



INDEX

- Crop Conditions
- Indar Receives Section 18 Exemption for Use on Blueberries
- Pruning Blueberries
- Pruning Grapes
- Pruning Brambles
- Peach Leaf Curl
- Pheromones and Pheromone Traps
- Integrated Pest Management
- Cider Contest
- Cider Pasteurization
- Tour of New Zealand
- 1999 Spray Guides
- Subscription Notice
- Upcoming Meetings

CROP CONDITIONS

FFF 99-01
March 16, 1999

The 1999 growing season is just around the corner. What do we expect for fruit crops across Indiana? Last summer's El Nino gave way to a La Nina this past winter which resulted in very warm and dry fall. That trend ended abruptly in late December with the first cold snap of the season. Sub-zero temperatures were reported across the northern part of the state. Although the lows weren't in the range that we normally expect to cause damage, they were preceded by very warm temperatures so that there was a temperature "swing" of 50-60 °F in many areas.

In January winter really set in with a major snow storm across the upper Midwest. Nick-named the Winter Blast of 1999 by the local news media, this storm will be remembered for the 12-18 inches of snow it dumped on the northern part of the state and the extreme drifting that occurred due to high winds. Many counties were under Snow Emergencies for several days following the January 3-4 storm. Temperatures reached season lows on January 5 when temperatures ranged from -20 °F in the west central and northern areas, to -5 °F or warmer across the southern part of the state. The central regions saw -15 °F in many places. These are damaging temperatures for many fruit crops, especially peaches, grapes, and blackberries. It looks like we've had about 100% kill of peach buds at West Lafayette, and 50% primary bud damage on tender grape varieties. Blackberry buds look okay for the most part, but the plants will very likely show delayed winter injury symptoms after growth begins in April. Apples, blueberries, and strawberries do not appear to be damaged at this time. Peaches in the Northwest corner of the state also suffered damage though not a total loss. Southwest Michigan also reported damage to peaches and cold-tender grape varieties. Fruit crops in the rest of the state do not show any significant winter damage at this time. For the most part, fruit crops are still dormant across the state. As growth begins over the next few weeks we will begin to see the full extent of the winter damage that occurred in January. After budbreak we will still have to get through spring frosts and freezes, so we're not out of the woods yet, but we're hopeful that 1999 will be a good year for fruit in Indiana. - *Bordelon*



Indar Receives Section 18 Exemption for Use on Blueberries: EPA has granted a section 18 Emergency Exemption for fenbuconazole (Indar) fungicide on blueberries for the 1999 growing season. INDAR 75 WP is used for the control of mummyberry disease and is a replacement for Funginex which is no longer being manufactured. The use recommendations call for application of

one 2 oz. pouch (1.5 oz. active ingredient) per acre by ground or air. Begin applications at early green tip and make subsequent applications at 10 to 14 day intervals. A maximum of 5 applications or 10 oz. of product per acre per year is allowed. Do not make applications within 30 days of harvest. Application through any type of irrigation system is prohibited. Do not graze livestock in treated areas or feed cover crops grown in treated areas to

livestock. Environmental hazards are toxicity to fish and aquatic organisms. Do not apply directly to water, to areas where surface water is present. Do not make applications within 75 feet of streams, rivers, ponds, lakes, or reservoirs. Drift and runoff from treated areas may be hazardous to aquatic organisms in adjacent aquatic sites. Do not contaminate water when disposing of equipment washwaters or rinsate. The supplemental label for the state emergency exemption must be in the possession of the applicator at the time of application. If you need a copy of the label, check with your agricultural chemical dealer, contact Rohm and Haas Company, 100 Independence Mall West, Philadelphia, PA 19106 215-592-3000, or you can contact Bruce Bordelon at the address at the end of this newsletter.

Pruning Blueberries: Spring is the best time to prune blueberries. Winter injured wood is easily identified and should be removed. Try to establish an even number of canes of various age classes. A well-pruned blueberry bush should have about 15-25 canes (depending on age, cultivar and growth habit) with approximately 1/3 in the 5-7 year-old class, 1/3 in the 2-4 year-old class, and 1/3 new canes for renewal. Pruning should open the center of the bush to encourage new cane growth, and promote an upright growth habit by removing low, drooping branches. Detailed pruning to remove weak growth in the tops of the canes will reduce the number of fruit and improve fruit size.
-Bordelon



Pruning Grapes: The level of winter injury in grapes this year will depend on grower location and the hardiness of the particular variety. There is likely to be varying levels of damage on cold-tender varieties. You will need to assess bud damage prior to pruning so that adjustments in the balanced pruning formula can be made based on the amount of bud loss. Typically, if less than 25% of the buds are damaged you can prune normally. If 25-40% of the buds are damaged then you'll want to adjust the number of buds retained accordingly. For example, if 40% of the buds are damaged then 60% are live. If you need 40 buds per vine for the proper crop load then you'll have to leave 68 buds to end up with 40 primary shoots. To

determine how to adjust the bud number multiply the inverse of the % live buds ($1/.60$) times the desired number of buds ($1/.60=1.7$; $1.7 \times 40 = 68$ buds). If more than 40% of the buds are damaged then you'll probably want to do minimal pruning now and wait until after budbreak to determine where live buds occur in order to have an adequate number for balancing the vines.

