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Winter weather conditions continued across the state over the past two weeks. Northern Indiana received several inches of sleet and snow in the past few days. Temperatures in the teens were recorded on March 22 across the state. This caused further damage to peaches and brambles. Grapes, blueberries, and apples are probably not yet active enough for these temperatures to cause a problem. Strawberries may have been damaged if the straw has been removed and flower buds are out of the crown. Normally fruit crops have started growth by the 1st week in April so the recent cold spell may lead to a late start to Spring 2002.

Indar Receives Section 18 Exemption for Use on Blueberries: EPA has granted a section 18 Specific Exemption for fenbuconazole (Indar) fungicide on blueberries in Indiana for the 2002 growing season. INDAR 75WP (fenbuconazole) is used for the control of mummyberry disease. The supplemental label for the Section 18 exemption has been issued by Dow AgroSciences. This supplemental label must be in the possession of the applicator at the time of application. Check with your agricultural chemical dealer, contact Dow Agrosciences, 9330 Zionsville Road, Indianapolis 46268-1054, the Indiana State Chemist at 765-494-1587, or download a copy from the Midwest Small Fruit and Grape Spray Guide website at www.hort.purdue.edu/hort/ext/sfg under "Recent Updates" link. (Bordelon)

Fire Blight: Dormant copper sprays are most beneficial in those years following severe fire blight. 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 C-O-C-S; 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. (Pecknold)

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 evidence of possible 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 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, "2002 Indiana Commercial Tree Fruit Spray Guide", for further information. (Pecknold)

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. (Pecknold)

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; however, if peach trees are at, or past bud swell, you're too late. If you always seem to be too late, consider applying your leaf curl spray at leaf fall this autumn, then you won't have to worry about spraying in spring. (Pecknold)

Raspberry Anthracnose: The most important spray you will apply this 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. (Pecknold)

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, air currents carry it. 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 number of fruit pests that can be monitored with pheromone traps. For growers who have not used traps before, I suggest starting out by trapping for codling moth, spotted tentiform leafminer, or peachtree borers. 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.

Monitoring with pheromone traps lets you know when the insect is active. This allows you to better time control practices or, in some cases, to determine if control is even necessary. If you choose to control spotted tentiform leafminers with sprays targeted at the adults, having pheromone traps will help you know when the moths are flying in large numbers. For codling moth control, we can use a combination of pheromone trap catches and degree day accumulations to better time sprays. This will be covered in more detail when we get closer to time of codling moth flight.

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

Consep Membranes, Inc.; 213 S.W. Columbia; Bend OR 97702-1013; 800-367-8727; www.consep.com

Gempler's; P. O. Box 270; 100 Countryside Dr.; Belleville, WI 53508; 800-382-8473; www.gemplers.com

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

Insects Limited Inc.; 16950 Westfield Park Rd.; Westfield IN 46074-9374; 317-846-3399; www.insectslimited.com

Scentry Biologicals Inc.; 610 Central Ave.: Billings MT 59102; 800-735-5323; www.scentry.com

Trece Incorporated; P. O. Box 6278. 1031 Industrial St.; Salinas, CA 93901; 408-758-0205; www.trece.com (Foster)

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 have 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 that showed that predator mites 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. The addition of an insecticide with your oil spray usually will not increase control of any of the three pests by more than a small amount. (Foster)

Mite Management: Although European red mites are still in the egg stage, it's not too early to start thinking about our strategies for managing this pest. Below are listed some suggestions I think you should consider.

1. As stated in the previous article, use of a dormant oil spray is recommended.

2. Conserve predator mites. It seems like I've been harping on this point forever, but I still believe very strongly that the key to managing European red mites is to conserve the predator mites, especially *Amblyseius fallacis*. We do this by avoiding the use of pesticides that are toxic to the predator, such as the pyrethroids (Pounce, Ambush, Asana), Vydate, Lannate, or Carzol. Think of the predators as being your first line of defense, with miticides used to take care of what the predators miss.

3. If you plan to use Apollo or Savey, don't apply them before bloom like we used to. The labels have changed, allowing them to be used much later in the season. Based on some preliminary research in grower's orchards, I have found that Apollo will give good control used as late as mid-June. I don't ever recommend application before petal fall, and the optimum time is probably sometime around late May or early June.

4. If you used Apollo or Savey last year, don't use either of those products this year. Switch to Agrimek, or don't apply anything as a preventive treatment. You can always use Pyramite as a rescue treatment once you see a problem. Rotating between modes of action will delay the development of resistance.

5. If you are using Agrimek, apply it shortly after petal fall. Research has shown that control is much better than if you wait 4-6 weeks to spray. It would probably be a good idea not to use Agrimek two years in a row, although to this point resistance has not been an issue.

