

# List of active ingredients that have become ineffective in various locations

## IDM Fungicide Resistance Location

### Active ingredient

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azoxystrobin	California
cyazofamid	Florida
dimethomorph	Florida
fluopicolide	California, Florida, New Jersey
fosetyl aluminum	Florida, Holland, Illinois
mefenoxam	California, Florida, Holland, Illinois, Michigan, New Jersey
phosphorous acids	Florida

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Be sure to use rotations like those listed here and/or tank mixes of different FRAC groups. In other studies rotations and tank-mixes are equally effective in delaying resistance development.

# Downy Mildew Rotation

- **Compass O, Heritage** (11-strobilurins) OR **FenStop** (11-non-strobilurin) OR any 7-11
- **Subdue MAXX** (4-mefenoxam/tank-mix as directed)
- **Adorn** (43-fluopicolide/tank-mix as directed)
- **Aliette** (33-phosphonate) and many others
- **Segway O** (21-cyazofamid)
- **Micora** (40-mandipropamid), **Stature** or **Orvego** (40-dimethomorph and 45-ametoctradin)
- **Segovis** (49-oxathiapiprolin)





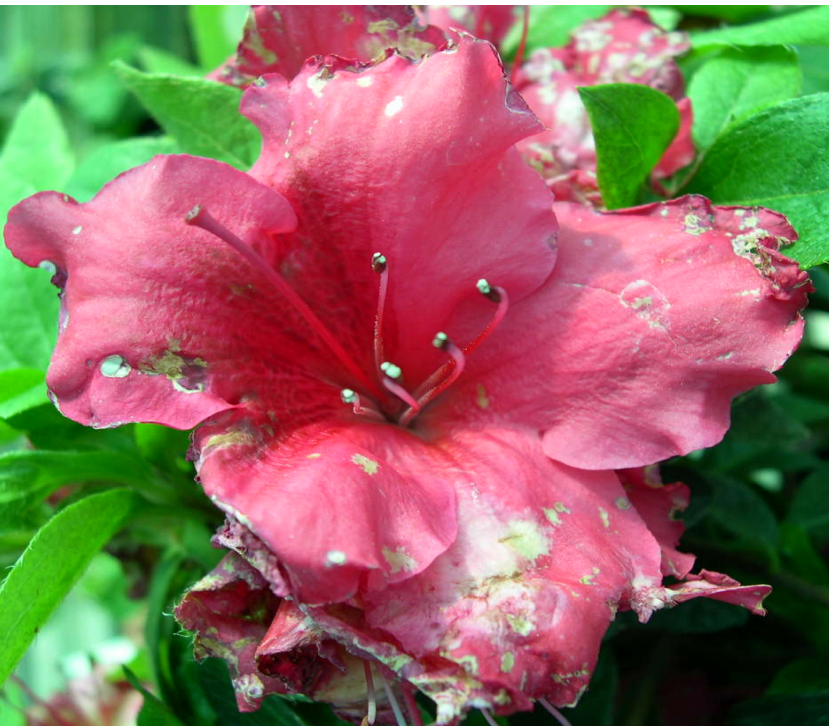






# Gray mold

## Botrytis blight (gray to brown spores).









2

CONTACT  
2 LBS  
WORKPL  
9325 PROG  
MENTOR OH

SHIP TO:  
MANAGER



# Botrytis Characteristics

**Spores form on all parts of the plant.**

***Botrytis* spores spread by fans or wind and infect new leaves.**



**Spores and sporangiophores of *Botrytis*. Overnight moisture on leaves is especially favorable for *Botrytis* sporulation.**

# Cultural Conditions

## **Environmental factors inducing development of fungal spores.**

- \* Exactly the same as what the plant needs.
- \* Botrytis optimal temperatures are 75-82 F.
- \* Grows at 32-95 F.
- \* Spores have lasted as long as 14 months under dry conditions.

