

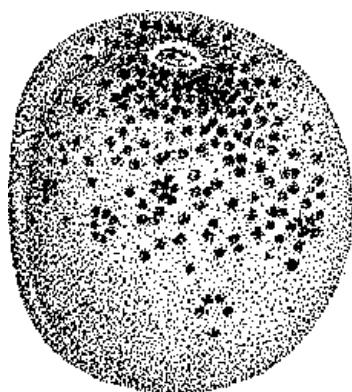
# PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

AUGUST 15, 2000

## Fruit IPM

*Dean Polk, Fruit IPM Agent*



### Peach

**Oriental Fruit Moth:** OFM pressure remains moderately high, especially in southern counties. The same conditions that applied last week are also present this week. Insecticides for OFM should be maintained for late varieties.

**Tufted Apple Budmoth (TABM):** Treatments for TABM should continue on a weekly basis for alternate middle sprays, but mostly in southern and central counties. While two treatments should have already been applied, additional treatments (3<sup>rd</sup>) will be due around 8/19-20, followed with the fourth spray due around 8/26-27. See last newsletter for materials and rates.

**Brown Rot:** SI and/or Abound treatments should be maintained on a tight schedule on *all* varieties. Abound used at the low rate of 12 oz/A has given favorable results. Do not use this material in and around apples, or use in the same sprayer that is also used for apples.

**San Jose Scale:** During the past several weeks we have noticed that San Jose scale is present on the fruit in a number of our post harvest samples. Last week we saw that the trees in one particularly infested block were also severely infested. San Jose scale can kill trees if the population is left unchecked. There are several generations per year of this insect. The stage most sensitive to insecticide treatments is the crawler stage when the motile insect is unprotected by its waxy shell. If you notice that peaches have scale on them, then check the trees. Peaches with scale will have a number of red measly looking spots, each with a small gray scale insect in the center. Crawlers appear like small yellow mite-size insects. They are most easily seen if a band of black tape is placed around a branch, and then coated with a thin layer of Vaseline, or Scotch Tape placed inside out, or double-sided Scotch Tape. While Diazinon and Supracide are effective for scale control, only Diazinon may be used after the dormant/delayed dormant stage. Use 1 lb per 100 gal in a dilute application. The addition of summer oil or a spreader will help with coverage. Make this application only if scale is present and the crawler stage can be seen.

### Apple

**Codling Moth (CM):** While degree day timed treatments should have already been completed, additional sprays are required when

*SEE IPM ON PAGE 2*

## INSIDE

|   |   |
|---|---|
| Fruit IPM.....                                      | 1 |
| Protect That Fruit! .....                           | 2 |
| Something in the Air .....                          | 4 |
| Painless and Efficient Apple Maturity Testing ..... | 4 |
| North Jersey Apple Maturity Update .....            | 5 |
| How to Make Starch Iodine Solution .....            | 6 |
| SE Strawberry Expo .....                            | 6 |

trap counts exceed 5 males pre trap in any given week. We have seen a number of areas this past week where trap counts have exceeded this level. Make sure to reapply insecticide and fungicide after heavy rains.

**Summer Diseases: Sooty blotch and flyspeck** are starting to show up, particularly in northern counties. Most of the disease is being seen on the insides of trees where the foliage is thick and drying conditions are poor. The following recommendations are repeated from last week's newsletter: Growers producing fresh market apples should be sure to include Benlate @ 8-12 oz/A plus Captan for **sooty blotch/fly speck**. Growers using Flint or Sovran do

**Insect Trap Counts**

**South Jersey Tree Fruit**

| Week Ending | AM   | CM   | LPTB  | OFM   | PTB  | STLM    | TABM-A | TABM-P |
|-------------|------|------|-------|-------|------|---------|--------|--------|
| 7/7         | 0.08 | 0.76 | 39.06 | 16.76 | 4.85 | 1560.69 | 3.53   | 8.25   |
| 7/14        | 0.25 | 2.08 | 28.24 | 15.04 | 4.31 | 990.65  | 4.44   | 10.24  |
| 7/21        | 0.11 | 1.85 | 17.43 | 24.23 | 3.73 | 1163.22 | 6.50   | 20.60  |
| 7/28        | 0.07 | 3.31 | 13.19 | 40.38 | 3.86 | 1396.76 | 10.67  | 19.49  |
| 8/4         | 0.08 | 4.12 | 14.63 | 34.04 | 5.83 | 1572.94 | 5.67   | 19.31  |
| 8/11        | 0.18 | 3.18 | 18.04 | 39.42 | 6.43 | 1127.81 | 14.09  | 19.21  |

