

Kentucky Fruit Facts

John Strang, Extension Fruit Specialist, Editor
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Fruit Crop News

John Strang and Matt Dixon, U.K. Extension Horticulturist and U.K. Ag Meteorologist respectively

Unfortunately Kentucky fruit grower crop expectations took a major hit on the mornings of February 19 and 20 when extremely cold temperatures were experienced across the state (Figure 1). Temperatures on these mornings and March 6th varied widely across the state and there are a number areas that managed to avoid the extremely low temperatures. Based on limited observations in the Lexington area apples, pawpaws, highbush blueberries, red raspberries, thorny blackberries, gooseberries, currants, and strawberries are uninjured.

Peaches, Pears, Asian plums, grapes, thornless blackberries and rabbiteye blueberries have substantial amounts of injury. It is difficult to determine what is injured and what isn't on some crops. I expect many peach flower buds have been killed and there is some wood injury in areas of the state that experienced some of the coldest temperatures. See Dwight Wolfe's and Daniel Becker's article assessing peach flower bud injury in western Kentucky below. Where the peach crop has been lost growers will want to apply half the normal amount of nitrogen fertilizer to avoid excessive vegetative growth. Orchards that experienced some of the coldest temperatures

that show moderate amounts of wood injury (browning) should be pruned heavily, but not dehorned (major scaffold limbs severely cut back) no later than 2-3 weeks after bloom. Asian plum, and rabbiteye blueberry flower buds have substantial flower bud losses, however the plants are fine. European pear and Asian pear flower buds look like they have some injury as well as injury (browning) to the spurs in some cases (Figure 2). Thornless blackberry canes are killed when the temperature reaches -10°F. The heavy snow cover protected the lower parts of the canes (figure 3). Buds on injured portions of the cane look alive and green, but growth will collapse and dry up under warm weather conditions when injured canes are unable to transport enough water. Canes may be cut back to live tissue to produce a crop on the lower portion of the canes. Less hardy grape cultivars show substantial amounts of bud and cane injury. Daniel Becker has assessed bud damage in western Kentucky in a following article. I expect that the deep snow protected vinifera grape graft unions from winter injury.

Preliminary observations indicate that Kentucky nut crops handled the low temperatures well. Persian walnuts have sustained wood injury to twigs and branches, but black walnuts, heartnuts, shellbark and shagbark hickories, pecans, hicans, chestnuts and hazelnuts all appear to be uninjured.

Tree fruit growers should be applying their dormant oil spray when the temperature is forecast to be above 40°F for two days after spraying particularly if scale was a problem in 2014. Apple and pear producers will want to apply a fixed copper spray to clean up fire blight bacteria that are on tree surfaces to get a good start on the season. Fixed copper can be mixed with the oil spray, but copper sulfate is not compatible with dormant oil. If scale was not a problem last year in the apple orchard the dormant spray of dormant oil can be skipped and a delayed dormant oil spray applied at the half-inch green stage which will provide better mite and aphid control.

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Research shows that matted row strawberry growers should pull most of the straw back off the plants when soil temperatures at the 4 inch depth reach 40-43°F. After all the cold weather it would seem that we are behind on soil temperatures, but Kentucky Mesonet data show otherwise. Four inch depth soil temperatures at Princeton, Bowling Green, and Glasgow have reached 50°F, while probes in Elizabethtown and Lexington show 45 and 43°F respectively. Keith Riche reported a 4 inch soil temperature of 43°F at Dry Ridge. Our Horticultural Research Farm matted row strawberries in Lexington are beginning to push out new leaves.

Ric Bessin has developed a Facebook page for spotted wing drosophila and will be posting weekly updates on activity during the growing season: <https://www.facebook.com/SWDinKY?ref=bookmarks>.

I am saddened to report that James Bennett, Bennett's Orchard Buffalo, KY passed away March 3, 2015. James grew up in the orchard business and grew apples and peaches which were sold at his roadside market. James was one of our best Kentucky apple growers and meticulously maintained his orchard with his wife Lula, and son Michael. He will be missed.

