Anthracnose fruit rot concerns for 2016

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As mentioned in the last newsletter, one area of particular concern in 2015 was the rise of anthracnose fruit rot (Fig. 1), caused by Colletotrichum species. This fungus overwinters in dead twigs and/or dormant flower buds. Once spores are produced, they move to and germinate on the surface of green fruit; the fungus then penetrates the fruit but remains dormant until the fruit begins to ripen. Rots form as the fruit matures, and orange to salmon-colored spore masses are observe on fruit surfaces (Fig. 1). Spores produced on rotting fruit can subsequently infect surrounding fruit as well as vegetative tissues. For whatever reason, anthracnose was prevalent on numerous commodities last year. The only surprise for us in Georgia is that we rarely see this disease as a fruit rot on blueberries. Infection is most often observed when conditions are warm and wet; however, that is often the case in Georgia, and we still have not had major issues.

We may have become complacent, as a spray program for rots should have prevented this – unless fungicide resistance was an issue. In light of the fact that the disease was prevalent throughout the state (really the region) on multiple commodities, I gravitate towards an environmental explanation, as opposed to resistance development. However, Phil Harmon (University of Florida) has confirmed Colletotrichum resistance development, particularly to the strobilurin fungicides (azoxystrobin in Abound and pyraclostrobin in Pristine) in Florida within the last year or two. In addition, he indicates that some Colletotrichum species are actually killing blueberry plants; this is mainly limited to one or two varieties, but this is not something we have seen before.

If resistance is being observed, there are several concerns. First, this would indicate that some fungicides are no longer working well. This might vary from one field to the next, but the advent of resistance might indicate a general issue with particular fungicide groups or classes. Phil Harmon has graciously agreed to help us determine whether we do have resistant fungal isolates in Georgia, but we will not know this till next summer. I am therefore suggesting some modifications to our blueberry spray program – just to be on the safe side. I will discuss this program in more detail below. A second concern is that with the advent of resistance, we may actually select for anthracnose fruit rot. In other words, we might be killing out some of the competitive fungi and actually increasing anthracnose (possibly other pathogens as well) to levels which would be worse than if we did not spray a fungicide at all. This has been observed in the last 2-3 years in South Carolina peach orchards. Dr. Guido Schnabel reported that anthracnose, rarely seen on peach, actually wiped out peaches in some sites – 60-70% losses. Likewise, Alternaria fruit rot increased as a major disease, and Alternaria resistance was to blame. Obviously, we need to understand our own situation. Again, we don’t know that we have resistance to the anthracnose fungus (or possibly multiple fungi), but it would be prudent to assume that we may.

We definitely need to consider fungicides with anthracnose activity as we are developing our spray programs for 2016. The following materials should have some degree of activity against Colletotrichum species found on blueberry. Bloom and early cover sprays are thought to be particularly important for management of this disease, but infections can occur later in the season as well.
Abound; group 11 (possible resistance)
Captan; group M4 (Captan + phosphonates have been particularly effective for controlling *Colletotrichum* diseases on apples, but data is not available on blueberry.)
Captevate; group 17 + M4
Omega 500; group 29
Orbit; group 3
Phosphonates (Prophyt, etc); group 33
Pristine; group 7 + 1 (possible resistance)
Quash; group 3
Sulforix (late dormant application; same as for Exobasidium)
Switch; group 9 + 12

The blueberry disease management program below (Fig. 2) is a modification of the Exobasidium program I sent out in the last newsletter. Captan is actually pretty efficacious on *Colletotrichum* species, and until we know the resistance status of the strobilurin fungicides, I would consider tank-mixing Captan with Pristine or Abound to provide insurance and additional efficacy. As you approach harvest, visual Captan residues might be an issue, so it might not fit well in the latter part of the season just prior to harvest. In the chart below (Fig. 2), I have moved Switch to an earlier application window than presented in previous versions, as at least one of the fungicidal compounds in Switch is likely to be active (does not readily develop resistance). This program does take into account resistance management, while also providing efficacious materials at the time they would be needed. However, feel free to mix and match fungicides on your own, as long as they provide the needed efficacy against given pathogens at specific growth stages. See the IPM guide at [www.smallfruits.org](http://www.smallfruits.org) to help you in developing your spray programs. Also, timely, frequent harvest (no soft fruit) and rapid cooling will help to prevent post-harvest rots. As always, contact your local county agent if you have questions.

**Figure 1.** Anthracnose fruit rot of blueberry. This disease was more prevalent than normal in 2016. Efficacious, preventative fungicidal spray programs are required to control this disease.
Figure 2. A suggested spray program for management of blueberry diseases after the introduction of Exobasidium leaf and fruit spot and potentially-resistant *Colletotrichum* species (anthracnose).