

scaffolds

Update on Pest Management
and Crop Development

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

April 21, 2008

VOLUME 17, No. 5

Geneva, NY

OUTPUT

ORCHARD RADAR DIGEST



❖❖ Beginning with today's issue, we will once again be publishing pest predictions generated by the Univ. of Maine's Orchard Radar model estimation service, provided to us by Glen Koehler for Geneva. This pest management tool uses commercially available weather data as an input for apple pest occurrence and development models taken from many established university and practitioner sources. It's offered as another perspective on what's happening in the orchard to compare against our own record-generated advisories and, of course, personal observations from the field. We'll be printing only some of the short-term arthropod events; the full Orchard Radar product range covers disease and horticultural events as well. The public sites available for anyone to use are located at: <http://pronewengland.org/AllModels/DecisionModels.htm>. Growers interested in exploring this service for their specific site may wish to contact Glen personally (gkoehler@umext.maine.edu).

Geneva Predictions:

Roundheaded Appletree Borer

RAB adult emergence begins: May 27; Peak emergence: June 12.

RAB egg laying begins: June 6. Peak egg laying period roughly: June 27 to July 11.

Codling Moth

1st generation 3% CM egg hatch: June 9 (= target date for first spray where multiple sprays

needed to control 1st generation CM).

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

Lesser Appleworm

1st LAW flight, 1st trap catch: May 8.

Mullein Plant Bug

Expected 50% egg hatch date: May 15, which is 7 days before rough estimate of Red Delicious petal fall date.

The most accurate time for limb tapping counts, but possibly after MPB damage has occurred, is when 90% of eggs have hatched.

90% egg hatch date: May 20.

Obliquebanded Leafroller

1st generation OBLR flight, first trap catch expected: June 9.

continued...

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UPCOMING PEST EVENTS

Oriental Fruit Moth

1st OFM flight starts, and first treatment date, if needed: April 27.

San Jose Scale

First adult SJS caught on trap: May 16.

Spotted Tentiform Leafminer

1st STLM flight, peak trap catch: May 6.

1st generation sapfeeding mines start showing: May 20.

Optimum sample date is around May 21, when a larger portion of the mines have become detectable.

White Apple Leafhopper

1st generation WALH found on apple foliage: May 12.



Adament (EPA Reg. No. 264-1052) is a premixed fungicide containing tebuconazole (Elite) and trifloxystrobin (Flint), for control of multiple diseases in cherries, peaches, and nectarines (leaf spot, brown rot blossom blight, fruit brown rot, powdery mildew, and scab). It is registered in NY but will not be available for 2008.

Envidor (spirodiclofen; EPA Reg. No. 264-831) is a new tetramic acid miticide federally labeled by EPA but denied registration in NY by the NYS DEC.

Movento (spirotetramat) is a fully systemic insecticide with 2-way translocation in the tree for control of sucking insect pests such as scales, aphids (including woolly apple aphid), psyllids, mealybugs, and whiteflies. EPA registration is expected in 2008; may be available for use in NY in 2009. Adjuvants such as horticultural oils are necessary for the toughest pests, while lighter surfactants are sufficient for aphids.

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WHAT'S
IN A
NAME?

PRODUCT
REGISTRATION
UPDATE, II
(Debbie Breth, Lake
Ontario Fruit Team,
Albion; ed. Art Agnello,
Entomology, Geneva)

Bayer

Calypso (EPA Reg. No. 264-806) was registered for use in pome fruit in NY in 2006. Japanese beetle was added to the label for 2008. Calypso also controls plum curculio, codling moth, oriental fruit moth, apple maggot, and European apple sawfly (all at 4–8 oz/acre), and leafhoppers, leafminers, mirids and green aphids at 2–4 oz/acre). It is not registered for use on stone fruit, where Japanese beetle can be a serious pest.

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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
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This newsletter available on CENET at: news://newsstand.cce.cornell.edu/cce.ag.tree-fruit
and on the World Wide Web at:
<http://www.nysaes.cornell.edu/ent/scaffolds/>

Belt (flubendiamide) is a new class of insecticide (phthalic acid diamides) for foliar application on pome and stone fruits, against a broad range of important lepidopteran pests. It controls CM, OFM and leafrollers by contact and ingestion activity. Bayer anticipates EPA registration in 2008.

