

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

JUNE 27, 2000



INSIDE

Peach Tree Death, Decline and Phytophthora in SNJ	1
Fruit IPM.....	2
The Japanese Beetle.....	5
Fire Blight Rundown	5
PPV Confirmed in Canada	7
PPV National Survey Info	8
Calendar of Events	8
ProVide for Suppression of Stayman Fruit Cracking	8

Peach Tree Death, Decline and Phytophthora in SNJ

Jerome L. Frecon, Agricultural Agent

We have seen a significant amount of death and decline in southern New Jersey peach orchards this spring. In analyzing symptoms, the primary causal factors have been stress-related injuries, including: drought and low temperature; nematode stress, *Cytospora sp.*, herbicide injury, mice and woodchuck injury, black peach aphid, general peach tree decline (some of the previous have been related to this condition), and *Phytophthora sp.* collar and root rot. This latter disease had been the greatest cause of peach tree death and decline under all types of soil management and conditions. Age of tree, except for newly planted stock, variety, rootstock and previous planting conditions do not seem to be predisposing factors.

None of the currently available peach seedling rootstocks planted in commercial orchards have any known resistance to *Phytophthora sp.* A complicating factor in evaluation of rootstock and variety combinations is that frequently trees are planted too deeply, or the trees are planted at the correct depth but soil is mounded high on the trunk after planting. If the rootstock had resistance, the susceptible trunk variety would be well exposed to the fungi that are carried most commonly in the soil.

In new plantings, some of the infected trees could have been infected when planted. Drought conditions followed by heavy rains, as we experienced last August, could have caused bad infections.

A tree blown over during the "Hurricane" last fall may have been predisposed to injury. Trees that were whipped by general winds both during and following heavy or prolonged rainfall are more susceptible to infection. Trees that are blown over and then straightened while the soil is moist may have few infections but if the soil begins to dry and/or the roots are broken, *Phytophthora sp.* infection may occur. Prolonged rains, particularly on poorly drained soils or parts of the soil, would result in more injury to trees planted on those sites. Trees should be treated with one of the effective fungicides described on page 123 of the 2000 *New Jersey Commercial Tree Fruit Production Manual*.

The most effective control consists of planting trees at the proper depth on a ridge or berm to improve drainage of moisture

SEE PHYTOPHTHORA ON PAGE 2

Fruit IPM

Dean Polk, Fruit IPM Agent

Peach

✓ **Oriental Fruit Moth:** The second flight of adult moths is peaking in southern counties. Adults are laying eggs that are hatching after just a few days. Larvae will emerge and enter growing shoots and immature fruit over the next couple of weeks. No new second brood flags have been seen as of this date. However, insecticide covers should be maintained on any farm that has trap counts that exceed 6 to 8 moths per trap.

✓ **Catfacing Insects - Tarnished Plant Bugs (TPB) and Stink Bugs (SB):** TPB numbers have decreased where plantings have been mowed. The ratio of nymphs to adults has remained relatively high, indicating that the potential does exist for adults to move into the trees after the nymphs mature. Higher populations continue to exist in areas with weedy ground covers. One unsprayed orchard with a weedy ground cover in a northern county had 12% new injury this past week. This orchard also had the highest sweep count (insects in the ground cover) and the greatest number of insects in beating tray counts (insects in the trees). Stink bugs are also starting a new generation, and nymphs have been seen in several locations.

✓ **Brown Rot and Blossom Blight:** Old blossom blight is still sporulating on old blossoms and newly formed cankers. This inoculum buildup makes fruit infection more likely if favorable infection conditions persist. A number of Derby and other early ripening fruit have been seen with brown rot developing. Do not use sulfur as your brown rot material when old blight is present. Use Captan and Captan combinations with SIs or other new materials.

✓ **Peach Scab:** Scab has been visible in southern counties for the past couple of weeks, and should be just becoming visible in northern counties. Peach scab takes 40 to 70 days to show up on the fruit after the initial infections have taken place. There is nothing that can get rid of the lesions on scab-infected fruit. Blocks that are most likely to have scab are those blocks that did not have a complete spray program during the early part of the previous season.

Apple

✓ **Tufted Apple Budmoth (TABM):** The last sprays for TABM are due this week in northern counties where the insect has been a problem. This has been a significant pest only in southern counties where trap catches are much higher compared to many farms in northern counties.

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✓ **Mites in Apples and Pears:** Populations of European red mites are increasing in apple blocks, while populations of two spotted spider mites have been seen in pear plantings. Tolerate no more than an average of 2 mites per leaf in pears. Predators are starting to appear in apples, but at very low numbers to start. When using miticides try to alternate materials. If you used Apollo last year, then try Pyramite this year, or if you used Apollo during early May use Pyramite or another alternative during the summer. Other older materials for summer use include Vendex and Kelthane. Use of the higher label rates is suggested for these materials.

