

Vegetable Diseases

Foliar Disease Control Using MELCAST

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What Is MELCAST?

MELCAST is a weather-based spray advisory program for controlling foliar diseases of muskmelon and watermelon. The MELCAST program, developed by Richard Latin (Purdue Botany and Plant Pathology) is available at melcast.info or (800) 939-1604.

The information provided by MELCAST can help growers manage these primary foliar diseases of muskmelon and watermelon: Alternaria leaf blight, gummy stem blight, and anthracnose. MELCAST is not meant to be used to manage other diseases such as downy mildew or Phytophthora blight.

Why Use MELCAST?

Growers who use MELCAST can save money on fungicide applications and get better disease control. In most years, MELCAST will save growers two or three fungicide applications per season. In all years, MELCAST recommends fungicide applications when they are most needed to achieve disease control.

Growers can use MELCAST to help them decide whether or not a fungicide application is warranted. MELCAST correlates weather with the severity of the major foliar diseases of muskmelon and watermelon. MELCAST calculates the weather-related risk and converts the data into Environmental Favorability



Figure 1. The Purdue University MELCAST program allows muskmelon and watermelon growers to optimize fungicide application timing according to temperature and moisture conditions.



Index (EFI) values. The more rapidly EFI values accumulate, the more likely disease will occur, and the more frequently fungicides will have to be applied.

Growers can access MELCAST EFI values at:

melcast.info
(800) 939-1604

A number of fungicides may be used successfully with MELCAST. Contact fungicides include those with the active ingredients chlorothalonil and mancozeb. Systemic fungicides include those with the active ingredients boscalid, cyprodinil (combined with either fludioxonil or difenoconazole), pyraclostrobin, and tebuconazole.

The fungi that cause disease may become resistant to systemic fungicides. Always follow recommendations on fungicide labels for resistance management, and check with local or state specialists about fungicide-resistant strains in your area. A discussion about fungicide resistance can be found in *Fungicide Resistance Management for Indiana Vegetables* (Purdue Extension publication BP-183-W), available from the Education Store, www.the-education-store.com.

In the Midwest, detailed information about fungicide use is available in the *Midwest Vegetable Production Guide for Commercial Growers* (Purdue Extension publication ID-56) and *Muskmelon and Watermelon Fungicide Guide for Indiana* (Purdue Extension publication BP-134-W). Both publications are available from the Purdue Extension Education Store, www.the-education-store.com.

Use the Record Sheet for Best Results

Use the MELCAST record sheet to record EFI values. This 8.5 by 14 inch sheet makes it easy to keep track of EFI values. Also included on the sheet is a description of the MELCAST system. Alternatively, growers may choose to download the Excel MELCAST record sheet from the MELCAST website.

Contact Dan Egel (egel@purdue.edu, (812) 886-0198) to receive a free copy of a MELCAST record sheet or to request a free copy of the weekly MELCAST update via U.S. mail.

How Do You Use MELCAST?

Using MELCAST is easy. Instead of applying fungicides every seven days, follow these simple steps (see also the example on a calendar in Figure 3).

- 1. Make the initial fungicide spray** at or before vine touch within a row.
- 2. Check the EFI value** for the day the fungicide was applied.
- 3. Calculate the threshold** for the next spray by adding 20 (for muskmelon) or 35 (for watermelon) to the EFI value in step 2.
- 4. Make the next fungicide application** 14 days after the first, or sooner if the EFI threshold has been reached.
- 5. Check the EFI values** on the day you make your next fungicide application and re-calculate the threshold for the next application.

Use MELCAST as a guide to schedule your fungicide applications, but also use common sense. If severe disease pressure exists for any reason, return to a seven-day fungicide schedule.

Information about setting up MELCAST in your area is available in *MELCAST: Melon Disease Forecaster* (Purdue Extension publication BP-64-W), available from the Education Store, www.the-education-store.com. MELCAST is available for many muskmelon and watermelon growing locations in the Midwest. Contact Dan Egel for more information about the availability of MELCAST in your area.

State Summary for Your State							
Muskmelon EFI Daily Cumulative Values							
Location	08-31	08-30	08-29	08-28	08-27	08-26	08-25
Location 1, Your State	140	140	140	140	140	139	138
Location 2, Your State	91	91	91	91	91	91	91
Location 3, Your State	83	83	83	83	83	83	83
Location 4, Your State	83	83	83	83	83	83	83
Location 5, Your State	134	133	133	132	132	132	130

Watermelon EFI Daily Cumulative Values							
Location	08-31	08-30	08-29	08-28	08-27	08-26	08-25
Location 1, Your State	263	262	262	262	262	261	260
Location 2, Your State	227	227	227	227	227	227	227
Location 3, Your State	210	210	210	210	210	210	210
Location 4, Your State	207	207	207	207	207	207	207
Location 5, Your State	227	225	225	225	225	224	223

Figure 2. This is an example of Environmental Favorability Index (EFI) values posted on the MELCAST website. During the growing season, EFI values are updated by location.

Figure 3. This example explains how to record Environmental Favorability Index (EFI) Values in the MELCAST calendar. This example is for watermelon; muskmelon would be similar except that a 20 EFI threshold would be used instead of 35.

Date	EFI	Irrigation Points	Spray Counter	Fungicide Amounts and Comments
May 16				
May 17				
May 18				
May 19	7		0	Vines touch, Bravo Ultrex® 2 lb./A.
May 20				
May 21				
May 22	12		5	
May 23				
May 24	19		12	
May 25				
May 26	25		18	
May 27	29		22	
May 28	34		27	
May 29	38		31	
May 30	40		33	Dithane M-45® 2 lb./A.
May 31	44			
June 1	46			
June 2	46			
June 3	47		7	
June 4				
June 5	49		9	
June 6	52		12	
June 7				
June 8	53		13	
June 9	55	2	15	
June 10	60		20	
June 11	63		23	
June 12	63		23	
June 13	64		24	Bravo Ultrex® 2 lb./A.
June 14	64		0	

After the first fungicide application, call the MELCAST 800 number or visit the website and write the EFI values (7) in the EFI column and 0 in the spray counter column. The 35 EFI threshold will be reached when the spray counter reads 35 and the EFI column reads 42 (7 + 35 = 42). Note that EFI values continue to increase over the season.

Although the spray counter is not yet 35, fungicide was applied because a rain was expected on May 31. MELCAST will give better results if every effort is made not to exceed the 35 EFI threshold.

Note that EFI values are not written for each date. It isn't necessary to check the EFI values every day. Check more frequently during periods of frequent dews or rain and when the EFI threshold is near.

No EFI values accumulated for this date. However, when an overhead irrigation takes place, 2 EFI values are added.

Fungicide was applied when the spray counter was 24 EFI values, because 14 days passed since the last application. Apply fungicides every 14 days regardless of EFI values.

Reference in this publication to any specific commercial product, process, or service, or the use of any trade, firm, or corporation name is for general informational purposes only and does not constitute an endorsement, recommendation, or certification of any kind by Purdue Extension. Insect, disease, and weed control recommendations in the publication are for example only. Individuals using such products assume responsibility for their use in accordance with current directions of the manufacturer. When in doubt about the use of any chemical, check with your Purdue Extension educator or chemical company representative.

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