

scaffolds

Update on Pest Management
and Crop Development

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

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NOW YOU PSEE 'EM

PYSSLA ON THE WING

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❖❖ Putting the latest revival of winter aside, adults have become more active and have been observed flying about in pear orchards from Orange to Columbia Counties over the past several weeks. A portion of the overwintering adult psylla population finds residence in the orchard, where they remain in diapause until temperatures exceed 45°F. The overwintering females will then seek out males and mate before fertile eggs can be deposited on branches during the spring.

The first eggs, in moderate numbers of 50 per 71 buds (0.7 eggs per bud), were found in Marlboro, NY, on March 12 in the scales of the pear stems (Fig. 1). These are the earliest deposits of eggs I have observed during my tenure at the HVRL. Considerations for manage-



Fig. 1. Psylla eggs in stem scales



ment in southern blocks and orchards along the Hudson River should have begun as weather permitted over the past three weeks; however, cold temps, snow and freezing rain are expected throughout the week. Oil should not be applied until well after the cold snap subsides, as foliage and developing flowers are susceptible to oil injury after freezing temperatures occur.

In the overwintering stage, the adult lingers about the orchard and woodland edge from the fall,



Fig. 2. Pear psylla adult

through the winter and into spring (Fig. 2). Adults are often seen in flight during the warm hours of
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the day, with increasing movement of woodland adults into the orchard over the next few weeks. After mating, females begin to produce the first of 3–4 generations, beginning with egg laying and nymph hatch from late March through June. When scouting for early egg laying, focus on the terminal end of the fruiting branches using magnification along the basal plates of buds.

We often think a single application of oil and a pyrethroid will "do the job" during the pre-bloom period. Data from our 2014 trial suggests that, although the egg numbers were numerically lower than the other treatments from this application, possibly due to repellency of the pyrethroid, egg hatch and nymphal development were not actually suppressed (Fig. 3). The use of oil either alone or in combination with either Centaur, Actara, or Surround resulted in no significant differences in oviposition, and the use of soap gave essentially no reduction in nymph numbers.

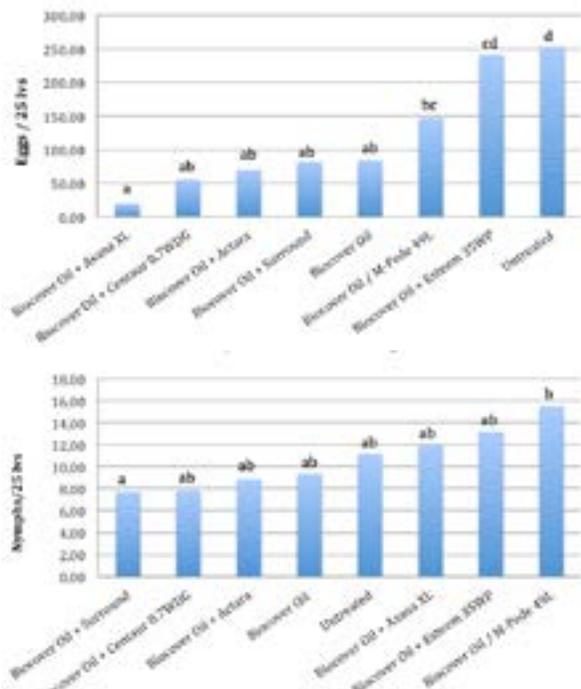


Fig. 3. Effect of a single application on oviposition and nymph numbers in Bartlett, Highland 2014.

