

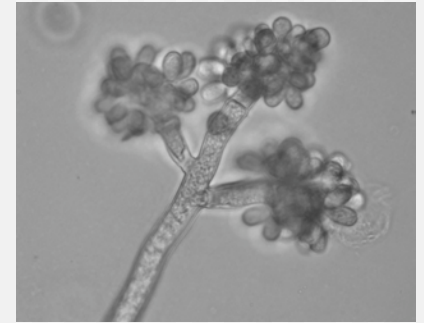
Management of *Botrytis* in Greenhouse Tomatoes



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Botrytis Gray Mold

- Caused by *Botrytis cinerea*
- Widespread problem of greenhouse grown vegetables
- Can attack all parts of the shoot
- Epidemiology
 - Sclerotia, mycelium on crop debris, seedborne, airborne conidia
- Integrated approach is needed for control



IPM Approach to Control in the Greenhouse

- Cultural practices
 - Maintain low relative humidity and warm temperatures
 - Adequate ventilation
 - Greenhouse sanitation
 - Using clean seed and transplants
- Resistant cultivars
 - No known cultivars
 - Guimaraes *et al.* (2004)
 - Wild nightshade is cross compatible with tomato and more resistant to *B. cinerea*
 - Resistance is partially dominant in tomato

IPM Approach to Control in the Greenhouse

- Pesticides and Biopesticides
 - Very few fungicides available for use on tomatoes
 - Exotherm Termil, Manex, Botran
 - Several biopesticides are being evaluated
 - RootShield, *Rhodosporidium diobovatum*, Prestop, SoilGard
- Resistance Management
 - Pest's biology, ecology, genetics and operational factors affect the development of resistance
 - Operational factors can be manipulated by the grower
 - Use multiple classes of fungicides
 - Integrate chemical control with biological and cultural control practices
 - Use on labeled crops only and at recommended rates

Objective

- To evaluate the efficacy of an experimental fungicide by Valent Inc. to control Botrytis gray mold under greenhouse conditions
- IR-4 supported project

Experimental Design

- cv. 'Big Beef'
 - Hot water treated
- *B. cinerea* (LH2-03)
 - Isolated from begonia
 - Plants wounded
- Treatments
 - V-10135 (Valent USA Corp.)
 - Two rates (113.5 and 227 g/A)
 - Botran 75W (Gowan Inc)
 - 2,6-dichloro-4-nitroaniline
 - 454 g/A
 - Untreated



Experimental Design

- RCBD
 - Four replications
 - Ten plants per treatment per rep
 - Two greenhouses
- Disease Evaluations
 - Horsfall-Barrett Rating Scale
 - Number of petioles infected
 - Number and weight of fruit infected



Percent foliar botrytis gray mold on greenhouse grown tomatoes treated with V-10135 and Botran.

Treatment	% foliar (4 Aug)	% foliar (15 Aug)	Number of petioles infected
Botran	7.7 a	30.9 a	1.8 b
V-10135 (low rate)	1.9 b	20.3 a	2.6 ab
V-10135 (high rate)	1.8 b	18.8 a	2.4 b
Untreated	3.1 b	25.8 a	3.7 a

P<0.05

Percent foliar botrytis gray mold on greenhouse grown tomatoes treated with V-10135 and Botran.

Untreated
25.8%



V-10135
(low rate)
20.3%

Botran
30.9%



V-10135
(high rate)
18.8%

Fruit yield, percent diseased fruit and average weight per diseased fruit on green tomato fruit from plants treated with Botran and V-101035.

Treatment	Yield (g)	% diseased fruit	Weight/diseased fruit (g)
Botran	169.6 a	37.2 a	58.1 a
V-10135 (low rate)	40.4 b	9.9 b	11.3 b
V-10135 (high rate)	50.1 b	4.2 b	6.5 b
Untreated	38.9 b	18.6 ab	11.2 b

