

Forecasting of cucurbit downy mildew began on 14 March 2006 and ended on 19 Oct 2006. Over this period 350 forecasts were issued on 60 forecast days (typically Tuesday and Thursday of each week). A total of 103 different sources of the disease were reported from 15 states within the U.S., Mexico, Ontario and Quebec, Canada. Web use statistics indicate a dramatic four-fold increase in user visits in the last two years. The first report from each state/country is listed below in chronological order.

Date of report	State/Province	County	Country	Host
6-Jan-06	Florida	Palm Beach Hillsborough, Miami-Dade	USA	cucumber
11-May-06	Nuevo Leon	near Le Nada	Mexico	cucumber
8-Jun-06	Georgia	Decatur	USA	summer squash
9-Jun-06	Michigan	Monroe	USA	cantaloupe
29-Jun-06	Ontario	Brant	Canada	cucumber
5-Jul-06	Ohio	Wayne	USA	cucumber
6-Jul-06	North Carolina	Sampson	USA	cucumber
11-Jul-06	Delaware	Kent	USA	cucumber
13-Jul-06	Virginia	Accomack	USA	cucumber
15-Jul-06	Indiana	Kosciusco	USA	cucumber
18-Jul-06	Maryland	Wicomico	USA	cucumber
22-Jul-06	New York	Erie	USA	cucumber
26-Jul-06	New Jersey	Cumberland	USA	pumpkin
24-Aug-06	South Carolina	Hemingway	USA	cucumber
8-Sep-06	Connecticut	New Haven, Litchfield, Hartford and Windom	USA	pumpkin
18-Sep-06	Tennessee	Sumner	USA	pumpkin
21-Sep-06	Kentucky	Harrison	USA	cucumber
13-Oct-06	Florida	Hendry, Collier, Lee, Glades, Charlotte	USA	cucumber & watermelon

While the first report from Ontario came 20 days after the first report from Michigan, the disease was likely present in both areas about the same time. In both areas, downy mildew was especially severe. The disease appeared early on plants grown in plastic tunnels and progressed as far north as Quebec. There were also reliable reports of the disease from Wisconsin, but these were not reported via the website. As in previous years, when the disease was present, it was severe on cucumber. Many growers had a difficult time controlling the disease and many were caught off-guard, especially in northern regions where it was less of a problem in 2005.

A key factor in controlling the disease in northern regions will be the elimination of overwintering sources of the pathogen. Greenhouses can be an important source of the pathogen if they are used during winter months to produce cucurbits. Since the pathogen cannot survive in the absence of a living host, greenhouses that grow cucurbits during the winter provide a means for the pathogen to survive the winter where it normally could not. Moving transplants to the field from such greenhouses increases the potential for efficient dispersal of the pathogen. Therefore, the first step in controlling

the disease is elimination of overwintering sources in areas where winter frosts are certain.

Fungicides continue to be an important method of disease control. Field evaluation of fungicides in North Carolina in 2006 confirmed results from the previous two years. There are five products that have consistently provided the highest levels of disease control: Tanos (cymoxanil + famoxidone; DuPont), Previcur Flex (propamocarb; Bayer Cropscience), Ranman (cyazofamid; FMC), Curzate (cymoxanil; DuPont) and Gavel (zoxamide+mancozeb; Dow Agrosciences). These products should be applied prior to disease onset, tank mixed with a protectant (e.g., chlorothalonil or mancozeb) and alternated between different chemistries in order to prevent the build-up of resistant populations of the pathogen.

Thus far, a total of 8 isolates of *Pseudoperonospora cubensis* (causal agent of downy mildew) have been tested and all 8 were shown to be resistant to mefenoxam (active ingredient in Ridomil Gold) and azoxystrobin (active ingredient in Quadris and same mode of action as Cabrio and Flint). These isolates were collected from four states and three years, making a fairly good representation of recent epidemics. We will continue to test isolates for fungicide resistance until there is sufficient representation from regions over several years (approximate 30 isolates).

In addition to providing bi-weekly forecasts, the website is used as an educational tool. The image gallery helps growers diagnose downy mildew and distinguish it from other common foliar diseases. Current fungicide performance evaluations are posted on the website for easy downloading. Disease control information is updated annually and made available in a convenient, one-page table of fungicide efficacy. In-depth information is also available regarding the pathogen and its biology. We appreciate the support of the OPVGA in making this possible.