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season before
they ripen.

Crop Conditions

Apple harvest continues and apples are still running about a week ahead of normal. A higher than usual amount of stem-end cracking is showing up. Fruit showing these cracks should be sold first and are not suitable for long-term storage. Grape harvest is winding down with only the latest varieties left. Primocane blackberry and raspberry harvest continues.



Mutsu harvest
underway



Blackberry
harvest
continues. Unripe
fruit may run out
of growing

Fruit Rots

Fruit rots continue to pose a problem for those of us in the wetter parts of the state. Frequent rains and warm temperatures really set the stage for bitter rot, black rot, white rot, and even brown rot. Any rain event that produced more than 2" of rain would remove the majority of fungicide, meaning that harvested fruit is going into the storage bin unprotected from these pathogens. If possible, a fungicide like Merivon or Pristine, with a zero day preharvest interval will provide protection in storage. However, fruit that may have looked clean at harvest could be infected, and any infected fruit will develop lesions over time. At this stage, damage control is limited to scouting bins, and removing infected fruit as it develops. Remember that postharvest applications of fungicide will not "cure" fruit that is already infected!

Some key points to minimizing storage rots include:

- Using clean bins (Cleanliness is next to impossible, but we keep trying!)
- Minimizing bruising and injury to fruit as it is picked
- Harvesting fruit at proper maturity, as overmature fruit is more susceptible to rot
- Keeping fruit cool after harvest. The growth of these fungi that cause rots is reduced when temps are below 44 degrees F

- 1-methylcyclopropene (1-MCP) (e.g., SmartFresh), blocks the ethylene receptors in apples, delaying them from ripening, and thus rot.

There was an interesting study about the Canadian experience using SmartFresh, you can find [here](#).

One rotten apple really can spoil the barrel. Which is why an ounce of prevention (or parts per million of SmartFresh or both!) is really important to a successful harvest.

Ripe Rot on Grapes

There are a number of common grape pathogens that can cause fruit rots each year in the region. Black rot and Phomopsis cane and leaf spot are by far the most common fruit pathogens. We also see Botrytis gray mold on some cultivars in cooler regions and years. Another common rot is Sour rot, but it is actually caused by yeasts and bacteria, not filamentous fungi and is spread by fruit flies. It occurs most often when heavy rains near harvest cause berry splitting. I wrote about it in a recent issue.

In the past few years we've had a troubling rot on a new cultivar to the region, Marquette. This early ripening red has excellent wine quality and is one of the new "super cold hardy" cultivars from Minnesota. That makes it a great choice for northern Indiana vineyards. However, Marquette is not without disease problems. While only moderately susceptible to black rot, it is highly susceptible to Phomopsis cane and leaf spot. Extra measures taken to manage Phomopsis have not been successful at stopping all fruit rots on Marquette. So we investigated a bit further to discover that, in fact, a relatively unknown disease to our region causes a late-season fruit rot. Ripe rot is caused by *Colletotrichum gloeosporioides* and is common in the warm southern Atlantic wine growing regions, but not cooler regions of the Midwest. It may be that the disease is spreading more westward, or more likely, that Marquette is just particularly susceptible. Marquette ripens about 2 weeks earlier than most

cultivars so it's possible that higher temperatures during ripening are partially to blame.

One concern with ripe rot is that it can infect fruit during the ripening period. The other fruit rots we commonly deal with infect much earlier in the season, so growers quit applying fungicides after mid-summer as risk for infection is greatly diminished. The lack of late-season fungicide applications may be why we are seeing ripe rot show up on susceptible cultivars. We will have to change our recommendations to reflect this new threat. Captan, Ziram and strobilurin fungicides have good activity against ripe rot.

The primary symptom of ripe rot is rotting of ripe fruit. Symptoms are not common on leaves, shoots, or cluster stems (unlike Phomopsis that also causes a rot of ripe fruit). Affected berries develop circular, reddish brown spots on their skins and the spots subsequently enlarge to include entire berries. A key characteristic is that infected berries become covered with salmon-colored spore masses of conidia as they decay. Eventually diseased berries shrivel and resemble the terminal stages of several other rot diseases (black rot, Phomopsis). Presence of the characteristic salmon-colored conidia from acervuli is diagnostic for ripe rot.



Healthy clusters of Marquette

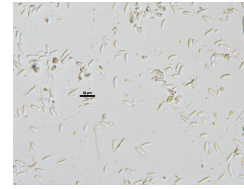


Early stages of ripe rot on Marquette



Individual berry
showing
development of
acervuli on
surface

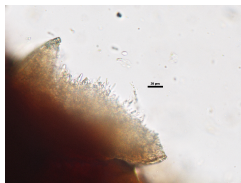
*Colletotrichum
gloeosporioides*



Spores of
*Colletotrichum
gloeosporioides*



Advanced stage
of ripe rot with
many shriveled
berries with
acervuli visible



Acervulus of

Upcoming Events

Indiana Flower Growers Association Conference
October 10, 2017

Daniel Turf Center, Purdue University
West Lafayette, IN

Contact Lori Jolly-Brown @ljollybr@purdue.edu

Indiana Horticultural Congress
February 13-15, 2018

Indianapolis Marriott East Indianapolis, IN

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Visit www.inhortcongress.org for more details

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