



Healthy Fruit

Volume 11, 2003

Prepared by the University of Massachusetts Fruit Team

Issue 9 – June 3, 2003

Current Degree Day Accumulations*

Location	Base 32F	Base 43F	Base 50F
Belchertown, UMass CSO observed (01/01/03 – 06/03/03)		808	504
Belchertown, UMass CSO, SkyBit™ (01/01/03 – 05/27/03)		647	NA
Belchertown, UMass CSO, observed (04/15/03 green-tip – 06/03/03)	1129 ¹		
Belchertown, UMass CSO, observed (05/25/03 petal fall – 06/03/03)			92 ²

*Base 32 from green-tip used for scab ascospore maturity;
Base 43 and Base 50 from January 1 used in insect models.

¹ Indicates 100% scab ascospore maturity.

² 340 Degree Days Base 50 used for plum curculio spray cut-off

Upcoming Meetings/Events

Date	Meeting/Event	Location	Time	Information
June 10	UMass Fruit Team Twilight Meeting	Bartlett's Orchard Richmond, MA	5:30 PM	Jon Clements 413-478-7219 Wes Autio 413-545-2963
June 11	UMass Fruit Team Twilight Meeting	Honeypot Hill Orchard Stow, MA	5:30 PM	Jon Clements 413-478-7219 Wes Autio 413-545-2963
June 12	UMass Fruit Team Twilight Meeting (in cooperation with Rhode Island Extension)	Noquochoke Orchard Westport, MA	4:30 PM	Jon Clements 413-478-7219 Wes Autio 413-545-2963 Heather Faubert 401-874-2750

Fruit Set Phenology And General Observations

Most Massachusetts orchards are (finally) beyond petal-fall and well into fruit set. Terminal shoot growth has accelerated with what little warm weather we have had, and now is the time for a second

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Apogee application if a first was made at petal-fall. Fruit set is generally good, although there are exceptions. A rather heavy, extended bloom, combined with less-than-ideal weather and poor honeybee activity has resulted in some apple blocks with what appears to be only moderate set. Fruit size ranges widely, with small fruitlets (5 mm.) just coming out of petal fall, to some apples approaching 15 mm. Many growers have applied their first thinning spray, often Sevin at petal fall and sometimes combined with moderate rates of NAA. Careful consideration is advised when deciding on what to do for fruit thinning now – there appears to be considerable size variation in fruitlets (McIntosh and Cortland are somewhat of an exception) and they *may* thin easy. June drop is expected to be substantial. The need for moderate thinning suggests Sevin alone or in combination with mid-range (5–7ppm.) NAA rates, or Accel at label rates. Insect activity is catching up to ‘normal’ and we are entering a period of high risk for damage, including curculio, borers, oriental fruit moth, and leaf miner. Unfortunately, primary scab lesions are showing up in apple foliage after what has been more disease pressure (six inches rain in Belchertown) than we’ve seen in several years. If you have scab, you need to maintain a rigorous fungicide program for at least another week or two. For more details, see following articles. JC

Pesticide Safety Around the Farm

Bill Coli, UMass Extension Farm Safety Coordinator

Those of us who use pesticides certainly make every effort to do so in accordance with label conditions regarding rates, personal protective equipment (PPE), re-entry intervals (REIs), pre-harvest intervals (PHIs) and the like, and take pains to be sure that farm workers and family members are not exposed to pesticides. With the passage in 1996 of the Food Quality Protection Act (FQPA) additional attention has been paid by the EPA to concerns about worker exposure and potential dietary effects of pesticides on children.

However, studies conducted at the Pacific Northwest Agricultural Safety and Health Center (PNASHC) have indicated that children may be exposed to pesticides in other ways (See “Pesticides and Farming: Are Children in Harm’s Way?” NIOSH Ag. Research Centers Update, Spring 2003, Vol. 1, No. 2 as well as the next article). The PNASHC found “elevated” levels of agri-chemicals in household dust in homes of agricultural workers compared to the general public. A recent report on the studies went on to add that “..children of pesticide applicators also had higher levels of pesticide metabolites” in their urine than children whose parents did not work in agriculture.

Another PNASHC study of 44 pre-school children of non-agricultural workers who live in close proximity to sprayed agricultural areas found that levels of pesticide metabolites in their urine increased during the spraying season and returned to normal after the end of the season. Of course the situation in Massachusetts is likely very different from Washington State in terms of the size of agricultural areas being treated with pesticides. Nonetheless, As noted by the PNASHC study authors, it would still seem prudent to consider ways “to strike a proper balance between the risks and benefits of agricultural pesticide use”, and minimize potential exposure of our families and our neighbors.