✓ **Spotted Tentiform Leafminer (STLM):** Trap counts are increasing as the second flight nears a peak. Larvae should be emerging from newly laid eggs and entering the leaves, creating the "sap feeding mines." However, very few mines have been seen, and no farms need specific treatment for this pest. If treating for apple aphids though, growers may wish to use Provado as an aphicide (one application only), since it will also control leafminer larvae.

✓ **Fire Blight:** Many farms are experiencing low to severe fire blight outbreaks. Please see the accompanying article by Dr. David Rosenberger on fire blight management.

Blueberry

✓ **Blueberry Maggot (BBM):** BBM adults have increased over the last 2 weeks. Many farms still show "0" flies caught, but average as high as 3-4 adults on other farms. Farms that have not had maggot fly catches, and are trapping under the Canadian shipping agreement can significantly delay maggot fly

SEE IPM ON PAGE 3

PHYTOPHTHORA FROM PAGE 1

away from the crown or trunk of the tree. Anything that improves drainage around the root system will help with protection.

If the classic symptoms of decline or death from *Phytophthora sp* appear on the roots and trunk, follow the recommendation for Ridomil Gold in the 2000 *Tree Fruit Production Manual*.

In addition to the *Phytophthora* information in the *Production Manual* and on brambles in an upcoming issue of this newsletter, previous information has been published in PPA-Fruit Edition Volume 4, Number 6, May 11, 1999 and PPA-Fruit Edition, Volume 3, Number 6, May 12, 1998. □

sprays. The general distribution of maggot fly adults can be seen in the Blueberry Maggot Distribution Maps. These maps are taken from trap averages for that week on each farm site (37 farm locations, 130 traps). The data is entered into an Access™ database and linked to GIS software (Arcview) to make the maps. The darker the shaded area, the higher the insect population. On the accompanying maps, all shaded areas represent light pressure, but heavier pressure (darker areas) is evident in the northern part of Burlington County.

✓ **Leafrollers (redbanded and obliquebanded - RBLR and OBLR):** Trap captures are peaking for second RBLR adult flight and peaked last week for OBLR. RBLR captures show much higher numbers, particularly in Atlantic County. This does not mean that high larval populations will develop out of high adult trap captures. However, it does mean that adults are laying eggs that hatch after only a few days. Leafrollers are usually best controlled by targeting newly emerging larvae. Most OP and carbamate materials used for the control of blueberry maggot will also control leafrollers (with the possible exception of malathion). Use of Provado for aphids does not control leafrollers.

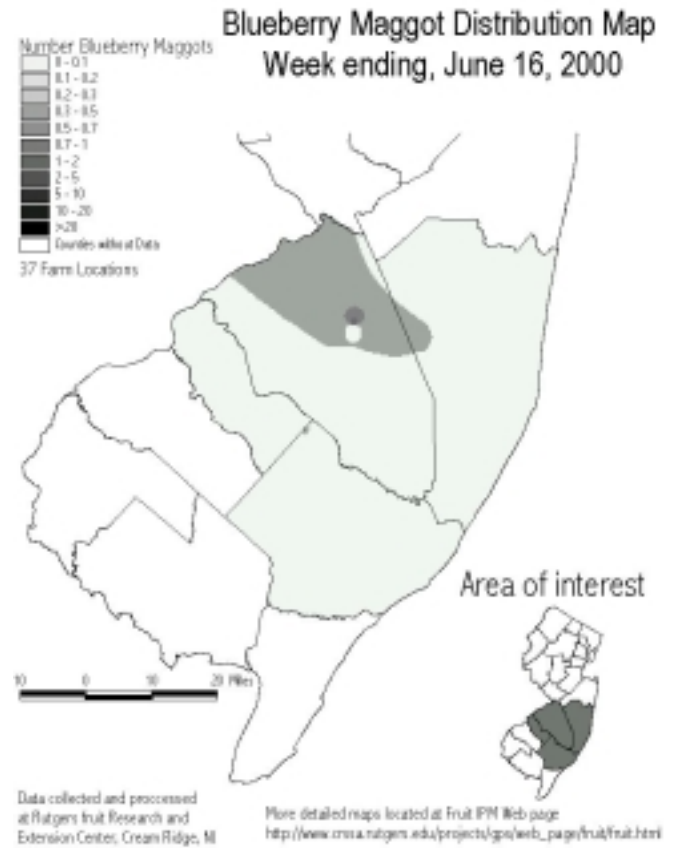
✓ **Aphids:** Aphid populations are at similar levels as were found during the previous week. About 52% of samples show infestations at some level, mostly below 5% of terminals infested.