6. After petal fall, check mite populations in your Red Delicious blocks (or wherever you normally have your worst problems) every week or two. If a problem develops, choose one of the rescue miticides. For most of you, Pyramite will provide the best control.

7. One strategy that has worked well for some growers is to use dormant oils sprays, conserve predator mites, and apply Apollo, Savey, or Agrimek. The next year, the grower again uses dormant oil, but no preventive miticides. Scouting is used to monitor mite populations and Pyramite or another rescue miticide is used if needed. During the third year, the grower could use Apollo, Savey, or Agrimek as a preventive and start the cycle again. This strategy allows the grower the possibility of using no miticides every other year, a considerable savings in pesticide costs and it reduces the likelihood of resistance developing. (Foster)

New Table Grape Publication from Michigan: Tom Zabadal at Michigan State University has published a new 44-page color publication entitled "Growing Table Grapes in a Temperate Climate" (E-2774). It contains an excellent discussion of the specific practices necessary to produce quality table grapes. This publication will be helpful to both hobby and commercial growers. It complements two other publications; "Table Grape Varieties for Michigan (E-2642) and "Pest control in Small Vineyards" (E-2698) to make a complete set of information on the topic of table grapes for our climate. Copies can be

ordered for \$7.00 by calling the MSU bulletin office at 517-355-0240.

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. 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 more than 5% of the buds have been damaged. 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 if needed. Damage from flea beetles usually decreases as buds break and shoots become 1/2 inch or longer. Sevin will provide excellent control of this insect. Refer to the label or ID-169 for complete recommendations. (Bordelon)

Cornell Research Foundation Announces Proposed Grape Licensing Agreement: The Cornell Research Foundation (CRF) released a proposed new licensing agreement for varieties coming out of Geneva's grape breeding program. First to be released will be GR-7 in 2002. Briefly, the CRF is proposing a licensing agreement in which growers would pay a royalty based on tonnage and price. The proposed term is 20 years, and the proposed royalty is 3% of the sale price after subtracting taxes and shipping costs.

Background: The program and research foundation began discussions about this plan in 2000 in meetings with growers. The proposed agreement represents an attempt to find a workable alternative to plant patenting. The patent process used for previous releases (Einset Seedless, Melody, Chardonel, Marquis) results in well under 50% of the revenues returning to the program to support ongoing breeding efforts. This revenue stream only begins after substantial patenting costs and legal fees are recovered. The proposed alternative represents an attempt to reduce administrative costs, increase the income from successful releases, and thereby assure long-lasting support for grape breeding efforts – the original goal of the patent approach. The rationale behind the “tonnage” royalty is that it would delay costs until the vines were producing income, and provide a steady stream of revenue for several years rather than a higher up-front cost at planting time. If markets for the varieties (prices or demand) dwindled, then the royalty would also be reduced. The legal device used to get around patent law requirements

and reduce administrative costs is called “bailment”. Essentially it amounts to a lease in which CRF would retain limited ownership rights, which would allow CRF to establish a royalty structure, and would provide a legal basis for the agreement.

Example: A grower produces 6 tons/acre of GR-7 that sells for \$500 per ton. Shipping costs are \$10 per ton. $3\% \times \$490 = \14.70 per ton $\times 6$ tons/acre = \$88.20 per acre. Cost per vine per year (8 x 10 spacing, 545 vines per acre) $\$88.20/545 = \0.162

Comments welcome: This draft plan was put out for discussion, and is subject to modification. The breeding program along with CRF ask for your ideas and input to help develop a workable plan that will provide benefits both for the industry and the breeding program. It would also provide a means by which out-of-state growers benefiting from NY varieties could support the program. Comments may be addressed to the following contacts:

Grape Breeding Program, Bruce Reisch, 204 Hedrick hall, Agr. Exp. Sta Geneva, Geneva, NY 14456-0462, phone: 315-787-2239 email b.reisch@cornell.edu. Cornell Research Foundation, Richard S. Cahoon, Vice President, Cornell Research Foundation, 20 Thornwood Drive Suite 105, Ithaca, NY 14850 phone: 607-257-1081, email: rsc5@cornell.edu Source: Tim Martinson and Bruce Reisch, Finger Lakes Vineyard Notes, March 5, 2002.

