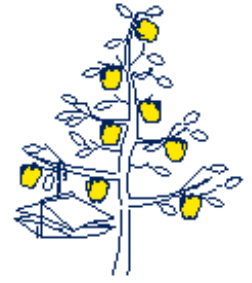




# The Orchard Monitor

*Committed to the Integration of Orchard Management Practices*



EXTENSION  
SPECIALISTS

**Henry Hogmire**  
ENTOMOLOGY

**Alan Biggs**  
PLANT PATHOLOGY

April 6, 2009

## UPCOMING EVENTS

**April 10.** – The WVU-KTFREC will be closed in observance of Good Friday.

**April 23, 6:00 p.m.** – Tree Fruit Grower Twilight Dinner and Meeting at Gourmet Central (in Hampshire Industrial Park), Romney, W. Va. WVU Extension Specialists will discuss early-season insects and diseases and their management strategies. Dr. Gerald Leather, Hampshire County Extension Agent, will discuss the results of chemical mowing experiments conducted in 2008. For more information contact the Hampshire County Extension Office at 304-822-5013.

**April 26-29.** – West Virginia Agritourism Conference at Quality Hotel Conference Center, Harpers Ferry, WV. Great presenters and good ideas: Good Agricultural Practices Training, A Crash Course in Group Sales, Agritourism in Action Tour, Social Networking, and breakout sessions. The Conference will also feature a bus tour of agritourism attractions in the Eastern Panhandle, as well as a number of shorter informational workshops. Participants are encouraged to bring a camera, notebook, and photos and publications of their own operations to share with the group. For more information, contact Cindy Martel at 304-558-2210 or at [cmartel@ag.state.wv.us](mailto:cmartel@ag.state.wv.us), or visit [www.wvagriculture.org](http://www.wvagriculture.org).

**April 30, 7:00 p.m.** - Spring In-depth Fruit Meeting at Virginia Tech’s Alson Smith Agricultural Research and Extension Center, Winchester, Va. The agenda will include seasonal updates by Virginia Tech Extension Specialists, and Dr. Rongcai Yuan will provide an in-depth discussion of “Return bloom of apples”. For more information contact the Frederick County Extension Office at 540-665-5699, or email Cyndi Marston at [cmarston@vt.edu](mailto:cmarston@vt.edu).

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## WEED SCIENCE

**Early season weed control in orchards.** Weed competition can result in reduced crop yields and stunted growth of young trees. In young plantings, it is recommended that tree rows be kept weed-free at least during the first three years of establishment. Weed management in bearing orchards is critical during

May-June (early postbloom to fruit-set), although it is ideal to keep rows weed-free from bud-swell to harvest. Follow label guidelines while applying residual herbicides to allow sufficient pre-harvest intervals. A non-selective post emergence herbicide such as glufosinate (Rely; only for apple), paraquat (Gramoxone Inteon), or glyphosate (Roundup or other generic products; broadcast application only for apple, pear, and cherry) should be added along with the residual herbicide to control existing weeds. For this time of the year, residual herbicides stronger on broadleaf weeds in general are diuron (Karmex), simazine (Princep) and terbacil (Sinbar), whereas those more effective on grasses include napropamide

(Devrinol), norflurazon (Solicam), oryzalin (Surflan), and pendimethalin (Prowl). Some residual herbicides (e.g., diuron, terbacil) are effective on certain grasses and broadleaf weeds. Tank-mixing at least two different residual herbicides based on mode of action and spectrum of weed control will minimize the requirement for repeat applications. Additional information on efficacy can be obtained from the 2009 Spray Bulletin. Follow the herbicide label to adjust rates based on soil texture and organic matter content in your orchard. Perennial weeds may have to be managed separately by application of post emergence herbicides later on during the growing season. Information on application timings for specific perennial weeds will be provided later. (Prepared by Dr. Rakesh Chandran, WVU Extension Weed Specialist).

