Pumpkin Disease Management

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Crop Consultant / Grower
From Planting to Harvest
Seedling Diseases

- **Causes**
  - *Pythium* sp.
  - *Phytophthora* sp.
  - *Rhizoctonia* sp.
  - *Fusarium* sp.
Contains the neonicotinoid systemic insecticide – Thiamethoxam

Contains fungicide active ingredients in:
- Apron XL®
- Maxim® 4FS
- Dynasty®

Purchase seed pre-treated with FarMore
Diseases – Viral and Bacterial

- **Viral**
  - Mosaic Viruses

- **Bacterial**
  - Bacterial Wilt
  - Yellow Vine
Mosaic Viruses

- Cucumber Mosaic Virus
- Papaya Ringspot Virus
- Watermelon Mosaic Virus
- Zucchini Yellow Mosaic Virus
Cucumber Mosaic Virus
Papaya Ringspot Virus
Zucchini Yellow Mosaic Virus
Watermelon Mosaic Virus
Viral Disease Control

- **Aphid Control (?)**
  - Very hard to prevent viruses
    - It only takes a few seconds of feeding for an aphid to transmit the virus
    - However, many people have seen reduced incidence by using a systemic insecticide
      - Admire
      - Platinum
      - Venom

- **Aphid Control (cont.)**
  - Use yellow mulch (?)
    - Yellow repels aphids
    - Yellow attracts cucumber beetles
    - Yellow mulch also delays maturity
    - Beleaf @ 2.8 oz/A
    - Fulfill @ 2.75 fl oz/A
  - **Use Resistant Varieties**
    - ‘Magician’ (ZYMV)
    - ‘Kratos’ (ZYMV)
Bacterial Wilt
Yellow Vine
Bacterial Wilt and Yellow Vine Control

- Cucumber Beetle and Squash Bug Control
  - Opposite viral transmittal by aphids, cucumber beetles and squash bugs must chew for several minutes to transmit bacterial wilt and yellow vine

- Systemic Insecticides are very effective
  - Admire
  - Platinum
  - Venom
Admire Experiment Methodology

- University of Kentucky Research
  - Rick Bessin
  - Bill Nesmith
  - Brent Rowell
  - John Strang

- 4 week old ‘Athena’ Muskmelon plants were transplanted on May 17.

- Treatments were applied as a post-transplant drench with 1/3 of an ounce of water/plant.

- Admire 2F was applied at:
  - 24 fl oz/A
  - 16 fl oz/A
  - 8 fl oz/a
  - Along with and UTC
Yield – No. of Fruit

Yield (no fruit/A)

Admire Rate (fl oz/A)

<table>
<thead>
<tr>
<th>Admire Rate</th>
<th>Yield (no fruit/A)</th>
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<tbody>
<tr>
<td>24</td>
<td>10,000</td>
</tr>
<tr>
<td>16</td>
<td>8,000</td>
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<tr>
<td>8</td>
<td>6,000</td>
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Seedling Disease Control

- Contains fungicide active ingredients in:
  - Apron XL®
  - Maxim® 4FS
  - Dynasty®
- Purchase seed pre-treated with FarMore
Foliar Diseases

- **Frequent**
  - Plectosporium Blight
  - Powdery Mildew
  - Downy Mildew

- **Occasional**
  - Bacterial
  - Gummy Stem Blight
  - *Alternaria* sp.
  - Leaf Spots
Plectosporium Blight
Plectosporium Blight Control

- **Cultural**
  - Crop Rotation

- **Preventative**
  - Chlorothalonil
  - Mancozeb (?)
  - Cabrio
  - Pristine
  - Flint
  - Quadris

- **New Products with Activity**
  - Merivon
  - Quadris Top
  - Inspire Super
  - Aprovia Top

- **Favored by wet weather**
  - Persistent rainfall
  - Foggy weather
Powdery Mildew

Loves periods of:
- Heavy Dew
- Low Rainfall

Varietal resistance is the best control measure.
Powdery Mildew Control – 8/13/2009

Graph showing the control of powdery mildew with different products: UTC, Bravo, Bravo + Maneb, Nova + Maneb, Quintec + Maneb, Folicure + Maneb, Microthiol + Maneb, Pristine / Bravo.

