scaffolds Update on Pest Management and Crop Development

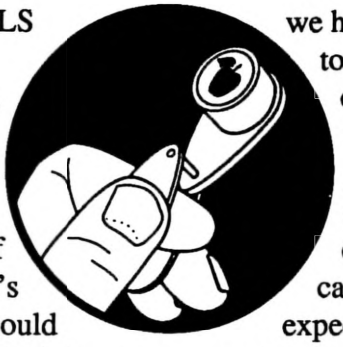
F R U I T J O U R N A L

April 7, 1997 VOLUME 6, No. 3 Geneva, NY

INSECTS

OILY SEASON

BOTH BARRELS (Art Agnello, Entomology, Geneva)



PEAR PSYLLA

❖❖ Psylla adults beat many of us out into the orchards with last week's summer preview, and egg-laying could be noted here and there by those who hadn't yet managed a pre-emptive oil spray (most of us).

Early oil applications can be very useful against pear psylla until the swollen bud stage; it doesn't kill the adults, but it does interfere with their egg-laying activity. The strategy behind this approach is to delay the timing of any needed insecticide spray until as late as possible before bloom. Oil rates depend on when you start: If your buds are at the dormant stage, one spray of 3% oil, or two of 2% through green cluster are recommended; if you start at swollen bud, one spray at 2% or two at 1% up to white bud should be adequate for this purpose, especially if applied as soon as the psylla become active (50°F or above). This will also give some red mite control at the same time.

EUROPEAN RED MITE

Despite the newly acquired prebloom miticides that are now available for apples, a delayed-dormant spray of petroleum oil from green tip through tight cluster can be a preferred approach for early season mite control to conserve the efficacy and help lessen the likelihood of resistance to our contact miticides. Technically, we have been advising that it is possible to get good control of overwintered eggs using 2 gal/100 at the green tip through half-inch green stage, or 1 gal/100 at tight cluster; this advice assumes ideal weather and excellent coverage. As we all know, oil applications don't always live up to our expectations, not only because of weather and coverage problems, but also because proper timing is difficult. That is, we have seen mites start to hatch when the trees are at solid tight cluster, so naturally the oil loses its ability to smother anything that's able to wade through the droplets. To be practical, you'll be best off if you do the following:

1) To assure that mites are in the egg stage, start on your blocks as early as the weather and ground conditions permit, even if it means using a higher rate.

2) Tend toward the high end of the dosage range, especially if there's been no frost during the 48-hour period before your intended spray, and no danger of one for 48 hours afterwards. A distinction that might be worth making is to use 1.5 gal/100 if the buds linger somewhere between 1/2-inch green and full tight cluster during your chosen spray period.

3) As an alternative, Morestan at pink has given very good results in recent years; it makes sense to take advantage of this material's limited (prebloom) period of application in blocks where you can't oil. We have heard that this material probably will not be available much longer for apples because of some marketing and distribution decisions at Bayer, so it makes sense to use up what you may have now in your rotation schedule.

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Good coverage of the trees is essential to take advantage of oil's potential efficiency; this in turn requires adequate spray volume delivered at an appropriate speed. Experience and research show that a 1X concentration (300 gal/A) is clearly preferable; however, if all other conditions are optimal (weather, speed, calibration), then 3X, or 100 gal/A, is the highest concentration that should be expected to give acceptable control at any given time. Growers like to concentrate more than this to save time and the hauling of extra water, but the problems this can cause usually aren't worth the tradeoff.

ET AL.

San Jose Scale may be one of those rare pests that is on the decline in N.Y., but for those blocks affected, a 2% oil treatment at half-inch green will control the nymphs, and is a preferred treatment if no other problem insects need to be controlled. Combining the oil with an insecticide is usually not more effective in this case than using the oil or insecticide alone. If you choose not to use oil against the scale nymphs, or have Rosy Apple Aphid or other early season insects to be controlled, an insecticide would be more appropriate. For both of these pests, Lorsban 4EC or Supracide (2EC or 25WP) have proven very effective during the green tip to tight cluster stage. Check the opening buds for infestations of Rosy Apple Aphid; treatment would be advisable upon finding one colony per 100 clusters.❖❖

HEAD 'EM UP, MOVE 'EM OUT

EASY AS PYRI
(Jan Nyrop, Dave Kain, John Minns, Entomology, Geneva)

❖❖ The mite predator *Typhlodromus pyri* can give biological control of European red mite when the predator is conserved in apple orchards. Experiments have shown that once established in an orchard, this mite can completely eliminate the need for miticides. While *T. pyri* is endemic throughout much of western New York, it can take as many as three years in specific orchard blocks for predator numbers to increase to the point where biological control is realized. Moving *T. pyri* from blocks where they are abundant to sites where more predators are desired (seeding) can speed this process.

