

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

APRIL 3, 2001



INSIDE

Orchard Weed Control	1
Interested in Increasing Your Retail Income?	2
Peach Fertilization Guidelines - 2001	3
Fungicide Strategies for Controlling Apple Scab and Mildew in 2001, Part I	4
Calendar of Events.....	5
Sweet Cherry Bacterial Canker	6

Orchard Weed Control

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

The weed control program for the orchard should consider the weed free strip under the tree and the sod middles between the tree rows separately. In addition, the program implemented in the spring depends on whether herbicides were applied the previous fall. Two applications of residual herbicides are recommended in the weed free strip under the trees. The first application should be applied in late fall, after the trees are dormant, but before the soil freezes. The second should be applied in late spring. Orchards that are sprayed with residual herbicides only once a year should be treated in early to mid spring. Rate ranges are recommended for most residual herbicides. Use the lower rates in orchards with coarse textured (sandy) soil low in organic matter, and the higher rate when soils are fine textured (silt and clay) and have higher organic matter.

Row middles should be maintained in perennial grass sod. Many broadleaf weeds are alternate hosts for disease, insect, and nematode pests. Control orchard broadleaf weeds, including dandelion, clover, and other weeds with 2,4-D in the fall or early spring.

Note: Dual Magnum 7.6EC has received a 24C Special Local Needs label for use in peaches in New Jersey. Apply 1.5 to 2.0 pints per acre (1.4 – 1.9 lb ai/a) in May to control annual grasses and suppress or control yellow nutsedge. Tank-mix with residual herbicides for the control of annual broadleaf weeds and a postemergence herbicide to control weeds that emerged prior to treatment. *Indemnification paperwork must be completed prior to receiving a label through the Horticultural Society of New Jersey. To obtain the paperwork, contact your local county agent.*

Recommendations

- I. No herbicide applications made in the fall.
 - A. orchard row middles (sod) - apply 2,4-D (Weedar 64) at 1.0 qt/a before dandelions bloom to reduce competition for bees during apple bloom, to eliminate the weed as an alternate host for diseases and nematodes in peaches, and to prevent equipment overheating due to radiators becoming plugged with seedheads later in the spring.
 - B. Orchards with the following characteristics,
 1. No serious perennial weed problems
 2. An open canopy, with sunlight reaching the weed-free

SEE WEED CONTROL ON PAGE 2

strip under most trees

3. A history of heavy or late season annual grass pressure
4. Varieties that mature later in the season should be sprayed in early spring (April) with the following.

Solicam 80DF	3.0 - 4.0 lb/a
+	+
Karmex 80DF	1.0 - 2.0 lb/a
+	+
2,4-D (Weedar 64) 4A	1.0 qt/a

Add 0.25 to 0.33 pounds of Sinbar 80DF to improve broadleaf weed control early in the season when dry weather follows application.

- C. Orchards with the following characteristics,
 1. perennial weed problems
 2. dense canopy, with fully shaded weed-free strips
 3. light annual grass pressure
 4. early maturing varieties
 should be treated in late spring (May) with the following.

Sinbar 80DF*	1.0 - 2.0 lb/a
or	
Dual Magnum 7.6E	1.5 - 2.0 pt/a
+	+
Karmex 80DF	1.0 - 2.0 lb/a
+	+
Roundup 4SC	0.75 - 1.0 qt/a
or	or
Gramoxone 2.5SC + NIS	1.0 qt/a + 0.25%

* Substitute Solicam 80DF at 3.0 to 4.0 lb/a for Sinbar if annual grass pressure is severe.

- II. Herbicide applied during the previous fall.
 - A. Only 2,4-D (Weedar 64) applied - see I.B. or I.C.
 - B. 2,4-D (Weedar 64) and simazine (Princep) applied - annual broadleaf control will last until June. Annual grass control may break earlier. Use I.B. or I.C., with 2,4-D only if needed, or Roundup if annual grasses emerge.
 - C. 2,4-D (Weedar 64), Solicam, and Princep applied in the fall.

