

Foliar Diseases 2017

A. R. Chase



Gray mold (Botrytis blight – gray to brown spores).





Botrytis Characteristics

Spores form on all parts of the plant.

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

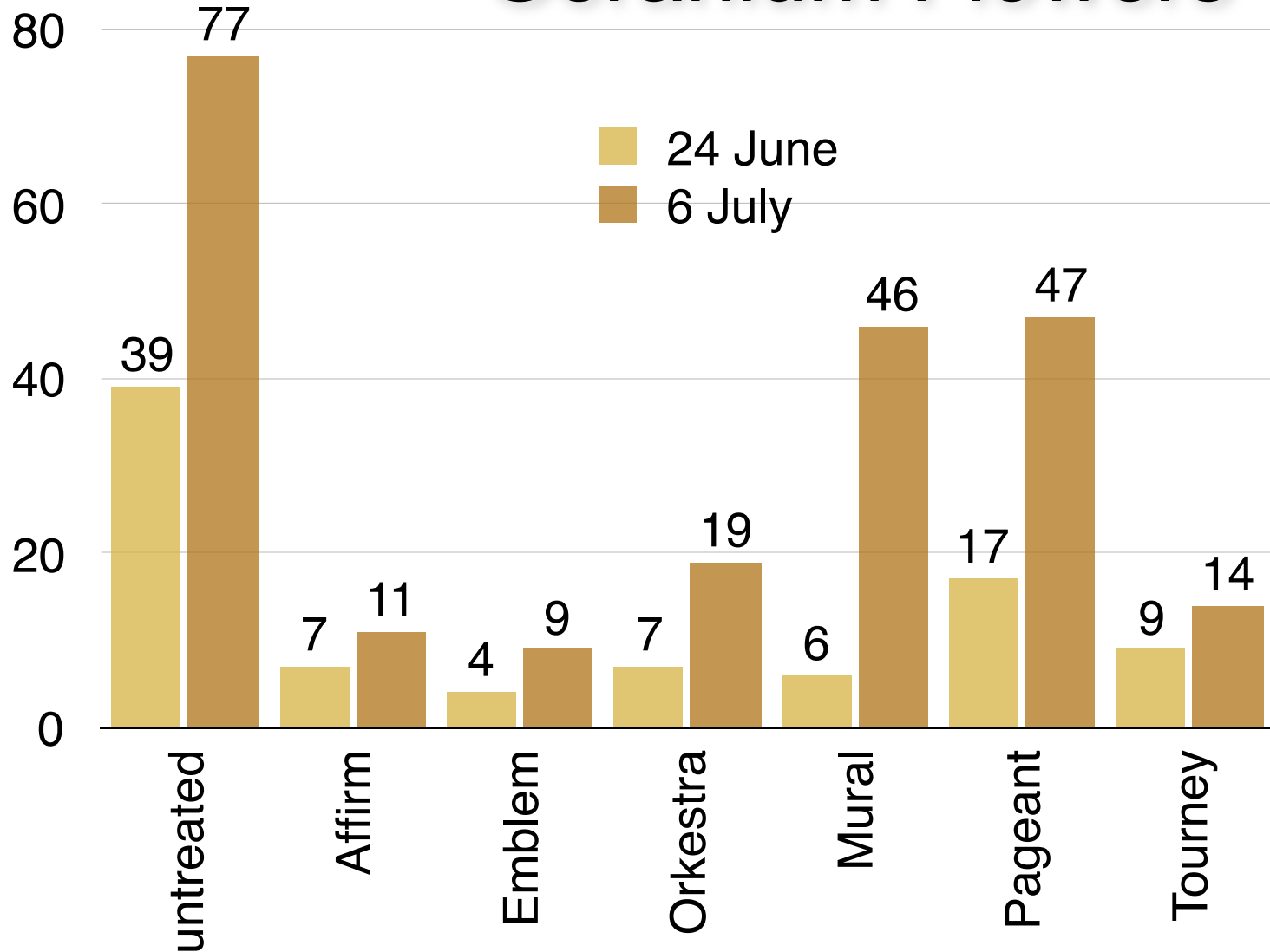


Spores and sporangiophores of *Botrytis*. Overnight moisture on leaves is especially favorable for *Botrytis* sporulation.

Cultural Control Strategies

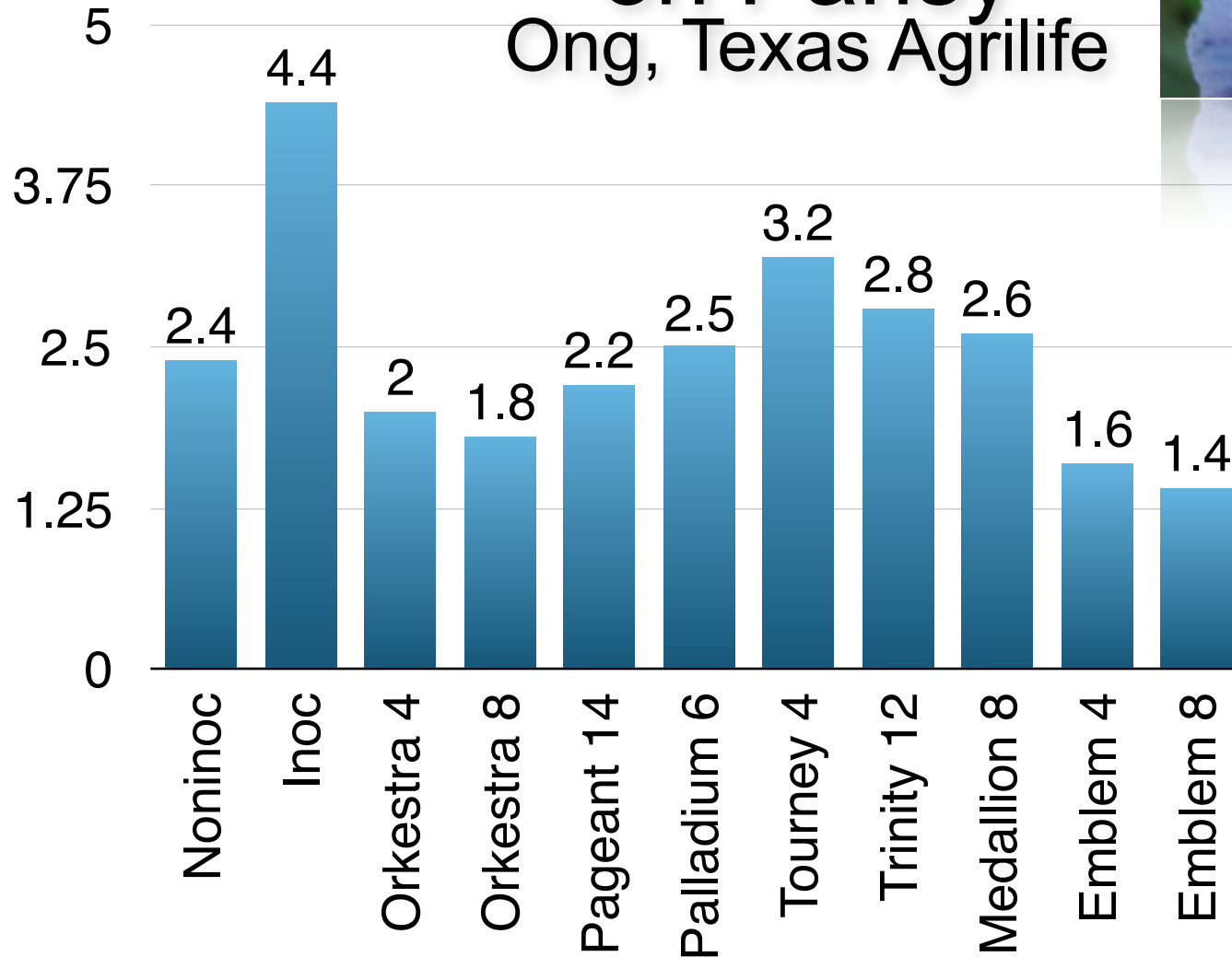
- Heat and vent at dusk to reduce humidity.
- Space plants to reduce humidity.
- All handling can spread Botrytis spores including irrigation and fungicide spraying.
- Never water at night.
- Do not place crops in hanging baskets with petals that shed easily over crops that are very susceptible to Botrytis.

