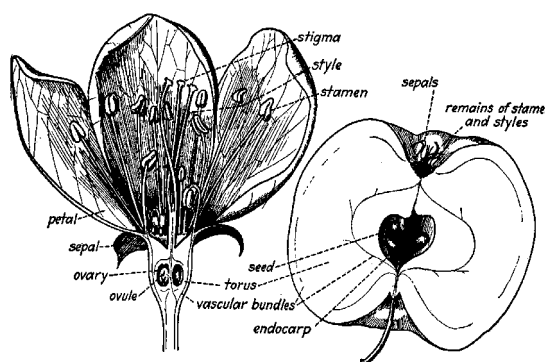


PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

JUNE 5, 2007



Enhancing Return Bloom on Apple with Plant Growth Regulators

Win Cowgill, Agricultural Agent and Wes Autio, Ph.D., Professor, University of Massachusetts-Amherst

Apple flower buds are formed in June and July for most varieties. Roughly 25-30 days after full bloom is the rule of thumb for the end of the thinning window, and the beginning of the flower bud development stage. Though this is a rough guideline, actual physiological responses are a result of degree day accumulations.

In addition to utilizing the hormonal type chemical thinners (NAA, NAD, 6-Ba, Ethephon) at the normal thinning windows, research has shown that both NAA and Ethephon can be also be applied in supplemental applications to enhance flower bud formation for the following season.

Beginning 4-6 weeks after full bloom and after June Drop, growers can begin using Ethephon or NAA applications to stimulate return bloom. June Drop is the key time marker here, as the timing varies from year to year.

Ethephon

Ethephon is a synthetic compound that is broken down in plant tissue to form ethylene. When applied during flower bud development on apples (June-early July), Ethephon can be highly effective in influencing return bloom. We suggest using Ethephon at 150 PPM which is 0.5pints/100 gallons.

New York recommends applying 2-3 weekly applications, depending on variety. Golden Delicious, Jonagold, Macoun and Mutsu require 2 sprays, while Suncrisp, Fuji, and Honeycrisp require 3 applications. Growers should avoid use of ethephon on Macoun for bloom return as it has caused premature ripening in NY, NAA would be the better choice.

No more than 1-2 applications should be made on early maturing cultivars like Gingergold, Paulared and other August maturing varieties.

Annual cropping of Fuji has been attained by some West Coast growers with the calculated use of Ethrel. Growers have found that rates of 1 pint/A at 30 and 45 days after full bloom have allowed

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them to dramatically reduce the biennial cropping tendency of Fuji (note Fuji is very hard to thin so 30DAFB is not too soon to begin at the 150 PPM rate.)

Non Bearing Trees

Ethrel on non-bearing apples can be used at 2-8 pints per acre (300-450 PPM) beginning 2-4 weeks after full bloom. However these trees should have filled their space and be ready to bear the following year. Tree growth with Ethrel will be reduced.

NAA

Can also be used for return bloom. One approach is to consider the use of NAA at 30 days after full bloom at 3-PPM and make repeat applications at 5ppm at 7-10 day intervals. The label calls for 2-3 applications on hard to thin cultivars. West coast growers have experimented with up to 5 applications.

Cautions:

- Ethephon applications at high temperatures and high rates can defruit trees; make sure you are past June drop and observe the temperature for the day of application + 2 days.
- NAA can reduce fruit size; this may be a concern on small-fruited cultivars.

Benefits: Enhanced bloom the following year, breaking of a biennial cycle.

Conclusion: Growers considering the use of PGR's for return bloom need to be in tune with their orchard conditions before making any application. PGR's can be very beneficial to a grower's operation, but their use requires a careful understanding of all parameters their application can influence. *Begin slowly and follow all label rates, guidelines and precautions. The label is the law.*

Note: The above information was developed from research and observations in the Mid-Atlantic fruit growing region. □

Time to Begin Calcium Sprays

Win Cowgill, Agricultural Agent

First cover is the time to begin calcium sprays.

Calcium (Ca)– The quickest and most effective short-term corrective treatments for control of bitter pit and cork in apple are to add a readily available source of calcium to your cover sprays.

To control **Cork** in apple flesh spray trees with 1.5 pounds of calcium chloride or 3.2 pounds of calcium nitrate per 100 gallons of water with first cover spray and include in each subsequent cover spray until a total of 18 to 24 pounds per acre has been applied. The calcium nitrate sprays will apply 2 to 3 pounds of actual nitrogen (N) per acre and should be used only on trees that do not contain high to excessive nitrogen levels as measured by leaf analysis or reflected in excessive shoot growth.