The economics of management is a driver in decision-making. Surround WP is most effective

at the highest labeled rate of 50 lbs/A (roughly \$1.00 per pound) costing about \$50/A. Two to three applications during the pre-bloom and petal fall period have been shown to be a viable approach to early psylla management. The use of a single prebloom application at 50 lb/A Surround was comparable to a single 2% application of Damoil in reducing oviposition when applied at the same time. Yet as the season progressed, the Surround treatment performed better in reducing nymph presence on foliage during later assessments. The stratification or layering of the kaolin clay, the active ingredient of Surround, builds on the limbs to maintain a residue of the product on the tree (Fig. 4). Using early season applications through to petal fall has the additional benefit of controlling plum curculio along with reducing egg laying from the 1st generation of psylla adults. Surround has not been shown to actually be toxic to the insect and as such, is an important tool in considering resistance management strategies for this pest. For more details, refer to the March 23, 2012 Scaffolds article addressing early Surround use followed by 1% oil (http://www.scaffolds.entomology.cornell.edu/2012/SCAFFOLDS_3-26-12.pdf).

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The advantages of using oil to control this insect are many. Oil is still a relatively inexpensive material for which there has been no mechanism found for development of resistance by the insect. It provides a degree of egg laying deterrence to treated buds and wood lasting a week or two, depending on rates and weathering effects. The rate and number of oil applications to use depend on when you start. If a single spray is planned at the dormant stage, use 3%, which will help reduce overwintering populations of San Jose scale, European red mite, pearleaf blister mite, and Comstock mealybug; in seasons with a protracted dormant period allowing for two applications, a 2% rate can be used for both. We are admittedly past the time for this approach this season. If starting at swollen bud, one spray at 2% or two at 1% would suffice through green cluster. Contacting the adults with oil droplets will cause mortality, while applications on top of the eggs will reduce adhesion, often causing them to dislodge from the tree. Oil applied prior to oviposition acts to delay and synchronize egg laying until later into the season, producing subsequent emergence of the nymphs for a concentrated management approach using a single insecticide application. Negative observable impact of oil applications has been shown to cause enlarged lenticels on developing stems, which may have an impact on plant respiration.

Ovicides can also be employed to kill the eggs prior to hatch. Esteem and Centaur work as insect growth regulators (IGRs) to inhibit development of various life stages. Esteem 35WP, used pre-bloom to kill the egg stage of psylla and reduce the viability of eggs laid by treated adult, should be applied prior to sustained egg laying with 0.25% v/v horticultural spray oil. Esteem may be applied once from the delayed dormant to "white bud" stage at 5 oz/A, or two applications at delayed dormant to "petal fall" stage at 4-5 oz/A, as a tactic for both psylla reduction and as a resistance management strategy. Remember, its mode of action is as an ovicide, so it will not reduce the adult or nymph population directly. It is most effectively used if

the material is on the wood or foliage prior to the eggs being deposited.

Using an ovipositional deterrent (oil, Surround WP) is a prerequisite for at least two follow-up strategies. One option, after the completed migration of adults into pear orchards, is the use of an adulticide to kill the adults before significant numbers of eggs have been laid. Adulticides would be employed this season from mid- to late April to significantly reduce the adult population. The choices for managing adult psylla include the neonicotinoids Actara 25WDG at 5.5 oz/A and Assail 30SG at 4-8 oz/A; and the pyrethroids Ambush 25WP and Pounce 25WP at 12.8-25.6 oz/A; Asana XL 0.66EC at 7.3-12.8 fl oz/100 gal or 9.6-19.2 fl oz/A (from dormant to white bud stage; postbloom rates are lower); Proaxis 0.5CS at 2.6-5.1 fl oz/A; Danitol at 16-21.3 fl oz/A; or Warrior II at 1.26-2.56 fl oz/A. The older insecticide Thionex is no longer labeled. Multiple applications often need to be applied in order to achieve optimum early season control.



Fig. 4. Pear tree after a Surround application.

