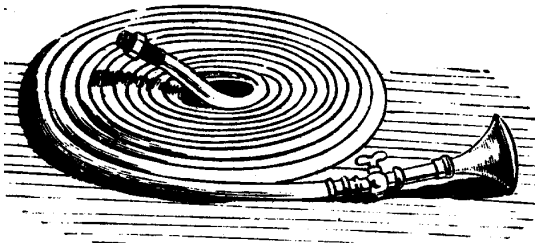
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

FRUIT EDITION $1.50 JUNE 13, 2000



INSIDE

Orchard Water Use

Robert Belding, Ph.D., Pomology

Most people underestimate orchard water use, and the effects can be dramatic. During a normal growing season, orchard water use ranges from 0.1 to 0.32 inches of water each day depending on the month (Figure 1). According to a recent Texas study, a single 5-year-old peach tree used 36 gallons of water a day. Would you have guessed that a single peach tree could use 250 gallons of water in a single week?

Depending on soil type, our soils hold between 1.25 to 2 inches of available water, (Figure 2). That means that during mid-season, most orchards will be 'water limited' if they don't receive water within 4 to 6 days.

From apple bloom, the next 50 days are in a cell division phase, which determine fruit size potential. During this same time frame, apple trees are forming new flower buds to produce next season's crop. Stress during this phase will result in smaller fruit and reduced return bloom. The 1999 drought arrived after the cell division phase and as a result did not affect cell division. The USDA crop prediction folks thought that the mid-season drought would cause a significant reduction of yield. Thanks to the late season rains, New Jersey beat the USDA predictions by 25%. What that tells us is that both the early and late season rains were really critical in determining the 1999 crop, and that the first 50 days of moisture paid off. Stress doesn't have to be in the form of drought - nutrition, excessive fruit load, or leaf damage from insect or disease damage will also hurt cropping.

Irrigation is of course the most obvious solution to dry soils. The ease and consistency of a permanent drip irrigation system is the best choice for most operations. Others prefer the flexibility and water volume of portable pipe systems. However, many operations do not have available water and must depend on Mother Nature. Here are several cultural practices we can use to relieve some of the stress.

Mounding Soils in the tree row has proven to help orchards tolerate drought by increasing the rooting zone for each tree. Tree survival is much better on mounded soils. The mounds need to be at least 4 feet wide to be effective and protect roots from winter injury. I prefer mounds at least 12 inches taller than the drive row.

SEE WATER USE ON PAGE 2

WATER USE FROM PAGE 1

The **Weed Free Zone** under the tree is critical for moisture conservation. There is a simple direct correlation between the size of the weed free zone under the tree and growth. Keep the weeds at least 5 feet away from the tree trunk in all directions. Usually, the more space the better. Studies have shown that peach tree roots will not grow under strong sod and any weeds will reduce growth and cropping.

DO NOT MOW SOD! I prefer permanent sod drive rows. Sod assists in traffic mobility, trapping rain, reducing erosion and increasing soil organic matter. During dry times, sod generally stops growing and does not need to be mowed. Mowing increases sod growth, which increases the moisture use and subsequent stress. So, to minimize water uptake by sod, in times of drought do not mow.

Soil Organic Matter (OM) holds moisture and nutrients in the soil to be more available to plant uptake. Any cultural practice we can do to increase soil Organic Matter is good. When managing orchard soils, both disking and maintaining weed free zones with herbicides generally reduce the soil OM. Disking oxidizes soil OM while herbicides reduce OM production. Older pomology texts recommended mulching as the best groundcover, but cost and availability has always been limiting. This past winter we began a study using community collected leaves as mulch for improving orchard soils. The benefits on nutrient recycling are substantial, but with this study, we also hope to answer how leaf mulch will affect soil moisture and soil temperature as well as tree health and crop size. One important nutrient from leaf mulch is available calcium. One application of 6 inches of leaves provides 600 pounds of available calcium per acre. We have high hopes for this practice in New Jersey and will keep you updated with current results.