Chemtura

Firestorm (paraquat; EPA Reg. No. 82557-1-400) is a generic formulation of Gramoxone Max.

Procure (triflumazole; EPA Reg. No. 400-431) is available in a new formulation, 480SC, 4 lb ai/gallon.

Temprano (abamectin; EPA Reg. No. 67760-71-400) is a generic 0.15EC formulation of Agri-mek available and registered for use in NY on apples, pears, plums and prunes.

Casoron CS (EPA Reg. No. 400-541) is a new 1.4EC formulation of Casoron registered for use on apples, pears and cherries, at 1.4-2.8 gallons per acre (use the high rate for nutsedge control). The best application timing is late fall through early spring when temperatures are below 60°F. Incorporation with rain or irrigation provides better control. If applied when temperatures are above 60°F, immediately irrigate it into the soil. If there is more than 30% weed cover, results will not be uniform and not optimum. If weeds are taller than 3 inches or cover more than 30% of the ground, Chemtura recommends a burndown herbicide about 7 days before applying Casoron CS.

Rimon (novaluron; EPA Reg. No. 66222-35-400) is a chitin synthesis inhibitor with effectiveness on Lepidoptera immatures and eggs by ingestion, contact, and transovarian impact. Rimon is registered on apples in Canada and all of the US except NY. Some western states have a 24(c) label for pears.

Dow AgroSciences

Rally 40WSP (EPA Reg. No. 62719-410) replaces Nova 40WSP. One bag of Rally 40WSP contains five 4-oz. water soluble packets of myclobutanil 40W, whereas one bag of Nova 40WSP contained four 5-oz. water soluble packets.

Indar 75WSP registration on apples for scab control is expected in NY later this year. When Indar is labeled for use on apples in NY, we expect the product will also receive labels for use on prunes and plums. After the new crop labels are approved for Indar 75WSP in NY, Dow AgroSciences will register Indar 2F in NY, which will eventually replace Indar 75WSP.

Quintec (quinoxifen; EPA Reg. No. 62719-375) is registered for use in cherries to control powdery mildew.

Delegate 25WG (spinetoram; EPA Reg. No. 62719-541) is a new spinosyn insecticide (Group 5) for control of codling moth, oriental fruit moth, leafrollers, pear psylla and cherry fruit fly by ingestion and contact. The label also lists suppression of plum curculio and apple maggot. Delegate was federally registered by EPA in Sept. 2007, and Dow has applied for a 24(c) Special Local Need label in NY for CM and OFM only (in apples); failing approval of this label, we expect a New York State registration sometime in late 2008 or early 2009.

Dupont

Avaunt (EPA Reg. No. 352-597) was originally registered for use in pome fruit, but is now additionally registered for use in stone fruit. In stone fruit, it is effective for plum curculio control, and the label states suppression only for oriental fruit moth. It is recommended for use in low to moderate populations of OFM and CM in conjunction with a mating disruption program.

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Altacor (rynaxypyr) is a new insecticide that works on the muscles of the insects (instead of the nervous system) and after ingestion, insects are paralyzed and quickly stop feeding. It is effective on leafrollers and internal lep larvae; suppression only for plum curculio. We expect an EPA registration in Spring of 2008, and a possible NYS label in 2009. There are several EUP trials in NY this season.

Matrix (rimsulfuron) is a herbicide registered by EPA for use in pome and stone fruit and grapes but not yet registered in NY. It will control certain broadleaf weeds and grasses in plantings established at least one full growing season. It will control weeds pre-emergence and if weeds are no more than 1-3 inches (1-2 inches for grasses), and will be effective post-emergence. Matrix will suppress nutsedge if applied at the highest rate allowed for the crops.

Gowan

Onager 1EC (hexythiazox; EPA Reg. No. 10163-277), contains the same active ingredient as Savey. Onager is labeled in NY for use on apples, pears, stone fruits, and grapes. It controls the egg and all immature stages of European red mite, but not adults. Adult female mites in contact with treated surfaces lay non-viable eggs. Onager use rates are 4X multiples of those for Savey (Savey 4 oz/A = Onager EC 16 oz/A). Check the label for specific rates and crops.

