

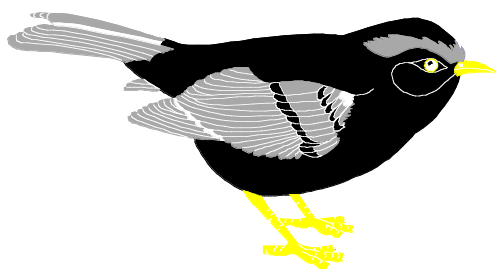
# PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

JULY 16, 1996

## Bird Management Update

*Submitted by Jerome L. Frecon, Gloucester County Agricultural Agent*



*The following updated article is reprinted from the New York State Extension Fruit News written by Dr. Marvin Pritts, based on work he and Dr. Paul Curtis have done on Bird Management. Dr. Curtis wrote an excellent review on bird management in our Spring 1995 issue of New Jersey Horticultural News. Birds are not only a serious problem in sweet cherries, blueberries, and grapes, but are becoming an increasingly serious problem on peaches and nectarines. As the red color of peaches and nectarines increases so does the bird problem.*

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**B**irds are a major pest of fruit crops such as cherries, blueberries and some grape varieties. In a recent survey, blueberry growers in the northeastern United States estimated that nearly 30% of their crop is lost to bird depredation. Across the country, 10% of the blueberry crop is lost at a cost of \$8.5 million. Since the loss of Mesurol, no effective chemical repellent has been available. Netting is expensive and difficult to install, so most growers would like to avoid using it if possible.

For the past several years, with the cooperation of Paul Curtis, Wildlife Management Specialist in the Department of Natural Resources, we have been examining the effectiveness of a new chemical repellent and audio scare device for birds in blueberries and cherries. Furthermore, some growers have reported success with a type of visual scare device. What follows is a summary of our experiences with these new technologies.

✓ **Chemical Repellents:** Methyl anthranilate is chemically similar to the major flavor component of Concord grapes, and is manufactured in large quantities by food processors. Birds are repelled by its taste, and since it is generally regarded as safe for human consumption by the FDA, it would seem to be a viable alternative to Mesurol.

Some problems exist with the use of methyl anthranilate. First, it breaks down into anthranilic acid and causes severe phytotoxicity on leaves of treated plants. Second, it is a volatile compound and has a short residual on exposed fruit. Third, to repel birds, a large amount must be consumed in one bite. It is less effective when applied uniformly.

PMC Specialties Co. in Cincinnati developed a formulation that did not cause phytotoxicity. They encapsulated the methyl anthranilate in clay particles, so the chemical was released slowly over time. A second

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formulation has been under development in Washington, called Bird Shield. These products as now formulated do not cause leaf burn.

Our results with both formulations have been disappointing. Although some deterrence was noted within 3 days of application, the effect was not long-lasting. Similar results have been reported from Oregon, Florida and Michigan this past year. In spite of these results, Bird Shield will be labeled for use in 1996 on blueberries.

We tested another compound, Keyplex, purported to have repellent properties. This foliar fertilizer contains a polysaccharide that may be responsible for its repellent properties. Some birds do not have the necessary enzymes to digest polysaccharides, and eating them gives birds indigestion. Our tests found that multiple sprays removed the gloss from the fruit and conferred a metallic taste to the berries. This was unacceptable.

Since blueberries ripen over such a long period of time, it may be impractical to apply a repellent every few days. Furthermore, the chemical formulations convey a strong grape aroma to the fruit for several days. Although methyl anthranilate (Rejex-It) works well as a goose repellent in turf, our expectation is that these formulations will not be widely used in fruit plantings until further improvements to the formulation are made.

✓ **Audio scare devices:** Distress tapes, cannons and firecrackers are audio devices to which birds rapidly acclimate. They are effective for only short periods of time unless moved regularly and supplemented with visual scare devices.

Recently, a new electronic device name "Bird-X" has been developed with digitized, species specific bird distress calls. The device we tested emitted distress calls of crows, robins and starlings every minute during daylight hours. We tested the device in two blueberry fields with high bird pressure, and found it to be effective for about 7 to 10 days. In one field, we added hawk models after a couple of weeks and observed a reduction in feeding. When the device was turned off, feeding increased dramatically.

