

# Foliar Problems of Giant Pumpkin Plants

Compiled with the help of the growing community to provide the pictures presented.

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*Updated Summer of 2011*

# 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
- Control products are only listed as a suggestion and you should always read the label and consult your local area rules & regulations to make sure you are in compliance with the law with any product you use.

# Notes:

- I want to thank the growing community for submitting pictures and if anyone has more they think fit I would like to see them
- Special thanks to Ken D. at [bigpumpkins.com](http://bigpumpkins.com) for not only providing the resource but allowing me to post this
- Many, many hours were spent putting this together and I am sure improvements can still be made so I welcome growers suggestions and new submissions
- This is the first guide focused just on Giant Pumpkins that I know of as I want to try and help the community out as often during the summer time I am unable to reply to all the e-mails with-in 24-hr. which for some problems is needed.

# Normal

The healthy or normal looking plant pictures are rarely shown for comparison

## **How a pumpkin plant should look**



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# Alternaria



# Altiwearia description

- Brown circular lesions are the identifying factor to this disease

# Altiwearia control

- Removing crop residues
- Chlorothalonil



**Powdery mildew:** that has been sprayed with incomplete coverage of fungicide



# Powdery Mildew description

- If you look closely at this leaf I can tell that powdery mildew control products have been applied as the disease has distinctive margins
- Since this fungus lives on the surface of the leaves there should be a random spreading appearance if it was left untreated
- Probably the reason for this condition is simply uneven spray coverage of the leaf surface.
- Typically occurs in a fold or on a leaf that is behind another one

# Powdery Mildew

## control

- 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
- Kelp is not the best preventer but it can help reduce some powdery mildew, so it is a good tank mix
- Bravo<sup>®</sup>
- Rally<sup>®</sup>
- Pristine<sup>®</sup>
- \*Note: rotations are important

**Advanced disease:** probably many secondary infections going on



# Advanced disease description

- Hard to provide an accurate diagnosis because there are probably multiple diseases active with some being a secondary infection

# Advanced disease control

- Prevent early diseases and keep an careful eye during the season. Watch for not only diseases but excessive nitrogen signs

# Excessive Nitrogen

picture #1



# Excessive Nitrogen

picture #2





# Excessive Nitrogen

**bloated look**



# Excessive Nitrogen

## description part 1

- \*Tends to be a more common problem with giant pumpkin growers
- Over additions of compost or manures can increase the odds of this problem
- Indicating factor is 'larger than life' leaves
- Splits, fractures, or cracks in the leaves or leaf stalks are more likely to occur under these types of conditions
- High Nitrogen can predispose plant to other infections

# Excessive Nitrogen

## description part 2

- Over fertilizing or over adding compost (or manures) can result in plant bloating due to an excess of Nitrogen.
- This 'fat' state can also predispose the plants to other diseases and result in brittle vines and poor pollination rates
- Increased leaf size and height are also potential indicators to this problem

# Excessive Nitrogen control

- Grower induced problem, favor on the low side. It is easy to add and does not take long to be used by the plant, so it is often over done

# Early Gummy Stem Infection



# Early Sign of Gummy Stem



# Advancing Gummy Stem



# Gummy Stem





# Gummy Stem Blight



# Gummy Stem Blight



# Gummy Stem Blight



# Gummy Stem Blight

## description

- Does not just infect the stems!
- Initially small brown lesions occur that expand
- Indicating factors are the holes in the leaves once the brown necrotic lesions reach a certain stage of development
- Early infection with Powdery Mildew can increase the odds for Gummy Stem Blight development

# Gummy Stem Blight control

- Prevent Powdery mildew!
- Bravo<sup>®</sup>

# Early stages of gummy stem?



pic2



# **Powdery mildew (also can increase odds of Gummy Stem)**





**Virus**- While the shape of these leaves remains normal the color is lighter than normal and there are dark green pustules indicating the problem as viral.



