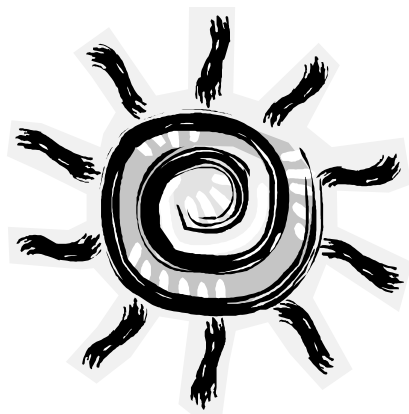


PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

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Heat Stress in Agriculture

Source: U.S. Environmental Protection Agency

Background

In some regions, there are times during the growing season when the temperature stays above 90°F, even at night. High air temperatures and humidities put agricultural workers at special risk of heat illness. Worker Compensation claims for heat illness among agricultural workers are among the highest of any occupation.

Pesticide handlers and early entry workers are at even greater risk. The special clothing and equipment they wear for protection from exposure to pesticides can restrict the evaporation of sweat, blocking the body's natural way of cooling itself, which results in a buildup of body temperature. Exposure to certain pesticides can also produce sweating and there can be combined effects with exposure to heat. In addition, pesticides are absorbed through hot, sweaty skin more quickly than through cool skin.

What is heat stress?

Heat stress is the buildup in the body of heat generated by the muscles during work and of heat coming from warm and hot environments. **Heat exhaustion** and **heat stroke** result when the body is subjected to more heat than it can cope with.

When the body becomes overheated, less blood goes to the active muscles, the brain, and other internal organs. Workers get weaker, become tired sooner, and may be less alert, less able to use good judgment, and less able to do their jobs well.

As strain from heat becomes more severe, there can be a rapid rise in body temperature and heart rate. Workers may not realize that this is happening because there is no pain. Mental performance can be affected with an increase in body temperature of 2°F above normal. An increase of 5°F can result in serious illness or death.

The most serious illness is heat stroke. Its effects can include confusion, irrational behavior, convulsions, coma, and even death. Heat stroke can make survivors very sensitive to heat for months and cause varying degrees of brain and kidney damage. More than 20 percent of people afflicted by heat stroke die, even young and healthy adults. An average of nearly 500 people are killed each year in the United States by the effects of heat.

During hot weather, heat illness may be an underlying cause of other types of injuries, such as heart attacks on the job, falls, and

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Currants and Gooseberries

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Over the past few years we have been seeing a fair amount of leaf cupping caused by the **currant aphid**, especially on red currant plants. In addition to leaf cupping, rounded galls form on the topside of the leaves in response to the presence of aphids in pockets on the underside. An economic threshold for currant aphid has not been worked out. Malathion is labeled for currant aphid on currants, applied as leaf buds are opening. Recently Provado has been labeled for currants and should be quite effective against aphids.

Imported Currant Worm (ICW), when present, can cause considerable injury to foliage. The adult, which becomes active in the spring, is wasp-like in appearance (indeed it's in the wasp group, but part of a primitive line called sawflies that are herbivorous as larvae). Eggs are laid along the midrib or on the undersides of the leaves. Larvae of the first brood appear in spring, shortly after leaves are out. They initially feed in colonies but as they become larger, feed singly. A second brood of larvae is produced in early summer and in some years a partial third brood is produced later in the summer. Malathion is labeled for use against ICW.

Another currant and gooseberry pest to be on the look out for in the spring is the **currant borer**. A relative of the **raspberry crown borer**, the adult moth has clear wings, blue-black body with yellow markings resembling a wasp. The adult emerges in the spring, mates and begins laying brownish eggs on the bark of canes. After hatching, larvae burrow into canes and begin feeding within the pith. No insecticides are labeled for currant borer although removal of weak canes in the spring and fall will help keep populations down.

Other pests that might be observed attacking currants and gooseberries in the spring to early summer include the **currant stem girdler** (lays an egg in shoot tips and then girdles stem below) and **gooseberry fruitworm** (larvae feed inside young fruit, sometimes weaving portions of stems together with silk).

Submitted by Jerome L. Frecon, Agricultural Agent. □

HEAT STRESS FROM PAGE 1

equipment accidents arising from poor judgment.

A program to prevent heat illness will:

Protect health. Heat illness is preventable. When less severe forms occur, they can be treated before they become life-threatening.

Improve safety. Workers with even mild effects of heat illness are more likely to have accidents and use poor judgment.

Increase productivity. People work slower and less efficiently when they are under too much strain from heat.

There are numerous precautions that employers can take against heat stress. Some of them are summarized here:

Training. Train workers and supervisors in how to control heat stress and to recognize symptoms of heat illness.