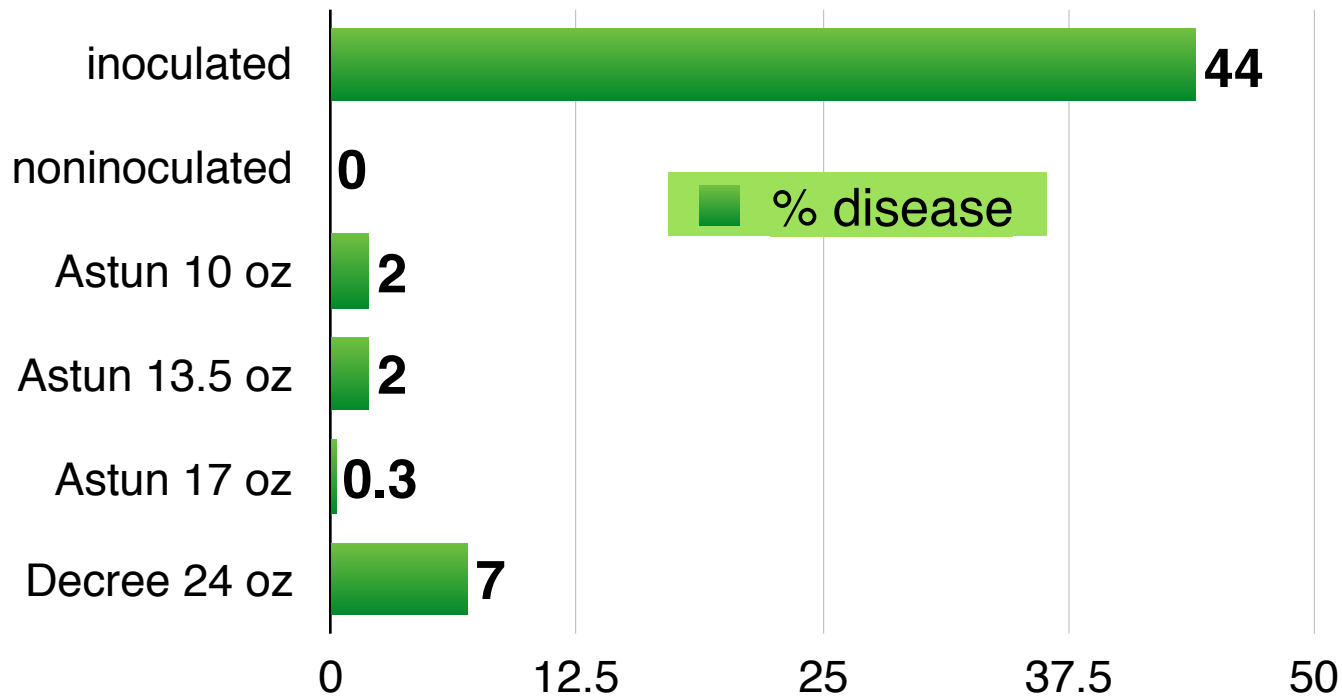
## **Favorable greenhouse environment for Botrytis and what can we do to stop the spreading (both physical and environmental).**

- \* I doubt you can do anything specific based on the outside environment.
  - \* heat the GH to decrease RH.
  - \* add fans - HAF.
- \* Spores move on air currents like wind and fans.

