



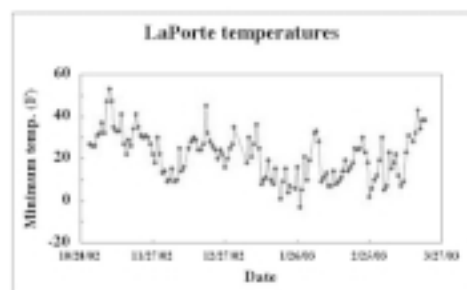
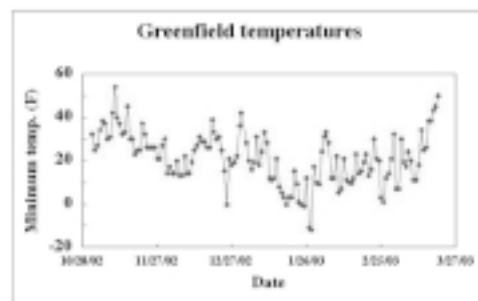
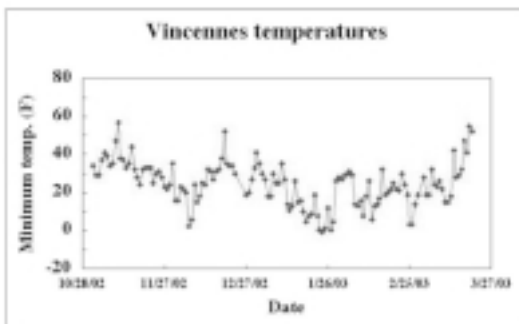
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FFF03-02
April 14, 2003

The cool weather of the past week has slowed plant development considerably. Temperatures hit the low to mid 20s across central and northern areas on March 31, and were a few degrees warmer in southern parts of the state. We have not heard any reports of damage and we don't expect that plant development was far enough along for these temperatures to cause significant damage. Apples and peaches haven't developed much in the last 2 weeks due to the cooler weather. Early grapes are at full swell to budbreak in the south, and just beginning swell in central and northern areas. Blueberries buds are swollen and reaching the popcorn stage. Strawberries are pushing new leaves and flowers are just emerging from the crown in central areas.

Winter temperatures: The below graphs show the daily minimum temperatures for southern (Vincennes), central (Greenfield) and northern (LaPorte) sites during the past winter. The lowest temperature recorded among the sites in the Purdue database was -12F in Greenfield on January 28, although other specific sites may have experienced lower temperatures. (Hirst)



Grape flea beetle: The Grape Flea beetle can be a serious pest of grapes because it feeds 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 fencerows 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 Commercial Small Fruit and Grape Spray Guide (www.hort.purdue.edu/hort/ext/sfg) and the Midwest Small Fruit Pest Management Handbook (www.ag.ohio-state.edu/~sfgnet/) for complete discussions of grape IPM. (Bordelon)

Apple Diseases: Tight cluster to pink is a time for maximum disease control efforts. During this period primary scab spores often reach their peak; powdery mildew infection is occurring on new growth; cedar apple rust is discharging spores with each rain; and fire blight is building, ready to be carried to opening apple and pear blossoms. It's not a pretty picture!

1. **Apple scab:** The potential for severe scab infection is ALWAYS high. The amount of scab is directly dependent on the frequency AND DURATION of spring rainfall. If we have a wet April, scab pressure will be high, if it turns dry, scab pressure will be low, spray accordingly.

2. **Rust:** The pink stage of apple growth generally coincides with the time rust spores begin to infect apple foliage and fruit. If rust is a chronic problem consider the use of a sterol-inhibiting fungicide such as Nova or Rubigan.

3. **Powdery mildew:** If mildew has been a chronic problem in certain blocks (Jonathan, Rome, Ida Red) the above mentioned sterol-inhibiting fungicides are also excellent in helping to control mildew.

4. **Fire Blight:** BE CONCERNED...see warning on fire blight (Pecknold).

Fire Blight Warning: Early, warm temperatures and the increased occurrence of fire blight over the past two years have increased the potential for this to be a bad fire blight year. If **prebloom & bloom coincide with warm temperatures** (daily average temperatures above 65°F) the possibility of blossom blight infection being triggered by a wetting event (rainfall or heavy dews) becomes very real. The best prevention for fire blight is the application of streptomycin during bloom. Apply streptomycin just as blossoms begin opening and repeat every 3-4 days if weather favorable for blossom blight infection persists. The "MARYBLYT" computer software program will help you in determining when and if an infection event occurred as well as predict the risk for future infection periods (Pecknold).

Planting to Avoid Fire blight: When establishing new orchard blocks, consider varietal susceptibility to fire blight. Blight control is easier if plantings of susceptible trees can be isolated. Avoid interplanting susceptible apple varieties (Gala, Fuji, Ida red, Jonathan, Lodi, Rome, etc.) with pears or in fields adjacent to pear plantings. In mixed variety plantings, set varieties susceptible to blight in solid rows for ease of spraying with blight control chemicals. Also, most of the more severe fire blight problems have occurred in orchards planted on poor sites. These sites can be characterized as having heavy, poorly drained, and/or highly acid soils. Planting trees on poor soil invites fire blight damage and poor fruit production (Pecknold).