✓ **Cranberry Fruitworm (CBFW):** While the adult flight is over. Larval damage and larvae continue to be found. About 20% of our samples show some injury, half of which is above 1% of clusters being infested. Some of this injury is present on farms where CBFW

traps never caught any adults. This points to the idea that CBFW traps should be used largely for timing purposes only.

Pest Distribution Maps

Week Ending 6/16/00, 6/23/00



SEE PEST DISTRIBUTION MAPS PAGE 4

Insect Trap Counts

South Jersey Tree Fruit

Week Ending	AM	CM	LPTB	OFM	PTB	STLM	TABM-A	TABM-P
6/2		2.54	53.92	6.44	1.62	256.05	39.24	59.14
6/9		5.24	54.16	7.82	6.94	736.94	36.64	42.80
6/16	0.00	3.93	52.13	20.89	3.87	1617.67	33.25	37.27
6/23	0.50	6.73	54.15	37.02	6.54	1793.28	29.92	45.19

North Jersey Tree Fruit

Week Ending	AM	CM	LPTB	OFM	PTB	STLM	TABM-A	TABM-P
6/02		4.65	10.15	12.45	0.00	67.96	8.59	11.17
6/9		3.98	1.19	14.31	0.88	210.44	14.45	20.54
6/16	0.07	6.03	1.78	18.55	0.75	999.29	19.73	22.25
6/23	0.04	3.33	1.90	24.40	1.02	934.85	16.13	15.46