# Virus



# Viral infections description

- Typically the normal plant behavior will be altered in some way, such as...
  - Leaf puckering
  - Abnormal leaf shapes or colors
  - Malformed fruits
  - Poor fruit sets

# Virus

## Prevention

- There is no cure!
- Prevent insect vectors (ex. Aphids)

# Insect damage



# Insect damage

## Description

- Typically feeding Cucumber beetles
- Will occur mainly on green otherwise healthy looking leaves and will not leave any brown or yellow margins
- Can be seen in small concentrated areas
- May be more likely to occur on new growth

# Insect Damage

## Control/prevention

- This can occur even if you do not 'see' the insects
- Inspect plants ~2hr. after sunset as this is when Cucumber beetles will typically hatch, use a flashlight to inspect leaves
- If beetles are found to be at high levels apply control products in the evening to increase their contact with the target insect and lessen the potential exposure to beneficial insects

# Insect Damage

## Control/prevention (continued)

- Trap plants (plants planted on the perimeter of the patch to act as your first sign or indicator plants)
- Giant pumpkins are NOT #1 on the menu, Hubbard Squash, Cinderella and Lumina field pumpkins are preferred so the beetles will favor this species



# Sunburn / Sunscald



# Sunburn / Sunscald

## Description

- 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.

# Sunburn / Sunscald

## Control/Prevention

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

# Yellow Vine Disease confirmed case



# Yellow Vine Disease confirmed case



# Yellow Vine Disease



# Yellow vine (bacterial) spread by squash bugs



# Yellow Vine Disease?

(could also be downy mildew)





# Yellow Vine Disease?



# Yellow Vine Disease + Cucumber Beetle damage



# Yellow Vine Disease

## Description

- This is a fairly new disease but seems to be showing up in more than one or two locations in giant pumpkin patches
- It is a bacterial disease that is spread by Squash bugs so controlling the insect vector is important

# Yellow Vine Disease

## Prevention/Control

- Monitor and control Squash Bug populations
- I have noticed that this can at least seem to originate at the site of a recently aborted pumpkin. I do not think there is a connection but recently aborted pumpkins should be promptly removed from the vine.

# Confirmed Fusarium, but looks very similar to a Mn deficiency



# Mn (Manganese) Deficiency

## description

- Can only be confirmed with a tissue test
- Consistent dark green leaf veins with a lighter green/yellow appearance to the rest of the leaf favors this deficiency

# Mn (Manganese) Deficiency prevention

- Tissue test will confirm if this is the problem which is suggested if you see similar symptoms to what is pictured here
- Mn Sulfate applied foliar and as a drench should help reduce this problem

# Aphids





# Aphids (pic2)



# Aphid damage

- Leaves can have a lighter green appearance
- May notice actual insects on the upper side but there will likely be a higher concentration on the underside

# Aphid Damage

## control/prevention

- Monitoring for insects is important as early detection is a must
- Aphids vector many other diseases so there is a greater risk than just insect damage
- I have noticed that an increase in the local lady bug population can be an indication that aphid numbers are on the rise
- Also, bees may favor hanging around areas where aphids are present in the later part of the day (not sure why but a pattern I have noticed)
- Step up viral disease scouting

# Potassium (K) Deficiency

8/22/10



# Potassium (K) Deficiency



# Potassium (K) Deficiency pic2



# K (potassium) Deficiency

## Description

- Indicated by the browning of the leaf margins
- Can progress inward and tends to occur first on the older leaves and move down the vine
- Tissue and soil tests are highly recommended to confirm potential cases
- Becomes a greater concern later in the season (mid/late August to harvest)

# K (potassium) Deficiency

## Prevention

- Take repeated in-season soil and tissue test and apply potassium if needed
- Note: Sulfate of potash (0-0-50) is preferred due to its reduced salt content over Mutate of potash (0-0-61) when applied to the soil
- Foliar sprays can have a basic pH which I have not found to be a problem but worth noting