Nichino America

Venue – (pyraflufen-ethyl; EPA Reg. No. 71711-25) is a non-selective contact herbicide for post-emergence control of broadleaf weeds in tree fruit and vine crops. It resembles the same mode of action as Aim, as it speeds the burndown of weeds. It is registered for use in both bearing and non-bearing tree fruit. It works best if weeds are small (2-4 inches); control will be better in larger weeds if

tank mixed with 2,4-D or glyphosate. (I have no experience with this herbicide - DIB.) The label restricts usage to between postharvest and pre-bloom only.

Fujimite (fenpyroximate) is registered by EPA for use against many mites species sold west of the Mississippi. Portal is the same product that is sold east of the Mississippi River; this product is not yet registered for use in NY.

Centaur (buprofezin) is an insect growth regulator that works by inhibiting chitin biosynthesis, and is federally registered by EPA for use on pome fruit for control of leafhoppers, psylla, mealybug and scale, and stone fruit for mealybug and scale. This product is not registered in NY.

Syngenta

Warrior 1CS will be reformulated as Warrior 2CS with a 2 lb ai/gal product.

Tilt (propiconazole) The Tilt federal label has been expanded to the Berry Group, and Stone fruit for control of monolinia, mummyberry and leafspots, brown rot on stone fruit, anthracnose and powdery mildew on strawberries. Orbit will be phased out. Tilt is not yet registered on these crops in NY.

Actara (EPA Reg. No. 100-938) currently has a Sec 24(c) label for use in NY with only 1 application allowed per season in pome fruit. EPA has added bushberries, caneberries, stone fruit and grapes to the federal label. We will have to wait for the full label to be registered by the NYS DEC before these crops will be added to the NY label.

A new fungicide, Inspire Super (difenoconazole) is in the DMI class of fungicides. It was federally registered for use in fruit crops by the EPA in February, but not by NYS DEC.

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A new insecticide, chlorantraniliprole (CTPR) will be registered as combination tank mixes with other insecticide classes after Dupont gets the original active ingredient registered (Altacor). This insecticide will be effective against internal lep pests and leafrollers and will be called **Voliam Xpress** and **Voliam Flexi**.

United Phosphorus Inc.

Assail 30SG (EPA Reg. No. 8033-36-4581) is registered for use in pome fruit and grapes in NY. Along with control of CM, OFM, apple maggot, aphids, and leafhoppers, it has been noted that Assail applied at early infestation of Japanese beetle causes the beetles to stop feeding and eventually kills the adults. Assail recently received a federal label for use in stone fruits, but this not yet approved for NY.

Valent USA

The NYS DEC has accepted for registration **Chateau Herbicide WDG** (EPA Reg. No. 59639-119) and supplemental labeling for Chateau Herbicide SW (EPA Reg. No. 59639-99), which contain the active ingredient flumioxazin (chemical code 129034). Chateau SW is currently registered for use in NY on grapes, non-bearing tree fruit, and onions. The new registered uses of flumioxazin on strawberries, pome fruit and stone fruit, as specified on the Chateau Herbicide SW and Chateau Herbicide WDG labels, represent a major change in use pattern for this active ingredient in New York State. Chateau Herbicide SW (EPA Reg. No. 59639-99) and Chateau Herbicide WDG (EPA Reg. No. 59639-119) are identical in formulation. Chateau is a light-dependent peroxidizing herbicide (LDPH) that acts by blocking heme and chlorophyll biosynthesis, resulting in an endogenous accumulation of phototoxic porphyrins. This class of herbicides is known to have a phototoxic mode of action in plants and possibly in fish.❖❖



CONTROLLING APPLE SCAB WHEN IT DOESN'T RAIN

(Dave Rosenberger, Plant Pathology, Highland)

❖❖ A squash-mount assessment of apple scab ascospore maturity was performed at the Hudson Valley Lab on Friday, April 18, and showed 40% mature spores and 3.2% empty asci. The empty asci resulted from rains on April 11–13 when apple trees in the Hudson Valley were mostly at the green tip bud stage. Despite predictions for an extended rainy period, the timing and duration of wetting events on April 11–13 varied considerably from location to location within the Hudson Valley. In many locations, the wetting duration was marginal for scab infection. As a result, low-inoculum orchards that were not sprayed prior to those rains may have escaped with very few scab infections. However, orchards that had any level of visible scab last year may have sustained enough infections to create problems later in the season.