Figure 1: Water Holding Capacity of Soils

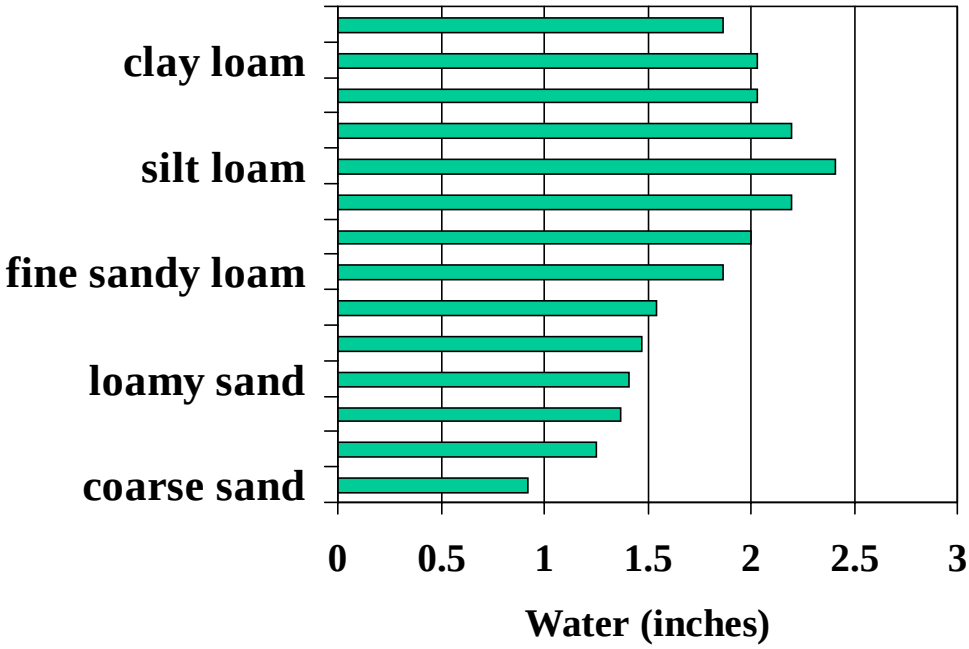
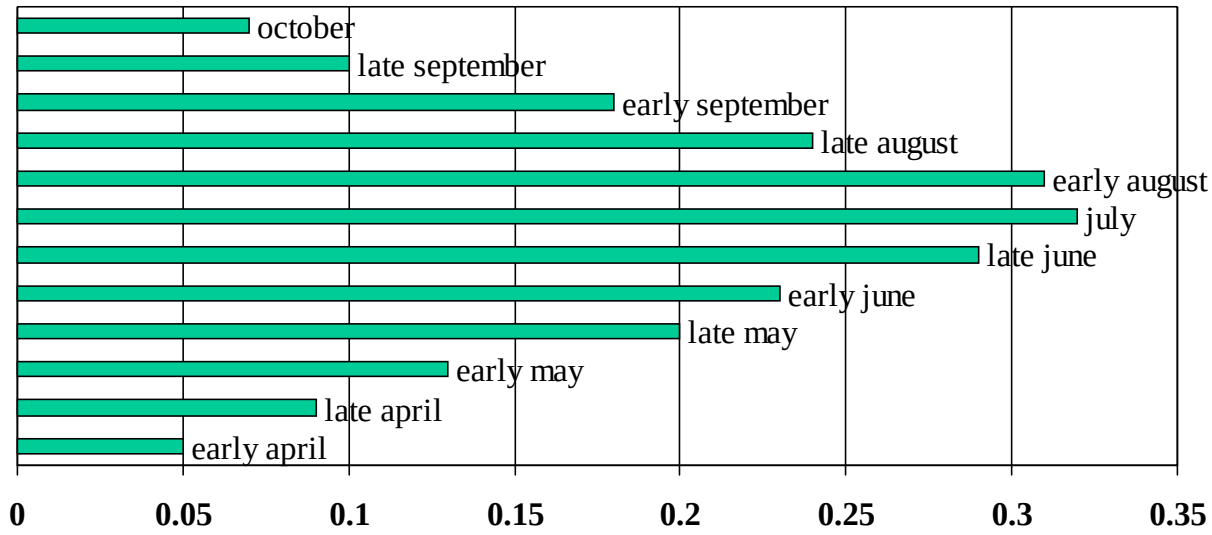


