

Watermelon Spray Guide 2020

- 1.) Crop rotation** of 3 to 5 years is recommended for reducing disease problems. However, for fields with *Fusarium* wilt it is recommended to use rotations more than 5 years. Avoid double cropping the same plastic with cucurbits, as this can lead to significant disease pressure when conditions favor disease development.
- 2.) Monitor transplants:** Healthy transplants are critical to controlling gummy stem blight, bacterial fruit blotch, and angular leaf spot as these diseases can be spread by seed. Inspecting transplants and removing diseased seedlings, including symptomless plants surrounding them, will reduce risk.
- 3.) Spray early and consistently** to efficiently manage disease. Fungicides are more effective when applied preventatively rather than as a cure.
- 4.) Rotate fungicide chemistries** to minimize the risk of selecting for resistant fungal pathogens. The Fungicide Resistance Action Committee (FRAC) developed a number and letter code that can be used to distinguish fungicides modes of action. Rotating different modes of action is an important step in prolonging a fungicide's effectiveness.
- 5.) Fungicides should be selected based on the target pathogen.** Many fungicides can control multiple diseases, but in general they are most effective for specific pathogens. Accurate diagnostics are important when selecting proper fungicide products or developing a management plan. Some common diseases to watch for are:

Powdery mildew (PM) typically produces white, powder-like signs on the upper and lower surface of watermelon leaves. This disease starts as small, faint yellowish spots on the leaves which continue to develop to neighboring leaf surfaces. The PM spread is facilitated by dry conditions; however, moisture is required for infection. Symptoms first appear in the lower canopy on older leaves and can quickly spread throughout a field. PM resistance to fungicides in FRAC groups 1 (e.g., Topsin M), 3 (e.g., tebuconazole), and 11 (e.g., Cabrio) has been identified. Currently, recommended fungicides for PM are Torino, Vivando, Quintec, Switch, and Luna Experience.



Downy mildew (DM) is a continual cucurbit problem in the southern Florida peninsula, however; its incidence varies from year to year in the northern half of the state. Lesions start out as yellow angular leaf spots that will later turn brown to black in color. Leaf curling and water soaking are often associated with DM. A white to grayish fungal growth will appear on the undersides of leaves displaying these lesions when the leaves are wet from heavy dews, rainfall, and high humidity (> 90%). Protectant fungicides (chlorothalonil and mancozeb) provide excellent control early in the season, but their effectiveness is limited once DM develops. DM has been reported to have resistance to Ridomil Gold and FRAC group 11 (e.g., Cabrio, Quadris) fungicides. Orondis Ultra, Revus, Ranman, Presidio, and Previcur Flex are the recommended fungicides for DM control once it is present. These fungicides should be mixed with a protectant fungicide to provide optimal control.



Gummy stem blight's (GSB) primary symptom is dark circular leaf spots at the leaf surface margin. When severely infected, complete leaf necrosis and drop is common. If a severe outbreak happens before fruit set with heavy leaf drop, yield losses can be substantial as exposed fruits experience sun scalding. The GSB pathogen is known to be resistant to multiple fungicides. Hence a carefully planned fungicide rotation program is necessary to reduce fungicide failure. Fungicides in FRAC groups 11 (e.g., Quadris), 1 (e.g., Topsin-M), and 7 (e.g. Endura) have a high risk of failure. The recommended GSB fungicides rotation programs are FRAC group M5 (e.g., chlorothalonil) with a group 3 (e.g., tebuconazole) or premixes (e.g., Inspire Super, Luna Experience, Aprovia Top, Miravis Prime).



Bacterial fruit blotch (BFB) symptoms appear as dark greasy spots on the fruit and irregular spots on the leaves. The disease can be managed by foliar application of FRAC group M1 (copper based compounds) or group P (Actigard) fungicides. Copper compounds should be applied 2 weeks before female flowers open, at bloom, and 2 weeks after bloom. This will help in suppression of BFB and other bacterial diseases. Actigard should also be applied early in the season and before the start of the infection to be effective in suppressing BFB. These management strategies coupled with healthy transplants and field sanitation will ensure that BFB is effectively managed early in the season, which is the critical period of infection for BFB.

