Fall Diseases Enhanced by Storms

David Langston
Extension Vegetable Pathologist - UGA

Generally we think of the fall of the year as being somewhat worse for having severe outbreaks of vegetable diseases. This type of severity is compounded by tropical storms that blow through from time-to-time. Back in 1994, hurricane Alberto dropped several inches of rain and was thought to have delivered or incited the first outbreaks of Phytophthora crown rot (caused by Phytophthora capsici) in Georgia vegetables. Since then this disease has become one of the most troublesome diseases of vegetables each year. Now since Frances has blown through, we are observing many outbreaks of diseases such as downy mildew of cucurbits, bacterial spot of tomato and pepper, Phomopsis blight of eggplant, Phytophthora crown fruit rot of cucurbits, pepper, and eggplant, and I'm sure a host of other splash and wind dispersed diseases that haven't been reported to the clinic yet. Tropical storms with their heavy, driving rains serve as perfect disease dispersal mechanisms. The excessive rain itself is favorable for disease development.

If storms are approaching, preventive fungicide/bactericide applications are essential to suppressing some of the inoculum spread by protecting plants that are not yet infected. However, even the best materials cannot completely hold back certain pathogen epidemics when weather is continually favorable for disease. Fungicide made a day or so prior to storms are a must. Generally, fungicides that can get into the plant either systemically or by translaminar movement will not be washed off as would protective, non-systemic fungicides. I would use the non-systemic materials soon after storms pass through for resistance management and to further help protect foliage. One positive thing these storms do is knock down whitefly numbers some. This is important because we have already begun to see Tomato Yellow Leaf Curl virus in tomatoes this year. Look out for Cabbage Leaf Curl virus as well. Main controls for these two viruses are rogueing infected plants and using insecticides. Dr. Sparks will cover these in the following column.

New Fungicide Labels

David Langston
Extension Vegetable Pathologist - UGA

Some new chemistries are being made available for the vegetable industry. This is in addition to the Amistar label that was granted this spring. Remember that Amistar is a dry formulation of azoxystrobin which is the active ingredient in...
Quadris. One of the more significant benefits this new Amistar label gives us is that the active ingredient is now labeled for use on the heading brassicas like cabbage, cauliflower, and broccoli. This is the first strobilurin label for these crops and this gives us better tools for wirestem (*Rhizoctonia*) and Alternaria leaf spot.

A new active ingredient has just been labeled for tomatoes, cucurbits, and peppers (greenhouse only). This is Previcur® Flex from Bayer Crop Science. The active ingredient in this material is propamocarb and it has a unique mode of action compared to other fungicides we currently use. This gives us an excellent tool for downy mildew and late blight (*Phytophthora infestans*) resistance management. I have used this material in my trials and have observed good activity when applied alone. The label indicates that Previcur Flex is to be tank-mixed with either chlorothalonil or mancozeb which should enhance suppression of late blight and downy mildew while broadening the spectrum of activity to include suppression of disease caused by *Alternaria* spp., gummy stem blight, anthracnose, and others. Another benefit of this product is that it is labeled for use on these crops in the greenhouse for suppression of seedling diseases caused by *Pythium* and *Phytophthora*. Peppers are included on the label for greenhouse use only.

Curzate® 60DF has also recently received a registration for use on cucurbits, tomatoes, and potatoes. This is the same active ingredient (cymoxanil) that is use in the premix Tanos™ (famoxate + cymoxanil). It will primarily be used for late blight and downy mildew suppression and is to be tank-mixed with protectant fungicides like mancozeb, copper, and chlorothalonil. Like Previcur Flex, Curzate is a good resistance management rotation partner with strobilurins and other QoI respiration inhibitors because it has a unique mode of action. Labels for Previcur Flex and Curzate are attached.

Silverleaf whitefly in fall vegetables

Stormy Sparks
Extension Vegetable Entomologist - UGA

Prior to hurricane Frances, and all the rain it brought, silverleaf whiteflies (SLWF) were preparing to carry away fall vegetables. Whiteflies had been building in the cotton for several weeks, and early fall vegetables were under extreme pest pressure in some areas. Early planted snap beans at the experiment station had well over 50 adults per leaf on new growth and some of the older leaves were yellow underneath from all the nymphs. The rain undoubtedly killed a lot of the adults, but it probably will not be long before the immatures complete development and a new batch of adults are flying around. The rain reduced the severity of the problem, but I doubt it was eliminated.

Several options exist for whitefly control, with the best option dependent on the severity of the pest pressure, the crop involved, and what is registered (which also varies with the crop). Whitefly pest pressure varies greatly across Georgia. Those fall crops planted near a source of a whitefly population (heavily infested cotton, etc.) should probably receive a preventative application of Admire or Platinum at planting, if registered for use on your crop. Those crops particularly sensitive to SLWF (squash, tomato) should probably also receive a preventative application this fall.

