Foliar Problems of Giant Pumpkin Plants

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

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Expertise of Matthew DeBacco

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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 as more they think fit I would like to see them
• Special thanks to Ken D. at 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
Altinearia

description

• Brown circular lesions are the identifying factor to this disease
Altinearia 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®
• Rally ®
• Pristine ®

• *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 lesion occur that expand
• Indicating factor 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 ®
Early stages of gummy stem?
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 fist 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)

http://www.bigpumpkins.com/DiaryImages/FullSize/116788.jpg
Yellow Vine Disease?
Yellow Vine Disease + Cucumber Beatle 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 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
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 ® does help
- Tanos ®
- Presidio ®
- 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)
Phytophtora-
Main vine was cut at the pumpkin and the spread was halted and the pumpkin continued to grow (slowly)

http://www.bigpumpkins.com/DiaryImages/FullSize/99688.jpg
Phytophthora

• Very quick acting disease that can spread within hours / over night to a large portion of the plant

• Leaves will go from normal looking to wilting to brown and dead within only 24-hr.
Phytophthora
Control / Prevention

• I have stopped the progression of this disease by removing vines at have become infected immediately

• Following the removal of the infected areas I will typically follow-up with a spray of Alliette ® if my rotations allow it (I would also consider Previcure Flex ®, and Presidio ®, 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.
Phytophtora

• Very quick acting leaves can go from normal to wilted and ‘burned’ in 12-24 hr.
• 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 ®
Verticilum 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
Verticilum Wilt

• Tends not to be a big problem in giant pumpkins
• General contact and systemic should help further reduce this potential problem
• Bravo ® (contact) + Topsin M ® (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 defficiency 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
• 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.