Monitoring and Adjusting Workloads. Take into account the weather, workload, and condition of the workers, and adjust work practices accordingly. Higher temperatures, high humidity, direct sun, heavy workloads, older workers, and workers unaccustomed to heat are more likely to become ill from heat. Here are things to do:

- Monitor temperature and humidity, and workers' responses at least hourly in hot environments
- Schedule heavy work and PPE-related tasks for the cooler hours of the day
- Acclimatize workers gradually to hot temperatures
- Shorten the length of work periods and increase the length of rest periods
- Give workers shade or cooling during breaks
- Halt work altogether under extreme conditions.

Drinking. Make sure employees drink at least the minimum required amounts of water to replace body fluid lost through sweating. Thirst does not give a good indication of how much water a person needs to drink.

More details on all these measures are included in "A Guide to Heat Stress in Agriculture," May 1993. Issued jointly by EPA and the Occupational Safety and Health Administration, the Guide offers practical, step-by-step guidance for nontechnical managers on how to set up and operate a heat stress control program.

The Guide is available from the U.S. Government Printing Office (GPO) available from farm supply companies and from the U.S. Government Printing Office at: <http://www.gpoaccess.gov/> (click on US Government on-line bookstore) or call (202) 512-1800 or write GPO, Superintendent of Documents, P.O. Box 371954, Pittsburg, PA 15250, and refer to document number 055-000-00474-9. Copies of the Guide from GPO are \$5.00 each. A summary of the Guide is in chart form – English on one side, Spanish on the other, 24" X 20" is also available from GPO (refer to document number 055-000-00544-3). Copies of the summary chart are \$1.50 each. □

Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt and Eugene Rizio, Program Associates in Tree Fruit IPM

Peach

Catfacing Damage, Stinkbugs (SB) and Tarnished Plant Bugs (TPB): Plant bug populations are beginning to reach damaging levels. If using Intrepid or Spintor for TABM include an effective plant bug material such as Lannate, Imidan (3#/ac) or Diazinon. Diazinon will also control scale crawlers emerging now. **Captan/Diazinon combinations are known to cause phytotoxicity in some crops.**

✓ **Bacterial Spot:** Recent foliar infections are present on a number of farms particularly in the variety "Snow Giant". Copper sprays should be maintained and reapplied after heavy rains. Coppers are protectants only and are not systemic. If significant new growth occurs between a copper application and an infection period, then that new growth is not protected. The best protection is when fresh copper is applied 24 to 36 hr prior to an infection period. Mycoshield also may be used. It is systemic and will provide about 3-5 days protection, and possibly 24 hours "back action".

✓ **Tufted Apple Budmoth (TABM):** Timings for TABM control are in the following table, updated since last week. Larvae are still emerging and eggs are about 10% hatched in southern counties.

County Area	Spray Type		
	AM	EM	Intrepid - EM
Southern	3 rd 6/15-17, 4 th 6/22-23	2 nd 6/19-21	2 nd 6/19-21
Central	3 rd 6/18, 4 th 6/23-24	2 nd 6/20-21	2 nd 6/20-21
Northern	3 rd 6/20, 4 th 6/25	2 nd 6/22	2 nd 6/22

✓ **Thrips:** Thrips have begun to appear in the orchard groundcover. Spintor @ 6-8 ozs. applied now for TABM control will also provide thrips control.

✓ **Anthracnose:** Wet seasons are favorable for anthracnose infections. This is a disease we rarely have a problem with, but it has been showing up on a more frequent basis. The varieties Harrow Beauty, Snow Giant, and Sugar Giant seem to be particularly susceptible. Growers may find it useful to protect against anthracnose, especially in blocks that have a history of the disease. For all practical purposes this means avoiding the use of sulfur in those blocks, and continuing using Captan or Ziram for the next several weeks. Ziram is about as effective as sulfur for brown rot control on fruit, but not as effective as Captan.

Apple

✓ **Codling Moth (CM):** Degree day based spray timings are now past in southern counties. If after about

7-10 days after an insecticide application, trap counts remain above 5 moths per trap, then additional sprays may be required. The following chart updates timings outlined in last week's newsletter.

County Area	Application and Insecticide Type	
	Standard Insecticides	IGR's
Southern	1 st past, 2 nd past	1 st past, 2 nd past
Central	1 st past, 2 nd 6/16	1 st past, 2 nd past
Northern	1 st past, 2 nd 6/17	1 st past, 2 nd past

✓ **Tufted Apple Budmoth (TABM):** See peach section.

