

# FACTS FOR *Fancy Fruit*



June 11, 2014  
Volume 14 • Issue 4

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**Crop Conditions:** Apples are in the final stage of fruit drop, caused by chemical thinner applications. Crops generally look light to moderate. Based on what I'm seeing and hearing, I expect crops around the state to generally be reasonable but doubt we're going to break any records this year.

**Pixie Crunch:** You may remember the grower panel discussion at Hort Congress on Pixie Crunch. A few growers have planted trees of this cultivar but now trees are more available. The only nursery licensed to supply commercial quantities of Pixie Crunch is Early Morning Fruit Nursery: <http://www.earlymornnursery.com/>

In my opinion, Pixie Crunch is a cultivar every retail grower in Indiana should grow (I can't think of any other cultivar I would say this about). The following is a list of what I see as the positive and negative features of this cultivar:

### Positive features of Pixie Crunch:

- Outstanding texture, right up there with Honeycrisp
- Can be sold at Honeycrisp prices
- Attractive very clean fruit finish. Russet is rare (see Fig. 1).
- A reliable, annual cropper. I have not seen biennial bearing on Pixie, but I'm sure it's possible.
- Hangs on the tree and maintains its texture, giving a very wide harvest window. Does not drop so ideal for U-pick.

- Calcium disorders are rare
- Grower friendly tree

### Negative features of Pixie Crunch:

- Ripens mid-late September so at a similar time to many other cultivars
- Small fruit size. Unsuitable for wholesale marketing, but for U-pick and direct retail marketing, small fruit size could be a positive rather than a negative feature.

(Hirst)



Fig. 1. Pixie Crunch

**Winter Injury Continues:** Across Indiana, and much of the Midwest, we are receiving reports about older trees that are failing or have failed (Fig. 2). Cultivars like Mutsu, Jonagold and Rome seem to be affected at a much higher rate than Golden Delicious, although I've received reports of Golden Delicious failing in southern Indiana.

I like to joke that one of the hardest problems to diagnose is dead, because dead can happen for so many reasons in the plant world. Often times, these are not simple 'one organism' caused 'one problem' situations. Pathologists use the term 'decline' to describe diseases of complex causes. By complex causes, we are referring to a predisposing situation, and inciting event, and contributing factors. A few ways these could play out could be:

In its most severe form, winter-damaged trees never break bud. In other instances, trees may bloom and begin to leaf out in the spring, only to wilt, fail and die as temperatures begin to warm, as the dying cambium cannot keep up with demands made by buds for water. Depending on how severe the winter injury was, and overall tree health prior to this freeze event, trees may begin a process of dying. It is important to note that less damaged trees may recover or they can continue to decline for the next few years before dying.

Like all living organisms, plants die when they are unable to get enough food or water. Trees are a delicate balance between their leaves and their roots, connected by a stem. Anything that prevents water from getting to leaves, or photosynthates (food) to roots, will kill a tree

they produce less food. This negative feedback loop ultimately ends in the tree's death.

Heavy cropping, as many of us observed in 2013, was a direct result of crop loss in 2012. Older literature discusses the relationship to heavy crop load and lack of trunk maturity, and failure to undergo proper dormancy. Another possible contributing factor would be late fertilizer application, or a dramatic change in temperature that prevented dormancy from becoming fully established. In the absence of full dormancy, plants are susceptible to freeze injury.

Even if your trees survived the winter, it is important to keep in mind that even moderate cold injury can make trees susceptible to infestation by borers and infection by

Event	Situation 1	Situation 2	Situation 3
<b>Predisposing</b>	Unusually heavy crop load after crop loss	Drought	Sublethal herbicide damage
<b>Inciting</b>	Freeze	Defoliation by scab	Rodent damage
<b>Contributing</b>	Later fertilizer application	Borer; Phytophthora	Phytophthora

Winter injury can result in rapid tree death. This results as damaged inner bark begins to die, and turns brown, failing to conduct water to leaves, or sugars from photosynthesis to roots. Remember that healthy bark will appear yellow-green. A few small slices throughout the branches allows you to readily distinguish between dead and healthy branches. Severe damage can result in bark splitting or sloughing (falling) off.