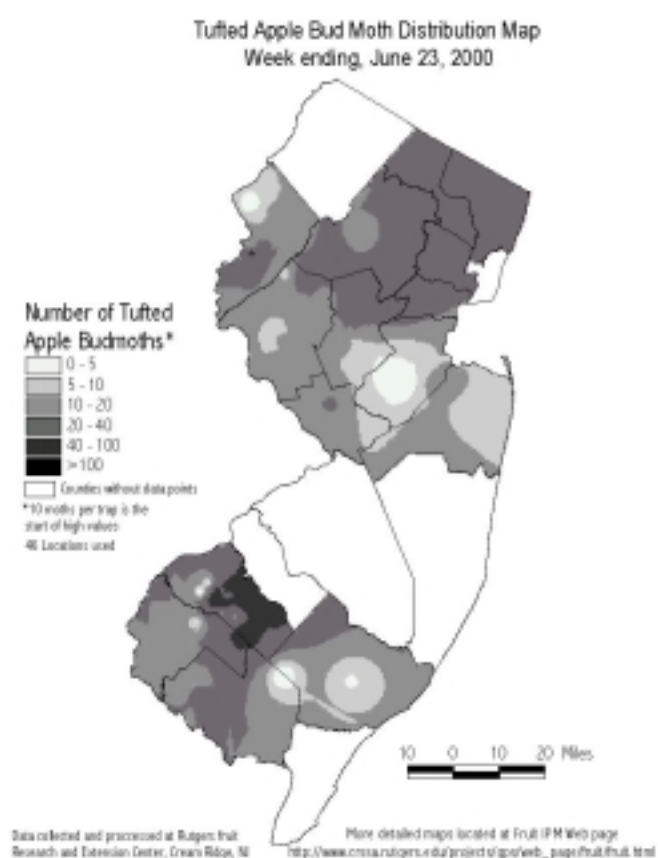
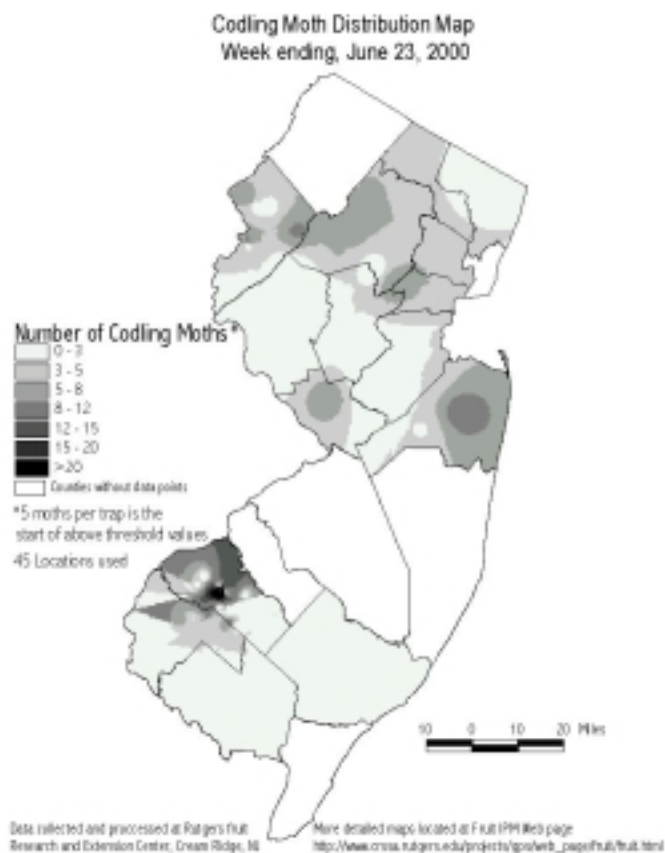
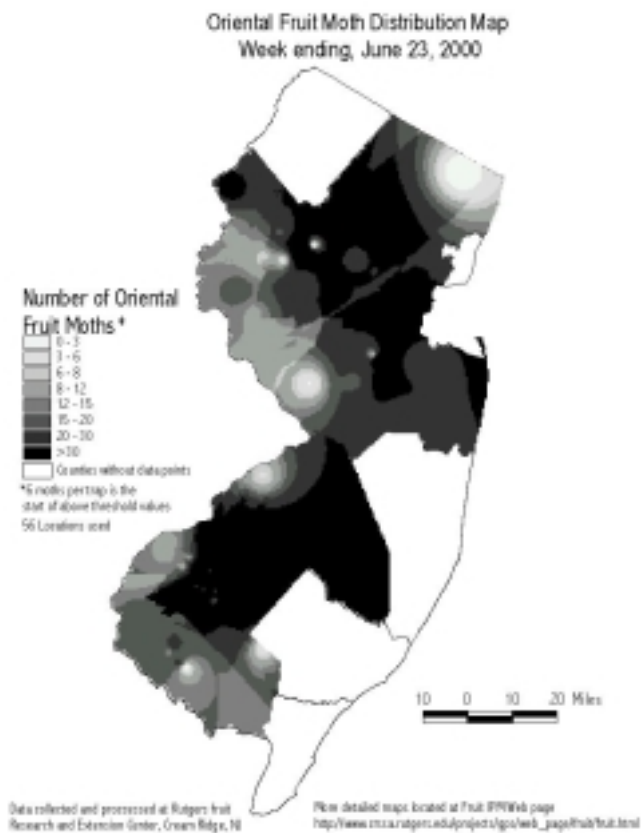
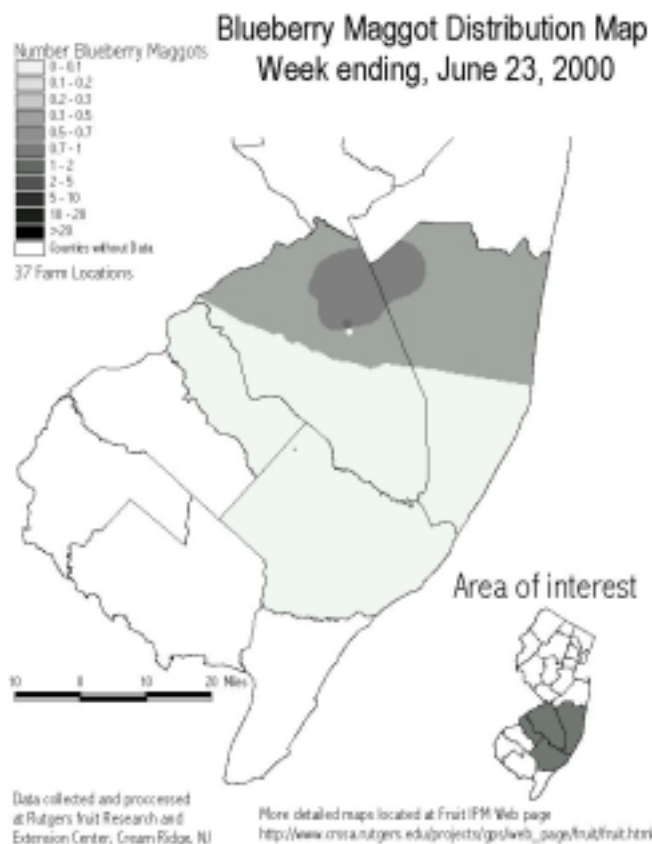
Blueberry

Atlantic County

Week Ending	RBLR	OBLR	CBFW	SNLH	BBM
6/2	2.54	3.27	0.67		
6/9	56.69	10.08	0.58	0.63	0.00
6/16	129.00	11.58	0.27	0.81	0.01
6/23	120.15	4.54	0.00	1.18	0.06

Burlington County

Week Ending	OB	RBLR	OBLR	CBFW	SNLH	BBM	OB
6/2		0.00	2.33	4.10			
6/9		2.13	9.78	2.60	0.00	0.00	
6/16	112.00	42.38	8.67	1.50	6.83	0.31	248.33
6/23	362.92	75.13	3.44	1.20	4.58	0.51	141.33



The Japanese Beetle

Peter W. Shearer, Ph.D., Entomology

The Japanese beetle has started to emerge in the southern part of New Jersey. I saw my first one last Saturday. This pest was introduced into New Jersey on nursery stock from Japan in 1913. Since its introduction, it has spread to most states east of the Mississippi River. It is now a seasonal pest and can cause extensive damage to many crops. The larvae feed on roots of plants and are especially damaging to turf and pasture. The adults feed on over 275 species of plants such as fruit trees, flowers, and vegetables.

