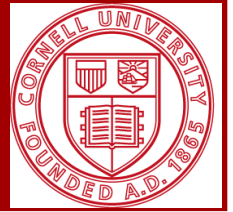




FRUIT NOTES

Lake Ontario Fruit Program



Volume 14 Issue 8

April 16, 2014

Ready, Set, GO!

D. Breth

The apples in the LOF region started to show green on Monday morning. Idareds, some McIntosh, etc. especially in inland sites and on sandy, well drained sites pushed a bit of green with the 2 days in the upper 70's and low 80's over the weekend. I could even find a green tip in sites closer to the lake.

It is critical that you know how the buds on your farm are developing so you are ready with your first steps for managing scab this year. The next shower with the first likely scab infection will be this weekend. Mark green tip when 50% of McIntosh buds are showing green. That is when we will traditionally have ascospores mature and ready to shoot. Time to get ready! In spite of the snow on Tuesday, spring is coming.

First – get the brush out!

Apply urea at 40 lb/100 gallons directed to the ground cover in scabby orchards.

Get your copper on hand now, and apply it on all blocks with scab last season, or fire blight pressure.

If you missed the window before the infection using copper, use mancozeb within 18-24 hours of the start of the rain, or you can use Syllit plus mancozeb.

It is always cheaper to be ahead of the game with apple scab than trying to kick back with fungicides that are resistant. Review the article by Dave Rosenberger in Issue 5 for fungicide options. And review the web site and new labels for the SDHI fungicides. The new class of fungicides, SDHI's, are now registered for use in tree fruit. Fontelis was registered last season, and Luna Tranquility and Merivon were registered this spring. They are all registered in NY as "Restricted Use" fungicides. Due to the special restrictions for use in NY, they also are Special Local Need registrations. In order to apply these materials you must have a copy of the label and the SLN label in your possession.

Dave Rosenberger's article included the following: "The SDHI fungicides Fontelis, Luna Tranquility, and Merivon are effective against scab, rust, and mildew, but only Fontelis and Luna Tranquility are currently registered in NY (via special local needs labels), and none of these products are labeled on Long Island due to concerns about the potential for ground water contamination. Merivon was the most recent to receive a New York label. Fontelis is labeled for use on apple and pears, cherries, peaches, plums and strawberries. Luna Tranquility is labeled for use on apples. Merivon is labeled for use in pome fruit and stone fruit.



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Building Strong and Vibrant New York Communities

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.

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 still possible. These recommendations are not a substitute for pesticide labeling. Please read the label before applying any pesticide.

For early-season disease control in apples, these products are best used between tight cluster and first cover. Our preference is to use them before petal fall. That is especially true for Luna Tranquility, which is a premix of Luna (the SDHI component) and Scala (pyrimethanil). Scala alone is not effective in protecting fruit from scab or in controlling rust, and the Luna component, like many of the SDHIs, has only moderate activity against rust diseases. Controlling cedar apple rust on leaves is usually most difficult during the period of rapid shoot growth after petal fall, so Luna-T does not fit very well after bloom.

All of these SDHI fungicides should be applied in combination with either mancozeb or captan. This is essential for both fungicide resistance management and because the SDHI fungicide products may not redistribute well enough to protect newly expanding leaves that develop between sprays. In most cases, we prefer to see these products combined with mancozeb rather than captan because of the additional rust control provided by mancozeb and because Fontelis, which is formulated with mineral oil, can enhance uptake of captan into leaves and fruit where captan will cause injury under certain environmental conditions. Merivon has label warnings against tank mixing with oil sprays or other pesticides formulated as emulsifiable concentrates.”

Mixing It Up

Art Agnello

(Note: The following is an updated version of last year's article on pre-mixes.)

With the increasing number of insecticide products available to growers comes increasing complexity in selecting the most effective and economical product to use for a given management decision. This has always involved weighing the traditional factors such as efficacy, chemical class, pest spectrum, impact on non-target species, and of course,

Kerik Cox offered more on Merivon. Merivon is a premix of pyraclostrobin (QoI, FRAC 11) and fluxapyroxad (SDHI, FRAC 7). The product is labeled for apple scab, powdery mildew, several summer diseases, and post-harvest diseases in apple. It is also labeled for brown rot and several pre & post-harvest rots of stone fruit, including sweet cherries. In trials at the NYSAES, Merivon has provided exceptional control of QoI & DMI resistant apple scab, powdery mildew, flyspeck, sooty blotch, and botrytis fruit rot in apples. In NYSAES stone fruit trials, Merivon provided exceptional control of brown rot and post-harvest rots.

