RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

FRUIT EDITION $1.50 APRIL 10, 2001

INSIDE

Early Season Peach Blossom Blight Management

Norman Lalancette, Ph.D., Specialist in Tree Fruit Pathology

Blossom blight of peach and nectarine, caused by the brown rot fungus *Monilinia fructicola*, rarely causes yield loss in New Jersey. Many peach tree cultivars are prolific producers of fruit, so at worst, blossom kill from blight might actually reduce the amount of thinning! However, blossom blight infections can develop into cankers, which are something to avoid. These cankers cause direct fruit loss by killing bearing shoots. But more importantly, they produce spores that can infect fruit during the preharvest ripening period.

Don't Forget Cultural Control

Growers often ask this time of year about "what to spray?". Yes, fungicide application is perhaps the most significant component of a blight control program. But don't underestimate the impact of cultural control practices that help reduce inoculum or alter the environment. Research studies have shown that the amount of inoculum directly influences the severity of infection. And after a very wet 2000 growing season, the level of inoculum should be higher than normal.

At the very minimum, peach fruit mummies should be removed from the canopy, as they can be a significant source of inoculum for blight. This action is often done during pruning in spring. Of course, they can still sporulate once on the ground, but at least the inoculum is not adjacent to flowers. Better yet, remove the mummies from the orchard, although this may not be practical. Other tactics include somehow covering the fallen mummies with soil/mulch or removing them from the canopy in the fall so they have more time to decay on the orchard floor.

Since the pathogen requires wetting periods for infection, proper pruning should help modify the microclimate to lessen wetting periods. Branch location within the canopy should allow good air circulation and light penetration, which together translate into faster drying after dews or rains. Furthermore, good pruning also allows improved fungicide penetration, which is particularly critical for alternate row spray programs. Finally, control of most other diseases, such as scab and brown rot, will also be improved with proper canopy structure.

SEE BLIGHT CONTROL ON PAGE 2

Critical Temperatures for Frost Protection

Compiled by Richard Snyder

T_{90} is the temperature at which 90% of the buds will be killed.

Peaches

Bud Stage	T_{90}
First Pink	15F
First Bloom	21
Full Bloom	24
Post Bloom	25

Cherries

Bud Stage	T_{90}
Tight Cluster	14F
Open Cluster	19F
First White	22F
First bloom	24F
Full Bloom	25F
Post Bloom	25F

Apples

Bud Stage	T_{90}
Tight cluster	21F
First Pink	24F
Full Pink	25F
Full Bloom	25F
Post Bloom	25F

Bloom 2001: Historic Late Year?

Robert D. Belding, Ph.D., Specialist in Pomology

With the mild winter and the late bloom, 2001 is set up to be an excellent year for fruit set. Since bloom is so delayed this year, our chances for freeze or frost damage to the crop is becoming very remote. Peach buds at the Cream Ridge Fruit Research Center, as of Monday April 9th, were in the first swell to calyx green stage. In Bridgeton, peach buds have entered first pink and apple buds are between ˘ inch green to tight cluster.

Diminishing chances of crop injury from the weather increases the importance of fruit thinning. Blossom thinning is an excellent option this year due to the decreased risk of crop injury from freezing temperatures. Physical bloom thinning can be done by brushing buds and flowers with ropes or brushes or by hand. Chemical bloom thinning can be accomplished using Wilthin, produced by Entek Corporation, at 85 to 95% full bloom. Caustic type peach blossom thinners, such as Wilthin disrupt pollination by damaging the flower parts and preventing pollen tube growth. Normally, three days are required for the pollen tube to grow and fertilize the flower. If bloom time is compressed more than usual, thinners will still have time to act even if the trees have reached 100 percent full bloom.

Weather forecasts for the Bridgeton area are for continued warm and wet weather for the next 7 days with highs around 70°F and lows of 40 to 50°F, setting us up for a rapid bloom and short pollination period. ❑

BLOSSOM BLIGHT FROM PAGE 1

Fungicide Timing and Choices

Ok, you've performed all or most of the above cultural controls to help lower your infection risk. Now, what about fungicide usage? Well, technically, a full blossom blight program consists of three sprays at pink, full bloom, and petal fall. However, since the petal fall spray is not always needed for blight control (only in wet years) and it also helps control other diseases, we will discuss this spray in the next issue of Fruit edition of the Plant & Pest Advisory.