**ENTOMOLOGY**

**Rosy apple aphids** that hatched from overwintering eggs are all wingless females called stem mothers that become



**Rosy apple aphid colony**

adults by the pink stage of apple bud development. Whereas the newly hatched nymphs have a dark green color, adults are purplish or dusty gray. A single stem mother is capable of curling a leaf, and it is from within this protected shelter that numerous live young are produced. Rosy apple aphid must be controlled before petal fall in order to prevent fruit injury. To monitor aphid abundance, make a 3-minute examination of 5-10 trees per block at the prepink stage and count the

number of fruit spurs showing curled leaves with live aphids. An insecticide application is recommended before petal fall if an average of one or more infested fruit clusters per tree are found. The neonicotinoid materials (Actara, Assail, Calypso) and Beleaf are considered the most effective options. Actara should not be applied later than early pink, or within 5 days of placing beehives in the orchard, since it is toxic to bees exposed to direct treatment or residues on blooming plants. Beleaf is relatively non-toxic to bees, whereas Assail and Calypso are toxic through direct contact and may be applied from pink through bloom if sprays are allowed to dry before bees begin foraging in the orchard.

**Tarnished plant bug** adults overwinter under bark and leaves in woodlots, fence rows and rock breaks, and around alfalfa, other



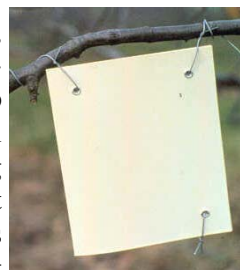
**Tarnished plant bug adult**

legumes or weeds that are seeded late in the summer or early fall. They become active and fly to apple trees near the tight cluster stage. Feeding on apple buds before bloom usually results in early bud abscission and is rarely a problem, whereas feeding from bloom to shortly after fruit set results in a deeply sunken dimple in the side or calyx end of the fruit.



**Tarnished plant bug apple injury**

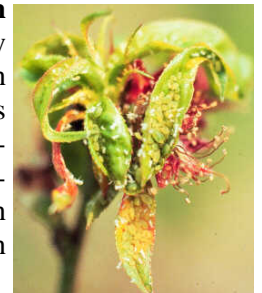
A white visual, non-UV reflecting sticky trap has been useful for monitoring tarnished plant bug populations and for making



**White visual trap**

decisions regarding management in apple orchards. Where these traps are installed at green tip, prebloom control is recommended if the cumulative capture averages 2.4 per trap by tight cluster or 4.1 per trap through late pink. Control options include pyrethroids (Adjourn, Ambush, Asana, Battalion, Baythroid, Danitol, Decis, Lambda-Cy, Mustang Max, Perm-UP, Pounce, Proaxis, Silencer, Tombstone, Warrior), Actara, Beleaf, Calypso, Thionex, or Carzol.

**Green peach aphid** typically overwinters in this area as wingless females in protected places on the tree and in ground debris. Aphid feeding on



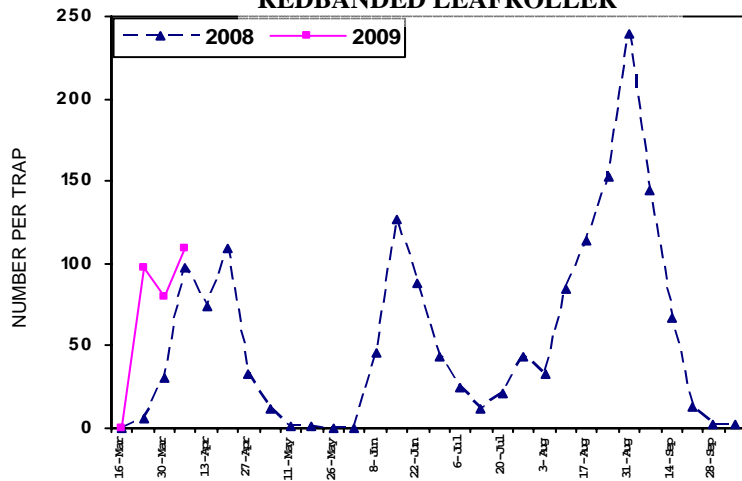
**Green peach aphid colony**

flower parts or on the underside of leaves is usually first observed during the late bloom to petal fall stage of peach and nectarine. Infestations are often first detected on leaf clusters attached to the trunk or scaffold limbs in the lower part of the tree. Feeding on leaves causes them to curl, become yellow, and drop prematurely from the tree. Feeding on fruit may result in distortion, cracking and drop, especially on nectarine. Imidacloprid (Pasada, Prey, Provado), Actara, Assail, Beleaf and Movento are the most effective treatments and are recommended for control if more than an average of one colony per tree is found.