Figure 2: Orchard Water Use Per Day



Fruit IPM

Dean Polk, Fruit IPM Agent

Peach

✔ **Oriental Fruit Moth:** Adults continue to emerge in the second generation flight. Small amounts of larval flagging have been seen from the first brood, but nothing of any significance. Treatments are suggested for OFM during any week that the trap counts exceed 6 to 8 male moths per trap. Many blocks on conventionally sprayed farms now have trap counts that exceed this level. No moths are being caught in blocks under mating disruption treatment.

✔ **Catfacing Insects - Tarnished Plant Bugs (TPB) and Stink Bugs (SB):** Bloom has increased from clover and other broad leaf weeds over the last couple of weeks. This has also coincided and encouraged the build-up of tarnished plant bugs and stink bugs. It is common to find 0 to 2 or 3 TPB per 50 sweeps in sod, and a few more where weedy patches exist. However, up to 19 - 20 TPB can be routinely found in all weed ground covers. While a 50:50 ratio of non-motile nymphs and motile adults was present last week, greater numbers of motile adults are present this week. Weedy ground covers encourage pest pressure, and lead to more frequent insecticides. When the ground cover is disturbed by mowing, raking or cultivating, insects are more likely to move into the trees. Under high pest pressure situations, insecticides should be applied just prior to any operation that disturbs the ground cover. Insecticides directed against the weeds will also decrease pest pressure.

✔ **Mites (European Red Mite (ERM) and Two Spotted Spider Mite (TSM)):** Mites are present at up to 25 - 50 motile forms per leaf in some peach blocks. Control options are limited, so do not let populations get too high. Vendex, Carzol, and Apollo are options. Do not use Carzol in hot weather. Apollo @3 to 6 oz/A has been the most consistent performer, but higher rates were required in many orchards last year.

✔ **Bacterial Spot:** Bacterial spot is starting to show up on the fruit. These are probably infections that occurred during the first 2 weeks of May. Continued thunderstorms will provide the rain needed to move the bacteria to new sites, causing additional infections. Copper sprays (Tenncop), should be treated as having very little if any weathering ability or residual activity. Applications should be made on a weekly schedule, but more often around precipitation.

Apple

✔ **Apple Scab:** The spore tower count done on June 1 showed 10 spores released over 30 minutes. Given the previous levels of inoculum found during April and May, a count of "10" means that just about all overwintering spores have matured and have been released. Combined with the fact that most overwintered leaves have degraded, growers should no longer be concerned with primary scab infections. Secondary infections were seen late last week in some southern locations. Where secondary scab is present, a tighter schedule will be needed.

✔ **Fire Blight:** Strikes are present in many northern and southern locations. These strikes must be pruned out, especially if on sensitive varieties (Gala, Fuji, Braeburn, Rome, Jonathan, Ida Red, Ginger Gold, Jonagold). When cutting out blighted wood, cut to at least 2 year old wood, but leave a 3-4" stub to be pruned out during the winter. Recent research has shown that sterilizing pruning tools for this purpose serves no real advantage. Coppers can be applied just prior to or just after rainy periods, but inoculum should be removed from the tree. Do not use streptomycin for prevention of shoot blight.