Apply the following any time in mid-to-late spring (April to early June).

Solicam 80DF	10 - 2.0 lb/a
+	+
Karmex 80DF	1.0 - 1.5 lb/a
+	+
2,4-D (Weedar 64) 4A	1.0 qt/a only if needed

Note: apply a total of 5.0 lb of Solicam 80DF per acre per year.

- III. Yellow nutsedge a serious problem.

Sinbar 80DF*	1.0 - 2.0 lb /a
+	+
Dual Magnum 7.6E	2.0 pt/a
+	+
Karmex 80DF	1.0 - 2.0 lb /a
+	+

Roundup 4SC	0.75 - 1.0 qt/a
or	or
Gramoxone 2.5SC + NIS	1.0 qt/a + 0.25%

Note: apply in early to mid May
Consult the Commercial Tree Fruit Recommendations book for residual herbicide rates for your soil type and additional information. □

Interested in Increasing Your Retail Income?

Then you might want to consider becoming part of the Women, Infants and Children/Farmers' Market Nutrition Program (WIC/FMNP)! Over the past seven years of the program in New Jersey, farmers participating in WIC/FMNP have averaged from \$5,000 to \$10,000 income annually from the program. Getting started in the WIC/FMNP is an easy process, it increases your income, it helps those less fortunate, so why not consider it?

The WIC/FMNP is a 70% federal funded, 30% state funded program that offers WIC clients four pre-printed checks worth \$5.00 each for the purchase of Jersey Fresh fruits, vegetables and herbs. These purchases must be made from farmers certified by the Department of Agriculture; the farmer can be marketing his produce at his own roadside market, at a farmers' market or from both locations. The main requirement to become a Certified Vendor is that the farmer be directly involved in raising at least 70% of the produce he or she would be selling.

There are nearly 28,000 WIC clients who will receive the \$20 worth of checks this year, all of whom will be seeking a farmer to redeem their checks.

This number of clients stays more or less constant, so once a farmer is certified, there would always be that potential market. And, for this year, there will be 1,000 senior citizens in each of the state's 21 counties who will also receive four of the pre-printed checks worth \$5.00 each. All 21,000 of those seniors will also be looking for a Certified Vendor to redeem their checks! These seniors will be part of the Senior Farmers' Market Nutrition Pilot Program in 2001, thanks to the USDA's grant of \$420,000 to the Department of Health & Senior Services.

Getting started in the WIC/FMNP and the Seniors program is an easy process - the certified vendor application takes only about two minutes to fill out - and with that kind of bottom line potential, why wouldn't you consider it? For more information call Ronald Good, Marketing Specialist, in the NJDA's Division of Markets at (609) 984-2278, e-mail at agmgood@ag.state.nj.us. □

Peach Fertilization Guidelines - 2001

Win Cowgill, County Agricultural Agent and
Meredith Peters, Fruit IPM Program Associate

General Thoughts

Mature peach trees require 0.025-0.05 pounds of actual nitrogen per year of tree age. You should determine your annual total nitrogen requirement per tree and then calculate a per acre rate with the fertilizer source of your choice.

In determining the total calculated nitrogen requirement, take into account the vigor of your soil as well as the leaf analysis results from the previous season. All growers should utilize annual soil and leaf analysis test results in planning the fertility program.

Split Applications of Nitrogen

For the past ten years we have been suggesting that Northern New Jersey peach growers split their nitrogen applications into two or three equal applications based on the total amount of nitrogen needed for the season as calculated above.

Two Applications = 3 weeks pre bloom and at shuck split

Three Applications = 3 weeks pre bloom, shuck split and 3 weeks later

We suggest splitting your applications into at least two applications. This spreads the nitrogen out over the season. However, the major advantage is in the event of a frost/freezing resulting in a reduced crop load (fruit set), you can eliminate the second (and/or third) application(s) reducing excessive vegetative growth and cutting costs.

