THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

# Vegetable Disease Management Update 2015

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# Cucurbit Downy Mildew

| Cucurbit | First Report in 2013 | First Report in 2014 |
|---|---|---|
| Cucumber | July 3 | Aug 15 (Wayne)<br>Aug 25 (Huron) |
| Cantaloupe | August 2 | Sep 8 (Clark) |
| Pumpkin | August 19 | Sep 3 (Ross) |
| Watermelon | August 22 | |
| Squash | ? | Sep 12 (Guernsey) |

See VegNet for updates: http://vegnet.osu.edu/

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# Cucurbit Downy Mildew Management

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- Timely fungicide application – before infection – required
- Fungicide insensitivity development in the pathogen is a problem

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# Cucurbit Downy Mildew Fungicides

| Product | PHI (days) | FRAC code | Comments |
|---|---|---|---|
| Chlorothalanil e.g. Bravo Weather Stik | 0 | M5 | Protectant: tank mix with targeted fungicides below |
| Mancozeb e.g. Dithane or Manzate | 5 | M3 | Protectant: tank mix with targeted fungicides below |
| Ranman | 0 | 21 | |
| Previcur Flex | 2 | 28 | Reduced efficacy suspected |
| Tanos | 3 | 11+27 | Up to 2 days curative activity but low residual (3-5 days) |
| Gavel | 5 | 22+M3 | Zoxamid + mancozeb |
| Zing! | 0 | 22+M5 | Zoxamid + chlorothalanil |
| Presidio | 2 | 43 | Reduced efficacy observed |
| Curzate | 3 | 27 | Up to 2 days curative activity but low residual (3-5 days) |
| Zampro | 0 | 40+45 | Moderate efficacy in Eastern US |