Fusarium wilt (FW) causes vine wilting and decline. Often symptoms are more pronounced on one side of the plant. Older leaves wilt first during the day and recover at night. Vascular discoloration can be seen when the stem is split. Due to the soil borne nature of FW, few fungicides are effective for control. Prothioconazole (Proline 480 SC) or pydiflumetofen (Miravis Prime) can suppress this disease.

6.) A typical spring spray schedule in Florida should start 1 week after transplanting and then use a 7 to 10-day schedule. These schedules should be tightened to 5 to 7 days during heavy rainfall periods, and should only be greater than 10 days if it is very dry and no disease is present. Pay attention to pre-harvest intervals (PHI) for late season sprays as they may be as high as 14 days. Chlorothalonil is a quality early season disease control product, but should **not** be sprayed within 21 days of harvest as it can cause watermelon rind burn.

7.) A typical fall spray schedule follows a similar program as in spring. However, heavy rains often occur in the fall with cooler temperatures occurring late in the season, so additional products should be added to or replace chlorothalonil in sprays 2 and 3. Some example products include Orondis Ultra for downy mildew and Luna Experience for gummy stem blight. Caution: Recent years have seen many viruses emerge and hence there is a high risk for crop failure in growing fall watermelon.

Consult the Vegetable Production Handbook of Florida for more detailed information about watermelon management and fungicides listed for specific disease control (http://edis.ifas.ufl.edu/topic_vph).

Spray Number	Suggested Seasonal Fungicide* Spray Schedules Recommended for Watermelons Based on Research Data from 2012 to 2019 with a Focus on:			
	Gummy Stem Blight	Powdery Mildew	Downy Mildew	Fruit Blotch
1**	chlorothalonil	chlorothalonil	chlorothalonil	Actigard and/or copper***+mancozeb
2	chlorothalonil	chlorothalonil	chlorothalonil	Actigard and/or copper+mancozeb
3	tebuconazole or chlorothalonil	tebuconazole or chlorothalonil	tebuconazole or chlorothalonil	copper+mancozeb
4	chlorothalonil	chlorothalonil	chlorothalonil	copper+mancozeb
5	Inspire Super or Luna Experience	Inspire Super or Luna Experience	Inspire Super or Luna Experience	Inspire Super or Luna Experience + copper
6	mancozeb	Quintec or Torino or Rally + mancozeb	Orondis Ultra, Ranman or Gavel	copper+mancozeb
7	Switch	tebuconazole or Switch	mancozeb	tebuconazole or Switch
8*	mancozeb	Torino or Vivando or Rally + mancozeb	Orondis Ultra, Ranman or Gavel	copper + mancozeb
9*	tebuconazole or Inspire Super	tebuconazole or Inspire Super	mancozeb	tebuconazole or Inspire Super

* A detailed list of fungicides and the diseases they control can be found in the Vegetable Production Handbook of Florida, ** Fungicide spray programs typically begin 1 week after transplanting, ***Copper indicates copper hydroxide products. **Do not mix copper products with chlorothalonil, *Avoid spraying chlorothalonil products within 21 days of harvest as this fungicide can cause rind burn on watermelons.**

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This guide is a recommendation for possible programs that may help manage watermelon diseases and is not an endorsement for any particular product or brand. The materials are in part or in full for educational purposes and proper credit should be given when this information is used in other resources and settings.

The authors would like to acknowledge Drs. Keinath and Miller from Clemson University. More specific information about these spray guides can be found at (accessed 11/29/2019):
<https://gpress.clemson.edu/publication/watermelon-fungicide-guide-for-2019/>
<https://site.extension.uga.edu/cook/files/2019/03/2019-watermelon-spray-guide.pdf>