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## Inside

Crop Conditions  
Non-Insured Crop Disaster Assistance Program  
To Thin or Not To Thin  
Chemical Thinning Guides  
Problems with Agri-mycin & Mycoshield  
New Revisions to Mills Infection  
Period Table  
The New Infection Period Table  
Why Use the New Table  
Strawberry Clipper  
Insecticides and Predator Mites  
Grape Flea Beetle Reminder  
Phomopsis Cane and Leaf Spot  
Save the Bees  
Coming Meetings/Events

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## Crop Conditions

FFF 97-05  
April 30, 1997

Apples are at full bloom in the south, at pink throughout central part of the state, and at half inch green to tight cluster in northern areas. Peaches are at petal fall to shuck split in the south and pink to bloom in other areas. Grapes have 1-3 inch shoots in the south, and are at early to full swell in central and northern areas. Blueberries are at pink tip in the south and budbreak in the north. Strawberries are at early bloom in the south, and just beginning to push in central and northern areas.

**Non-Insured Crop Disaster Assistance Program:** For growers whose crops have been affected by the cold temperatures of the last few weeks, now is the time to think about The Non-insured Crop Disaster Assistance Program (NAP). This program provides crop loss protection for growers of many crops for which insurance is not available, such as tree fruits. Crops become eligible for coverage when the county committee determines the expected "area yield" has been reduced by at least 35% due to a widespread disaster condition, such as severe spring temperatures. Payments are made to eligible growers when they suffer losses of over 50% of the individuals approved yield. Payments are then made at 60% of the crops average market price, as determined by the Farm Service Agency (FSA).

So what are NAP approved yields? These are based on the average actual production from your farm over a 4-10 year period. At least 4 consecutive yields are required to calculate your NAP approved yield. If you cannot provide production records, a yield figure will be assigned to you - one that you

will probably consider to be on the low side. Therefore it is in your best interests to provide suitable yield records. These records must be verifiable, and show the date, buyer, quantity and the crop sold. For most people, this will obviously be easier for fruit that was sold wholesale rather than retail. Personal records or ledgers are not considered to be verifiable records. If you cannot submit verifiable evidence for ALL of your production of the crop, you will not meet the requirements for NAP. If you cannot provide verifiable evidence, you must have an appraisal done prior to harvest. This costs \$30 for the first field and \$10 for each additional field. If you don't have verifiable records and don't have an appraisal carried out prior to harvest, you will not qualify for NAP.

The state FSA office can define an area for NAP in three ways, but the only way which really applies to fruit growers is on a county level. The county committee must review losses to determine whether the county has suffered a 35% loss before requesting NAP. Therefore it is important for losses to be reported as soon as possible so that counties

can request NAP. If you have suffered any loss, contact your county FSA office as soon as possible.

***To Thin or Not To Thin:*** Well that's a very good question, and one that can only really be answered by your own experience on your farm. With peaches obviously nothing needs to be done immediately since we don't have an excess of flowers left in many places and we don't generally chemically thin peaches in Indiana. With apples the situation becomes a bit more tricky. Remember that with heavy flowering, we only need to set about 5% of the flowers to get a full crop. But in many places around the state, flowering maybe be on the light side. With light flowering, many chemical thinners won't drop as much fruit as they would when we have heavy flowering, so there is some internal adjustment that goes on within the tree. With thinning it all comes down to risk. By thinning early you'll get a better response both in terms of fruit size and return bloom, but obviously this is a risky approach. Later thinning will not give as much benefit as early thinning, but by delaying thinning you lower the risk.

***Chemical Thinning Guides:*** We have copies available of the Apple Thinning Guide, written by Phil Schwallier of Michigan State University. This is an excellent guide, written for growers with practical, down-to-earth advice. The author has a lot of experience with chemical thinning in the midwest and has summed up this often perplexing problem in this comprehensive yet easily understood guide. The price is \$10, available from the extension office at Purdue.

***Problems With Agri-mycin & Mycoshield:*** We have recently received information regarding out-of-specification Agri-mycin and Mycoshield. The information included the following details: "A recent audit of our inventory for Agri-mycinÆ (streptomycin sulfate) 17 and MycoshieldÆ (oxytetracycline) revealed that some growers may have product

that currently is likely to be out of specification.

We maintain a strictly specified range of percentage of active ingredient for these products and we have found that some of our own retained samples currently contain slightly less than the minimum specified amount of the active ingredient. Although the products fully conformed to specifications at the time they were manufactured and sold, the active ingredients may have naturally degraded over time.

We have contacted both growers and distributors by letter to inform them of this matter. However, we are also requesting your assistance in reminding growers that material they purchased before March 25, 1997, may now be below minimum specification. They should contact their supplier before spraying this material. If it is identified as being below minimum specification, it will be replaced through their supplier as soon as possible."

While we understand that the "bad batches" of Agri-mycin and Mycoshield are confined to product sold in 1996, growers who still have product purchased in 1995 are also advised to contact their supplier. If you have further questions on this matter it would be best to phone Dr. Jim Johnson, Merck Technical Services, at (517) 676-0884.

