

Commercial Pumpkin Disease Management Guide

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Introduction

This publication is intended to be a quick reference guide for managing the most common pumpkin diseases found in Tennessee each year. It is not intended to be a comprehensive guide to all pumpkin diseases. Growers should work closely with county Extension agents, crop consultants or a disease diagnostic lab to ensure an accurate disease diagnosis is achieved and an appropriate management plan is established. The ability to accurately identify early symptoms and signs of disease is crucial for satisfactory disease management. Once diseases are established control is much more difficult to achieve.

Pumpkin disease overview

In Tennessee there are three major pumpkin diseases that growers must deal with each year: powdery mildew, downy mildew, and Plectosporium blight. Being able to identify and manage these diseases, especially early symptoms and signs, is crucial for successful pumpkin crop production. Figures 1-3 illustrate key symptoms and signs of each disease and provide useful information on disease diagnostics.

Several other diseases can impact pumpkins in Tennessee, including bacterial diseases (foliar and vascular wilt), viruses and Phytophthora blight. Foliar bacterial diseases are best controlled with copper products, whereas bacterial wilt is best controlled using insecticides with good activity against cucumber beetles. Spotted cucumber beetle is the subject of a UT Extension factsheet **W 487 Vegetable Pests, Spotted Cucumber Beetle**. Several viruses affect pumpkins as well. Most viruses affecting pumpkins are vectored by insects and are best managed through insect scouting and the application of insecticides. Other viruses, like watermelon mosaic virus, are transmitted by aphids in a nonpersistent manner which means they can transmit the virus very quickly. In these cases, cultural control methods are more important like eliminating other hosts that may harbor viruses and choosing resistant varieties. Resistance to certain viruses is available in some pumpkin varieties. Phytophthora blight can be a devastating disease of pumpkins, but only impacts crops where the pathogen is found in the soil or in contaminated irrigation water. Phytophthora blight is the subject of a separate Extension factsheet **W 810 Managing Phytophthora Blight of Peppers and Cucurbits**. More information on managing these and other pumpkin pests and diseases can be found in the **2019 Southeastern US Vegetable Crop Handbook**.



A



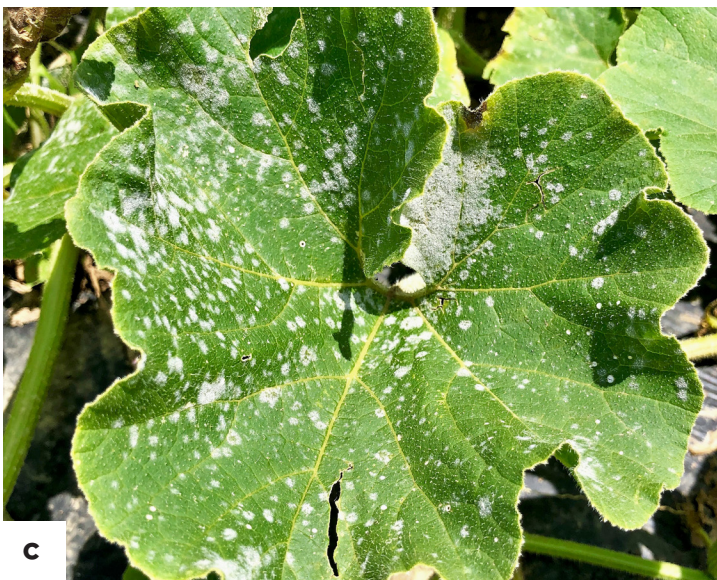
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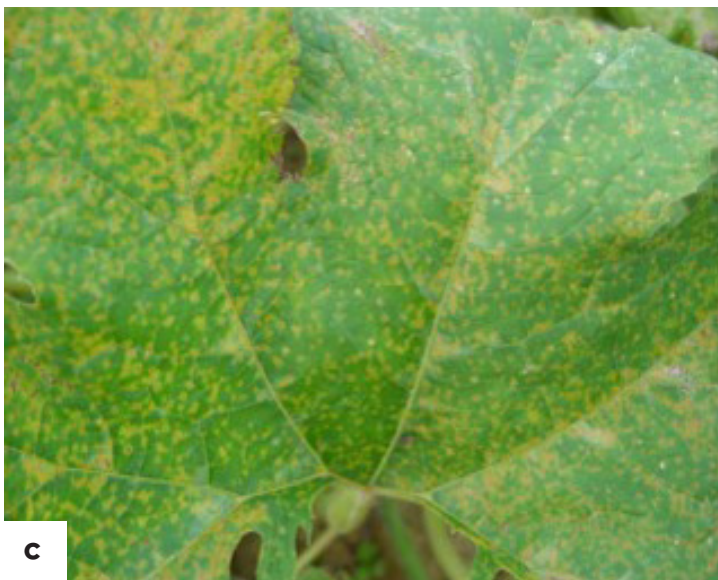
Figure 1. Powdery mildew, caused by the fungi *Podosphaera xanthii* and *Golovinomyces cichoracearum*, appears as white powdery fungal growth on upper and lower leaf surfaces which is readily seen with the naked eye (A-E). Symptoms often first appear on older or lower leaves when plants begin to fruit, although symptoms may appear sooner (A-C). Severe infections may cover entire leaves (D-E). Infected leaves may senesce prematurely. Spores are wind dispersed over long distances, and disease is favored by high humidity and can be severe even during extended periods without rain.