To control **Bitter Pit**, spray trees with a solution of either calcium chloride or calcium nitrate. Use 2 pounds of calcium chloride or 4.25 pounds of calcium nitrate per 100 gallons of water plus a wetting agent. Calcium nitrate should not be used on trees that contain high to excessive amounts of nitrogen in the leaf tissue as measured by leaf analysis or that are making excessive shoot growth. Make applications at 2-week intervals with the last spray 2 weeks before harvest. These calcium sprays can reduce bitter pit in apples by 50 to 90 percent.

For Calcium sensitive varieties such as Enterprise, Braeburn, Fuji, York, and Cortland apply:

Calcium Chloride (CaCl₂):

2-3 lb/100 prior to August 1

3-5 lb/100 after August 1

Late season calcium sprays are usually more effective against cork than early season sprays.

Reduced rates of CaCl₂ should be applied if there was no rain between applications, or if it is very hot and humid.

Form of Calcium for Foliar Sprays

There are many calcium products promoted by industry as substitutes for Calcium Chloride (CaCl₂). However extensive research and comparison of these products has yet to show an advantage over Calcium Chloride because it is one of the richest forms of calcium at the cheapest price. Calcium nitrate (CaNO₃) can be substituted for CaCl₂ but only on trees that do not contain low nitrogen levels as measured by leaf analysis. Vigorous trees should not receive Calcium nitrate. Growers opting to use CaNO₃ as their calcium source should be aware that CaNO₃ does not contain as much available calcium as CaCl₂, so they should adjust their rates accordingly. □

Thinning and Crop Set on Peaches and Nectarines in S. New Jersey

Jerome L. Frecon, Agricultural Agent

Most growers are now into hand, bat and shaker thinning peaches in southern New Jersey orchards. As some of the smaller peaches fall off the tree, it is easier but still a challenge to uniformly thin fruit. A guesstimate would be that we have from 60 to 80% of a full 70,000,000 pound crop. Of course many things can happen from now until harvest. Two big factors are how many peaches will fall off. This will be offset by the size of fruit. With some of the spring thinning, we have some nice large fruit. The rain we had this weekend was very timely.

By evaluating hundreds of varieties on different blocks in different locations we have concluded the following:

- a. Some varieties had buds injured by low winter temperatures because they had a light to medium bloom when they flowered. Examples were: Big Red, Flamin Fury PF 24-007, Coral Star, Gala, and numerous other varieties that are not commercially planted.
- b. Varieties that bloomed early and some in early mid-season were injured by April's low temperatures on several nights of wind and a cold freeze. Some flowers that were open were injured. While some of these flowers did not appear to have injured pistils, as they hung on the tree during the long bloom period they never developed into viable fruit. These trees also have flowers clustered on the basal portion of the shoot since flowers on the terminal portion bloomed earlier and were injured. Examples of commercial varieties that bloomed early to early mid-season, and were injured are Spring Snow, Blazeprince, Encore, Flamin Fury PF 25, Flamin Fury PF 27A, John Boy, Snow King, White Lady, and Sugar Giant.
- c. On the last two nights of low temperatures, many flowers and buds were injured. The low temperatures presented themselves as a radiation frost with warm sunny days followed by still nights and the rapid radiation of ground temperatures into the atmosphere inverted with cool night temperatures settling near the ground. Much injury occurred on the lower portion of the tree. Some injury did occur above 6-8', but when the trees were larger than 8' they had a lot of fruit on them. Some varieties were injured on sites where radiation type frosts occurred. Some varieties that had a heavy crop and bloomed late were Gloria, Harrow

Beauty, Flamin Fury PF 12B, Flamin Fury PF 20-007, Flamin Fury PF Lucky 13.

Other difference noted in addition to variety and orchards site were:

- A. Wind machine helped on the night of radiation frosts;
- B. Delaying bloom practices was a big factor;
- C. Pruning where we practiced bloom delay technology and then pruned, appear to have more of a crop than trees that were pruned without bloom delay. Time of pruning has and will continue to be a factor in crop load.

While I firmly believe January pruning injures peach trees and buds, as can February and early March pruning, I cannot segregate crop loss solely by time of pruning in blocks where we did not employ bloom delay technology. We had a very complex winter with extended periods of warm weather in both December and January. Those growers who were pruning during this period pruned older and more tolerant varieties to the temperature so it is very difficult to evaluate.

Our bloom season was very long from April 3 to May 5, so it is difficult to evaluate crop maturity. I think our crop maturity is later but that can always change.