Botrytis Blight on Geranium Flowers



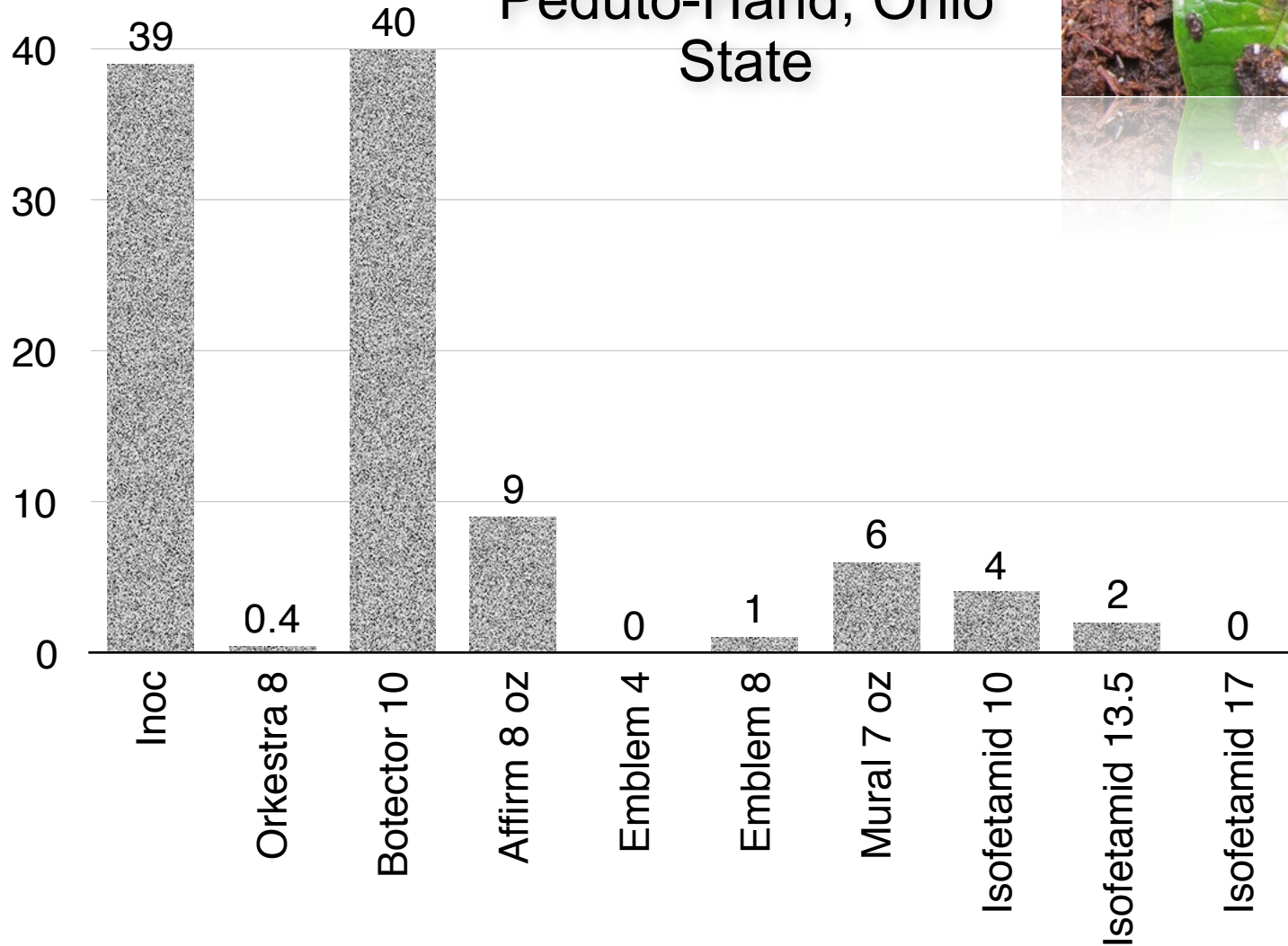
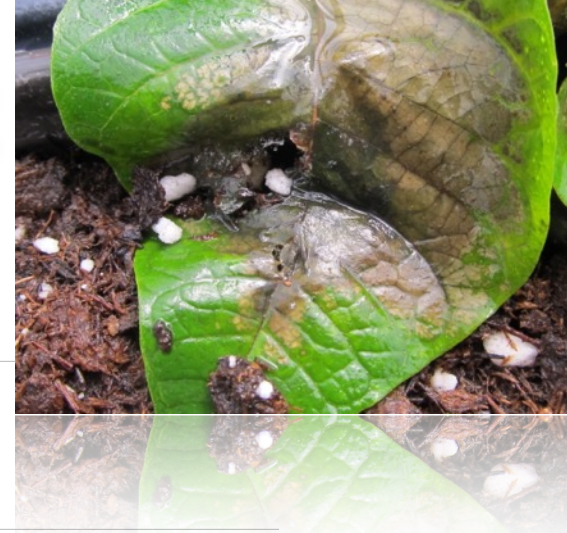
Botrytis Blight on Pansy