**North Jersey Tree Fruit**

| Week Ending | AM   | CM   | LPTB | OFM   | PTB  | STLM   | TABM-A | TABM-P |
|-------------|------|------|------|-------|------|--------|--------|--------|
| 7/7         | 0.11 | 1.16 | 0.93 | 10.51 | 0.67 | 679.35 | 2.22   | 3.24   |
| 7/14        | 0.20 | 0.54 | 0.44 | 8.91  | 0.74 | 598.45 | 0.96   | 1.24   |
| 7/21        | 0.09 | 0.96 | 0.38 | 4.44  | 0.92 | 377.54 | 0.20   | 0.17   |
| 7/28        | 0.22 | 3.67 | 0.37 | 9.80  | 0.92 | 474.81 | 0.52   | 0.14   |
| 8/4         | 0.00 | 1.50 | 0.00 | 11.33 | 0.00 | 216.14 | 0.00   | 0.00   |
| 8/11        | 0.13 | 3.63 | 0.25 | 14.15 | 1.15 | 425.77 | 0.56   | 0.17   |

**Blueberry**

**Atlantic County**

| Week Ending | RBLR  | OBLR | CBFW | SNLH | BBM  |
|-------------|-------|------|------|------|------|
| 7/7         | 36.46 | 0.38 | 0.00 | 0.74 | 0.18 |
| 7/14        | 9.53  | 0.62 | 0.0  | .053 | 0.18 |
| 7/21        | 9.75  | 0.17 | 0.00 | 0.35 | 0.27 |
| 7/28        | 14.77 | 0.58 | 0.00 | 0.13 | 0.37 |
| 8/4         | —     | —    | —    | 0.26 | 0.26 |
| 8/11        | —     | —    | —    | 0.83 | —    |

**Burlington County**

| Week Ending | OB     | RBLR | OBLR | CBFW | SNLH | BBM  | OB     |
|-------------|--------|------|------|------|------|------|--------|
| 7/7         | 266.92 | 8.88 | 0.11 | 0.00 | 1.85 | 0.21 | 109.20 |
| 7/14        | 176.00 | 2.13 | 0.11 | 0.10 | 1.13 | 0.39 | 28.9   |
| 7/21        | 46.08  | 0.25 | 0.00 | 0.00 | 0.28 | 0.26 | 12.7   |
| 7/28        | 26.38  | 1.29 | 0.33 | 0.00 | 0.49 | 0.51 | 8.14   |
| 8/4         | —      | —    | —    | —    | 1.66 | 0.23 | —      |
| 8/11        | —      | —    | —    | —    | 9.8  | —    | —      |

not need the Benlate, since the strobilurins have excellent sooty blotch/fly speck activity. **White rot and black rot** are also major concerns at this time. Captan/Benlate is the standard. If using the strobilurins, Sovran has better activity on rots than Flint. Sovran and Flint have little activity on **bitter rot**.

**Blueberry**

**Blueberry Maggot (BBM):** Adults are still being caught in traps in monitored fields. Most traps in Elliott fields are averaging 2 to 3 flies per trap per week.

**Blueberry Leafminer:** Leafminer activity is at similar levels as were present last week. See last week's newsletter for additional leafminer comments.

