scaffolds

Update on Pest Management and Crop Development

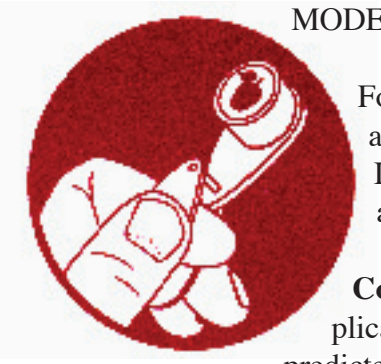
F R U I T J O U R N A L

June 15, 2009 VOLUME 18, No. 13 Geneva, NY

INSECTS

JUNE BUGS

ORCHARD RADAR DIGEST (Art Agnello, Entomology, Geneva)



MODEL BUILDING

Following are the available readings as of today.

Insect model degree day accumulations:

❖❖ Geneva Predictions:

Roundheaded Appletree Borer

RAB peak emergence: June 13.

RAB peak egglaying period roughly: June 27 to July 11.

Codling Moth

Codling Moth development as of June 15: 1st generation adult emergence at 70% and 1st generation egg hatch at 16%.

1st generation 20% CM egg hatch: June 16 (= target date where one spray needed to control 1st generation codling moth).

Obliquebanded Leafroller

Where waiting to sample late instar OBLR larvae is not an option (= where OBLR is known to be a problem, and will be managed with insecticide against young larvae):

Early egg hatch and optimum date for initial application of B.t., Intrepid, Proclaim, SpinTor, Delegate, or other insecticide with comparable efficacy against OBLR (with follow-up applications as needed): June 26.

San Jose Scale

First generation SJS crawlers appear: June 20.

Spotted Tentiform Leafminer

2nd STLM flight begins around: June 18.

Codling Moth (targeted spray application at newly hatching larvae, predicted at 250–360 DD base 50°F after biofix):

Location	Biofix	DD (as of 6/14)
Sodus	May 14	302
Williamson	May 14 (lake site)	283
Albion	May 15	304
Geneva	May 18	307

continued...

IN THIS ISSUE...

Plum Curculio (spray coverage required until 308 DD base 50°F after biofix; i.e., McIntosh petal fall):

Location	Biofix	DD (as of 6/14)
Sodus	May 15*	289
Geneva	May 18	307
Albion	May 18	286

* (estimated)

[NOTE: Consult our mini expert system for arthropod pest management, the **NEWA Apple Insect Models Degree Day Calculator**: http://newa.nrcc.cornell.edu/newaModel/apple_pest
Find accumulated degree days for the current date with the **Degree Day Calculator**: http://newa.nrcc.cornell.edu/newaLister/dday
Powered by the NYS IPM Program's NEWA weather data and ACIS, Northeast Regional Climate Center] ❖❖

WARM FUZZIES

THEY GROW ON TREES
(Art Agnello, Entomology, Geneva)

❖❖ Similar to most years at this point in the season, we've received a report from Jim Eve of the first infestations of woolly apple aphid (WAA) in problem sites in western NY. WAA colonizes both aboveground parts of the apple tree as well as the roots, where it commonly overwinters. In the spring, nymphs crawl up on apple trees from the roots to initiate aerial colonies. Most nymphs are born alive to unmated females on apple trees during the summer. Colonies initially build up on the inside of the canopy on sites such as wounds or pruning scars and later become numerous in the outer portion of the tree canopy, usually during late July to early August.

The aerial colonies occur most frequently on succulent tissue such as the current season's growth, water sprouts, unhealed pruning wounds, or cankers. Heavy infestations cause honeydew and sooty mold on the fruit and galls on the plant parts. Severe root infestations can stunt or kill young trees, but usually do not damage mature trees. However, large numbers of colonies on trees may leave sooty mold on the fruit, which interferes with harvest operations because red sticky residues from crushed WAA colonies may accumulate on pickers' hands and clothing.

During late June most years, water sprouts, pruning wounds, and scars on the inside of the tree canopy should be examined for WAA nymphs. During mid-July, new growth around the outside of the canopy should be examined for WAA colonies. No economic threshold has been determined for treatment of WAA, but they are difficult to control, so the occurrence of any colonies should prompt the consideration of some remedial action.