Apply the first application (1/2 of the total nitrogen needed rate) one month to three weeks before bloom and the 2nd half at shuck split if a good crop is present. We suggest using a complete fertilizer at the first application. For loam and silt loam soils use a 2-1-1 ratio such as 16-8-8 to increase your available P and K levels. Sandy loam soils may benefit from a 1-1-1 ratio fertilizer such as 10-10-10. Even if phosphorous (P_2O_5) and potassium (K_2O) are adequate in your foliar tests, the use of a complete fertilizer is recommended for the first nitrogen application. The second and/or third nitrogen application should utilize calcium nitrate if needed. CaN will also supply calcium.

Sample Calculations

You need to know what percent nitrogen your fertilizer formulation is. Calcium nitrate is 16% actual nitrogen and ammonium nitrate is 33% actual nitrogen.

Example: Seven year old peach trees on a strong growing site

7 years old X 0.025 = 0.175 lbs. N per tree up to (7 x 0.05 =) 0.35 lbs. N tree

Using CaN at 16% actual nitrogen, the above rate per tree of 0.175-0.35 would equal 1-2 lbs. per tree

At a 20 X 20 spacing = 109 trees/A @ 2 lbs. per tree
X 109 trees = 218 lbs. of CaN/A

1 lb. CaN or 16-8-8 = 0.16 lbs. of actual N
2 lbs. CaN or 16-8-8 = 0.32 lbs. of actual N

If you use 16-8-8, which is also 16% actual nitrogen, the rate is the same, 1-2 lbs. per tree

At a 20 X 20 spacing = 109 trees/A @ 2 lbs. per tree
X 109T/A = 218 lbs. of 16-18-18/A

For Non-Bearing Peaches

Non-bearing trees (1-2 years old) require 0.1-0.2 lbs. actual nitrogen per year of tree age. The same calculations would apply and split applications are extremely beneficial to keep the tree growing during the first half of the growing season.

Liming and pH for Peach Production

Maintaining a target pH of 6.5 is essential for peach production. All soils should have their pH levels adjusted at least one full year prior to establishment of peaches with the addition of calcium or magnesium oxides according to a soil test. On many non-limestone North Jersey soils pH may drop as much as 1/2 point per year. The correct type of limestone is also important. Limestone consists of calcium and magnesium oxides. On most North Jersey soils magnesium is rarely deficient. Unless magnesium tests low or very low in your soil tests, magnesium or dolomitic lime should not be used, only high calcium limestone.

The New Jersey regulations regarding the classification of liming materials have changed. You will note that all our soil tests results now list lime rates in Calcium Carbonate Equivalents (CCE). For a complete discussion of this change in liming recommendations, review the Orchard Nutrition section of the *2001 New Jersey Commercial Tree Fruit Production Guide* E002N, pages 15-24.

For additional information contact your Rutgers Cooperative Extension county agricultural fruit agent or IPM program associate. The *New Jersey Commercial Tree Fruit Production Guide* can be found on the world wide web at:

http://www.rce.rutgers.edu/pubs/treefruitguide/Orchard_Nutrition.pdf. □

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

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

Reprinted from *SCAFFOLDS Fruit Journal, NYAES, Volume 10 (2)*.

Selecting and scheduling fungicides for apples involves many considerations. No single program can be devised that is appropriate for all apple orchards. The information that follows may prove useful as apple growers and consultants plan for the coming apple spray season. Note that throughout the following discussion, I have assumed that SI fungicides are still fully effective for controlling apple scab and powdery mildew in the orchards under consideration. Many of the suggested strategies must be modified if SI-resistant strains predominate in the orchard. Strategies for orchards with SI-resistance will not be covered in this article.