The labels are in the Special registration section of the PIMS website.

[Fontelis NYSDEC label](#)

[Fontelis SLN label](#)

[Luna Tranquility NYSDEC label](#)

[Luna Tranquility SLN label](#)

[Merivon NYSDEC label](#)

[Merivon SLN label](#)

cost. Added to this in recent years have been the more challenging considerations involving pesticide resistance, mode of action, seasonal maximums and, as companies have begun marketing pre-mixes that are combinations of two (for the time being) different active ingredients, the need to compare benefits vs. drawbacks of going with a pre-mix as opposed to a single-a.i. product for a given spray.

Like most university extension entomologists, I have expressed concern in the past over the proliferation of these pre-mixes in the marketplace, as I feel that growers are better off deciding for themselves what products should be mixed in their tanks, and when. Furthermore, I think that pre-mixed product combinations make it too easy to abuse the active ingredients by overusing them when both may not be strictly necessary. This not only promotes a higher risk of resistance development in the pest population, but adds to the complexity of juggling rates to achieve equivalent levels of pest control, since a spray of a pre-mix product containing A + B may not be the same as the amount of either A or B contained in their respective single-a.i. products. Moreover, the added challenge of having to observe different seasonal maximum uses for each product is enough to cause a grower to start seeing double and inadvertently making mistakes.

Naturally, agrichemical companies love pre-mixes because they seem to make sense from a sales point of view, and I have yet to see sound biological arguments ever win out against the forces of marketing, so it's a sure bet that there will continue to be more of these products introduced into the market as time goes on. Some university specialists have chosen to ignore the pre-mixes altogether in their crop guidelines, but this doesn't seem very realistic, as the products do exist and there are admittedly some management decisions when they may be the optimal choice, so growers do use them. For the time being, I have chosen to keep them in the NY "Recommends", although I've taken pains to segregate them from the single-a.i. products, and have preceded each of their listings with the following advisory: "For best effectiveness and insecticide resistance management, the use of pre-mixes should be reserved for situations when multiple pest species are present and are appropriately matched to the combination of active ingredients and modes of action contained in

the product." This is advice that I hope growers take seriously, because the long-term utility and effectiveness of these active ingredients depends on our responsible stewardship in using them, and the short-term convenience and economy of having them available will not compensate for burning them out prematurely if they are applied needlessly or overused. (Thus endeth today's sermon.)

All this being said, I am often as confused as anyone else when confronted with the choice between a pre-mix and the single-a.i. alternative. I'm waiting for someone who is a lot cleverer than I to develop some sort of expert-system app that will take into account all of the factors one should keep in mind when making such a deliberation. For the moment, however, I've made up the following table of "A.I. Equivalences", which might be of use in comparing the levels of actual insect control you might expect to achieve from different formulations of a given a.i. More details might have been included, but I hesitated to make this any more complicated, because the main intent is to provide a basis of comparison for some of the more likely decisions that could be made in choosing a pesticide product. Just to give an idea of how this table might be used, note that the amount of chlorantraniliprole a.i. in a high-rate application of Voliam Xpress (0.078 lb) is lower than a comparable application of Altacor (0.099 lb); also, you can see the difference in thiamethoxam a.i. between the use rates of Endigo (0.046-0.055 lb) and Actara (0.070-0.086 lb). Additionally, note that thiamethoxam is limited to a maximum seasonal total of 0.172 lb/A, regardless of the formulation, which can complicate mixing & matching of products during the season. Many comparisons are possible, of course, and the information in this table is only a start, but it may help make things a bit simpler than trying to reference a bunch of individual labels. We'll see what we can do to improve on how this information is presented over time.

