



Arkansas Fruit and Nut News Volume 3, Issue 4, 27 June 2013

Fruit Production

Water Management in Fruit Crops

Dr. M. Elena Garcia - Extension Fruit and Nut Specialist

Water is perhaps one of the most critical factors in producing a profitable crop and drought conditions are beginning to develop in many areas of the state. Water management will impact this year's crop and next year's crop potential. The need for irrigation depends on several factors including (1) frequency and duration of drought periods during critical plant growth stages, (2) crop rooting and drought tolerance characteristics (3) soil water-holding capacity, (4) availability of suitable water supply, and (5) cost of water. In other words, the amount to irrigate depends on many factors, but as a general rule, if your soil is getting dry then you need to start irrigating.

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Thoughts on White Drupes on Blackberries

Dr. John R. Clark - Fruit Breeder

“I would like to make a few comments on white drupes (WD) and related topics in the early part of this blackberry season in Arkansas. My experience is from the research plots in the Arkansas breeding program, based in West-Central Arkansas, and are based on observations from early June until June 17, 2013. I have seen more white drupes this year than normal, and I think it is due to several factors. A primary one is that our environment shifted quickly, from daytime high temperatures in the upper 70s and nights in the upper 50s to daytime highs near the mid-90s, with above 70 nights (all are Fahrenheit temperatures). I think the plants were rather shocked with this change and responded with more susceptibility to this increased heat and possibly sunlight. I also saw more true sunburned berries during this time –the whole sides of berries burned red or white. The problem appears to have lessened somewhat as fruit maturity has moved along, and I suspect the plants may have adjusted to some degree. One cultivar I noted to have no white drupes was Prime-Ark®45. As I was looking closely at cultivar and new breeding developments I could not find any white drupes on it while some selections were covered with WD berries. Natchez had a few white drupelets with the first ripe berries, while Ouachita had no ripe berries. Note this was in the florican fruit of PA 45, and it began ripening about June 5 (our season is running 7- 9 days late this year).

Prior to this heat, we saw a tremendous amount of dry drupe berries, often concentrated at the tips of berries. I am not sure if this was anthracnose or another problem, but the weather was very wet several weeks prior to this, the plants were only sprayed with liquid lime sulfur at budbreak, and heavy foliar anthracnose was seen during this time. I don't have a solution to this problem other than as a breeder to try to select and advance selections to release that have less or none of the WD problem, and not spraying to try to identify the most resistant plants to the dry drupe issue. I still feel this WD event is associated with wet periods and sunlight damage; it can be much worse on berries located lower on the plant and closer to the ground that stay wetter longer."

Dry Berry Syndrome of Blackberry

Dr. M. Elena Garcia - Extension Fruit and Nut Specialist

This season, we are seeing some blackberry cultivars showing symptoms of something called "dry berry syndrome". The symptoms include individual shriveled drupelets that are dry and hard. In some instances, these symptoms appear only in a portion of the drupelet (Fig. 1). The affected berries may be found in clusters or scattered throughout the canes. The fruit quality is very poor and mostly unmarketable. We have not been able to identify the causal agent, but according to the Pacific Northwest Plant Disease Management Handbook (<http://pnwhandbooks.org/plantdisease/blackberry-rubus-sp-dry-cell-dry-berry-syndrome>), the list of pathogens causing these symptoms include anthracnose, ascospore dieback, spur blight, cane and leaf rust, and Botrytis fruit rot. The extended wet weather conditions this spring were ideal for the development of some of these diseases, particularly anthracnose. This disease is often seen as lesions on the canes (Fig. 2) and early season fungicide treatments are necessary for control.

Control: Lime sulfur can be applied at the end of the dormant season to eradicate a portion of the overwintering inoculum. The timing of foliar fungicide application is critical: fungicide applications should be applied during the time of green tip stage of plant development (when the plant is breaking dormancy). Additional foliar fungicide applications are recommended when primocanes are between 1 to 1 ½ feet tall. Later in the season, some sprays to control Botrytis can be effective against this disease. Infected primocanes need to be removed during the dormant season to reduce the source of inoculum.



Figure 1. Dry drupelets in blackberry (Photo: M.E. Garcia)



Figure 2. Anthracnose symptoms on blackberry canes (Photo: <http://plant-disease.ippc.orst.edudisease>)

Fruit Pests

Dr. Donn T. Johnson - Fruit Research/Extension (unlabeled photos: D. Johnson)

- **Spotted wing drosophila (SWD)** is a new invasive pest of ripening, soft-skinned fruits (caneberries, blueberries, cherries, strawberries, late season peaches). The adult male fly has red eyes and a black spot on tip of each wing (Fig. 3).



Figure 3. Spotted wing drosophila

Control: Arkansas growers have started spraying caneberries and blueberries weekly for SWD in 12 Arkansas counties: Calhoun, Hempstead, Howard, Izard, Johnson, Lonoke, Nevada, Polk, Pope, Van Buren, Washington and White (Fig. 4).