**Protect That Fruit!**

*Peter W. Shearer, Ph.D., Tree Fruit Entomology*

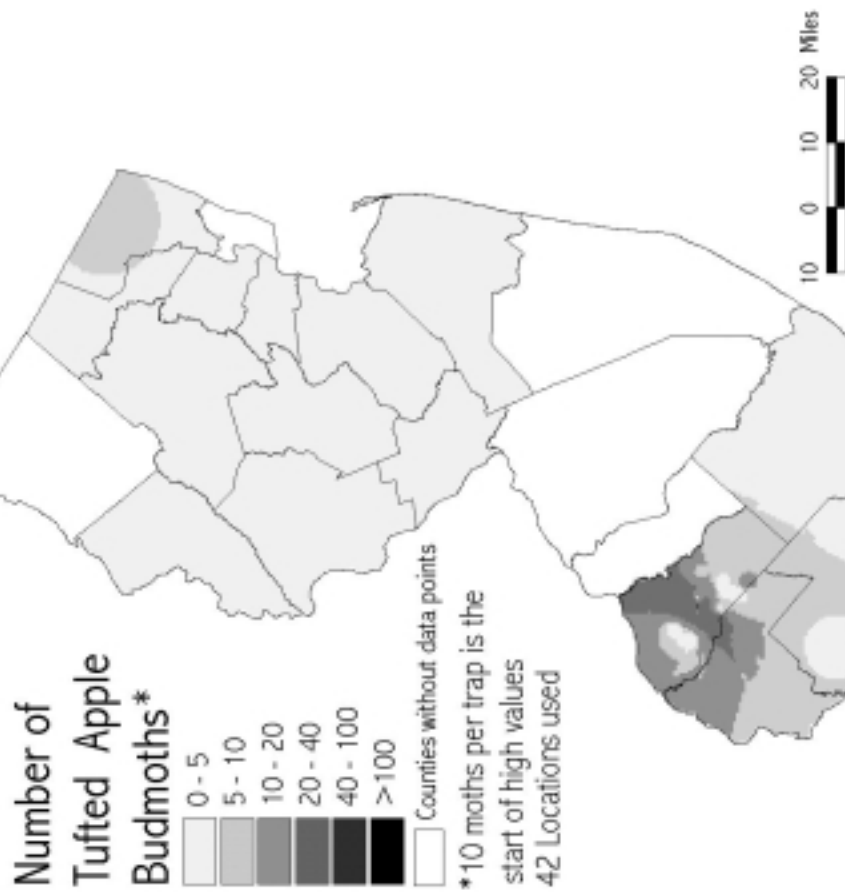
All this rain can wash off insecticides, thus reducing their longevity and effectiveness. This is especially true with Imidan; it is not as persistent as Azinphosmethyl under heavy rains. If your orchard is awash with rains, reapply crop protectants using shorter intervals or use higher rates if rains are expected.

Also, remember the problems with **Oriental fruit moth** infested apples during the last few years. It is important to protect trees up to harvest. OFM pres-

sure is high again this year and if your apples are located near peaches, keep those apples covered. Pyrethroids or higher rates of OP's should control this pest.

I am seeing more **Oblique banded leafrollers** in my minimally sprayed test blocks this year. These larvae are eating peach surfaces and entering softer fruit. Likewise, I'm seeing more **plum curculio larvae** in recently harvested peaches. It is likely that these 2 pests will become more problematic as we reduce our OP insecticide use per FQPA mandates. I don't expect that insect control will get any easier in the future. ☐

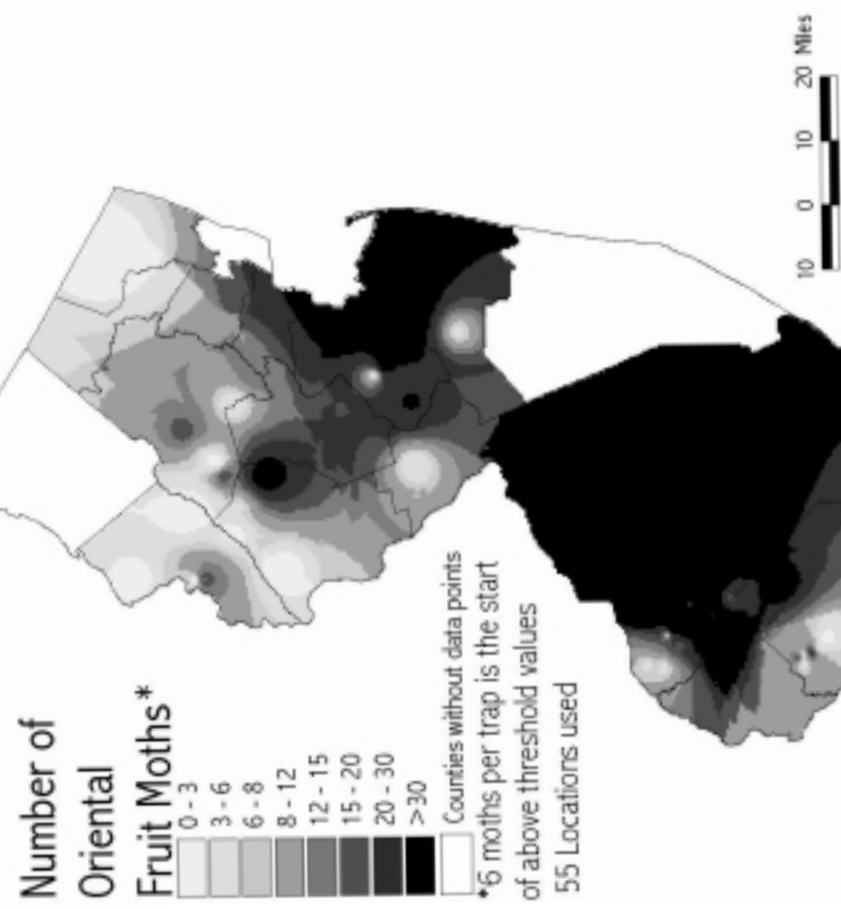
## Tufted Apple Bud Moth Distribution Map Week ending, August 11, 2000