Ong, Texas Agrilife



Botrytis Blight on Poinsettia

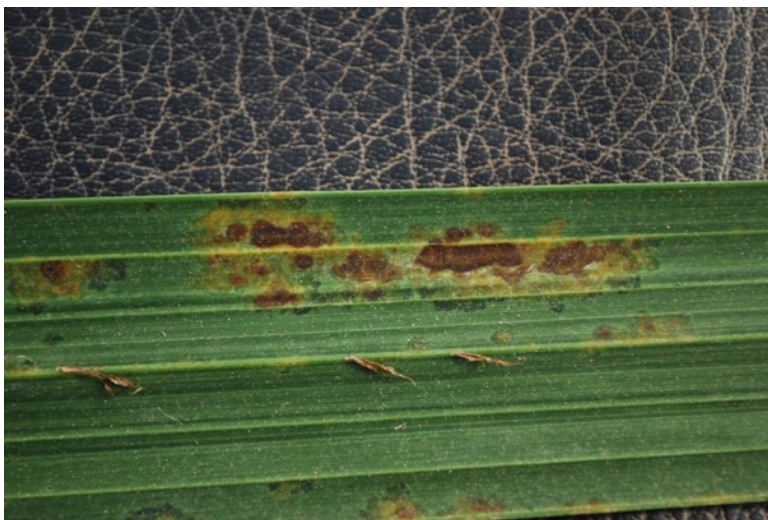
Peduto-Hand, Ohio
State



BOTRYTIS/SCLEROTINIA ROTATION

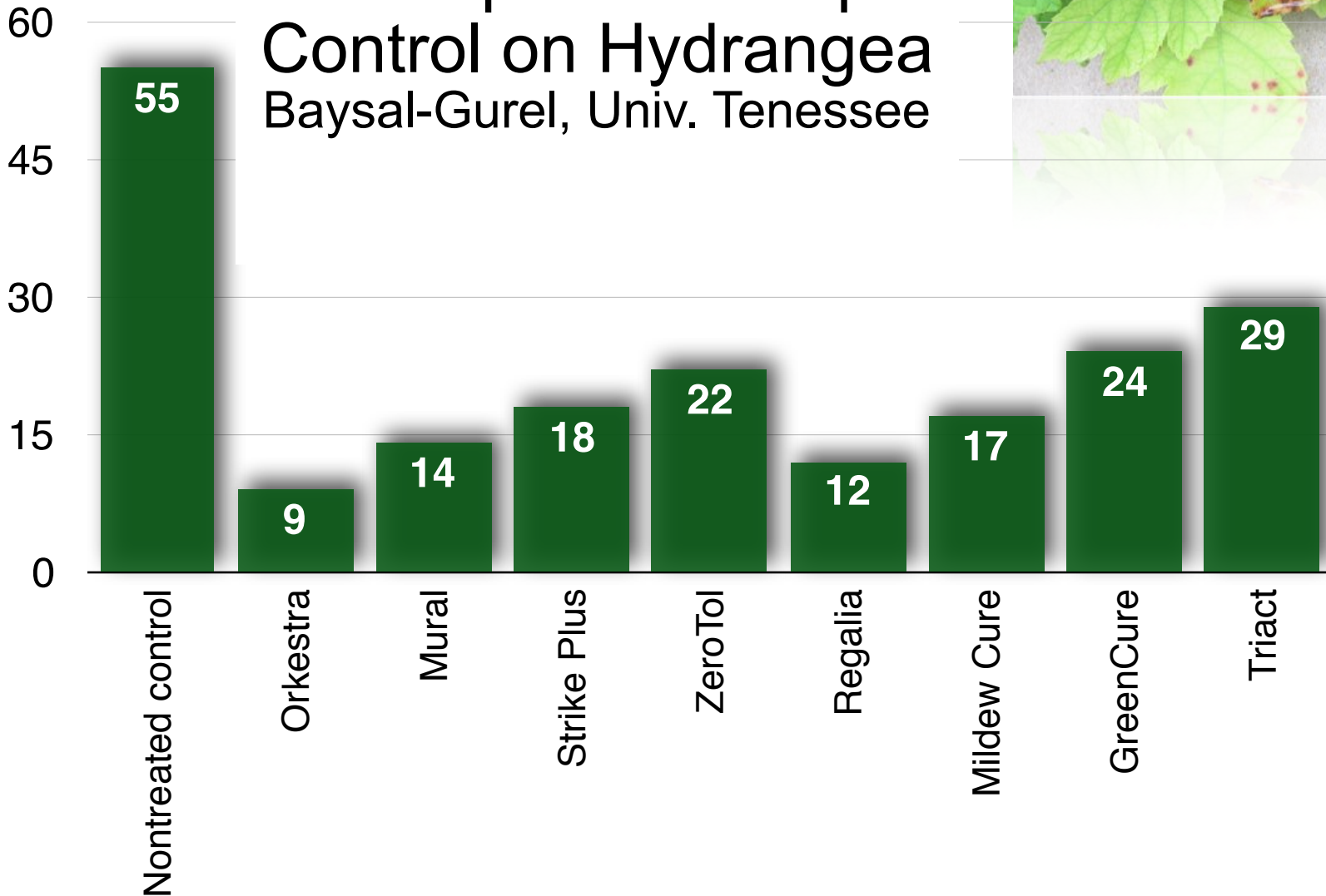
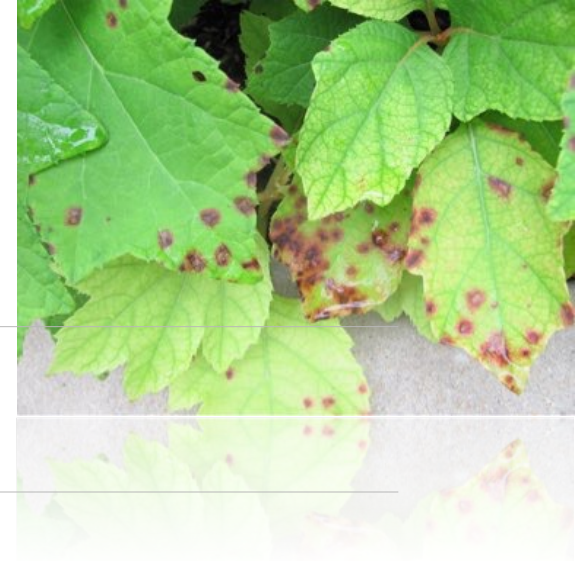
- **Chipco 26019, 26GT** (2-iprodione)
- **Daconil Ultrex** (M5-chlorothalonil)
- **Decree** (17-fenhexamid)
- **Pageant Intrinsic** (11 and 7-pyraclostrobin and boscalid) or **Orkestra Intrinsic** (11 and 7-pyraclostrobin and fluxapyroxad) or **Mural** (11 and 7-azoxystrobin and benzovindiflupyr)
- **Palladium** (12 and 9-fludioxonil and cyprodinil)

Cercospora Leaf Spots (water on leaves)



Cercospora Leaf Spot Control on Hydrangea

Baysal-Gurel, Univ. Tennessee



CERCOSPORA ROTATION

- **3336, Fungo, OHP6672** (1-thiophanate methyl)
- **Palladium** (12 and 9 – fludioxonil and cyprodinil)
- **Compass O, Disarm O, Heritage or Pageant or Orkestra** (11-strobilurins)
- **KleenGrow** (nc-quaternary ammonium) PACE 49
- **Cease** (nc-*Bacillus subtilis*) BioWorks

