

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

MAY 12, 1998



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Diagnostic Services for Fruit Growers

Jerome L. Frecon, Agricultural Agent

Agricultural agents with Rutgers Cooperative Extension are the first line in solving diagnostic problems for fruit growers. Many agricultural agents will make personal visits to commercial fruit farms, and try to solve problems based on their experience and expertise. Some agricultural agents have knowledgeable program associates who are regularly visiting fruit farms. Program associates are the core operation of the IPM fruit programs. Agricultural agents also have the support and help of the specialist faculty of Rutgers Cooperative Extension. While the specialists are focused on conducting fruit research and developing state wide recommendations, they also provide skill in general diagnosis when requested by agricultural agents.

Fruit growers, agricultural agents, and specialists in New Jersey are also fortunate to have access to an excellent plant diagnostic laboratory at Rutgers University in New Brunswick.

The laboratory, started in 1991, has not been frequently used by fruit growers but is regularly used by other agricultural industries. The laboratory must charge a fee for its services because it is self-supporting. The fee of \$20 per sample is small for in-state samples when considering the value of the service.

Growers often ask, "Why should I use the diagnostic laboratory?"

- The laboratory has the equipment and facilities to make exact diagnoses by culturing diseases and providing a definitive identification by genus and species. RCE personnel without laboratories cannot do this.
- The laboratory can also provide this definitive identification for weeds and insects, not easily done by agents in the field.
- The laboratory can provide quantified analyses of nematodes by genus in species in fruit soil plantings.
- The laboratory can test fruit and plant samples for possible resistance to various pesticides.
- The laboratory also helps RCE faculty and staff in research and teaching projects and programs.

All of these things are done in cooperation with agricultural agents and their program associates who make the recommendations to the growers based on research and information from agricultural specialists.

One of the difficulties in using the laboratory has been the problems of getting good samples to the laboratory in a cost-effective and

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Weed Control in Fruit

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

✓ **Tree Fruit:** Postemergence (knockdown) herbicide options include 2,4-D, Gramoxone Extra, Roundup, and Rely. The characteristics of each herbicide is different, and should be used in different situations.

Weedar 64 and other labeled formulations of 2,4-D effectively control **annual** and certain **perennial broadleaf weeds**, such as **dandelion**. Applications should be sprayed before the target weeds begin to bloom. Effectiveness decreases after flowering has begun. No control of **annual** or **perennial grasses** can be expected; therefore, the use of 2,4-D as a knockdown herbicide should be limited to fall and early spring before summer **annual grasses** emerge. Peach and apple shoots sprayed with 2,4-D will be killed, but the rest of the tree will not be affected. Do *not* use 2,4-D on newly planted trees.

Gramoxone effectively controls **seedling annual broadleaf** and **grass weeds** but may only provide temporary control of established **annual** and **perennial weeds** by “burning off” the foliage. Applications should be sprayed before the target **annual weeds** become established. Effectiveness decreases after flowering has begun. No long-term control of **perennial broadleaf weeds** or **grasses** can be expected. Peach and apple shoots sprayed with Gramoxone Extra will be killed, but the rest of the tree will not be affected. Do *not* use Gramoxone Extra on newly planted trees.

Roundup Ultra and Touchdown effectively control many **annual** and **perennial broadleaf weeds**. The reason is that after absorption through the leaves Roundup is moved (translocated) throughout the plant, including down into the roots. Applications should be sprayed when the target weeds are actively growing and have a large healthy canopy of foliage to absorb the herbicide. Effectiveness decreases when treatment is made during periods of stress for the target weed. Control of **perennial broadleaf weeds** and **grasses** is more difficult, requires a higher rate, and must be applied at the right time of year for control to be obtained. Applications at the wrong time of the year will result in control of the shoots, but poor translocation into the roots and regrowth. The correct time of year for Roundup application depends on the target species. Generally, **perennial grasses** must be tillered and have at least six or more leaves before treatment. **Perennial broadleaf weeds** are most susceptible when they are in full bloom to the green fruit stage of growth. This occurs at different times of the year for different weeds. Peach and apple limbs sprayed with Roundup will be killed. The rest of the tree may be affected the same year by Roundup translocated out of the sprayed limb into the tree or the next year by Roundup translocated from the sprayed limb into the roots where it is stored until the following spring. Do *not* use Roundup on newly planted orchards until they are four to five years old and all the bark that may be hit by spray is old, mature, and

brown. Heavily shaded apple suckers sprayed in the spring do not affect the rest of the tree, but suckers that receive several hours of direct sun treated in the late summer may translocate Roundup to the roots.