# Cucumber DM Seedling Bioassay 2014

# Downy Mildew Seedling Cucumber Fungicide Bioassay 2014

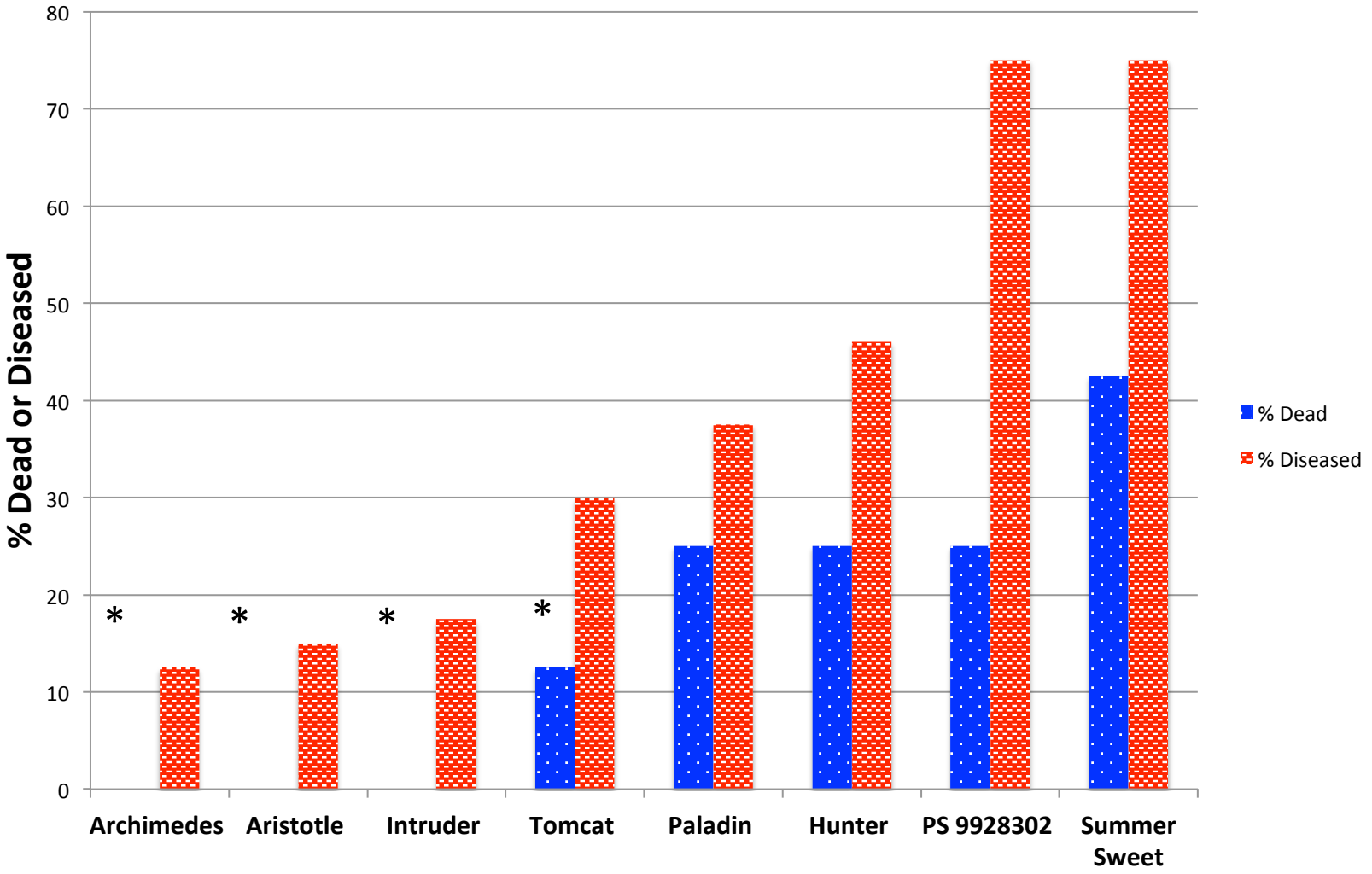
| Treatment and rate | % Downy mildew | | |
|---|---|---|---|
| | Wooster | Celeryville | Fremont |
| Previcur Flex 1.2 pt/A | 0.4 d | 1.0 c | 0.3 c |
| Presidio 4 SC 4 fl oz/A | 3.6 c | 1.9 b | 2.4 bc |
| Ranman 400SC 2.75 fl oz/A | 0.3 d | 0.1 ef | 0.0 c |
| Manzate Pro-Stick 75WG 2lb/A | 0.8 d | 0.0 f | 0.6 c |
| Bravo Weather Stik 6SC 2 pt/A | 0.0 d | 0.0 f | 0.0 c |
| Gavel 75DF 2.0 lb/A | 0.6 d | 0.0 f | 0.6 c |
| Tanos 8 oz/A | 1.4 d | 0.0 f | 0.6 c |
| Zampro 11 oz/A | 0.5 d | 0.9 cd | 0.6 c |
| Ridomil Gold EC 2 pt/A | 5.6 b | 0.5 de | 8.1 b |
| Non-treated (water) control | 23.8 a | 7.5 a | 21.3 a |
| *P* value | <.0001 | <.0001 | <.0001 |

Final rating 15 September

## Phytophthora Blight Update

- Severe in 2014 in areas where excessive rainfall events/flooding occurred
- No new chemistries for control
- No resistant varieties for cucurbits
- Limited number and efficacy for pepper

# Peppers: Susceptibility to Phytophthora




P = 0.13

# Phytophthora Blight Update

- Cultural management

- Water management
- Surface waters commonly infested – avoid if possible

- Use high ridges/beds; fields with good drainage

- Sanitation
- Cull piles/discarded fruit in field are a source of inoculum; destroy

# Phytophthora Blight Update

- Cultural management
- Trellis production of cucumbers may reduce the number of rotted fruit
- Power-wash equipment after using in infested fields
- Remove diseased plants and adjacent healthy plants