More detailed maps located at Fruit IPM Web page [http://www.crssa.rutgers.edu/projects/gps/web\\_page/fruit/fruit.html](http://www.crssa.rutgers.edu/projects/gps/web_page/fruit/fruit.html)

Data collected and processed at Rutgers Fruit Research and Extension Center, Cream Ridge, NJ

## Oriental Fruit Moth Distribution Map Week ending, August 11, 2000



More detailed maps located at Fruit IPM Web page [http://www.crssa.rutgers.edu/projects/gps/web\\_page/fruit/fruit.html](http://www.crssa.rutgers.edu/projects/gps/web_page/fruit/fruit.html)

Data collected and processed at Rutgers Fruit Research and Extension Center, Cream Ridge, NJ

## Something in the Air

Art Agnello, Dept. of Entomology,  
N.Y.S. Agricultural Experiment  
Station.

Reprinted SCAFFOLDS Fruit Journal  
Volume 9, No. 22, August 14, 2000  
[http://www.nysaes.cornell.edu/ent/  
scaffolds/](http://www.nysaes.cornell.edu/ent/scaffolds/)

As you make plans for the final apple insect control sprays of the season, keep in mind that this is the time of year to be sure your blocks are not nursing a healthy and expanding infestation of **woolly apple aphids**. These colonies show up predictably in some orchards, predominantly on unhealed pruning wounds, cankers, or water sprouts. Heavy infestations can cause **honeydew and sooty mold** on the fruit, and **galls** on different plant parts. Because woolly apple aphids are somewhat protected by a waxy covering, regular spray programs may not provide adequate control. Higher volume applications of recommended insecticides may be necessary to penetrate the wax.

Judge the severity of any infestations in your trees, plus the projected harvest dates, and if needed, select a suitable material keeping in mind the respective Pre Harvest Interval: Thiodan (21 days) or Lorsban (28 days). Lorsban will also control **apple maggot**.

Submitted by Win Cowgill, Agricultural Agent. □

## Calendar of Events

September 6, 2000, 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.

November 8-10, 2000 - Southeast Strawberry Expo, Raleigh, North Carolina. Contact NCSA, 1138 Rock Rest Rd., Pittsboro, NC 27312, phone 919-542-3687, fax 919-542-4037, e-mail - [ncstrawberry@mindspring.com](mailto:ncstrawberry@mindspring.com).

## Painless and Efficient Apple Maturity Testing

Win Cowgill, Agricultural Agent, Jon Clements, Fruit Specialist, University of Massachusetts, and Jeremy Compton, North Jersey Tree Fruit Technician

Our observation has been that few growers utilize the Starch Index (SI) method of determining harvest maturity. Perhaps SI testing is perceived as time consuming and difficult to properly judge. However, we contend that SI testing is the best and easiest indicator of apple maturity that a grower can use to plan their harvest and storage regimes.

