonly can become infected with canker since they do not easily form a healing callus; flush cuts callus over and heal quickly. However, most modern peach training systems require replacement branches in the lower part of the canopy, which will not grow from flush cuts. Thus, we recommend leaving stubs in the lower portion of the tree where re-growing fruiting wood is a challenge (see recipe for V-Systems below).

3. Remove all very fine wood (smaller than the diameter of a pencil) throughout the tree, particularly on the trunk and main scaffolds. Remove all shoots less than 6" long because short shoots produce small fruit. This wood, especially when shaded, dies and becomes a site for canker infection on the structural parts of the tree. Ideally, all fruiting wood throughout the tree is "pencil-sized".

4. Reduce crop load during pruning to reduce the hand-thinning job later. We say, "Prune to thin"! Peach trees often set 10 times as many fruits as needed

for a full crop! Hand thinning is expensive, time consuming, and the quality of your work can affect ultimate fruit size (the bottom line). By removing 1/2 of the potential flowers during pruning, you can significantly reduce the amount of hand thinning required later. With a good bloom, this entails pruning off 1/3–1/2 of the remaining branches and thinning out fruiting wood, keeping the best pencil size. As with apples, the earlier the thinning is done the better result in fruit size, so reducing crop load at bloom via pruning will give better fruit size than waiting until hand-thinning.

In addition to the general pruning rules, there are specific rules for each planting system (Open vase, V-systems and Central Leader systems). Each system requires a different pruning scheme. Pruning a mature perpendicular-V or Quad-V tree is generally a simpler procedure than pruning an open-vase tree of equivalent age. Due to the regimented structure of the system, each tree is virtually identical. As a result, pruning can be performed quickly and efficiently because only a single ladder position is needed to prune each scaffold.

When pruning a mature perpendicular-V or quad-V tree, we recommend using a system of **renewal**

pruning in which the previous season's fruiting shoots (hangers) are cut back to the main scaffold as closely as possible, while still ensuring the development of a replacement shoot. When doing this pruning at bloom, it is easy to identify the last vegetative bud on a shoot that is closest to the trunk, and cut to that bud to ensure a replacement shoot. If flush cut pruning is done on the trunk, then no replacement shoots develop. Renewal pruning on V-systems also entails the removal of all previous-season shoots with tertiary branches originating from auxiliary buds during the summer. With this type of pruning, the highest-quality fruiting wood (12–19-inch long and 1/4 inch in diameter) is developed each year for fruit production in the upcoming season. Renewal pruning also keeps the fruiting wood close to the trunk and prevents having all of the fruiting wood on the tips of branches and in the upper part of the tree.

When pruning a V-system tree, pay particular attention to shoots in the bottom half of the tree along the scaffold arms. Prune to keep bottom shoots actively growing and continually fruitful. To keep shoots growing in the lower portion of the tree, they must receive adequate light during the season. This requires removing upper branches that shade the

interior of an open center tree or a V-tree. Prune out most, if not all of the vigorous upright growth in the tree, which shades the lower half of the tree. Prune it all the way to where the branch originates. Keeping good light exposure to the bottom of the tree will also require 1–2 summer prunings to keep interiors of trees open by removing vigorous and upright interior growth.

Limit the height of the tree by heading tops of scaffold arms, maintaining approximately 10–12 feet in height and keeping tops very narrow and approximately in line with the main trunks by removing all large wood in the top facing in the row.

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