Even though feeding by certain bird species was reduced, many birds still fed in the plantings, especially ground-feeders like sparrows and finches. Because blueberries ripen over such a long period of time, the birds have ample opportunity to habituate to the sounds. Furthermore, species composition changes over time, so sounds that work early in the harvest may not work at the end of the season.

One blueberry grower reported that an owl model was effective for him. The owl mounts on a bearing on top of a post, allowing the owl to swivel in the slightest breeze. In addition, the owl emits a loud shriek at intervals, powered by a solar cell. Combinations of audio and visual scare devices seem to be most effective.

✓ **Summary:** Combinations of audio and visual scare devices hold the most promise, especially if they can be moved regularly and can be directed to specific problem species. An effective substitute for Mesurool does not appear to be on the horizon." □

## Fabraea Leaf Spot Disease

Submitted by Jerome L. Frecon, Gloucester County Agricultural Agent and Norman Lalancette, Ph.D., Plant Pathology

*Samples have recently been brought to our office with severe Fabraea leaf spot on Oriental and European pears. Since we did not cover this disease in past issues of the Commercial Tree Fruit Production Recommendations in 1993 and our spray programs, we are reprinting this article from Dr. Dave Rosenberger, Plant Pathology, Highland, NY, that was published in the June 17, 1996 issue of Scaffold Fruit Journal.*

Pear growers should maintain fungicide coverage in their pear blocks throughout June and early July to protect trees from fabraea leaf spot. Fabraea leaf spot can destroy a pear crop more quickly than any other fungal disease I have seen. Fabraea epidemics are usually reported in early July when the disease suddenly "explodes" in certain blocks. Fungicide protection during late June is necessary to prevent the early infections that provide inoculum for the July epidemics.

Fabraea overwinters either in small (<1/4 inch), indistinct cankers on pear twigs or in fallen leaves on the orchard floor. Fabraea first appears as small round purplish leaf spots. Very few growers or fieldmen recognize the early fabraea infections because they are rather nondescript leaf spots and there are very few of them at first. Each of these initial infections, however, can produce millions of slimy spores that are disseminated by splashing rain or by pear psylla and other insects. If spores are disseminated by insects, infection can occur during long dew periods in the absence of rain. Economic damage is usually caused by the rapid development of secondary infections in orchards where primary infections became established in June. If fungicide protection is lacking or inadequate, fruit can become severely infected during July and August. Severely infected Bosc trees can lose most of their leaves by late August. Bosc are more susceptible than Bartlett, but the disease can affect most pear cultivars.

Fabraea is relatively easy to control if fungicides are applied before the disease reaches epidemic proportions in an orchard. Mancozeb is the most effective fungicide for fabraea, but it cannot be used within 77 days of harvest. Ziram is probably the best bet for controlling spread of fabraea during summer. Benlate has been effective in some trials and ineffective in others. Ziram applied on a 3-week interval will provide adequate protection except where heavy rains remove fungicide residues, or where the disease was well established before the first spray was applied. Where disease pressure is very high (i.e., early infections were not controlled), sprays may need to be applied on a 14-day interval. □

# Brown Rot Part III: Fruit Susceptibility

Norman Lalancette, Ph.D., *Tree Fruit Pathology*

So far in our study of brown rot fruit infection, we've examined the influence of inoculum level on the severity of fruit infection. We've also provided descriptions of the various inoculum sources for identification purposes.

We now turn our attention to the second factor influencing the severity of fruit infection: fruit susceptibility. This factor, along with inoculum level and environmental favorableness, ultimately determines the potential for significant fruit loss from brown rot.

## ◆ Fruit Infection Process

*Monilinia fructicola* spores from one of the previously mentioned inoculum sources (see Part II) are disseminated to fruit by wind, rain, and insect vectors. If environmental conditions are favorable, these conidia germinate and penetrate the fruit cuticle directly or through natural openings, such as the stomata. Any fruit injury from insects, hail, or mechanical damage augments the susceptibility of the fruit to infection.

Once inside the fruit, the fungus begins producing pectolytic enzymes. These enzymes break down the pectin layer located between the fruit cells, thus leading to maceration and browning of infected tissues. Within a few days, the entire fruit can be rotted. During this colonization phase, the fungus also produces tufts of gray to tan conidia on the fruit surface, thus providing more inoculum for additional infection of healthy fruit.