- **Growers are asking:** Is there a trap threshold that justifies a spray for SWD? Dr. Hannah Burrack (entomologist at North Carolina State University and eastern U.S. coordinator of the SWD Project) answered:

“There is no trap based threshold for SWD for several reasons:

1. *There is no consensus on traps/baits*
2. *There is zero tolerance for SWD in fruit*
3. *There is no validated relationship between any of the trap captures and fruit infestation*

Traps are useful for presence/absence only at this time. I recommend treating when susceptible ripening or ripe fruit is present and continuing weekly. We hope to back off this recommendation in the near future, but at this time, there is simply not enough information available to be confident in trap captures as a predictor of infestation.

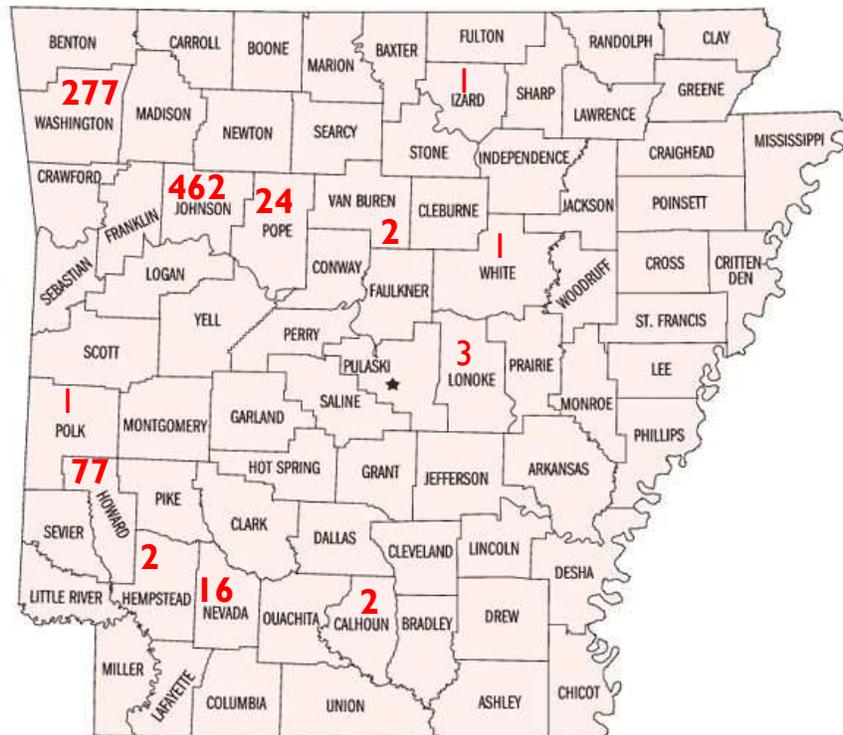


Figure 4. Confirmed total trap captures of spotted wing drosophila flies in 12 Arkansas County from 9 May to 26 June 2013.

See online information about spotted wing drosophila at:

- ❖ Spotted Wing Drosophila Fact Sheet ([pdf](#))
- ❖ Picture Sheet of Spotted Wing Drosophila: ID, Trap, Bait, Management ([pdf](#))
- ❖ Workshop Talk on Detecting and Managing Spotted Wing Drosophila ([pdf](#))

Most Fruits:

- **Fruit insect control:** Check MP144 for recommended insecticides and rates for each fruit pest. MP144 Insecticide Recommendation for Arkansas (2013) is available online ([pdf](#)) (http://www.uaex.edu/Other_Areas/publications/PDF/MP144/MP144.pdf)

- **Japanese beetle:** This is a pest of most fruits and many ornamental and turf plants. This season, Japanese beetle adults have been seen in Altus, Clarksville and Fayetteville causing slight foliar feeding damage. There has been a drastic decline in Japanese beetle adult trap catches in 2012 and 2013 compared to previous years (Fig. 5). This decline is attributed to effects of the high summer temperatures and droughts in both 2011 and 2012. The summer heat/drought kept the soil so dry that very few Japanese beetle adults emerged in June and July 2012 and 2013 (Fig. 5). By 25th June 2013, only 42 Japanese beetles were captured per trap compared to end of June past totals of 830 (2012), 197 (2011), 1589 (2010) and 1401 (2007) per trap (data from the University of Arkansas Research and Extension Center in Fayetteville, AR).