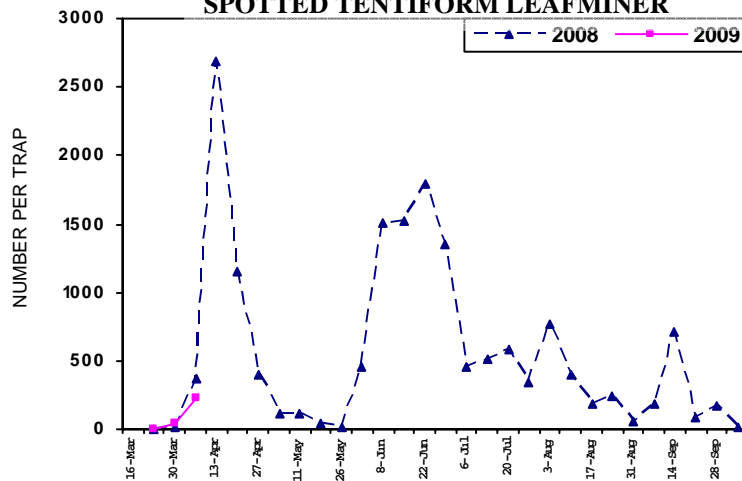
**Pheromone traps** should be installed for the monitoring of **codling moth** and **tufted apple bud moth** at the beginning and near the end of apple bloom, respectively.

**PHEROMONE TRAP COUNTS  
WEST VIRGINIA UNIVERSITY KTFREC**

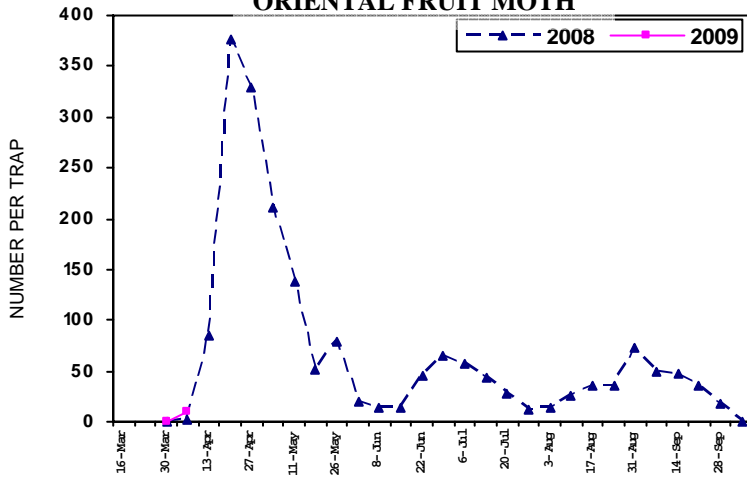
**REDBANDED LEAFROLLER**



**SPOTTED TENTIFORM LEAFMINER**



**ORIENTAL FRUIT MOTH**



**PLANT PATHOLOGY**

**Apple scab.** We've recorded four infection periods (Table 1) on varieties showing green tip on March 23, including Red Delicious, some Gala's, Empire, Granny Smith, Ida Red, etc. On March 25 - 27 we had 28 hours of wetting at 43° F with 0.34 inches of rain. Apple scab ascospores were caught in traps during this infection period at the Winchester Fruit Station. Because of the high overwintering scab populations in several orchards, I consider these early wetting periods to be significant in terms of scab infection at those locations. The second infection period on March 27 - 29 was more convincing in terms of rainfall amount (0.95 inches) and wetting duration (29 hours in a split infection period, at an average temperature of 51° F). The third scab infection period was recorded on April 1 - 2, with 14 hours of wetting at 49° F with 0.09 inches of rain. The next day, on April 3 we experienced some heavy rain (0.90) inches and wetting for 13 hours at 59° F. This was our fourth scab infection period and our first cedar apple rust infection period.