Legend:
- Gold Challenger
- Gladiator
- Column1
Powdery Mildew Findings 2004

* An additional trial showed PM 100% resistant to Flint
Powdery Mildew Control – 2007

- Sonata
- Storox
- Storox + Sonata

Powdery Mildew Incidence (%)

- UTC
- That
- Sonata
- Storox
- Storox + Sonata

- 7-Sep
- 17-Sep
- 24-Sep
Powdery Mildew Control – 2007
Powdery Mildew Control

- **Cultural**
  - Resistant Varieties

- **Chemical**
  - **Torino @ 3.4 fl oz/A**
  - Quintec @ 4 to 6 fl oz/A
  - Sulfur
  - Inspire Super @ 16 to 20 fl oz/A
  - Aprovia Top @ 10.5 to 13.5 fl oz/A
  - Chlorothalonil
  - Fontelis @ 1 pint/A

- **Chemicals (cont.)**
  - Pristine
  - Merivon
  - Quadris Top
  - Luna Experience

- **Labeled, but ???**
  - Actigard
  - Swith
  - Tebuconazole

- **Labeled, but Resistance**
  - Rally 40WSP
  - Procure 50WS
Downy Mildew
New Strain of Downy Mildew

- There are several strains of downy mildew that are resistant to many of our labeled fungicides.
- This organism has the ability to build resistance in a very short time.
- Forecasting:
Products for Control of Downy Mildew

- Orondis Ultra
- Orondis Opti
- Ranman 400SC @ 2.75 fl oz/A
- Presidio 4F @ 3 to 4 fl oz/A
- Previcur Flex @ 1.2 pints/A
- Revus 2.08F @ 8 fl oz/A
- Tanos 50WP @ 8 oz/A
- Zampro @ 14 oz/A

Rotation is very important!
Tank mixes are recommended!
- Chlorothalonil
- Maneb
Bacterial Diseases

The best control is foliar copper sprays.
  Tanos
  Mancozeb
  Copper
Gummy Stem Blight
Gummy Stem Blight Control

- **Chemicals**
  - Proline 480SC @ 5.7 fl oz/A
  - Monsoon 3.6F @ 8 fl oz/A

- **Protectants**
  - Chlorothalonil

- **Resistance**
  - Pristine
  - Topsin M
  - Others
Fruit Diseases

- *Alternaria* sp.
- Anthracnose
- Bacterial Spot
- Fusarium Fruit Rot
- Plectosporium Blight
- Phytophthora Fruit Rot
- Powdery Mildew
- Sclerotinia Stem Rot

- Gummy Stem Blight / Black Rot (Winter Squash)
Alternaria Fruit Rot
Alternaria Control

Chemicals
- Chlorothalonil
- Mancozeb
- Cabrio @ 12 to 16 oz/A
- Quadris @ 11 to 015.4 fl oz/A
- Aprovia Top @ 10.5 to 13.5 fl oz/A
- Inspire Super @ 16 to 20 fl oz/A
- Tanos @ 8 oz/A

Chemicals
- Luna Experience
- Luna Sensation
- Merivon
- Pristine
- Quadris Top

???
- Gavel
- Switch
- Reason
- Topsin M
Anthracnose
Anthracnose Control

Chemicals
- Chlorothalonil
- Mancozeb
- Cabrio @ 12 to 16 oz/A
- Quadris @ 11 to 015.4 fl oz/A
- Aprovia Top @ 10.5 to 13.5 fl oz/A
- Inspire Super @ 16 to 20 fl oz/A
- Tanos @ 8 oz/A

Chemicals
- Luna Experience
- Luna Sensation
- Merivon
- Pristine
- Quadris Top
- ???
- Reason
- Topsin M
Bacterial Spot on Fruit

The best control is foliar copper sprays.

