



Maine Tree Fruit Newsletter

Tuesday, June 10, 2020 Vol 27:6

Thinning

Apples and Pears

For most Maine orchards, it is still thinning season. Highmoor Farm applied thinner last week and have not seen much sign that it has worked. Cool temperatures will slow down the process, but fruit will become resistant to chemical thinning by next week. It will take a few more days for last week's thinner to start showing signs of working which should give us one more chance to apply an additional thinning spray. Orchards in the southern part of the state may be nearing the end of the thinning window.

Orchards in northern Maine should be at the stage where chemical thinners are most effective. Check flowers and fruitlets for signs of freeze damage (internal browning in the seed cavity) and adjust thinning rates as needed. Freezing temperatures occurred earlier this month causing damage to flowers and fruitlets in a few orchards south of Bangor. Because of the sporadic occurrence of freeze damage, you should check individual blocks before thinning. If there is no damage, then plan on applying the normal rates of thinner. If damage occurred but is not severe, apply carbaryl because some thinning will be needed. On pears, NAA or Maxcel can be used instead of carbaryl.

Peaches

Now that fruit set is evident, peaches can be thinned to reduce the crop where necessary. Based on observations at Highmoor Farm, orchards at higher (>500 feet above sea level) elevation have the greatest flower bud survival and the greatest need for fruit thinning. There are no chemical thinners that will work at this stage of fruit development, so hand thinning or mechanical thinning are the only options. Leave about one or two fruits per shoot.

Apple Scab

The continuation of dry weather has probably delayed the final apple scab primary spore release later than the normal correlation with First Cover timing, e.g. between Petal Fall and 10-days after Petal Fall. There is a modicum of rain in the forecast for Highmoor Farm in Monmouth for early Thursday. For Sanford, the forecast shows high probability for a brief but heavy shower in the afternoon. If your location is at least 10 days past Petal Fall and receives at least 0.3 inch of rain, it seems safe to presume that apple scab primary infection risk is over for the year. That still requires checking for scab lesions to see if scab shows up from earlier infection periods. Based on observations so far, this is going to go down in the record books as a low scab year.

For both Highmoor and Sanford, beyond Thursday June 11, the rain forecast is not encouraging. There is total of 0.20 inch of rain in forecast across the 8 days of Friday June 12 through Friday June 19. With temperatures above 90F in the latter part of the forecast. That is great weather for suppressing apple scab fungus. But it is a serious threat to tree health, especially young trees. Irrigation season looks to start early this year.

Powdery Mildew

What appears to be early stage Powdery mildew was found in a Maine orchard this week. This disease has rarely been a significant problem in Maine, and it probably will remain a curiosity this year as well. Even though it is a fungus, powdery mildew is favored by lack of rain. If it does become more prevalent, the DMI/stroby/SDHI fungicides all provide good to excellent control. Captan is not effective against powdery mildew. The return of regular rain will help contain further spread, but that is not in the current forecast. Where abundant, powdery can causes loss of foliage and create skin scarring on the fruit.

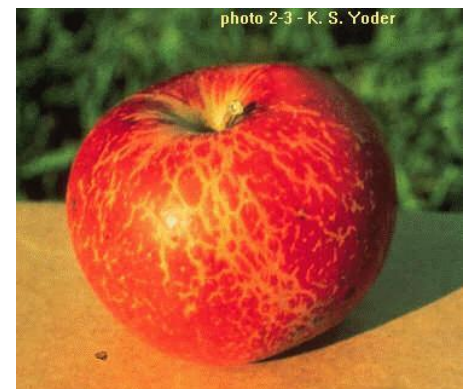


Photo credits: top - anonymous x2, bottom - Renae Moran x 2, Keith Yoder.

Peach leaf curl

Peach leaf curl is an uncommon disease for Maine but is showing up. This disease is caused by a fungus that infects buds just as they begin to swell in springtime, but the infected leaves display symptoms several weeks later. With extended wet weather at this time, it could progress to outbreak status in unsprayed orchards. The chance to control peach leaf curl for this growing season has passed.