✓ **Aphids: Spirea and Apple (green) Aphids:** Populations continue to build, and are below or at treatment levels in many southern orchards. Our treatment threshold is set at 50% of the terminals infested with healthy colonies. Since this is a critical time for mite predators to build up, try to avoid the use of Lannate. The best aphicides include Actara, Assail, and Provado. Of those, Assail has activity on both Codling Moth (CM) and Oriental Fruit Moth (OFM) when properly timed. Be aware though, that achieving broader spectrum control comes at the cost of increased rates. However, even with the increased rates, a higher rate of a single material may be more economical than a combination of 2 materials. Assail rates (oz/Ac) for various pests are as follows: Aphids: 1.1-1.7, Leafminers: 1.1, Leafhoppers: 1.1-1.7, Codling Moth: 1.7-3.4, Oriental Fruit Moth: 2.3-3.4, Apple Maggot: 3.4.

Scouting Calendar

The following table is intended as an aid for orchard scouting. It should **not** be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made over the past 5-10 years in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

Pest Event or Growth Stage	Approximate Date	2005 Observed Date
San Jose Scale Crawlers	June 3 +/- 7 days	June 8
Peach – Pit Hardening	June 16 +/- 8 days	

Blueberry

✓ **Oriental Beetle:** Adults started to emerge last week, with some low trap counts present during the past 7 days. Over the last few years this has become a key pest in blueberries, and should be controlled wherever significant populations are present.

Admire should be used for control where the pest is a known problem, either from the grubs being seen in the soil, or from high trap counts the previous year. The use rate should be 3.3 to 3.9 fl. oz. per 1000 row feet, or 16 to 32 oz. per measured acre (label) (16-19 oz is all that is needed). There is a PHI of 7 days, and like Provado, there is an REI of 12 hr. Apply with ground equipment in an 18" band on both sides of the row or chemigate through a drip irrigation system. Dry soil should be irrigated just prior to application, and the application itself should be

SEE IPM ON PAGE 4

IPM FROM PAGE 3

followed with .5 to 1" of irrigation. Apply in the evening, so the Admire is not broken down by sunlight. Do not apply more than .5 lb. a.i. of imidacloprid per season, and make no more than 1 application of Admire to the soil per season.

Admire when used to control oriental beetle grubs will also give several weeks of aphid control. However it takes a few days after application to accumulate in the plant to the levels required for aphid control.

Admire should be applied at least 7 days before the first picking, or be applied as a post harvest material. Grubs should be targeted at their youngest stage, or as they hatch and are at the 1st and 2nd instar stages, and while still close to the soil surface. Admire has little effect on 3rd instar and older larvae. Older 3rd instar grubs start to appear by mid August. Therefore, applications should be made well in advance of that date. The first oriental beetle eggs will probably appear around the end of June. Therefore try to delay application as late as possible. With the earliest varieties like Weymouth and Bluetta, application can be made immediately after the last picking. With Duke and Bluecrop, try to make an application 7 days before the first picking, although some growers will find it easier to apply on Duke after harvest. With late season varieties like Elliott, apply no later than 7 days prior to the first anticipated picking, probably no later than July 7-10.

✓ **Blueberry Maggot:** The first adult blueberry maggot flies were caught last Saturday in Hammonton with 2 adults found on the trap. Additional sites should show adult captures over the next few days. Females need about 10 days after emergence to sexually mature before they can start laying eggs. Insecticides are generally applied to kill ovipositing females and others as they forage for food. Therefore, the first insecticides should be targeted 7-10 days after the first adult emergence.

Most maggot flies emerge outside cultivated fields and disperse into commercial fields from wild host sites, or wild and abandoned blueberries. The maggot adult or fly can move about the length of a football field over its lifetime. Fields that are close to wild hosts, or field borders if next to the woods, are most susceptible to infestation. If you are using your own traps, most of them should be placed near the field edges in order to catch incoming flies. Often, the border areas are the only places on the farm where maggot flies are caught, and therefore are the only areas that may need spraying.

Since most insecticides last from 7 to 10 days, repeated insecticide sprays will be needed. Adults can live for up to 30 days, and the total emergence can last up to a month and a half. Traditional insecticide options include Malathion, Imidan, and Lannate. While Guthion is labeled and controls BBM, it may not be able to be used because of its extended REI. Provado and Spintor also control blueberry maggot and have short REI's.

Provado is principally an aphid and leafhopper material, while Spintor is principally a thrips, fruitworm and leafroller material.

✓ **Cranberry Fruitworm:** Levels have not changed much since last week. Eggs are being laid and are hatching. Larvae are starting to emerge, and the first feeding signs were recently seen. Sprays should have been applied for this pest. If applications have not already been made, and populations are known to exist on your farm, then treat for this pest as soon as possible by ground.

✓ **Aphids:** Infestation levels have increased during the last week with 91% of samples being positive. About 59% of samples show populations infesting 10% or more of new growth terminals. Provado has been giving very good results where used. Where possible, apply by ground, since aphid applications, no matter what the material, do not work as well when applied from the air.