Active ingredient equivalents between pre-mix and single-a.i. insecticide products

Product	Labeled amt/Acre	a.i. #1	lb a.i./ applic	a.i. #2	lb a.i./ applic	Max seasonal use/A
Pre-mixes						
Voliam Xpress	6-12 fl oz	CTPL	0.039-0.078	LAMB	0.0195-0.039	31 fl oz (0.2 lb CTPL)
Voliam Flexi	4-7 oz	CTPL	0.063-0.109	TMX	0.063-0.109	11 oz (0.172 lb of each)
Leverage	2.4-2.8 fl oz	IMID	0.038-0.044	BETA	0.019-0.022	2.8 fl oz (0.044 lb IMID)
Endigo	5-6 fl oz	TMX	0.046-0.055	LAMB	0.034-0.041	19 fl oz (0.172 lb TMX)
Agriflex	5.5-8.5 fl oz	TMX	0.055-0.084	ABA	0.012-0.018	17 fl oz (0.169 lb TMX)
Gladiator	14-19 fl oz	CYP	0.019-0.026	ABA*	0.009-0.012	38 fl oz (0.024 lb ABA)
Single-a.i. products						
Altacor	2.5-4.5 oz	CTPL	0.055-0.099			9 oz (0.2 lb CTPL)
Actara	4.5-5.5 oz	TMX	0.070-0.086			11 oz (0.172 lb TMX)
Admire Pro	1.4-7.0 fl oz	IMID	0.05-0.25			14 fl oz (0.5 lb IMID)
Agri-Mek SC	2.25-4.25 fl oz	ABA	0.012-0.023			8.5 fl oz (0.047 lb ABA)

CTPL = chlorantraniliprole; IMID = imidacloprid; TMX = thiamethoxam; ABA = abamectin; LAMB = lambda-cyhalothrin; BETA = beta-cyfluthrin; CYP = zeta-cypermethrin; ABA* = label gives a.i. as "avermectin B1" (abamectin, the a.i. in Agri-Mek, is a mixture of >80% avermectin B1a and <20% avermectin B1b, so a strict comparison is not possible according to the information provided).

The Soil for a Good Orchard Site and How to Recognize Symptoms of Poor Drainage

Damon Boynton (modified for WNY by M. Miranda Sazo)

(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 explore completely 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 from 6 to 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 from 3 ½ to 5 feet deep.

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 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 predominately 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 types 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.

Update: Forecasting Bud Break in the Spring of 2014

Terence Robinson and Mario Miranda Sazo

Since our article last week on April 7 where we presented the results of the Chill Unit model which estimates rest completion and the heat unit accumulation model which estimates green tip, the heat unit accumulation model indicates that at Williamson near the lake we have rapidly accumulated 1119 new growing degree hours (GDH) rising from the 653 GDH we had on April 7 to the current 1772 as of Tuesday morning April 15 (Fig. 1). We need about 2000 GDH to reach green tip on Idared, 2,200 GDH for McIntosh and 2,500 GDH for Delicious. The warm weather of the last few days has pushed us close to green tip but the cold temperatures over the next few days

will slow down bud development. Using forecasts for the next 10 days (until April 24) it appears Williamson will slowly accumulate GDH and will reach 2000 GDH on **Sunday April 20**, 2,200 GDH on **Tuesday April 22** and 2,500 GDH on **Thursday April 24**. If temperatures are warmer than predicted we will reach green tip a bit sooner. Remember this forecast is for the DeMarree farm in Williamson which is within ½ mile of the lake and which is cooler than inland sites. Thus, inland sites will reach green tip sooner than lake sites. Also remember for the purposes of the GDH model **green tip** is defined as the moment when there is green showing on **50% of the buds** not when the first bud shows green.