Peach leaf curl is unlikely to worsen with time or have much impact on peach production. It may be showing up this year because peach budbreak and bloom were ahead of normal in relation to the first fungicide spray, typically copper. Maine is unusual in that peach budbreak and bloom occur synchronously with apple trees instead of a week or two ahead of apple trees, which is typical in other regions.

For a photo of the symptoms see:

<https://extension.umaine.edu/publications/2068e/#common-diseases>

To prevent infections next year, a chlorothalonil or copper fungicide can be applied this fall after leaf drop or next spring before budbreak. Here is a fact sheet from Penn State:

<https://extension.psu.edu/disease-of-the-month-peach-leaf-curl>

Plum Curculio

Apples and stone fruit in almost all Maine orchards have grown past the minimum diameter at which plum curculio egg-laying begins. Some cuts have been seen. Carbaryl used as a thinner has a short term and moderate effect as a PC control, but relying on that alone for protection is likely to be inadequate, especially where there is a history of damage. A perimeter only spray is often sufficient where at least one full block insecticide application has been made previously. The New England Tree Fruit Guide has insecticide options at <https://netreefruit.org/apples/spray-table/8-fruit-set-7-14-days-after-petal-fall-apple>

Codling Moth

Another key pest at this time is codling moth. In most orchards, insecticide targeted against PC will also control codling moth. As with PC, carbaryl used for thinning has a limited effect as a codling moth (CM) control, but in the case of CM is even less adequate alone. CM control requires preventing the laying of first generation of eggs which begins with moth flight and mating around Petal Fall. Egg hatch begins in mid-late June at most Maine locations. The optimum timing for different CM control materials varies from 100 to 300 degree days base 50 F, and is described on the label. With the possible exception of Aroostook County, Maine orchards are already past 100 DD after Petal Fall. The link above also has insecticide options for codling moth.

European red mites (ERM)

The extended period of dry weather has given ERM a fast start on summer generation increase. Now is the time to check your apple trees for presence / absence of ERM on middle aged fruit cluster leaves. If more than 30% of leaves show signs of living hatched ERM, or if you find more than an average of 1 ERM per leaf, then control is recommended. ERM control is longer lasting if established early. That only applies if control is needed in the first place. In recent years, many Maine orchards have not needed any summer ERM control, especially if oil was used prebloom. Miticide options are at the Tree Fruit Management Guide link shown above.

What happens next is that ERM, even where previously found in abundance, seem to disappear in late June. With the heat in the forecast, this might begin in mid-June for southern Maine this year. But they are not gone, they are just between 1st and 2nd generations. When the eggs laid by the 1st generation begin to hatch as 2nd generation nymphs, the ERM population can reappear.

Sprayer Calibration

1) George Hamilton, University of New Hampshire Extension Specialist is well known to the commercial fruit industry in Maine and beyond for his work on sprayer calibration and coverage testing. **George has a new set of 1-minute videos addressing different topics for boom, backpack and all types of sprayers** at <https://extension.unh.edu/resource/quick-tips-using-your-sprayer-video>

2) **Airblast sprayers configured and calibrated for early season applications to fruit trees need to be recalibrated** now that foliar density has increased by an order of magnitude. Everybody has more preferred things to do than re-calibrating a sprayer. And while nobody is handing you money to do it, in essence you are paying yourself. The time spent can have a big effect on spray material costs. Even more important, it helps insure accurate application, better crop quality and yield, enhanced pest protection with lower risk of phytotoxicity, unintended environmental or human health impacts.

EPA guidelines call for spray delivery to be within 5% of targeted amount. Sprayer calibration surveys have found that to be somewhat of mythical idealized target. Delivery vs. intended delivery is often found to be off by 10 -20% or more. In some cases, way more. It is not just pesticide and spray water coming through those nozzles. It is also your money.