Rely is labeled for use in apples, effectively controls **annual broadleaf** and **grass weeds**, and may provide temporary control of perennials, and regrowth may be suppressed; but *Rely is NOT RECOMMENDED FOR USE IN NEW JERSEY*. Research conducted at Rutgers with experimental formulations that contained glufosinate, the active ingredient in Rely, caused significant trunk injury to apples and peaches. Other herbicides that are currently recommended did not cause injury in the same experiments. Additional research is currently in progress using the formulation of glufosinate marketed under the trade name “Rely.”

✓ **Tree Fruit and Grapes:** Touchdown (sulfosate) is a nonselective nonresidual postemergence herbicide that has received a label for use in tree fruit. Two formulations may be available, Touchdown (contains 6 lb ai/gal.) and Touchdown 5 (contains 5 lb ai/gal.). Both are labeled for use in nonbearing and bearing grapes and stone fruit, and nonbearing apples.

Touchdown is similar to Roundup in activity against weeds and speed of action. Use 1.0 to 4.0 lb ai/acre to control emerged **annual** and **perennial grasses** and **broadleaf weeds**. A nonionic surfactant may be used but is not necessary. Research has indicated that the addition of a nonionic surfactant will increase the speed of weed control activity but is not needed to improve weed control.

For control of **perennials**, like for Roundup, the time of year the application is made may be critical for control of the roots. Multiple applications may be needed to control certain perennial weeds.

Do *not* allow Touchdown to contact leaves, young shoots, or young bark that have not developed layers of dead cells on the surface, or fresh wounds. The herbicide may be absorbed and cause severe crop injury. Touchdown will not be absorbed through old mature bark. □

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timely manner. Because it is in New Brunswick, samples must be shipped or specially delivered to the laboratory. To simplify the shipping process the Plant Diagnostic Laboratory has forms to explain how and where this can be done as effectively as possible. These forms are available from any Rutgers Cooperative Extension office serving fruit growers in New Jersey. Forms can also be received by faxing the laboratory at 732 932-1270. The Laboratory also has an informative WWW Page at <http://aesop.rutgers.edu/~floriculture/diagnostic/diagnost.htm>.

If samples are mailed they can be sent to: *Plant Diagnostic Laboratory, Rutgers Cooperative Extension, P.O. Box 550, Milltown, N.J. 08850-0550.*

If samples are delivered or shipped by another carrier they can be delivered to the Plant Diagnostic Laboratory, Rutgers Cooperative Extension Building 6020, Dudley Road Cook College, New Brunswick, N.J.

The sister laboratory for soil samples will be discussed in a future newsletter. □

A Bacterial Spot Dilemma

Norman Lalancette, Specialist in Tree Fruit Pathology

On moderate to highly susceptible peach and nectarine varieties, bacterial spot is, to say the least, a challenge to control. Last season was testament to this fact. Proper bactericide application timing, preferably during the 24 hour period prior to an infection period, is critical to achieving optimum disease control. Spray just before the rain arrives, cover every row middle, and use as dilute a spray as possible. Complete and thorough coverage is a must.

Got Mycoshield?

But wait, there's one problem with the ideal spray situation described above. It assumes you have material to spray! Have you tried to purchase Mycoshield, the most effective bacterial spot material, lately? Supplies at dealers are either in small quantities or unavailable.

Novartis Crop Protection, producer of Mycoshield, planned to have plenty of material available for the 1998 season. In fact, production quantities for this season were twice as much as in the past. However, no one predicted the El Niño-induced wet weather for the California crop. Consequently, large volumes of the product headed west well before the bacterial spot season began in the east. Result: little or no Mycoshield to be found. And it is too late to start manufacturing more antibiotic for this season.

