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Crop Conditions

FFF 98-02

March 24, 1998

Fruit crops are still fairly dormant across most of the state due to the cooler weather over the past two weeks. In southern areas, peaches are still holding at full swell or pink, apples are at silver tip, brambles have 1/2 inch shoots and grapes are at early swell.

Indiana growers breathing a sigh of relief:

Many Indiana growers seem to have escaped the cold experienced on March 11-12 with minimal damage reported on most fruit crops. In many locations around the state, temperatures hit the single digits, but it seems that the temperature didn't stay down there for very long. In the central to southern parts of the state, peaches were at bud swell or in some cases, starting to show pink. With single digit temperatures at this stage of development, we would have expected a significant amount of damage, but fortunately for the most part, this did not occur. Japanese plums took a severe hit as did nectarines, with almost total kill being reported for these crops. Explanations for the relative lack of damage range from the short duration of cold to the lack of stress so far this winter.

Certainly we were fortunate to have cooler weather over the last week or so which helped to hold development back a little. Although it's too early to be too confident, at this stage I think most folks will be pretty happy with the number of live apple and peach buds they have surviving. We should have a good crop of all fruits this year if we can get through the next few

weeks. Remember that for the past two years we have had hard freezes in early-mid April. Delay final pruning and manage your cover crops to reduce the risk of cold damage. The average date for the last 28F frost of spring for ranges from March 26-31 in the southwest corner of the state, to April 21-25 for the eastcentral highlands and northeast corner.

Although the southern states didn't suffer the same degree of cold as we did, the level of damage was generally greater due to their more advanced stage of development. I think we all saw the damage and attempts to control it on TV. In Georgia, initial estimates put this years peach crop at 50% of normal but apparently the damage was not as bad as first thought, and estimates have been raised to 75% of a full crop. This is an average of 40% for early, 75% for mid and 100% for late ripeners. Of course, this assumes no further freezes and good pollination. Strawberries and blueberries were damaged fairly severely in the southern states.

Weather Review: (From the Purdue Crop & Weather Meetings, March 20) Tom Priddy (Univ. of Kentucky) gave an update on El Nino and some

of the effects seen this winter including flooding in areas of southeastern United States and the West coast as well as in areas of Central and South America. Extreme dry conditions are being experienced in Australia, Indonesia and the Philippines with rain forest areas experiencing forest fires and a delay of the rainy season. Much above normal winter temperatures have been experienced throughout the Midwest extending north into Canada with records being set in many areas of the midwest. As to what is in the future - forecasters are unsure. The current medium and long range outlook calls for normal temperatures and above normal precipitation for the 6-10 day period March 24-28 while the 30 day for April and the 90 day for April through June both call for normal temperatures and precipitation.

Ken Scheeringa (Purdue) gave an update on weather conditions through the past few months. Overall for the last 6 months temperatures have averaged above normal while precipitation has averaged below normal. Month by month information is as follows: October, 1997 precipitation below normal, temperatures normal; November, 1997 precipitation below normal, temperatures below normal; December, 1997 precipitation below normal, temperatures above normal; January, 1998 precipitation above normal, temperatures above normal (10 degrees ave); February, 1998 precipitation slightly below normal, temperatures 8-12 degrees above normal; March, 1998 (1-19) precipitation above normal, temperatures 3-6 degrees below normal. November was the 3rd very cold November in a row. January was the 6th warmest in 104 years and February was the 3rd warmest in 104 years.

Fruit Growers and the Internet:



An increasing number of growers now have computers and are hooking up to the internet. Obviously there is all kinds of information on the internet, and this includes information on fruitgrowing, pest control, etc. The 1998 Small Fruit & Grape Spray Guide is available at <http://www.hort.purdue.edu/hort/ext/sfg/>. Most Purdue Extension publications are on-line at http://hermes.ecn.purdue.edu/http_dir/acad/agr/extn/agr/acspub/ID.html. Another site of interest in the Midwest Small Fruit & Grape Network maintained by Ohio State University at <http://www.ag.ohio-state.edu/~sfgnet/>. The site contains many publications of interest such as

the Midwest Small Fruit Pest Management Handbook, and has links to other sites.

