



Arkansas Fruit and Nut News Volume 5, Issue 2, 3 April 2015

Upcoming Events

- **April 18**, Arkansas Pecan Growers Association Meeting- Conway, AR ([Link](#) to registration form)
- **April 21**, Protected Agriculture Production- Harrison, AR (dates and registration information soon)
- **May 2**, Strawberry Production Field Day- Harrison, AR (dates and registration information soon)

Phasing Out Some Insecticides

- **Endosulfan phase-out:** All endosulfan registrations will be canceled over a six-year phase-out period (2010-2016). Part of the MOA included specific existing stocks provisions that must be included on revised endosulfan labels. Here are the four phase out dates applicable to fruit crops in Arkansas ([Link](#)).
 - It became unlawful to use the product on nectarines, peaches, plum, prune, sweet and tart cherries, and annual strawberries as of July 31, 2012.
 - It became unlawful to use this product on pears after July 31, 2013.
 - It will become unlawful to use this product on apples and blueberries after July 31, 2015.
 - It will become unlawful to use this product on perennial/biennial strawberries after July 31, 2016.

- **Where's Calypso this year? Voluntary Cancellation of thiacloprid (Calypso) on 6 August 2014:** The registrant had requested to voluntarily cancel all of its current U.S. thiacloprid products and domestic use registrations. The registrant may continue to sell and distribute existing stocks of thiacloprid until February 8, 2016. Growers with existing stocks may continue to use product in the labelled manner until those existing stocks are exhausted, provided that such sale, distribution, or use is consistent with the terms of the previously approved labeling on, or that accompanied, the canceled product.

Alert: Plum Curculio Emerging

- **Plum curculio:** By April 1, we had reports from the Research and Extension Centers in Hope, Clarksville and Fayetteville of captures of plum curculio adults in pyramid traps.

Biology: After a couple days in March with temperatures exceeding 70°F (this is called the biofix date), overwintering plum curculio adults begin to exit overwintering sites in woods adjacent to fruit orchards. At that time they disperse toward apple and stone fruit trees or blueberries. After petal fall, on cooler

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days plum curculio adults walk up fruit tree trunks then find fruit to feed on and lay eggs in fruit (**Fig. 1 A, B**), whereas on warmer days the adults can fly into fruit trees. The egg hatches into a white, legless larva with an amber head capsule (**Fig. 1 C**) and feeds inside the fruit.

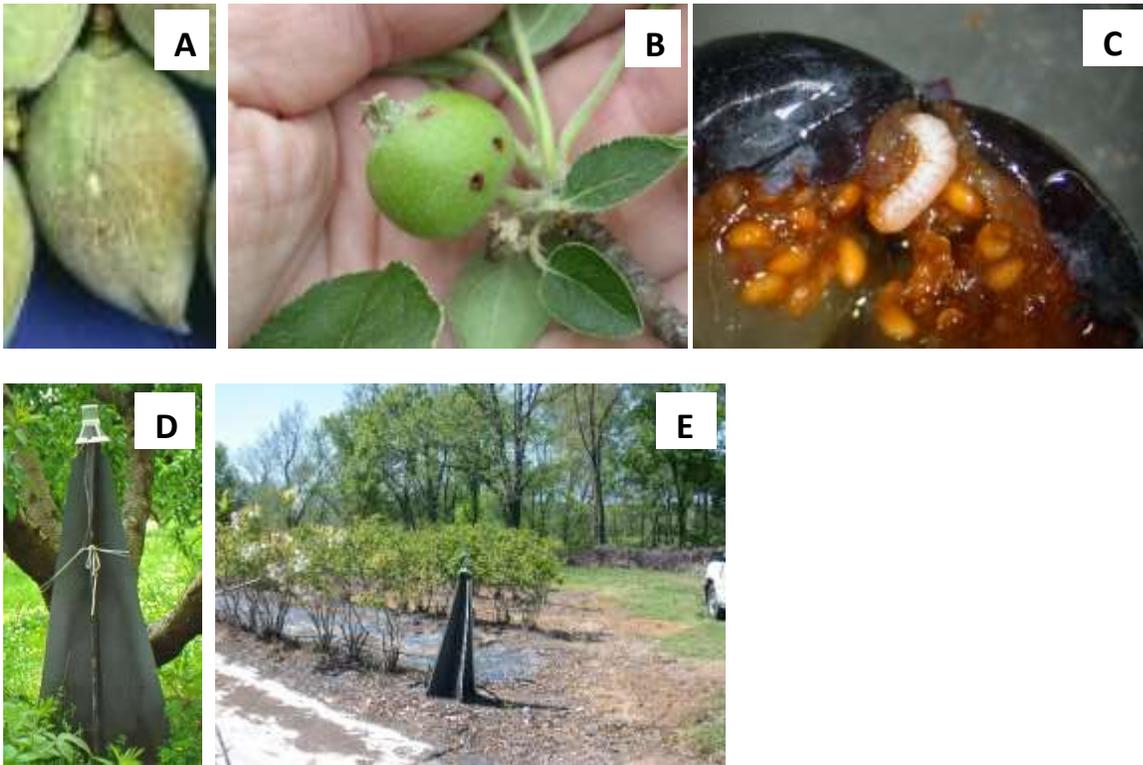


Figure 1. Scout after petal fall for adult feeding damage or egg laying in A) peach (remove white spot of fuzz and you may see a feeding hole or white egg or tunnel by larva) or B) apple (slice under scar and you may see an egg or tunnel) or C) plum curculio larva inside blueberry. At bloom, start checking twice weekly for plum curculio adults in pyramid traps in perimeter of D) apple or peach or staked near E) blueberry plants all adjacent to a woodlot.

