



# Singing the Botrytis Blues:

## Tips to Help Growers Change Their Tune

May 2016

Several risk factors can converge in the month of May to make *Botrytis* a potential problem. Crops are at or approaching saleable size, making plant canopies dense and tight. With shipping and selling in high gear, it can be a scramble to keep everything irrigated properly. Then, there's the weather... everybody talks about it, but nobody does anything about it! Extended cool and rainy spells can occur almost anywhere, but this year, the East Coast took it on the chin.

Several methods, both cultural and chemical, can be used to help keep *Botrytis* at bay. Whether this spring has been naughty or nice where you are, you'll surely find this information helpful now or in the future.

### Managing the nighttime environment

*Botrytis* can germinate and make penetration into healthy tissue with as little as four hours of free moisture on plant surfaces. With this in mind, keeping the foliage as dry as possible is a key factor in fending off *Botrytis*.

Warm air holds more moisture than cool air; therefore, warming the air results in less condensation on plant surfaces. In many parts of the country, May can be warm enough that growers may decide to shut off the heat. Resist the temptation to do this! During periods of damp weather, set the thermostats so that the heat runs occasionally throughout the night. Reduced *Botrytis* pressure can quickly pay back the energy costs.

Horizontal air flow (HAF) fans mix the air effectively, which helps to eliminate pockets of high humidity that develop in the plant canopy, further reducing condensation. Heating and ventilating can be utilized when disease risk is very high to further reduce the relative humidity. Most environmental control systems have this option built in.

### Managing the daytime environment

If it's cloudy but no mist or rain is falling, utilize some passive or minimal power ventilation. The outside air is humid, but a few air exchanges exhausts the airborne *Botrytis* spores to the outside and replenishes the carbon dioxide. If it is precipitating, keep the greenhouses closed up and set the heat high enough that the heat cycles on occasionally.

### Irrigation strategies

When bad weather lingers for several days, growers can end up with the majority of the crop being very dry, a problem for when the sun finally comes out. For crops on drip irrigation, irrigate as needed but avoid watering to the point of leach to help keep floors and crops beneath the baskets dry. Where overhead irrigation is a necessity, time irrigations to provide the best chance of the foliage drying by nightfall.

### Nutrition

Excess nitrogen can make tissue more prone to foliar disease, so back off of the fertilizer during prolonged cloudy spells and plan to catch it up later.

### Fungicides

Several fungicide options are available, and can be very helpful. *Botrytis* has become resistant to many fungicides but rotating between modes of action while following the cultural steps above will improve success.

**Rotating between modes of action while following cultural best practices will improve success against Botrytis.**

Dense foliage in the center of hanging baskets, combos and even bedding flats can provide a breeding ground for *Botrytis*. With high moisture and limited air movement under the thick foliage canopy, disease can get a foothold. Good fungicide coverage can be difficult to achieve with foliar sprays under those conditions. Growers have had great success srenching **Medallion®** or **Emblem™** by running it through the injector and using overhead irrigation to coat the crown area of the plant. **Pageant® Intrinsic®** and **Mural™** have labels that allow for similar treatments. Where srench treatments aren't needed, growers have reported good results and excellent bloom safety with foliar sprays of **Affirm™** and **Palladium®**.

Treating vegetable transplants poses unique challenges since not all fungicides are labeled for that use. **Affirm**, **Emblem** and **Mural** have curative and preventative activity against *Botrytis*, and have many edible crops on their labels. **ZeroTol® 2.0** can be used for a quick knockdown of spores. **Actinovate® SP**, **Cease®** and **Triathlon® BA** are examples of biofungicides with preventative activity against *Botrytis*.

Always read and follow all label directions. Some of the product mentioned are not labeled in every state, Griffin can assist you in determining which products are labeled in your state. Some labels contain phytotoxicity cautions. Products other than those mentioned here may also be safe and effective.

### Featured Products

Product	Description	Item No.
Actinovate SP	18 oz	31007318
Affirm WDG	0.5 lb	71-1129
Cease	1 gal	71-13301
Emblem	1 pt	71-1570
Medallion WDG	8 oz	71-16502
Mural WDG	1 lb	
Pageant Intrinsic WG	1 lb	71-26801
Palladium WDG	2 lbs	71-2685
Triathlon BA	1 gal	71-3040
ZeroTol 2.0	2.5 gal	71-35501



# Controlling Foliar Leaf Spots: Tips to Manage the Disease Triangle



Powdery mildew on gerbera



Rust on miscanthus



Cercospora leaf spot on pansy



Xanthomonas on zinnia

Recognizing the diverse symptoms of fungal and bacterial leaf spots, such as the ones pictured here, is a must-have skill for any greenhouse grower. Just as important, though, is awareness of the conditions that promote such foliar spots on ornamental plants. Foliar diseases will cause undesirable aesthetic damage, of course, and can also lead to potentially quick, significant plant decline.

Three factors – something plant pathologists refer to as the “disease triangle” – are needed for infection to occur. Simply put, infection can’t happen if any of these three components is missing:

- A susceptible host
- Proper environmental conditions for the disease to develop
- Presence of the pathogen

When weather conditions are favorable to disease onset, make preventative fungicide applications at the high end of the rate range. Repeat applications will be needed to protect new plant tissue; check product labels for re-application intervals. As disease pressure lessens, application rates and frequency

may be reduced. Fungicides with translaminar systemic activity have an advantage since, in some cases, the active ingredient will travel within the leaf to protect untreated leaf tissue.

Growers can also implement several cultural controls to reduce the development of foliar diseases. Among the options to consider:

- Increasing airflow
- Avoiding overcrowded plant spacing
- Irrigating early in the day, allowing leaves to dry by nightfall
- Promptly removing and discarding plant leaves that show symptoms of disease

When diagnosing foliar diseases, be aware of look-alike problems such as damage caused by insects, mites, phytotoxicities and physiological disorders. Utilize resistant varieties when they are available.

Read and follow all label directions. Consult GGSPRO or your GGSPRO Technical Reference Guide for application rates and methods. Products other than those mentioned here may also be safe, legal and effective.

## Featured Products

Product	Size	Item No.	Property
Actinovate® SP	18 oz.	31007318	Protectant
Affirm™ WDG	8 oz.	71-1129	Protectant/Curative
Cease®	1 gal.	71-13301	Protectant
Cleary's 3336 F	1 gal.	71-2580	Protectant/Curative
Compass® 50 WDG	1 lb.	70-11891	Translaminar Systemic
Daconil Ultrex®	5 lbs.	71-1420	Protectant/Curative
Disarm® O	8 oz.	71-1448	Translaminar Systemic
Eagle® 20EW	1 pt.	71-1435	Systemic
Heritage® WDG 50	1 lb.	71-1400	Translaminar Systemic
Medallion®	8 oz.	71-16502	Protectant/Curative
MilStop®	5 lbs.	71-2879B	Protectant/Curative
Nordox™	12.5 lbs.	71-1700	Protectant/Curative
Pageant® Intrinsic™	1 lb.	71-26801	Translaminar Protectant/Curative
Palladium®	2 lbs.	71-2685	Translaminar Systemic
Protect™ DF	1 lb.	71-2746	Protectant/Curative
Phyton® 35	1 ltr.	71-2732	Translaminar Systemic
Regalia® PTO	1 gal.	70-2850	Translaminar Protectant
Spectro 90 WDG	5 lbs.	71-2755	Protectant/Curative
Strike® Plus	1 lb.	71-29512	Translaminar Systemic
Terraguard®	1 qt.	71-3018	Protectant/Curative