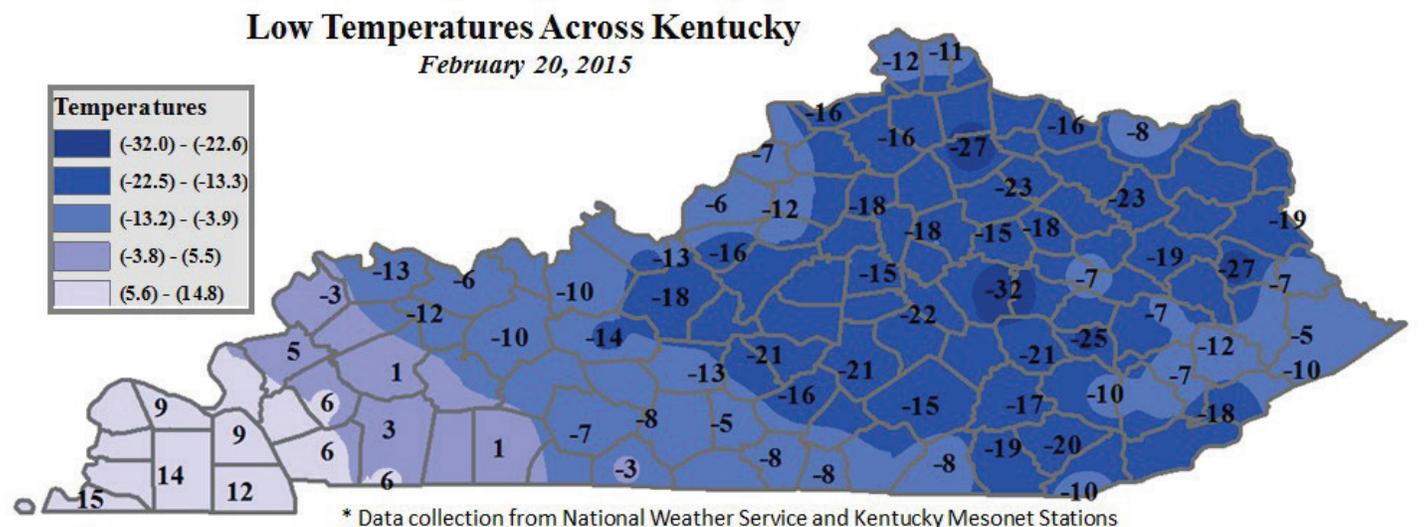
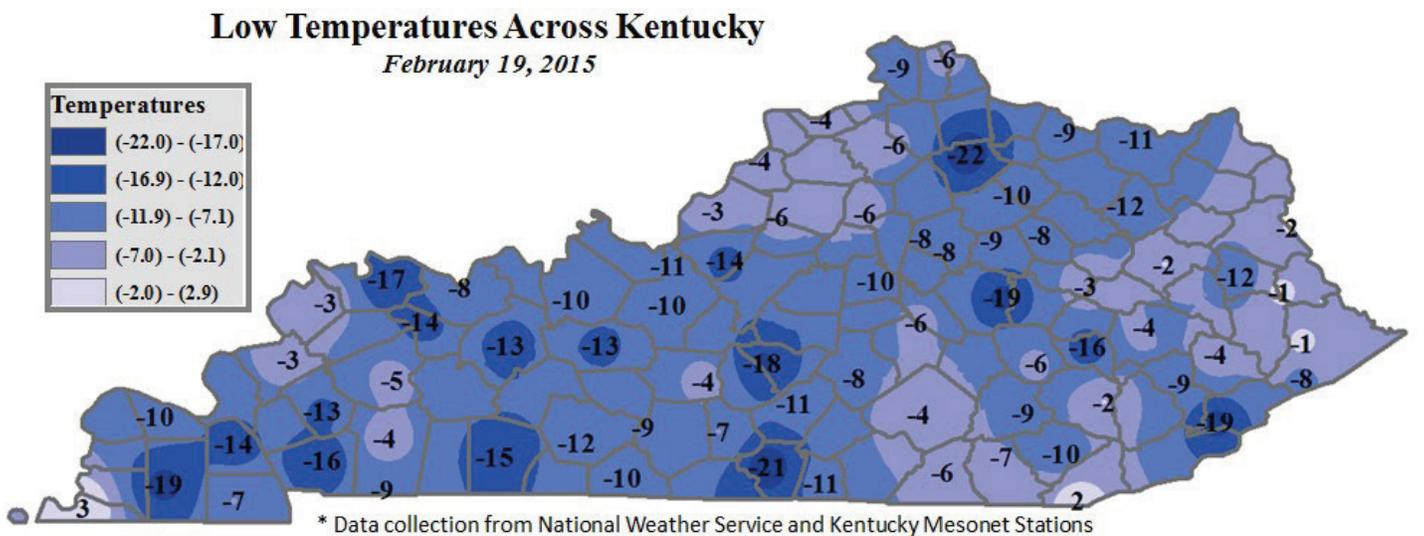


Figure 1. Kentucky low temperatures on the mornings of January 19 and 20th 2015.