Instances will occur when it is necessary to use pesticides that are toxic to *T. pyri* to control other orchard pests. To combat the resulting disruptions of mite biological control caused by these pesticide applications, it has been suggested that orchardists establish sites to be used as mite "nurseries". These sites would not be treated with pesticides harmful to *T. pyri* and would be used as sources of predators that could be moved to orchards where predators are scarce; the practice of transferring them could therefore become an important ingredient of any integrated mite control program.

Transferring *T. pyri* entails removing wood (and foliage when present) from a source orchard to target trees. There are several timing possibilities, but in recent research trials, we found that bloom appears to be the preferable time to conduct this transfer. It has been noted

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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
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This newsletter available on CENET, on the Tree Fruit News bulletin board under FRUIT and on the World Wide Web at:
http://www.nysaes.cornell.edu/ent/scafolds/

that predators tend to concentrate in flower buds and the flowers themselves during bloom, most likely to feed on pollen. In our trials, predators were transferred from the source orchard to target trees by attaching five 20-inch-long branches collected from the source orchard to each of twelve recipient Red Delicious trees. Branches were chosen so that they each had approximately seven flower clusters. Transferring predators at bloom resulted in higher numbers of phytoseiids compared with transferring predators at tight cluster or at half-inch green.

Moving as few as 40 predators per tree resulted in substantial increases in predator abundance. Orchardists may not be willing to cut branches with flowers to transfer predators. In such cases, terminal branches cut later in the summer could be used; however, more branches will be required. Using winter prunings or branches cut early in the spring to transfer predators is not the most effective way of accomplishing this goal. While *T. pyri* overwinter throughout the tree, there are apparently many predators that overwinter on large branches or the trunk itself and that move into the canopy as foliage appears. Use of nurseries in which *T. pyri* are cultivated, and transfer of branches harboring *T. pyri* from these nurseries to target sites, should allow biological mite control to be more persistent on a farm-wide scale.

Unlike petroleum oils applied early in the growing season, oils applied during the summer can have an adverse effect on phytoseiid numbers. However, this effect is apparently only significant when high volumes of oil suspension are applied. Our opinion is that oil applied using conventional airblast sprayers will have only a minimal negative effect on phytoseiid numbers. As such, summer oil applications can be recommended as a way to help manage European red mite numbers if predator numbers are insufficient for biological control.

IMPACT OF LORSBAN

Lorsban is an effective tool for controlling obliquebanded leafroller in New York apple orchards. However, there is concern that use of Lorsban will destroy many predacious mites (*Typhlodromus pyri* and *Amblyseius fallacis*). This concern is founded on the results of laboratory assays in which Lorsban was relatively toxic to both predator species. While the assays showed that Lorsban was toxic, they also revealed that *T. pyri* were more susceptible than *A. fallacis* and that toxicity of Lorsban to *T. pyri* decreased rapidly as residues aged. Furthermore, Lorsban is considerably less toxic to mite predators than are the pyrethroids or Lannate, which are other conventional insecticides that are used against leafrollers. Even though Lorsban is toxic to *A. fallacis* and *T. pyri*, it still might be a good choice for leafroller control because efficacy against leafrollers might be balanced with preservation of some mite predators.

In 1992, we evaluated the effect of one or two applications of Lorsban 50WP (3/4 lb per 100 gallons water) on *T. pyri* and *A. fallacis*. The insecticide was applied using a handgun and the second application was made one week after the first. A single Lorsban application reduced both *A. fallacis* and *T. pyri* numbers with *T. pyri* suffering approximately 75% mortality and *A. fallacis* being reduced by about 50%. Two applications of Lorsban reduced A.fallacis densities approximately 75% compared with untreated trees. With *T. pyri*, no predators were found in trees treated with two applications one or two weeks after the second application. During late winter 1993, we recovered 43 overwintering *T. pyri* from the control trees; 38 were recovered from the trees treated once, and 14 were recovered from the trees treated twice.