(or any plant, for that matter). This can happen quickly: A completely girdled trunk will prevent the flow of food or water, resulting in rapid death. More often though, it is a slow decline. Damage prevents water from getting to leaves, which keeps them from producing food for the rest of the plants, namely the roots. The roots, unable to get food, do not have the energy to get water to the leaves. As the leaves receive less water,

opportunistic pathogens like Botryosphaeria canker, Nectria canker, Phytophthoras and even dead man's fingers (Fig. 3). For stressed trees, making sure crop load is well managed to on the light side, and keeping plants irrigated through any drought event, will go a long way in preventing any more nasty surprises next spring.

(Beckerman)

Facts for Fancy Fruit is a newsletter for commercial and advanced amateur fruit growers. It provides timely information on pest control, production practices, and other topics likely to be of interest to fruit growers. All growers and interested persons are welcome to subscribe.

Subscriptions are \$15 per year. Subscribers will receive 12-15 issues biweekly during the growing season and monthly otherwise.

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Fig. 2. One of many trees that failed after this past winter.



Fig. 3. Dead man's fingers are weak, opportunistic fungal pathogens.

**Managing winter injured grape vines:** It is obvious at this stage of the growing season just how badly the winter of 2014 damaged grape vines. With the exception of vineyards in the southern tier of counties, most Indiana vineyards are now showing significant winter injury. Even the cold hardy Minnesota varieties suffered some bud injury, but for the most part look like they will produce a full crop this year. Other varieties commonly grown in the state are in various stages of damage. Cold hardy varieties like Foch will produce partial crops from secondary and latent buds. Others will produce little or no crop and are showing significant injury to cordons and trunks and will need to be retrained from the ground. This includes Traminette, Chambourcin, Vidal, Chardone, and others. Cold tender varieties were killed to the ground and are showing very little sucker growth from the base and will likely need to be replanted. It is a very disappointing situation for many growers.

**Suggestions:** Where there is consistent shoot growth from the cordon, retain as many fruitful shoots as needed to produce a full crop and thin fruitless shoots to reduce shading. Five to six shoots per foot of row is the recommended density.

If there is little or no growth along the cordon, then cut the cordons off back to the head or a few inches below the top wire (Figs. 4 & 5). If suckers are emerging from along the trunk, then save those to help heal injured vascular tissue in the trunk. Hopefully the trunks will be okay and you can save suckers emerging from high on the trunks to renew the cordons. On those vines with suckers only from the ground on own-rooted vines, or from just above the graft union on grafted vines, save several suckers to help manage vigor. Vigorous shoots lead to "bull canes" that are poor choices for trunks or cordons. It is best to have medium vigor shoots to save for renewal trunks and cordons. Keeping 4 to 6 suckers should insure that they are moderate in vigor. You can either remove the old trunk now or save it to train suckers up. I suggest waiting to remove the old trunks until this winter. Use twine to bundle and tie the suckers loosely to the old trunk. The suckers are very easy to damage when they are new. Care should be taken to get them off the ground and growing vertically.

**Risk of crown gall:** Crown gall is a bacterial disease caused *Agrobacterium vitis*. It infects vines after physical injury to the trunks. The

cold damage this year is the kind of physical injury that frequently leads to crown gall infection. After infection, the bacterium inserts genes into the vine that cause it to produce excessive callous tissue, leading to galls that erupt from beneath the bark. Galls usually occur within a foot of the ground, but can occur all the way out on the cordons. The vine structure above the galls typically dies in a year or two from lack of water and nutrient transport. Bringing new shoots up from beneath the gall will potentially salvage infected vines, at least temporarily. It is best to replace vines with crown gall.