#### ***New Revisions to Mills Infection Period***

***Table:*** The following information comes to us from a recent article by David M. Gadoury and Robert C. Seem that appeared in the Cornell University fruit grower newsletter, *Scaffolds*. In part, the article read as follows: "The Mills Infection Period Table has been used throughout the world for over 40 years. This table (in the unlikely event that you've forgotten) provides an estimate of the number of hours of continuous leaf wetness required for infection by ascospores at temperatures from 42°F to 78°F, and formed the basis of disease forecasting system that is still in use today. The essential elements of Mills' system were: (i) a table for predicting three levels of infection based upon temperature and duration of leaf wetness, and (ii) a rule that secondary infection

by summer spores (conidia) requires only two-thirds the time required by ascospores. The original Mills Table is rarely used today. The most common version was modified sometime in the 1980s by Alan Jones at Michigan State University.

Many orchard and lab studies, both in the US and abroad, have indicated that ascospores can infect in less time than indicated by the original Mills Table, or by Jones' revision. Furthermore, none has supported Mills' claim that conidia require one-third less time than ascospores. The original table was also vague at low temperatures, saying only that infection at less than 42°F took "more than 2 days". Finally, the three levels of infection were often misused as forecasts of scab severity following rain.

**The New Infection Period Table.** The new infection period table is the result of several years of collaborative research involving Bill MacHardy (Univ. New Hampshire), David Gadoury (long ago at UNH, now at Geneva), Arne Stensvand (once at Geneva, now in Oslo, Norway), and Bob Seem (at Geneva since day 1).

Despite the revisions made over the years, previous infection period tables lacked

data to adequately support the times given for infection at temperatures below 42°F. Mills' original table stated simply that infection at 42°F or below took "more than 2 days". Jones modified the infection times only between 37°F and 46°F. Based on our most recent studies, we now know that infection can take place in as little as 30 hours at 37°F. That's 18 hours LESS than the time in Mills original table, and 11 hours less than in Jones' revision. These are not trivial differences. Above 43°F, the table uses the times recommended by MacHardy and Gadoury from 1989, and at lower temperatures the times were based upon experiments by Stensvand.

**Why Use the New Table?** Because the earlier tables underestimate the time required for infection at all temperatures, and grossly so at 34-46°F. Granted, that's a rather narrow temperature range, but infection periods in that range occur all too frequently between green tip and pink. At 70°F, there is only a 3 hour difference between the new table and the original (6 vs 9 hrs). Following most rain events, that difference may not effect a spray decision. However, at 37°F, the difference is 11-18 hrs (30 vs 41-48 hours).

Table 1. Minimum times required for infection by ascospores of *Venturia inaequalis* according to Mills (1944), Jones (1980), and the New Infection Period Table of MacHardy and Gadoury (1989) as amended by Stensvand, et al, (1997).

<u>Temperature</u>	<u>Minimum hours of leaf wetness required for infection</u>		
	<u>Mills</u>	<u>Mills revised by Jones</u>	<u>New Table</u>
34	>48	48	<b>41</b>
36	>48	48	<b>35</b>
37	>48	41	<b>30</b>
39	>48	33	<b>28</b>
41	>48	26	<b>21</b>
43	25	21	<b>18</b>
45	20	17	<b>15</b>
46	19	16	<b>13</b>
48	15	15	<b>12</b>
50	14	14	<b>11</b>
52	12	12	<b>9</b>
54	12	11.5	<b>8</b>
55	11	11	<b>8</b>
57	10	10	<b>7</b>
59	10	10	<b>7</b>
61-75	9	9	<b>6</b>
77	11	11	<b>8</b>

**Strawberry Clipper:** The overwintering adults of the strawberry clipper become active when temperatures rise above 65°F. The female lays eggs on unopened buds and then uses her mouth to clip the bud from its stalk. Our recommendations indicate that an application of Lorsban or Brigade may be in order if there is a problem. Cornell recommends that growers treat with insecticides when there are more than 2 clipped buds per meter of row. However, recent research in New York has shown that there is no relationship between the number of clipped buds and yield. In simulated damage plots, they cut off up to 25 buds per meter without any yield loss. In commercial fields with an average of 13 clipped buds per meter, there was no loss of yield compared with the portions of the fields in which insecticides were used to reduce the damage to 4 clipped buds per meter. It appears that the three varieties they tested, Seneca, Jewel, and Kent, were able to compensate for the damage to primary buds by producing more and larger secondary fruit. This year they will be testing ten additional varieties to see if they respond the same way. It appears, therefore, that insecticides applied to control strawberry clipper may not pay for themselves. Growers may want to leave a portion of their fields untreated this year and do their own yield comparisons.