## ◆ Fruit Development and Susceptibility

Although many modern stone fruit cultivars are more resistant than old ones, resistance alone is never sufficient enough for adequate disease control. So, when we speak of fruit susceptibility, we're not referring to genetic resistance, but rather to susceptibility of the fruit in relation to its stage of development. As the fruit grows and develops from pollination onward to full ripeness, how does its susceptibility change?

Fruit are susceptible at two different times during the course of the growing season. The first period of susceptibility occurs during the three-week period in June just prior to pit hardening. However, once pit hardening occurs, fruit are resistant to further infection. This resistance continues until about two to three weeks before full ripeness, when the second period of susceptibility begins. The fruit remain susceptible through harvest and up to the point of consumption.

Of course, fruit susceptibility alone doesn't determine whether or not disease will occur. In addition to a favorable environment, the level of inoculum or inoculum density interacts with fruit susceptibility. That is, if much inoculum was available during early June or during the preharvest period, then significantly higher amounts of fruit infection would occur if fungicidal control was inadequate.

## ◆ Fruit Susceptibility and Disease Control

In terms of disease control, *when* do you need to spray for fruit infection? Based on susceptibility alone, the obvious spray periods coincide with the periods of susceptibility: prior to pit hardening and during preharvest. And of these two periods, the latter one - preharvest - is considered the most critical time for managing brown rot fruit infection. If sprays are not applied at this time, complete crop loss is imminent.

But what about the pre-pit hardening period of susceptibility? Why don't we see more infection of the immature, green fruit at this time of season? One possible explanation may be that the shuck fall spray is providing sufficient forward protection. Or, given the interaction with inoculum density, another explanation may be that the level of early season inoculum is not high enough to generate significant infection. Or, finally, a combination of spraying and low inoculum level is preventing fruit infection. Of course, in orchards where much immature fruit infection has been found, then either one or both of these factors may well be the culprit.

What about timing the first preharvest spray? The simplest approach is to use the calendar date for harvest. After determining the expected harvest date, simply back up two to three weeks to determine the time to apply the first spray. Of course, this approach is not too accurate as weather conditions during any given season can affect fruit maturation. Consequently, the time of "first color," which is considered the initiation of the ripening process, can also be used as a guide to timing the first spray.

One final comment on fruit susceptibility: varieties that mature earlier obviously need to be sprayed sooner than those that mature later. If disease is not adequately managed on these early varieties, then any brown rot on these fruit will serve as additional inoculum sources for the later varieties. This situation is particularly valid if the blocks are adjacent or nearby. Thus, one should consider the early sprays as doubly important - protecting the current as well as the future crop. □

## Virtual Orchard Update

Win Cowgill, Hunterdon County Agricultural Agent and Jon Clements, University of Vermont

Many of you have indicated that the information we have posted on our world wide web (WWW) page has been useful to you. For those of you with a computer, modem, Internet service provider and browser software, come visit us at the Virtual Orchard. The address is: <<http://orchard.uvm.edu/>>

Our readers have commented they like being able to download the Plant and Pest Advisory newsletter at their convenience in the New Jersey Fruit Focus section at: <<http://orchard.uvm.edu/rce.default.html>>

Growers commented on the ability to look up our NJ Tree Fruit Pesticide Recommendations at any time, as well as the Massachusetts and Vermont IPM Newsletters, articles from the Great Lakes Fruit Grower news and chat forms to discuss fruit issues with growers and researchers.

A special report on the 1996 and 1995 International Dwarf Fruit Tree Summer Tours has been added at: <<http://orchard.uvm.edu/IDFTA.default.html>>

For more information on how to access the Virtual Orchard please do not hesitate to contact Win Cowgill at <[cowgill@aesop.rutgers.edu](mailto:cowgill@aesop.rutgers.edu)> or 908-788-1339. □

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## New Orbit Label for Cherries

Norman Lalancette, Ph.D., Tree Fruit Pathology

Orbit fungicide, used for control of **brown rot** on stone fruit, has just received a supplemental label for application to cherries. The previous label for use east of the Rocky Mountains included apricots, nectarines, peaches, and plums.