CHARACTERISTICS OF MILDEWS

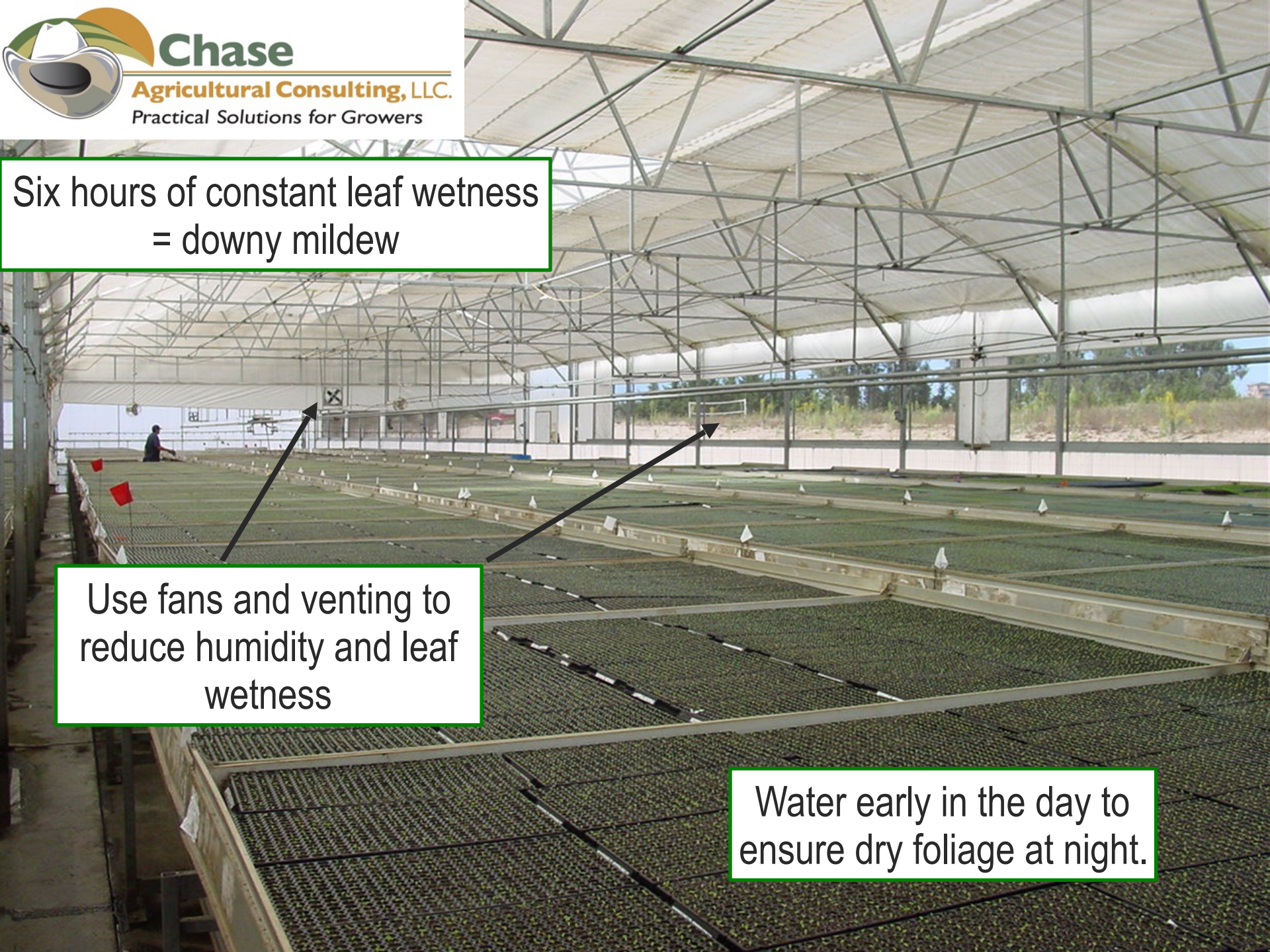
Disease	Key characteristics
Powdery mildew	White colonies (upper surface) any plant part, purplish mottling, distortion
Downy mildew	White or purple down on undersides, yellow blotches between veins, purplish mottling, burning, distortion



Downy mildew (seeds, cuttings, high humidity)



Six hours of constant leaf wetness
= downy mildew

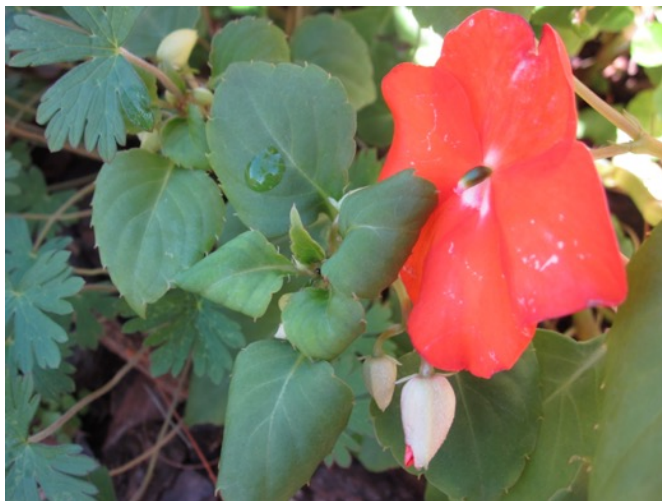


Use fans and venting to
reduce humidity and leaf
wetness

Water early in the day to
ensure dry foliage at night.

Impatiens Downy Mildew

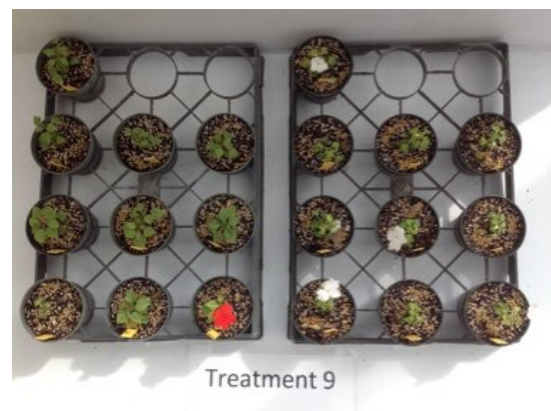
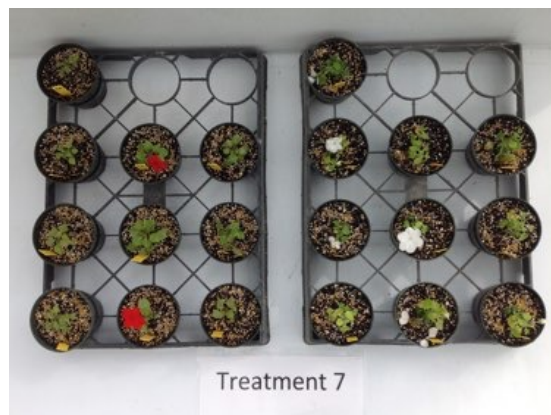
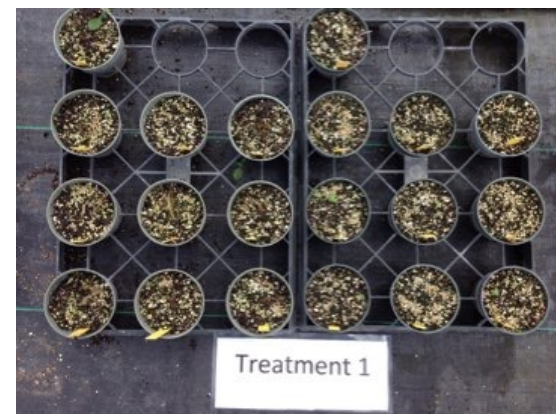
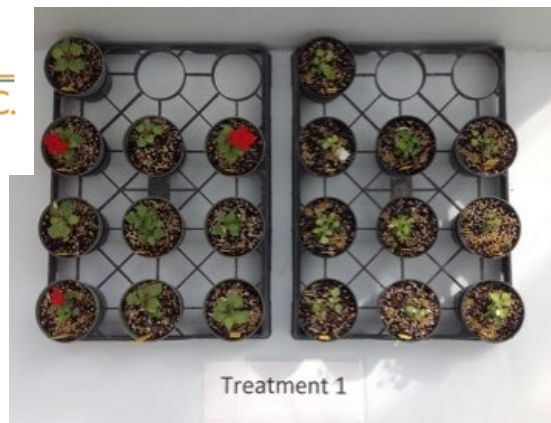
GH reported in 2004



