scaffolds

Update on Pest Management and Crop Development

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

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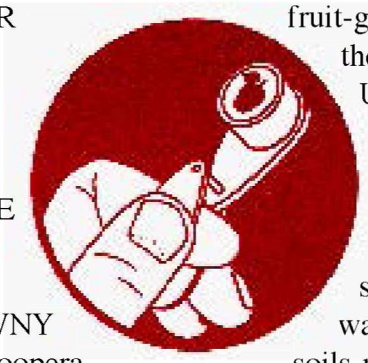
HORTICULTURE

THE GOOD EARTH



THE SOIL FOR A GOOD ORCHARD SITE AND HOW TO RECOGNIZE SYMPTOMS OF POOR DRAINAGE

(Damon Boynton [modified for WNY by M. Miranda Sazo, Cornell Cooperative Extension, Newark; mrm67@cornell.edu])

[Note: This information was developed by Professor Boynton at Cornell more than 60 years ago. I recently found his extension publications at the Geneva library and thought it was still very useful information for growers looking for expert soil advice.]

❖❖ The soil should be well enough drained to allow tree roots to start work early in the spring and to keep on working until late fall, even in years when rainfall is excessive. Poor drainage not only decreases the extent and depth of rooting but also makes it difficult for roots to completely explore the soil in which they are able to grow. Thus, the effect of too much water in the soil during part of the year is to decrease the chances for a tree's root system to take in as much water and minerals as the tree needs during the whole year. A few trees may be killed by poor drainage. But, what may be worse, their average productiveness on poorly drained soils is always low, even when they remain alive under such conditions.

The soil on which tree roots can grow well should be able to store water for use in long periods of very dry weather. Bed rock or very compact subsoil sometimes limits the depth of fruit-growing, even though the soil above the impervious layer is well drained. Under New York conditions, a good orchard soil should furnish a reservoir of available water equal to 6–8 inches of rainfall. Whenever there are dry spells, the trees should be able to tap this reserve water supply. Light sandy or gravelly soils need to be 5 or 6 feet deep to furnish this much reservoir capacity. Moderately heavy soils should be 3.5–5 feet deep.

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The soil should be fertile enough to keep the trees vigorous with good soil management and fertilization practices. Most New York soils are fertile enough to support properly cared-for orchards. Local variations within some soil types are, practically speaking, just gravel banks right up to the surface.

Poor Drainage: One cannot always recognize poorly drained sites just by looking at the surface of the soil or by walking over them. Such observations, to be valuable, should be made during or soon after spells of extremely wet weather or in the early spring following the winter period of water accumulation. If water stands on the surface of the soil for several days, or if one sinks in when he walks across a prospective site a few days after such a rainy period, the soil is not well-drained. In fact, after mid-May, there should be no water in freshly dug holes 4 feet deep for more than a few days after a heavy rain. Such test holes are helpful to determine how good the subsoil drainage is in a prospective orchard site.

Poor drainage often brings about, or is associated with, certain characteristics of the subsoil. If the subsoil is exposed on a ditch face to a depth of 4 feet, or if samples of the subsoil are taken with a soil tube or auger, one or more of the following symptoms of poor drainage may be revealed:

Mottling or grayness in the upper subsoil: Well drained subsoils usually have an even, uniform color. Poorly drained soils may be mottled, rusty, and the gray colors are mingled with the normal color of the soil materials. The normal color may vary from brownish gray to reddish brown in New York soils. In the mottled zone of the upper subsoil, there may be soil areas that are predominantly ashy gray. These signs indicate that not far below the mottling is a layer that does not allow water to drain through it readily. Marking mottling within 2 feet of the surface usually means that a site is too poorly drained for orchards.

Accumulation of lime in the subsoil: Many New York soils have developed from rock materials that are high in lime. In the normal process of weathering, this natural lime has been moving downward through the soil. As a result of poor drainage in some of these soil typesm, lime has accumulated in the subsoil within 3 feet of the ground surface. It can sometimes be seen as whitish lenses in the soil, or can be detected by the fizzing that results when a drop of dilute acid is placed on a subsoil sample. Marked lime accumulation above 2 feet in a subsoil may mean that a site is not well enough drained for use as an orchard location.