Figure 2. Korean Giant Asian pear (left) and Maxine European pear (right) buds and spurs showing some spur browning and possible flower bud injury



Figure 3. Apache thornless erect blackberry cane death (slightly brown pith) above the snow line as designated by the leaf petiole placement. Green pith below indicates live uninjured cane.

Upcoming Meetings

(All meetings are Eastern time unless specified.)

Mar. 21 Kentucky Strawberry Association Meeting, Reid's Orchard, 4818 Hwy 144, Owensboro, KY 42303. 10:00 a.m. C.D.T. Contact the Daviess Extension Office 270-685-8480. See program below.

Mar. 23 Fruit Pruning Demonstration, Logan County, 1:00 p.m. C.D.T. Contact 270-726-6323.

Mar. 23 Eastern KY Regional MarketReady Producer Training, Knott County Extension Office, 149 Parks Branch Rd., Hindman, KY 41822. 10 a.m.-4 p.m. Registration \$25 and includes class materials, refreshments and lunch. Registration deadline is Tuesday March 17 by 4 p.m. This is for those interested in selling products to restaurants, grocers/wholesalers/retailers, and schools/institutions. MarketReady will provide you with a professional marketing education to improve sales relationships, and get you up to speed with the latest local food programs and resources. Contact Kevin Heidemann email: kevin.heidemann@uky.edu; phone: 859-218-4383.

Mar. 24 Apple Grafting Workshop, Hart County Extension Office, Munfordville, KY. 10:00 a.m. C.D.T. Contact 270-524-2451.

Mar. 24 Growing Tree Fruit, Barren County Extension Office, 1463 West Main St., Glasgow, KY 42141. 5:00 p.m. C.D.T., Contact 270-651-3818.

Mar. 26 Fruit Tree Pruning Demonstration, Van Meter Family Farm, Clarkson, KY. Noon CDT. Contact the Grayson County Extension office for directions. 270-259-3492.

Mar. 27 Pruning Demonstration and Fruit Tree Grafting Workshops, Laurel County Extension Office, 200 County Extension Rd., London, KY 40741. 10:00 a.m., 1:30 p.m. & 6:00 p.m. Contact 606-864-4167.

Apr. 2 Fruit Tree Pruning and Grafting Workshops, Russell County Extension Office, 2688 S. Hwy 127, Russell Springs, KY 42642. 2:00 p.m. and 5:00 p.m. C.D.T. Contact 270-866-4477.

Apr. 9 Fruit Grower Orchard Meeting, Reid's Orchard, 4818 Hwy 144, Owensboro, KY 42303. 10:00 a.m. C.D.T. Contact the Daviess Extension Office 270-685-8480. See program below.

Apr. 9 MarketReady Graduate Meet the Buyer Forum, Morehead Conference Center, 111E 1st St., Morehead, KY 40351. 10:00 a.m.-2:00 p.m. This is for MarketReady Graduates ONLY! It will include Farm to School, Farm to Restaurant, and Farm to Grocery/Wholesale/Retail panels, a round table "Speed Date" discussion with buyers, and a special local lunch.

Registration \$20, The deadline for registration is Monday March 30 by 4:00 p.m. Contact Kevin Heidemann email: kevin.heidemann@uky.edu; phone: 859-218-4383.

Apr. 13 Eastern Kentucky Blueberry and Apple School, Letcher County Extension Office, 478 Extension Drive, Whitesburg, KY; The morning will be devoted to blueberries and the afternoon to apples. Contact 606-633-2362.

Apr. 25 Kentucky Nut Growers Association Spring Meeting, Harden County Extension Office, 201 Peterson Dr., Elizabethtown, KY 42701. Contact Danny Ganno Phone: 270-860-8362 or Email: danganno@yahoo.com

May 14 Fruit Grower Orchard Meeting, Hillview Farm & Orchard, 4161 Franklinton Rd., Pleasureville, KY 40057. Contact Henry County Extension Office 502-845-2811.