The Alternatives

Tenn-Cop 5E and Syllit 65W are two alternative bactericides still available. Of these two, Tenn-Cop is the more effective material and should be used on the most susceptible varieties. However, even when applied at the 4 to 8 oz / A recommended rate, it is still not as effective as Mycoshield. Users should keep watch for phytotoxicity, expressed as leaf spotting, especially as the number of cover sprays increase. Reduce the rate if damage to foliage occurs.

Syllit, along with Cyprex, are tradenames for the fungicide dodine. In addition to controlling fungal diseases such as apple scab, dodine was also found to have bactericidal properties, particularly when applied with Captan. However, this material is only recommended for light to moderate disease pressure situations. To control bacterial spot, apply 1-2 lb Syllit plus 2-4 lb Captan 50W per acre on a 7-10 day schedule. Shorten intervals during wet weather to maintain maximum protection.

If you have some but not enough Mycoshield, consider alternating with Tenn-Cop. This should reduce copper phytotoxicity and is a good resistance management approach for Mycoshield. And, of course, having Mycoshield, as we found out last season, doesn't mean you are free of bacterial spot worries. The product must be used properly to be effective. □

Phytophthora Root Rot Management

Norman Lalancette, Specialist in Tree Fruit Pathology

The soil temperatures have finally reached an average temperature of 60°F and the ground-soaking rains have arrived. Time to think about preventative measures for controlling Phytophthora root and crown rot.

Whether we're talking apple or peach, the fact is not every block needs control. Several factors should be considered to determine the risk of Phytophthora infection. Are the trees less than four years old? Is surface water drainage poor in the block? Is the soil heavy or does an underlying clay layer exist? Did some trees in the block die from root rot in the past? Has wind caused some toppling, possibly snapping supporting roots? Did some trees exhibit early defoliation last fall? Is the rootstock rated as susceptible (apple only)?

The number of "yes" answers to the above questions can be used as a guide to determine if you need to take action. If you answered "yes" to four or more questions, then the risk of Phytophthora root rot is greatest. In this case, preventative fungicide applications are advised. If a block has two to three "yes" answers, then the risk is moderate and fungicide applications should be considered, especially if it is a young planting. A single "yes" is a low risk situation requiring no action.

Two fungicides are available for control. Ridomil Gold can be applied to either crop at the rate of 2 quarts per treated acre. It can be applied in a band application or as a soil drench. In either case, a minimum of 0.5" of rain or irrigation should follow the application to ensure adequate penetration into the root zone. Make one application now, a second one month later, and a third in late September or early October.

Aliette WDG is labeled for bearing and non-bearing apple and non-bearing peach orchards. It is applied as a series of foliar sprays during spring and summer. Apply three to four applications at 60-day intervals at 5 lb/100 gallons or six to eight applications at 30-day intervals at 2.5 lb/100 gallons. □

Fruit IPM

Dean Polk, Agricultural Agent

Peach

✓ **Oriental Fruit Moth (OFM):** First generation sprays are finished over most of the southern counties. The *second* of two degree day timed sprays (both sides or full cover) are still due in northern counties: Mercer Co. 5/13, Hunterdon Co. (Oldwick) 5/15, and (Pittstown) 5/17, and Warren Co. (Hackettstown) 5/21-22.

✓ **Aphids:** Green peach aphid populations are still present on some farms. Lannate @ .5lb/A has done very little. Rates of .75 to 1 lb/A have shown considerably more control. Thiodan @ 2lb/A controlled populations in one case.

✓ **Tufted Apple Budmoth (TABM):** Trap catches have increased over the last week. Four alternate middle treatments may be applied starting at 490 DD₄₅ and again at 625, 763, and 848 DD₄₅. The first of these treatments should fall on or around 5/25-26 in Gloucester County. See last newsletter for treatment suggestions.