Light surface and upper subsoil underlain by heavy or compact lower subsoil: Some poorly drained soils do not always show marked mottling, grayness, or lime accumulation in their subsoils. In New York, a continuous heavy or compact soil layer underlying relatively light soil can cause poor drainage, even though the other soil indications of poor drainage are not marked. Soils with a heavy or compact layer within 3 feet of the surface are usually not good locations for orchards. It is important to remember that drainage may be poor on hilltops and hillsides as well as on land with relatively level topography. ❖❖

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INSECTS

FIRST FRUITS

THE PROOF IS IN THE PACKOUT
(Peter Jentsch, Entomology, Highland; pjj5@cornell.edu)

❖❖ Much of the 2013 fruit in storage has gone through the packing line, with shipped fruit telling of successful thinning for optimum size, summer pruning for ideal color and undamaged appearance from successful pest management. However, downgraded fruit to juice speaks of weather-related cracking, poor color, hail or sunburn, or bird, insect or disease injury. Defining the damage in each block should be a part of successful tree fruit management strategies for issues that are within our control to change.

Knowing what blocks produced significant levels of damaged fruit provides needed information to adjust management programs. When it comes to San Jose scale, a few fruit in a block can indicate at least one infested tree. It's unlikely that scouting or even trapping can pinpoint the infestation, but knowing the particulars of the block would intensify management efforts specific to the block, rather than to the entire farm. For sooty mold on pear, psylla populations were the culprits. Increased management to maintain populations below the 1 nymph per leaf threshold is indeed a challenge.

Egg hunt

In most mid-Hudson Valley pear blocks, we are now at early bud burst. Although we have not seen pear psylla nymph hatch, the increasing leaf development provides significant seclusion for egg laying, making it more difficult to target eggs. If you have a single oil application on the trees, you have delayed egg laying and should be applying a second application of 1–2% oil. A follow-up application of oil at this stage will reduce egg viability and deposition onto newly developing foliage. If the egg has a dilute coating, the oil will dissolve the adherence of the egg to the shoot, causing it to drop.

As the majority of the adult population has moved into the orchard, adding a selective adulticide to the tank would be a sound tactic. We have seen the pyrethroids lose their ability to control the adults over the past ten years. The pyrethroids, in IRAC Group 3A, include Ambush 25WP & Pounce 25WP, both @ 12.8-25.6 oz/A, Asana XL 0.66EC @ 9.6-19.12 fl.oz/A, Danitol 2.4EC 16-21.3 fl.oz/A, and Warrior II 2.08CS @ 1.28-2.56 fl.oz/A. From work done in 2005, we found that the effectiveness of Asana improved against the adult if the product Incite (piperonyl butoxide) was added to the tank mix to reduce the detoxification mechanism of the pyrethroid.

With the propensity for pear psylla to develop resistance to insecticides over time, developing a strategy of insecticide resistance management throughout the season, using of a single active ingredient for each of the four generations should be considered now to minimize selection pressure. The robust active ingredient list available for pear psylla management provides a number of labeled materials in no less than 7 mode of action (MOA) groups. Moving away from the pyrethroids makes sense, especially as the weather warms and these tools become less effective.

When psylla nymphs do hatch, they find their way into clusters, well hidden from contact applications and oil sprays. However, the neonicotinoids have translaminar movement into new tissue to control secluded nymph populations. Of the insecticides in Group 4 (Assail, Actara, Provado and Calypso), Actara appears to have excellent efficacy against both adult and nymph populations. Employing oil and the neonicotinoids during the first generation would be one choice as a resistance management strategy. Actara does have a potential negative impact on bee activity and should be halted once white bud occurs.

A case for IGRs

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Another choice would include a newer mode of action such as the insect growth regulators. Two labeled products in these groups, Centaur WDG (buprofezin) at 34.5 to 46.0 oz/A is a chitin biosynthesis inhibitor in group Group 16, and Esteem (pyriproxyfen) at 13-16 oz/A is a juvenile hormone mimic in Group 7C. Both of these products can be used with oil. Centaur can be used up to bloom and petal fall with no more than 2 applications per season, providing efficacy against psylla nymphs as they develop. These IGRs also provide efficacy against overwintered immature and crawler stages of scale and mealybug if they have been a problem in pear the previous year. ❖❖

GENERAL INFO

VALLEY NEWS

ACCESSING INFORMATION FROM THE HUDSON VALLEY LAB

❖❖ To better serve the fruit industry in the Hudson Valley, both Peter Jentsch and Dave Rosenberger recently established websites where they are posting information on diseases, pests, and pest management that is relevant to fruit growers in the Hudson Valley. Both the plant pathology and entomology websites for the Hudson Valley Lab contain blogs where they post time-sensitive observations and pest alerts. Fruit growers interested in receiving alerts via e-mail whenever new information is posted can subscribe by entering their e-mail address in the "subscribe" box on the relevant website. The bottom of each e-mail alert from the blogs will contain an "unsubscribe" link so that alerts can be discontinued at any time.