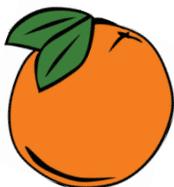
Jun. 25 Third Annual Horticulture Open House, UKREC, 1205 Hopkinsville St., Princeton, KY 42445. Contact Winston Dunwell, Phone: 270-365-7541 X 209 email: wdunwell@uky.edu, Website: http://www2.ca.uky.edu/HLA/Dunwell/UKRECHortOpenHouse_Save_the_Date_Jun252015.pdf

Jan. 4-5, 2016 Kentucky Fruit and Vegetable Conference, Embassy Suites Hotel, Lexington, KY. Contact John Strang 859-257-5685; email: jstrang@uky.edu, Office 270-685-8480.

FRUIT HUMOR

If you had 5 oranges in one hand and 5 pears in the other, what would you have?

Massive hands!



Kentucky Strawberry Association Program

Saturday, March 21, 2015

Reid's Orchard

4818 Hwy 144
Owensboro, KY 42303
Market: 270-685-2444
Website: <http://reidorchard.com/>

Directions:

From the South

At the end of the Natcher Parkway, exit to the right onto the Wendell Ford Expy. (231/60 Bypass)
Exit the Bypass at Exit 21 and turn to the right on Hwy 144.

Take the next right into Reid' Orchard

From the North

From 231/60, get off at exit 21, turn left onto Hwy 144.
Take the next right into the orchard

Program:

All times CDT

Time	
10:00	Field Walk - <i>Billy Reid</i>
11:30	BBQ Lunch available at cost
12:30 p.m.	2014 Southeast Strawberry Expo. Highlights: Botrytis Crown Rot, Row Cover Management & Plug Plant Disease Management – <i>Danny Van Meter & Chris Smigell</i>
1:10	Strawberry Packaging Discussion
1:25	Weed Control, Vole Control, and Out-of-State Pesticide Labeling – <i>John Strang</i>
2:00	Grower Roundtable Discussion
2:30	Adjourn

Fruit Grower Orchard Meeting - Thursday, April 9

Reid's Orchard

Billy, Kathy, Brad Reid, Katie Reid Clark and Valerie Reid
Reel operators
4818 Hwy 144
Owensboro, KY 42303
Market: 270-685-2444
Website: <http://reidorchard.com/>

Directions:

From the South

At the end of the Natcher Parkway, exit to the right onto the Wendell Ford Expy. (231/60 Bypass)

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From the North

From 231/60, get off at exit 21, turn left onto Hwy 144.

Take the next right into the orchard

Program:

All times CDT

Time	
10:00	Registration & Tour of Reid’s Orchard & Farm Market – <i>Billy Reid</i>
10:45	Pests and Insecticide Programs - <i>Ric Bessin</i>
11:15	Bitter Rot – <i>Misbah Munir and Nicole Ward Gauthier</i>
11:45	Fire Blight Prediction Model Use - <i>Jonathan Price</i>
12:00*	Lunch will be available at cost <u>for those that preregister.</u>
12:45	Fruit Crop Winter Injury - <i>John Strang</i>
1:15	Grower Round Table Discussion – <i>Dana Reed, moderator</i>

***Preregister for lunch by calling Pam Compton at 859-257-2909** between 8:00 a.m. and 4:30 p.m. EDT weekdays by Tuesday, April 7 and give her a count for the Fruit Grower Meeting at Reid’s Orchard

Low Temperature Injury of Peach Buds

By Dwight Wolfe, U.K. Horticulture Research Specialist and Daniel Becker, U.K. Fruit & Vegetable Extension Associate

Below zero temperatures this winter in Kentucky have resulted in varying degrees of low temperature injury to peach flower buds in orchards throughout the state. Temperatures at Mayfield, KY, reached -1° F on February 17, 2015, -7° F, on February 19, 2015, and -6° F on March 6, 2015 while flower buds were still dormant. Temperatures at Princeton, KY, reached -6° F, -13° F, -10° F on February 17, February 19, and March 6, 2015 respectively.

To assess cold temperature injury of peach flower buds, peach shoots were sampled from six different cul-

tivars from a peach orchard in Clinton, KY in Hickman County. Sampling was completely random, selecting buds from high to low and from different trees for each cultivar. The buds were cut and examined for any internal brown to black discoloration as shown previously http://www.uky.edu/hort/sites/www.uky.edu/hort/files/documents/ffFeb2013_0.pdf, see Figure 1 on page 2. Survival percentages were 33% Redskin, 17% Southern Pearl, 33% Red Gold Nectarine, 20% June Prince, 13% Florida Prince, and 27% Redhaven. Sampling size was about 30 buds per cultivar.

