



Inside

Crop Conditions
Fire Blight
Oil Sprays
Peach Leaf Curl
Raspberry Anthracnose
Just Published: Diseases of Tree
Fruit in the East...
Pheromones and Pheromone Traps
Collar Rot of Apple
Straw Removal on Strawberries
Strawberry IPM Newsletter
Available
Planting Fruit Trees and Small
Fruit Plants
Subscription Notice
Coming Meetings

Crop Conditions

FFF 97-02
March 19, 1997

March is the month of transition from winter to spring in Indiana. Though spring officially begins March 20, winter is not quite over. Most fruit crops are still dormant, but significant damage can occur if temperatures have been warm enough to cause plants to break dormancy and lose hardiness. Above normal temperature and rainfall have occurred over the past few weeks, then temperatures reached the teens across much of the state this past weekend. This likely caused additional bud and cane damage on brambles, and possible damage to peach flower buds. At last report, peach flower bud survival was looking good, with about 80% kill of buds in Southern Indiana and about 90% kill in West Lafayette, so we could be looking at a full crop of peaches this year. However, it is still early and we're not out of the woods yet. We will just have to wait and see what happens over the next few weeks.

Fire Blight: If fire blight has not been a problem in your orchard over the past few years there is *no need* to apply a copper based dormant spray. Dormant copper sprays are most beneficial in those years following severe fire blight. However, if you do feel copper sprays are needed, we suggest you apply copper to the entire orchard block, including non-susceptible cultivars. The reason for treating non-susceptible cultivars is that even normally fire blight resistant trees like Red Delicious can be colonized by the bacteria and serve as a source of infection during bloom. If copper sulfate (4 pounds per 100 gallons) is used be sure to apply it when trees are dormant. If applied late it may burn leaf tissue. Also, **do not** apply copper sulfate with oil; apply copper sulfate and dormant oil as separate sprays spaced at least 10 days apart. If copper sulfate is applied under poor drying

conditions or later than silver tip, plant injury can result. An alternative to copper sulfate are the fixed coppers such as Kocide and Champion; most fixed coppers do not have the compatibility problems of copper sulfate and can be tank mixed with early season oil sprays. Remember however that even fixed coppers, if applied after half-inch green, can cause fruit russetting in years when there is not enough rain to remove the copper residues before tight cluster. -PP

Oil Sprays: One of the first and most important parts of a good insect and mite management program is the application of an early season oil spray to control European red mites, San Jose scale, and several species of aphids. Scales overwinter on the tree as nymphs and European red mites and aphids overwinter as eggs. Because two-spotted spider mites do not

overwinter on the tree, oil sprays are not an effective control measure for that species. Although scales, European red mite eggs, and aphid eggs may appear to be inactive, they are living organisms and, therefore, must respire, or breathe. The application of the oil creates an impervious layer over the pests that will not allow the exchange of gases, causing the pest to die of suffocation.

Oil sprays should be applied between 1/2 inch green and tight cluster. Apply a 2% rate at the 1/2 inch green stage or a 1% rate at tight cluster. Oil sprays should not be applied during, immediately before, or immediately after freezing weather. For best results, apply when temperatures are 45°F or above, and not just before rain showers. Remember that the oils are not directly toxic to the pests. They only work by suffocation. Therefore, the better the coverage, the better control you will receive. Our data has shown that mite control is improved if oil is applied at tight cluster rather than at 1/2 inch green.

One question that has arisen as a result of our research on predator mites that showed that the predators overwinter on the tree is: what effect will early season oil sprays have on predator populations? In other words, will the oil sprays kill the predators and create more serious European red mite populations? Our research in 1994 and 1995 showed that oil sprays, whether applied at green tip or tight cluster, had absolutely no detrimental effect on mite predators. These results were not terribly surprising, because of our observations of predator mite behavior over the last few years. Therefore, we continue to recommend the use of early season oil sprays as a good management practice. Inclusion of an organophosphate insecticide such as Lorsban in the oil spray will have little negative effect on the predator mites.

If you plan to use Apollo, Savey, or Agrimek for mite management, a reasonable question to ask is, Is it still necessary to apply an early season oil spray? I believe that the oil application is still a good idea, for two reasons.