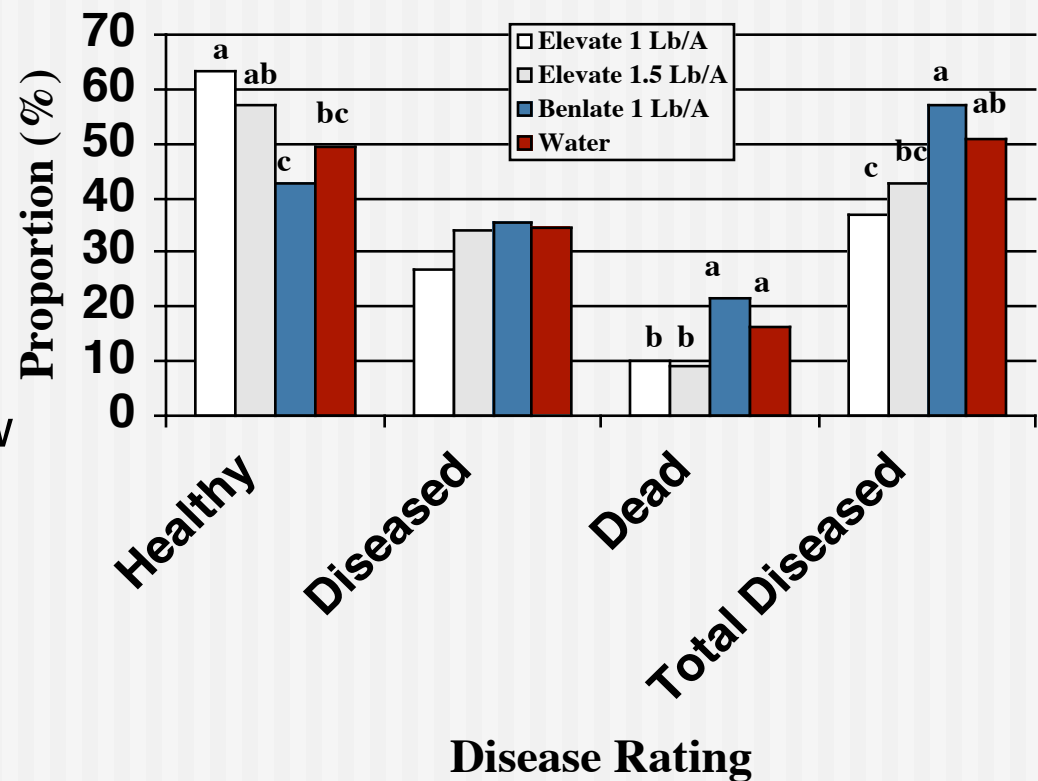
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Summary

- Disease pressure was low with no visible stem cankers.
- The high rate of V-10135 reduced foliar symptoms but the reduction was not always significant.
- The high rate of V-10135 reduced the number of fruit with ghost spots.

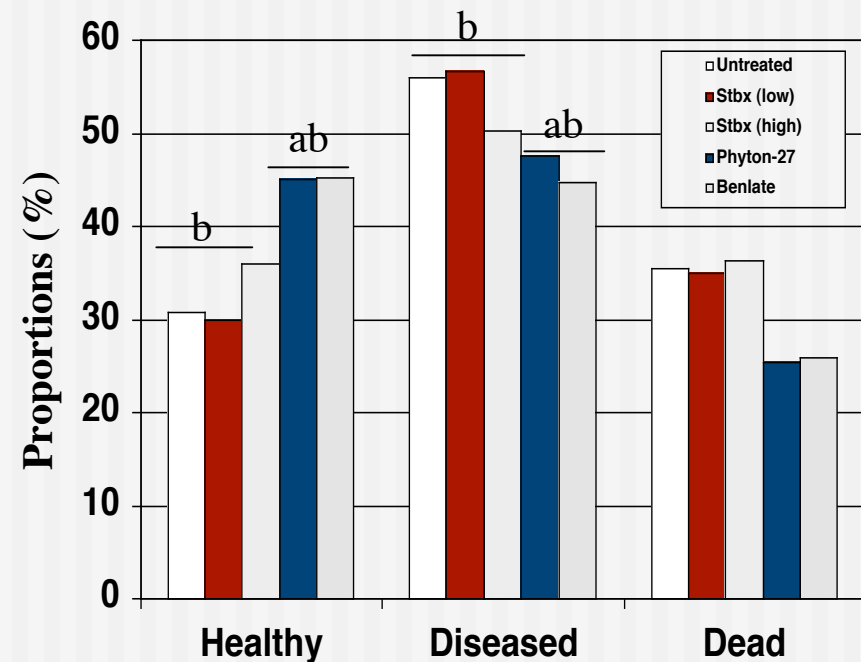
Efficacy of Elevate on the control of Botrytis gray mold on tomato seedlings.

- Elevate (2001)
 - TomenAgro product
 - Fenhexamid
- Results
 - Higher proportion of healthy seedlings (low rate)
 - Lower rate reduced disease severity



Efficacy of an experimental fungicide and Phyton-27 on the control of Botrytis gray mold on tomato seedlings.

- Stbx and Phyton-27 (2002)
 - Source Tech Bio products
 - Stbx: experimental
 - Phyton-27: soluble copper
- Results
 - No control by either products



Efficacy of Benlate on the control of Botrytis gray mold on tomato seedlings.

- Benlate (2001 and 2002)
 - Benomyl
 - Systemic fungicide
 - Taken off the market in 2001
- Results
 - Provided no control
 - Due to resistant strain or efficacy?



Conclusions

- To date no product evaluated has shown excellent control
- Elevate and V-10135 reduced disease severity but not consistently
- Best approach is an IPM program