Adults are about 3/8-1/2 inch long and metallic green to greenish bronze in color. They have white tufts of hair along the bronze forewing. Larvae are C-shaped white-to-cream-colored grubs with brown heads and are about 3/4-1 inch when full grown.

The Japanese beetle overwinters as a grub in the soil. In the spring, they move up towards the soil surface and feed on roots. Adults begin to emerge in late June and are active until late September. Females can lay about 50 eggs apiece 2-6 inches deep in the soil. It takes about 2 weeks for the eggs to hatch and newly emerging larvae feed on decaying matter then plant roots.

Adult feeding damages both leaves and fruit. Leaf damage usually takes the form of skeletonizing. Fruit feeding results in large holes in the fruit. Ripening fruit is often attacked, making control necessary yet difficult because of pre-harvest interval (PHI) limitations of effective materials. Early peach and apple varieties are most susceptible to adult attack because their time of ripening occurs during Japanese beetle emergence.

Occasional scouting is required to determine if this pest is causing damage. Carbaryl (Sevin) can be used on peaches and nectarines when adult populations are high and damage can be seen. This product has a 3-day PHI for peaches and nectarines, respectively. On apple, Imidan is effective and not considered disruptive to IPM programs. Imidan has a 7-day PHI for apple; 14 days for peaches and nectarine. The fact that these materials do not provide quick knock-down and that new beetles invade from outside the orchard often gives the appearance that control measures are ineffective. Under high pressure, control measures should be applied more frequently. □

Fire Blight Rundown

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Reprinted from *SCAFFOLDS Fruit Journal*, Geneva, NY, May 22, 2000, Volume 9, No. 15, <http://www.nysaes.cornell.edu/ent/scaffolds/>.

In the last three weeks, severe fire blight has been reported in a number of apple orchards throughout the Hudson Valley. The blight outbreak this year has several unusual characteristics. In apples, most of the fire blight in the Hudson Valley has developed in Gala blocks where trees are three to five years old. In several cases, Gala blocks are so severely affected that several hundred trees have already been removed and many more will be lost to rootstock blight.

At this point, the incidence of blight appears manageable in adjoining blocks of other cultivars including Cortland, Rome, Spartan, Macoun, and Delicious. The distribution of blight strikes in cultivars adjacent to affected Gala blocks suggests that Gala acted as a source of inoculum for other cultivars. The number of blight strikes in those blocks is greatest immediately adjacent to or downwind from the Gala trees. In several of the Gala blocks, we discovered evidence of over-wintering cankers from last year or point-sources for this year's infections, even though the growers involved were not aware that fire blight had been present in the orchard last year.

The good news is that the fire blight epidemic in the Hudson Valley is still limited to relatively few orchards. The devastating hailstorms that occurred beginning May 19 did not generate the disaster that would have developed if blight inoculum had been present in all orchards. The hailstorms did contribute to spread of blight to adjacent cultivars in some of the affected orchards, but there are still many orchards, including Gala blocks, that do not have any fire blight at this time.

What is the best way to deal with fire blight in young orchards where blight was not completely controlled during bloom? No single answer can be applied to all situations, and there is considerable room for debate on many details relating to blight management during summer. Dr. Paul Steiner at the University of Maryland has posted some excellent articles about fire blight on the World Wide Web at <http://www.caf.wvu.edu/kearneysville/wvufarm10.html>. However, none of the articles answers all of the questions that arise after blight appears in an orchard. Answers for many questions are lacking because the appropriate research has not

SEE FIRE BLIGHT ON PAGE 6

been done or because research results have been inconsistent.

Growers dealing with fire blight must make daily management decisions even when scientists do not have enough data to provide research-based recommendations. Therefore, I have provided below my “best guesses” for some of the questions raised by growers. Much of this information may come too late to be useful for this season, but it may help to stimulate discussion and awareness concerning the best approaches for managing shoot blight in the future.