Fungicide classes referenced in this article include:

1. Contact fungicides: copper sprays (for use at green tip), mancozeb fungicides (Dithane, Penncozeb), Polyram, captan. Polyram is not a mancozeb fungicide. However, for the sake of simplicity, any subsequent references to 'mancozeb' in this paper should be interpreted as including Dithane, Penncozeb, and Polyram.
2. SI scab fungicides: Rubigan, Nova, Procure
3. Strobilurin fungicides: Sovran, Flint
4. Benzimidazoles: Topsin M and Benlate.

Decision #1: Copper sprays?

Copper sprays are strongly recommended in orchards where fire blight was present in either of the previous two seasons. Sprays should be applied between silver tip and quarter-inch green. The objective of this copper application is to create a copper residue on the tree that will release copper ions during rains and reduce populations of the fire blight bacterium coming from over wintering cankers. Copper sprays are of questionable value in orchards that have not had fire blight during the past two years since these orchards would theoretically have neither blight cankers nor resident populations of the fire blight bacterium. However, growers with highly susceptible cultivars and rootstocks may still wish to apply copper as insurance against blight infections that may have gone unnoticed the previous year. In some seasons, copper sprays can cause russetting on apple fruit. This usually occurs when sprays are applied after quarter-inch green and/or there is little

or no rainfall between the time of application and the time when trees reach open cluster. If too much copper residue is still present at open cluster, then rains occurring after open cluster may redistribute the copper residue to the clusters and injure the tissue that will later form the apple fruit.

If copper sprays are applied after quarter-inch green, then rates should be reduced to the minimum label rate. Conversely, if the long-range weather forecast at the time of copper application suggests that heavy rainfall is expected within the next week, then the high end of the labeled rate should be used to increase the probability that some copper residue will still be present after the rain. In either case, copper rates per acre should be adjusted for tree-row volume to prevent overdosing small trees. A copper spray, even at the low label rate, will provide scab protection equivalent to that provided by a mancozeb fungicide applied at 1 lb of formulated material per 100 gallons. Copper sprays will not act as scab eradicants.

Decision #2: Contact fungicide program vs. planned use of SI's or strobilurins at tight cluster.

Excellent scab control can be achieved by using only mancozeb or captan sprays. Rates as low as 2-3 lb of formulated mancozeb fungicides/A or 2-3 lb of captan 50W/A can provide excellent scab control if the fungicides are applied just ahead of predicted rains. Higher rates are needed in very large and/or poorly pruned trees or when fungicides are applied on a weekly schedule irrespective of rain events. Programs involving only protectant fungicides (e.g., copper, mancozeb, Polyram, captan) can be inexpensive, especially in dry years, but they are unforgiving because they offer no post-infection or anti-sporulant activity. As a result, lapses in spray coverage will almost always result in at least a few scabby fruit. Coverage lapses may occur due to stretched spray intervals, wash-off during heavy rains, or spraying in windy conditions. Furthermore, if summer weather remains cool and wet as it did in 1998 and 2000, then any scab that becomes established during April, May or early June will continue to spread during summer and will increase the potential for late-season fruit infections that develop into pinpoint scab during storage. In wet years, attempting to control scab with only contact fungicides can be both frustrating and expensive.

All growers should begin the season by using one or two applications of contact fungicides because there is usually no reason to pay for an expensive fungicide prior to tight cluster. Growers planning to use only contact fungicides through the entire scab season will

SEE FUNGICIDE STRATEGIES ON PAGE 5

need to be more conservative in covering ahead of predicted infection periods than growers who plan to use SI or strobilurin fungicides during the peak scab season.

Those planning to switch to SI's or strobilurins can afford more risk because the SI and strobilurin fungicides will cover minor lapses in coverage that may occur with prebloom applications of contact fungicides.