No fungal pathogens, lab was stumped  
**My diagnosis: spray injury or salt damage or  
neem oil burn**



# **My diagnosis: spray injury or salt damage or neem oil burn (pic2)**



# Spray Damage

- While the main cause here looks like spray damage I feel there are a few other things going on in the background
- The lesions are tan and smooth which does not fit the look of a disease very well
- There may also be some background Mn deficiency and possible even a little downy mildew
- What leads me to think spray damage is that there is a noticeable streak of something running down the leaf stalk originating at the funnel point of the leaf

**Spray damage**- Notice how only the top half of the leaf is 'infected'. This tells me what direction the spray products have been mainly applied



**Spray damage-** green leaf veins indicate a non-systemic problem



**Spray damage-** Area where the leaf was folded over remained green as it was not exposed to the pesticide applications



# Spray Damage

- Most common 'problem' I diagnose for the Giant Pumpkin group in general
- Treat the plants with care when applying materials
- Read the label
- Favor slightly on the lower side of a products recommendation if you are using it for the first time
- Be extra cautions if tank mixing more than two or three ingredients at one time

# Downy Mildew progression (my diagnosis)

## Stage 1





# Downy Mildew progression (my diagnosis)

## Stage 2



# Downy Mildew progression (my diagnosis)

## Stage 3



Patch picture- **Downy Mildew** can quickly spread and defoliate the entire plant in a short period of time



# Downy Mildew

- Downy can throw some different looks and there are different strains so it is not a textbook disease to identify
- The progression included here is for an aggressive form that can kill the entire plant in about a week.
- **Note**: While this maybe a quick acting disease it behaves very differently than a phytophthora

# Downy Mildew

- Aliette<sup>®</sup> does help
- Tanos<sup>®</sup>
- Presidio<sup>®</sup>
- Can be quick acting and spreading so try and catch the symptoms early and apply one product. If after ~4 days there is no change in the progression apply another product with a different mode of action. DM has different species and we can never be sure which exact strain is 'the one' when it first arrives.

# Phytophthora (progresses very quickly)



**Phytophthora** Pic2- notice the simultaneous wilt / burn of the leaf but the stalks remain 'normal' looking



**Phytophthora**- originating at the initial planting site and spreading down the main vine (in this case)





## Phytophthora-

Main vine was cut at the pumpkin and the spread was halted and the pumpkin continued to grow (slowly)



# Phytophthora

- Very quick acting disease that can spread with-in hours / over night to a large portion of the plant
- Leaves will go from normal looking to wilting to brown and dead with-in only 24-hr.

# Phytophthora

## Control / Prevention

- I have stopped the progression of this disease by removing vines that have become infected immediately
- Following the removal of the infected areas I will typically follow-up with a spray of Alliette<sup>®</sup> if my rotations allow it (I would also consider Previcure Flex<sup>®</sup>, and Presidio<sup>®</sup>, but these are more restricted and as a result can be harder to find and more expensive)
- This disease can also be stress induced, as the odds are greater on your more aggressively growing pumpkin plants. I have also found remove the stress (the pumpkin) and the disease will stop.
  - Clearly this is not a common option but if you want to reduce the potential spread to another plant this should be considered, and it does offer some insight into the behavior of this disease.

# Phytophthora

- Very quick acting leaves can go from normal to wilted and 'burned' in 12-24hr.
- You must be aggressive, cut the portion out that is infected and remove from site
- More than just the visually infected area should be removed to attempt to limit the spread of the disease
- Aliette ®
- Presidio ® + Bravo ®
- Prevecure Flex ® + Bravo ®

# Verticillium Wilt?



# Verticilium Wilt

- While I have not hear of Verticilium wilt in giant pumpkins very often this pictures does show lessions that best fit the Verticilium description
- Wilt is not required for this disease
- Vascualar streaking may occur if the vines are inspected

# Verticilium Wilt

- Tends not to be a big problem in giant pumpkins
- General contact and systemic should help further reduce this potential problem
- Bravo<sup>®</sup> (contact) + Topsin M<sup>®</sup> (systemic) are good products to start with.

