scaffolds Update on Pest Management and Crop Development

FRUIT JOURNAL

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INSECTS

PINK

PINK SPRAY STRATEGY

(Art Agnello)

❖❖ The last of the prebloom sprays should be applied at pink for the most effective control of arthropod pests. In general, the three most important insects to be concerned with are tarnished plant bug, rosy apple aphid, and spotted tentiform leafminer. If all three are present in sufficient numbers to warrant a treatment at this time, the only materials with enough broad sprectrum activity and residual effectiveness to do a good job are the synthetic pyrethroids: Asana or Ambush/Pounce. As a rule, the best control of plant bug is obtained with a pyrethroid, although Cygon and Thiodan will do a fairly good job; Thiodan is easiest on mite predators. If your fruit has been showing no more than 2–3% plant bug damage at harvest, a spray is of questionable value, because low level damage is difficult to eliminate completely, and packout studies have shown that any increases in packout gained by spraying for TPB are offset by the cost of the spray. If TPB is not a problem, but rosy aphids and leafminers are, a recommended option would be Vydate; for rosy apple aphid control alone, use Lorsban 50WP at 12 oz, or Thiodan at 1 lb of the 50WP (2/3 qt of the 3EC) per 100 gallons.

First brood STLM may well turn out to be very low again this year, because of the rain and cool weather of the past few days, but if this insect is your sole pest at pink, you have some options. Vydate applied at pink will act as an ovicide against the eggs, 90% of which are present by bloom, and its long residual activity will also work against the larvae as they hatch. Lannate is also effective at pink, but has a shorter residual life, which may be a concern if egg-laying gets slowed down by our cool weather. Also, there is little or no ovicidal action with this material, so you are aiming at the young larvae. These materials can also be used at petal fall, but Vydate thins the fruit, so if you don't want this thinning action, Lannate at petal fall is preferred. Be sure virtually all the blossoms have fallen. This allows enough time for all the eggs to be laid and begin hatching. The recommended threshold for this brood of STLM is 2 eggs per fruit cluster at pink. Examine leaves 2, 3, and 4 on three clusters from each tree sampled, and use the sequential sampling table (No. 10, p. 60 in the Recommends) or chart (Fig. 1, p. 178) to determine how many trees to sample. I would remind you that a decision can also be made by sampling with a threshold of 1 sap-feeding mine per leaf at petal fall (same table, or chart on p. 180, Fig. 2). For rosy apple aphid, 1 infested cluster per 100 (check 10 on each of 10 trees) warrants treatment.

Caterpillars: Growers often feel it is necessary to control green fruitworm and/or obliquebanded leafroller in their pink spray. A number of materials, most notably the pyrethroids, are suitable for this purpose; however, it generally turns out that

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even if some kill is obtained during pink, you usually need to come back again after bloom to finish the job, so you should probably consider petal fall to be the best time to control these worms.

Mites: If oil was not used earlier for red mites, a contact miticide should be included now—Kelthane, Omite, and Carzol are possibilities; however, Morestan performs very well against mites at pink, and because no resistance to it has been seen (and it can't be used post-bloom), it remains our strongest recommendation for a pink miticide. (Its withdrawal from the pear label does not affect its availability for use on apples.) No contact miticide should be necessary at pink if oil was applied previously. Vydate or Lorsban may also provide some mite suppression if used at this time.

Plum curculio: Some growers advocate a pyrethroid at pink to help take care of the first curcs immigrating into the block during bloom, because they don't feel they will get in soon enough with a petal fall spray to control every single one. This is an especially popular practice in mixed plantings, where some varieties are still in bloom while others have already reached petal fall. Although it may be possible to kill some curculios this way (and it may not be very many if the residue has to last through a very protracted pink stage), the majority of adults begin damaging the fruit clusters after the petals fall; in fact, Sieg Lienk always said that it takes a couple of warm days after this point until any are actually working in the trees. Despite the philosophy that **ANY** curcs that can be killed justify a spray, it is our opinion that the long-term effects of excessive pyrethroid sprays constitute a strong argument against this practice. Also, recent field trials conducted by Harvey Reissig reinforce this position — the addition of a pink pyrethroid spray did not reduce fruit damage by curculio when compared with normal programs consisting of petal fall-plus-cover sprays. You would come out ahead by spot-treating the trees that reach petal fall earlier, or by making a quick border row spray to hold off the invasion for a few days while the straggling varieties catch up, after which a full cover petal fall spray would be applied.❖❖