Perfect timing for the pink spray is early bloom, when about 5% of the flowers are open. For cultivars that have short flower petals, this first spray occurs when 5% of the flowers have their innards (pistil and anthers) exposed. Ideal timing for the second spray occurs at 50-75% bloom. However, note that if cool weather delays flowering, the second spray should be applied no later than 7-10 days after the pink spray, especially if one or more rains have occurred.

As for fungicide selection, different chemistries should be employed for each spray for resistance management. Fortunately, there are many materials available. For a good start, see table 6.2 of the *2001 NJ Commercial Tree Fruit Production Guide* (p 72). This table not only lists relative efficacies of available fungicides, but also their chemical classification.

An excellent choice would be a pink spray using a sterol inhibitor (Elite, Indar, Nova, or Orbit) followed by an anilinopyrimidine (Vangard), strobilurin (Abound), or dicarboximide (Rovral). Or alternatively, the order of these two choices could be reversed. Other materials that can be substituted for either spray are Bravo or a benzimidazole (Benlate or Topsin-M) plus Captan. Specific rates are given in the production guide.

Plan to attend the April 11th (Clayton) or April 19th (Pittstown) fruit meetings for additional discussion on early season tree fruit disease control. And, as always, read the label before usage. ❑

Weed Control in Newly Planted Orchards

Bradley A. Majek, Ph.D., Specialist in Weed Science

Weed control in new peach and apple orchards is extremely important. Competition with weeds for water, light, nutrients, and space the first year after a tree is planted can affect the survival rate or reduce tree growth the second year. Reduced growth during the years before a tree begins to bear fruit delays bearing and reduces early yields, which adversely affects orchard productivity.

Research indicates that trees respond with additional growth to increasing the width of the weed free strip to 10 to 12 feet the first year (5 to 6 feet on each side of the tree). The increased growth occurs the following year, so it is not immediately apparent. Reducing the width of the weed free strip to 3 to 4 feet (20 inches on each side of the tree) to save money spent on herbicides reduces growth the following year and delays bearing. Increasing the weed free strip width to 10 to 12 feet the first year results in trees that grow more the second year and bear fruit earlier.

Apply residual herbicides after trees have been planted and 1 to 2 inches of rain has settled the soil, but before weeds emerge. Check the orchard prior to spraying to be sure that no depressions are evident around the trees at the planting hole to collect water or the risk of crop injury will be increased. Calibrate the sprayer to be sure the new trees are sprayed with the correct herbicide rate. Till cultivated fields immediately before planting trees to control emerged weeds. Research has shown that planting trees "no-till" into a previously established perennial grass sod killed with Roundup a week before planting results in improved tree growth compared to cultivated orchards.

Residual annual grass control in new orchards can be accomplished with Prowl, Surflan, Devrinol, or Solicam. All four herbicides can control annual grasses for the entire season, but certain products are more frequently recommended. Prowl, Surflan, and Devrinol must be applied and "activated" by rainfall before susceptible weeds emerge, or they may fail to provide adequate control. Prowl is recommended in early spring due to a significant price advantage compared to the other products. Solicam is recommended later in the season after the weather has warmed. Weeds that emerge before rainfall "activates" Solicam can still be controlled by "back-action" that can kill emerged annual grasses up to an inch tall.

Residual annual broadleaf weed control in new orchards is limited to Goal or Gallery. Both herbicides are excellent products with good crop safety, but are expensive compared to the cost of herbicides recommended for use on established peaches and apples. Goal must be applied before buds "break" or some speckling and/or crinkling of new foliage may occur as a result of spray or vapor drift. Although a great deal of interest has been generated by research using reduced rates of less expensive residual broadleaf weed herbicides labeled for use in bearing orchards, none of the products have been labeled for use in newly planted orchards and should not be used.

Nonresidual postemergence "knockdown" herbicides can cause injury to newly planted orchards. Use of these herbicides, including Gramoxone Extra, 2,4-D, and glyphosate products, including Roundup Ultra, Touchdown, and GlyphoMax are *not* recommended in newly planted orchards. The sensitivity of new orchards can vary, depending on the caliper of the trees planted, the degree of wetting of the trunks, and the herbicide used. Trees less than one-half inch in diameter are most sensitive to herbicides. Avoid allowing postemergence herbicides to contact the trunks of newly planted trees until mature brown bark with layers of dead tissue have developed and buds no longer sprout along the trunk. The use of shields, or solid tree guards can be used to protect trees if necessary.