✓ **Leafroller and Other Lep Larvae:** There has not been much change since last week in our tray and search samples for LR larvae. About 17% of samples are positive for larvae, and levels have been consistently in the range of 1 or 2 larvae per 1000 leaf clusters. Green fruitworm and Obliquebanded leafroller (OBLR) are 2 species, which are showing up. Gypsy moth is not present. **Fruit Injury** – About 41% of samples show some level of injury. Most levels are between 1 - 5 injuries per 1000 berries although there are 2 or 3 locations with levels over 1%. The highest level seen was 1.7% damaged fruit mostly due to OBLR.

✓ **Plum Curculio (PC):** We are seeing a reduction in PC presence this week compared to the previous week with 8% of samples being positive. This pattern is typical for PC since they tend to be most active early in the season. **Fruit Injury** – About 36% of fruit samples are showing some level of damage. Most injury levels are low, but in 7% of our samples we see damage at 1% or more. At our most active site we now see 9.2% injury.

✓ **Fall Webworm:** The first webworm colony was seen on 6/10 in Burlington Co. These are very easy to spot since the web is built around a mass of foliage, which stands out like a flag. Within the web are numerous small worms, which are quick to consume any fruit and foliage within the web. Infestations are usually found around wooded edges of a field. Small farms can manage this by simply clipping out the infested portion of the cane and burning. Larger farms may need a perimeter spray around wooded edges where colonies are building up. Lannate has given good control, but other carbamate and OP materials will work.

✓ **Mummy Berry:** Very little activity is being seen. Only 2 sites have been seen with fruit infection and levels seen have been low.

SEE INSECT TRAP COUNTS ON PAGE 5

IDFTA 2005 Summer Tour - NJ

June 26-28, 2005

Headquarters: Princeton University
Princeton, NJ

Focus on Direct Marketing in NJ

For a complete Itinerary see www.IDFTA.org

Highlights include:

Union Square Green Market, NYC on Monday

Terhune Orchards-Mounts

Rutgers Snyder Farm Rutgers Snyder Research And Extension Farm

Melicks Town Farm

Wightman Farms

Alstede Farms

NJ Growers are especially invited to the Monday Night Clam Bake at Terhune Orchards on June 27. You may log on to www.IDFTA.org and just register for the Dinner.

Join with our fellow fruit growers from across NJ for an evening of fellowship.

For additional information contact Susan Pheasant at the IDFTA office Phone: 509.665.3812; Fax 509.665.4912; Email: business@idfta.org.

Calendar of Events

June 26 - 28, 2005 - IDFTA 2005 Summer Tour - NJ, Princeton, NJ. Contact: Susan Pheasant at the IDFTA office Phone: 509.665.3812; Fax 509.665.4912; Email: business@idfta.org.

June 29, 2005 - 5:00 p.m. Fruit Research and Picnic, Rutgers Agricultural Research and Extension Center, Centerton, NJ. For information contact: Jerry Frecon at 856-307-6450 Ext 1 or frecon@rcrc.rutgers.edu. Pre-registration is requested.

July 28, 29, 30, & 31, 2005 - New Jersey Peach Festival at the Gloucester County 4-H Fairgrounds, Rte. 77, Mullica Hill, NJ. For information contact: Jerry Frecon 856-307-6450 Ext 1 or frecon@rcrc.rutgers.edu.

Insect Trap Counts

Tree Fruit Southern Counties

Week ending	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
5/27/05	1	4	4		13	0	1	8	58	0
6/05/05	18	11	2		6	6	2	15	80	2
6/11/05	25	22	2		3	5	1	29	60	2

Northern Counties

Week ending	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
5/27/05	6	9	1		0		14	7		
6/05/05	13	16	2		0		7	15		
6/11/05	13	21	6		0		14	21		

Key: STLM = Spotted Tentiform Leafminer, TABM = Tufted Apple Budmoth (A – apple, P – Peach), CM = Codling Moth, AM = Apple Maggot, OFM = Oriental Fruit Moth (A – apple, P – Peach), LPTB = Lesser Peachtree Borer, PTB = Peachtree Borer

Blueberry Trap Counts – Atlantic County

Week Ending	CBFW	RBLR	OBLR	SNLH	OB	BBM
5/27	1.3	3.6				
6/4	7.6	0.7	0.3			
6/11	8.8	1.2	28	0.0	1.8	0.0

Blueberry Trap Counts – Burlington County

Week Ending	CBFW	RBLR	OBLR	SNLH	OB	BBM
5/27	1.3	2.2				
6/4	2.6	0	0			
6/11	5.9	0.0	50	3.2	3.1	0.0

Key: CBFW = Cranberry Fruitworm, RBLR = Redbanded Leafroller, OBLR = Obliquebanded Leafroller, SNLH = Sharpnosed Leafhopper, OB = Oriental Beetle, BBM = Blueberry Maggot

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCRE in your County.

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