The URL for the Hudson Valley Entomology website and blog is http://blogs.cornell.edu/jentsch/, and the URL for the Hudson Valley Plant Pathology website/blog is http://blogs.cornell.edu/plantpathhvl/. Both websites are still in the early stages of development, but then websites documenting the current state of knowledge are never really complete.

Although Dave Rosenberger retired in February, he plans to continue some of his writing and extension activities through the coming season. One of his objectives is to gather on his website a user-friendly compilation of information on tree fruit diseases as well as a compilation of historical information about the Hudson Valley Lab. Much of the tree fruit disease information on the website is and will be from previously published extension articles, but the information is being organized by subject matter to enable easier access via a single site.

The Hudson Valley Lab is currently in the midst of a major transition that involves both staffing transitions and major changes in the way the Hudson Valley Lab will be funded and managed in the future. The current status of these transitions was recently reported in Core Report, the official newspaper of the New York Apple Association. A copy of that article can be accessed under the title "Farmer Contributions Keep Lab Viable" at http://blogs.cornell.edu/plantpathhvl/historical-documents/. ❖❖

HARVEY'S TIME

EVENT ANNOUNCEMENTS

REISSIG RETIREMENT PARTY - MAY 17

❖❖ Harvey Reissig has recently retired after 40 years as a Fruit Entomologist at Cornell's NYS Agricultural Experiment Station in Geneva. Those of us who work with tree fruit insects have come to regard Harvey as one of the gurus of the field, someone who is not only aware of all of the complex interactions taking place in the orchard, but who can keep a handle on the practical aspects of what the insects are doing out there. During his time at Cornell, Harvey mentored and collaborated with a long line of colleagues, students, visiting scientists, fruit industry leaders & insiders and the general public. We cordially invite you to join us in celebrating his retirement, along with that of his wife, Nancy, who has been an Administrative Assistant in the Entomology Dept. for 23 years, by attending a dinner at Geneva Country Club on Saturday, May 17, 2014.

The buffet menu includes Pasta with Tomato Sauce, Mixed Vegetable Medley, Eggplant Parmesan, Rice Pilaf, Broiled Haddock with Butter Crumb Topping, and Baked Chicken; Finger Lakes wines will be donated by area wineries; cash bar available. Cost per person: $30.00 (checks only, payable to "Cornell University"). For registration and payment, please respond to Kate VanHouter (kev35@cornell.edu; tel: 315-787-2331), NYSAES, Dept. of PPPMB, 630 W. North Street, Geneva, NY 14456. Registration & payment deadline: May 2. ❖❖

PHENOLOGIES

Geneva:

	4/28, predicted
Apple (McIntosh, Empire): green tip	half-inch green
Apple (Red Delicious): early green tip	half-inch green
Sweet cherry: bud burst	bud burst
Peach: swollen bud	bud burst–half-inch green
Plum (early): swollen bud–early bud burst	bud burst
Plum (late): dormant–swollen bud	bud burst

Highland:
Apple(McIntosh, Red Delicious , Ginger Gold, Empire): half-inch green
Pear (Bartlett, Bosc): swollen bud
Plum (Stanley): swollen bud
Apricot: 50% bloom
Cherry: swollen bud–early bud burst
Peach (Early, late): green tip

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–4/21/14):	127	63
(Geneva 1/1–4/21/2013):	136	58
(Geneva "Normal"):	200	82
(Geneva 1/1–4/28/14, predicted):	176	84
(Highland 1/1–4/21/14):	191	86

Coming Events:	Ranges (Normal ±StDev):	
Green fruitworm flight peak	97–213	36–100
Pear psylla adults active	31–99	8–34
Pear psylla 1st oviposition	40–126	11–53
Redbanded leafroller 1st catch	110–178	40–82
Spotted tentiform leafminer 1st catch	113–213	41–101
Pear thrips in pear buds	118–214	50–98
Rosy apple aphid nymphs present	134–244	56–116
McIntosh green tip	97–145	36–62

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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