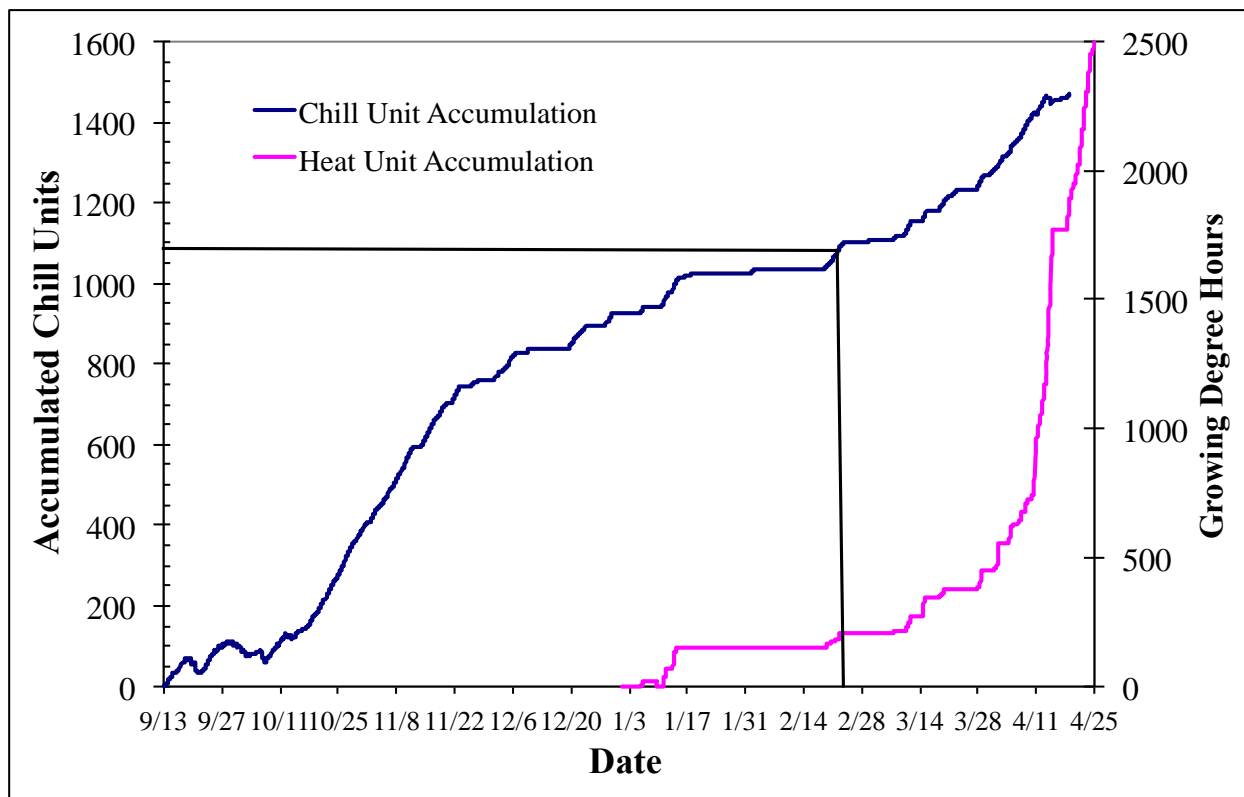


Fig. 1. Accumulated chill units after Sept.13, 2013 (blue line) and accumulated growing degree hours after Jan. 1, 2014 (pink line) at Williamson NY during the fall and winter of 2013/2014 through April 15, 2014 with forecasted temperatures from April 15-April 24, 2014.

Selecting a Good Site for a Blueberry Planting is Critical

Mario Miranda Sazo

It is critical because blueberries have more specific site and soil requirements than most other crops. Here are three important criteria to establish a successful blueberry planting: (1) Soil texture has to be composed of a significant amount of sand to allow for good drainage and pore space. Sands, loamy sands, and sandy loams are acceptable. Silts and clays are generally not conducive for blueberry root development because they lack pore space of an appropriate size. Soils with a clay or silt content of greater than 20% are not favorable for blueberry production, (2) an optimal pH for

blueberries is 4.5, with a range between 4.2 and 4.8. At a lower or higher pH, certain essential nutrients become unavailable. One of the most common problems in blueberry plantings is high pH. When pH exceeds 5.0, the availability of iron becomes limiting and chlorophyll production ceases, and (3) blueberries do poorly when soil calcium levels exceed about 1,500-2,000 lb/A, probably because calcium interferes with the uptake of other nutrients. Even if soil pH is 4.5, blueberry plants will not grow well if the calcium level is high.

Nitrogen Management in Perennial Strawberries is Different than with Most other Fruit Crops

Mario Miranda Sazo

Generally, nitrogen is provided to fruit crops in early spring, just prior to the flush of vegetative growth that ensues as buds break dormancy. Strawberries do not have shoots in the typical sense. The shoots of strawberries are only about an inch long, and from those shoots (crowns) leaves, runners and flower buds develop. Although strawberry plants are small, they are not efficient at sequestering nitrogen from the soil. Typically, for established strawberries, growers should apply 70 lbs/acre in summer and another 30 lbs/acre in early September. Leaf analysis can be used to determine if nitrogen is

adequate – a range between 2 and 3% is satisfactory in leaves tested in mid-summer. New strawberry plantings are fertilized differently, usually two or three applications of 30 lbs each throughout the first growing season, beginning a few weeks after planting. Growers concerned about poor growth in spring, will apply nitrogen before flowering in an established strawberry field. Cornell research has shown that more than about 30 lbs/acre applied before flowering can induce excessive growth and create conditions favorable for diseases (gray mold).