WAA is difficult to control with insecticides because of its waxy outer covering and tendency to form dense colonies that are impenetrable to sprays. WAA is resistant to the commonly used organophosphates, but other insecticides are effective against WAA, including Diazinon and Thionex, and some newer products such as Assail (plus

continued...

scaffolds
is published weekly from March to September by Cornell University—NYS Agricultural Experiment Station (Geneva) and Ithaca—with the assistance of Cornell Cooperative Extension. New York field reports welcomed. Send submissions by 3 pm Monday to:

scaffolds FRUIT JOURNAL
Dept. of Entomology
NYSAES, Barton Laboratory
Geneva, NY 14456-1371
Phone: 315-787-2341 FAX: 315-787-2326
E-mail: ama4@cornell.edu

Editors: A. Agnello, D. Kain

This newsletter is available online at:
http://www.nysaes.cornell.edu/ent/scaffolds/

1 qt. of oil per 100 gal) and Beleaf may offer some suppression. Good coverage to soak through the insects' woolly coverings is integral to ensuring maximum efficacy. Additionally, Lorsban trunk applications for borers made at this time will effectively control any crawlers that might be contacted by these sprays. ❖❖

EN-CRUSTED

DRAWN TO SCALE
(Art Agnello, Entomology, Geneva)

❖❖ The San Jose scale (SJS) is a pest of tree fruit that attacks not only apple, but also pear, peach, plum, and sweet cherry. The minute SJS adult males emerge in the spring from beneath scale covers on the trees, usually during bloom, and mate. The first of this year's crawlers should be showing up any day now. The females produce live crawlers within 4-6 weeks of mating; these are bright yellow, very tiny insects resembling larval spider mites. About 24 hours after birth, the crawlers have walked or drifted to new sites and settled in by inserting their mouthparts into the tree and secreting a white waxy covering that eventually darkens to black.

SJS infestations on the bark contribute to an overall decline in tree vigor, growth, and productivity. Fruit feeding causes distinct red-purple spots that decrease the cosmetic appeal of the fruit. Control measures for SJS are recommended when the scale or their feeding blemishes have been found on fruit at harvest during the previous season. Insecticidal sprays are most effective when directed against the first generation crawlers, specifically timed for the first and peak crawler activity, which are usually 7-10 days apart.

The most reliable method of determining first appearance of the crawlers in your specific area is by putting sticky-tape traps on the tree limb near encrusted areas and checking them at least twice a week. We are closing in on the predicted time for this event, about 50 degree days away from the needed accumulation of 310 (50°F base) since the date of first adult catch (5/21 in Geneva this year). Effective materials for SJS control include Assail, Esteem, Leverage and Provado; Guthion and Imidan were once standards but now show limited effectiveness in most orchards.

Coverage and control are generally better if the spray is applied dilute and in every row. SJS is frequently a problem in larger, poorly pruned standard size trees that do not receive adequate spray coverage. Dormant or delayed-dormant sprays of oil, or 1/2-inch green applications of Lorsban, Esteem or Supracide will help prevent populations from getting established. Early season pruning is important for removing infested branches and suckers, as well as for opening up the canopy to allow better coverage in the tree tops where SJS are often concentrated. ❖❖

VALLEY VIEW

HUDSON VALLEY INSECT PEST MANAGEMENT UPDATE
(Peter Jentsch, Entomology, Highland)

Obliquebanded Leafroller

The first catch (biofix) of OBLR occurred on May 31. Since the early flight, adult females have been laying eggs. We anticipate these first eggs to begin emerging this week. Model predictions used to determine a more precise date for the early hatch of these eggs (360 DD base 43°F) forecasts June 18 to be the first larval emergence in HIGHLAND, NY. We would then expect 50% hatch to occur after 630 DD (late June); the 2nd–3rd instar larvae of the early hatch by 720 DD, and 90% hatch of the eggs by 810 DD (1st–2nd week of July).