Application rates and timing for use on cherries are the same as those previously labeled for the other stone fruits. For **brown rot blossom blight**, apply 4 fl oz Orbit/A at early bloom stage and again 50-75% bloom. If bloom is prolonged or environmental conditions are favorable, a third application may be necessary at petal fall.

For fruit **brown rot**, a maximum of two preharvest sprays, also at 4 fl oz Orbit/A, can be applied. The first spray should occur at 3 weeks prior to harvest. Since the preharvest interval is 0 days, the second spray can occur at any time up to the day of harvest. □

## Varieties Before Garnet Beauty

Jerome L. Frecon, Gloucester County Agricultural Agent

**Garnet Beauty** harvest is well underway. Fruit has good color, excellent size, fair flavor with some spot pits. Most importantly growers/shippers are receiving excellent prices. Early season fruit has brought premium prices in the past four years and many growers have been interested in planting early maturing fruit. New sizing regulations will make it easier to pack 2 1/4 and 2 1/2 inch up fruit.

### ◆ Peaches

**Sentry** has been planted by many growers. It has outstanding size, very good color and ripens with Garnet Beauty. This variety compliments Garnet Beauty but not totally replacing it on sites more prone to winter injury. This year with all the soil moisture Sentry has some soft seams, but few split pits.

Some growers have **Candor & Derby** before Garnet Beauty. Both varieties split pit body and lack good size.

**Flaming Fury #1** does not split as badly and has better color. It may be a few days earlier than Candor and is not any larger. **Valley Fire** is equal to Candor and Derby in the same season but not as firm. **Harrow Diamond** is between Candor and Garnet Beauty; a pretty peach with Garnet Beauty size and flavor, it lacks firmness. **Suzie Q** is just after Candor with little color and firmness. It's small size and splitting are major drawbacks. **Springcrest & Springold** are simply too small. All of the previous varieties have resistance or tolerance to bacterial spot. **May Sun, David Sun, June Sun** (all before Garnet Beauty) have beautiful color, excellent firmness and good size, but have always been light bearing and too susceptible to bacterial spot.

The white fleshed variety **Scarlet Pearl** ripening before Garnet Beauty has good size color and flavor but the skin is too thin for commercial shipping. It always crops well. The white fleshed varieties **Snowbrite & Sugar May** ripen slightly after Garnet Beauty. They are both very firm with red color and susceptibility to bacterial spot.

The yellow fleshed varieties **USDABY84P119Y** and **PF5B** are both beautiful red peaches ripening before Garnet Beauty. PF5B is available to commercial growers.

### ◆ Nectarines

**EastenGlo** yellow fleshed nectarine and **Arctic Glo** white fleshed nectarine are both far superior to anything earlier. Both ripen on the back end of Garnet Beauty and are susceptible to bacterial spot. □

# Fruit IPM

Week Ending 7/19/96

Dean Polk, IPM Agent - Fruit

## ◆ Apple

✓ **Spotted tentiform leafminer (STLM):** The second flight has peaked, with most of the egg laying having already taken place. Several farms have had mine levels in excess of .5 mines per leaf. Both Vydate and Lannate treatments have controlled very young sap feeding miner populations.

✓ **Tufted apple budmoth (TABM):** Adult activity is minimal since we are between generations, and most insects are in the larval stage. Infestation varies throughout the state. About 50% of the farms in Gloucester through Cumberland Counties have older larvae present on leaves or fruit. Half of these blocks show visible fruit injury that ranges from 2 to 10% of fruit infested. Degree day accumulations indicate that the first sprays for the second generation will be due around August 1 in southern counties and about 1 week later in northern counties. At the present time larvae are from 50 to 90% grown and in well protected areas in folded and webbed leaves and/or between fruit. *Treatments for this stage are not suggested.*

✓ **Codling moth (CM):** Second generation treatments are due at 1250 °D after first catch. We reached that level in several southern locations today. The first CM treatments will be due in northern counties by the first part of next week. This timing should be used in conjunction with pheromone trap counts. Trap catches in many southern locations do not merit CM sprays, while catches in many northern locations do demand CM treatments.

✓ **Overall insect pressure** in many southern locations is extremely low. Insecticide is not needed in these blocks.

✓ **European red mites (ERM):** The predatory mite, *Amblyseius fallacis* continues to do a good job in several orchards. A mite population of 15 mites per leaf recently crashed with the combined action of .7 A. fallacis leaf and Cygon 400 applied for aphids.