# Cultural Control Strategies

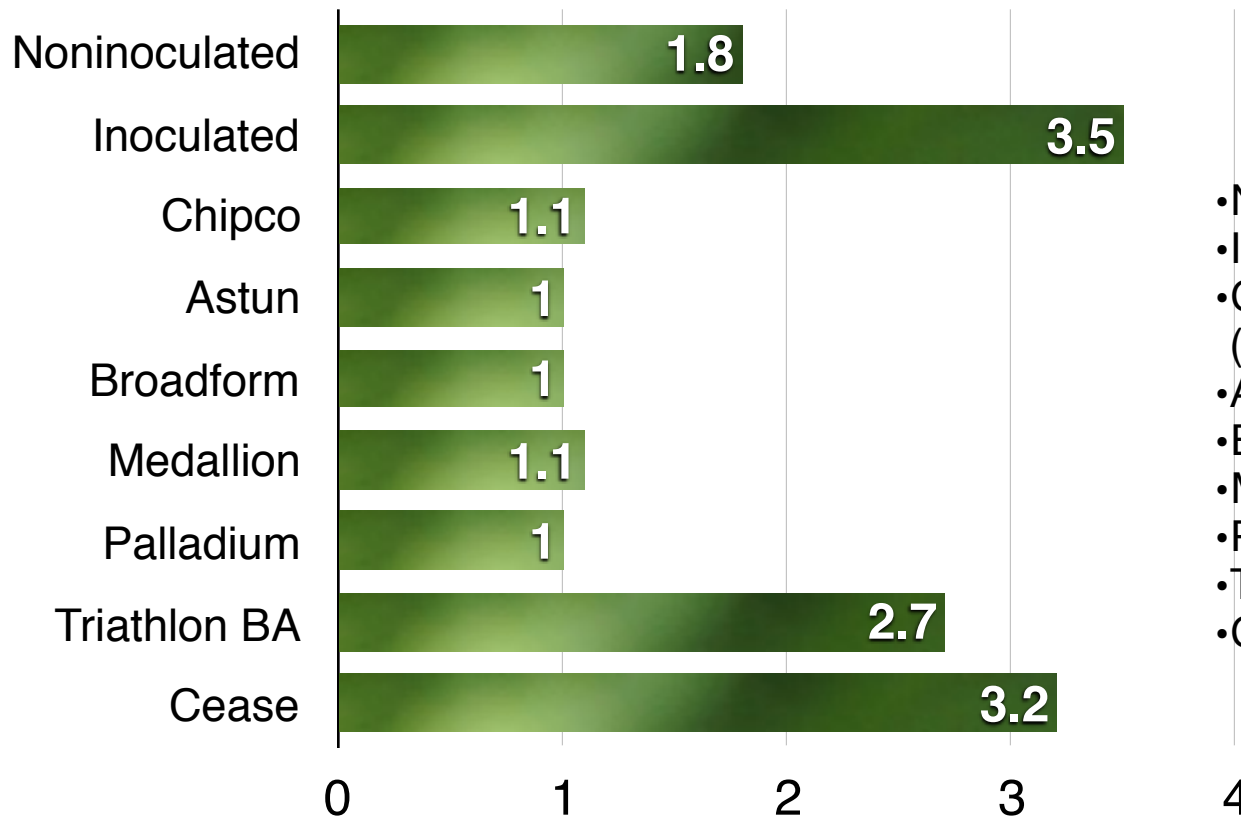
- Heat and vent at disk to reduce humidity.
- Space plants to reduce humidity.
- All handling can spread Botrytis spores including irrigation and fungicide spraying.
- Never water at night.
- Do not place crops in hanging baskets with petals that shed easily over crops that are very susceptible to Botrytis.