Laundering Clothing Used During Application Of Pesticides

Applicators cannot completely avoid exposure to the chemicals that they apply. Exposure occurs during any of the many activities involved in the spraying operation, including transporting the pesticide, tank filling and mixing, container rinsing, spraying sprayer maintenance, pesticide storage and early re-entry to treated areas.

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Exposure can involve contact with pesticide vapors and aerosols, the concentrated pesticide formulation in a liquid, granular, or powder form, and the spray mixture itself. Workers absorb chemicals into the body through the skin, eyes, respiratory (breathing) or digestive system. (swallowing). Studies have shown that good personal hygiene practices reduce the risk of long-term health effects.

General Recommendations

- Read and understand the product label and material safety data sheet before application.
- Bathe or shower after completion of pesticide application, including shampooing hair thoroughly and cleaning under nails.
- Put on clean clothing.
- Clothing worn during application must be washed daily after each use.
- Launder all clothing used for spraying separately from the family's regular clothes.
- Personal protection equipment should be cleaned daily after use.
- Discard any clothing that is heavily soiled with pesticide concentrate.

Preparation for Laundering

- Remove pesticide granules from cuffs and pockets outdoors (in the field).
- Discard (according to label instructions) any garment saturated with a full-strength chemical.
- Handle soiled clothing with chemical resistant gloves.
- Use disposable plastic garbage bags for temporary storage of pesticide-soiled clothes before washing.
- Pre-treat pesticide-soiled clothes with a laundry stain removal product intended for oily stains when an oil-base (emulsifiable) formulation has been used.
- Pre-treat heavily soiled areas.
- Read the pesticide label for information.
- Pre-rinse pesticide-soiled clothing: on pre-soak cycle of automatic washer or presoaking in a suitable container (dump water on field) or spray/ hose the garment outdoors (away from children and pets).

Laundering

- Isolate pesticide-contaminated work clothes and wash them separately from the regular family laundry to avoid contamination.
- Do not overcrowd clothes in the washing machine.
- Use hot water 140⁰F) setting.
- Use full water level.
- Use normal wash cycle (about 12 minutes).
- Use more detergent than recommended by product label.
- Use fabric starch. Pesticide residues cling to the starch and are removed in the subsequent wash cycle when the starch is washed away.
- Choose a heavy-duty detergent (liquid or powder).
- Re-wash clothing two or three times.
- Line dry clothing to avoid contamination of the dryer and to allow sunlight to break down pesticide residues.
- Run the empty washer through a full/wash rinse cycle afterward.

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Instructions for Cleaning Protective Equipment

- Wear rubber gloves while cleaning equipment
- Wash hard hat or waterproof hat, goggles, face shield, apron, boots with hot soapy water, rinse and dry.
- Wash the respirator face-piece only. Before cleaning, remove the cartridges.
- Wash the respirator in warm soapy water, rinse and air-dry.
- Check seals and valves for signs of damage or wear.
- Store the respirator and cartridges in a sealed plastic bag
- Last wash your gloves with hot soapy water, rinse and dry.
- Inspect and replace any worn or damaged protective equipment.

Adapted from the Institute of Rural and Environmental Health, University of Saskatchewan by Craig Hollingsworth

Primary Scab Ending

At Belchertown, the day degree accumulation reached 1129 on 3 June. On 27 May it had reached 926. For orchards near Belchertown and in areas to the east and south it is safe to say that there will be no more ascospore release. If a careful inspection of foliage finds no scab lesions developing during the 2 weeks since the final ascospore release (may be a few days longer if the average daily temperature was below 53 degrees F), then primary scab has been controlled. A conservative estimate of final scab release in a commercially-managed orchard would be when 900 scab day degrees have accumulated before a daytime rain of at least 0.1 inch and temperatures of at least 50 degrees F during the wetting period. The usual guideline for keeping the foliage protected until June 10 certainly applies this year in the areas of MA described above. In the hill-towns the season is several days later.

This year scab-promoting wet weather has been extended over a long period and growers have rightly used more fungicide than usual. Now that EBDCs and SIs have been used (and in some orchards the strobilurins Flint and Sovran also), growers are starting to use captan. For those who did not see Dave Rosenberger's cautionary article in last week's (May 27) issue of Scaffolds, it is reprinted below. By now, orchards have had some sunny dry weather, so the danger of phytotoxicity from captan is lower than last week, but using caution with spray adjuvants and avoiding use of captan on stone fruits at this time is advisable. Alternatives could be an SI-mancozeb combo or a stroby-mancozeb combo, but many plant pathologists agree that captan is the best material to use when scab is a tremendous risk. It may be better to get some phytotoxicity (most likely leaf-spotting on apples, especially Red Delicious), than to have to fight secondary scab on leaves and fruit.