The glyphosate products are the most dangerous herbicides to use in new orchards due to the translocation (movement) throughout the tree after absorption. Use glyphosate products prior to planting to control perennial weeds, and after all the trees, including replants are 3 to 5 years old.

2,4-D is less dangerous than Roundup, but should not be allowed to contact the trunk of trees during the first growing season.

Gramoxone Extra is a contact herbicide with limited or no translocation in plants. Young trees may be injured if living tissue is present near the surface of the bark. Buds along the trunk will be killed if treated with Gramoxone Extra. This is most serious when a tree fails to break buds except for a few at the bottom of the tree.

Consult the *Commercial Production Recommendations* for rates and additional information. ❑

Early Scale Management

Peter W. Shearer, Ph.D., Specialist in Tree Fruit Entomology

San Jose scale is starting to become a problem again in several New Jersey orchards. Additionally, the white peach scale, normally considered a peach pest in southern states, has been found in damaging levels in several New Jersey peach orchards.

We are not sure why the white peach scale has shown up in New Jersey after all these years. San Jose scale, on the other hand is coming back in our orchards for several reasons including the lack of pre-bloom oil plus OP sprays, poor coverage from reduced spray volume or poorly pruned trees, incorrect timing for the crawler stages during the cover season, and possibly resistance.

San Jose scale has multiple host plants and prefers apple, pear, and plum. It will also feed on peach, cherry, apricot, currants, and several woody ornamentals. Left unchecked, it can kill a young tree in 2-3 years and severely weaken and even kill older trees. When populations are high, fruit becomes unsightly and unmarketable because of the presence of scale and the reddish discoloration cause by their feeding.

The white peach scale also has many host plants, and in addition to stone fruit, grows quite well on mulberry and privet. Severe infestations can develop rapidly and damage trees and fruit similar to San Jose scale.

If your pack-out last year had scale-infested fruit or you noticed scale infestations while pruning, then consider attacking scale pre-bloom. A pre-pink application of superior oil plus an OP insecticide is the best way to control this pest. For best results, apply in enough water to get thorough coverage. Insect options vary between peach and apple so make sure to read the label. Consult the *2001 New Jersey Commercial Tree Fruit Production Guide* for current recommendations. ❑

Apple Foliar Nutrient Suggestions for 2001

Win Cowgill, County Agricultural Agent and Jeremy Compton, North Jersey Tree Fruit Technician

The addition of foliar nutrients has become standard practice for most progressive apple growers to help set fruit and prevent certain physiological disorders. Dr. Ed Stover, formally of the Cornell Hudson Valley Lab, conducted two years of research on Nitrogen, Boron and Zinc as pre bloom sprays on apple. He concluded pre bloom nutrient treatments enhance cropping by increasing retention of flower buds that would otherwise abscise during early bud development. He indicated "the most obvious use of these treatments (N, B, Z) would be on apple blocks where cropping is expected to be light. There is potential to increase fruit size as along as aggressive thinning practices are followed".

Urea (N) Urea is beneficial on apples for helping to improve fruit set and increase size on apple cultivars that are low in nitrogen as indicated by leaf tissue analysis. Use 2-3 pounds of urea per 100 gallons of water at pink bud, full bloom, and/or at petal fall to improve fruit set and tree vigor. Use 5 pounds per 100 gallons in cover sprays after petal fall *only* on nitrogen-deficient trees. Foliar nitrogen is not a replacement for ground-applied nitrogen as it does not translocate down into the wood, rather it is an aid to fruit set and fruit sizing.

Boron (B) Solubor sprays of 1 pound in 100 gallons of water applied at full bloom and at 1 week after full bloom may reduce cork in apple flesh if boron is deficient. Boron aids calcium movement into fruit. Adequate boron is essential; excessive boron hastens apple maturity and increases fruit drop. Both soil and leaf analyses are essential in determining the need for boron. Apply no more than two sprays per season.

Note: Boron may be added to pesticide sprays. Do not premix Solubor with calcium chloride. Do not apply boron with oil or apply boron when trees are wet with oil as an increased uptake of boron may result causing boron toxicity.

Zinc (Z) — Tight Cluster to Pink —If zinc level is low (as indicated by leaf tissue sample) apply zinc chelate (EDTA) at 1 qt liquid formulation per 100 gallons dilute equivalent at tight cluster to pink, repeat 2-3 weeks after petal fall and again 4-5 weeks later. Low levels of zinc are known to cause small fruit size especially in Red Delicious, even when no other symptoms of zinc deficiency are evident. Most of our New Jersey soils and orchards are deficient in zinc.