A more systematic sample was taken at the UK orchard at Princeton, KY, using a protocol suggested by Rich Marini at Penn State University <http://extension.psu.edu/plants/tree-fruit/news/2015/assessing-low-temperature-injury-in-peach>. Two 6-inch shoots and two 24-inch shoots were collected from each of the upper Southwest side and the lower Northeast side of six Redhaven trees on Lovell rootstock. Survival averaged 19 percent over all six trees, but ranged from 11 to 32 percent, with an average sample size of 96 buds per tree. Barring any significant frost events this spring, full peach crops are still possible this season in western Kentucky.

Grapevine Bud Mortality in Response to Low Temperature Injury

By Daniel Becker, U.K. Fruit & Vegetable Extension Associate

This winter Kentucky has experienced a number of record breaking weather events characterized most importantly by extremely cold temperatures. In Princeton, KY the Mesonet weather station recorded -6° F and -13° F on February 17 and 19, respectively, and more recently -10° F on March 6, 2015. Consequently, on March 12 and 13 an assessment was performed to ascertain the extent of damage that these conditions may have caused to grape buds.

Mortality was determined by randomly selecting six canes from each cultivar sampled, taking care where possible to collect one cane each from six vines randomly spread throughout the vineyard block. Only pencil diameter canes that were at least 24 inches in length were collected from within the canopy, excluding those which arose within 12 inches of the head and ends of the cordons. This was done to exclude collecting any overly weak or vigorous canes which are less cold hardy and often experience greater damage following severe cold events. Cuttings five nodes in length were then removed from the portion closest to the cordon or spur base of the sampled canes, giving a total sample of 30 nodes. Each node was examined using several consecutively deeper, cross sectional cuts through

the node to expose the primordia of the primary, secondary, and tertiary buds contained therein. Dead buds were identified by an internal brown or black discoloration of the tissues whereas live buds were light-green in coloration and were not water soaked in appearance.

Samples from 11 cultivars, seven hybrid and four vinifera, from two sites were collected for the mortality assessment. Seven cultivars collected from the UKREC orchard in Princeton, KY included 'Cabernet Franc', 'Chambourcin', 'Niagara', 'Norton', 'Pinot Noir', 'Traminette', and 'Vidal Blanc'. Samples from six cultivars collected from a commercial vineyard located 10 miles away from the UKREC included 'Cabernet Franc', 'Catawba', 'Chambourcin', 'Chardonnay', 'Noiret', and 'Riesling'. One of the primary differences between the two sites is in elevation. The research orchard at the UKREC is situated at ~620 feet in elevation while the commercial vineyard is at ~530 feet in elevation.

Primary bud mortality among the hybrid cultivars from greatest to least at the UKREC Orchard was 43, 20, 13, 7, and 0% for 'Vidal Blanc', 'Chambourcin', 'Traminette', 'Niagara', and 'Norton', respectively. The secondary and tertiary mortality was minimal (0-3%) for all cultivars except for 'Vidal Blanc' which experienced 20 and 13% mortality.

At the commercial vineyard primary bud mortality among the hybrid cultivars from greatest to least was 40, 10, and 7% for 'Chambourcin', 'Noiret', and 'Catawba', respectively. 'Catawba' and 'Noiret' experienced no loss of secondary and tertiary buds while 'Chambourcin' exhibited a 27 and 13% loss. 'Chambourcin' at the commercial vineyard contained 20, 24, and 13% fewer primary, secondary, and tertiary buds than the vines sampled at the UKREC indicating that these vines were more greatly affected by the cold temperatures experienced, possibly due to the lower elevations on-site.

The vinifera cultivar 'Pinot Noir' had the greatest bud mortality at the UKREC orchard, with 47, 17, and 7% loss of primary, secondary, and tertiary buds, respectively. In contrast, 'Cabernet Franc' exhibited a relatively minor 17% loss of primary buds while secondary and tertiary buds were little affected with only a 3% loss. Primary bud losses of vinifera at the commercial vineyard site were much greater with 'Cabernet Franc', 'Riesling', and 'Chardonnay' experiencing 40, 34, and 83% mortality, respectively. These three varieties also produced a 60 to 17% and 37 to 7% loss of secondary and tertiary buds with 'Chardonnay' exhibiting the greatest damage. Again it is expected that the lower elevations at the commercial vineyard resulted in a 23, 14, and 4% loss of primary, secondary, and tertiary buds of 'Cabernet Franc' compared to the vines at the UKREC orchard.

