What is Wrong with my plant?
Top-10 problems diagnosed

Presented by Matthew DeBacco

http://www.pumpkinfoest.org/images/pics/IGVGC_Logo.jpg

http://www.bigpumpkins.com/DiaryImages/FullSize/157930.jpg
Way to go Canada!

- WR Pumpkin
- WR Squash
- WR field pumpkin
- #2 in the world Long Gourd
- #4 in world Tomato
Disclaimer:

• Following diagnosis's were provided mainly based on visual observations

• Intention of this collection is to provide a growers guide to what you might see in the field

• Consult your local area rules & regulations to make sure you are in compliance with the law with any product you use.
My Background

• From Southern New England (Connecticut)
• Have my Masters in Agronomy
  – (study of growing field crops)
My Background

• Have grown pumpkins for the last 12 years
  – Grew Connecticut State Record in 2008
• Founding member of “Team-Pumpkin”
• Have been growing giant pumpkins continuously for the last 1,053 days (and counting…)
  – 1st to mass disperse pumpkin clones
The normal or ‘ideal’
Key points to remember

• Monitor
• Watch for changes
• **Determine:**
  – Date of occurrence
  – Rate of spread
  – Recent cultural practices
  – Weather conditions
Sunburn
Cause

• Results from leaves getting too hot due to insufficient transpiration resulting in a scorching

• Note: Some plants are more sensitive than others to this condition

http://www.nidaria.com/Nidaria/UpLoadFiles/PGallery/9318516737.jpg
Sunburn
What to look for

• Typically occurs in summer especially early in the season when plants are still actively growing
• Can occur with variable degrees of severity on specific plants even if conditions are the same in the field.

http://aggie-horticulture.tamu.edu/publications/cucurbitproblemsolver/images/leaf/large/molybdenum.jpg

Molybdenum Deficiency
Sunburn
How to prevent

• Applying water in some way to the leaves during the heat of the day can help lessen the severity of this problem

• Impact sprinklers, misters, or even shade cloth can be used to attempt to control this problem
#9

Virus

http://www.bigpumpkins.com/DiaryImages/FullSize/137370.jpg
Virus Cause

• Virus are nonliving particles that are a piece of nucleic acid wrapped in a protein shell (capsid)
• In short they alter the expression of DNA in the plant cells
**Virus**

**What to look for**

- Can produce two different looks
  1.) normal shaped leaves but mottled coloration
  2.) distorted leaves that often also have irregular coloration

- Also lead to malformed fruits and poor fruit sets
Virus
How to prevent

• There is no cure
• Prevention of the insect vectors (ex. Aphids) is important

http://www.daylilies.org/ahs_dictionary/PestPics/Aphids.gif
http://upload.wikimedia.org/wikipedia/commons/thumb/2/20/Acyrthosiphon_pisum_%28pea_aphid%29-PLoS.jpg/220px-Acyrthosiphon_pisum_%28pea_aphid%29-PLoS.jpg
#8

Gummy Stem
Gummy Stem Cause

• A plant that has powdery mildew can predispose it to gummy stem

• Needs moisture to germinate

• Optimum temperature is 16-24°C (61-75°F)
  – Low night time temperatures may result in water droplets excreted from leaves to provide moisture
Gummy Stem
What to look for

- Look beyond the stems
- Small brown lesion will expand
- If holes in leaves develop as the necrotic lesions develop
- (Powdery Mildew)
Gummy Stem
How to prevent

• Prevention of powdery mildew
#7
#7

Yellow Vine Disease
Yellow Vine Disease

Cause

- Bacterial disease
- Spread by squash bugs
- New disease (increasing problem)
Yellow Vine Disease

What to look for

• Yelllowing of leaves that spreads through entire plant
• May be related to pumpkin abortions in some cases
Yellow Vine Disease
How to prevent

- Can not control actual disease focus on insect vectors that can potentially carry the disease
#6

Phytophthora
Phytophthora

Cause

• Sporangium (short-lived spores) can swim in water and spread quickly.

http://phytophthora.pppmb.cals.cornell.edu/photos13.html
Phytophthora
What to look for