Where the preventative approach is not taken, several foliar options do exist, depending on the crop and pesticides labeled. Endosulfan (Thiodan, Phaser) provides good control of adult whiteflies, but has little or no efficacy against immatures. It can be used early, prior to establishment of an immature population. Two insect growth regulators, Knack and Courier, are registered for some vegetables and provide good control of immature stages, but have minimal effects on adults (although they do impact reproduction through effects on eggs). If you need to control adults and immatures, your options may include Assail, Actara, Capture, or a pyrethroid mixed with an organophosphate. Assail and Actara
are registered on relatively few vegetables and should not be used if Admire or Platinum was used, but they perform well against all stages of whiteflies. Capture is the only pyrethroid that generally provides good control of SLWF as a stand alone product; however, it should be used at high rates and about 10% of the time it needs an organophosphate tank mix partner. In general, any pyrethroid mixed with any organophosphate will provide good control of SLWF.

As a final caution, none of the options listed above have proven very effective in Georgia when virus transmission becomes a problem. Indications are that when we have problems with whitefly transmitted viruses in the fall, we have heavy whitefly populations that are carrying the virus when they enter the field and reproduction in the vegetable fields is a minor part of the problem. Where insecticides have proven effective against virus problems has generally been where reproduction in the field and secondary virus spread is a large portion of the problem.

**Country of Origin (COOL): What it means to the fruit and vegetable industry**

Esendugue Greg Fonsah
Extension Economist

The mandatory country of origin (COOL) labeling requirement is a policy that would be beneficial for U.S. produce growers if adopted. COOL was implemented in Europe for almost two decades ago. Although stringent quality requirement are needed, the EU is still an important market in which there is need for us expand our exports of fresh fruits and vegetables. The reasons are (1) the euro is a hard currency and is now appreciated against the US dollars, thus, an increasing purchasing power parity (2) their have a stable banking and financial institutions and system. (3) the EU member countries, Canada and Japan who are currently the dominant demand-side factors for fruits and vegetables trade, are willing to pay for better quality products all year round (4) The US still remain one of the best producer of quality agricultural food commodity in the world, therefore meeting quality requirement should pose little or no problem to us at all.

Adopting the mandatory COOL and other requirements such as traceability would enable the U.S. to take advantage of these and other markets the world over. Figure 1 shows that imported vegetables is four times more than what we export.

**Fig. 1: U.S. Vegetable Industry: Import, Export & Per Capita Use 2002 - 2004**

![Graph showing U.S. Vegetable Industry: Import, Export & Per Capita Use 2002 - 2004](image)


The value of imported vegetable increased to $5,600 million in 2004 compared with $5,431 million and $4,818 million in years 2003 and 2002 respectively. On the other hand, export was more or less the same in the same time period. Interestingly, per capita consumption/use increased to 175 pounds in 2004 compared with 2003. The increase in per capita consumption will continue to expand import and export trade.

It is also very important to know that the following are exempt from COOL: (1) food service businesses i.e. restaurants, food stands, grocery stores with total fruits and vegetables annual sale of $230,000 or less.

**COOL Conclusion**

It is imperative that growers start thinking of adopting COOL, especially those who plan to put their fresh produce into the NAFTA markets (Canada, Mexico) and international markets such as the EU and Asia. The early adopters will definitely benefit before intra-competition sets into the equation.
Command in Transplant Cabbage

Stanley Culpepper
Extension Weed Scientist - UGA

Currently, Command is labeled for use in Georgia transplant cabbage at a rate of 0.67 to 1.3 pints of product per acre. Command is an effective tool managing many of the most common and troublesome weeds infesting our fields and should be included as a component of a weed management system for many of our acres. Although many growers have used Command in cabbage for years with no injury problems, there were several injury issues that arose doing the spring of 2004. We are currently conducting research to determine the cause of this Command injury during the spring. We are positive that the cool, wet environment played a huge role in increasing the amount of injury that was observed in the field. However, there may be several other issues such as cabbage cultivar that impacted the degree of injury noted.

Currently, we would recommend the following for cabbage transplants:

1. If expected conditions are cool and/or wet use no more than 1 pint per acre of Command on any cabbage transplant.
2. If one is growing the Bravo cabbage cultivar, use no more than 0.67 pint per acre of Command regardless of growing environment.

Additional research is and will be conducted to address some of the unknowns surrounding this springs increased cabbage sensitivity to Command and results will be provided as soon possible.

Crisis Exemption Received for Knack on Fall Planted Beans

Stormy Sparks
Extension Vegetable Entomologist - UGA

More good news from the Georgia Department of Agriculture. Because of the heavy pest pressure from silverleaf whitefly, the Department of Agriculture has requested a specific exemption for the use of Knack on fall planted beans (snap beans and related crops). In addition, they were willing to declare a crisis exemption to allow the immediate use of Knack (declared on September 13). Knack has shown excellent activity on SLWF immatures (mostly eggs and last instar nymphs), but has little or no activity on adults. Under heavy pest movement, it may be useful to include endosulfan in your management program if you are using Knack (endosulfan gives good control of adults but has little or no activity on immatures). The section 18 allows for use of Knack on succulent beans at 8 to 10 ounces per acre. A maximum of two applications can be made per crop with 14 days between applications and a 7 day pre-harvest interval.