**Downy and Powdery-** While both diseases are distinctly separate they can occur at the same time





**Down Mildew-** Early signs of what downy looks like. The yellow splotches are the indicating factor. Centers of the yellow areas may become brown as disease progresses.



# Ozone damage

## Stage 1



# Ozone damage

## Stage 2



# Ozone damage

## Stage 3



# Ozone damage

- Not much you can do, just realize what it is so you do not drive yourself crazy.
  - Can look like a Mn deficiency and will occur in a regional area at the same time with symptoms only showing up on leaves at a particular stage of development. (Only a select few leaves will show symptoms.) Tends not to spread or change over time.

# General Plant stress

Can be induced due to many factors such as poor nutrition, poor soil structure with additional disease issues. Key part is recognize potential problems early and avoid this stage.



# Comparisons

I decided to include some side-by-side comparisons of some common problems that look similar and are often confused with one another.

- Ozone vs Spray damage
- Insect damage vs gummy stem blight
- Spray damage vs early gummy stem
- Alternaria vs downy mildew

# Ozone vs Spray damage

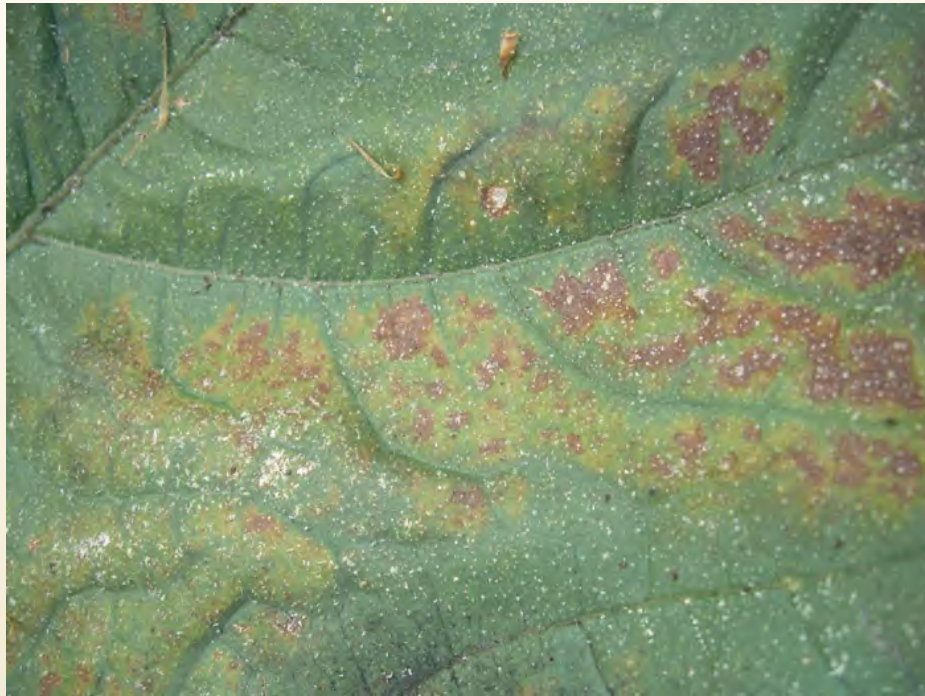




# Insect damage vs Gummy stem blight



# Spray damage vs Early gummy stem



# Alternaria vs Downy Mildew



# END

- Hope you found this useful and was just looking and not diagnosing;-)
- Think you have a better picture of a disease or have a new disease pass it along to me so I can update this guide.
- Comments welcome.
- Good luck in the patch!
- Matt D.