Caution With Captan (27 May, 2003)

(Dave Rosenberger, Cornell University, Highland Lab, Lower Hudson Valley)

Fruit growers should be very cautious about using captan during the next 7-10 days because weather conditions over much of the state have left apples, peaches, plums, and cherries unusually susceptible to captan injury. Captan is an effective, broad-spectrum fungicide that is labeled for many fruit crops. However, when absorbed into plant tissue, captan causes phytotoxicity that appears as leaf spotting, shot-holing, and leaf yellowing. When combined with other products that enhance uptake into leaves, captan applied at this time of year can cause complete defoliation of peach and nectarine trees. To be safe, growers should avoid applying captan until trees have had several days of sunny, dry weather.

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The risk of captan injury is greatest when the annual spring growth flush of fruit trees coincides with an extended period of cloudy, cool, damp weather. The growth flush on fruit trees begins when terminal shoots start growing during or shortly after bloom. The cuticle (the waxy layer on the leaf and fruit surfaces) develops in response to heat and water stress. During cloudy and damp weather, there is little danger from heat or water loss and trees therefore produce only a thin cuticle to protect the newly formed leaves and enlarging fruitlets. The same waxy cuticle that serves to prevent water loss also prevents captan from entering and injuring living cells beneath the plant cuticle. Some varieties of plums and cherries almost always develop a leaf spot or shot-hole after captan is applied because, even under the best conditions, some captan enters and kills leaf cells of these varieties. For most other fruit crops, captan causes little or no injury except during unusual seasons when weather conditions inhibit cuticle development.

Even when plant tissue has only a thin cuticle, captan by itself will rarely cause phytotoxicity (except to those plum and cherry varieties that are especially susceptible to captan injury). Problems often arise, however, when captan is mixed with other agrichemical products. Spray adjuvants that enhance the transport of captan through the plant cuticle can greatly increase the phytotoxicity of captan, especially when the plant cuticle is thin at the time spray is applied. Adjuvants that enhance uptake of captan include spray oils, some spreader-stickers, and other petroleum-based carriers commonly found in products that are formulated as liquids or emulsifiable concentrates.

Where apple scab symptoms are appearing in orchards, the best option for stopping further spread of apple scab is to apply a combination of an SI fungicide along with the maximum label rate of captan. To avoid phytotoxicity problems, however, growers may need to use an SI-plus-mancozeb combination for the next week to avoid the potential phytotoxicity that could result if captan is applied at this time. This is especially true if Sevin XLR Plus will be applied for thinning or if spray oil will be applied with a miticide during the next week. Those who opt to apply captan despite the risks are advised not to use spray adjuvants that might enhance trans-cuticular movement of captan.

Insects and Mites

Plum Curculio (PC)

In PC monitoring blocks, fruit range in size from 7 to 10 mm, a size that makes them susceptible to PC egg-laying. An examination of 9000 developing perimeter row fruit for PC stings on May 30, found approx. 0.1% PC injury. Over the past 4 days, injury has risen to 1%, indicating the impact of a new wave of PC immigration that occurred last Thursday and Friday. Although the weather has remained cool, growers should maintain a good insecticide cover on perimeter rows for the foreseeable future.

Codling Moth (CM)

Cornell Geneva reports that about 4% of first generation Codling moth had emerged as of May 27, based on degree-day modeling. As is usually the case, CM adults are active, and egg hatch will occur during the period when we need to protect against PC, so no special attention needs to be paid to this internal fruit-feeding pest.

Leafminers (LM)

Private consultants report that sap-feeding mines are now visible in monitored blocks, although none had exceeded threshold. Where LM has been a problem, it is worthwhile spending some time this

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week monitoring the underside of 5 mid-aged fruit cluster leaves on 20 trees per block for presence of mines. Use of a 10X hand lens is recommended. Where 7 or more mines per 100 leaves are found in McIntosh (or 14 mines per 100 leaves in non-McIntosh) treatment is advisable.

White Apple Leafhoppers (WAL)

While you're out looking for leaf mines, keep an eye out for the young pale white nymphs of WAL. WAL should not be a problem unless their levels exceed 3 per leaf in June. It is likely too early to consider treatment for WAL.

Dogwood Borer

Where borers are a problem in later developing areas that are closer to Petal fall may still consider Lorsban trunk sprays for this pest, if in possession of the supplemental label.

Putting It All Together

As noted above, sprays against PC using Avaunt, Guthion, Imidan, or Danitol should provide good to excellent control of CM as well. Where leafminer treatment is required, only the pyrethroid Danitol will also control this pest. If Danitol is not chosen, Provado, Intrepid, or SpinTor are options that will least disrupt mite biological control agents, followed by Agri-mek (moderate effects), and Lannate (severe effects). For best effectiveness, SpinTor requires addition of a penetrating surfactant. Provado, Ari-mek and Lannate will also control leafhoppers.

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