A single application of Lorsban applied with a handgun reduced populations of both *T. pyri* and *A. fallacis*. This is not a surprising result. What is more interesting and important is that some *T. pyri* and *A. fallacis* survived the Lorsban treatment. In fact, the effect of a single Lorsban application on the most susceptible species, *T. pyri*, was nonexistent when overwintering predator numbers were compared. Two applications of Lorsban had a greater effect on predator numbers and this effect was apparent in the

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numbers of overwintering *T. pyri*.

These data suggest that Lorsban can be used to manage obliquebanded leafrollers without decimating mite predator populations. While the Lorsban applications will probably reduce predator numbers and may disrupt biological control of European red mite, predator numbers should recover quickly. This is especially true if the lowest possible rates of Lorsban are used. Of course, the use of Lorsban on a prophylactic calender basis should be avoided, and Confirm or a B.t. material should be substituted if there is a desire to eliminate destructive effects on predator mites altogether.

ERRATUM

The issue of Lorsban and predator mites has been examined a number times in the recent past. In the Recommends, we used to classify Lorsban as having a high impact on the *T. pyri* population (i.e., more than 70% mortality after a 48-hr residue test) — or an "*H*" in our Insecticide Activity Spectrum table. Following the results of the studies cited above, we amended this in the 1995 edition to an "*M*", moderate impact (between 30–70% mortality). Somehow, through an inadvertent editing error, the 1996 Recommends listed it as "*H*" again, and we didn't pick up the mistake until after the 1997 edition came out (p. 44). However, we've got our eye on it now, and we promise these ratings will behave themselves from here on out.❖❖

ON YOUR MARK

APPLE SCAB REPORT
(Dave Rosenberger, Plant Pathology, Highland)

Apple scab ascospore maturity as determined by squash mounts from leaves collected at Highland:

4/4 93% immature, 7% mature, 0% empty asci; 2 spores in the discharge test

4/7 88% immature, 12% mature, 0% empty asci; 39 spores in the discharge test

❖❖ With the system that we use for spore maturity evaluations, commercially significant discharges usually begin when ascospore maturity reaches 15% mature spores and the discharge of spores in our shooting tower test exceeds 70 spores. Thus, spore maturity in the lower Hudson Valley is still slightly below commercial thresholds.

At this point, spores will continue to mature rapidly and Hudson Valley growers should plan to have orchards protected prior to the next scab infection period. The only exceptions would be orchards that were clean last fall and that will be receiving an SI fungicide program beginning at tight cluster. Even where SI fungicides will be used, Hudson Valley growers should be cautious about delaying sprays because of the ideal scab conditions that we had last year. In other parts of the state where inoculum levels were generally higher than in the Hudson Valley, growers should definitely be applying either copper or a protectant fungicide at green tip.❖❖

FIELD NOTES

PEST FOCUS

Geneva: 1st **green fruitworm** trap catch.
Albion: **pear psylla** active, laying eggs
Highland: 1st **pear psylla** eggs. 1st **redbanded leafroller** and **green fruitworm** trap catches.

PHENOLOGIES

Geneva:
Apple(Mac) - **early green tip**
Pear, cherry, plum - **swollen bud**
Peach - quarter inch green
Highland:
Apple (Mac) - quarter inch green
Pear (Bartlett) - bud burst

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva NY	4/3	4/7	HVL, Highland NY	4/3	4/7
Green fruitworm	-	0.2*	Green fruitworm	-	0.1*
Pear psylla (eggs/bud)	0	0	Redbanded Leafroller	-	0.4*
			Pear psylla (eggs/bud)	-	1.4*

* 1st catch

(Dick Straub, Peter Jentsch)

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1 - 4/7):	124	51
(Highland 1/1 - 4/7):	154	60

Coming Events:	**Ranges:**	
Green fruitworm flight peak	64–255	19–108
Redbanded leafroller 1st catch	32–480	5–251
Pear psylla 1st nymphs	111–402	55–208
European red mite egg hatch begins	157–358	74–208
OBLR overwintered larvae active	149–388	54–201
Rosy apple aphid nymphs present	91–291	45–148
STLM 1st catch	73–433	17–251
STLM 1st oviposition	141–319	48–154
McIntosh at half-inch green	112–221	54–101

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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