Decision #3: Knowing when to switch to SI's or strobilurins (the "power" fungicides)

The key to minimizing scab control costs is knowing exactly when to switch from a mancozeb or captan program to the extra protection provided by SI's or strobilurins. In a dry year when contact fungicides can easily be applied ahead of infection periods, contact fungicides alone may suffice for all sprays up to petal fall, especially in blocks where mildew is a minimal problem. However, in years with heavy rains and extended wetting periods, using SI's or strobilurins beginning at tight cluster may be the most cost-effective approach.

Regardless of the initial strategy chosen, it is absolutely essential that the first SI or strobilurin spray be applied *before* there are any visible scab lesions in the orchard. Therefore, any time that protection with contact fungicides becomes suspect, either an SI or strobilurin should be applied within 12 days of the infection period in question. For example, if heavy rains (more than 1.5 inches) at half-inch green remove mancozeb residues and continued wind and rain prevent re-spraying ahead of the next infection period, then the best option is an SI or strobilurin application within 72-96 hours, counting from the time that the mancozeb protection lapsed. Unfortunately, cold fronts usually follow lengthy rain periods, and those cold fronts frequently bring winds that prevent good spray coverage.

One must sometimes choose between getting an SI or strobilurin applied within 96 hours under poor spray conditions or waiting beyond 96 hr for good spray conditions. I would usually opt for the latter choice when facing that decision. During the prebloom period, SI's and strobilurins applied within 10-12 days of the infection period should provide near-perfect scab control if they are applied so as to achieve near-perfect coverage. In fact, in one of my field trials last year, scab control was better when these fungicides were applied 10-12 days after infection rather than 5-8 days after infection. This means that one need not rush out to apply SI or strobilurin fungicides immediately if one has already missed the 96-hr window of post-infection activity following an infection. I believe that it is better to wait for good spray conditions during the following week than to attempt spraying in less than

optimal conditions. For missed infection periods during or after bloom, one cannot afford to delay applications more than 7-8 days because higher temperatures will result in a shorter scab incubation period.

The suggestion that scab can be arrested even 10-12 days after prebloom infection periods is not meant to imply that prebloom contact sprays can be routinely omitted. Over-dependence on the post-infection and pre-symptom activity of SI's and strobilurins almost certainly will result in both occasional control failures and in rapid selection for fungicide-resistant isolates. Instead, the post-infection and pre-symptom activity of SI's and strobilurins should be viewed as a safety net for situations where protection by contact fungicides might be compromised. Knowing that such a safety net exists allows one to take a few more risks in timing prebloom contact sprays. But those taking the risks must also recognize that the safety net will be fully effective only if the SI or strobilurin program is initiated before scab symptoms become visible. That latter point cannot be over-emphasized. Strobilurins and SI's are much less effective when applied after scab is already visible on leaves because the visible lesions raise inoculum levels to the point where complete control becomes improbable.

(Next week: Part II - Configuring SI and strobilurin sprays, timing sprays during bloom, and strategies from petal fall through mid-July.)

Submitted by Win Cowgill, Agricultural Agent.

Calendar of Events

April 11, 2001, Wednesday, 7:15 p.m. - Evening Fruit Meeting, Gloucester County Office of Government Service, 1200 N. Delsea Dr., Clayton, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester County at 856-307-6450.

April 17, 2001, Tuesday, 7:00 p.m. - Evening Fruit Meeting, Donio Farms Packing Facility, 3rd Street. Hammonton, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester County at 856-307-6450.

April 19, 2001, 5:30-8:30 pm - North Jersey Twilight Fruit Meeting, Rutgers Research and Extension Farm, 130 Locust Grove Road, Pittstown, NJ. Contact: Win Cowgill at Rutgers Cooperative Extension of Hunterdon County at 908-788-1339 or cowgill@aesop.rutgers.edu.