Concentrate vs Dilute Spraying: Ever wondered about how to calculate water and chemical rates for dilute and concentrate spraying? A new publication by Celeste Welty at Ohio State addresses this subject. This publication does a nice job of explaining concepts such as tree row volume, dilute applications and concentrate applications. It also goes into detail on how to calculate the amount of chemical and water for these different approaches to spraying and includes a number of examples. I have a bunch of these publications that I will be bringing to county extension meetings with me or you can contact me to send you one. The price is \$3.00. (Hirst)

MAAHS Moves Forward to Meet Employer Needs in Ohio and Indiana: Source: John Wargowsky, Executive Director, Mid American Ag and Hort Services, 614-677-4530 or labor@ofbf.org

Members of Mid American Ag and Hort Services (MAAHS) combined educational sessions and their organization's annual meeting held recently in Findlay, Ohio. According to John Wargowsky, the new organization's executive director, MAAHS is a consortium of association, organizations and employers organized to meet the educational, regulatory

compliance assistance, and labor recruiting needs of agricultural and other employers in Ohio and Indiana. Associations and organizations are sponsor members, while employers who are members of sponsor members may become employer members.

The inaugural board of trustees was elected during the annual meeting portion of the day-long program. Those board members are Tom Demaline, President, Willoway Nurseries, Avon, OH; Michael Baise, Vice President and Secretary, Indiana Farm Bureau, Indianapolis, IN; Mike Pullins, Treasurer, Ohio Farm Bureau Federation, Columbus, OH; Mike Adolph, K.W. Zellers & Son, Hartville, OH; Richard Wander, Lynd Fruit Farm, Pastakala, OH; Jack Schmidt, Timbuk Farms, Granville, OH; Lawrence Schmidt, Schmidt Bros., Swanton, OH; John Holmes, Ohio Florists, Association, Columbus, OH; and Bill Stalter, Ohio Nursery & Landscape Association, Columbus, OH. This newly elected board will build upon actions of the initial working board that included Demaline, Baise, Pullins and Dennis Kirven, retiring executive director of the Ohio Florists, Association.

The first key action of the new board was to repackage the organization's services to employers into Employer Limited and Employer Premium categories. Employer limited member services include the Gempler's Ag & Hort Employers Labor Law Compliance Manual with a state-specific section, Gempler's Alert newsletter of ag/hort safety and employment law compliance, MAAHS Messenger newsletter, educational seminars, twenty (20) percent discount on Gempler's educational materials, and one-time fifteen (15) percent on all Gempler's products, Spanish Phrases for Landscaping Professionals at Ohio Nursery & Landscape Association member price of \$25.00 (\$25 savings) and basic phone consultation billed in 30 minute increments.

Employer premium member services include all services in the employer limited category with no time charge on the phone consultation. Additional fee-based services for employer premium members include foreign labor advice for H-1B specialty/professional workers, H-2A program for temporary or seasonal agricultural work, and H-2B program for temporary non-agricultural work. Employer premium members may also access MAAHS, service to develop legally correct disclosure forms translated into the language of the workers as required by the Migrant and Seasonal Agricultural Worker Protection Act disclosure requirements on a fee-basis.

"We are excited with the initial response of employers to our services with vegetable, nursery, fruit, greenhouse, florists, landscaping, food processing, and other industries being represented in our membership," Wargowsky said. "We look forward to serving the needs of many more agricultural, horticultural,

and other employers and evolving our services and as our membership grows. Another quickly growing aspect of MAAHS, value is building cooperative relationships with government officials and other stakeholders dealing with employment-related laws, regulations, and services."

If you would like more information about MAAHS, contact Wargowsky at P.O. Box 479, Columbus, Ohio, 43216 or 614-677-4530 (voice) or 614-249-2200 (fax) or labor@ofbf.org.

Upcoming Meetings:

- April 1 -** Spring Grape and Wine Workshop. Oliver Winery, St. Rd. 37 N, Bloomington, IN. Contact Bruce Bordelon 765-494-8212 or Oliver Winery 812-876-5800.
- April 9 -** Alternatives in Agriculture Series. Tree Fruit and Grape Production. Huber Orchard and Winery, Starlight. Contact Roy Ballard 812-948-5470
- April 16 -** Lake County twilight meeting. County Line Orchard, 5:30 pm. For directions see <http://www.countylineorchard.com>
- April 17 -** LaPorte County twilight meeting. Location and time to be announced. For more information contact Walt Sell, Ph 219-326-6808 ext 271
- April 24 -** North East Indiana twilight meeting. Bruick Bros. Orchard, New Haven, IN. For more information contact Ricky Kemery, Ph 219-481-6826.
- April 27 -** Grape Planting Day. Madison Vineyards. Contact Steve Palmer 812-273-6500
- May 8 -** Eastern Indiana Horticultural Society. Twilight meeting. Grabow Orchard. More details to come.
- May 14 -** LaPorte fruitgrowers twilight meeting. More details to come.

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

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

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

Peter Hirst
1165 Dept. of Horticulture &
Landscape Architecture
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

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