Section 18 Terminology

Just for your information: We generally talk about a section 18 registration as if it were a single option, but there are actually four different types of section 18s. The two we deal with the most are specific exemptions and crisis exemptions. The specific exemption is the one we deal with the most. It is a long drawn out process, generally requiring 180 days or more from the time the application is submitted until the registration is received (or rejected) and is usually good for one year from the date it is issued. A crisis exemption can be declared by the state (State Department of Agriculture) and goes into effect immediately and is good for 14 days, unless a specific exemption is requested. If a specific request is submitted, the crisis is good until the specific request is ruled upon.

While a crisis sounds like an easy way to do things, it can have considerable risk associated with it, and they are carefully scrutinized by EPA. Under normal circumstances, a product for which we are requesting a section 18 does not have a tolerance. A crisis declared under those circumstances would allow use of the product, but the treated produce could not be sold unless a
tolerance was established prior to harvest. That’s a big risk for anyone. Fortunately, with both of the current section 18s for Knack and Avaunt, a tolerance already exists, so were safe as far as the crisis is concerned. Under even the best of circumstances, crisis exemptions are avoided for a variety of reasons and must be fully justified. We are fortunate that the Georgia Department of Agriculture was willing to support our requests for crisis exemption for both of these badly needed products.

Crisis Exemption Received for Avaunt on Collards

Stormy Sparks
Extension Vegetable Entomologist - UGA

On September 13, the Georgia Department of Agriculture requested a section 18 registration to allow the use of Avaunt on collards for control of diamondback moth. Although we had a similar section 18 last year, the registration of Proclaim a few months after the original section 18 for Avaunt made renewal for this year questionable (are you confused yet?). With both Proclaim and SpinTor available for use on collards, a section 18 request for resistance management would probably have failed and thus was not requested. Recent events have changed this scenario. Although we have not had full field failure with SpinTor, we have had reports of reduced efficacy, which raises a flag because of previous resistance problems with this pest. This has allowed us to make a reasonable argument for the use of Avaunt for resistance management. The Georgia Department of Agriculture has requested the specific exemption and declared a crisis exemption. The crisis exemption allows for the use of the product until EPA rules on the specific exemption. In any case, use of Avaunt on collards for control of diamondback moth is once again legal. The section 18 is very similar to last year. The use rate is 3.5 ounces per acre, with a 7 day interval between applications and a 14 day pre-harvest interval. A maximum of 14 ounces may be used per acre per crop. For resistance management, do not make more than two sequential applications of Avaunt (or SpinTor, or Proclaim) without rotating to another insecticide with a different mode of action.

Methyl Bromide Package Submitted for 2007

William Terry Kelley
Extension Horticulturist

The Critical Use Exemption Applications for continued production of methyl bromide for Georgia in 2007 were submitted in early August. The applications covered the same crops as the previous applications - squash, cucumber, cantaloupe, pepper, tomato, and eggplant. As in the past, the applications were prepared by the University of Georgia Extension Vegetable Team in collaboration with the Georgia Fruit & Vegetable Growers Association.

This application will go through the same process as previous applications. It will first be reviewed by the Environmental Protection Agency and if approved will then become part of the U.S. State Department’s request to the United Nations Environment Program’s Methyl Bromide Technical Options Committee. The final decision on the application will be made at a Meeting of the Parties of the Montreal Protocol which will be held at a later date.

The process now includes three applications which cover 2005, 2006 and 2007. Each of the applications are in various stages of consideration. None have been completely acted upon. The 2005 CUE’s have been approved at the EPA and international level, but EPA has not released rules on allocation of amounts for individual states or crop sectors. The 2005 total exemption was approved at the current level of production.

The 2006 applications have been submitted since September 2003, but there has been no word whatsoever on the progress of those applications at this time. All of the applications were based on the critical need of methyl bromide to control nutsedge, nematodes and soil-borne diseases in
vegetables grown with plastic mulch. To this point, there has not been a suitable alternative or set of alternatives identified to replace methyl bromide and serve all of these purposes.

The acres covered and pounds of active ingredient of methyl bromide requested in the most recent Critical Use Exemption applications are listed below:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acres</th>
<th>Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cantaloupe</td>
<td>4,044</td>
<td>541,762</td>
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<tr>
<td>Cucumber</td>
<td>1,106</td>
<td>148,204</td>
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<tr>
<td>Squash</td>
<td>1,528</td>
<td>204,752</td>
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<tr>
<td>Pepper</td>
<td>5,712</td>
<td>765,408</td>
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<tr>
<td>Tomato</td>
<td>5,815</td>
<td>779,210</td>
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<tr>
<td>Eggplant</td>
<td>804</td>
<td>107,736</td>
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