SEE CALENDAR ON PAGE 6

Sweet Cherry Bacterial Canker

Win Cowgill, Agricultural Agent and Jeremy
Compton, Plant and Soil Science Technician

Bacterial Canker can be a serious bacterial disease of sweet cherry in New Jersey. Bacterial canker or bacterial gummosis of sweet cherry is caused by the bacteria *Pseudomonas syringae* pv. *syringae* and *Pseudomonas syringae* pv. *morsprunorum*. The bacteria over winter in bark tissue at canker margins in apparently healthy buds and/or systemically in the vascular system. In the spring, particularly when conditions are cool and wet, bacteria multiply and emerge from their overwintering sites and are disseminated throughout the orchard by wind and rain. Natural plant openings (i.e., stomata, nectaries, and lenticels) or wounds provide entry sites for bacteria. The bacteria typically enter tree limbs and the trunk through pruning wounds and/or sites of freeze injury in autumn and early winter.

Bacterial Canker disease infects flower buds and spurs. It can completely kill new spurs and leaves and then move into the trunk. In our humid climate in New Jersey, the cankers can continue to develop in lateral branches and the central leader. In some cases, the cankers have grown to girdle and kill two-year wood. Central leader die back may result. In older wood, the canker looks very much like a fire blight canker in apple. In most cases, the canker begins to ooze a brown to amber exudate.

Previously the best information on this disease is from a fact sheet from Ontario, Canada written by W.R. Allen "Bacterial Canker of Sweet Cherry" NO. 88-0886. It has good color plates and control measures.

This bacterial disease is most troublesome in young plantings where it can cause losses of up to ten percent of the trees. On mature trees, it can reduce yields from 10–50%.

Control Program for Canker

- In the spring apply 1-2 applications of Bordeaux Mix prior to bud break.
- Do not dormant prune.
- Summer prune immediately after harvest. Growers should prune cankered limbs well below visible canker, *avoid pruning in early spring and fall* when bacteria are most active; sterilize pruning tools before pruning healthy trees.
- Removal of wild *Prunus* species in hedgerows adjacent to sweet cherry orchards may help to reduce inoculum.

Bordeaux Mix consists of Hydrated lime and Copper Sulfate. For rates and mixing instructions, please refer to the *2001 Rutgers Commercial Tree Fruit*

Production Guide. Review the cherry spray schedule and the special disease control section for stone fruit crops. <http://www.rce.rutgers.edu/pubs/treefruitguide/index.html>.

Online Fact sheets on Bacterial Canker

There are numerous fact sheets online for Bacterial Canker; many include color photographs for reference. Below are the listings for several:

West Virginia University
http://www.caf.wvu.edu/kearneysville/disease_descriptions/bactcank.html

Penn State also has a fact sheet on Bacterial Canker in Stone Fruit on their web site at:
<http://tfgp.cas.psu.edu/part2/part22e.htm>

Comparison of healthy trees vs. diseased trees:
http://www.caf.wvu.edu/kearneysville/disease_descriptions/disease_images/fig129c.jpg

University of California
<http://www.ipm.ucdavis.edu/PMG/r105101511.html>

CALENDAR FROM PAGE 5

April 24, 2001, Tuesday, 7:15 p.m. - Evening Fruit Meeting, Office of Government Services, 1200 N. Delsea Dr. Clayton, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester Co. at 856-307-6450.

May 15, 2001, 6:15 PM - Twilight Fruit Meeting, Wm. Schober Sons Farm, Rt. 553 Buck Rd. Monroeville, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester County at 856-307-6450.

June 5, 2001, 6:15 PM - Twilight Grape And Enology Meeting, Heritage Tree Fruit LLC. Rt. 609 Richwood-Elmer Rd., Richwood, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester Co. at 856-307-6450.

June 26, 2001, 6:15 PM - Twilight Fruit Research Meeting, Rutgers Agricultural Research and Extension Center, Northville Rd., Upper Deerfield Township, Bridgeton, NJ. Contact: Jerry Frecon at Rutgers Cooperative Extension of Gloucester Co. (Registration required) This meeting will be part of the State Horticultural Association of Pennsylvania Fruit Tour of southern NJ.

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