Warm and dry weather has prevailed since April 13 and is predicted to continue through the next 10 days. At the Hudson Valley Lab, early blooming apple cultivars will reach the tight cluster bud stage by tonight (April 21). If the current weather prediction is accurate and no rains arrive before the end of April, then apples in the Hudson Valley may reach full bloom before we have our first major scab infection period.

Dry weather during the pre-bloom period in spring should be an apple grower's dream (and a nightmare for plant pathologists evaluating apple scab fungicides!). Everyone knows that trees don't need scab protection during dry weather!

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HOWEVER, serious scab problems emerge more often than one might expect following a dry spring. Following are some factors that may contribute to scab development in a dry year:

1. Massive spore releases can occur after long dry periods. The spore load in overwintering leaves does not disappear during dry weather. While it is true that some of the leaf litter will be removed by earthworms and by saprophytic decomposition of leaves, both of those processes slow down in dry weather. Ascospore maturation continues so long as the leaf litter is damp enough to keep leaves pliable. When rains finally arrive after a long dry spell, ascospore releases can be massive and there will be far more leaf area available to catch spores released during bloom than if those same spores were released prior to tight cluster.

2. Extended spray intervals during dry weather result in reduced fungicide residues available to control scab when rains finally arrive. In “normal” years with moderate and intermittent rainfall, fungicides must be applied to trees on a regular basis to cover new growth. Some of the fungicide residues are washed off and/or degraded with each rain event. However, if protectant fungicides such as mancozeb are applied at roughly 7-day intervals and if rainfall during any given week totals less than an inch, then some of the fungicide residues pre-

sumably persist from week to week. In that case, the total accumulated residues in the trees may exceed what can be expected from a single spray applied just ahead of a rain event that occurs after a long dry period.

3. Fungicide redistribution does not occur in the absence of rains. Heavy rains (greater than 1.5 to 2 inches) remove all fungicide residues from sprayed trees, but light rains may improve fungicide effectiveness by redistributing contact fungicides (Polyram, mancozeb, captan) to new growth and/or to small areas missed by the sprayer. The role that fungicide redistribution plays in scab control is often underestimated. A visual demonstration of redistribution can be obtained by expelling individual water droplets from an eye-dropper held at head level and positioned so that the droplets hit a small puddle of red or blue food coloring on a white tile floor. The surprisingly large area covered by the spattered food coloring provides some indication of how effectively fungicide residues on a wet leaf are redistributed by falling rain. If this demonstration is done by someone wearing khaki trousers, then the height of the color splatters on the trouser legs will also illustrate how fungicides can redistribute to shoot tips that extend higher than the last leaf that was actually sprayed. In warm dry weather, however, fungicides stay where they were

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Figure 1: Fungicides applied at pink are more likely to reach stems, sepals, and the flower hypanthium (arrow) than are fungicides applied at bloom.

deposited by the sprayer, whereas the area of susceptible tissue continues to increase rapidly.

4. Open flowers create a massive increase in plant tissue surface area that can complicate fungicide coverage. Fungicides applied at the pink bud stage are more likely to reach flower stems, sepals, and petals than are fungicides applied at full bloom. (Fig. 1) Furthermore, the hypanthium at the base of the flower is the part that ultimately develops into the apple fruit. On a fully opened flower, the hypanthium is somewhat protected from spray droplets by the umbrella of petals just above it whereas airborne spores can still find their

way to the hypanthium and/or the flower sepals. Scab infections on flower sepals become calyx-end infections on apple fruit.