One of the many things that growers across the country are finding useful are the various mailing groups established. These are essentially discussion groups with participants from across the country and around the world including scientists, growers and other folks interested in the industry exchanging ideas and discussing recent events. When you send a message to the group address, it automatically gets sent to everyone on the list via their email account. One of the more active groups is the Apple Crop list-serve administered by the folks at the University of Vermont. Recent discussions have included damage from the recent freeze, apple cider and pasteurization, and the implications of the Food Quality Protection Act. There is also a peach discussion group administered by Clemson University, and a Small Fruit discussion group, Viticulture discussion group, and Enology discussion group administered by Oregon State University. Participation in these groups is free. If you would like more information, please email Peter Hirst (hirst@hort.purdue.edu) or Bruce Bordelon (bordelon@hort.purdue.edu).

State Chemist to Begin On-Farm Records Inspections:

The Office of the Indiana State Chemist has announced that it will begin to perform randomly selected on-farm record keeping inspections. This decision is the result of a 1993 Indiana rule that requires that records be kept on all applications of restricted-use pesticides (RUPs). The state requirements parallel a federal law which was enacted by the USDA. While the record keeping rule pertains only to RUPs, many growers insist that keeping records of all their pesticide applications is vital to their business. Accurate records aid in application timing, product selection, and help the grower maximize yield and profit. Accurate records may also defuse potential litigation. The state requires that records provide seven key pieces of information. Those are included in the record keeping forms in the Tree Fruit (ID-168) and Small Fruit & Grape (ID-169) Spray Guides. Questions regarding RUP record keeping should be directed to Leo Reed at the OISC (765)494-1585.

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 later edition of Facts for Fancy Fruit will have detailed instructions for using pheromone traps to time codling moth sprays.

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 damaging 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.

COMING MEETINGS

March 26 — Southeast Indiana Fruitgrowers twilight meeting. 7.00 pm, Farm Bureau Building, Aurora. Contact Karen Witt, phone 765-647-3511

March 28 — Pruning demonstration, Rocky Meadow Orchard and Nursery, 1.00 pm. Contact Ed Fackler, phone 812-347-2213

April 8 — East Indiana Fruitgrowers twilight meeting. 6.00 pm, Minnetrista Cultural Center, Muncie. Commercial roundtable discussion at 3.00 pm. Contact Harold Brown, phone 765-747-7732

May 18 — Twilight meeting, 6.30 pm. LaPorte County. Contact Walt Sell, phone 219-326-6808 ext. 271



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 '97 in the corner, we have no record of your payment for 1998, and you will not receive another issue of the newsletter. If you wish to continue to receive this newsletter please fill out the subscription form attached to the this issue and send with a check for \$12.00 payable to Purdue University, to: 'Facts for Fancy Fruit', 1165 Department of Horticulture, Purdue University, West Lafayette, IN 47907-1165. If you feel there is an error, please contact Karen Cooper at (765) 494-1301.

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

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

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

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 showed that oil sprays, whether applied at green tip or tight cluster, had absolutely no detrimental effect on mite predators. Therefore, we recommend the use of early season oil sprays as a good management practice.

If you plan to use Apollo, Savey, Agrimek, Pyramite or some other material 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 other miticides are going to be used.

Fireblight: If fireblight 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 fireblight. 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 fireblight 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.



Collar rot of apple: Think back to late last summer, did trees in your orchard show premature leaf reddening, sparse, yellow foliage, and many small, highly colored fruit? Such symptoms, if accompanied by a canker (localized discolored tissue) at or just below ground level, are very symptomatic of collar rot, caused by the soil-borne fungus, *Phytophthora*. If collar rot is suspected we advise the use of Ridomil 2E or Aliette. We especially recommend these fungicides in those problem wet areas having poor drainage and heavy, clay-type soil. Be sure to treat surrounding healthy appearing trees, not just trees already showing severe symptoms of collar rot. Both these fungicides are best used to prevent collar rot.... not cure it. Note: Ridomil Gold EC and Ridomil Gold WSP are new formulations of Ridomil that will eventually replace the Ridomil 2E formulation. See ID-168, "1998 Indiana Commercial Tree Fruit Spray Guide", for further information.

Powdery mildew of apple: The Pathologist's Almanac states: after a very cold winter there will be very little powdery mildew on apple; however, after a very mild winter powdery mildew may be severe. If this prediction holds true, we could be in for a bad mildew year. It might be wise to use a fungicide that will also control mildew in your early scab sprays. Nova and Rubigan are excellent for scab, powdery mildew and rust control.



Peach leaf curl: 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 are too late.



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.



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.



