



WEEKLY CROP UPDATE

UNIVERSITY OF DELAWARE COOPERATIVE EXTENSION

Volume 12, Issue 18

July 23, 2004

Vegetables

More on Downy Mildew on Pickling Cucumbers - Ed Kee, Extension Vegetable Crops Specialist; kee@udel.edu

Downy mildew continues to be a major challenge to pickling cucumbers, as well as other cucurbit crops. At this point at least 95% of our fields are demonstrating some level of infection. While we and at least one crop consultant have seen fungicide applications of Ridomil Gold Bravo made during the fruit stage at least "hold the vines," the frustration and anxiety level is justifiably high among growers and processors. Please refer to last week's Update for specific recommendations, but here are some additional observations and possible strategies:

1. We have been asked about resistance of downy mildew to Ridomil (mefenoxam) formulations, especially about the possibility of resistant strains of downy mildew "blowing up" from North Carolina. Resistant strains of downy mildew have not been detected in either region, Delmarva or North Carolina. However, there is a significant risk of resistance development. Ridomil formulations should be used in a rotation with other products that have a different mode of action (Tanos, Cabrio or Gavel).
2. Ridomil Gold 4/E is labeled at 1-2 pts/acre and Ultra Flourish 2/E at 2-4 pts/acre for application in a 7-inch band to control Pythium. This application also will likely provide early season control of downy mildew. The Vegetable Production Recommendation Guide has the information for converting this to a per/acre basis. See the other article on downy mildew for additional information.
3. Are there variety differences in the reaction to Downy mildew? Yes. There are differences in the relative resistance of varieties. Seed company ratings indicate Palomino and Sassy have intermediate resistance, while Vlaspic has more resistance than Palomino. Another factor in all of this is the resistance level of the pollinator varieties. Female hybrid varieties that have resistance may be mixed with older pollinator varieties that have little or no resistance. This situation can be negative in two ways. First, the non-resistant pollinators

encourage the development of the disease. Secondly, the failure of the pollinators to produce blossoms as a result of the disease would increase the amount of non-payable product, i.e., crooks & nubs. Finally, while there is a lot of anecdotal evidence circulating about varieties, there is the possibility that as the disease hit our region, much of our acreage happened to be in one variety or another, thus skewing what we're looking at. Having said that, however, there are differences in resistance level among varieties, as noted above.

As was stated last week, there are several materials listed in the Commercial Vegetable Production Guide. The example programs that include Bravo or Ridomil were recommended based on performance data from other states, our experience, and the goal of addressing both Downy mildew and Phytophthora fruit rot. With the situation as it is, trying other materials alone, or in combination is justified.

Growers are asking about performance of various fungicides. It is important to remember, that up to now, all fields were treated with fungicides **after** infection has occurred. The real evaluation of the performance and effectiveness will begin when our region begins harvest of fields that have had fungicide applications before major infection occurred. We should be in that mode in seven to ten days.

We are evaluating all of this and will keep the industry posted.



Vegetable Crop Diseases - *Bob Mulrooney, Extension Plant Pathologist,*
bobmul@udel.edu

Late Blight Advisory.

Disease Severity Value (DSV) Accumulation as of July 21, 2004 is as follows:

Location: Joe Jackewicz Farm, Magnolia, DE. Greenrow: April 25, 2004

Date	Daily DSV	Total DSV	Spray Recommendation
4/25- 5/18	4	18	7-day
5/19	4	22	7-day
5/20	2	24	7-day
5/21	2	26	7-day
5/25	5	31	7-day
5/27	3	34	7-day
5/30	8	42	7-day
5/31	1	43	7-day
6/1	1	44	7-day
6/4	17	61	5-day
6/7	2	63	5-day
6/8	1	64	5-day
6/10-6/13	9	73	7-day
6/14-6/15	3	76	7-day

6/16	3	79	7-day
6/17	3	82	7-day
6/22	1	83	7-day
6/23	1	84	10-day
6/25	3	87	7-day
6/26-30	0	87	10-day
7/1-7/11	7	94	10-day
7/12	5	9199	7-day
7/13	2	101	7-day
7/14	2	103	7-day
7/17	10	113	5-day
7/19	1	114	5-day

Application rates for protectant fungicides (Dithane, Bravo, etc.) should be at the high end of the rate with the amount of foliage present. For specific fungicide recommendations, see pages F132-33, 2004 Delaware Commercial Vegetable Production Recommendations Book. EB 137.

Downy Mildew on Pickles.

Downy mildew on pickles continues to be a problem in Delaware. Several different treatments have surfaced since last week and deserve some attention. A program that might be very helpful for new plantings of pickles in areas where downy mildew is established is application of Ridomil Gold EC or UltraFlourish for Pythium damping-off control either pre-plant incorporated, broadcast, or applied in a band over the row at planting. This application may provide from 2-3 weeks control. That treatment can be followed by Tanos, Cabrio, or Gavel alternated with Bravo. If Ridomil Gold EC is used at planting, Ridomil Gold/Bravo or Flouranil should not be used as the first foliar spray. If the field is dry, a light irrigation after application will move the Ridomil or UltraFlourish to the emerging seeds. Rainfall following treatment will do the same thing. If there has been no rainfall and the seed is germinating, irrigation should be applied to get the Ridomil to the emerging seedlings. If Phytophthora blight control is a concern use Gavel, Ridomil Gold/Bravo, or Acrobat (which has the least activity against downy) at the 1 inch and 3 inch stage of fruit development. When we reported that Pristine (Cabrio + boscalid) was providing good control of downy, it is from the Cabrio in the Pristine. So Cabrio is another fungicide that will provide good control of downy mildew in pickles. Cabrio will also be less expensive than Pristine.