In our crop estimates we have not factored in tree death. I expect to see much more than I have to date because of the mild January temperatures, and the heavy rains in the spring. Winter injury and Phytophthora sp will be the main problems. □

Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt, Eugene Rizio, and Atanas Atanassov, Ph.D., Program Associates, Tree Fruit IPM

Peach

✓ **Tufted Apple Budmoth (TABM):** Treatments for TABM should be focused where TABM is a known problem. Degree day (DD) timed treatments are outlined for either alternate middle (AM) applications, (4 sprays/generation), or full cover every middle (EM) applications (2 sprays/generation). If using B.t. or Intrepid, apply full cover with 2 sprays per generation. All treatments must be applied in sufficient water volume to thoroughly cover leaves and fruit. Experience has shown that especially B.t.s must be applied in at least 100 gal of water per acre. Timings are updated below.

TABM Spray Timing				
County Area	Spray Type			
	Standard Insecticides -AM	Standard Insecticides - EM	Intrepid - EM	Bt-EM
Southern	3 rd 6/10-11, 4 th 6/15-16	2 nd 6/13-15	2 nd 6/13-15	2 nd 6/13-15
Central	3 rd 6/11-13, 4 th 6/16-17	2 nd 6/13-15	2 nd 6/13-15	2 nd 6/13-15
Northern	1 st 6/4-6, 2 nd 6/9-11, 3 rd 6/16-18	1 st 6/7-9	1 st 6/5-11	1 st 6/9-11

✓ **Oriental Fruit Moth (OFM):** Second flight adults are just starting to emerge. These will mate and lay eggs over the next several weeks. Growers in southern counties should start to plan their treatments for the end of next week. See table below:

OFM Treatment Timings – 2 nd Generation, 2 Sprays/Generation		
County / Region	Standard Insecticides	Intrepid
Gloucester – Southern	1 st about 6/16-18	1 st about 6/14-16
Monmouth – Central	1 st about 6/19-21	1 st about 6/17-19
Hunterdon - Northern	After 6/20	After 6/20

✓ **Catfacing Damage, Stinkbugs (SB) and Tarnished Plant Bugs (TPB):** Catfacing pressure increased during last week's hot weather, especially in weedy groundcovers. If using Intrepid or Spintor for TABM include an effective plant bug material such as a pyrethroid, Imidan (3#/ac) or Diazinon. Diazinon will also control scale crawlers when they begin to emerge. Actara will control TPB, aphids, and plum curculio, but is weak for stink bug.

✓ **White Peach Scale (WPS), San Jose Scale (SJS):** Dr. Peter Shearer reports that the first generation of SJS crawlers began emergence on 5/29 in southern counties. This first generation of crawler emergence will continue for about 3-4 weeks. No white peach scale crawlers have been seen to date. Effective materials include Esteem, Centaur and Diazinon.

✓ **Bacterial Spot (BS):** Bacterial spot leaf and fruit infections can be found at low levels in many sensitive varieties in southern counties. Apply antibiotics anytime severe weather is in the forecast. Mycoshield and Flame Out generally provide 3-5 days protection. Applications made within 24 hours after a potential infection may help to suppress infections. If using Tennocop, re-applications are suggested on sensitive varieties after any heavy rain.

Apple

✓ **Codling Moth (CM):** The first of 2 spray timings is past in all counties. Timing for the second application is in the table below. If using IGR's, then ideally they should have already been applied in southern and central counties. Overall pest pressure is light, except on some farms in northern counties where trap counts indicate that repeated applications may be needed.

County Area	Application and Insecticide Type	
	Standard Insecticides	IGR's
Southern	1 st past 2 nd 6/8	1 st past; 2 nd 6/3
Central	1 st past 2 nd 6/8	1 st past; 2 nd 6/3
Northern	1 st past 2 nd 6/12	1 st past; 2 nd 6/7-8

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

✓ **San Jose Scale (SJS):** See peach section.

✓ **White Apple Leafhopper; Aphids (Spirea and Apple Aphids):** Leafhoppers are now appearing in apples in southern regions. Although a nuisance, leafhoppers cause little economic injury and should be tolerated unless sampling indicates a population over 3-4 nymphs/leaf. Green aphid populations continue to build but are under the treatment threshold of 50% terminals infested. Growers using Assail or Calypso for codling moth control will also control aphids and leafhoppers.

SEE IPM ON PAGE 5

✓ **Fire Blight:** Fire blight infections are showing up in several blocks. If your orchard has fireblight, cover sprays of Tennocop @ 1 pt/acre may help to suppress further infection. Other copper formulations may also be used to suppress further disease development, but all coppers will russet the fruit.