SPRAY MIXTURES

COMPATIBILITY TABLE UPDATE
(Art Agnello)

❖❖ When the CENET-format version of the Spray Mixture Compatibility guidelines (Table 45, p. 173 of the Recommends) was developed to replace the graph version a couple of seasons ago, the use of mancozeb products like Dithane, Manzate and Penncozeb was in hiatus because of regulatory maneuverings. Now that we have them back, more or less, we should restore them in the table. An amended version of the entire table has been placed on CENET, but for the record, here are our compatibility ratings of mancozeb with the various products for which we have information:

"+" = Potentially compatible, if used as directed: Bayleton, Benlate, Bravo, Captan, Carbamate, Carzol, Cygon, Cyprex, Cythion, Diazinon, Dinocap, Ethion, Funginex, Guthion, Imidan, Kelthane, Lorsban, Morestan, Oil, Omite, Penncap-M, Phosdrin, Rovral, Rubigan, Sevin, Sulfur, Thiram, Thiodan, Topsin-M, Vendex, Vydate.

"?" = Usually not mixed together or compatibility unknown: Asana, Lannate, Mitac, Ronilan.

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"W" = Use wettable powder form of materials, where applicable: Botran, Methoxychlor.

"Footnote a" = Decomposes on standing; residual action reduced: Fixed Copper, Lime.

"Footnote c" = Compatible, continuous agitation required: Ambush, Pounce.❖❖

FIELD NOTES

HUDSON VALLEY

(Dave Rosenberger)

Apple scab ascospore maturity, **Highland, NY**:

Date	Immature	Mature	Discharged	Tower shoot
April 26	42%	40%	18%	797 spores

GENEVA

APPLE SCAB UPDATE
(Wayne Wilcox)

ASCOSPORE MATURITY DETERMINATIONS

		Maturity category (%)**					Discharge
Date	DD 32*	1	2	3	4	5	(Spores/LP field)
4/22	65	54	15	11	19	1	3

*Accumulated degree days (base 32°F) between first date of green tip and date of assessment. Ability to discharge ascospores usually begins to increase rapidly at ~175-225 DD after green tip.
**Categories: 1–3 = immature; 4 = morphologically (apparently) mature; 5 = discharged
Growth stage on 4/22: McIntosh = Quarter-inch green

NOTE: Leaves for assessment were collected 4/22 a.m., following rain of 4/21. Low percentage of category 5 suggests relatively low discharge up to that point.
INFECTION PERIOD(S): Wed. 4/21-Fri 4/23, 58 hr @ 38°F = Light infection.

Due to relative immaturity of inoculum, last week's infection period in western and central NY was probably important only in blocks with high overwintering inoculum levels (substantial leaf infection last year). However, another week of moderate temperatures should advance maturity enough to put many more orchards at risk, particularly considering the higher-than-average levels of leaf scab that developed across the region last summer and fall. Protectant fungicides should be going on most orchards by the end of this week if they haven't already; Rubigan and Nova programs probably have until sometime next week if control was reasonably good last year.❖❖

DISEASES

SOUNDS LIKE MY PICKUP

RUST DISEASES
(Dave Rosenberger)

❖❖ The two most common rust diseases on apples are cedar apple rust and quince rust. Hawthorn rust also occurs in eastern United States, but it is rarely an important problem on apples in commercial orchards. Cedar apple rust causes yellow or orange lesions on both leaves and fruit of susceptible apple cultivars. Quince rust infects apple fruit, but not leaves. Infection periods for all three rust diseases can begin when apples are at the tight cluster bud stage. Infection periods during pink and bloom are more likely to result in fruit infection than are infection periods after petal fall. The window for quince rust infection probably ends at about petal fall. In the Hudson Valley, cedar rust can cause severe infections on leaves from about tight cluster through June 15.

Unlike apple scab, none of the apple rust diseases have a secondary infection cycle. Primary lesions on apple fruit or leaves will never result in secondary spread to other apple leaves. All of the inoculum must come from cedar apple rust galls or quince rust cankers on cedar trees. After this

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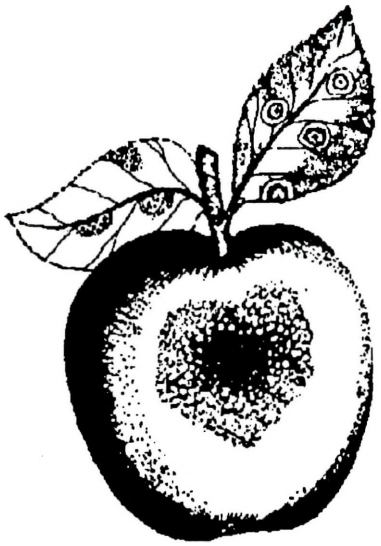


primary inoculum is exhausted, no further infections on apple can occur until the following season.

