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Downy Mildew in Cucurbits Update – July 21, 2006

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While the hot, dry weather of the past 10 days has helped to slow down the progression of the downy mildew in many fields, significant losses continue to occur in cucumber fields. The growers who initiated their spray programs early, have had the best success at controlling this disease. This really illustrates the importance of a strong preventative program. We have had some success at minimizing the spread in infected fields, if the sprays are applied immediately after the initial infection. Unfortunately, once there are obvious visual symptoms, it becomes very difficult to entirely stop the spread.

All cucumber growers should assume that the risk of infection is high and follow a very tight preventative spray program. All fungicides must be used preventatively. Even the best fungicide products, do not have the ability to “cure” existing infections.

Where hand-harvest has already started, apply Cabrio (3-day PHI) at a rate of 336 g/ac. 5 days later apply a broad-spectrum fungicide, such as Bravo 500 (1-day PHI) at a rate of 1.9 L/ac. Observe a 5-7 day spray interval, rotating between the two products as the harvest schedule permits. While Cabrio's 3 day to harvest interval does mess up the harvest schedule, it is better to play catch-up due to a missed pick, than to lose the crop entirely.

Mancozeb (Dithane DG, Manzate DF, Penncozeb 80 WP) is registered for the control of downy mildew in all vine crops. However, it does have a 14 days to harvest interval, and should be used accordingly.

It is extremely important that all Cabrio applications be made in rotation with a fungicide from a different chemical family such as Bravo, or mancozeb (Dithane, Manzate, Penncozeb).

While the progression of downy mildew does slow down dramatically at temperatures above 30 C (86 F), night time temperatures in the 12-23 C (55-75 F) range will promote disease development. Heavy dews, intermittent showers and high humidity in the crop canopy will also promote disease development.

Downy Mildew - What is the Risk for Pumpkin, Squash and Melon Growers?

To date we have not had any confirmed outbreaks of Downy Mildew in Squash or Pumpkins. It appears that cucumber and muskmelon plants are the most susceptible to the 5 Downy Mildew pathotypes. However there is one pathotype that can also infect pumpkins, squash and watermelons (see table 1).

Without knowing for certain which pathotypes are present in Ontario, pumpkin and squash growers should initiate a preventative spray program. Powdery mildew has been found in several Ontario pumpkins fields, as has septoria, alternaria and angular leafspot. A 7-14 day spray schedule (depending on the weather) will protect the pumpkins and squash from these diseases, and well as further reduce the risk of running into problems with Downy Mildew.

TABLE 1. Interactions of cucurbit hosts with pathotypes of Downy Mildew (*Pseudoperonospora cubensis*)

Host	Pathotype				
	1	2	3	4	5
<i>Cucumis sativus</i>	+	+	+	+	+
<i>C. melo</i> var. <i>reticulatus</i>	+	+	+	+	+
<i>C. melo</i> var. <i>conomon</i>	-	+	+	+	+
<i>C. melo</i> var. <i>acidulus</i>	-	-	+	+	+
<i>Citrullus lanatus</i>	-	-	-	+	+
<i>Cucurbita</i> spp.	-	-	-	-	+

+ = highly compatible host-pathogen interaction;

- = incompatible or very slightly compatible host-pathogen interaction.

Source: with minor adaptation from C. E. Thomas. 1996. in Compendium of cucurbit diseases. APS Press, St. Paul, MN.