Weather patterns should be reviewed daily to find the optimum application window. Mid-Hudson Valley temperatures are predicted to be moderate (mid-upper 70s) with 40–50% chance of rain throughout the remainder of the week. A pro-

longed period without rain is optimum for control; however, intermittent rains accompanied by wind often help to reduce early instar larval numbers.
The biology of this insect is such that, in years when foliage is lush, it tends to feed on leaves during the early instar stages, forming a nearly impenetrable "leaf-rolled" barrier to insecticides as it grows. However, in drought years, foliage provides less "appeal" to the insect and it quickly moves to feeding on fruit. During these situations, it will form a cluster-leaf covering directly over the fruit for protection. Once inside this fortress, the larvae are very difficult to eradicate. In either case, research has determined early hatch, prior to the development of these protected sites, to be the optimum timing for insecticide management of the insect. This tends to be more critical with the use of some of the newer insecticides and Bts.

In small plot field trials and farm demonstrations in NY, Delegate has been shown to provide excellent control of the summer generation of OBLR. It appears to be more effective with the addition of a penetrating surfactant. Delegate, a synthetic spinosyn chemistry, has greater efficacy and broader spectrum than its predecessor SpinTor, providing 14–21 days of protection. Dow AgroSciences will soon replace SpinTor with Delegate, maintaining the Entrust formulation for organic management.

Proclaim (Avermectin class), has also shown very good activity against OBLR. Its mode of action requires the active ingredient to be ingested by larvae. Proclaim should be applied at the 4.5 oz/acre using a penetrating spray adjuvant to improve efficacy, such as Damoil at 2 qts/100 gallons. The use of a sticker/binder, however, is not advised, as it may inhibit the movement of product into the plant. DO NOT tank mix Proclaim with Dithane or Rainshield, as they act like sticker-type materials. The addition of Warrior to Proclaim appeared to enhance activity and efficacy in studies in Michigan. Bts are most effective when applied during warm weather conditions (daily highs in the 70s) and are most effective against smaller larvae. Using 2–4 sprays at the low rate on a 7-day interval, starting 10–12 days after first adult catch, has been shown to be very effective in field studies. Bt products are generally more effective with a lower tank pH.

Refer to last week's issue for comments on using Intrepid, plus products in the conventional insecticide classes, as well as some resistance management considerations.

Pear Psylla

The 2nd generation of pear psylla adults continue to lay eggs on extension growth, giving rise to nymphs on foliage that contains little to no residue. These nymphs have been causing considerable damage to fruit and foliage in untreated trees, primarily in the form of sooty mold. Most pear growers in the Hudson Valley have used a single application of Agri-Mek and 0.25% oil, and those that made their first application in mid-May are outside of the 21-day label restriction and have made a follow-up second application. Given the relatively cool temperatures and succulent foliage, a second application of Agri-Mek continues to be a good strategy this week if it hasn't already been done. Remember that if Agri-Mek + oil is used, it should be applied as close to the 21–day label restriction as possible, as the insecticide needs to be taken up by the leaf and becomes less effective as foliage hardens off. It requires the use of 0.25% v/v horticultural spray oil to penetrate the foliar waxy cuticle and translocate within the leaf for optimum uptake by feeding nymphs. Agri-Mek is also one of the best measures against pear rust mite.

However, if you choose not to make a second Agri-Mek application for the 2nd psylla generation, and if populations are building, there are other options available for control. One cultural option that is quite effective during this period of the season will "kill two birds with one stone". This is the timely suckering of shoot growth. At the onset of the nymphal hard shell stage (this week), sucker water sprouts and shoots to remove nymphs and eggs from growth that has little or no insecticide,

as it has "outgrown" the coverage from earlier applications. As we are approaching the completion of egg laying by adults, the removal of shoots will reduce emerging nymph populations and allow for better coverage of insecticides and fungicides for the control of Fabraea as the season progresses. Suckering of shoots can be done using pruners or simply by "ripping off" the scaffold limbs prior to stem hardening. Dropping them into the row middles will kill the nymphs as the leaves desiccate.

Delegate is another insecticide labeled for pear psylla and Lepidoptera management. In our trials, it was quite effective against psylla when used with a penetrant such as horticultural mineral oil or penetrant rates of LI-700. Delegate has a greater degree of activity against insects such as the codling moth and obliquebanded leafroller when compared with its predecessor, SpinTor, with a residual of 14–21 days. Studies in NY and PA have shown this product gives excellent control of pear psylla nymphs. Delegate should be applied as a 3rd generation psylla control in mid-July (18 July in 2008) as codling moth larvae begin to emerge.