Wetting and temperature requirements for cedar apple rust infection are noted on page 42 of the 1993 Pest Management Recommendations for Commercial Tree-Fruit Production. When using the table, be sure to read the footnote. It indicates that the wetting durations listed in the table are the periods required for infection after (basidiospore) inoculum is available. However, in most cases, an initial 4 hours of wetting is required for galls on cedar trees to produce basidiospores. After the basidiospores are produced on the galls, then the wetting required for infection can range from 2 additional hours at 68–76°F to 24 additional hours at 36°F.

Wetting requirements for quince rust infection have not been clearly defined. However, I have seen severe quince rust infections only when extended wetting periods (at least 30 hours, usually >48 hours) with moderate temperatures (50–75°F) have occurred between tight cluster and late bloom. Under these conditions, more than 50% of fruit on unprotected trees can develop quince rust. More commonly, 5 to 15% of fruit are affected. Delicious, Golden Delicious, Rome, and Cortland appear to be the most susceptible cultivars for quince rust in the Hudson Valley, but quince rust can occur on nearly all cultivars. Because of the limited period of susceptibility and the extended wetting period required for significant infection, conditions favoring severe quince rust infection occur only once every 5 to 7 years.

If ideal conditions develop for quince rust infections between the tight cluster and petal fall bud stages, growers using SI fungicides need to be especially cautious about spray timing. SI fungicides are less active against infections on fruitlets and flower parts then they are for infections on leaves. Quince rust may be especially difficult to control with SI fungicides if the SI's are used in an eradicant mode.

Following is a common scenario which might result in failure to control quince rust: An SI plus mancozeb (3 lb/A) is applied at tight cluster. Three days later, a storm with one inch of rain removes most of the mancozeb protectant. Six days after the fungicide application, another extended infection period develops with ideal conditions for quince rust infection. The grower applies another spray (SI plus mancozeb) 10 or 11 days after the first application. In this scenario, the mancozeb protectant is removed with the first rain, infection occurs with the second rain, and the grower is depending on the eradicant effect of the SI fungicide 96 hours or more after the beginning of the second and critical infection period. This program is likely to provide excellent control of apple scab on both leaves and fruit, but it may not adequately control quince rust.

In the above scenario, and any time residual protectant activity of the contact fungicide is questionable, the grower should come back with the SI fungicide as soon as possible after the quince rust infection period is over. I suspect that the SI fungicides may eradicate quince rust infections if the fungicides are applied within 48 or perhaps even 72 hours after the beginning of the infection period. However, if applications are delayed until 96 hours, the quince rust fungus may have too much of a head start and it may no longer be susceptible to eradicant sprays.❖❖

PHYTOPHTHORA

CROWN ROT (COLLAR ROT) ALERT
(Wayne Wilcox)

❖❖ The extreme moisture conditions that have continued since last summer are ideal for the initiation and development of root, crown, and collar rots caused by *Phytophthora* fungi. Remember that periods of soil saturation promote these diseases for two reasons:

(1) saturated soil conditions are required for the production and movement of the infective fungal spores;

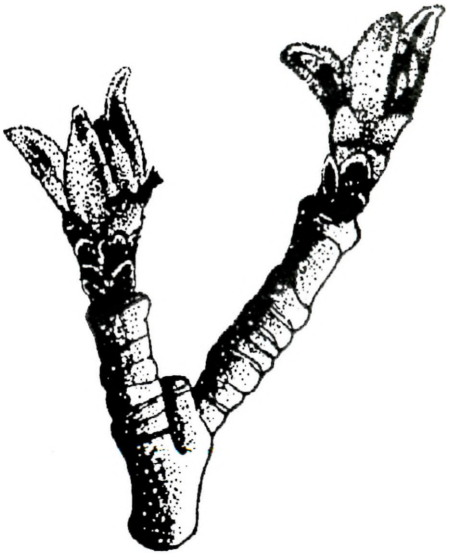
(2) lack of oxygen in saturated soils inhibits new root growth (making it hard for trees to "grow out of" non-fatal attacks). Lack of oxygen may also actually increase the rootstock's susceptibility to the diseases.