We always make such a big fuss about early scab control because it is important to avoid early infections on sepals, as these are difficult to detect and can provide conidial inoculum throughout the early part of the growing season. Copper sprays, even at the low label rate, will provide scab protection similar to that provided by a mancozeb fungicide applied at 3 lb/acre. However, Cu does not provide back action against scab. The relatively new AP-type fungicides, Vanguard 75WG and Scala 5SC will provide about 48 hours of back action. These products should be used in a tank mix with a protectant material, preferably one of the EBDC's or captan (3 ounces of Vanguard *or* 5 fluid ounces of Scala, combined with the 3-lb. rate of mancozeb 75DF or Polyram 80DF).

**Apple scab ascospore maturity degree-day tracker.** With a green tip estimate for March 23, 2009, estimated ascospore maturity is approximately 15% (90% confidence interval 4 to 40%) as of Monday, April 6, 2009.

**Table 1. Dates and conditions for apple scab infection periods at the WVU - KTFREC, 2009.**

No.	Date 2009	Hours/ degrees F
1.	March 25-27	28 hr/43 F
2.	March 27-29	29 hr/51 F
3.	April 1-2	14 hr/49 F
4.	April 3	9 hr/60 F
5.	April 6	TBD

**Powdery mildew** spores are showing now on overwintering shoots that have started to emerge. For best mildew control, fungicide applications should begin at tight cluster and continue until terminal growth stops in midsummer. The spray interval is generally 10 days from tight cluster through petal fall, when leaf tissue is developing rapidly,

and is lengthened to 14 days after petal fall. Excellent powdery mildew control can be expected when SI-class fungicides are used on a 7 to 10-day interval for scab control. The strobilurin fungicides, Sovran and Flint, also provide good control of powdery mildew. (Deciding how to configure sprays of SI's and strobilurins should depend upon other disease concerns, particularly the rust diseases, where SI's are better, and whether or not your orchard contains scab that is resistant to the SI's). Severity of powdery mildew is directly related to the amount of overwintering inoculum in shoot and blossom buds and the length of the spray interval. Check blocks of highly susceptible cultivars (Jonathan, Ginger Gold, Rome Beauty, Stayman Winesap, Idared, Paulared, Granny Smith) to determine the amount of overwintering inoculum. Where mildew is a problem, maintaining shorter spray intervals (not over 7 days) more effectively reduces mildew infection

than increasing fungicide rates. On highly susceptible cultivars, special mildew sprays applied between the regular sprays from pink through the cover sprays is the most economical way to effectively manage the disease and prevent a repeated buildup of mildew for the following year. These extra spray applications will easily pay for themselves with increases in yield and quality. When the protectant fungicides mancozeb, Polyram, captan, and Ziram, are being used for scab control, the addition of sulfur will usually provide good control of mildew.

**Weather Data** from Kearneysville Davis Vantage Pro 2 includes an electronic leaf wetness sensor and a soil temperature probe. The information is viewed on an hourly basis on the link labeled "hourly weather data for the previous 8-day period" from the Weather Stations page (<http://www.caf.wvu.edu/kearneysville/weatherstations.htm>).

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**READ THE LABEL CAREFULLY AND USE THE CHEMICALS IN ACCORDANCE WITH LABEL CAUTIONS, WARNING AND DIRECTIONS. REQUEST A MATERIAL SAFETY DATA SHEET (MSDS) FROM THE MANUFACTURER FOR EACH PRODUCT YOU USE.**

**Trade and brand names are used only for the purpose of information, and the West Virginia University Extension Service does not guarantee nor warrant the standard of the product, nor does it imply approval of the product to the exclusion of others which may also be suitable. The West Virginia University Extension Service assumes no responsibility in the use of hazardous chemicals.**

**Individuals requesting an accommodation to a meeting because of a disability should contact one of the Extension Specialists at the WVU Kearneysville Tree Fruit Research and Education Center at (304) 876-6353 at least five days prior to the event.**