✓ **Apple Scab and Other Diseases:** Scab is present in very few orchards statewide at present. Summer diseases, including black rot and white rot are the key diseases to control at present. Combinations with Topsin and Captan have been the most economical, and give broad spectrum control. See last newsletter for other details.

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	2007 Observed Date
Plum Curculio Injury	May 05 +/- 16 Days	May 8
CM Biofix	May 14 +/- 16 Days	May 9
TABM Biofix	May 04 +/- 10 Days	May 10
Oriental Fruit Moth - 375 DD	May 10 +/- 10 Days	May 14
GAA colonies	May 05 +/- 17 Days	May 18
CM 1 st generation 150 DD target	May 18 +/- 04 Days	May 18
Bact. Spot Leaf Symptoms observed	May 15 +/- 21 Days	May 22
Rusty Spot symptoms observed	May 12 +/- 10 Days	May 25
OFM Flagging observed	May 15 +/- 04 Days	May 25
CM 1 st generation 250 DD target	May 28 +/- 07 Days	May 25
2nd Pear Psylla hatch	May 30 +/- 02 Days	Not yet observed
TABM 1st gen. 475 DD target (start)	June 02 +/- 07 Days	June 1
CM 1 st generation 450 DD target	June 04 +/- 08 Days	June 3
CM 1 st generation 550 DD target	June 09 +/- 07 Days	June 8
Peach Scab symptoms	June 14 +/- 13 days	Not yet observed
TABM 1st gen. 910 DD target (end)	June 18 +/- 10 Days	Not yet observed

Blueberry

✓ **Cranberry Fruitworm:** Trap counts appear to be peaking, but numbers are overall quite low, except on farms with traditional high populations. Growers who have “normal” low populations should be making a treatment when the weather clears late this week. Growers with high populations should be making their second application at the same time.

✓ **Leafrollers and Other Leps (except Gypsy Moth):** Very little change has been seen since last week. Only 13% of samples show any activity, with only 1 field meriting any treatment.

✓ **Gypsy Moth (GM):** Larvae have been controlled on most farms. Where GM has been a continued problem, Lannate has worked well and suppressed aphids.

✓ **Aphids:** As expected, populations are somewhat higher since last week. About 71% of samples were positive with 21% over the 10% infestation level. Aphids become the main insect target after fruitworm is controlled.

✓ **Obliquebanded Leafroller (OBLR):** Adults are now starting to be found in pheromone traps. Adults will mate and lay eggs, the majority of which will hatch around early to mid July. This is not a significant pest at this time.

✓ **Oriental Beetle:** Adults are just starting to emerge. This single generation will continue to emerge throughout June and most of July.

✓ **Cranberry Weevil:** This pest has returned to blueberries and can now be found in many areas feeding on foliage. In most instances feeding will not be significant, and the beetle is often killed by the materials targeting other insects.

SEE INSECT TRAP COUNTS ON PAGE 6

Trap Counts

Tree Fruit Southern Counties

Week End	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
4/14	0				0		0			
4/21	21				0		0			
4/28	175	0			23		44	0	0	
5/5	101	0	1		56		49	0	0	
5/12	83	0	1		26		30	0	0	
5/19	78	5	6		25		16	8	84	
5/26	21	30	3		4		9	31	57	
6/2	14	25	3		3	25	2	34	80	

Tree Fruit Northern Counties

Week End	STLM	TABM-A	CM	AM	DWB	OFM-P	TABM-P	LPTB	PTB
4/14	0					0			
4/21	23					0			
4/28	1120					0			
5/5	834	0	0			2.3	0		
5/12	729.0	0	0.2			38.6	0		
5/19	456.3	3.5	5.1		6.0	40.2	6.1	7.5	0.0
5/26	55.8	9.0	6.4		6.6	17.3	10.0	24.6	0.0
6/2	65.6	18.1	7.7		27.0	4.3	23.5	30.8	0.0

Blueberry

Atlantic County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
3/31			46			
4/7			50.5			
4/14			6.1			
4/21			30.9			
4/28			82.7			
5/5			48.9			
5/12	0.01		9.02			
5/19	0.48		4.54			
5/26	2.38		0.43			
6/2	1.89		0.09	12.09	0.00	0.00

Burlington County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
3/31			0			
4/7			13.7			
4/14			7.0			
4/21			8.1			
4/28			44.4			
5/5			43.0			
5/12	0.04		13.79			
5/19	0.18		3.75			
5/26	0.42		0.27			
6/2	0.98		0.00	12.20	0.00	0.00

Calendar of Events

June 26, 2007 - 5:15 p.m. Twilight Tree Fruit and Wine Grape Research Meeting, Tour and Picnic, Rutgers Agricultural Research and Extension Center, 121 Northville Road, Bridgeton, N.J. Program information and directions at <http://gloucester.rutgers.edu>. Preregistration required; No charge. Contact Alice Rogers at 856 307-6450 Ext 1 or gloucester@aesop.rutgers.edu.