# Phytophthora Blight Fungicides

| Fungicide | Cucum-ber | Melon | Summer squash | Winter squash | Pumpkin | Pepper |
|---|---|---|---|---|---|---|
| Gavel 75DF | ✔ | ✔ | ✔ | | | |
| Zing! | ✔ | ✔ | ✔ | ✔ | ✔ | |
| Presidio 4SC | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Revus 2.08SC | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |
| Ridomil Gold SL | | | | | | ✔ |
| Forum 4.18SC | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ |

# Tomato Early Blight Management

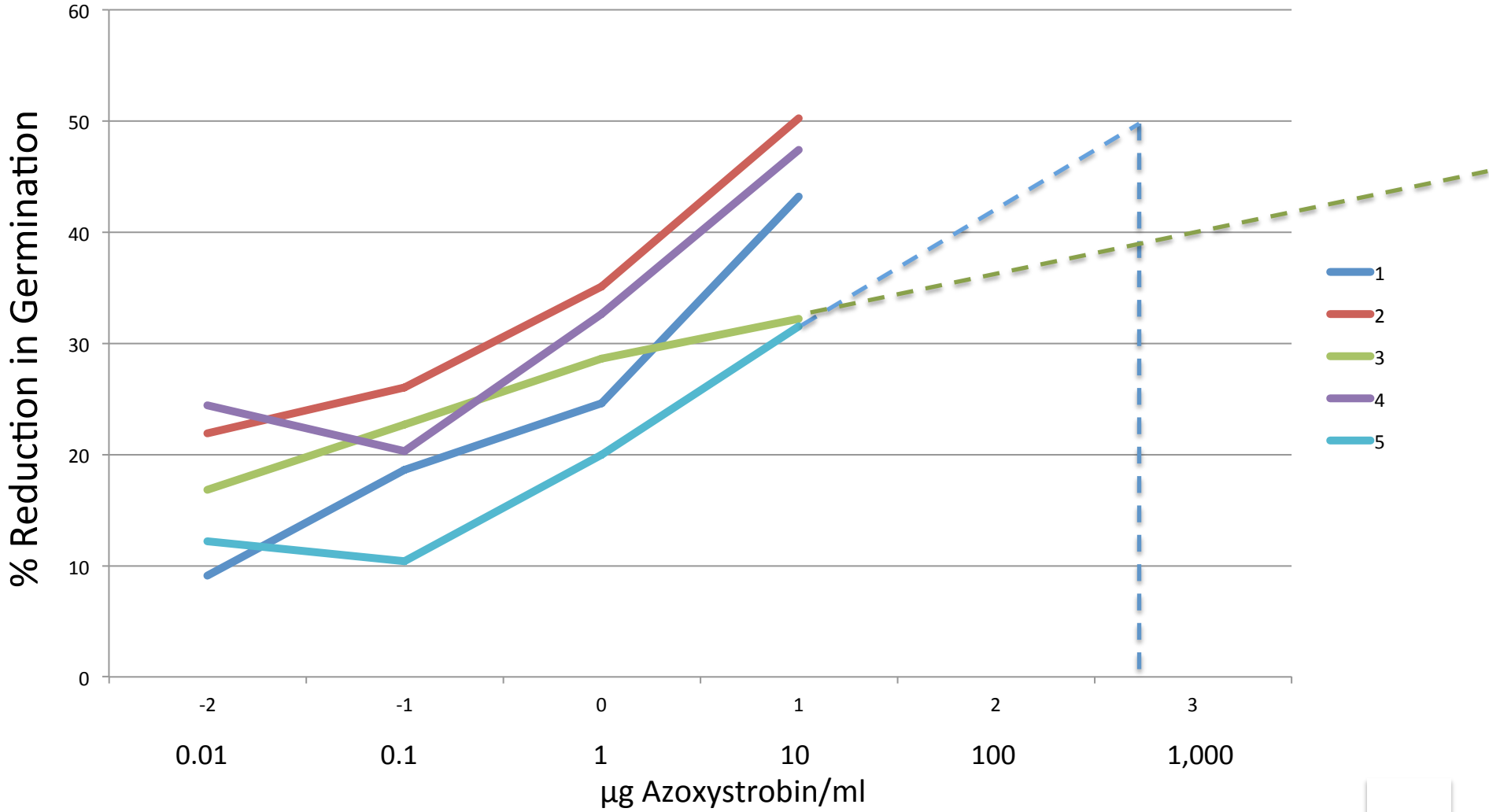
- Cultivars with high degree of resistance not common
- Early blight pathogen – *Alternaria solani* and *A. tomatophila*
  - Reduced sensitivity to strobilurin fungicides reported
  - Potato *A. solani* isolates from northern OH identified in 2014 with reduced sensitivity to azoxystrobin
- Use a fungicide resistance management program