First, it will provide control of aphids and scales, as well as European red mites. Secondly, I believe that the use of oil will reduce the likelihood of developing resistance to these miticides. Therefore, I still recommend oil sprays even if Apollo, Savey, or Agrimek are going to be used. -RF

Peach Leaf Curl: Cold injured peach trees need all the help they can get, that includes a spray for control of peach leaf curl. If you have not yet sprayed for leaf curl get on your tractor and spray the first chance you get. If peach trees are at, or past bud swell, you're too late. -PP

Raspberry Anthracnose: The most important spray you will apply all season for control of anthracnose on brambles is the delayed dormant spray of lime sulfur. DON'T FORGET IT! Liquid lime-sulfur at 20 gallons per acre should be applied when new leaves are exposed 1/4 to 3/4 inches; if you are late in your application and don't spray until a few leaves have unfolded, cut the rate to 10 gallons per acre. NOTE: There is greater risk of lime-sulfur burn when applied at this later time. -PP

Just Published: Diseases of Tree Fruit in the East... this is the book that fruit growers have been waiting for! That's what the flyer states, and I agree! This is the revised edition of, *Diseases of Tree Fruits*, by Alan L. Jones and Turner Sutton (two of the best tree fruit pathologists in the country). A comprehensive and clearly illustrated identification guide to 65 common and not-so-common diseases of tree fruit; the book has more than 170 color photos and drawings to illustrate disease signs and symptoms and cycles of infection. The book is available from: Bulletin Office - TFD, Michigan State University, 10-B Agriculture Hall, East Lansing, MI 48824-1039. Cost of the book is ten dollars. The price includes shipping and handling. Make checks payable to Michigan State University and allow 4 weeks for shipping. -PP

Pheromones and Pheromone Traps: One way insects communicate with individuals of the same species is with pheromones. Pheromones are volatile chemicals released by an insect that usually can be detected only by individuals of the same species. There are a number of different types of pheromones, but the most common type is the sex pheromone. Usually the females will emit a tiny amount of a chemical that attracts the male to her and increases the likelihood of mating. Because the chemical is volatile, it is carried by air currents. The male detects the pheromone in the air with receptors on his antennae. He then flies upwind to find the source of the pheromone, a prospective mate. The chemical compositions of pheromones for a number of pest species have been identified and synthetic copies can be produced in the laboratory. Synthetic pheromones can be used in conjunction with traps to catch male insects.

There are a large number of fruit pests that can be monitored with pheromone traps. For growers who have not used traps before, I recommend starting out by trapping for codling moth and spotted tentiform leafminer. As you gain experience with the traps and learn how they can improve your pest management practices, you may want to begin trapping for additional pests.

There are two ways you can use pheromones. The first and most common method is to determine when the insect is active. This allows you to better time control practices or, in some cases, to determine if control is even necessary. Specific information for using pheromone trap catches to time insecticide applications for controlling spotted tentiform leafminer, codling moth, San Jose scale, and dogwood borer is available in the Midwest Tree Fruit Handbook (ID 60).

A more novel use for pheromones is known as mating disruption. Here the orchard environment is saturated with so much pheromone that the males are unable to successfully find a mate. Since the females are unmated, they do not lay eggs that hatch into the damag-

ing larvae. The practice has been tested fairly successfully for Oriental fruit moth. The track record for using pheromones to control codling moths is not as strong, but it does show promise. I am not prepared to recommend these techniques at this time, because of the necessity for chemical control of other pest insects.

Listed below are some, but certainly not all, of the suppliers of pheromones and traps. -RF

Consep Membranes, Inc.; P. O. Box 6059; Bend OR 97708; 503-388-3705

Gempler's; P. O. Box 270; 211 Blue Mounds Road; Mt. Horeb, WI 53572; 800-382-8473

Great Lakes IPM; 10220 Church Rd., NE; Vestaburg, MI 48891; 517-268-5693

Insects Limited Inc.; 10505 N. College Avenue; Indianapolis IN 46280-1438; 317-846-3399

Pest Management Supply Co.; P. O. Box 938; Amherst, MA 01004; 800-272-7672

Scentry Inc.; P. O. Box 426, Dept. MPI; Buckeye, AZ 85326-0090; 602-233-1772

Treco Incorporated; P. O. Box 6278. 1143 Madison Lane; Salinas, CA 93912; 408-758-0205

Collar Rot of Apple: Think of last summer, and those trees in your orchard that showed symptoms of premature leaf reddening, sparse, yellow foliage, and many small, highly colored fruit. Trees that show such symptoms *and* also have a canker at or just below ground level are likely infected with collar rot. If collar rot is suspected we advise the use of Ridomil 2E or Aliette. Both Ridomil and Aliette are labeled for use on *bearing* pome fruits for control of *Phytophthora* collar and root rots. We especially recommend the use of these fungicides in those problem wet areas having poor drainage and heavy, clay-type soil. See ID-168, "1997 Indiana Commercial Tree Fruit Spray Guide", for further information. Also be sure to concentrate your Ridomil or Aliette treatment on surrounding healthy appearing trees, not just trees already showing severe symp-

toms of collar rot. Both these fungicides are best used to prevent collar rot.... not cure it.
-PP