1. Q: Should I try to prune out fire blight when it appears in *young* trees?

A: Absolutely, unless blight is so severe that the orchard is beyond hope. Strikes should be pruned out as soon as possible after they appear. Failure to do so increases the likelihood that blight will continue to spread both to adjacent trees and into the rootstocks of affected trees. Pruning out infections in mature trees may not be practical, but mature trees with a full crop will set terminal shoot buds earlier than young trees. When trees set terminal buds, blight stops spreading both between trees and within the affected trees.

In order to remove strikes before cankers extend too far into the tree, trees must be examined at least two or three times weekly until the epidemic begins to slow. In sections where trees are severely affected, it may be more cost-effective to immediately remove entire trees, especially if trees are a susceptible cultivar like Gala. Pulling out badly affected trees will allow blight removal crews to focus their efforts on trees that can be salvaged.

Blight removal crews should be trained to recognize the early symptoms of blight on terminal shoots. On terminals just beginning to show symptoms, the first or second fully expanded leaf will droop and closer examination will show blackening along the mid-vein at the base of the leaf blade. The entire shoot tip may appear to be slightly yellowed. Remove such shoots by cutting back into two-year-old wood at least 8-12 inches below the last visible symptoms. If a spur or shoot on the central leader shows signs of blight, immediately remove the central leader down to 8-12 inches below the last visible symptom. Immediate and aggressive removals reduce the need for repeated pruning in the same tree and may result in fewer trees lost to root stock blight.

2. Q: Is it necessary to disinfect pruning tools between cuts?

A: Dr. Paul Steiner has shown that disinfecting pruning tools is a waste of time because minute cankers often form on the ends of cuts even when pruners are disinfected. Instead of wasting time disinfecting pruning tools, Paul recommends making all cuts into at least 2-year-old wood where bacteria will be less able to multiply. Also, leave “ugly stubs” by cutting branches between nodes and at least several inches away from the central leader. Small cankers that form on these stubs can then be removed during winter pruning whereas a canker that forms at a flush cut on the central leader will be missed during winter pruning.

An extension specialist in California reported that he failed to transmit fire blight with pruning tools when he purposely made cuts through active cankers in dry weather. However, he succeeded in transmitting blight on pruning tools when pruning was done in wet weather. Blight removal operations should usually be suspended in wet

weather, but that is not always possible. (See question #4 below). As a precaution, perhaps pruning tools should still be disinfected if blight removal must be done in wet weather.

3. Q: Should prunings be removed from the orchard?

A: I haven’t found any recent recommendations addressing this question (although I admit my search was not exhaustive). My personal recommendation is to place prunings in the row middles and allow them to thoroughly dry before running a mower over them. “Thoroughly dry” means that the bark no longer slips on the branches that have been removed, and the out bark and cambium have turned brown. With today’s tightly spaced orchards, I am concerned that carrying prunings out of the orchard may spread more blight than occurs when prunings are left to dry in the row middles.

4. Q: What about pruning out blight in damp or rainy weather?

A: In the ideal world, blight removal would only be done in dry weather. However, when a week of rain is predicted just as the first symptoms of blight appear, one must weigh the risks of spreading blight by pruning in wet weather versus the risks of giving the epidemic a full week, or even a two- or three-day head start. With highly susceptible cultivars like Gala, I would opt to remove blight as quickly as possible, even if that meant that some removal would be done in less than ideal weather.

5. Q: Can I do hand thinning or bud pinching while blight is active in the orchard?

A: Avoid these activities until after terminal bud set. Delaying hand thinning may result in some loss of fruit size, but risks of spreading blight outweigh the benefits of early hand thinning. One local grower demonstrated that pinching buds as part of tree training for the vertical axe system is a great way to spread blight. Even though we no longer recommend disinfecting pruning tools between cuts, one can still spread blight on one’s fingers while pinching buds (and presumably while hand-thinning). Pinching is done to succulent shoot tips that are highly susceptible to blight, whereas cuts made to remove blight are made in wood that is at least two years old.

6. Q: What can be done to stop the spread of blight to new terminal shoots?

A: No good answers here. Anything that helps to shut down tree growth will help to limit the spread of blight since the epidemic stops when terminal buds are set. Lucky growers never get blight, but if they do, they only get it in drought years when trees stop growing in mid-June. (This is not a lucky year!) Obviously, blocks with blight should not be trickle-irrigated until well after terminal bud set. Allowing weed regrowth beneath trees may increase competition for water and nutrients, thereby helping to slow tree growth.