✔ **Tufted Apple Budmoth (TABM):** The first flight of TABM has peaked. Egg masses that are being found are either hatched or about to hatch. The last treatment in southern counties is due the first part of this week. Treatments in central counties are due on 6/13-14, and about 6/18-19. Treatments in northern counties are due on 6/14-15, 6/19-20, and about 6/23(625, 763, and 898 DD after biofix). These timings are for standard OP and carbamate insecticides. As mentioned in previous newsletters, applications of Confirm should be applied at 20-30% egg hatch (full cover, every middle) or about 650 DD after biofix. This has passed in southern and central counties, but should be on or about 6/16 in northern counties.

✔ **Apple Aphids (green apple aphids and spirea aphids -GAA and SA):** Aphid populations have remained high in many blocks. It is common to find up to 80+% of terminals infested (50% is needed to justify treatment). If a specific aphicide is needed, Dimethoate @3pt/A is effective and easiest on mite predators. Thiodan may also be used. Provado gives excellent results, but should be saved for controlling more than just aphids at this time of year (use when leafminers and leafhoppers are also a problem).

✔ **Mites (see above):** ERM and TSM are present in many apple blocks, some of which have already been treated. Predators are starting to come in, both the small black lady beetle, *Stethorus punctum* and several species of predatory mites. Do not let more than 6-7 mites per leaf develop before using a miticide.

Blueberry

✔ **Worms and General Lep. Larvae:** Levels are somewhat less than last week, with 11% of samples showing leafroller activity, but with 21% of fruit samples showing some feeding signs.

See IPM on page 4

IPM FROM PAGE 3

✔ **Aphids:** Aphid populations are at about the same overall levels as last week. Aphids were present in 55% of our samples, most with about 5% of terminals infested with small to medium size colonies. Individual colony size has increased some since last week.

✔ **Cranberry Fruitworm (CBFW):** Trap catches of adult moths have decreased, but some adults are still present. Slightly higher levels are still being seen in Burlington County. Frass and feeding injury has also been noted on several farms. About 5% of samples show some CBFW injury, but at very low levels.

Insect Trap Counts

South Jersey Tree Fruit

Week Ending	AM	CM	LPTB	OFM	PTB	STLM	TABM-A	TABM-P
3/24				0.10				
3/31				0.70		425.00		
4/7				25.30		552.60		
4/14				32.75		137.50		
4/21				91.00		621.90	0.00	0.00
4/28		0.00		40.90		405.50	0.20	0.10
5/5		0.80		27.40		423.60	3.10	7.80
5/12		5.68		44.79		529.17	11.65	26.27
5/19		6.77	78.75	21.98	0.00	256.25	34.04	53.06
5/19		5.9	45.0	6.1	0.2	106.2	37.9	40.5
6/2		2.54	53.92	6.44	1.62	256.05	39.24	59.14
6/9		5.24	54.16	7.82	6.94	736.94	36.64	42.80

North Jersey Tree Fruit

Week Ending	AM	CM	LPTB	OFM	PTB	STLM	TABM-A	TABM-P
4/23				39.80		1598.20		
4/30				16.30		880.60		
5/5		1.09		37.23		873.93	0.50	
5/12		19.18		44.28		634.48	3.63	3.79
5/19		10.25		14.35		107.07	6.84	6.66
5/26		5.66	6.67	9.00	0.00	67.25	6.99	6.87
6/02		4.65	10.15	12.45	0.00	67.96	8.59	11.17
6/9		3.98	1.19	14.31	0.88	210.44	14.45	20.54