✓ **European Red Mite (ERM):** Mites are starting to appear in greater numbers in some blocks. While we do not have true action levels in peaches as we do in apples, high populations will bronze leaves and can be an irritant to farm labor. Suggested materials are: Apollo @4 oz/A (3oz has worked well for growers with populations that were not excessive), Vendex @1-2 lb/A, and Carzol @1-1.25 lb/A (12oz/A has also worked well when populations were not excessive and temperatures were not high). Materials should be rotated and used conservatively to delay or prevent the occurrence of resistant populations.

✓ **Bacterial Spot:** With rains occurring almost every day this month, we have had numerous bacterial spot infection periods. Fruit infections have been noted in some locations, on susceptible varieties. Treatment options were summarized in the last newsletter.

✓ **Brown Rot:** Given the frequent rains, growers are advised to minimize their use of sulfur, and increase the use of Captan for brown rot control. Even a combination of sulfur and captan provides more protection than sulfur alone.

Apple

✓ **Aphids:** Rosy apple aphids continue to be found in excess of 2 colonies per tree. In most cases they are being found where pre-bloom aphicides were applied too late. Applications of Provado have provided control.

✓ **Codling Moth (CM):** As of this writing between 140 to 160 DD₅₀ has accumulated in southern counties. Treatments are recommended at 250 degree days (base 50) after biofix. The first sprays for this insect should be due close to 5/18-19 in Gloucester County and 5/20 in Cumberland County. This is about 10 days earlier than in most seasons.

✓ **Tufted Apple Budmoth (TABM):** As of this writing, from 200 to 250 DD₄₅ has accumulated since first emergence. If you are using traditional organophosphate or carbamate insecticides, you can use the timing guidelines under the peach section. However, if using the growth regulator Confirm, a different timing scheme is needed. The first brood TABM application timing for ConfirmÆ 2F insecticide is 600 to 650 degree days. This is expected to occur in 2-3 weeks depending on temperature.

✓ **Apple Scab:** With 6 to 7 days of straight infection periods, growers have had a difficult time keeping protection on the trees. While a spore tower count done on May 1, yielded 238 spores, a count done on May 8, yielded 142 spores over 30 minutes. Spore tower counts are done from leaves that were collected from an infected orchard (1997), and held outside under a screen cage. Leaves are brought into the lab, soaked for 7 minutes, and placed on a 1/4" hardware cloth surface while exposed to a small vacuum pressure over 30 minutes. Mature ascospores that were released over that time are collected on microscope slides and counted. I should note that the count done last Friday was done in the late afternoon from leaves that had already been exposed to heavy rains for most of the day, thus the count may be slightly conservative, but still indicates that we are in the primary infection period.

✓ **Fire Blight:** The ongoing rains have been favorable for additional fire blight infections. One should take particular note if orchards have previous infections from last year, and/or late bloom is still present (far northern counties).

SEE IPM ON PAGE 5

Degree Day Accumulations Since Biofix and Spray Targets

Insect	May 10							
	Hammonton	Bridgeton	Hardingville	CreamRidge	Princeton	Oldwick	Pittstown	Hackettstown
OFM	574	396	553	352	370	345	284	214
TABM	231	194	238	150	152	150		
CM	132	158	115	102	100			31

Spray Targets:

OFM	200 & 400 DD ₄₅ after biofix (1 st generation).							
TABM	490, 625, 763, 898 DD ₄₅ after biofix (1 st generation).				2228, 2415, 2605, 2795 DD ₄₅ after biofix (2 nd generation).			
CM	250 DD ₅₀ after biofix plus 14 days later (1 st generation).				1250-1300 DD ₅₀ after biofix plus 14 days later (2 nd generation).			

Blueberry

✓ **Leafrollers and Leps. (Redbanded leafrollers - RBLR, Obliquebanded Leafroller - OBLR, Green Fruitworm - GFW):** Low number of leafroller larvae, spanworms and green fruitworms are present. No fields have been seen where populations need treatment.

✓ **Aphids:** About 90% of scouted samples have aphid populations. The majority of infested terminals consist of small colonies or single insects, but the percent of growing terminals that are infested has steadily increased over the last 3 weeks.

