Strobilurin Resistance in Cucurbit Downy Mildew

David Langston
Extension Vegetable Pathologist - UGA

Some say it was just a matter of time but it has been confirmed. Resistance has been recently documented in downy mildew of cucurbits (Pseudoperonospora cubensis) to the strobilurin and other QoI fungicides. These include Amistar/Quadris, Flint, Cabrio, Reason and components of Pristine and Tanos. Samples submitted from North Carolina, Georgia, and Florida were submitted to BASF and their lab in Germany confirmed the gene shift that confers this type of resistance. Like with other fungicide resistance problems we have seen like this, when one gene is involved, complete resistance to the fungicide is conferred immediately to the population that has that gene shift. There is no gradual shift in that population from being sensitive to intermediate sensitive to resistant. This does not mean that these fungicides will not work some of the time, it does mean that there is a chance that they might not work in some situations, depending on where the disease inoculum originated. BASF is suggesting a "mix & alternate" approach to manage downy mildew and other foliar diseases while lessening the risk of fungicide resistance. Basically this means that when an application is made of a QoI fungicide to a cucurbit crop with downy mildew as the primary target, tank mix the QoI fungicide with another fungicide that has activity against downy mildew and that has a different and effective mode of action than the QoI. The next spray will be a tank mix or pre-mix of a non-QoI downy mildew fungicide with a broad spectrum protectant fungicide or a broad spectrum fungicide alone. Good rotation or tank-mix partners that are specifically targeted at downy mildew are Previcur Flex, Acrobat, and Gavel (Gavel actually has the broad spectrum component mancozeb too). The broad spectrum protectant fungicides are chlorothalonil and mancozeb.

Cantaloupe or Watermelon Growing Slowly?

Stanley Culpepper
Extension Weed Scientist- UGA

Most of us are struggling this spring with our crops growing very slowly and even dying in some instances. Obviously, the cool, extremely wet spring is the predominant reason for most of our struggles. However, there have been several other issues that have impacted vegetable growth for some growers.

First, there are those who applied Cadre or Strongarm to their peanut crop last year and now
have followed with a spring vegetable crop such as cantaloupe or watermelon. Cadre and Strongarm have a plant back interval of at least 26 to 30 months for many vegetable crops. Many growers will say “hey I got away with it for the past couple of years” and I am sure this is the case. However, herbicide carryover is extremely complicated and varies greatly depending on the product applied, rate applied, soil type, soil pH, weather immediately after application, and especially weather conditions at planting of the vegetable crop and during early season. There is the belief that since we had so much rain last fall with all the hurricanes then there can not be an issue this year. Amount of rainfall since last year is just one of many factors impacting the potential for carryover and believe it or not, it appears to be one of the least important factors impacting the carryover of these herbicides, especially Cadre. Another misnomer is false security that there will be no problems because a soil sample was sent to a lab to test for Cadre and there was none detected. We can actually apply low lethal rates of Cadre to the soil and immediately pull a soil sample from the treated area and send it to a laboratory and usually the lab will not be able to detect the Cadre that was just applied. The problem is not the lab but rather the fact that Cadre is lethal at rates that can not be detected with current technology. The factors that appear to be the most important for carryover, especially for Cadre, are 1) wet cool soils when planting the vegetable crop; 2) soil pH at time of herbicide application; and 3) liming the soil just prior to planting the vegetable crop. BOTTOM LINE: follow the plant back restriction of the herbicide applied!!!!!!!!!

The second issue involves those growers using the yellow herbicide (Curbit is the actual product labeled, same active ingredient as Sonalan) incorrectly. With the rapid adoption of plastic mulch laid in 15- to 24-inch strips, methods for herbicide applications have become quite complicated. Most growers realize they need the yellow herbicide in their program but how should it be applied? Some growers go out and incorporate the yellow herbicide and then lay their plastic. This application method is not recommended or labeled as plant stunting (Figures 1, 2, and 3) can and often will be observed. Unfortunately, the only recommendation that can be made in this situation is to lay the mulch and then spray the yellow herbicide between the mulch strips. This, of course, leaves no help with weeds in the transplant hole (the area of greatest concern). Grasses emerging from the transplant hole can be easily managed while broadleaf weeds are more challenging.