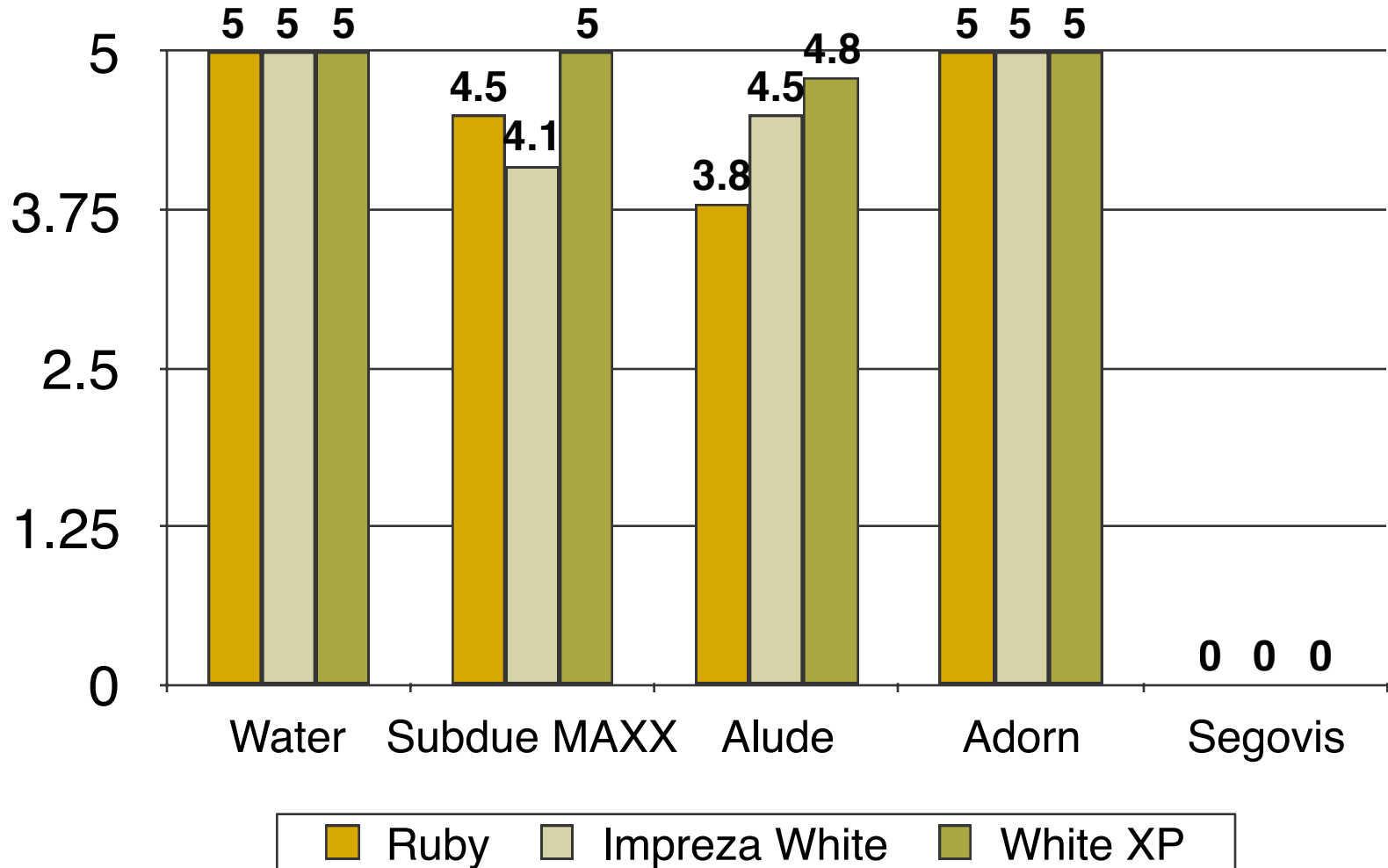
Treatment List:

1. Untreated control
2. Stature 12.25 fl oz
3. Adorn 4 fl oz
4. Subdue MAXX 2 fl oz
5. Inosco 64 fl oz
6. Segway O 3.5 fl oz
7. Segovis 0.6 fl oz
8. Segovis 1.2 fl oz
9. Segovis 2.4 fl oz
10. Segovis 3 fl oz

Fungicides were applied on a 7-day schedule on 1/27 and 2/3. The rate is per 100 gal. Pictures were taken 6 weeks after the final application.



Effect of fungicides on
Impatiens downy mildew - one
month after final application



	FRAC	Control
Segovis	49	excellent, very long residual
Subdue MAXX	4	excellent, long residual
Segway O	21	very good to excellent
Micora	40	very good to excellent, long residual
Stature	40	very good to excellent
Orvego	40	very good to excellent
Adorn	43	very good to excellent
Protect	M3	excellent preventative only, short residual
Dithane RainShield	M3	excellent preventative only, short residual
Vital	33	good, short residual, better as drench
Agri-Fos	33	very good, short residual, better as drench
Aliette	33	some, better as spray
FenStop	11	very good
Heritage	11	poor to some
Pageant	11 and 7	some to good
Orkestra	11 and 7	excellent

DOWNY MILDEW ROTATION

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

Powdery mildew (white spots or all over leaves, flowers and stems)