Cool weather provides the conditions to optimize the use of pyrethroids. However, the use of these insecticides over the past 20 years has decreased pear psylla susceptibility to some pyrethroids such as Asana (esfenvalerate) and Warrior (lambda-cyhalothrin). Their use should be limited and used only during periods of cool temperatures. ❖❖

TIME
OUT OF
PLACEERRATUM: MISPLACED
SECTIONS IN PEAR
RECOMMENDATIONS

❖❖A production error in the 2016 Tree Fruit Pest Management Guidelines caused the switching of two phenological stages in the Pears Table 12.1.1 (p. 180), so that the "Swollen Bud" section precedes the "Dormant" section. All the entries under these respective sections are correct, but don't be tempted to think that the trees could go dormant after reaching swollen bud, even though our unusual weather trends this season might deceive you into thinking this could happen. The error will be corrected in the online version. ❖❖

FIND
YOUR
HEAT

NEW DEGREE DAY
CALCULATOR ON NEWA
(Juliet Carroll, NYS IPM
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❖❖ We launched a new tool — the NEWA Degree Day Calculator. Get the accumulated degree days for a time period of your choosing. Also select from 11 base temperatures (4°C, 32°F, 40°F, 43°F, 45°F, 48°F, 50°F, 86°F/50°F, 55°F, 47.14°F, 14.3°C) plus two calculated using the Baskerville-Emin/Sine Wave formula (43°F and 50°F). Access it under the Weather Data main menu or directly at <http://newa.cornell.edu/index.php?page=degree-day-calculator>. Pick your weather station location, the degree day type, start and end dates, and hit "Get Report". The results provide a table with the seasonal accumulation, the daily degree days for the past two days, the current day of record and the 5-day forecast. Below the table is a chart graphing the accumulated degree days. Scroll along the degree day line and the specific details for each point pop-up.

We hope you benefit from this tool! If you have suggestions for improving it or where you want a link to it on NEWA, let me know, jec3@cornell.edu. ❖❖

PEST FOCUS

Highland:
Pear psylla nymph hatch has begun.
Increased oviposition on untreated pears.

INSECT TRAP CATCHES
(Number/Trap/Day)

	Geneva, NY			Highland, NY		
	<u>3/31</u>	<u>4/7</u>	<u>4/11</u>		<u>4/4</u>	<u>4/11</u>
Green Fruitworm	9.5	14.0	16.0	Green Fruitworm	0.0	0.1
Redbanded leafroller	0.0	0.0	0.0	Redbanded leafroller	0.6	1.8
Spotted Tentiform Leafminer	0.0	0.0	0.0	Spotted Tentiform Leafminer	5.1*	0.9

* = 1st catch

UPCOMING PEST EVENTS

	<u>43°F</u>	<u>50°F</u>
Current DD accumulations (Geneva 1/1–4/11/16):	149.5	59.0
(Geneva 1/1–4/11/2015):	33.0	12.7
(Geneva "Normal"):	109.8	44.8
(Geneva 1/1-4/18, predicted):	203.4	87.0
(Highland 1/1–4/11/16):	296.7	131.9

<u>Coming Events:</u>	<u>Ranges (Normal ±StDev):</u>	
Apple grain aphid nymphs present	128-488	63-247
Comstock mealybug 1st gen crawlers in pear buds	215-441	80-254
Green apple aphid present	111-265	38-134
Green fruitworm peak flight	97-209	37-97
Obliquebanded leafroller larvae active	158-314	64-160
Pear psylla 1st egg hatch	174-328	60-166
Pear thrips in pear buds	118-214	50-98
Redbanded leafroller 1st catch	113-177	41-83
Rosy apple aphid nymphs present	134-244	56-116
Spotted tentiform leafminer 1st catch	115-215	44-102
Spotted tentiform leafminer 1st oviposition	143-273	58-130
McIntosh half-inch green	148-198	63-93

all DDs Baskerville-Emin, B.E.

PHENOLOGIES

	<u>Current</u>	<u>4/18, Predicted</u>
Geneva:		
Apple (McIntosh):	green tip	1/2" green
Apple (Empire/Red Delicious):	green tip	1/2" green
Pear (Bartlett/Bosc):	swollen bud	bud burst
Sweet/Tart Cherry:	swollen bud	bud burst
Peach:	swollen bud	bud burst
Plum:	swollen bud	bud burst

Highland:

Apple	(McIntosh): tight cluster	
	(Red Delicious, Ginger Gold, Empire): tight cluster	
Pear	(Bartlett, Bosc): green cluster	
Peach	(early): 1/2" green	
	(late): swollen bud	

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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