Insecticide options for psylla nymph management during the post-petal fall period include the neonicotinoids, Actara, Assail, Provado, and Calypso, in combination with 0.25–1% oil for increased efficacy. We have found Actara to be an excellent choice against the adult psylla as they emerge and as a rescue material for nymph populations. This may be a good option for the upcoming 3rd generation of psylla later this month. The insecticide Leverage (imidacloprid, the a.i. in Provado, + cyfluthrin, the a.i. in Baythroid) is also registered for use against psylla.

Portal is a newly registered insecticide and another option for use in pears for psylla and rust mite. Portal (fenpyroximate, EPA Reg. No. 71711-19) is in the phenoxypyrazole class of acaricides, similar to the mode of action of two other acaricides, Nexter and Kanemite. It works as a mitochondrial electron transport inhibitor (METI), blocking cellular respiration. It stops feeding within hours after application, with mortality occurring within 4–7 days. For purposes of resistance management, no more than one application of compounds from the METI group is recommended per season. Portal is registered for use on pome fruit, has a 12-hour REI and can be applied up to 14 days before harvest.

Subsequent seasonal applications of horticultural mineral oil, used through the mid-late season, have been shown to reduce pear psylla egg laying, nymph emergence and rust mite buildup. Oil can be used at a 1% concentration at 14-day intervals for psylla nymph management throughout the season at temperatures below 80oF. The oil can be tank-mixed with manzate used to manage Fabraea leaf spot; however, in this situation the oil should not be concentrated. It's important to note that if 1% oil is used for psylla management, it will have greater efficacy at application rates above 100 GPA. Larger droplet size and increased application gallonage per acre have greater impact on egg hatch and early instar mortality. Rates of oil above 1% or at temperatures above 80°F will most likely cause russetting of Bartlett fruits. ❖❖

PEST FOCUS

Geneva:
1st **Dogwood Borer** trap catch, 6/11.

Highland:
1st **Peachtree Borer** trap catch, 6/15.

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY

	6/4	6/8	6/11
Redbanded leafroller	0.1	0.1	0.0
Spotted tentiform leafminer	0.7	0.3	0.3
Oriental fruit moth	1.0	0.1	0.3
Lesser appleworm	0.0	0.0	0.8
Codling moth	0.7	0.5	1.0
San Jose scale	0.8	0.0	0.0
American plum borer	1.0	0.5	1.2
Lesser peachtree borer	0.1	0.1	1.3
Peachtree borer	0.0	0.0	0.0
Pandemis leafroller	0.0	0.5*	0.7
Obliquebanded leafroller	0.0	0.0	0.0
Dogwood borer	–	0.0	0.2*

Highland, NY

	6/8	6/15
Redbanded leafroller	0.0	0.0
Spotted tentiform leafminer	36.6	49.5
Oriental fruit moth	20.3	0.0
Lesser appleworm	17.9	15.9
Codling moth	1.7	1.9
Lesser peachtree borer	0.2	<0.1
Obliquebanded leafroller	4.6	6.6
Dogwood borer	0.1	0.0
Peachtree borer	0.0	0.2*

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–6/15/09):	971	567
(Geneva 1/1–6/15/2008):	1082	669
(Geneva "Normal"):	996	600
(Geneva 1/1–6/22 Predicted):	1125	679
(Highland 3/1–6/15/09):	1180	684

Coming Events:	Ranges (Normal ±StDev):	
Cherry fruit fly 1st catch	755-1289	424-806
Codling moth 1st flight peak	593–1017	325–603
Lesser appleworm 1st flight subsides	975-1453	595-927
Obliquebanded leafroller 1st flight peak	843–1139	491–707
Oriental fruit moth 1st flight subsides	827–1111	481–693
Pandemis leafroller flight peaks	869-1159	497-703
Pear psylla 2nd brood hatch	967-1185	584-750
Peachtree borer 1st catch	768–1346	437–829
Rose leafhopper adult on apple	809–1053	440–622
San Jose scale 1st gen crawlers present	1033-1215	619-757
Spotted tentiform leafminer 2nd flight starts	980-1154	582-720

NOTE: Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide.

This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.