Identification and Management of Diseases of Tomato and Cucurbits

Edward Sikora
Extension Plant Pathology
Auburn University
Tomato Diseases in Alabama

- Early blight
- Late blight
- Bacterial spot
- Tomato spotted wilt virus (TSWV)
Early blight on tomato
Early Blight
Warm temperatures, wet conditions
Early Blight

- Reduce fruit size
- Reduce fruit quality
- Increase in sunscald
- 50% yield reduction
Late Blight
warm days, cool nights, & very wet conditions
Late Blight and Buckeye Rot

Late Blight

Buckeye rot

Late Blight and Buckeye rot
Foliar Disease Management

• Remove tomato residue after harvest
• Plant disease-free transplants
• Keep tomato plants healthy following a balanced fertility program
• Scout fields weekly
• Follow a fungicide spray program
Tomato with and without fungicides
Fungicide Program for Tomato

• Begin applications 3-7 days after transplanting
• Apply fungicides every 7-10 days
• Scout and spray program
• Mancozeb and chlorothalonil
• Quadris, Cabrio for severe disease situations
Fungicide Efficacy: Early Blight

- Quadrис, Amistar (5)
- Cabrio (5)
- Endura (4)
- Mancozeb (3.5)
- Evito (3)
- Gavel (3)
- Reason (3)
- Revus Top (3)
- Tanos (3)
- Bravo, Echo, Equus (2.5)
- Copper, Scala, Ranman (2)
Bacterial Spot

- Introduced on transplants
- Favored by warm, wet conditions
- Attack leaves & fruit
- Tomato & pepper
Bacterial Spot

Bacterial ooze
Bacterial spot - peppers
Bacterial Spot
Bacterial Spot Control

1. Use disease-free transplants
2. Avoid overhead irrigation
3. Use Actigard in preharvest program
4. Apply a copper-based fungicide with mancozeb
Bacterial Spot Tolerant Peppers

- Alliance
- Aladdin X3R
- Aristotle X3R
- Brigadier
- Camelot X3R
- Declaration

- Lafayette
- Patriot
- Polaris
- Red Knight X3R
- Sentry
- Wizard X3R
Tomato Spotted Wilt Virus

- Spread by thrips
- Stunting
- Leaves are distorted & turn pale green
- “Bronzing” of foliage
- Ring spots develop fruit
1) Plant TSWV resistant varieties:

- Amelia VR
- Belle Rosa
- BHN 602, 640
- Crista
- Fletcher
- Mountain Glory
- Quincy
- Red Defender
- Talladega

- Roma types: BHN 685, Muriel, Picus

2) Reflective mulches may reduce thrip feeding
Common Diseases of Cucurbits

- Powdery mildew
- Downy mildew
- Plant viruses
Anthracnose

Gummy stem blight

Anthracnose

Target spot
Powdery mildew

- All cucurbits are susceptible

- Favored by:
  - High humidity
  - Lush plant growth
  - Low light conditions
Powdery mildew

- Overwinters on weeds
- Spores carried on air currents
- No free water necessary for infection
Powdery Mildew - Control

1) Plant a PM-tolerant variety
2) Balanced fertility program
3) Follow a fungicide spray program
Powdery Mildew Tolerant Varieties: Pumpkins

- Mini’s: Gold Dust, Gooligan
- Small: Cannon Ball, Iron Man, Prankster
- Medium: Mystic Plus
- Large: Magic Lantern, Magic Wand, Magician, Merlin, 20 Karat Gold
- Extra large: Aladdin, Super Herc
Powdery Mildew-tolerant fresh market cucumbers

- Dasher II (A, D)
- Daytona (A)
- General Lee (D)
- Indy (A, D)
- Rockingham (A)
- Speedway (A)
- Talladega (A)
- Thunder (D)
Powdery Mildew - Fungicides

- Procure (5)
- Quintec (5)
- Nova (5)\(^R\)
- Sulfur (4)\(^P\)
- Flint (4)\(^R\)
- Pristine (3)
- Quadris (3)\(^R\)

- Sovran (3)
- Cabrio (3)\(^R\)
- Topsin M (3)\(^R\)
- Bravo (2)
- Copper (1)
- Penncozeb (1)
- Dithane (1)
Downy Mildew

- Cucumber, cantaloupe & pumpkins
- Spores spread long distances
- Moderate temperatures & wet leaves favor disease development

**Symptoms:**
1) Angular yellow spots that turn brown
2) Gray-white downy growth on underside of leaf
3) Defoliation, stunting & poor fruit development
Downy Mildew

cantaloupe

cucumber
Downy mildew

40x magnification

100x magnification
Downy Mildew-tolerant varieties

Cucumbers: Dasher II, General Lee, Indy, Thunder

Cantaloupe: Ambrosia

Honey Dew: Rocio
Downy Mildew - Fungicides

- Ridomil/Bravo (5)
- Previcur Flex (4)
- Presidio (4)
- Ranman (4)
- Reason (4)
- Tanos (4)
- Gavel (4)
- Cabrio (4)

- Pristine (3)
- Curzate (3)
- Penncozeb (3)
- Dithane (3)
- Bravo, Equus (2)
- Quadris (2)
- Flint (1)
- Copper (1)
Sample Fungicide Program

• Presidio 4F (4 oz) + Manzate Pro-Stick* 75DG (2 lb)

alternated every 5 to 7 days with:

Previcur Flex 6F (1.2 pt) + Bravo Weather Stik* 6SC (2 pt)
Plant viruses

- All cucurbits are susceptible
- Can overwinter in weeds
- Most transmitted by insects (aphids)
- Cucumber mosaic virus
- Papaya ring spot virus
- Watermelon mosaic virus
- Zucchini yellow mosaic virus
Viruses - Symptoms

- Mottled and distorted leaves
- Stunted plants
- Mottled & deformed fruit
- Reduced marketable yields
Virus - Control

- Resistant varieties
- Avoid planting next to infected fields
- Weed control before planting
- Insect control
- Reflective mulches
- Row covers
Virus-resistant Summer Squash

- **Conqueror**: ZYMV, WMV, CMV, PRSV
- **Destiny III**: ZYMV, WMV, CMV
- **Liberator III**: ZYMV, WMV, CMV
- **Cougar**: ZYMV, WMV, PRSV
- **Prelude II**: ZYMV, WMV
- **Multipik**: ZYMV, WMV
- **Superset**: ZYMV, WMV
- **Superpik**: ZYMV, WMV
Virus-resistant Zucchini

- Payroll: ZYMV, WMV, CMV, PRSV
- Judgement III: ZYMV, WMV, CMV
- Justice III: ZYMV, WMV, CMV
- Dividend: ZYMV, WMV, CMV
- Declaration II: ZYMV, WMV
- Independence II: ZYMV, WMV
Virus-resistant/tolerant Cucumber

- Daytona: ZYMV, WMV, CMV, PRSV
- Indy: ZYMV, WMV, CMV, PRSV
- Thunder: ZYMV, WMV, CMV
- Talladega: WMV
- General Lee: CMV
- Rockingham: CMV
- Speedway: CMV
General Disease Control Practices

- Crop rotation
- Disease-free material
- Resistant varieties
- Weed & insect control
- Field scouting
- Fungicides
- Sanitation