Calcium (Ca)– The quickest and most effective short-term corrective treatments for control of bitter pit and cork in apple are: For Bitter Pit control, spray trees with a solution of either calcium chloride or calcium nitrate. Use 2 pounds of calcium chloride or 4.25 pounds of calcium nitrate per 100 gallons of water plus a wetting agent. Calcium nitrate should not be used on trees that contain high to excessive amounts of nitrogen in the leaf tissue as measured by leaf analysis or that are making excessive shoot growth. Make applications at 2-week intervals with the last spray 2 weeks before harvest. These calcium sprays can reduce bitter pit in apples by 50 to 90 percent.

See Foliar Nutrients on page 5

Evening Fruit Meeting

Tuesday, April l7, 2001, 7:15 pm
Donio Farms Packing Facility
Third Street, Hammonton, NJ

Sponsored by Rutgers Cooperative Extension of Gloucester County

- Current Field Pests and How We Evaluate the Situation, Gene Rizio, Fruit IPM Program Associate
- Growth Regulation and More on Tree Propagation, Dr. Robert Belding, Specialist in Pomology
- Early Season Insect Control and New Labels for Insect Control, Dr. Peter Shearer, Specialist in Fruit Entomology
- Disease Management Update and New Fungicides, Dr. Norman Lalancette, Specialist in Tree Fruit Pathology
- Integrated Pest Management and Nematode Results, Dean Polk, Statewide Fruit IPM Agent
- Early Season Weed Control Suggestions, Dr. Bradley Majek, Specialist in Weed Science
- New Pesticides and Worker Protection Standards, Dr. George Hamilton, Specialist in Pest Management

NJDEP PESTICIDE APPLICATOR UNITS: 1A – 3 Units, 3A – 3 Units, Core – 1, PP2 – 3 Units

This location is not totally accessible to the physically impaired. Special arrangements can be made by calling Jerry Frecon at RCE of Gloucester County at 856 307-6450 1-day prior to the meeting.

First North Jersey Twilight Fruit Meeting

Thursday April 19th, 2001, 5:30 pm
Rutgers Snyder Research and Extension Farm
Locust Grove Road, Pittstown, NJ

- Tour of Research Plots, Win Cowgill, Area Fruit Agent
- Insect Updates, Dr. Peter Shearer, Specialist. in Tree Fruit Entomology
- Disease Control Updates, Bill Tietjen, Agricultural Agent
- Weed Control Updates Dr. Brad Majek, Specialist in Weed Science
- Peach Update Dr. Robert Belding, Specialist in Pomology
- Worker Protection Update Dr. George Hamilton, Specialist in Pesticides/Pest Management
- Chemical Thinning Strategies & Use of Apogee for 2001 Win Cowgill, Area Fruit Agent
- IPM Updates Dean Polk, Fruit IPM Agent, and Meredith Peters, North Jersey IPM Program Associate

NJ Pesticide Credits will be awarded.

For directions to Snyder Farm call 908-340-9419.

FOLIAR NUTRIENTS FROM PAGE 4

To control Cork in apple flesh, spray trees with 1.5 pounds of calcium chloride or 3.2 pounds of calcium nitrate per 100 gallons of water with first cover spray and include in each subsequent cover spray until a total of 18 to 24 pounds per acre has been applied. The calcium nitrate sprays will apply 2 to 3 pounds of actual nitrogen (N) per acre and should be used only on trees that do not contain high to excessive nitrogen levels as measured by leaf analysis or reflected in excessive shoot growth.

For Calcium sensitive varieties such as Enterprise, Breaburn, Fuji, York, and Cortland apply:
Calcium Chloride ($CaCl_2$):
2-3 lb/100 prior to August 1
3-5 lb/100 after August 1

Late season calcium sprays are usually more effective against Cork than early season sprays.

Reduced rates of CaCl2 should be applied if there was no rain between applications, or if it is very hot and humid.