Straw Removal on Strawberries: Straw should be removed from strawberry beds before the plants grow enough to cause yellowing of foliage. Rake most of the straw off the tops of the beds and into the row middles. Leaving some straw on top of the beds for plants to grow up through provides a clean surface for fruit. Studies done in Illinois indicate that proper time to remove straw is when the soil temperature at 4 inches averages about 40-43F. This temperature is usually reached in March for most areas of the state. Allowing the leaves to become etiolated (yellowed with long petioles) due to late straw removal can reduce yields by as much as 25%. However, uncovering the plants early may promote early growth and increase chances of frost or freeze injury. This is a judgment call that growers have to make for themselves. After the straw is removed the frost protection irrigation equipment should be set up. -BB

Strawberry IPM Newsletter Available: An excellent publication is available for commercial growers and others interested in strawberry production. **Strawberry IPM Update** is published quarterly by Iowa State University. Editor Mark Gleason welcomes subscription (it's free of charge), suggestions and articles from growers, educators and researchers. If you would like more information, write to Mark Gleason, Department of Plant Pathology, 313 Bessey Hall, Iowa State University, Ames, IA 50011; or call (515) 294-0579. -BB

Planting Fruit Trees and Small Fruit Plants: Planting trees, vines, bushes, and other fruit plants while the temperatures are still cool allows them to get off to a much better start than plants set out in late spring. Avoid planting into excessively wet soils due to compaction. Though the danger of frost or freezing weather is still present, dormant nursery stock

can be planted at this time with little risk of cold injury. -BB

Subscription Notice: If you subscribe to the printed version of Facts for Fancy Fruit, check the mailing label on this issue. If there is a '96 in the corner we have no record of your payment for 1997, and this will be your last issue of the newsletter. If you wish to continue to receive this newsletter please send a check for \$12.00 payable to Purdue University, to: 'Facts for Fancy Fruit', Colleen Martin, 1165 Department of Horticulture, Purdue University, West Lafayette, IN 47907-1165. If you feel there is an error, please contact Colleen at (765) 494-1301. If you have e-mail and would like a free electronic copy, send us your e-mail address and we will include you on the list, or subscribe through the web at <http://www.hort.purdue.edu/fff/fff.html>.

Coming Meetings:

March 22 — Kentucky Vineyard Society Grape Pruning Session. Bravard's Vineyard and Winery, Hopkinsville, KY. Contact Bravard's. 502-269-2583.

March 27 — Tree fruit pruning demonstration, Porter County. 1:30pm. Contact David Yeager (219-465-3555) for further details.

March 27 — Southwest Michigan Spring Peach Meeting. Benton Harbor, MI. Southwest Michigan Research and Extension Center, 1:00 PM to 5:00 PM. Contact Dr. Bill Shane. 616-944-1477 ext 205

April 2 — Eastern Indiana Fruitgrowers Meeting. Muncie, Delaware County. 7pm. Contact Harold Brown (317-747-7732) for further details.

April 5 — Kentucky Vineyard Society Grape Pruning Session. Norma and Tom Collins' On the Rocks Farm. Lexington, KY. Contact Collins'. 606-272-5205.

April 6 — Indiana Nut Growers Association Scion Wood Swap. Kokomo Lion's Club. Contact Bill Heiman. 317-643-4582.

April 10-11 — New York Wine Industry Workshop. Geneva, NY. Contact Thomas Henick-Kling. 315-787-2277.

April 24 — Northeast Indiana Fruitgrowers Twilight meeting. Details to follow.

Department of Horticulture
Purdue University
1165 Horticulture Bldg.
West Lafayette, IN 47907-1165

First Class
Presort Mail
U.S. Postage
PAID
Lafayette, IN
Permit No. 221

Bruce Bordelon
1165 Dept. of Horticulture
Purdue University
West Lafayette, IN 47907-1165
765/494-1301
e-mail: bb@hort.purdue.edu

Paul Pecknold
1155 Dept. of Botany & Plant Path.
Purdue University
West Lafayette, IN 47907-1155
765/494-4628
e-mail: Pecknold@btpny.purdue.edu

Peter Hirst
1165 Dept. of Horticulture
Purdue University
West Lafayette, IN 47907-1165
765/494-1323
e-mail: hirst@hort.purdue.edu

Rick Foster
1158 Dept. of Entomology
Purdue University
West Lafayette, IN 47907-1158
765/494-9572
e-mail: Rick_Foster@entm.purdue.edu

Disclaimer: Reference to products in this publication is not an endorsement to the exclusion of others which may be similar. Any person using products listed in this newsletter assumes full responsibility for their use in accordance with current label directions of the manufacturer.