Scouting: After the 2015 biofix date of March 17 or 18, we began daily accumulation of degree-days (DD, base 50°F) using either the Arkansas county plum curculio DD calculator ([Link](#)); or the new Oregon State University Online Phenology DD models ([Link](#)). At the later, I use the codling moth model to calculate DD since this model uses the same base of 50°F as used for plum curculio. For Counties in southwest, central and northwest Arkansas, the plum curculio model predicts that traps will capture adults by 100 DD after biofix, scouting fruits will detect first feeding scars with eggs under fruit skin by 200 DD after biofix, and 80% of adults will have dispersed into the orchard by 400 DD after biofix (**Table 1**). After petal fall of apples and blueberries and as shucks begin to split in stone fruit, begin twice weekly inspections for plum curculio feeding or egg laying (**Fig. 1 A-C**) by checking 30 fruit per tree or bush on each of 10 plants (300 fruit total) along perimeter of planting near woodlot.

Control: Once you find more than 1% of fruit with “new” feeding damage with eggs present then begin your spray program and reapply 10 to 14 days later (usually by 400 DD after biofix) if weekly scouting continues to find new feeding/egg laying damage. The model predicts that insecticidal control is no longer necessary after 310 DD have accumulated since 90% petal fall. Usually by 600 DD after biofix most of the overwintered adults have dispersed into the planting and have been killed by an earlier spray so you can stop spraying for overwintering plum curculio if no new feeding damage is detected. The

summer generation adults are expected to emerge and start laying eggs in early- to mid-June (1,200 DD after biofix).

Consult the 2015 Fruit Spray Guides (listed above) for the best pesticide or for other management recommendations.

Table 1. Plum curculio degree-day (DD) model predicts the following events in Arkansas Counties (calculated using uspest.org):

| Plum curculio event | Hempstead Co. | Johnson Co. | Washington Co. |
|--|---------------|-------------|----------------|
| 1st PC adult trap capture = 100 DD | April 1 | March 30 | March 31 |
| 1st egg laying = 200 DD (<i>1st spray</i>) | April 6 | April 6 | April 7 |
| 80% of PC adults have dispersed into orchard= 400 DD (<i>2nd spray</i>) | April 21 | April 24 | April 30 |
| Summer adults begin laying eggs = 1,200 DD (<i>summer spray</i>) | June 5 | June 7 | June 16 |

2015 Fruit Spray Guides Online

- MP44 Arkansas Recommended Chemicals for weed and brush control ([free pdf](#))
- MP144 Arkansas Insecticide Recommendations ([free pdf](#))
- MP154 Arkansas Plant Disease Control Products Guide ([free pdf](#))
- MP467 Arkansas Small Fruit Management Schedule ([free pdf](#))
- Midwest Small Fruit and Grape Guide ([free pdf](#))
- Midwest Tree Fruit Guide ([free pdf](#))
- Southeast Integrated Orchard Management Guide for Commercial Apples ([free pdf](#))
- Southeast Blackberry / Raspberry Management Guide ([free pdf](#))
- Southeast Apple Orchard Management Guide ([free pdf](#))
- Southeast Peach/Nectarine/Plum Guide ([free pdf](#))

Start Scouting Insects

Donn Johnson, Ph.D., Fruit/ Nut Entomologist, University of Arkansas

Strawberries and Blackberries

- **Mites and Aphids:** From Little Rock to northwest Arkansas, I have been seeing increasing numbers of spider mites per leaflet on strawberries in both field and high tunnel plantings and seeing aphids on blackberries in high tunnels.

Scouting: Weekly, use a hand lens to aid in inspecting for mites or aphids on a mature strawberry leaflet or new blackberry shoot on each of 20 plants in each of 5 locations of your planting (total of 100 leaflets or shoots). Note how many leaflets or shoots out of 100 have mites or aphids present. This will be the percentage of leaflets or shoots infested.

Control: A pesticide application may be needed to lower the number of pests per leaflet or shoot if more than 70% of inspected have spider mites or aphids (> 2 mites or aphids per leaflet or per shoot). Leaflet counts of mites and aphids tend to increase fast once they reach between 2 to 5 per leaflet or shoot.

Consult the 2015 Fruit Spray Guides (listed above) for the best pesticide or for other management recommendations.

