



## Watermelon Spray Guide 2023

- 1.) **A three-to-five-year non-cucurbit crop rotation** is recommended for reducing diseases. However, fields with a *Fusarium* wilt history should use non-host rotations of more than 5 years. Avoid double cropping cucurbit crops using the same plastic, as this can lead to significant disease issues in the right environments.
- 2.) **Inspect transplants:** Healthy transplants are critical to managing gummy stem blight, *Fusarium* wilt, and bacterial diseases 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. Fungicides options for PM are Vivando, Quintec, Rally, Switch, Luna Experience, and Torino. There are indications of Torino having reduced efficacy against some PM isolates thus observation reporting of fungicide efficacy is critical.



**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, Revus, Forum and FRAC group 11 (e.g., Cabrio, Quadris) fungicides. Some strong fungicide options for DM once it is present are Orondis Ultra and Ranman, however other good early season options are available. 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 Diseases:** 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 including bacterial leaf spot/angular leaf spot. Actigard should also be

applied early in the season and before the start of the infection to be effective. These strategies coupled with healthy transplants will ensure that bacterial diseases are effectively managed early in the season, which is the critical infection period.

**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 shortened to 5 to 7 days during prolonged 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 ([http://edis.ifas.ufl.edu/topic\\_vph](http://edis.ifas.ufl.edu/topic_vph)).

Spray Number	Suggested Seasonal Fungicide* Spray Schedules Recommended for Watermelons Based on Research Data from 2012 to 2021 with a Focus on:			
	Gummy Stem Blight	Powdery Mildew	Downy Mildew	Bacterial Diseases
<b>1**</b>	chlorothalonil	chlorothalonil	chlorothalonil	copper***+mancozeb or Actigard
<b>2</b>	chlorothalonil	chlorothalonil	chlorothalonil	copper+mancozeb or Actigard
<b>3</b>	tebuconazole and/or chlorothalonil	tebuconazole and/or chlorothalonil	tebuconazole and/or chlorothalonil	copper+mancozeb
<b>4</b>	Chlorothalonil or Miravis Prime	chlorothalonil	chlorothalonil and/or Previcur Flex or Zampro	copper+mancozeb
<b>5</b>	Inspire Super or Aprovia Top or Luna Experience	Inspire Super or Aprovia Top or Luna Experience	Inspire Super or Aprovia Top or Luna Experience	Inspire Super or Aprovia Top or Luna Experience
<b>6</b>	mancozeb	Quintec or Torino or Rally + mancozeb	Orondis Ultra or Ranman	copper+mancozeb
<b>7</b>	Switch	tebuconazole or Switch	mancozeb	tebuconazole or Switch
<b>8*</b>	mancozeb	Vivando or Rally or Torino + mancozeb	Orondis Ultra or Ranman	copper + mancozeb
<b>9*</b>	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, Cucurbit Production, ** Fungicide spray programs typically begin 1 week after transplanting, ***Copper indicates copper hydroxide products. <b>Do not mix copper products with chlorothalonil, *Avoid spraying chlorothalonil products within 21 days of harvest as they can cause rind burn on watermelons.</b>				

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