Figure 1. Cantaloupe response to no herbicide (left) or Sonalan 1 pt/A applied preplant incorporated (right) under mulch. Planted 16 days after applying herbicide and laying mulch during spring of 2005.

Figure 2. Watermelon response to no herbicide (left) or Sonalan 1 pt/A applied under mulch (right). Planted 16 days after applying herbicide and laying mulch during spring of 2005.
Georgia Vegetables Off to Slow Start

William Terry Kelley
Extension Horticulturist - UGA

Georgia’s commercial vegetable crop has finally started to take off after several weeks of cool, damp weather that slowed the crop down. During the last two weeks, the crop has made significant progress. Early planters were not necessarily rewarded this season as early transplanted crops seemed to sit in a holding pattern for several weeks. By early May, some crops looked as if they had only been in the ground for a couple of weeks, even though they actually had been there for over a month.

As a result of the delayed start, harvest is and will be behind for the spring crop. Watermelons may be 10 days to two weeks later than normal. Squash harvest, which normally is underway by the middle of April, was still just getting started in mid May. Other crops are facing the same scenario. Probably the best news so far is that the entire southeast has been affected by these weather patterns and neighboring states have been thrown almost as much off track as Georgia growers. Hopefully, this will stem any gluts in produce later in the season because of timely harvests north of here competing with later than normal harvests in Georgia.

Unusually cool, damp conditions and sometimes windy conditions caused the delay as well as several other anomalies in various crops. Environmental conditions have caused a number of unusual growth patterns, blemishes, spots and all sorts of symptoms on plants and fruit. Many of these conditions have moderated along with the weather.

Delays may extend the season for some crops. For longer season crops that require significant fertilizer inputs, this may require growers to make at least a partial additional application to carry the crop through to the end. Although the plants weren’t using the nutrients, in bare ground cases, the fertilizers were getting leached by the consistent rains.

The crops will tend to “catch up” quite a bit if the weather stays warm and sunny. However, the delay may have been too great to completely get on schedule. The best medicine for the crops out there now, however, is going to be warm days with lots of sunshine. And, hopefully brief, timely rains will be the rule, rather than drought or wet conditions.

Vegetable Extension- Research Update Meeting

Stormy Sparks
Extension Vegetable Entomologist - UGA

The first annual (hopefully) Georgia Vegetable Extension-Research Update will be held at the RDC in Tifton on June 30, starting at 10:00 AM and ending at 3:00 PM. The plans for this meeting include distribution of the Georgia Vegetable Extension-Research Reports for 2003 and 2004 with presentations by authors of these reports. Previously, these reports have been distributed through the mail with no chance to interact with the scientists involved in the studies. Each scientist with at least one study in the report will be offered a time slot during the meeting to discuss their results and any pertinent studies in progress.
will also be allotted for questions for each speaker. Our targeted audience for this meeting is County Agents and local vegetable producers, but everyone is welcome.

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**Oberon 2SC Registered for Vegetables**

Stormy Sparks  
Extension Vegetable Entomologist - UGA

Oberon 2SC from Bayer CropScience recently received its first registrations. The primary vegetable crops included in this label are cucurbit vegetables (watermelon, cantaloupe, squash, etc.), fruiting vegetables (eggplant, pepper, tomato), leafy greens and Brassica leafy greens (spinach, cabbage, collards, mustard greens), and sweet potato. On most of these crops the use rate is from 7.0 to 8.5 oz/ac (higher for sweet potato). Oberon has shown excellent activity against spider mites and good activity against whiteflies in local studies. Oberon has a unique mode of action (Lipid Biosynthesis Inhibitor) as compared to products currently used for these pests and should be very useful in resistance management. This mode of action is somewhat slow in providing complete mortality and the full benefits of treatment may not be apparent until 4 or more days after application.

A word of caution - Oberon is registered for up to three applications per season on most vegetables. It has been reported to show better results with two applications 7 to 10 days apart. This is very likely with whitefly; however, my limited experience with Oberon has shown excellent activity on spider mites with a single application. Therefore, for spider mites I discourage the automatic use of a second application as this may unnecessarily add to the potential for resistance. Furthermore, with a 7 day application interval (required on the label), careful scouting (at 5 to 7 days after the first application) should easily determine whether a second application is justified.

The label is attached for your use.