Why is it important to perform SI testing? First, as mentioned, the SI method is probably the best way to judge fruit maturity without expensive equipment. The SI technique, wherein the starch to sugar ratio is measured, is correlated with ethylene evolution. Ethylene synthesis occurs as fruit ripens. Therefore, the SI index is an inexpensive way to assess the degree to which fruit has converted starch to sugar, and is indicative of the onset and progress of ethylene production.

Secondly, because SI is a reliable indicator of relative fruit maturity, SI testing can help determine if harvested fruit should be placed in early CA, late CA, or regular cold storage. Remember that, as a rule, fruit with SI readings of 3-4 are suitable for late CA, apples measuring 4-6 on the SI scale are best for early CA, and any fruit reading 6 or above should be placed in regular cold storage or marketed immediately. Of course, reliability in using the SI method for determining apple maturity is predicated on good sampling techniques such as looking at fruit that has sufficient size and color. In other words, sample apples that you expect are approaching harvest readiness.

Note: Apples going into late CA (available in April-June, etc.) should not average less than 15 LBS. firmness.

Dr. George Green, Penn State University has more details on harvest maturity in the *PA Tree Fruit Production Guide* (page 221). The can be found online at:

<http://tfpg.cas.psu.edu/part6/part61a.htm>.

He also offers the following: "Over the years charts have been developed for many varieties but some charts went from 1 to 5 while others went from 1 to 7. There was much confusion so the postharvest physiologists at Cornell University have developed a more universally accepted chart that is useful for all varieties. It is being used by researchers in over 20 states in the national apple cultivar-testing program. Cornell has an excellent publication available to help you use the starch-iodine test and to develop an apple maturity program. The publication also contains a laminated starch iodine chart to aid in interpreting the tests. I strongly suggest that anyone seriously interested in harvesting high quality apples with good storage potential buy a copy of this publication, "*Predicting Harvest Date Windows for Apples* (1992)" Information Bulletin 221.

Full-color plates show how to use and interpret the starch-iodine test for determining maturity and the best harvest dates for quality, especially important for apples going into storage. Included

SEE MATURITY TESTING ON PAGE 5

are McIntosh, Cortland, Empire, Delicious, Mutsu/Crispin, and Idared; dates for other varieties can be interpreted from the information presented. 20 pages. Cost: \$5.50. This publication can be ordered from Cornell University by calling 607-255-2080 and using a Master Card or VISA credit card to pay.

Specific starch charts have also been developed for Gala, Empire, and Liberty. On the West Coast they have also been developed for Fuji. If you need a copy of one of these charts please contact Win Cowgill.

Having tested tens of thousands of apples over the years, per numerous experimental protocols, we can now suggest a simple, quick and efficient method for evaluating SI apple samples orchard by orchard or block by block. Here is our quick and simple testing technique:

Equipment consists of a one quart hand-operated spray bottle filled with SI solution, a pocketknife, and a Starch Index chart. The most important thing is to use the chart and begin sampling and testing the fruit two weeks before anticipated harvest to get a baseline on the maturity.

The procedure is simple—pick a sample of apples that appear ready to harvest based on size, color, days after full bloom, and taste. Spray the SI solution on longitudinally halved fruit, wait one to one and one-half minutes and make your readings based on the SI chart. The whole process is portable, quick, simple, and saves SI solution compared to dipping individual apples in a solution filled pan.

It is important to keep good records on your maturity determinations by cultivar and block. You will start to build a good database of harvest maturity information for your orchard.

### **Cultivars That do not Respond to SI**

Although the SI is a reliable gauge of many cultivars such as McIntosh, Empire, Jonathan, Golden Delicious and Macoun, some cultivars do not respond well to the SI test, and should be monitored using other methods.

Cultivars such as Gala, Fuji and Honeycrisp do not respond well to the SI rating, and should be gauged in manners such as background color; soluble solids content (SS) and flesh firmness.

Background color is a very good maturity indicator on cultivars such as Gala and will provide the grower with an accurate maturity gauge. Red over-color, flesh firmness and SS content are not as reliable indicators as background color on this cultivar. Fruit should be harvested for optimum long-term storage quality when the background color of the fruit is changing from a green to yellow color. After that, the background color changes from yellow to cream. It is at this stage that the fruit is ready for immediate sales or short-term storage. Galas will require multiple pickings for optimum fruit quality. Background color is also the best indicator of maturity for Fuji cultivars.