Despite the bud losses it is not expected that hybrid cultivars will experience a significant reduction in yield during the 2015 growing season. This is due to the fruitful secondary and tertiary shoots contained in the compound bud which will emerge and compensate for any potential crop loss in the event of primary bud death.

Vinifera cultivars, however, do not have fruitful secondary and tertiary buds and a 25% loss of primary buds will often result in a corresponding 25% reduction in yield. Potential losses in yield may be offset by increasing the number of nodes retained during pruning by the corresponding percentage of primary bud loss. Therefore, if it is estimated that 25% of the primary buds are killed then node retention should be increased by 25%. For example if a vine on 8 ft. spacing is normally pruned to 6 nodes per ft. of cordon or 48 total nodes per vine, then using the adjustment value of 25% the pruner will retain 8 buds per ft. of cordon for a total of 64 count nodes per vine in the hopes of producing a full or nearly-full crop.



Management of San Jose Scale Begins Soon

By Dr. Ric Bessin, U.K. Entomologist

While pruning, producers need to be on the watch for signs of active San Jose scale on their apple and peach trees (Figure 4). Left uncontrolled, San Jose scale is potentially the most destructive pest of peaches in Kentucky and also a serious pest of apples. San Jose scale injects enzymes while feeding that are toxic to the wood and can lead to reduced yields, branch dieback, and tree loss.



Figure 4. Red-stained patches under the bark are indications of damage and active San Jose scale feeding in fruit trees. (Photo: Ric Bessin, UK)

At this time of year, San Jose scale is in the nymphal stage and will begin to resume feeding as the temperatures increase in spring. They become adults in April/early May depending on the weather, and eggs hatch in late May or early June. This is temperature-dependent and there is a model on the UK Ag Weather Web site to estimate hatch timing for specific counties <http://www.wagwx.ca.uky.edu/ky/agmodels.php>. The model requires that users monitor for the date of adult emergence (called biofix) to initiate the model. The first generation egg hatch is synchronized and eggs hatch over a relatively short period of time. This is not the case with the later generation in the summer. A synchronized emergence is helpful when targeting that stage with an insecticide. Within a week or so, the newly hatched crawlers (Figure 5) will settle on thin bark and begin to produce a protective cap.



Figure 5. San Jose scale crawlers appear as small specks on the black-tape and can be seen with a 10X hand lens. (Photo: Ric Bessin, UK)

Management

The table below indicates the specific tactics that are used to control San Jose scale, when they are used, and the stages targeted.

Table 1 San Jose Scale Management and Control Tactics

Management/Control/Tactic	Timing	Stage
Watch for scale at pruning	February/March while pruning	Look for staining under bark. Mark a few trees or scaffold limbs with active scale nymph infestations.

Dormant spray with Superior oil or Superior oil with an insecticide (see ID-92)	Before bud swell and when temperatures are above 40°F	Target San Jose scale nymphs.
Deploy pheromone traps for San Jose scale	Pink stage, just before bloom	To detect adult male activity and used to initiate Ag Weather model. The model will alert growers to the timing of egg hatch. Check traps twice a week.
Use insecticide for control of nymphs (see ID-92)	Half-inch green stage of bud development	To control nymphs. Growers will use this spray in place of a later spray targeting egg hatch.
Deploy black electrical tape on infested limbs	After petal fall electrical tape is wrapped sticky side outward on infested limbs	Used to monitor for the initiation of scale crawlers (egg hatch). Check tape at least twice a week.
Spray to control crawlers with scale insecticide (see ID-92)	Egg hatch occurs sometime between late May and early June	Target the newly hatched nymphs while they are unprotected in the crawler stage. This is used if no spray was used at the half-inch green stage.

Additional Resources

Midwest Commercial Tree Fruit Spray Guide, ID-92

Receiving Fruit Facts on the Internet

By subscribing to the email notification service you will receive an email announcement when each new issue is posted on the web with a link.

To subscribe, send an email message:

TO: listserv@lsv.uky.edu
SUBJECT: Fruit Facts
MESSAGE: subscribe KY-FRUITFACTS
Followed by a blank line

OR to unsubscribe, the lines:
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