Fortunately, trees are relatively resistant to infection while they are dormant. However, susceptibility begins to increase this time of year, reaching a maximum around bloom. The combination of very wet soils and high water tables at the present time suggests a strong possibility that many soils may still be excessively wet come bloom time unless weather patterns change abruptly. Obviously, this would then put trees in such orchards at increased risk of root, crown, and collar rot infections.

As we've stressed many times over the years, the best programs for control of these diseases are preventive: appropriate site and rootstock selection, tiling, ridging, etc. Chemical control (Ridomil, Aliette) is also an effective option, but likewise must be applied preventively for reliable results—in other words, once you see symptoms it's usually too late for effective treatment, because by then the tree's usually girdled.

Because these diseases occur so sporadically and the cost of chemical treatments is high, I've never been too excited about recommending routine applications. Most people who actually have to pay for the materials seem to share this lack of excitement. However, if present conditions continue they will no longer qualify as routine, and this may be a year to consider treating trees on sensitive rootstocks, especially on heavier ground. For apples, MM.106 is particularly susceptible; M.7, M. 26, and MM.111 would be in the next tier; M.9 (and Mark?) and seedling are relatively resistant. Peach, cherry, and apricot rootstocks are all pretty susceptible, plums are relatively resistant. Pears are very resistant.

Aliette is registered only on non-bearing trees (pome and stone fruits). Ridomil is registered on both non-bearing and bearing apples and stone fruits. Note the different application instructions for apples versus stone fruits on the Ridomil label. For apples, the label directs that you make a drench around the trunk of the tree, adjusting rate for tree size. This should protect against crown and collar rots, and is a sensible and relatively economical approach. In contrast, the stone fruit instructions prohibit such an application method and instead specifies a broadcast approach beneath the drip line. This is supposedly because injury could occur by concentrating around the trunk (I don't think you can afford that much Ridomil), and just coinicidentally causes you to use more of the product per acre. Nevertheless, it's the law.❖❖



INSECT TRAP CATCHES (Number/Trap/Day)

Geneva NY

	4/12	4/15	4/19	4/22	4/26
Green fruitworm	0	0.4*	0.1	0.1	0.1
Pear psylla adults (# per twig)	-	0.3	0.3	0	0
Pear psylla eggs (# per twig)	0.8	2.1	3.2	4.5	3.4
Redbandedleafroller	0	0	0	0	0
Spotted tentiform leafminer	0	0	0	0	0

* 1st catch

HVL, Highland NY

	4/19	4/21	4/23	4/26
Green fruitworm	1	0	0	0
Pear psylla (eggs/bud)	0.9	-	1.3	-
Redbanded leafroller	0	0	0.3*	1.8
Spotted tentiform leafminer	0	0.3*	0.3	10.8
Sparganothis fruitworm	0	0	0	0

(Dick Straub, Peter Jentsch)

PHENOLOGIES

Geneva: Apple (McIntosh) - **Half-inch green**
Pear, cherry - **Bud burst**
Peach: **Quarter-inch green**
Plum: **Bud burst**
Highland: Apple (All varieties): **Tight cluster**
Plum (Stanley): **Green cluster**
Plum (Myrobalan): **Full bloom**
Pear (Bartlett): **Green cluster**

PEST FOCUS

Pear psylla adults active, laying eggs
Tarnished plant bug adults in panel traps
Green apple aphids present in Wayne County

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1 - 4/26):	145	69
(Highland 1/1 - 4/26):	282	124
Coming Events:	**Ranges:**	
Redbanded leafroller 1st adult catch	32-480	17-251
Spotted tentiform leafminer 1st adult catch	73-433	17-251
Spotted tentiform leafminer 1st oviposition	141-241	48-101
Syrphid predator eggs present	137-310	67-139
Obliquebanded leafroller larvae active	159-369	54-196
Pear psylla 1st egg hatch	111-278	55-92
Rosy apple aphid nymphs present	91-291	45-148
European red mite egg hatch	157-358	74-191
McIntosh at tight cluster	209-279	87-138
Sweet cherry at swollen bud	67-137	17-67
Peach at half-inch green	154-193	61-101
Pear, plum at green cluster	209-279	87-138
Tart cherry at white bud	209	87

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.

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