The new plant growth regulator called “Apogee” may prove useful for arresting blight epidemics. This product has a Federal label, but it is not yet registered in New York State. Apogee causes trees to set terminal buds beginning about two weeks after it is applied. To control vegetative growth in overly vigorous blocks, Apogee application will be recommended at late bloom or at petal fall. In young orchards, however, early cessation of terminal growth is undesirable except when blight is present. If Apogee is applied after the first symptoms of blight appear in an orchard, two applications will probably be needed to rein in

the growth process and blight will continue to spread for at least two weeks after the first Apogee application. In highly susceptible cultivars, blight may reach the rootstocks in many trees before Apogee can shut down terminal growth and make the tree more resistant to blight. In dry years, untreated trees may stop growing on their own about the same time that Apogee takes effect. The earlier cessation of shoot growth triggered by Apogee will help control blight in wet years, but the combined cost for the two Apogee treatments may exceed \$150 per acre. Cost-effectiveness of Apogee for fire blight remains to be determined.

Until the mid 1980's, fire blight experts recommended reducing action thresholds for aphids and leafhoppers in orchards with blight because of concerns that these insects might spread blight during summer. Research in the Mid-Atlantic States has shown that aphids and white apple leafhoppers cannot vector blight. The role of potato leafhoppers (PLH) is less clear. A spray of Provado or carbaryl to control PLH may be helpful. However, complete control of PLH is impossible in a season when thunderstorms regularly drop new immigrant PLH adults into orchards.

Streptomycin sprays should *not* be applied during summer because summer applications will result in rapid development of streptomycin-resistant strains of the blight pathogen. The only exception is that streptomycin should be applied immediately after any hailstorm if there is active blight in the orchard (i.e., orchards where blight was present this year and terminal shoots are still growing).

Copper sprays applied in summer theoretically should inactivate blight bacteria on plant surfaces and thereby help to reduce inoculum and slow the epidemic. However, attempts to document the benefits of summer copper sprays have provided inconsistent results. Proponents of using copper during summer admit that benefits of copper will be limited because copper is not systemic and therefore will not affect bacteria inside plant tissue. Furthermore, actively growing terminal shoots "outgrow" the copper residue, thereby leaving the blight-susceptible shoot tips unprotected within several days after an application. Copper applied in summer is also phytotoxic to fruit, with injury appearing as necrotic black spots at fruit lenticels. Thus, copper sprays are not acceptable where the crop is destined for fresh market. In young orchards, salvaging the crop may be less important than salvaging the trees. This is especially true this year when many orchards in the Hudson Valley already have severe hail damage.

The bottom line: If I was managing a young Gala block with fire blight, I would be applying a low rate (about 4 oz/100 gallons dilute spray) of a fixed copper on a 7-10 day schedule until terminal buds are set. Copper sprays should be applied under good drying conditions. The alkaline nature of copper sprays means that they probably cannot be combined with other pesticides that are subject to alkaline hydrolysis.

7. Q: What determines how many trees will develop rootstock blight?

A: No one knows. Rootstock blight develops when bacteria move from strikes in the top of the trees down through the trunk and cause cankers in the rootstock. Because M.9 and M.26 rootstocks are highly susceptible to blight, rootstocks that become infected usually die. In the Hudson Valley, Gala orchards that showed the first symp-

PPV Confirmed in Canada

From June 23, 2000 Press Release, Ottawa, Canada.

The Canadian Food Inspection Agency (CFIA) today announced the discovery of plum pox virus (PPV) in an orchard outside Niagara-on-the-Lake, Ontario. Sample testing by the CFIA's Centre for Plant Health in Sidney, B.C. confirmed the infection. This is the first discovery of plum pox virus in Canada.

Plum pox virus, also known as sharka, is a serious disease infecting stone fruit species of the genus *Prunus* including peaches, nectarines, plums, apricots and ornamental varieties. PPV does not kill trees but it renders the fruit tasteless and low in sugar, making it unsuitable for eating and processing. There is no treatment for infected trees. They must be destroyed to prevent the spread of the disease. PPV is spread over short distances by aphids and over larger distances through grafting of infected budwood or nursery stock. PPV does not affect humans.

The strain of the virus found in Canada has been identified as Strain D. The same strain of PPV was found in *Prunus* trees in Pennsylvania in October, 1999. This was the first time PPV was found in North America. The CFIA suspended the importation of *Prunus* plant material from the U.S. in November, 1999. The nectarine trees outside of Niagara-on-the-Lake confirmed to have PPV were imported from Pennsylvania.

All *Prunus* plant material (including nursery trees, scionwood and rootstocks) imported from Pennsylvania in the last three years have been placed under a prohibition of movement, and the surveying of this material for the presence of PPV began this spring. The CFIA has initiated a PPV Emergency Program to intensify surveys to assess and determine the extent of the disease and take actions to control its spread.

The CFIA is consulting with the National Plum Pox Virus Task Force, a group of scientists, provincial advisors and industry representatives on activities to prevent and control the spread of this disease. The CFIA will continue to provide updates on the progress of the survey and eradication activities. A Fact Sheet on Plum Pox Virus can be found on the CFIA's website at: <http://www.cfia-acia.agr.ca>.