Blueberry

	Atlantic County						Burlington County					
Week Ending	RBLR	OBLR	CBFW	SNLH	BBM	OB	RBLR	OBLR	CBFW	SNLH	BBM	OB
3/24	74.00											
3/31	156.50											
4/7	155.80						30.00					
4/14	59.30						27.30					
4/21	68.60						29.00					
4/28	45.40	0.00					7.00	0.00				
5/5	23.73	0.09	0.00				9.00	0.00	0.00			
5/12	10.08	0.08	0.00				4.63	0.00	0.00			
5/19	0.85	1.81	2.98				0.56	3.00	0.56			
5/26	0.31	1.54	1.02				0.00	1.56	2.60			
6/2	2.54	3.27	0.67				0.00	2.33	4.10			
6/9	56.69	10.08	0.58	0.63	0.00		2.13	9.78	2.60	0.00	0.00	

Insect Trap Count Key: RBLR=redbanded leafroller, AM=apple maggot, CM=codling moth, OFM=oriental fruit moth, STLM=spotted tentiform leafminer, TABM=tufted apple budmoth (in A-apple and P-peach), LPTB=lesser peachtree borer, PTB=peachtree borer, OBLR=obliquebanded leafroller, CBFW=cranberry fruitworm, SNLH=sharpnosed leafhopper, BBM=blueberry maggot, OB=oriental beetle.

Calendar of Events

June 19, 2000 - Wildlife Damage Twilight Meeting, Mt. Holly, NJ. Contact Rutgers Cooperative Extension of Burl-ington County at 609-265-5050.

(Date Correction) June 24-27, 2000 - IDFTA Summer Tour: Quebec Canada, Vermont, New York. Registration Deadline June 9, 2000. Contact: Charles Ax, IDFTA, 14 South Main Street, Middleburg, PA 17842. Phone: 570-837-1551, e-mail: attorney @ptdprolog.net. For complete information on the IDFTA Summer Tour visit the IDFTA website at: http://www.IDFTA.org.

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

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

Chemical Thinning and Return Bloom on 'Fuji' Apple

Win Cowgill, Agricultural Agent

Fuji apple is one of the most widely planted new apple cultivars in New Jersey. It is estimated that by the year 2005 it will capture 10-11% of the world apple market. It is also notoriously hard to thin and has a tendency to be biennial. A recent article in the Journal of American Pomological Society by Dr. David Ferree, Ohio State University, summarized six years of thinning and return bloom experiments with Fuji apple. Ohio has similar humid growing conditions to New Jersey.

A summary of results is as follows:

- Both NAA and NAD should not be used. They did not adequately thin and did increase the number of pygmy fruit on Fuji.
- Sevin or Accel alone will not generally thin adequately.
- The combination of Sevin and Accel at 10-12MM fruit size gave the most consistent thinning program.
- The combination of Sevin and Accel was one of the most successful treatments in breaking the biennial tendency of Fuji.
- Multiple sprays of ethephon and scoring increased.
- Endothall (Thinrite) shows promise as a bloom thinner for Fuji (Note: we anticipate a label for Thinrite on apple this fall for use in 2001).

Ethephon can still be applied to assist with return bloom of Fuji. See the article "Techniques to Enhance Return Bloom" in the May 23 issue of the Fruit Plant and Pest Newsletter at: http://www.rce.rutgers.edu/pubs/plantandpestadvisory/2000/pdfs/fr0523.pdf

A complete research report on thinning apple with endothal is available on-line in the New Jersey Fruit Focus Web Site under North Jersey Tree Fruit Research Reports at: http://virtualorchard.net/rce/default.html ❑

PPV National Survey Information for Week Ending, June 9, 2000 for NJ

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

Field Sampling:

Sampling conducted by: NJ Department of Agriculture

0	Acres of propagative orchards surveyed.	0	Samples taken
139	Acres of commercial orchards surveyed.	902	Samples taken
0	Mother trees sampled.	0	Samples taken
0	Nursery properties surveyed.	0	Samples taken
2	Other (list): Coop. Ext. Variety Evaluation Blocks	91	Samples taken

Laboratory Analysis:

Analysis conducted by: NJ Department of Agriculture

654	Samples analyzed	654	Negative Samples	0	Positive Samples

This report covers activities from June 2, 2000 through June 8, 2000.