Powdery mildew infections with unusual symptoms



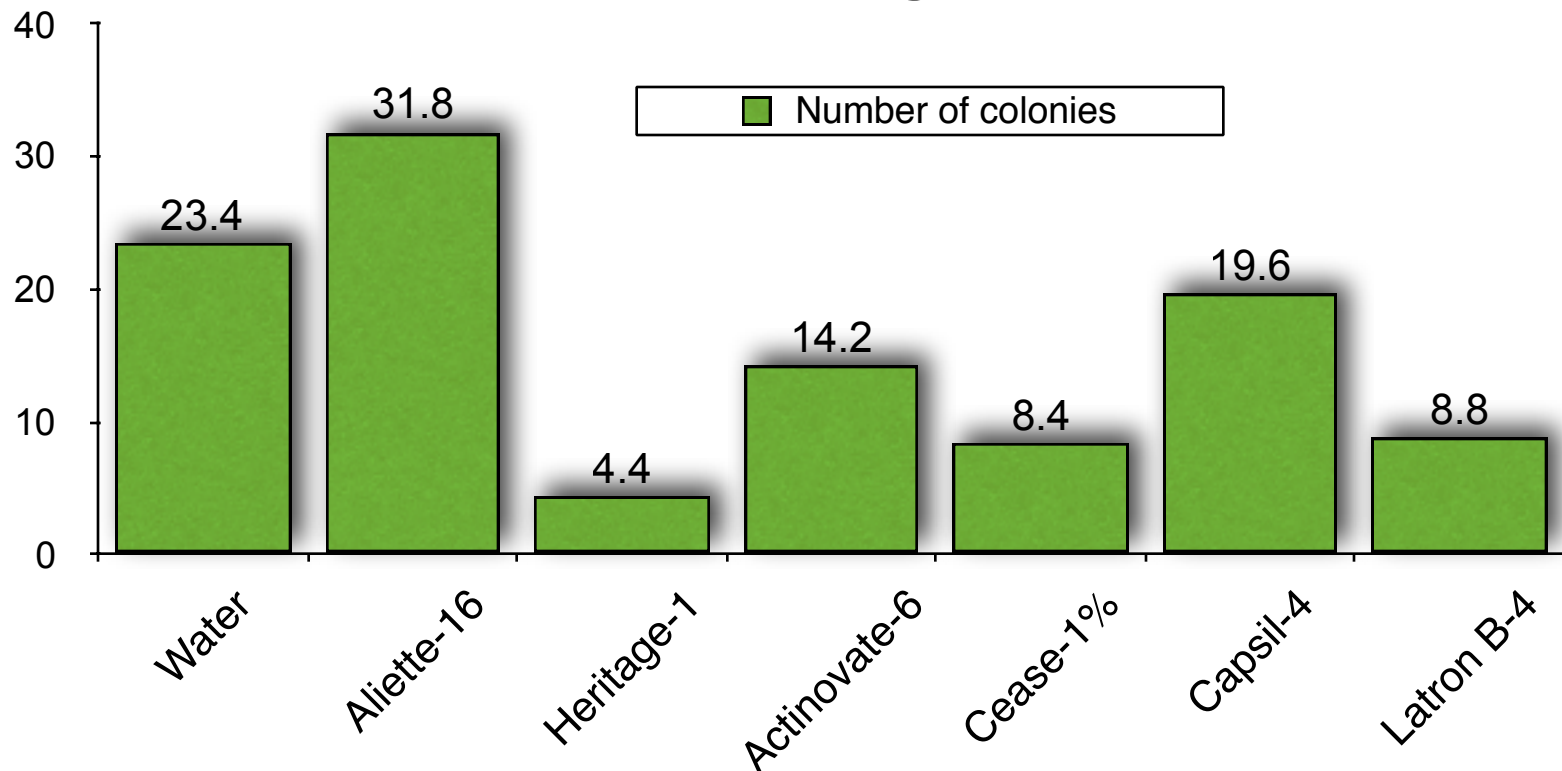


Powdery Mildew control on Verbena

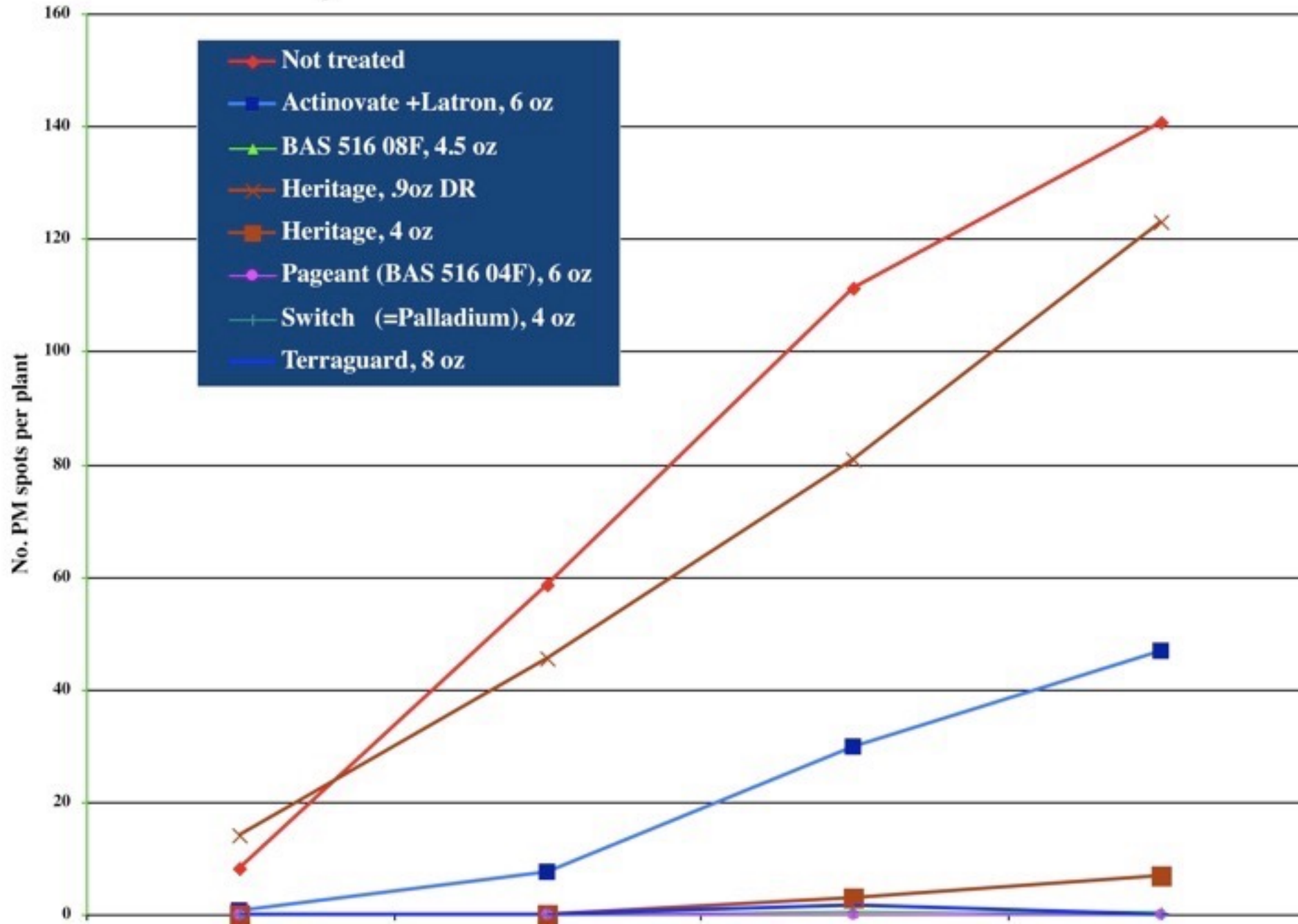


Treatment	Rate/ 100 gal	4 Aug	13 Aug	22 Aug
Inoculated control	————	3.4 a	12.2 a	16.9 a
Mural	4 oz	0.2 b	0.1 b	0 b
Mural	7 oz	0 b	0.9 b	0 b
Pageant Intrinsic	12 oz	0 b	0 b	0 b
Non-inoculated control	————	0 b	0 b	0 b

Eradication of powdery mildew on Rosemary with biocontrols and wetting agents



Powdery Mildew Control on Poinsettia



POWDERY MILDEW ROTATION

- **Compass O, Disarm O, Heritage or Mural, Pageant Intrinsic or Orkestra Intrinsic (11-strobilurins)**
- **MilStop** (nc-K bicarbonate)
- **Palladium** (9 - cyprodinil and 12 - fludioxonil)
- **Phyton 27** (M1-copper)
- **Terraguard, Banner MAXX, Eagle** and many others (3-sterol inhibitors)



Scab control on Poinsettia

Treatment	Rate/100 gal.	# spots per plant
Water noninoculated	-----	0 a
Water inoculated	-----	72 b
Phyton 27	25 oz	19 a
Dithane Rainshield	24 oz	0.3 a
Terraguard	8 oz	0.6 a
Spectro	16 oz	6 a
Eagle 20EW	8 oz	6 a
Junction	48 oz	7 a
Heritage and Latron	2 oz and 0.06%	5 a
Heritage and Latron	4 oz and 0.06%	3 a
Rubigan	4 oz	5 a
MilStop	40 oz	43 b
Protect T&O	16 oz	0 a