Spring freeze damage can also be a significant economic problem for grape growers. A technique called long pruning or double pruning helps avoid spring frost and freeze damage, especially on varieties that tend to bud out early. The procedure utilizes the apical dominance of buds on the cane. The first buds to begin growing are those on the tip of the cane, while buds closer to the base begin growth later. This type of pruning is only applicable to spur or no-tie training systems. To perform long pruning, select canes to be used for fruiting spurs during the normal pruning practice, but leave those canes long, with 10-15 more buds than desired. Spurs are normally pruned to 5 or 6 nodes for fruiting, but if they are not cut back, then the extra buds will help delay the development of the desired basal 5-6 buds, which helps avoid frost injury. After the date of the last probable spring freeze has passed, the canes are shortened to the desired length to properly adjust the bud number for the vine. Growth of the basal buds can be delayed by as much as two weeks if weather conditions are favorable. While this procedure requires an extra trip through the vineyard, it can mean the difference between a full crop and little or no crop.
-Bordelon



Pruning Brambles: This is a good time to finish pruning summer-bearing brambles. Last years fruited canes should be removed now if they were not last summer or fall. Remove weak or spindly canes and thin the number of canes to 2-4 per foot of row. Laterals on blackberries and black and purple raspberries should be trimmed back to about 2/3 to 3/4 of their original length to promote flowering on strong wood. Red raspberry canes can be tipped if desired, but should not be tipped more than 1/4 of the cane length. If the planting is trellised, the canes should be tied to the wires now before growth starts. Fall bearing

types should be mowed to the ground before growth begins. Remove and destroy the prunings to help prevent anthracnose. *-Bordelon*



Peach Leaf Curl: If you haven't applied your leaf curl spray, then don't delay. Control of this disease is relatively easy and requires only one fungicide application per year. However, it is absolutely critical that this spray is applied prior to bud swell in the spring – if you miss this window of opportunity then there's not much you can do until next year. There are a number of recommended materials which will control this disease – see page 18 of the 1999 spray guide for details. *-Hirst*

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 advocate 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.

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. 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.

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. Mating disruption of codling moths is practiced on several hundred thousand acres in Washington. However, I do not recommend this technique for codling moths in Indiana because of the necessity for chemical control of other insects. *-Foster*

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

Integrated Pest Management: As all of you know, use of certain insecticides, namely the organophosphates and carbamates, is receiving a lot of publicity lately. The Food Quality Protection Act, articles in consumer magazines, and full-page ads in newspapers have called into question the potential for negative health effects resulting from the use of these materials. Whether or not there is a scientific and factual basis for these concerns, it can only be in your best interest to use these insecticides as judi-

ciously as possible. One way to limit the use of insecticides is by adopting the use of Integrated Pest Management or IPM. IPM is the use of all possible methods to manage pests, not just relying on pesticides. For insects, this may include such practices as proper pruning to allow spray penetration, conserving natural enemies, or using pheromone traps to better time sprays. Many of you are using some IPM practices already. Below I have listed several suggestions that you might consider adopting.

1. If you have not already, purchase the *Midwest Small Fruit Pest Management Handbook* and/or the *Midwest Tree Fruit Pest Management Handbook*. These relatively inexpensive books are full of suggestions for improving your management of the pests in crops that you grow.
2. Consider using pheromone traps this year for at least one of the insects for which pheromones are available.
3. Consider how various cultural practices affect insect pests. For example, tarnished plant bugs and stink-bugs are usually more serious problems when certain weeds are allowed to form a seedhead. Are you controlling weeds to prevent insect problems?
4. Before you make spray decisions, do you ask yourself "What affect will this spray have on natural enemies, such as predator mites?" Pyrethroid insecticides can provide excellent control of several pests, but is it worth it to kill all your predators?
5. Before you make an insecticide application, do you know for sure what the target insect is? If you apply an organosphosphate to apples early in the season, are you attacking a specific insect with that spray? If scales have not been a problem, then you can probably get by without that spray. If you are in the southern part of the state where apple maggot is not a concern, you may be able to skip a cover spray or two if you know when codling moths are active (by using pheromone traps).
6. Are you scouting for mites on your apples at least every two weeks beginning after petal fall? Blocks that had very few mites last year probably will not need an application of Apollo or Savey this year. Blocks that had a fairly high population last season may well require an early season miticide application. But, if you didn't scout, you won't know for sure.
7. Are you scouting for aphids, scales, leafminers, leafhoppers, and other insects that don't necessarily

occur every year? Are you using thresholds to make spray decisions?