# Efficacy of Astun on Botrytis blight on Hydrangea Basal-Gurel, UT





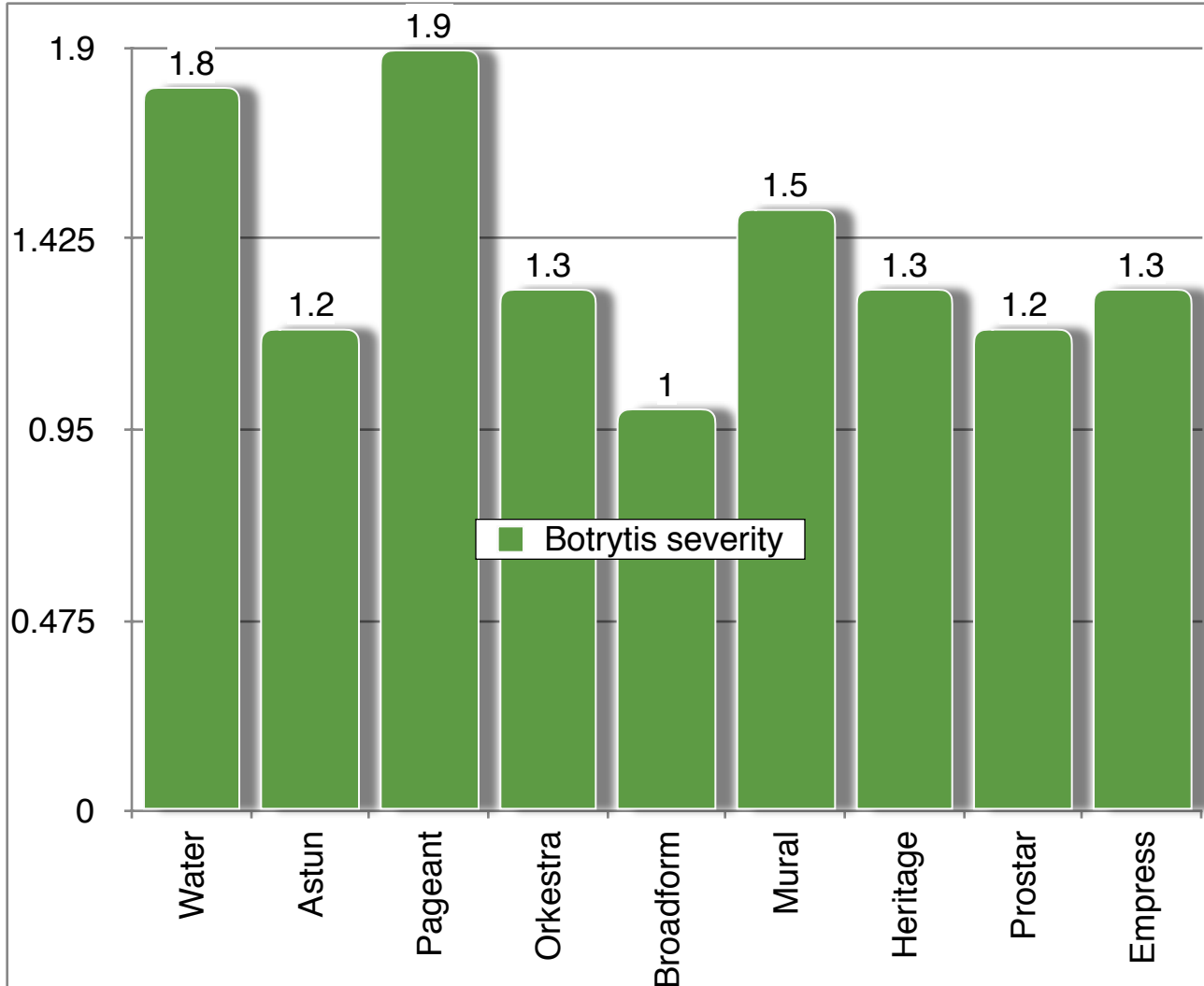
## Botrytis blight on Pansy Flowers



- Noninoculated
- Inoculated
- Chipco 26019 WG (16 oz/100 gal)
- Astun (17 oz/100 gal)
- Broadform (6 oz/100 gal)
- Medallion (4 oz/100 gal)
- Palladium (6 oz/100 gal)
- Triathlon BA (1.5%)
- Cease (1.5%)



# Botrytis Petal Blight on Pansy



Orkestra Intrinsic  
25%  
Mural 25%  
Empress Intrinsic  
42%  
ProStar 75%  
By the end of the  
trial, the flowers were  
no longer showing  
any signs from the  
third application.