Grape Flea Beetle: Flea beetles can be a serious pest of grapes because they feed on developing buds after final pruning. Lost buds can relate to a direct loss of yield. This year's mild winter may have allowed high survival rates of this pest. Grapes will be in early swell to budbreak across the state over the next two weeks and these are the stages most likely to be damaged from flea beetles. Scout vineyards for these insects or their damage and control if necessary. Damage appears as holes eaten into the sides of buds. The insects are small (1/8 inch long) and shiny green, blue or black in appearance. They crawl quickly along the canes and tend to drop to the ground if disturbed. Incidence often occurs in outer rows adjacent to fence rows or woods making spot spraying an option. Scout the planting carefully and apply insecticides only where needed. Damage from flea beetles usually decreases as buds break and shoots become 1/2 inch or longer. Sevin or PennCap-M will provide excellent control of this insect. Refer to the label or ID-169 for complete recommendations.

Grafting wood: If you need any grafting wood for new trees, for topworking or perhaps for repairing old trees and haven't cut it yet, now is your last chance to collect it. For most types of budding or grafting, last year's growth which is about pencil thickness is the best wood to collect. The most common cause of graft failure is desiccation or drying out of the scion wood. This can occur while wood is being stored as well as after grafting. Wrap scion wood in moist cloth or damp newspapers, then put this in 2 plastic bags. Wood should be stored at about 32F or in a refrigerator, but should not be stored with apples.

Small Fruit Pest Management Publication: The Midwest Small Fruit Pest Management Handbook was published by Ohio State University (OSU Bulletin 861) in 1997. The handbook is a cooperative effort among nine midwestern states; Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Ohio, and Wisconsin. The handbook contains pest management strategies for diseases, insects, and weeds in strawberries, brambles, blueberries, and grapes, and has chapters on pesticide use and foliar analysis. It is designed to complement the annual Small Fruit and Grape Spray Guide. This is an invaluable resource for growers, extension specialists, students, and professionals. Soft bound copies are \$5.50, and hard bound copies are \$11.00 each. They can be ordered from Media Distribution, 385 Kottman Hall, 2021 Coffey Rd., Columbus, OH 43210-1044. Phone 616-292-1607. We have a supply on hand in the Horticulture Department at Purdue as well.

1998 Spray Guides: The revised 1998 Tree Fruit (ID-168) and Small Fruit and Grape (ID-169) Spray Guides are now available. The new issues contain the latest pesticide label information available at printing time but, as always, you should read and follow

the label directions. Several changes have occurred this year and all commercial growers should have a copy of the revised versions. The spray guides will be available at the regional meetings, through your local Cooperative Extension office, or directly from Agricultural Communication Service, Media Distribution Center, 301 South 2nd Street, Lafayette, IN 47905-1092. 1-888-EXT-INFO. (1-888-398-4636)

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**FACTS FOR FANCY FRUIT
SUBSCRIPTION NOTICE FOR 1998**

Facts for Fancy Fruit is a newsletter for commercial and/or advanced amateur fruit growers. It provides timely information on pest control and production practices that should be of interest to all growers. The information is not geared for home fruit growers unless those growers wish to follow commercial practices. All growers or interested persons are welcome to subscribe, however.

At least 14 issues will be published during 1998, bi-weekly during the growing season and monthly otherwise. The subscription price of \$12.00 includes only the basic costs of printing and mailing at first class rates. The newsletter is also available electronically through the world wide web at <http://www.hort.purdue.edu/fff/fff.html> or by email. If you have e-mail and would like a copy sent electronically, 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>.

If you wish to receive the printed version of the newsletter in 1998, please fill out the form below and send it to the Department of Horticulture and Landscape Architecture, along with a check for \$12.00 (tax included) **made out to Purdue University**.

We hope that you will benefit from the information contained in the newsletter. We welcome your comments and suggestions.

Bruce Bordelon

Please send me "Facts for Fancy Fruit" for the 1998 season. Enclosed is my check for \$12.00 (tax included). Make checks payable to PURDUE UNIVERSITY.

Name _____ Please Check:
Address _____ _____ Grower
City _____ _____ Sales
State _____ Zip _____ _____ Other
Phone# _____ County _____

I would like to see information on the following fruit crops:

_____ Apple _____ Peaches _____ Pears
_____ Blueberries _____ Strawberries _____ Grapes
_____ Raspberries _____ Cider _____ Other

Please Return to: Facts for Fancy Fruit, Purdue University,
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