8. Is your sprayer properly calibrated? Putting on too much insecticide could result in illegal residues and putting on too little could result in poor control or the development of resistance. Be sure you are applying the right amount of insecticide.

If you can find a way to reduce your insecticide use with IPM, it may save you some money, it may conserve some natural enemies that help keep other pests under control, and it will allow you to tell those curious customers that you are using the latest scientific information to minimize the amount of insecticides necessary to produce a marketable crop. I realize that I am probably preaching to the choir, but this is a good time to think about how you could possibly upgrade your IPM practices. If you have specific questions, don't hesitate to call me. -Foster



Cider contest: This year we held the first ever Indiana Apple Cider contest, in conjunction with the Hort. Congress in late January. The winning cider maker was Steve Doud of Denver, IN who incidentally took second place also. His winning cider was made up largely of Purdue-bred apples, and was heavy in Goldrush. Thanks go to all the cider makers who submitted entries and we hope to expand this contest next year. Special thanks go to Jim Barbour of the Marion County Extension office who took care of all the logistics including organizing the judging and collating the scores. -Hirst

Cider Pasteurization: There are a few folks in the state who have purchased UV pasteurizers for cider. To my knowledge these have not yet been approved by the FDA, but I understand the manufacturer expects the approval to come through soon. We still have no word on whether the FDA is going to mandate pasteurization, but I will let you know as soon as I hear anything on this. In the next issue of Facts for Fancy Fruit I will present the results of the recent survey of Indiana cider producers. -Hirst



Tour of New Zealand: This will definitely be going ahead in late February or March 2000. I am in the

process of putting the itinerary together, which will include a mix of fruit visits and tourist activities. Total length of the trip will be about 18 days. While preference will be given to Indiana fruit growers, others will also be welcome if we have space (which we probably will have). Spouses will also be welcome – in fact I've heard that some may have difficulty getting permission to go without your spouse coming along also! Look for updates in Facts for Fancy Fruit, and save those pennies! -Hirst

1999 Spray Guides: The revised 1999 Commercial Tree Fruit (ID-168) and Commercial 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). The current version of the Small Fruit and Grape Spray Guide is also available on the web at: <http://www.hort.purdue.edu/hort/ext/sfg/>. Any changes in pesticide registration that have occurred since printing will be listed under a special button on that web page.

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 98 in the corner we have no record of your payment for 1999, 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 this issue and send with a check for \$15.00 payable to Purdue University, to: 'Facts for Fancy Fruit', Department of Horticulture and Landscape Architecture, 1165 Horticulture Building, Purdue University, West Lafayette, IN 47907-1165. If you feel there is an error, please contact my

secretary at (765) 494-1301. 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>.

Upcoming Meetings

April 1 – Pruning demonstration at Anderson Orchard, Porter County. Contact Dave Yeager at 219-465-3555

April 7 – East Indiana Fruitgrowers twilight meeting 6.00 pm, Minnetrista Cultural Center, Muncie. Contact Harold Brown at 765-747-7732.

April 10 – Pruning demonstration at Fantasy Vineyards near Rockville, Parke County. Contact Bruce Bordelon at 765-494-8212

April 20 – Twilight meeting, Elkart County. Contact Jeff Burbrink at 219-533-0554.

May 5 - East Indiana Fruitgrowers twilight meeting 6.00 pm, Minnetrista Cultural Center, Muncie. Contact Harold Brown at 765-747-7732.

Department of Horticulture
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

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.

**FACTS FOR FANCY FRUIT
SUBSCRIPTION NOTICE FOR 1999**

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 1999, bi-weekly during the growing season and monthly otherwise. The subscription price of \$15.00 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 your e-mail address to bordelon@hort.purdue.edu 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 1999, please fill out the form below and send it to the Department of Horticulture and Landscape Architecture, along with a check for \$15.00 (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 1999 season. Enclosed is my check for \$15.00 (tax included). Make checks payable to PURDUE UNIVERSITY.

Name: _____
Address: _____
City: _____
State: _____ Zip: _____
Phone# _____ County _____

Please Check:
Grower _____
Sales _____
Other _____

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

Apple	Strawberries
Peaches	Grapes
Pears	Raspberries
Blueberries	Cider
Other	

Please Return to: Facts for Fancy Fruit
Purdue University
Department of Horticulture and Landscape Architecture
1165 Horticulture Building
West Lafayette, IN 47907-1165