Spray coverage also changes radically with the huge change in foliar density between Green Tip and First Cover. Yellow spray cards attached with alligator clips at different locations around the canopy can be an eye-opening demonstration of where your spray dollars and pesticide protection are going.

3) A **comprehensive article about backpack sprayer calibration** was included in the June 4 edition of the UMass Vegetable Notes newsletter by Genevieve Higgins, Lisa McKeag, and Susan Scheufele. It is oriented for two-dimensional application to vegetable crops, but is also useful for backpack sprayer application for weed control in small orchard plantings or as spot control for problem areas in larger orchards. Remember to never use a sprayer used for herbicide application to subsequently spray tree canopies. Even if you wash out and rinse the tank thoroughly, there is a high risk of phytotoxicity from residual amounts of herbicide.

Speaking of phytotoxicity, there has been concern that surfactants included in some glyphosate (e.g. Roundup) products may increase the potential for phytotoxicity from even small amounts of drift onto tree trunks. Risk is much higher for young trees without a thick layer of protective bark, but even established trees exposed to herbicide drift can show signs of damage, especially if exposure includes direct hits or is repeated across years.

The calibration instructions for walking speed etc. are also applicable to adjusting amount of spray water and amount of pesticide to put in the tank for spraying tree canopies. But in the interest of brevity I have not included backpack sprayer calibration for canopy application.

The following material is adapted from the UMass Vegetable Notes article.

BACKPACK SPRAYER IMPROVEMENTS AND CALIBRATION

Growers with diverse crops and small plantings often need to apply pesticides to beds or plots of only several hundred square feet, and backpack sprayers are the best tool for the job. John Grande and Jack Rabin of Rutgers made an excellent series of short (about 3-10 minute) videos on selecting, upgrading and calibrating backpack sprayers.

<https://sustainable-farming.rutgers.edu/backpack-sprayer-modification/>

The spray wand upgrade designed by John Grande and described in video 2 of the series, costing about \$200, can go a long way to improving the efficiency and usability of your backpack sprayer.

Described below are details on calibrating your sprayer to apply the correct amount of material. Making an application of the accurate amount of spray will depend on four variables: a constant walking speed, a steady pressure providing a constant volume, maintaining your spray swath width, and selecting the most appropriate nozzle tip for the job. If you change any one of these, you change the amount of spray you apply.

Walking speed.

Your walking speed should be constant and one that you can comfortably maintain over the entire time you intend to spray and in the uneven conditions of a cultivated field. It also must be the same speed at which you calibrate the sprayer. If you double your walking speed while maintaining pressure and swath width, you'll apply half as much material. You would then require twice as much pesticide per gallon (that is, a greater concentration) to apply the same amount of pesticide per acre. A barbed swivel added to the base of your spray wand will allow you to direct the angle of your spray and allow you to walk through the field without fatiguing your wrist, making the entire process more comfortable.

For most people, an easy walking speed to maintain is 2-3 miles per hour (mph), or, 34-23 seconds per 100 feet. Three mph also happens to be a good speed for tractor-driven pesticide applications. You can easily practice this walking speed by marking out and walking 100 feet in the field and timing yourself while spraying water to test your coverage.

Pressure and volume.

If you change the pressure while you spray, you change output. Increased pressure results in higher output; the exact relationship depends on your nozzle type. 30 psi is a common pressure used with backpack sprayers since 40 psi is hard to achieve with a hand pump operated sprayer. Manufacturers provide output rates for nozzles at a given pressure. A pressure gauge can be fitted onto a backpack sprayer, however, adding a CF pressure-regulating valve to the spray wand is the best option for maintaining constant pressure. With a CF valve, the sprayer will only spray when there is enough pressure in the tank to maintain a constant flow and will not exceed the set flow rate either. When the flow stops, the applicator knows that they need to pump more air into the tank in order to keep going.