**Mid-season grape pest management:** Even in a year with little or no crop, we still need to maintain vine health. I've had several reports of black rot leaf spot and Phomopsis cane and leaf spot this year (Fig. 6). It is important to prevent widespread infection by these pathogens as that will lead to significant disease pressure in the future. Plus minimizing disease to any remaining marketable crop this season will be important economically. Growers should scout regularly now for leaf diseases and insects and act accordingly. Most varieties become resistant to black rot and powdery mildew fruit infection by 3-5



weeks after bloom, so leaf diseases (downy and powdery mildew) are the main concern. Japanese beetle is the main insect of concern in grapes, though grape berry moth could still be a problem in some areas. Pheromone traps are very helpful in monitoring GBM populations, but scouting is the best method to monitor damage. On varieties with no harvestable crop this year, mancozeb can be used throughout the season without regard to the Pre-harvest interval. Mancozeb is excellent against black rot, downy mildew, and Phomopsis, but does not control powdery mildew at all. One of the sterol inhibitor fungicides will be needed on powdery mildew susceptible varieties.

(Bordelon)



Fig. 4. Cayuga White vines with very few shoots from the cordon, suckers from the base.



Fig. 5. Cayuga White vines with cordons removed and old trunks retained to train suckers.



Fig. 6. Phomopsis cane and leaf spot on shoot and cluster stem of Aromella.

**Spotted Wing Drosophila:** So far I have received no reports of either trap catches of spotted wing drosophila or reports of any damage to strawberry. If that holds up, I think we can be pretty sure that June strawberries are not going to be severely impacted by this new pest. If you have seen flies or damage, please let me know. That is very useful information for everyone. If you are growing raspberries, blueberries, or blackberries, you should probably have your traps in place now. See previous editions of Facts for Fancy Fruit for instructions on construction and use of traps.

(Foster)

**Potato Leafhoppers:** Potato leafhoppers have made their annual migration northward into Indiana. I have seen some fairly high populations in apples. Fruit growers should be scouting for leafhoppers now and treating based on the number of leafhoppers you see. Don't wait until you see symptoms of the feeding, leaf yellowing or curling, because at that point the damage is already done. See the spray guides for details of which insecticides to spray on your particular crop.

(Foster)

**European Red Mites:** Mid-June is the time to begin looking for outbreaks of European red mites in your apples. Look first in those varieties or blocks where you usually see them first, such as Red Delicious or next to a gravel road. If you find damaging populations there, look in other parts of your orchard. Early in the season, the threshold is relatively low, an average of 2.5 mites per leaf would justify a spray.

(Foster)





**U.S. leader in vineyard mechanization research will be remembered**

Dr. Justin Roy Morris died at the age of 77 on 5-19-14. Prior to his retirement in 2009, Dr. Morris was a Distinguished Professor Emeritus in the Food Science Department and Director of the Institute of Food Science and Engineering at the University of Arkansas where he provided research, teaching, leadership, and service to the grape and wine industries for over 40 years.

Dr. Morris was dedicated to improving the sustainability of horticulture and he is renowned worldwide for his contributions to the grape and wine industry. He will especially be remembered for his applied research and Extension in vineyard mechanization.

The family requests that in lieu of flowers, contributions be made to the Ozark Food Processors Association – Justin R. Morris Scholarship (send to OFPA, 2650 N. Young Ave., Fayette, AR 72704) or the Food Science Department Justin Morris Endowed Scholarship (send to food Science Department, 2650 N. Young Ave., Fayetteville, AR 72704).



<i>Current bud stages West Lafayette, IN</i>	
<i>Apple</i>	<i>Grape</i>
	
<i>final fruit drop occurring</i>	<i>early bloom</i>
<i>Strawberry</i>	<i>Raspberry</i>
	
<i>harvest</i>	<i>post bloom</i>



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