July 12, 2007 - Penn State University Fruit Research and Extension Center Grower Field Day, Penn State Fruit Research and Extension Center, 290 University Drive, Biglerville, Pennsylvania. Noon to 5:00 p.m. Cost is \$15.00. Contact Dr. Greg Krawczyck at 717-677-6116. Registration required and forms available at: <http://frec.cas.psu.edu/>.

July 26, 27, 28, 29, 2007 New Jersey Peach Festival, Gloucester County 4-H Fairgrounds, Rt. 77 (South), Mullica Hill, N.J. Grower reception on Friday evening July 27 at 7:00 p.m. Information available at: <http://gloucester.rce.rutgers.edu/fairfest/> or by contacting 856-307-6450.

"From Our Farms" Guide to Gloucester County Farm Products

Jerome L. Frecon, Agricultural Agent

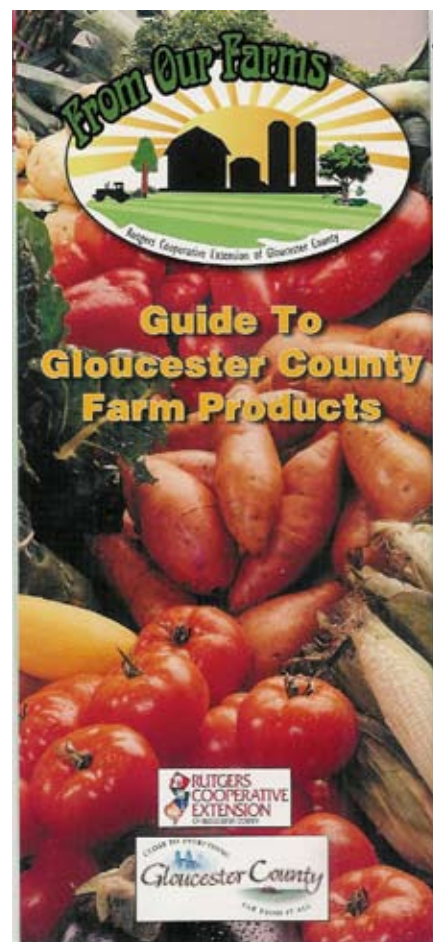
The newly revamped and revised "From our Farms" Guide to Gloucester County Farm Products is now available, and is being distributed to farm markets, tourism sites, and at various public and community events throughout Gloucester County. This new publication includes a map and complete listing of 115 markets, garden centers, equine and other agricultural and agritourism operations growing, producing, and marketing products and services from Gloucester County Farms. This glossy well-illustrated 4-color guide was revised and developed jointly by the Office of Business and Economic Development with the County Office of Rutgers Cooperative Extension. Gloucester County and the Gloucester County Board of Agriculture provided funding for the map and a web site to be developed on the Guide.

"We really want to promote our Gloucester County farms", stated Doug Zee Jr., President of the Gloucester County Board of Agriculture. "We want to preserve farmers as well as our farmland", said Mr. Zee. This publication along with the series of television spots we are running this summer will encourage the public to buy Jersey Fresh, Jersey Bred and Jersey Grown.

A big addition to the new guide is the 30 more horse farming operations that not only preserve open space but also provide services to young and old on breeding, training, boarding and riding. The direction of these operations in the guide focuses on a growing effort by farmers to develop agricultural tourism and the full range of services and products for our county residents, and to educate our growing population on the importance of agriculture. The County Business and Economic Development Department and many of our communities are focused in their plans on the promotion and development of agricultural tourism.

The guide includes a map of the county and a numerical key "pin pointing" the location of each retail operation. A graphic chart lists the availability of some of the most important fruits and vegetables in the county. Using the popular logos, Jersey Fresh, Jersey Grown and Jersey Bred the guide describes the importance of these programs to the promotion and sale of all products and services listed in the guide.

The Gloucester County Board of Agriculture consists of 1700 agricultural members and their Board of Directors serves as a major advisory group to Rutgers Cooperative Extension of Gloucester County. "From our Farms" is the name of an agriculture, food, and nutrition educational program developed by Rutgers Cooperative Extension of Gloucester County. □



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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 RCE in your County.

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