✓ **White rot and Black rot:** These diseases are starting to show up on fruit in a few southern and northern locations. A couple of growers experienced severe white rot problems in 1995. Where rots are a problem maintain full rates of fungicides. Captan (50W) should be used at 6 lb/A (possibly 8 lb/A in full size trees) in these situations.

## ◆ Peach

✓ **Oriental fruit moth (OFM):** OFM is being found above 6-8 males per trap in only a few locations. Insect pressure is extremely low on most farms. Where general insect pressure is light, no insecticide is needed at this time.

✓ **Tufted apple budmoth (TABM):** See apple section for TABM summary. About 25% of the plantings in southern counties are infested with TABM larvae. These are older larvae, and treatments are not suggested at this time.

✓ **Scarab beetles, including Japanese beetles:** High levels of adult activity are present in many locations. Common insects include green June beetles, oriental beetles, and Japanese beetles. Most feeding activity is on fruit which is 0 to 10 days from picking. Because of the short pre-harvest interval, and desired efficacy, Sevin remains the insecticide of choice. Use at 2 lb/Ac.

SEE IPM ON PAGE 6

# Blueberry Insects

Sridhar Polavarapu, Ph.D., Entomology and IPM

✓ **Blueberry maggot (BBM):** Adult counts in the abandoned fields in Burlington County have remained high. However, adult counts in commercial fields in both Burlington and Atlantic Counties have remained very low, averaging less than one fly per trap. In abandoned fields BBM larvae (maggots) are beginning to leave the berries and drop to the ground to pupate. We are past the peak period of egg laying. If adult counts continue to remain at low levels (average < 1 fly per trap), depending on the location, growers may be able to avoid further insecticide applications or stretch their insecticide applications to 14 day intervals.

✓ **Aphids:** Aphid populations have slightly increased in several monitored fields. Few fields are showing numbers that may require a treatment. Use Malathion or Diazinon if you need to apply an insecticide to control Aphids.

✓ **Leafrollers and Leafminers:** Larval populations of the leafroller complex are well below treatment levels in most commercial fields. Leafminer larvae have been seen in a few Atlantic County fields. Blueberry bushes can tolerate high levels of this insect and control measures specifically for leafminer control are not necessary.

✓ **Scarab beetles:** Several fields have damage due to Japanese beetle feeding. Adult feeding on fruit results in surface scars, and may also provide entry points for fungal pathogens. Use Sevin 50WP to control adult beetles. This will also provide control of Blueberry maggot adult flies. □

✓ **Peach scab:** Samples from both northern and southern counties indicate low levels of scab starting to show up. This is wide spread but at limited levels at the present time.

✓ **Brown rot:** Low levels of brown rot continue to be present on early varieties. Under our present wetting conditions, and warm humid air, it is best not to base a program on sulfur. Captan at 4 lb/Ac (or higher in large thick trees) should be used on most varieties. Combinations using Captan + Rovral, Ronilan, Orbit, Indar or other SIs should be started *at least* 3 weeks pre harvest. Please be aware of recent changes in the pre harvest intervals for Rovral and Ronilan.

◆ **Blueberry**

✓ **Sharpnosed leafhopper:** Adult trap captures are bottoming out. We are between generations and no treatments are suggested during this time. Trap captures will start to increase again in mid August.

✓ **Blueberry Maggot:** While adult activity has continued to be minimal in commercial fields, abandoned sites have shown large numbers of flies. Treatments that were applied during the past week targeted a major portion of fly emergence and egg laying. Many growers have applied insecticide for BBM specifically because it is showing peak activity at this time. Remember that insecticide applications are intended to: 1) work by killing adult flies that contact fresh spray material, and 2) create a residual for a week to 10 days that continues to control BBM after the initial application. No insecticide (or fungicide) can stay on the plant with the level of precipitation we have been having, unless it is a systemic material. None of our current insecticide options are systemic. Therefore, if an application was made just prior to 1 or 2 heavy rains, a re-application is needed in order to attain the equivalent full residual action. No samples that are being cooked for blueberry maggot have shown any infested fruit.

✓ **Oriental Beetle:** This insect continues to show a wide variation of activity. Activity has increased with over 2500 adults captured at one farm in Atlantic County. Higher levels of activity continue on several Atlantic County farms.