Considering the four factors noted above, it should be evident that an effective pink spray may be especially important for getting good scab control in a dry year. Full rates of fungicides and thorough spray coverage (no alternate row spraying) are especially important if several prebloom sprays were omitted prior to the pink spray. Attempting to catch up with scab control after the flowers open is likely to be a losing strategy in a dry year unless no rains occur during bloom. ❖❖

PHENOLOGIES

Geneva:		
	<u>4/21</u>	<u>4/28 (Predicted)</u>
Apple(McIntosh):	1/2 inch green-tight cluster	pink
Apple(Red Delicious):	1/2 inch green-tight cluster	pink
Apple(Empire):	early tight cluster	pink
Pear:	bud burst-green cluster	white bud-bloom
Sweet cherry:	late bud burst	bloom-petal fall
Tart cherry	bud burst	bloom
Plum:	bud burst	bloom
Peach:	bud burst	bloom
Highland:		
Apple (Ginger Gold):	early pink	
Apple (McIntosh):	tight cluster	
Apple (Red Delicious):	early tight cluster	
Apple (Golden Delicious):	early tight cluster	
Pear (Bartlett/Bosc):	early green cluster	
Peach (early):	50% bloom	
Peach (late):	10% bloom	
Plum (Stanley):	green cluster	
Sweet cherry:	late green cluster-bloom	

HORNS APLENTY

CEDAR RUST DISEASES
(Dave Rosenberger,
Plant Pathology, Highland)

❖❖ If you understand the life cycle of cedar apple rust and if you remember the weather during late August and September of 2006, then you might be able to guess that cedar trees in the Hudson Valley are carrying a bumper crop of cedar apple rust galls. (Fig. 1) These galls will soon be releasing the basidiospores that infect apple leaves and fruit. Aeciospores of the cedar apple rust fungus move from apple leaves to cedar trees in late summer. Aeciospores infect cedar trees where the fungus produces galls that mature about 18 months after

the infections occurred. In 2006, we had 18 days with measurable rainfall between 24 August and 30 September. Those rains provided ideal conditions for infection of cedar trees, and cedars growing in the proximity of unsprayed apple trees are therefore loaded with galls this spring.

Photos and more information on apple rust diseases are available in the Scaffolds article that I wrote in 2003: (<http://www.nysaes.cornell.edu/ent/scaffolds/2003/5.12.html#d1>). Rust diseases are relatively easy to control so long as the fungicides selected to control apple scab also have activity against rust. Syllit, Scala, Vangard, Topsin M, captan, and the stroby fungicides (Sovran and Flint) will not provide adequate protection against rust diseases when inoculum levels are high. Polyram, mancozeb, and all of the SI fungicides are very effective. ❖❖



Fig. 1: Cedar apple rust galls as they appear on cedar trees during dry weather in spring (left), with teliohorns extruded during May rains (center), and festooning a cedar tree during a spring rain in the Hudson Valley (right).

PEST FOCUS

Geneva:

Redbanded leafroller flight began 4/17. **Spotted tentiform leafminer** flight began today, 4/21

Highland:

Oriental fruit moth flight began today, 4/21. **Red-banded leafroller** and **spotted tentiform leafminer** flights increasing.

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–4/21/08):	209	107
(Geneva 1/1–4/21/2007):	129	48
(Geneva "Normal"):	197	93
(Geneva 1/1–4/28 Predicted):	314	169
(Highland 3/1–4/21/08):	185	76

<u>Coming Events:</u>	<u>Ranges (Normal ±StDev):</u>	
Green apple aphid present	111–265	38–134
Obliquebanded leafroller larvae active	158–314	64–160
Pear thrips in pear buds	118–214	50–98
Rosy apple aphid nymphs present	134–244	56–116
Redbanded leafroller 1st flight peak	229–377	103–191
Spotted tentiform leafminer 1st flight peak	257–407	115–207
Comstock mealybug 1st gen. crawlers in pear buds	215–441	80–254
European red mite egg hatch	231–337	100–168
Oriental fruit moth 1st catch	207–381	81–203
Pear psylla egg hatch	174–328	60–166
Rose leafhopper nymphs on multiflora rose	239–397	96–198
McIntosh at pink	274–310	123–155
McIntosh at bloom	348–420	171–219

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.