Suggested Compounds, Rates and Timing for Foliar Nutrients
Apples

Timing	Material	Rate	Element
Delay Dormant	TriBasic Copper Sulfate	(2 lb/100 dilute equivalent)	Cu
Pink	Urea	(2-3 lb/100 dilute equivalent)	N
	Zinc Chelate	(1 qt/100 dilute equivalent)	Zn
Bloom	Urea	(2-3 lb/100 dilute equivalent)	N
	Solubor	(1 lb/100 dilute equivalent)	B
Petal Fall	Epsom Salts	(15 lb/100 dilute equivalent)	Mg
	Solubor	(1 lb/100 dilute equivalent)	B
1st Cover	Calcium Chloride	(2 lb/100 dilute equivalent)	Ca
	Epsom Salts	(15 lb/100 dilute equivalent)	Mg
	Zinc Chelate	(1 qt/100 dilute equivalent)	Zn
	Manganese Sulfate	(4 lb/100 dilute equivalent)	Mn
Covers: (2nd)	Epsom Salts	(15 lb/100 dilute equivalent)	Mg
(2nd)	Zinc Chelate	(1 qt/100 dilute equivalent)	Zn
(All)	Calcium Chloride	(2 lb/100 dilute equivalent)	Ca

Fungicide Strategies for Controlling Apple Scab and Mildew in 2001, Part II

Dave Rosenberger, Ph.D., Specialist in Plant Pathology, Cornell University

Continued from Part I in previous issue of Fruit edition of the Plant & Pest Advisory. Reprinted from SCAFFOLDS Fruit Journal, NJAES, Volume 10 (3).

Configuring SI and strobilurin sprays, timing sprays during bloom, and strategies from petal fall through mid-July

Decision #4: Configuring SI and strobilurin sprays

There are no clear-cut rules concerning the best ways to configure SI and strobilurin sprays. Using an SI+mancozeb combination at tight cluster (TC) and pink followed by a strobilurin at petal fall (PF) and 1st cover is generally no better or worse than using the fungicides in the reverse order. Depending on the situation, the following factors might affect the decision:

The SI+mancozeb combination will be weak against black rot infections that might occur at PF and 1st cover. Substituting captan for mancozeb in the SI combination at PF and 1st cover would beef up the black rot activity of the SI+contact combination, but it would reduce activity against primary infections of flyspeck. Strobilurins used at PF and 1st cover will provide excellent protection against both black rot and flyspeck.

The SI fungicides are slightly stronger than the strobilurins against powdery mildew, although the differences are minor when mildewcide programs are initiated before bloom. If no mildewcides are applied before PF, then an SI should always be used at PF because SI's provide a faster "knock-down" of a running mildew epidemic than do strobilurins. (Where no mildewcides are applied to mildew-susceptible cultivars before PF, mildew is almost always in the epidemic phase at PF, even though most growers fail to recognize the epidemic until about 1st cover!) If an SI+contact is needed at PF to stem a mildew epidemic, the PF spray can still be followed by a strobilurin at 1st cover to pick up black rot that might otherwise invade the retained fruitlets killed by thinning sprays.

The strobilurins will not provide adequate control of rust diseases. Quince rust and cedar apple rust infections on fruit usually occur between TC and the end of bloom, so one might argue that SI's should be used at TC and pink in areas where rust is a concern. However, most cedar apple rust infections on leaves occur during the terminal shoot growth flush that occurs between PF and 2nd cover. Rust-susceptible cultivars sprayed with strobilurins at PF and 1st cover can develop enough leaf rust to give the tree an unhealthy appearance, even though the leaf infection may not have much economic impact on the crop.

Currently, we can suggest four options where rust is a problem:

1. Stay with SI+mancozeb combinations from TC through 1st cover. I don't like this option because there is too much selection pressure for development of SI-resistant powdery mildew when SI's are the only mildewcides used.
2. Combine 2-3 lb/A of mancozeb with strobilurins any time the strobilurins are used between TC and 1st cover. The low rate of mancozeb may provide more complete protection at TC and pink than at PF and 1st cover because the rapid development of terminal leaves after PF may allow the tree to outgrow the mancozeb coverage. I have not tested strobilurin+mancozeb combinations, but I cannot foresee any problems with this approach, although it adds to costs.
3. Apply a strobilurin at TC, SI+mancozeb at pink, strobilurin at PF, and SI+mancozeb at 1st cover. The SI fungicides have such potent post-infection and pre-symptom activity against rust that this alternating schedule is likely to provide adequate rust control. (I say 'likely', because this strategy has not been extensively tested.) A potential weak point in this strategy is that a severe quince rust infection occurring right at tight cluster might not be fully controlled by an SI applied 10 days later. However, if one begins with the SI at tight cluster, then infections at 1st cover would not be controlled unless another SI was applied at 2nd cover.
4. An untested alternative to a strobilurin+mancozeb combination would be a strobilurin+Bayleton combination. Bayleton will control rust as effectively as the other SI's and it would enhance the mildew control provided by strobilurins. However, this combination may be prohibitively expensive.