A



B



C



D



E

Figure 2. Downy mildew on pumpkin, caused by the oomycete or “water mold” *Pseudoperonospora cubensis*, initially appears as faint yellow or light green spots (A-B), which progress into small, bright yellow to orange irregularly shaped lesions (C), eventually coalescing into large necrotic or blighted leaf areas (D). Dark sporulation may be observed on the lower leaf surface with the aid of a hand lens or microscope (E). Spores are wind dispersed over long distances, and disease is favored by extended periods of leaf wetness.



A



E



B



F



C



G



D



H

Figure 3. *Plectosporium* blight (also known as white blight, formerly known as *Microdochium* blight), caused by the fungus *Plectosphaerella cucumerina* and first reported in Tennessee in 1988, causes symptoms on all aboveground plant parts (A-H). Lesions on leaves are white, diamond or canoe shaped, and appear on leaf veins (A-B). Early symptoms include downward cupping and tan midribs of young leaves (C). Lesions on stems and petioles are white, spindle shaped, and may coalesce to form large white blighted areas (D-G). Lesions on fruit also appear white and may have a scabby appearance (H). Spores are spread by wind or rain splash, and disease is favored by wet conditions.

Disease management

Follow cultural practices aimed at reducing disease pressure, including using resistant varieties, crop rotation and drip irrigation. Keep in mind that these practices alone are often insufficient to achieve satisfactory disease control. There are several pumpkin varieties with resistance to powdery mildew (Table 1). Selecting powdery mildew-resistant varieties can reduce disease severity and reduce the number of fungicide sprays necessary for powdery mildew management. This will also help slow the development of fungicide resistance in powdery mildew pathogen populations, thereby prolonging the efficacy of powdery mildew fungicides. Unfortunately, resistance to downy mildew and *Plectosporium* blight in pumpkin is currently unavailable. Therefore, growers should scout for these diseases weekly and be prepared to make timely fungicide applications to protect their crops once disease is detected. Growers should scout each variety because of varietal differences in disease susceptibility, especially to powdery mildew. The protectant fungicides chlorothalonil and mancozeb provide protection against a broad range of diseases, including powdery mildew, downy mildew and *Plectosporium* blight. However, once disease becomes established these products do not offer systemic activity and other targeted fungicides should be used. For best results use an air-blast fungicide sprayer which rolls the leaves to achieve thorough canopy coverage on both the underside and top of the leaves. Applications should be made before rainfall, rather than after, whenever possible as long as products have sufficient time to dry.