If you'd like to check your rate of output, fill your tank $\frac{1}{2}$ way, pump the sprayer, and determine your spray volume by collecting the spray output in a container while timing yourself holding the trigger for 1 minute. This will provide you with each nozzle's output in gallons (or whatever volume you choose) per minute.

Nozzle tip selection.

The proper tip will depend on the situation. Tips are available that cover a wide range of output volumes, spray widths, and pressures. Most backpack sprayers come with a single flat fan nozzle, but a cone tip may be more appropriate for getting the small droplet size that is needed for covering foliage. When making soil drenches for root pests, some growers remove the nozzles entirely, because soil drenching usually requires more water per acre in order to carry the product into the soil in a narrow band along the row. For soil drench, labels frequently give amounts per 100 row feet.

Many spray wands that come with the backpack sprayer do not have easily adjustable nozzles, therefore, it is important to retrofit your wand with a quick-change nozzle body adapter and round cap so that you can easily change and adjust nozzles.

Swath width/nozzle height.

Tips are designed for use within certain heights and pressures. Within these ranges, some tips deliver narrow bands; others, like flooding tips, provide swath widths up to 7 feet. The wider each swath width, the less time the operator spends walking up and down fields. The height at which you hold the spray tip above the target influences the swath width. For foliar applications, 18" above the crop is a common distance appropriate for many nozzles. Keep this distance even if you are spraying from the side in order to improve coverage of lower leaf surfaces. Higher distances from the target plant surface will increase the band width but also the potential for pesticide drift.

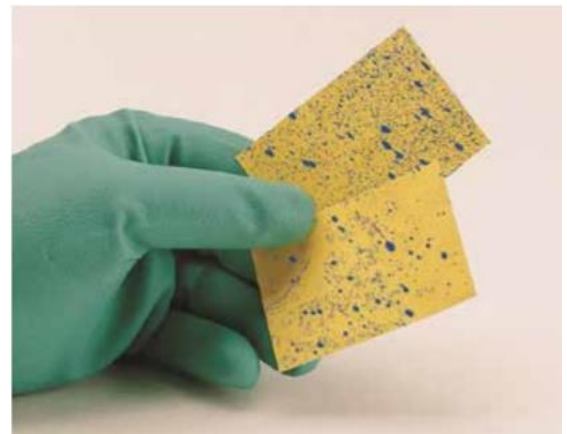
Determining the desired band width can easily be done by spraying water on a dusty farm road. If you have trouble maintaining the desired height, tie a piece of string weighted with a bolt 18" long (or the desired height) from the wand near the nozzle head, and watch that it just touches the ground as you walk.

Calibrating backpack sprayers:

First, check your sprayer coverage and operation. Select the spray tip or boom setup that provides the desired coverage. Add water and spray the ground or dry pavement as if you were spraying your field. Check fittings and hoses for leaks. Check the spray pattern for uniformity to make sure that the nozzle is not clogged, and if using a multiple nozzle boom setup, that all nozzles are working and are achieving proper spray pattern overlap (about 1-2”).

You can also check the water spray over the crop to see if you are getting good coverage. Attach water-sensitive cards to a piece of foliage and inspect your spray coverage. Adjust nozzle spacing and/or height until you achieve the desired pattern. These cards are available from suppliers of spray equipment and pesticide.

For insecticides and fungicides, your goal is to use enough water to cover the foliage with small droplets, but only until the point of drip from leaf surfaces. Be certain you’re getting uniform coverage before you proceed!



Water-sensitive spray cards. Photo: Gemplers

SPRAY VOLUME and PESTICIDE DOSE CALCULATIONS:

1. Calculate what portion of an acre is being sprayed.

Determine the sq. ft. of area to be sprayed (multiply canopy width x row length x number of rows), and convert to acres (this may be a small fraction of an acre):

Example: 4ft. canopy width x 250 ft. bed length x 5 rows = 5,000 sq. ft.
5,000 sq. ft. / 43,560 ft² per acre = Acres to be sprayed = 0.115 acres

2. Calculate how much pesticide to use.

Multiply the rate per acre for the crop and pest (from the label) by the proportion of an acre to be sprayed.