Should strobilurins be used in combination with a contact fungicide? An obvious reason for using strobilurin+contact combinations is to gain better control of rust diseases. A second reason might be to compensate for poor spray coverage: presumably the contact fungicide will redistribute better than the strobilurins. A third reason for using combinations is to reduce selection pressure for strobilurin-resistant strains of apple scab. However, the latter is presumably of minor importance so long as strobilurins are used according to label instructions (no more than three sprays back-to-back).

There is absolutely no justification for cutting strobilurin rates in half when adding mancozeb or captan to the mix. Cutting rates with strobilurins will

See Strategies on page 7

Strategies from page 6

significantly reduce the protectant, post-infection, and anti-sporulant activity of the strobilurin component and may speed selection of strobilurin-resistant strains. Thus, using strobilurins in combination with a contact fungicide will be significantly more expensive than either using strobilurins alone or than using SI+contact combinations.

Decision #5: Timing sprays during bloom

Spray timing with SI and strobilurin fungicides is often mentioned as coinciding with TC, pink, PF, and 1st cover. In fact, those phenological stages rarely occur at precisely 10-day intervals, the standard suggested spray interval for these fungicides. The biggest divergence often occurs between pink and petal fall. Growers who apply a spray at pink or early bloom often find that 10 days later they are still about 5-6 days away from petal fall. Rather than squeezing another SI or strobilurin spray in between pink and PF, it often makes sense to revert to a contact fungicide (used alone) to bridge the gap between the pink and PF sprays.

When using this strategy, the contact fungicide application during bloom should be made ahead of infection periods that are predicted any time after the 6-7 days of protection provided by the pink spray. Remember that with both SI's and strobilurins, the 10-day interval between sprays derives from approximately 6 days of protection and four days of post-infection activity. A contact fungicide applied during bloom will not have post-infection activity, so it must be applied ahead of infection periods during mid-bloom.

Decision #6: Petal fall and first cover

In my opinion, every apple grower should be using either a strobilurin or an SI+contact combination at PF and 1st cover. This is the peak risk period for powdery mildew and for fruit infection by apple scab. Using the best fungicides during this window is just common sense. If no mildewcides were applied before petal fall, then an SI+contact combination is preferred at PF (see the discussion under Decision #4 above).

Decision #7: Second cover to mid-July

Assuming that scab was controlled earlier, the main concern during this interval is mildew. On mildew-susceptible cultivars, mildewcide coverage should be maintained until terminal shoots stop growing. The 2nd cover spray is especially important since many trees will still be in the midst of their growth flush at second cover. Where Benlate or Topsin M still work against mildew, they can be used here instead of the SI's or strobilurins. If scab was not completely controlled by earlier sprays, then a strobilurin applied at 2nd cover will more than pay for itself. The strobilurins have excellent retention on fruit, especially after the fruit begins to develop a visible cuticle, because these fungicides are chemically bound to waxes in the cuticle.

Submitted by Win Cowgill, Agricultural Agent. ❑

Apple Scab Update

Dave Rosenberger, Ph.D., Specialist in Plant Pathology, Cornell University

Reprinted from SCAFFOLDS Fruit Journal, NJAES, Volume 10 (4)

Note: Weather conditions in Northern New Jersey are very similar to those in the Hudson Valley. Northern New Jersey Growers should be alert to Dr. Rosenbergers scab update.

Spore maturity in the Hudson Valley is unusually advanced compared to tree phenology. Trees still had no green tissue present at the time of this spore count. Significant spore discharges usually begin when we reach 15% mature spores in our counts. Although very few spores were discharged in the tower shoot test, this could change quickly with a few days of warmer weather. (Tower discharges usually exceed 400 spores at the peak of the season.)

The early spore maturation is hardly surprising given the constant snow cover during winter and the wet weather of the past two weeks. The early spore maturation in the Hudson Valley is similar to that of 1998 when many orchards developed severe scab as a result of a green-tip infection period followed by a wet spring and summer. Thus, Hudson Valley growers should be prepared to spray as soon as there is green tissue and a predicted infection period, even if they can only spray alternate rows. With high carry-over inoculum present in many orchards, this will not be the year to take chances on skipping early infection periods.

Submitted by Win Cowgill, Agricultural Agent. ❑

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