Tree Fruits

- **Codling moth (CM) and Oriental Fruit Moth (OFM):** We have not captured either moth in traps as yet. **Scouting:** There is an excellent explanation of when to set out pheromone traps and how to use trap catch and degree models to predict spray timing or to use mating disruption against both the Oriental fruit moth and codling moth. Excerpts on how to use traps and DD models for both these pests are copied below from pages 32 to 34 in the 2015 Integrated Orchard Management Guide for Commercial Apples in the Southeast (see Spray Guides link above).

Codling Moth (in apples only): Pheromone traps should be placed in orchards near the tight cluster stage of bud development, and checked one to two times per week. Hang traps at a density of one trap per 10 acres of orchard. Traps hung in the upper third of the canopy catch more moths than those in the lower canopy and are a preferred location. Once biofix (first date of sustained trap catch) is determined, degree days are calculated daily. First Generation CM: Recommendations are provided for low and moderate-to-high population densities. Low-density orchards are those where less than 0.2 percent of fruit were damaged the previous year and pheromone trap catches that do not exceed 10 moths per trap per week anytime during the first generation (up to about 1000 DD after biofix). In low-density orchards, make a single insecticide application near 350 DD after biofix. In moderate-to high-density orchards, apply two insecticide applications at 14 to 21 days apart, the first at 100 to 250 DD after biofix: 100 to 150 if using a product which depends primarily on ovicidal activity for control (i.e., Intrepid or Rimon), and 250 if using an insecticide that targets early stage larvae. Additional applications may be necessary if trap captures remain high (greater than 7 moths per trap).

Oriental Fruit Moth (apples and stone fruits): Place pheromone traps in the orchards near the green-tip stage of bud development, and check one to two times per week. Hang traps at eye level at a density of 1 trap per 10 acres of orchard. Once biofix (first date of sustained trap catch) is determined, degree days are calculated daily and traps checked weekly. The DD model predicts adult emergence and egg hatch for the first three generations of the four or five generations that occur in the Southeast. However, generations overlap in the late season, which makes the degree-day model less useful later in the season. The table on page 37 uses daily maximum and minimum temperatures to determine daily DDs for oriental fruit moth (base 45°F). First-Generation OFM: Control of the first generation is often important to prevent first-generation damage and to reduce density of subsequent generations. First-generation egg laying is usually low on apple, and only one insecticide application between 400 and 500 DD after biofix (first trap catch) is necessary, which usually coincides with petal fall.

Consult the 2015 Fruit Spray Guides (listed above) for the best pesticide or for other management recommendations.

Protecting Pollinators

- **New EPA Web site - Protecting Bees and Other Pollinators from Pesticides** ([Link](#)):
 - Links to information on Pollinator Health, What EPA is doing and how can you help.
 - MP144 Arkansas 2015 Insecticide Recommendations: see page 27, a new page on “*Protecting Pollinators From Pesticides*” ([free pdf](#))

Sub-lethal Effects of Pesticides on Natural Enemies

- USDA-NIFA Specialty Crop Research Initiative Project titled: *Enhancing Western Orchard Biological Control* has developed a searchable table on the impact of several pesticides on a select group of natural enemies ([Link](#)). Under its **Featured Content** section click on the colorful table called **OPENED** which stands for *Orchard Pesticide Effects on Natural Enemies Database*. Select a pesticide that you may plan

on applying to a fruit crop (tree fruits only) and see expected acute or sub-lethal effects it will have on natural enemies. The loss of these natural enemies could result in outbreaks of secondary pests of aphids, leafminers, leafrollers, mealybugs, mites, scale, or thrips.

Critical Temperatures for Common Fruit Crops

Gary Gao, Ph.D., Extension Specialist for Small Fruit Crops and Associate Professor, OSU South Centers

Fruit growers may have questions about critical temperatures for different fruit crops. Dr. Gao gathered a few links on critical temperatures for various fruit crops from NC State, Michigan State, and Washington State. These links should give you a good idea about what to expect. Growers need to keep in mind that many factors should be taken into consideration, when reading these articles. Some of the possible factors are: fruit types and cultivars, local temperatures, developmental stages of fruit crops, and fruit load last year. These could all make a difference.

- Assessing Cold Injuries in Blackberries and Raspberries (NC State): ([pdf](#))
- Critical Temperatures in Blackberries (NC State): ([Link](#))
- Frost Control in Blueberries (MSU): ([pdf](#))
- Critical Temperatures in Blueberries (MSU): ([Link](#))
- Critical Temperatures in Grapes (WSU): ([Link](#))
- Critical Temperatures in Fruit Trees (MSU): ([Link](#))

Much of the information obtained for this newsletter was gathered by the authors at the University of Arkansas-Fayetteville. All chemical information is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Before purchasing or using any pesticide, always read and carefully follow the directions on the container label. Compiled by: Donn T. Johnson, University of Arkansas, Department of Entomology, E-mail: dtjohnso@uark.edu; and Elena Garcia, University of Arkansas, Department of Horticulture, E-mail: megarcia@uark.edu. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Arkansas Division of Agriculture, University of Arkansas, Agriculture, Director, Cooperative Extension Service, University of Fayetteville. The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.