**Insecticides and Predator Mites:** As most of you are aware, over the last 5 or 6 years I have concentrated much of my research effort on managing European red mites on apples. One of the most important findings from that research has been the importance of conserving predator mites. Even when highly effective miticides such as Apollo, Savey, or Agri-Mek are used, you can have a mite outbreak if you do not properly conserve your predators. The best way to conserve them is by selecting insecticides that are least toxic to the predators. Materials that we have identified as being relatively safe to use include Guthion/Azinphosmethyl, Imidan, Thiodan/Endosulfan, and Dimethoate. Some insecticides that you should avoid if at all possible are Pounce,

Ambush, Asana, Carzol, Vydate, and Lannate. These products will kill the predators and may result in a European red mite outbreak. Many of the apple growers in Indiana have been very quick to adopt these recommendations because they agree with what the growers had observed in their own orchards. As a result, most of these growers have far fewer mite problems than they have had in the past, and they use fewer miticides than they used to use.

**Grape Flea Beetle Reminder:** Grapes are in the various stages of bud swell to early shoot growth across the state, depending on location and cultivar. Development has progressed slowly over the past two weeks, increasing the time buds are susceptible to flea beetle damage. Scout vineyards for flea beetle or climbing cutworm damage and control if necessary.

**Phomopsis Cane and Leaf Spot:** 1996 was one of the worst years for Phomopsis cane and Leaf spot on grapes in recent years. The excessive spring rains and cool temperatures were likely the cause. There is a high level of inoculum in vineyards this year, so care should be taken to control Phomopsis. The primary infections occur when shoots are 1-3 inches long, and secondary infections spread to cluster stems at bloom, and fruit shortly after bloom. Phomopsis infections on cluster stems can lead to severe fruit loss from shelling (dropping off the cluster before harvest) and fruit infections lead to fruit rot and reduced overall fruit quality. Cluster stem and fruit infections remain latent from the time of infection until after fruit begin to ripen. The best materials to control phomopsis are mancozeb or captan. Ziram, benlate, and copper will provide some control. The most important thing to remember is that these materials are protectants and must be applied before infections occur to be effective. If shoots are one inch or longer, make an application prior to a forecast rain event. The most susceptible varieties are Catawba, Chardonel, Chancellor, Concord, DeChaunac, Delaware, Niagara, and Vignoles.

**SAVE THE BEES:** Do not apply insecticides or miticides during bloom since these pesticides are toxic to bees. Those bees that are not killed by direct contact in the orchard often carry the pesticide back to the hive where it may kill the brood. Remove bees from the orchard as soon as adequate pollination has been achieved, and certainly before the petalfall spray is applied.

**Facts for Fancy Fruit Available Electronically:** This newsletter is available electronically through the world wide web at <http://www.hort.purdue.edu/fff/fff.html> or by email. You may subscribe by sending a message to "almanac@ecn.purdue.edu". Your message should consist of this single one-line message in the body: "subscribe FFF\_L <your name>" without the quote marks.

### ***Coming Meetings/Events:***

**April 30** — Wabash Valley Fruitgrowers twilight tour and program. Nesbitt's Orchard, Vincennes. Contact Peter Hirst (765-494-1323) or Dave Byers (812-279-9721).

**May 6** — Elkart County Fruitgrowers meeting at Tom Kerchers Orchard. Contact Jeff Burbrink (219-533-0554) for more information.

**May 7** — Eastern Indiana Fruitgrowers twilight orchard tour and program. Contact Harold Brown (317-747-7732) for further details.

**May 8** — Southeast Indiana Fruitgrowers twilight tour. 6:30 p.m. - dark at the Paul Juhasz farm just a couple of minutes off of interstate 64 in Georgetown, IN. Contact Roy Ballard (812-948-5470) for further details.

**June 3** — Eastern Indiana Fruitgrowers twilight orchard tour and program. Contact Harold Brown (317-747-7732) for further details.

**June 7-9** — Wine and Juice Production and Practical Monitoring Workshop. A regional meeting of the American Society for Enology and Viticulture/Eastern Section. Holiday Inn Dulles, Dulles, Virginia. Contact Cynthia Wood at 209-278-2089 for more information.

**June 10** — Blueberry Growers of Indiana summer meeting. Pruitt's Farm, Wheatfield, IN. Contact Pat Goin 219-896-2283.

**June 23** — Indiana Winegrowers Guild Summer meeting and vineyard tour. Location TBA. Contact Bruce Bordelon 765-494-8212.

**July 1&2** — Indiana Horticultural Society Summer Meeting. Applacres, Inc. in Bedford, and Beiersdorfer Orchard in Guilford. Emphasis on cider. Mark your calendars, more details will follow. Contact Dick Hayden (765-463-6587).

**July 9-11** — American Society for Enology and Viticulture/Eastern Section Annual Meeting and Riesling Symposium, Corning, NY. Contact: E. Harkness, Dept. Food Science, Smith Hall, Purdue Univ. W. Lafayette, IN 47907-1160, Phone 317-494-6704, FAX 317-494-7953 Email: Harkness@foodsci.purdue.edu.

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