◆ **Insect Trap Captures**

Week Ending	6/7	6/14	6/21	6/28	7/5	7/12
<b>Tree Fruit - Southern Counties</b>						
RBLR	0.5	0.5	26.8	54.8	36.7	20.3
STLM	283.1	1005	1876	1734	1071	854
TABM-A	76.3	75.7	59.4	37.4	10.7	4.8
CM	1.4	1.6	4.3	1.4	0.2	0.3
AM	—	—	1.0	0.0	0.1	0.0
OFM	2.7	4.5	8.4	8.0	3.7	2.9
TABM-P	78.9	68.5	46.3	30.0	8.6	9.7
LPTB	44.7	72.9	102.2	55.1	36.8	30.7
PTB	0.2	2.3	3.5	7.0	3.2	3.5
<b>Tree Fruit - Northern Counties</b>						
RBLR	3.1	0.0	9.8	25.5	19.2	8.4
STLM	13.1	352.5	1085	932	794	627

TABM-A	12.6	26.5	32.2	25.5	10.0	3.2
CM	8.0	7.2	11.5	7.5	5.1	2.4
AM	—	—	—	.04	.02	0.7
OFM	6.4	3.9	9.5	6.3	4.9	4.3
TABM-P	2.2	18.2	52.0	3.7	20.0	10.0
LPTB	28.4	105.8	74.8	30.4	9.5	9.8
PTB	7.0	17.0	13.2	16.3	8.0	6.2
<b>Blueberry - Atlantic County</b>						
RBLR	0.2	27.3	178	141	6.5	45.4
OBLR	13.3	22.8	31.0	15.0	2.3	0.8
CBFW	2.4	0.7	1.2	0.02	0.08	0.1
SNLH	0.9	3.8	2.3	2.1	1.2	0.8
BBM	—	—	0.2	0.16	0.2	0.3
OB			403	831	774	1451
<b>Burlington County</b>						
RBLR	0.0	0.1	41.5	96	73.4	45.0
OBLR	10.3	34.1	46.5	21.4	7.0	1.0
CBFW	21.9	12.7	2.9	0.8	0.0	0.1
SNLH	0.5	2.9	7.9	7.5	1.8	1.6
BBM	—	—	0.0	0.11	0.2	0.2
OB			—	509	449	840
<b>Abandoned Fields (both counties)</b>						
RBLR	0.0	3.0	38.3	70.0	47.0	34.0
OBLR	3.0	14.3	59.0	34.5	15.5	4.0
CBFW	1.5	1.0	1.7	0.0	0.0	0.0
SNLH12	15.0	53.2	38.5	22.5	18.3	
BBM	—	—	0.0	3.2	6.8	37.0
OB						435

## Regional Changed to NJ Peach Festival

*Jerome L. Frecon, Gloucester County Agricultural Agent*

To accommodate growers from all over New Jersey, the Regional Peach Festival name has been changed to the New Jersey Peach Festival. "The Festival" will be held in conjunction with the Gloucester County 4-H Fair at the Fairgrounds in Mullica Hill. This year the festival will be held on July 25, 26, and 27. Fruit for the Commercial Grower/Shipper Exhibit and Competition will be held on Thursday, July 25th. The Little Miss Peach and The Peach Queen Competition will be held on Friday afternoon and evening July 26. A grower reception will be held on the evening of the 26th after all awards are given. Of course New Jersey Peaches and vegetables will be sold all three days of the festival. All types of peach food and gifts will be on sale.

Educational displays of the Peach Integrated Pest Management Program, the Peach Breeding and evaluation program, soil and water testing, peach promotion activities, New Jersey Department of Agriculture, food safety, and farm safety will available in the main peach tent. Information on the festival is available by calling (609) 863-0110 or (609) 769-9069. All grower are welcome and encouraged to participate. □