✓ **Plum Curculio (PC):** Plum curculio egg scars

Trap Captures

Tree Fruit – South Jersey

WEEK END:	RBLR	STLM	TABM-A	CM	AM	OFM	TABM-P	LPTB	PTB
3-Apr	25.00	730	0.00			10.55	0.00		
10-Apr	4.00	704	0.00			17.55	0.00		
17-Apr	1.67	1127	0.00	0.00		58.48	0.00		
24-Apr	1.25	1248	0.00	0.45		33.09	0.06		
1-May	0.75	1057	1.38	2.23		15.43	7.08		
8-May	0.33	953	19.58	5.31		14.54	23.58		

Tree Fruit – North Jersey

WEEK END:	RBLR	STLM	TABM-A	CM	AM	OFM	TABM-P	LPTB	PTB
10-Apr	37.18	945	0.00	0.00		1.11	0.00		0.00
17-Apr	37.96	621	0.00	0.00		2.96	0.00		0.00
24-Apr	35.83	871	0.00	0.03		14.30	0.00		0.00
1-May	23.53	803	0.11	0.11		11.27	0.04		0.00
8-May	14.02	346	0.91	1.56		7.04	0.63		0.38

Blueberry - Atlantic Co.

WEEK END:	RBLR	OBLR	CBFW	SNLH	BBM HIGH	BBM LOW
4/3	105.8					
4/10	144.7					
4/17	66.3					
4/24	11.9					
5/1	6.4	0.08				
5/8	2.2	0	0.2			

were seen about 10 days ago, but no new activity has been seen this past week. If activity is present, PC has been problematic on early varieties, mostly near field edges. See last newsletter for further discussion.

✓ **Cranberry Fruitworm (CBFW):** The first adult was captured in the Hammonton area this past week. This could be an isolated insect, and may not represent the first sustained emergence. Although it would not be surprising if CBFW captures started 1 to 2 weeks earlier than normal. Last year we caught the first CBFW during the week of 5/16, with the flight showing a peak around 6/6. Insecticide applications would normally be applied to target the insect near the time of peak flight.

Blueberry - Burlington Co.

WEEK END:	RBLR	OBLR	CBFW	SNLH	BBM HIGH	BBM LOW
4/3	18.3					
4/10	21.6					
4/17	13.6					
4/24	6.7					
5/1	2.5	0				
5/8	1.1	0.05	0			

Fruit Meeting Calendar

May 13, 1998 - Twilight Tree Fruit Meeting and Tour, 6:15 p.m., Rutgers Agricultural Research and Extension Center, 121 Northville Road, Bridgeton, NJ. Contact RCE of Gloucester County, 609-863-0110 for details and directions.

May 14, 1998 - 6:00-8:00 p.m., 2nd North Jersey Twilight Fruit Meeting, Alstede Farms, Rt 24, Chester, Morris County, NJ. Contact Bill Tietjen, RCE of Warren County, 908-475-6505

May 27, 1998 - Twilight Fruit Meeting and Strawberry Showcase and Open house, 4:00 p.m. Rutgers Fruit Research and Extension Center, 283 Route 539, Cream Ridge, NJ. Contact RFREC at 609-758-7311.

May 28, 1998 - South Jersey Woodlot Management Program and Demonstration 6:30 p.m., Fries Mill Road, Monroe Township, Gloucester County. Contact RCE of

Gloucester County, 609-863-0110 to register and receive directions.

June 3, 1998 - South Jersey Christmas Tree Growers Meeting, Dean's Evergreens Christmas Tree Plantation, Route 609 Elmer-Richwood Road, Monroeville, NJ. Call RCE of Gloucester County, 609-863-0110 for details and information.

June 29-30, 1998 - International Dwarf Fruit Tree Association Summer (Peach & Apple Tour of Virginia). Pre-registration is required. Contact Charles Ax at 717-837-1551 before May 15 to register. Details are available from Jerry Frecon at 609-863-0110.

July 23 through July 26, 1998 - New Jersey Peach Festival at the Gloucester County 4-H Fair, 4-H Fairgrounds, Mullica Hill, NJ. Contact Chris Smith at 609-881-1411 or Marsha Gaventa at 609-467-8028.

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