Example: Pyganic EC 5.0 II at 10 fl. oz. per acre x 0.115 acres.
Amount of Pyganic needed = 1.15 fl. oz.

3. Measure water needed per square foot.

Add a known amount of water (e.g., 1 or 2 gallons) to the tank. Spray the water as if you were actually spraying your field and watch that you are getting adequate. When making a soil drench application, target the base of the plant and check if enough water is applied to percolate 2 inches deep. Remember, you must maintain constant pressure, constant walking speed, and consistent nozzle height and boom setup or wand motion to achieve the coverage you need. This amount will change with different crops and size of crop canopy.

When the water is gone, stop and mark the spot. Measure the area you sprayed and calculate the square feet (length of swath x width). Calculate how many gallons were needed per square foot.

Example: 2 gallons used / 1000 sq. ft. tested Gallon per sq. ft. = 0.002 gallons

4. Determine total water needed:

Example: 0.002 gallons x 5,000 per square foot (from step 1 above)

Gallons of water needed = 10 gallons

5. Mix the required amount of pesticide in the required amount of water.

It is best to add half the water, add the pesticide, agitate, then add the remaining water. Spray, using the walking speed, pressure, nozzle and boom setup or wand motion that you used for calibrating. Be careful to follow the label for whichever pesticide you are using as to rates, maximum number of total and consecutive applications and maximum total amount of product applied per crop per season, and of course, always use proper PPE when mixing and applying pesticides.

Resources:

- Landgren, C.G. Calibrating and Using Backpack Sprayers, Oregon State University, Washington State University, University of Idaho.
- Stivers, L. "Upgrade and Calibrate to Optimize your Backpack Sprayer" Pennsylvania Vegetable Growers News, Vol. 38: 3.
- Grande, J. and Rabin, J. Rutgers University, NJ. "Field Demonstrations: Backpack Sprayers" Video Series: <https://sustainable-farming.rutgers.edu/backpack-sprayer-modification/>
- Grande, J. and Rabin, J. Rutgers University, NJ. "Backpack Sprayers Modified for Small Farm Crop Protection": <https://sustainable-farming.rutgers.edu/companion-handouts-for-the-backpack-sprayer-videos/>

Crop insurance listening session

You are invited to participate in a Listening Session on Thursday, June 25 with USDA's Risk Management Agency (RMA) to discuss proposed changes to the Apple Policy. This is a follow-up to previous listening sessions to discuss the apple program and identify potential changes to enhance coverage while also addressing increasing loss ratios and resultant premium costs. In this session, RMA will present proposed changes to growers and their insurance representatives and ask for their comments.

1. To participate by telephone: Dial 1-888-844-9904. When prompted, enter the access code: 4965127; OR

2. Join by telephone AND follow along online by using this webinar link:

<https://usda.adobeconnect.com/applegrowers/>

Click on or enter the link into a web browser and then "Enter as a Guest." In the "Name" field, enter your first and last names. More complete instructions and information about the session is in the flyer sent as an email attachment to this newsletter.

Virus Eradication

No, not COVID-19, plum pox virus. It was not a big deal in Maine, but it certainly was for growers in other Northeast states who watched their orchard get bulldozed in the name of communal phytosanitation. Fortunately, the effort was successful for the benefit of all. A USDA good news story at <https://www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-program-overview/plant-protection-today/articles/plumpox>

Closing Words

"Let creation reveal its secrets by and by.
When the light that's lost within us reaches the sky."

- Jackson Browne

If you need a break to stop and think, (after clicking through an ad) there are 6 minutes of time well spent with JB at: https://www.youtube.com/watch?v=7SX-HFcSloU&feature=emb_logo

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