SCAB ROTATION

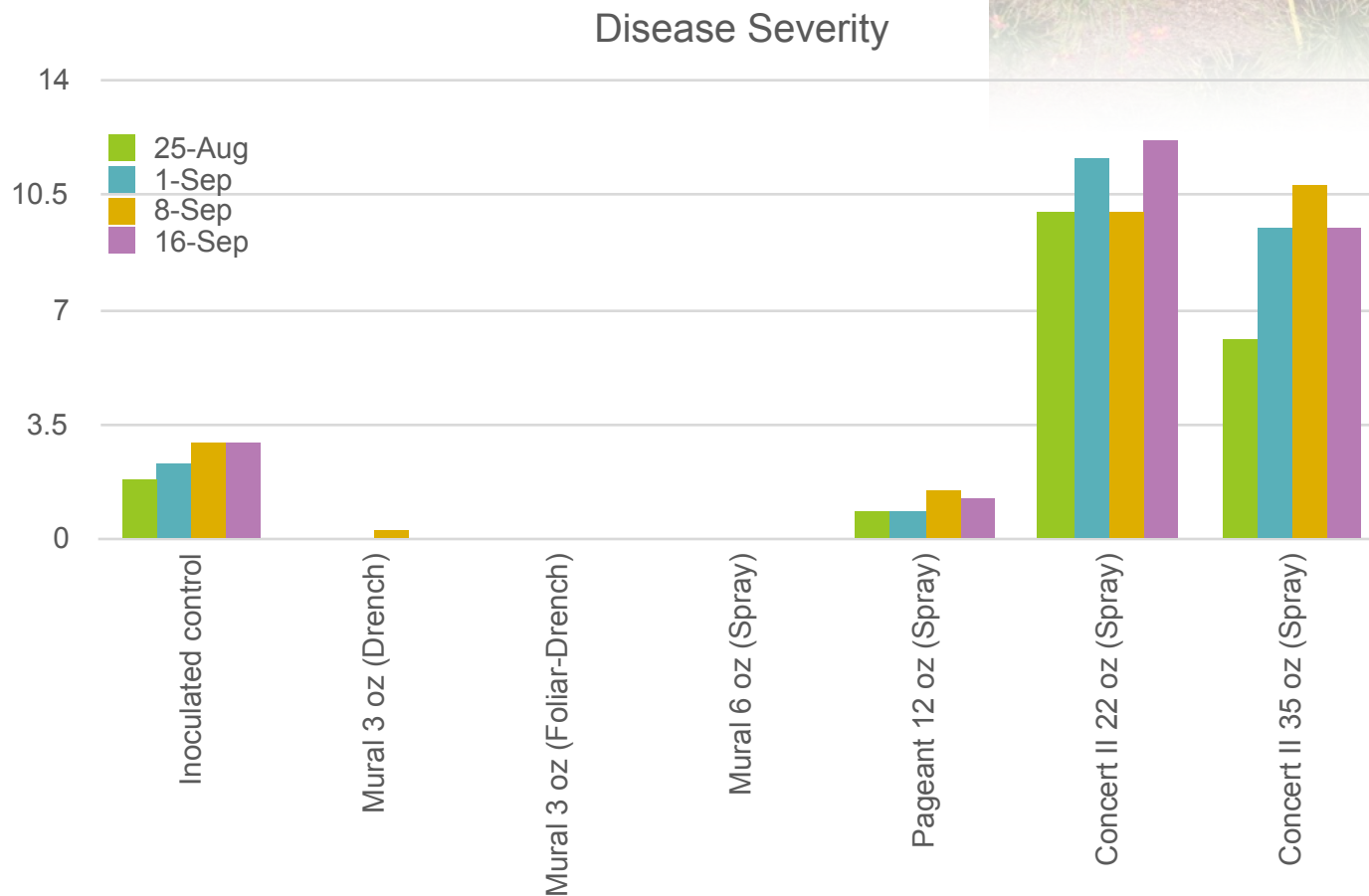
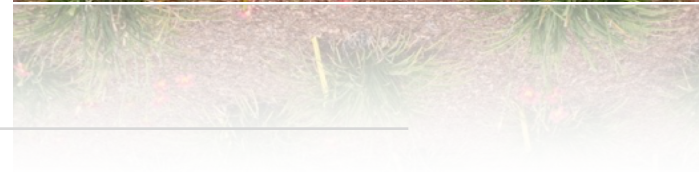
- **Compass O, Disarm O, Heritage or Pageant**
Intrinsic(11-strobilurins) OHP, Syngenta, BASF
- Mancozeb (M3 - BAD residue sometimes)
- **MilStop** (nc-K bicarbonate)
- **Palladium** (9 - cyprodinil and 12 - fludioxonil)
- **Phyton 27** (M1-copper)
- **Terraguard, Banner MAXX, Eagle** and many others (3-sterol inhibitors)

Rust

(water on leaves,
wind)



Efficacy of Fungicides on Daylily Rust (Buck, U of Georgia)



RUST ROTATION

- **Banner MAXX, Eagle, Trinity, Torque, Tourney or Terraguard (3-sterol inhibitor)**
- **ProStar (7-SDHI)**
- **Compass O, Disarm O, Heritage or Mural, Insignia or Pageant (11-strobilurin)**
- **Camelot O or Phyton 27 (M1-copper)**
- **Dithane or Protect (M3-mancozeb)**
(effective at preventing rust)