Submitted by Jerome L. Frecon, Agricultural Agent. □

toms of fire blight in early June now have many trees with bacterial ooze coming out of the rootstocks. Some of the trees with rootstock blight still have a reasonably intact canopy, but they will not survive. Some will die within several weeks, some will die later this fall, and some will survive until next spring when they will wilt and die soon after bud break. Incidence of root stock blight can range from less than 5% of trees to more than 80% in a severely blight block. Rootstock blight is most common in orchards less than 6 years old, but other factors that make trees susceptible to rootstock blight have not been determined.

Submitted by Win Cowgill, Agricultural Agent and Dean Polk, Fruit IPM Agent. □

PPV National Survey Information for Week Ending, June 23, 2000 for NJ

Robert Balaam, Director, Division of Plant Industry, New Jersey Department of Agriculture

Field Sampling:

Sampling conducted by: NJ Department of Agriculture

0 Acres of propagative orchards surveyed.	0 Samples taken
251 Acres of commercial orchards surveyed.	1,569 Samples taken
0 Mother trees sampled.	0 Samples taken
0 Nursery properties surveyed.	0 Samples taken
0 Other (list): Coop. Ext. Variety Eval. Blocks	0 Samples taken

Laboratory Analysis:

Analysis conducted by: NJ Department of Agriculture

1073 Samples analyzed 1073 Negative Samples 0 Positive Samples

This report covers activities from June 16, 2000 through June 22, 2000.

Submitted by Jerome L. Frecon, Agricultural Agent ☐

Calendar of Events

July 12, 2000 - Twilight Fruit Research Meeting, Rutgers Agricultural Research & Extension Center, Upper Deerfield Township, Northville Road, Bridgeton, N.J. Contact Jerry Frecon at 856-307-6450.

September 6, 2000, 6:00 P.M. - Fruit Variety Meeting and Showcase, Gloucester County Office of Government Services Auditorium, 1200 North Delsea Drive, Clayton, NJ. Contact Jerry Frecon at 856-307-6450.

ProVide[®] for Suppression of 'Stayman' Fruit Cracking

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

Fruit cracking of Stayman is the major limitation for continued production of this apple cultivar. Stayman was one of the main apple cultivars grown in New Jersey, Pennsylvania and other Mid-Atlantic States through the 1980's. Cracking was commercially suppressed with the plant growth regulator Alar[®]. Virtually every block of Stayman prone to cracking was treated with Alar[®] during this period. With the loss of Alar[®], the acreage of Stayman rapidly declined until it fell below the volume needed to support a wholesale market in the Northeast. However, consumer demand remains high and Stayman still fills an important apple niche for many New Jersey retail growers.

For these growers, cracking can be variable from year to year and between blocks. The strain of Stayman can also influence cracking. Some strains crack worse than others. A bad cracking year can make the crop unsaleable. Although cracking is as old as the cultivar itself, there is limited knowledge of the origins and exact causes of cracking. However, fruit cracking has been closely correlated to increased relative humidity, frequent wetting periods and reduced water loss of the tree. If our current weather pattern in New Jersey continues through the summer (numerous wetting periods), growers may want to consider the use of the plant growth regulator (PGR) ProVide[®] (Valent BioSciences) for Stayman.

Primarily wetting periods that occur from July until harvest induces cracking of Stayman apples. Provide[®] applications must begin two to three weeks prior to initial cracking. Provide[®] will not completely eliminate cracking, but will suppress it. Growers should also focus on removing any environmental stresses, primarily drought stress, from Stayman blocks. Regular scheduled irrigation will enhance a grower's ability to manage cracking.

Past grower experience with individual blocks is the most effective method of determining cracking potential. A discussion of Stayman cracking is outlined in the *2000 NJ Commercial Tree Fruit Production Guide*. A method of utilizing a water bath to determine the cracking potential of a block of Staymans is discussed. If Provide[®] treatments begin after the onset of cracking, its efficacy will greatly be reduced.

Research done in Virginia shows better control is achieved with 6 applications on the tighter 14-day schedule, in heavy crack situations. ProVide[®] is labeled at 16-32 oz/a. Since ProVide[®] is a PGR that needs to be absorbed into the plant; applications made during slow drying conditions can improve efficacy. Dilute applications will enhance distribution of the product.

Since ProVide[®] is a gibberellin-based product, PGR's that inhibit gibberellin activity, such as Apogee[®], may reduce the performance of the product. Preliminary information indicates that growers should proceed with caution when using ProVide[®] and Apogee[®] on the same trees in the same season. A potential for reduced efficacy of either material appears to exist, but may be dependent on timing, rates and sequence of applications. Consult the ProVide[®] label for rates and precautions. The label is the law. ☐

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