Reflecting on Last Year's Crop – Planning for This Year's Crop

A. De Marree

We are currently three quarters through the marketing of the 2013 apple crop. Many of you have received some returns from CA stored apples and have likely heard from your marketer what you can expect from fruit still in storage, based upon how it will be marketed. It is important that you record and study returns by variety and by marketer **now** to get a good handle on varieties that are meeting your return expectations versus those that are not meeting expectations.

Many of New York's traditional fresh varieties (Empire, Cortland, McIntosh, Macoun, Jonagold) have not met grower expectations this year for a variety of reasons (big crop: smaller fruit, color not meeting current market standards, picked late, lower fruit firmness, more difficult to meet export requirements, cannibalization of older varieties by new varieties, consumer demand for new varieties, competition from higher quality fruit, etc.).

I recommend calculating the **average** return per bushel **by variety** and also looking at the highest and lowest returns for each variety in order to reflect on what you can do differently this season to improve returns. This may mean: planning ahead for more pickers; doing a better job of

thinning the crop earlier; and diverting some varieties to the fresh slice market at harvest time (which means ReTain applications and picking earlier for better fruit firmness). It may also mean installing drip irrigation in high value blocks, planning to apply chemicals to reduce sunburn, planning on stem clipping some varieties (Honeycrisp, Topaz, and any variety with a high percent of stem punctures) or doing a better job controlling scab and summer diseases.

Your reputation as a high quality apple grower is crucial to get your apples into the best paying markets. Plan now to improve fruit quality and intentionally move apples into the best returning markets at harvest time, block by block. Storing apples that do not meet the mark of the intended market is very expensive (post-harvest fungicide, 1-MCP, storage, packing and marketing charges).

Reviewing 2013 returns now gives you a realistic review of today's market and allows you to move forward in improving future returns. Many new high density plantings in NY, MI, PA and WA (which increased apple acreage by 20,000 acres in the past three years) are coming into production. Plan ahead to improve your competitiveness by intentionally increasing your apple quality!

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Focus on Food Safety Series – Introduction, Part 1

Craig Kahlke & Betsy Bihn

Are you a fruit or vegetable grower that is beginning to get asked questions about your food safety practices or having a 3rd-party food safety audit that requires a comprehensive farm food safety plan? Are you concerned with ever increasing food safety requirements that are part of the Food Safety Modernization Act (FSMA) and the extra burden it might put on your business? **Well, you are not alone, and hopefully this multi-part series of articles on food safety will help ease your mind.** This weekly series will focus on clearing up common misconceptions, providing background information on the risk of foodborne illnesses associated with fresh fruits & vegetables, sharing a brief history of produce-related foodborne illness outbreaks, and outlining basic Good Agricultural Practices (GAPs) to guide you through thinking about the potential food safety risks on your farm. Throughout, we will provide resources that can give you more detailed information and ask you to give us ideas for future articles.

Tentative Outline of Focus on Food Safety Series

Here are some of the areas we would like to cover in this series.

A Brief History of Produce Associated Foodborne Illness Outbreaks

Buyer Demand for Produce Safety Drives Implementation

Third Party Audits

Food Safety Modernization Act (FSMA) Produce Rule and the Produce Safety Alliance

Produce Safety Hazards on the Farm: Chemical, Physical, and Biological

Assessing Risks on Your Farm

Good Agricultural Practices to Reduce Risks (multiple parts)

Crisis Management

Developing Your Own Individual Farm Food Safety Plan

We would love to have your suggestions, so please email Craig at cjk37@cornell.edu to suggest article topics or share your concerns about produce safety. The main purpose is to engage you in the topic of farm food safety and provide ways for you to expand your understanding so that you can meet both the market demand and federal requirements for food safety on your farm (without wanting to poke your eye out with a pen!