• Very quick acting (hours)
• Leaves become wilted and ‘burned’, but the leaf stalks remain intact
Phytophthora
How to prevent

• If seen cut and remove portion infected as soon as possible
• I have stopped the progression by this method but it is not easy.
• Plant stress can also sometime increase odds
#5

Fusarium
Fusarium Cause

• Fungus penetrates and grows within the xylem
• Wilting occurs as a result of the formation of tyloses within the xylem by the host.
  – Tyloses are ‘balloon-like’ blockages in the vessel
Fusarium
What to look for

• Brown or tan discoloration in the vines
• Tends to be more common on fields that have had cucurbits growing on them for 4+ years
• If plant is wilting inspect vines

http://www.bigpumpkins.com/DiaryImages/FullSize/70756.jpg
Fusarium
How to prevent

• Practice crop rotations when possible
• If Fusarium problems are noticed pull plants early to reduce future pressure on the site
#4

Downy Mildew
Downy Mildew
Cause

• Can germinate and infect the leaf within ONE hour!
• Can produce more inoculum within 4 days
• If temperatures rise above 30°C (85°F) during the day disease progress may slow or stop during these conditions.

**Different strains have varying virulence's and hosts ranges**

<table>
<thead>
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<th>Host Pathotype (strain)</th>
<th>Cucumber</th>
<th>Cantaloupe</th>
<th>Sweet Melon</th>
<th>Sour Melon</th>
<th>Water Melon</th>
<th>Pumpkin and Squash</th>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>6*</td>
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</tr>
</tbody>
</table>

* 6th pathotype identified in Israel in 2003
+ indicates infection and disease
- indicates no or very little disease

(modified from Compendium of Cucurbit Diseases, APS Press, St. Paul MN)
Downy Mildew
What to look for

- Occurs quickly (days) but effected by weather
  - not as fast as phytophthora and has different symptoms
- I have seen it defoliate plants in 7-10 days
Downy Mildew
How to prevent

• Not much you can do
• In the greenhouse using blue polyethylene sheets to filter light has been shown to decrease spore production
#3

Powdery Mildew
Powdery Mildew

Cause

• Fungus lives on the surface of the leaves
• After 48 hr. initial germtube produces hyphae
• **Conidia** formed after 96hr. (4 days) and first conidia are apparent soon after.
**Powdery Mildew**

**What to look for**

- **What to look for:**
- White colonies
- Random spreading appearance
- Occurs in folds of leaves where spray products may not be present

**Where to look:**

- Look in shady or covered areas
- Undersides and folds of the leaves
- Inside shade structures
Powdery Mildew
How to prevent

• Reduce direct leaf to leaf contact
  – keep up with pruning for the entire season, do not let tertiary growth take over

• 40% milk in 60% water (good for prevention if sprayed once every 7 days)
  – Any type of milk will work but whole milk will probably work the best as the increased fat may have spreader sticker qualities
#2

Excessive Nitrogen
Excessive Nitrogen

Cause

• **Tends to be a common problem with giant pumpkin growers**
• Comes with over applications of manures (which also add excessive levels of phosphorus) or composts
Excessive Nitrogen
What to look for

- Fractures in leaves
- Huge pumpkin leaves
- Plants will look “larger than life” (bloated)
- *High N can increase the odds of other diseases
Excessive Nitrogen
How to prevent

• Prevention is key
• Know what you are adding (and why)
• Know the amount (volume) you are adding and check your math
#1
Spray Damage
Spray Damage
Cause

• The Grower!
• Can be to forcefully applying products
• Incorrect dosage
• Wrong time of day
• Product interactions
Spray Damage
What to look for

- “Patterned” damage

Looking into the garden

Looking out of the garden
Spray Damage
How to prevent

• Treat the plants with care when applying materials

• Read the label

• Favor slightly on the lower side of a product’s recommendation if you are using it for the first time

• Be extra cautious if tank mixing more than two or three ingredients at one time
My field over the 2011 season
Thank You
check out
www.Team-Pumpkin.org