Tanos +
Mancozeb +
Copper
Fusarium Fruit Rot
At least 11 different species of Fusarium that infect pumpkins

Manifestation
- It often appears after periods of stress
  - Drought
  - Heat
  - Sometimes, even during excessively wet seasons

Fusarium Control
- Proline 480SC @ 5.7 fl oz/A (?)
- Irrigation
- Use of calcium nitrate at sidedressing
- Foliar applications of calcium
- Foliar fertilizer applications (?)
- Use of no-till or minimum tillage systems (?)
- Rotation (?)
Plectosporium Blight
Plectosporium Blight Control

- Cultural
  - Crop Rotation

- Preventative
  - Chlorothalonil
  - Mancozeb (?)
  - Cabrio
  - Pristine
  - Flint
  - Quadris

- New Products with Activity
  - Merivon
  - Quadris Top
  - Inspire Super
  - Aprovia Top

- Favored by wet weather
  - Persistent rainfall
  - Foggy weather
Phytophthora capsicii (Fruit Rot)
Phytophthora Control

- No such thing!!!
- Very persistent in the soil
  - Resting spore
    - At least 8 years (15)
- Alternate host plants
  - Cucurbitas
    - Squash and pumpkins most sensitive
  - Solanaceous
    - Peppers most sensitive
  - Green Beans
- Phases
  - Root Rot
  - Plant
  - Fruit & Foliar
- Management
  - Avoid fields with Phytophthora
  - Avoid low or wet areas
  - Ridomil Gold at planting
  - Ridomil Gold Bravo applied to foliage
- Presidio
- Orondis Products
Biofumigation

- Caliente Mustard
  - AITC
  - Very effective on Phytophthora
- Arugula
  - Nematodes

- Combination
  - Caliente 199
  - Arugula
  - Very effective
- Pelleted Mustard
  - Biofence
  - Biosence
Powdery Mildew on Stems
Powdery Mildew Control

- **Cultural**
  - Resistant Varieties

- **Chemical**
  - Torino @ 3.4 fl oz/A
  - Quintec @ 4 to 6 fl oz/A
  - Sulfur
  - Inspire Super @ 16 to 20 fl oz/A
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  - Fontelis @ 1 pint/A

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  - Quadris Top
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- **Labeled, but ???**
  - Actigard
  - Swith
  - Tebuconazole

- **Resistance**
  - Rally 40WSP
  - Procure 50WS
Unusual Observation 2013 & 2014
Sclerotinia Stem Rot - 
*Sclerotinia sclerotiorum*

- **S. sclerotiotum**
- **Control**
  - Fontelis @ 1 pint/A
  - Endura @ 6.5 oz/A
    - Disease not on Label
  - Pristine @ 12.5 to 18.5 oz/A
    - Disease not on Label
Stem Quality

- Control Diseases
  - Powdery Mildew
  - Microdochium Blight

- Vine Health
  - Fertility
    - Sidedressing
    - Foliar
  - Irrigation
Spray Schedule

- Early Season
  - Rotate or tank mix
    - Chlorothalonil
    - Mancozeb
  - Then Add

- Powdery Mildew
  - Torino @ 3.4 fl oz/A
  - Quintec @ 4 to 6 fl oz/A
  - Sulfur

- Downy Mildew
  - Orondis Ultra
  - Orondis Opti
  - Ranman @ 2.75 fl oz/A
  - Presidio @ 4 fl oz/A
  - Zampro @ 14 oz/A

- Pre-Harvest
  - Pristine
  - Cabrio
Bravo and Sunburn

- Sunburn issues with Bravo on mature watermelon.
- Mature pumpkins appear to be sensitive to Bravo.
- Grower experience suggests a good possibility!
- Possibly an interaction with insecticides.
- Remove Bravo from spray schedule once orange fruit is visible through vines.
Inspire Super

- **Syngenta**
- **Active Ingredients**
  - difenoconazole
  - cyprodinil
- **FRAC Codes**
  - 3 and 9
- **Rate**
  - 16 to 20 fl oz/A

- **Diseases Controlled**
  - *Alternaria* sp.
  - Anthracnose
  - Cercospora Leaf Spot
  - Gummy Stem Blight
  - Phoma Blight
  - Phylllosticta Leaf Blight
  - Plectosporium Blight
  - Powdery Mildew
  - Septoria Leaf Spot
Aprovia Top

- Syngenta
- Active Ingredients
  - solatenol
  - difenoconazole
- FRAC Codes
  - 7 and 3
- Rate
  - 10.5 to 13.5 fl oz/A

- Diseases Controlled
  - *Alternaria* sp.
  - Anthracnose
  - Belly Rot
  - Cercospora Leaf Spot
  - Gummy Stem Blight
  - Phoma Blight
  - Phyllosticta Leaf Blight
  - Plectosporium Blight
  - Powdery Mildew
  - Scab
  - Septoria Leaf Spot
  - Target Spot
Questions?

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