For additional information on testing for fruit maturity or where to obtain a starch iodine chart contact, Win Cowgill, Jerry Frecon or Bill Tietjen, New Jersey County Agriculture Fruit Agents or visit the Virtual Orchard at:

<http://www.virtualorchard.net/>.

For information how to mix the Starch Iodine solution or where to purchase it, see the accompanying article by George Green. □

## **North Jersey Apple Maturity Update**

*Jeremy Compton, North Jersey  
Tree Fruit Technician and Win  
Cowgill, Agricultural Agent*

**B**ased on maturity indicators and picking dates of early season apple cultivars at the Rutgers Snyder Farm in Hunterdon County, we feel the season is running three to five days ahead of the traditional harvest window. This means that we will be looking to begin harvest of true Macs and Gala strains, for fresh market towards the middle to the end of the week of August 28<sup>th</sup>.

There are many methods for gauging apple maturity, and each variety responds differently to each method. Trying to match the right maturity indicator to the cultivar being monitored can be a real challenge. Past experience with the cultivar and an understanding of how close to “traditional” picking dates the year is running will give a grower a good base for the knowledge required to pick the cultivar at optimum maturity.

In the following weeks we will bring you detailed apple maturity reports on major apple cultivars that will include starch, firmness and soluble solids data from selected New Jersey locations.

The single best measure of determining apple maturity for storing apples is the starch pattern that develops in the fruit as the starch is broken down into sugars. Fruit firmness, soluble solids (sugar) levels and skin color are all important factors in determining the eating quality and/or salability of apples but they vary so much from year to year that they are not useful in determining maturity for storage.

See the previous article on ‘Painless and Efficient Apple Maturity Testing’. □

# How to Make Starch Iodine Solution

George Green, Ph.D., Pomology, Penn State University

A solution of iodine and potassium iodide is used to make the starch turn black and this pattern is the basis for the test.

Dr. George Chu, of the University of Guelph - Department of Plant Agriculture in Ontario has developed a publication on this test entitled: *Starch-iodine test for determining maturity and harvest dates of Empire, Idared and Spartan apples* (Factsheet No. 88-090. 4 pp.). It is available on the Web at:

<http://www.gov.on.ca:80/OMAFRA/english/crops/facts/88-090.htm>.

For those wanting to make their own Dr. Chu gives these instructions:

## Preparing the Test Solution

Always use a freshly prepared solution at the beginning of every season. This solution is sensitive to light and should be stored in a dark container. A dark-coloured bottle or a glass jar wrapped in aluminum foil will serve the purpose. Chemicals needed for this test are potassium iodide and iodine crystals. A pharmacist or a chemist can use the following recipe to make up the iodine solution.

## Recipe

1. Dissolve 8.8 grams of potassium iodide in about 30 ml of warm water. Gently stir the solution until potassium iodide is properly dissolved.
2. Add 2.2 grams of iodine crystals. Shake the mixture until the crystals are thoroughly dissolved.
3. Dilute this mixture with water to make 1.0 liter of test solution. Mix them well.

## Warning

Iodine is a very poisonous chemical. The iodine solution should be properly labeled and kept away from children and pets. Apples used in the test should not be fed to any animals or used in composting. In case of ingestion of either iodine, or iodine treated apples, induce vomiting and consult a physician immediately.

You can buy the iodine-potassium iodide solution from Cascade Analytical, 3019 GS Center Road, Wenatchee WA 98801. Their phone number is 1-800-545-4206. Their Web site is:

<http://www.cascadeanalytical.com/>.

It can also be purchased from Wilson Irrigation in Washington State at

<http://www.wilsonirr.com/> or call them at 1-800-232-1174. □

# Southeast Strawberry Expo

From the North Carolina Strawberry Association

This year's Southeast Strawberry Expo will be held in Raleigh, North Carolina on November 8-10. The Expo is the leading event for strawberry production and marketing in the Southeast—but also attracts folks from much farther afield. This year's conference focuses on marketing, business management, and plasticulture production.

## Highlights of this year's Expo include:

**New Grower Plasticulture Workshop.** An intensive workshop for prospective, new, and novice plasticulture strawberry growers. The basics you need to know; the strawberry production year from start to finish; learning from others' experience, and more. Follow up by attending the regular conference Thursday and Friday, with a special new-grower wrap-up session on Friday.