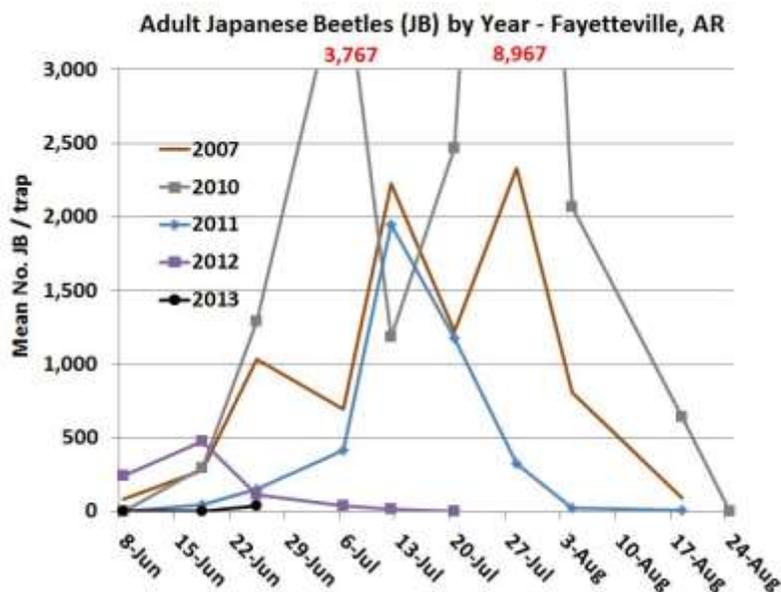


Figure 5. Number of Japanese beetles per dual lure baited yellow funnel trap sampled from 2007 to 2013 at the Arkansas Agricultural Research and Extension Center in Fayetteville, AR.

Control: In 2012, we applied only one foliar spray in early July and could have gotten by without that spray. I predict for 2013 that the only areas in Arkansas that may experience problems with Japanese beetles will be located near large irrigated areas like golf courses. Otherwise, most growers in NW Arkansas may get by with none or one foliar insecticide spray to prevent foliar damage by Japanese beetles in 2013.

- **Stink bugs:** We are seeing numerous immature stink bugs without wings (Fig. 6). Both immature and adult stink bugs puncture and damage blackberries, raspberries, apples and peaches. Stink bugs often leave a bad taste or bad stink bug smell (released defense odor) on damaged fruits.



Figure 6. Green (left) and brown stink bug (middle) adults and nymphs and new feeding damage (clear threads of ooze) by stink bugs.

Scouting: Weekly until harvest, check for stink bugs on fruit or note new clear threads of ooze on fruit (Fig. 5).

Apple and Peach

- **Plum curculio:** Summer adults should be emerging and laying eggs under skin of fruit from mid-June to mid-July. Check Table 1 for predicted hatch periods for south, central and NW regions of Arkansas.
- **Codling moth:** This week we started catching the second generation males in pheromone traps in Fayetteville. By next week, eggs should start hatching and requiring insecticide sprays to prevent wormy apple damage.
- **Oriental fruit moth:** Second generation adults should be nearly done laying eggs near fruit but third generation adults should begin emerging and egg laying in these regions of Arkansas by 8 July (south), 13 July (central) or 17 July (northwest) (Table 1).

Grape

- **Grape berry moth:** Small to large larvae can be found in damaged grape berries. Weekly, inspect 10 clusters on each of 30 vines along wooded perimeter for discolored berries with GBM larvae inside berries (see Table 1).

Bramble

- **Rednecked cane borers** will lay eggs on primocanes most of June.
Scouting: Twice a week between 10am and 4pm, look for adults flying or landing on leaves of primocanes.

Updated chart from degree-day models that predict egg hatch (spray periods) for several fruit pests.

(Derived using the online degree day calculator: <http://pecan.uaex.edu/DD35SelectInsects.asp>)

We monitor pheromone trap catches of several fruit pests at three Agricultural Experiment Stations: SWREC in Hope, Fruit Research Station in Clarksville and AAREC in Fayetteville. The corresponding predicted hatch periods (spray periods) are noted in **Table 1**.

Table 1. First trap catches (biofix dates) with updated predicted hatch periods for each generation of several fruit pests using cumulative degree days (DD) for three locations in Arkansas in 2013.

Location (AR)	Generation, Pest	Biofix Date	LDT (°F)*	Hatch periods	Cumulative DD**
Hope (SWREC)	1 st , Oriental fruit moth	16 Apr.	45	12 May	400
	2 nd , Oriental fruit moth			12 June	1300
	3 rd , Oriental fruit moth			8 July	2200
	1 st , Plum curculio	16 Apr.	50	6 May-31 May	200-700
	2 nd , Plum curculio			18 June-5 July	1200-1700
	Clarksville	1 st , Oriental fruit moth	20 Apr	45	16 May
	2 nd , Oriental fruit moth			17 June	1300
	3 rd , Oriental fruit moth			13 July	2200
	1 st , Plum curculio	9 Apr.	50	29 Apr.-29 May	200-700
	2 nd , Plum curculio			23 June-10 July	1200-1700
	1 st , Grape berry moth	17 Apr.	47.3	16 May-31 May	400-800
	2 nd , Grape berry moth			22 June-8 July	1300-1800
Fayetteville	1 st , Oriental fruit moth	24 Apr	45	17 May	400
	2 nd , Oriental fruit moth			20 June	1300
	3 rd , Oriental fruit moth			17 July	2200
	1 st , Plum curculio	9 Apr.	50	29 Apr.-30 May	200-700
	2 nd , Plum curculio			21 June-10 July	1200-1700
		1 st , Grape berry moth	27 Apr.	47.3	19 May-7 June
	2 nd , Grape berry moth	(no traps catch, guess)		24 June-11 July	1300-1800
	3 rd , Grape berry moth			26 July-11 Aug.	2300-2800

* LDT = lower developmental temperature used to calculate degree days accumulated after the biofix date

** Cumulative degree-days calculated using the online degree-day calculator, click [here](#)

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: dtiohns@uark.edu