Submitted by Jerome L. Frecon, Agricultural Agent ❑

EPA Announces Changes to Chlorpyrifos Labeling

George Hamilton, Ph.D., Pest Management

On June 8, 2000, the United States Environmental Protection Agency (EPA) announced that it would be reclassifying chlorpyrifos (Dursban and Lorsban) as a restricted use product, phasing out certain uses, and limit the use of chlorpyrifos in areas where children may come in contact with product residues. While the bulk of these changes affect uses not related to fruit, you should be aware of the following items:

- Beginning in December of 2000 you will be required to have a state applicator's license in order to purchase and use chlorpyrifos products.
- The restricted entry intervals for chlorpyrifos may change as of 12/1/00 for newly purchased materials. You will need to check newly purchased materials for any changes that might have occurred.
- Beginning in August and September of this year, all new products will carry labels for pre-bloom uses only. The tolerances for apples will also be lowered in order to lower the residue levels in apple products that children may consume.
- As of 12/31/00, all post-bloom uses of chlorpyrifos on apples will no longer be allowed.
- The tolerances for grapes will be lowered in order to better protect children. This change will continue to allow dormant applications of chlorpyrifos but not foliar applications. Since dormant applications are the only use allowed in the United States, this change will not impact U.S. grape growers. The change, however, will impact foreign production areas where foliar use is still allowed.

If you have any questions about these changes, further information can be obtained from the USEPA website at: http://www.epa.gov/pesticides/announcement6800.htm ❑

Produce Growers Directory Update

Pegi Ballister-Howells, New Jersey Farm Bureau

New Jersey Farm Bureau, with the help of a Jersey Fresh grant, is in the process of updating the 1995 Produce Growers Directory. The new format will be internet accessible and will be available on disk. Hard copy can be printed and kept in a three-ring binder. Many new categories have been added. We want to update existing entries, so all farmers must fill out the new form even if you are already in the existing edition. County Agents will be assisting with the mailing of the forms and Farm Bureau will mail out to those members with an interest in produce. If you do not receive a form, and wish to be included in the directory, contact the Farmhouse at 609-393-7163. This buyers' guide has been very well received in the past and is an excellent marketing tool for your fruit and vegetable products. The more farms listed, the more essential the resource will become to potential buyers. There is no charge to be included in the directory. ❑

Postharvest Disease Control: Section 18 Approval for Scholar 50WP on Stone Fruit

Norman Lalancette, Ph.D., Tree Fruit Pathology

The U.S. EPA has recently granted New Jersey a specific exemption under provisions of section 18 of FIFRA for use of Scholar 50WP on peach and nectarine. Tree fruit growers/packers may now use Scholar, a fungicide manufactured by Novartis Crop Protection, as a postharvest fungicide treatment. This is the third year in a row that the EPA has granted this exemption.

Scholar fungicide, which contains the active ingredient fludioxonil, controls both **brown rot** and **Rhizopus rot**. As an added benefit, Scholar also has activity against **Gibertella rot** and **gray mold**, two postharvest diseases that are not as common in New Jersey, but can occur. Scholar provides a very effective disease control replacement to Rovral, which is no longer registered for postharvest use on stone fruit. Use of Scholar should help augment the shelf life and quality of fruit, particularly after disease-favorable seasons.

Peach and nectarine packers may make one application of Scholar for fresh shipment. The labeled rate is 8 oz/100 gal water containing an appropriate water-wax/oil emulsion for the crop being treated. Treat 200,000 lbs of fruit per 100 gal of solution using a spray-application system to obtain thorough coverage. Concentrated applications using low volumes are allowed, as long as 8 oz of fungicide product is applied to 200,000 lb of fruit. Scholar is not labeled for use in hydro-coolers.

Scholar has a different chemistry than any fungicide currently used in the field, so development of cross-resistance is not a concern. As always, read and follow label directions. ❑

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