Pumpkin spray guide

- When vines begin to run, spray chlorothalonil or mancozeb every 7-14 days.
 - Rotating fungicide mode of action (FRAC group) is not necessary with chlorothalonil due to low risk of resistance development.
 - Chlorothalonil and mancozeb provide protection against powdery mildew, downy mildew and *Plectosporium* blight.
 - Spray frequency depends on rainfall and disease pressure but should generally occur every 7-14 days (spray weekly during wet periods).
 - Downy mildew spray programs may need to start sooner if downy mildew is detected in your area before vines begin to run.
- Scout crops weekly and look for early signs of powdery mildew, downy mildew and *Plectosporium* blight.
- At first sign of disease, begin spraying a fungicide selected from Table 2 with targeted activity for that disease.
 - Choose at least two targeted fungicides for each disease and rotate on a weekly basis once disease arrives.*
 - For *Plectosporium* blight, rotate Cabrio or Flint with chlorothalonil.
 - Continue spraying on a weekly basis from disease onset through harvest.

Table 1. Pumpkin varieties with resistance or tolerance to powdery mildew.

Fruit size	Variety ¹
Miniature (<2 lbs)	Bumpkin*
	Gold Dust*
	Jill-Be-Little*
	WeeeeOne*
Small (2-6 lbs)	Blanco
	Cannon Ball*
	Darling*
	Early Abundance
	Field Trip*
	Gargoyle*
	Iron Man*
	Prankster
	Sunlight
Medium (6-12 lbs)	Mystic Plus*
	Orange Bulldog
Large (12-20 lbs)	Blue Bayou
	Blue Doll
	Dependable*
	Magic Lantern*
	Magic Wand*
	Magician*
	Orange Sunrise*
	Racer Plus
Extra Large (20-50 lbs)	Aladdin*
	Apollo*
	Camaro*
	Cronus* ^H
	Gladiator
	Kratos*
	Mustang*
	Rhea*
Super Herc*	
	Warlock*

[†] For more information on variety characteristics such as growth habit, shape, and skin features, see the 2019 Southeastern US Vegetable Crop Handbook.

* Indicates varieties recommended in Tennessee, according to the 2019 Southeastern US Vegetable Crop Handbook.

^H Poor performer under high temperatures

- For downy mildew, monitor national disease occurrence on the map at cdm.ipmpipe.org. Begin spraying targeted fungicides when downy mildew arrives in your state or nearby bordering state.
 - Notify your county Extension agent if downy mildew is observed so the national occurrence map can be updated.

*Note on fungicide resistance: Failure to rotate fungicides with different modes of action increases the risk of fungicide resistance development. This affects all growers because diseases like powdery and downy mildew have spores that are wind dispersed over long distances which can lead to wide distribution of fungicide-resistant strains.

Additional resources

Hale, F. A., R. J. Pivar, G. Phillips and J. F. Grant. 2018. Vegetable pests, spotted cucumber beetle. University of Tennessee Extension, [W487](#).

Hansen, Z., Siegenthaler, T., & Swafford, A. 2019. Managing Phytophthora blight of peppers and cucurbits. University of Tennessee Extension, [W810](#).

[2019 Southeastern U.S. Vegetable Crop Handbook](#). 2019. (J. M. Kemble, I. M. Meadows, K. M. Jennings, & J. F. Walgenbach, Eds.). Meister Media.

Table 2. Select fungicides for managing common pumpkin diseases in Tennessee, 2019.

Disease	Product	Active Ingredient	PHI (days)	REI (hours)	FRAC code
Powdery mildew, downy mildew, Plectosporium blight	Various trade names	chlorothalonil*	see label	see label	M05*
Powdery mildew, downy mildew, Plectosporium blight	Various trade names	mancozeb*	see label	see label	M03*
Powdery mildew	Torino ^R	cyflufenamid	0	4	U06**
	Luna Experience	fluopyram + tebuconazole	7	12	7 + 3
	Gatten	flutianil	0	12	U13**
	Vivando	metrafenone	0	12	50
	Quintec ^R	quinoxifen	3	12	13
Downy mildew	Ranman	cyazofamid	0	12	21
	Orondis Opti	oxathiapiprolin + chlorothalonil	0	12	49 + M05*
	Orondis Ultra	oxathiapiprolin + mandipropamid	0	4	49 + 40
	Elumin	ethaboxam	2	12	22
Plectosporium blight	Cabrio	pyraclostrobin	0	12	11
	Flint	trifloxystrobin	0	12	11

*Broad-spectrum protectant fungicide with multi-site activity

**Unknown mode of action

^RResistance has been reported

Precautionary statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication.

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