# Tomato Early Blight Management: Fungicides

A19334 = Solatenol

| Treatment and rate/A | Early blight severity (%) | Marketable yield (ton/A) |
|---|---|---|
| A19334A 10.5 fl oz + Activator 90 (1,3,5,7) alt Bravo Weather Stik 2 pt (2,4,6,8) | 5.3 b | 54.8 a |
| A19334A 194.5EC 13.5 fl oz + Activator 90 (1,3,5,7) alt Bravo Weather Stik 2 pt (2,4,6,8) | 6.0 b | 51.1 a |
| Equation 5 fl oz (1-10) | 21.0 ab | 42.2 a |
| Equation 6.2 fl oz (1-10) | 16.0 b | 44.1 a |
| Quadris 6.2 fl oz (1-10) | 18.7 ab | 41.3 a |
| Zing 36.0 fl oz + Activator 90 (1-10) | 4.3 b | 41.6 a |
| Bravo Weather Stik 2 pt (1,3,5,7,9) alt F9110-1 2.12SL 24.5 fl oz + Activator 90 (2,4,6,8,10) | 3.3 b | 47.5 a |
| Bravo Weather Stik 6SC 2 pt (1,2,5,6,9,10) alt F9110-1 2.12SL 24.5 fl oz + Activator 90 SL 0.25% v/v (3,4,7,8) | 8.3 b | 44.6 a |
| Ignite S2 64 fl oz (drench) fb Quadris Top 325SC 8 fl oz + FoliarBlend 16 fl oz (1,3,5,7,9) + Nutri-Gro 64 fl oz (5,7,9) alt Bravo Weather Stik 2 pt + FoliarBlend 16 fl oz (2,4,6,8,10) | 4.7 b | 41.4 a |
| Quadris Top 8 fl oz (1,3,5,7) alt Bravo Weather Stik 2 pt (2,4,6,8) | 17.7 ab | 42.6 a |
| Non-treated control | 36.7 a | 44.1 a |
| P Value | 0.0615 | 0.6550 |

# *A. solani* Germination in Presence of Azoxystrobin



# New Tomato Fungicides

- Solatenol (Syngenta)
  - Early blight
- Zing! (Gowan)
  - Early blight, late blight, Septoria leaf spot
  - Potato early blight, late blight, black dot, Botrytis vine rot
- Fracture (FMC)
  - Early blight, bacterial spot

# Resources

- Midwest Vegetable Production Guide
- VegNet Newsletter (vegnet.osu.edu)
- Twitter @OhioVeggieDoc
- u.osu.edu posts
  - u.osu.edu/miller.769 (OhioVeggie Disease News)
  - http://u.osu.edu/vegetablediseasefacts/

# Vegetable Pathology Lab Resources

Diagnostics

Contact Sally Miller (miller.769@osu.edu) or Fulya Baysal-Gurel (gurel.2@osu.edu)

No charge for Ohio samples

Websites

www.oardc.osu.edu/sallymiller

u.osu.edu/miller.769

VegNet

Vegnet.osu.edu

Thanks to OVSFRDP and crop protection companies for research support

**Twitter: @OhioVeggie Doc**