Note: There is a high risk of resistance developing in the downy mildew fungus if mefenoxam (Ridomil formulations, UltraFlourish or Flouranil) Ridomil Gold/Bravo is used repeatedly. It should be rotated with a fungicide with a different mode of action, which is any of the other fungicides that are labeled for downy mildew. If you are not getting control with a mefenoxam product

(such as Ridomil Gold/Bravo), stop using it and switch to another product such as Tanos, Cabrio, or Gavel.



Vegetable Crop Diseases - *Kate Everts, Extension Plant Pathologist, University of Maryland and University of Delaware, everts@udel.edu*

Pumpkins.

Last week, I incorrectly listed Gavel for management of downy mildew on pumpkin. **Gavel is not labeled for use on pumpkins or winter squash.** However, Gavel can be used on cucumbers, muskmelon (cantaloupes) and watermelon, and has good efficacy on downy mildew.

Watermelon.

Downy mildew has developed in several watermelon fields over the past two weeks. Because of the widespread occurrence of this potentially devastating disease, I'm recommending that growers spray on a weekly schedule and **NOT** use Melcast to schedule fungicide applications. Melcast is an effective program for scheduling fungicide applications for anthracnose and gummy stem blight, but not for downy mildew. We will continue to send Melcast to those who currently receive it, so that you will have information on how favorable weather is for gummy stem blight and anthracnose development.

Several products are registered for management of downy mildew on watermelon. Mefenoxam plus chlorothalonil (Flouranil, Ridomil Gold/Bravo) 2 lb 76 WP/A; chlorothalonil (Bravo, Equus or Echo) 1.5 to 2 pt 6F/A; Tanos - 8 oz 50 WDG/A (must be tankmixed with either chlorothalonil, mancozeb, or copper); Gavel - 1.5 to 2 lb 75 DF/A; and Pristine 12.8 to 18.5 oz. 38 W/A have very good efficacy on downy mildew when used preventatively. Cabrio also has very good efficacy on downy mildew, but will not control gummy stem blight that is resistant to the Qol class of fungicides. Several other products, Ridomil Gold MZ, Ridomil Gold Copper, and Mancozeb, provide some downy mildew control, but not as much as those mentioned above.



Downy Mildew on Lima Beans.

We have had several reports of downy mildew on backyard pole lima beans as of Friday July 23, 2004 and a possible but unconfirmed report of downy mildew in a commercial field of limas. If limas are flowering or beyond protectant sprays of copper (Champ, Kocide, Cuprefix, etc.) are suggested at this time. We also have a 24(c) in place for the use of Ridomil Gold/Copper and Phostrol. Follow the label for rates. Phostrol must be used as a protectant, do not use if downy is present in the field. Ridomil Gold/ Copper and Phostrol have given the best disease control, but are more costly than copper formulations.

Remember that lima beans can get **downy mildew** (*Phytophthora phaseoli*), **white mold** (*Sclerotinia sclerotiorum*), and ***Phytophthora capsici* (lima bean pod rot)**. White mold tends to be very fluffy and white when active. It will infect flowers first, then infected flowers fall onto branches leaves and stems and further infections can take place on those plant parts. White mold will produce the black sclerotia that are imbedded in the white fluffy fungus growth. *P. capsici* only infects the pods and is very grainy looking almost like granular sugar. Downy mildew infects the pods and flower spikes (racemes) sometimes infecting petioles as well. Downy is downy looking not as fluffy as white mold most of the time, and often there is a reddish border between healthy and infected pod tissue. Fungicides for white mold and downy are very different and one fungicide will not control both diseases. White mold is controlled with Topsin M, Rovral, or Endura. See labels and EB 137 Commercial Vegetable Recommendations pages F 9-10 for more information.



Downy mildew,
Phytophthora phaseoli

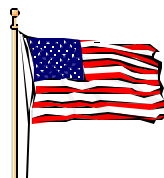


Phytophthora capsici,
Lima bean pod rot.

Weather Summary
http://www.rec.udel.edu/TopLevel/Weather.htm
Week of July 16 to July 22, 2004
Rainfall:
0.02 inches: July 16
0.20 inches: July 18
0.07 inches: July 19
0.03 inches: July 20
Readings taken for the previous 24 hours at 8 a.m.
Air Temperature:
Highs Ranged from 88°F on July 21 to 77°F on July 18.
Lows Ranged from 68°F on July 19 to 62°F on July 16.
Soil Temperature:
80°F average.
(Soil temperature taken at a 2 inch depth, under sod)

Web Address for the U of D Research & Education Center: <http://www.rec.udel.edu>

*Compiled and Edited By:
Tracy Wootten
Sussex County Extension Agent - Horticulture
University of Delaware*



Cooperative Extension Education in Agriculture and Home Economics, University of Delaware, Delaware State University and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Delaware Cooperative Extension, University of Delaware. It is the policy of the Delaware Cooperative Extension System that no person shall be subjected to discrimination on the grounds of race, color, sex, disability, age or national origin.