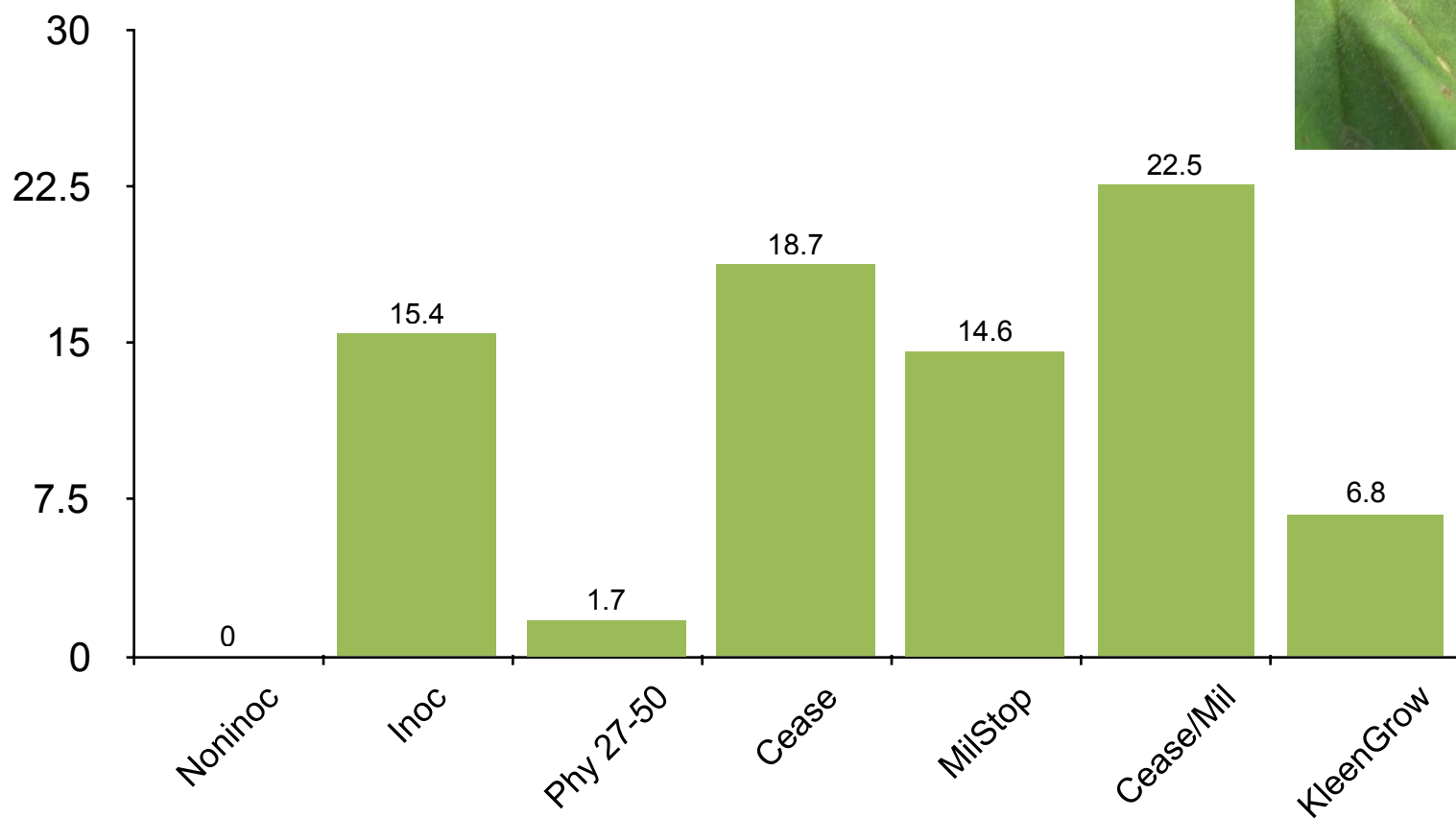


Prevention of Xanthomonas leaf spot on poinsettia

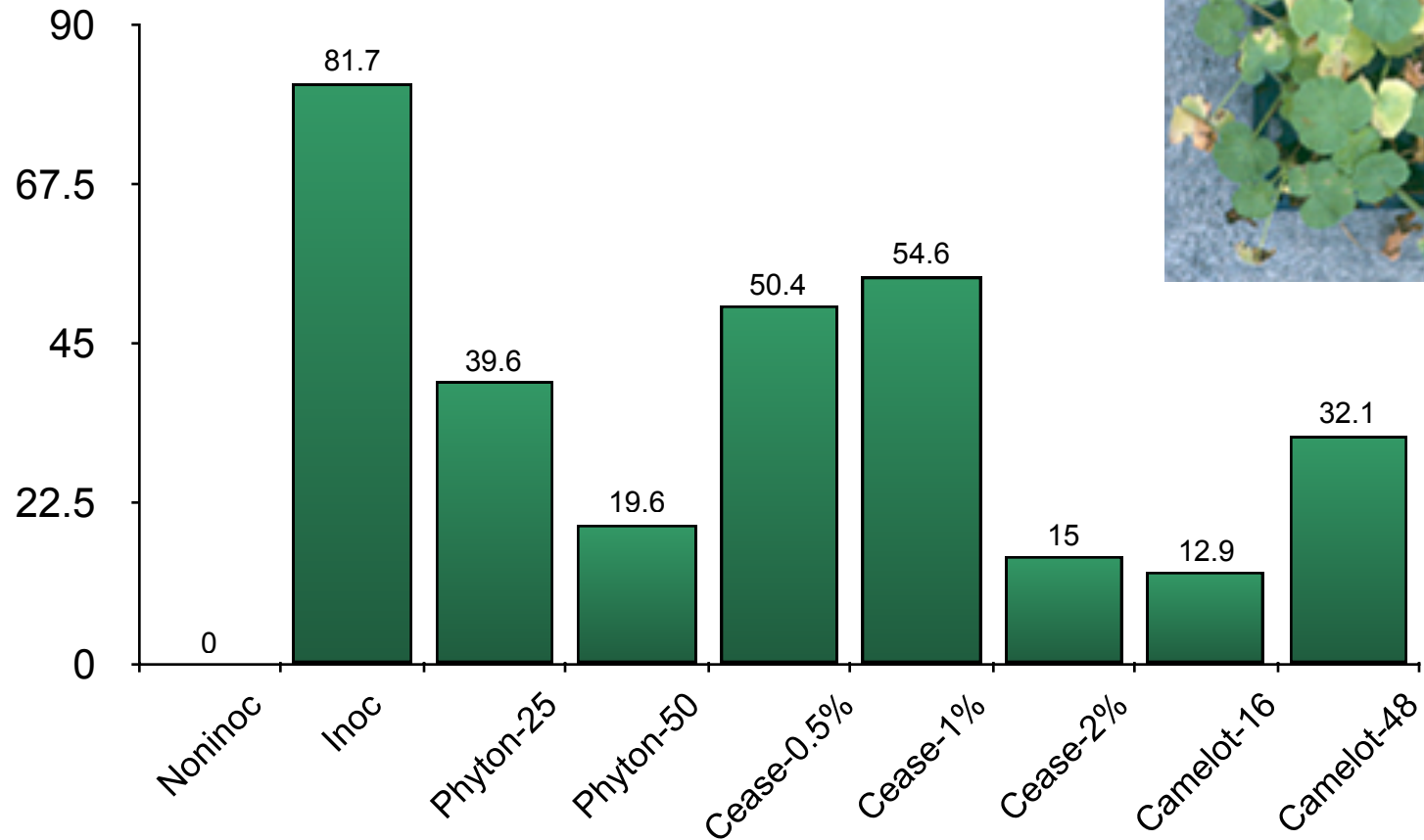


Treatment	Rate/ 100 gal.	Height (cm) 10-21-10	Top grade 10-21-10	# Xanthomonas leaf spots 10-29-10	Phytotoxicity 10-29-10
Water Noninoculated	---	20.1 c	3.7 b	0.0 a	1.0 a
Water Inoculated	---	19.4 bc	3.6 ab	13.2 b	1.0 a
Phyton 27 Spray weekly	20 oz	18.8 bc	3.5 ab	1.8 a	1.0 a
KleenGrow Spray weekly	0.1%	17.3 abc	3.4 ab	0.6 a	2.7 b

Prevention of Xanthomonas on Geranium



Prevention of Xanthomonas on Geranium



BACTERICIDE ROTATION

- **Agri-Mycin** (antibiotic-streptomycin sulfate) (best for *Erwinia*)
- **Copper** (M1-Camelot, Kocide and Phyton 27) (most bacteria)
- **KleenGrow** (nc-quaternary ammonium) (most bacteria)
- **Triathlon BA** (nc-*Bacillus amyloliquifaciens*) or **Cease** (nc-*Bacillus subtilis*) (best for *Pseudomonas* and *Xanthomonas*)



YouTube.com/ChaseAgricultural
Chase Digest
ChaseBase
Chase Archives
Ask Ann
Custom consulting/research

937 Tierra Verde Circle
Cottonwood, AZ 86326

928-649-0400

www.chaseagri.com



**....There is always
a practical solution**

QUESTIONS???