Apple Scab: The most important time of year for scab control is from green tip to petal fall. If you don't control scab during this period it's an uphill struggle the remainder of the season. Be sure sprayers are properly calibrated; thoroughly read the label of all pesticides you will be applying; use sufficient water to provide good coverage; choose calm, good drying conditions for spraying (Good luck on this suggestion); prune trees so they have an open canopy allowing for good spray penetration; and maintain a tight schedule if wet weather persists during the primary scab period (Pecknold).

Brown Rot Of Stone Fruits: Management of brown rot began last year after harvest...with the removal of all fruit, mummies and blighted twigs. It continues this year at pink with early season

fungicide sprays. We fortunately have an abundance of fungicides for use in control of brown rot. See ID-168, “2003 Indiana Commercial Tree Fruit Spray Guide”, for a complete listing of suggested fungicides (Pecknold).

Web Resource for Fruit Diseases: I just checked out the ascospore maturity rating for apple scab in New York this past week by going online at: www.nysaes.cornell.edu/pp/extension/tfabp/. Once at this website, you’ll find a number of excellent links to disease fact sheets, extension presentations, and other newsletters. I highly recommend you take a look at this site; it’s an excellent reference for both tree and small fruit disease information (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 the time of codling moth flight.

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

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

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

Just a few notes about using pheromones.

1. It is preferable to use more than one trap for each insect pest for which you are trapping. Sometimes for reasons we don’t entirely understand, a trap place at a particular location may not catch many moths, which could give you misleading information. If you have two or three traps, you can be a lot more confident in the results.
2. Pay attention to how frequently the lures need to be replaced. When you replace a lure, don’t throw the old lure on the ground. If you do, it may compete with the lure in the trap and lower your trap catch.
3. If you are trapping for more than one insect, don’t handle more than one type of lure with your bare hands. You can contaminate the lure with the other pheromone and it will lose effectiveness (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 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 a dormant oil spray.
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 1st cover.

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 or Acramite 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 when applied right after petal fall 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 or Acramite will provide good control. I don't have a lot of experience with Acramite yet. My initial observations are that it is not quite as effective as Pyramite against European red mite, but is a lot less toxic to the predator mites. The few reports I have heard from growers about Acramite have been positive, but I would be interested to hear from other growers who have used it.

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).

Pesticide Use Survey : This winter I sent most of you a survey questionnaire asking about your pesticide use. We just received the completed survey a few weeks ago from the Ag Statistics office, so we haven't done a thorough analysis of the results yet. However, the response to the survey was much higher than the previous survey we did in 1994. Thanks to all of you who took the time to complete the survey.

There are several pieces of preliminary information that I thought I would share with you at this time.

- Guthion use decreased from 34% of total insecticide used to 13%.
- Imidan use increased from 29% of total insecticide used to 51%.
- Total OP used decreased from 84% to 73% or, to say it another way, total non-OP use increased from 16% to 73%.
- Danitol use represents 6% of total insecticide use.
- Insect growth regulators (Intrepid, Confirm, and Esteem) accounted for 4.5% of all insecticide use.

So, what can we learn from this. There has certainly been a dramatic shift away from the use of Guthion, at least partially because of restrictions on its use. While non-OP use is still small, it appears that at least some growers are starting to look seriously at alternatives to the OPs for insect control.

Another question that I asked growers was whether they use pheromone traps to monitor for various insects. The one I have the most interest in is codling moth. The good news is that almost 47% of the apple acreage is being monitored for codling moth with pheromone traps. The bad news is that only 9% of the growers who responded to the survey are using codling moth pheromone traps. In other words, the larger growers tend to use pheromone traps, while most of the small growers don't. I won't presume to guess why that is true, so I will let you all figure that out. (Foster).

Health update: In a recent study, women with the lowest blood levels of the beneficial plant compounds called carotenoids were twice as likely to develop breast cancer as those women with higher levels. Carotenoids are especially plentiful in carrots, tomatoes, and dark green leafy vegetables.

The bottom line – eat at least 5 servings of fruits and vegetables every day. There's mounting evidence that they prevent all kinds of cancer, and heart disease also. *From: The American Journal of Epidemiology Vol 153 page 1142.* (Hirst).

Return Bloom Fund: This week we are in the process of establishing new plantings at the new Meigs horticulture research farm. Trees being planted this year are:

- Trees of several large fruited apple varieties for physiology research into the genetic basis of fruit size in apple.
- Honeycrisp trees for entomology research.

These plantings are being established with help from the Return Bloom Fund. Once again we would like to thank all contributors to this fund for continuing to support our research (Hirst).

Upcoming meetings:

April 17. Lake County fruit meeting. Pruning demonstration 3.00 pm, twilight meeting 6.00 pm, Countyline Orchard. Contact Stan Sims, Lake County Extension Educator. Email stanley.sims@ces.purdue.edu, Phone 219-755-3240.

April 23. North East Indiana twilight fruit growers meeting. Springer Vineyard and Orchard, 17221 Morton Road, Ossian, IN. For more details contact Ricky Kemmery, Allen County Extension Educator, phone 260-481-6826

May 22. LaPorte County twilight meeting. Garwood Orchard. Contact Walt Sell, LaPorte County Extension Educator. Email walt.sell@ces.purdue.edu, Phone 219-326-6808

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