**Special Workshop: Planning for Success.** Where do you want to be in five years? How will you get there? What are your resources and how will you use them? Led by Don Rogers, of First Pioneer Farm Credit in Connecticut, a nationally known speaker and seminar leader specializing in business management. Registration limited.

**Farm Tour.** Visit Cottle Farms in Faison, one of North Carolina's largest and most successful strawberry operations, selling both retail and wholesale. A BBQ dinner at the farm will follow the tour.

Sessions on production, management, and marketing. The Expo schedule is packed! Here's just a sample:

**Production:** Insect, Weed, & Disease Control, Strawberries for Fall Fruiting, Greenhouse Production, Methyl Bromide Alternatives, Creative Equipment Design, Double-cropping, Matted Row Methods

**Marketing:** Diversifying Your Products, Advertising & Promotion, Innovative Marketing Ideas, Listening to Our Customers, Matching Fruit Quality to Your Market Management: Managing Peak Production, Bringing Out the Best in Your Employees, Crop Insurance, Raising & Selling Safe Strawberries, Handling School Tours.

**Grower Success Stories:** Three successful growers share the details of their operations.

**Trade Show:** Visit with leading suppliers of strawberry plants, irrigation equipment, rowcovers, equipment, farm chemicals, packaging, products for farm markets, and more.

Registration information with details of the schedule will be mailed out early this fall. To receive it, contact NCSA, 1138 Rock Rest Rd., Pittsboro, NC 27312, phone 919-542-3687, fax 919-542-4037, e-mail - [ncstrawberry@mindspring.com](mailto:ncstrawberry@mindspring.com)

Submitted by Jerome L. Frecon, Agricultural Agent. □

Rutgers Cooperative Extension - NJAES  
U.S. DEPARTMENT OF AGRICULTURE  
Rutgers - The State University of New Jersey  
Plant & Pest Advisory  
18 College Farm Road  
Cook College  
New Brunswick, N.J. 08901-8551

## **PLANT & PEST ADVISORY**

### **FRUIT EDITION - CONTRIBUTORS**

#### Rutgers Cooperative Extension Specialists

Robert Belding, Ph.D., Pomology  
Joseph A. Fiola, Ph.D., Small Fruit & Viticulture  
George Hamilton, Ph.D., Pest Management  
Norman Lalancette, Ph.D., Plant Pathology  
Bradley A. Majek, Ph.D., Weed Science  
Peter Oudemans, Ph.D., Plant Pathology  
Sridhar Polavarapu, Ph.D., Entomology  
Peter W. Shearer, Ph.D., Entomology  
Nicholi Vorsa, Ph.D., Breeding, Genetics and Culture

#### NJAES/Cook College

Joseph Goffreda, Ph.D., Breeding

#### Rutgers Cooperative Extension Agricultural Agents and Program Associates

Atlantic County, Gary C. Pavlis, Ph.D. (609-625-0056)  
Gloucester County, Jerome L. Frecon (856-307-6450)  
Hunterdon County, Winfred P. Cowgill, Jr. (908-788-1338)  
Morris County, Peter J. Nitzsche (973-285-8300)  
Warren County, William H. Tietjen (908-475-6505)  
Fruit IPM, Dean Polk (609-758-7311)  
Meredith Peters, Program Associate (908-788-1338)  
Gene Rizio, Program Associate (856-566-2900)  
David Schmitt, Program Associate (856-307-6450)

#### Newsletter Production

Jack Rabin, Assistant Director, NJAES  
Cindy Rovins, Editor and Designer  
Mary Ann Hughes, Assistant Editor

**Rutgers Cooperative Extension (RCE)** provides information and educational services to all people without regard to sex, race, color, national origin, disability, or age. RCE is an Equal Opportunity Employer.

**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.

**Use of Trade Names:** No discrimination or endorsement is intended in the use of trade names in this publication. In some instances a compound may be sold under different trade names and may vary as to label clearances.

**Reproduction of Articles:** RCE invites reproduction of individual articles, source cited with complete article name, author name, followed by Rutgers Cooperative Extension, Plant & Pest Advisory Newsletter.