**Insect Degree Day Accumulations as of 7/15**

Insect	Site & County						
	Biofix Date plus Degree Days Since Biofix						

	Bridgeton Cumb.	Hammonton. Cam.	Hardingville Glou.	Richwood Glou.	Princeton Mercer	Oldwick Hunt.	Morristown Morris
OFM <sub>45</sub>	4/20 hit 200 on 5/2 hit 400 on 5/19	4/5 hit 200 on 4/27 hit 400 on 5/13	4/19 hit 200 on 5/1 hit 400 on 5/18	4/17 hit 200 on 5/1 hit 400 on 5/18	4/19 hit 200 on 5/3 hit 400 on 5/19-20	4/22 hit 200 on 5/9 hit 400 on 5/22	4/24 hit 200 on 5/14 hit 400 on 5/24
TABM <sub>4</sub> 5 2nd Gen	5/4 - 1656 Predict 2228 about Aug 1	5/3 - 1662 Predict 2228 about Aug 1	5/2 - 1682	5/2 - 1684	5/13 - 1507	5/20 - 1382	5/23 - 1263
CM <sub>50</sub> 2nd Gen	5/8 - 1271 hit 1250 on 7/15	5/8 - 1267 hit 1250 on 7/15	5/8 - 1274 hit 1250 on 7/15	5/8 - 1275 hit 1250 on 7/15	5/11 - 1223 predict 1250 on 7/16	5/20 - 1098 predict 1250 on 7/21	5/20 - 1071 predict 1250 on 7/22

All reported accumulations based on Skybit Inc. data with some ground verification. OFM base = 45, max = 90, TABM base = 45, max = 91, CM base = 50, max = 88.  
 Spray targets based on: OFM: 200 °D after biofix and again 200 °D later (first generation only)  
 TABM: (A.M. sprays) 490, 625, 763, 898 - 1st gen. and 2228, 2415, 2605, 2795 °D after biofix - 2nd gen.  
 CM: 250 °D after biofix and again 2 - 3 weeks later; 2nd generation at 1250 - 1300 °D after biofix + another spray 14 to 21 days later.

## Weather Summary for the Week Ending 8 am Monday 7/15/96

*Keith Arnesen, Agricultural Meteorologist*

Temperatures averaged below normal. Extremes were 93 degrees at Toms River on the 15th and 48 degrees at Newton on the 11th. Weekly rainfall averaged 4.62 inches North, 2.54 inches Central, and 2.97 inches South. The heaviest 24 hour total was 3.40 inches at Charlotteburg on the 12th to 13th. Estimated soil moisture, in percent of field capacity, this past week averaged 91 percent North, 74 percent Central and 64 percent South. Four inch soil temperatures averaged 71 degrees North, 73 degrees Central and 74 degrees South.

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	4.89	22.12	4.78	86	51	69.	-3	1139	-30	100
CANOE BROOK	3.28	24.02	5.58	90	52	72.	-1	1378	208	98
CHARLOTTEBURG	5.64	25.71	7.08	89	49	70.	0	1174	233	98
FLEMINGTON	3.97	25.63	7.87	88	50	70.	-4	1283	75	100
LONG VALLEY	5.42	22.63	3.63	89	51	69.	-2	1157	143	97
NEWTON	4.49	23.67	6.72	86	48	69.	-2	1147	110	100
FREEHOLD	2.00	18.43	1.13	93	52	74.	0	1369	60	95
LONG BRANCH	1.22	15.35	-1.91	86	57	72.	-2	1293	59	73
NEW BRUNSWICK	3.53	21.89	4.80	90	53	72.	-3	1347	-40	100
PEMBERTON	3.17	24.36	7.29	92	54	74.	0	1579	233	89
TOMS RIVER	2.17	20.84	3.34	93	54	73.	-1	1268	24	90
TRENTON	3.16	29.20	13.02	89	51	72.	-4	1375	-70	100
CAPE MAY RT HOUSE	4.03	21.19	5.91	90	57	74.	-1	1390	63	1
DOWNSTOWN	3.19	19.26	3.37	90	54	74.	-2	1484	26	92
GLASSBORO	2.87	21.73	4.77	91	60	75.	-1	1572	135	91
HAMMONTON	2.18	17.96	1.17	92	54	75.	-1	1510	78	100
POMONA	2.81	19.10	3.95	90	56	74.	-1	1414	89	90
SEABROOK	2.90	21.50	6.16	91	60	76.	0	1536	69	91
ATLANTIC CITY MARINA	2.80	16.89	2.39	90	52	73.	-1	1310	64	91
WOODSTOWN	2.25	19.83	2.75	92	51	75	NA	1632	NA	NA

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