New and spreading vegetable diseases

Claudia Nischwitz

Assistant Professor and Extension Specialist

Email: claudia.nischwitz@usu.edu

UtahStateUniversity
COOPERATIVE EXTENSION

New or spreading diseases

- Tomato spotted wilt virus
- *Candidatus* Liberibacter solanacearum
- Potato virus Y
- Alfalfa mosaic virus
- Tobacco streak virus
- *Embellisia* skin blotch on garlic
- Russet mites on tomato

Tomato spotted wilt virus


http://www.caes.uga.edu/topics/diseases/tswv/index.html

- TSWV is an important pathogens of tomato, pepper, tobacco and peanut in the U.S.
- The virus is transmitted by thrips
- Thrips have to acquire the virus as larvae to be able to transmit it as adults. Once larvae are infected, thrips carry and transmit the virus throughout their entire lifespan

Tomato spotted wilt virus


http://www.caes.uga.edu/topics/diseases/tswv/index.html

- TSWV is not seedborne
- Plants get infected early in the season
- Symptoms:
  - Necrotic spots on leaves
  - Stunting of plants
  - Necrotic rings on immature fruit
  - Chlorotic ringspots on mature fruit

Tomato spotted wilt virus

Tomato spotted wilt virus

Tomato spotted wilt virus


http://www.caes.uga.edu/topics/diseases/tswv/index.html

- Management:
  - Resistant tomato varieties (Finish Line, Fletcher, Crista, Red Defender, BHN 602 and Picus)
  - No resistant pepper varieties
  - Reflective mulch
  - Insecticides (potential resistance problems)

Candidatus Liberibacter solanacearum

- Most important on potatoes (Zebra chip disease)
- Occurs on tomatoes and peppers in Utah
- Caused by a non-culturable bacterium Candidatus *Liberibacter solanacearum*
- Transmitted by potato psyllid

Liberibacter - symptoms

- Potato plants: red and yellow discoloration of leaves – very similar to nutrient deficiency
- Tomato: light green to yellow discoloration of foliage
- Pepper: light green to yellow leaves, plants are stunted, small fruit

Zebra chip - Liberibacter

Liberibacter - Pepper

Liberibacter - Tomato

Liberibacter and psyllid distribution

- Davis county
- Carbon county
- Washington county
- Cache county (psyllids only)

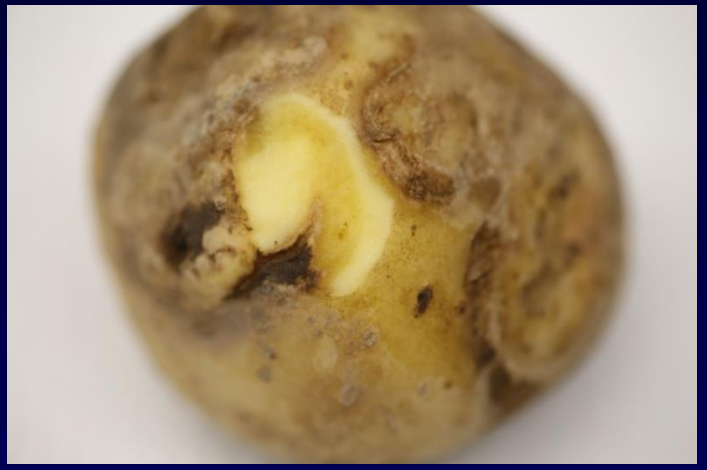
Liberibacter - management

- Scouting for potato psyllids
- Controlling psyllids with imidacloprid starting early in the season
- Good weed management
- Once a plant is infected there is no cure

Potato virus Y - Potato

- Three strains: PVY^{O}, PVY^{N}, PVY^{NTN}
- PVY^{O} cause mosaic symptom on leaves, no tuber symptoms
- PVY^{N} cause necrotic lesions on leaves, no tuber symptoms
- PVY^{NTN} cause necrotic lesions on leaves, and ring spots on tubers that extend into flesh (Yukon Gold very susceptible to tuber necrosis)

Potato virus Y - Potato



Potato virus Y - Potato

- Transmitted by aphids and equipment
- Main spread and introduction to fields: infected seed pieces
- Management:
  - Certified seed pieces (best option but no guarantee)
  - Remove infected plants from field

Alfalfa mosaic virus

- Hosts: Potato, tomato, pepper

Alfalfa mosaic virus

- Transmitted by aphids
- Symptoms:
  - Calico pattern on leaves of tomatoes and peppers
  - Yellow mosaic on potato. Some strains cause stunted plants and tuber necrosis.
- Management:
  - Avoid planting potatoes, peppers and tomatoes near alfalfa

Tobacco streak virus

- Summer squash
- 2nd report in the country
- Other hosts: cowpea, beans, asparagus, tomato, white sweet clover
- Transmission: Pollen spread by thrips???
- Symptoms:
  - Stunting of plants
  - Reduced yield

Tobacco streak virus

Shouan Zhang, UF/IFAS

Tobacco streak virus

- Management:
  - Good weed control

Embellisia skin blotch

- Host: Garlic
- Fungus (*Embellisia allii*) survives in soil, plant debris or infected bulbs
- Symptoms:
  - Dark gray – black spots on outer skin layer of garlic bulb
  - Most of the time symptoms are only superficial, not affecting market value

Embellisia skin blotch on garlic

Bruce Watt, University of Maine, Bugwood.org

Photo by S. Johnson

Embellisia skin blotch

- Prefers temperatures of 78-84F
- Moist soils with manure applications increase disease development
- Management:
  - Red garlic cultivars less susceptible than white ones
  - Remove outer skin of bulb
  - Keep garlic dry in storage

Russet mites on tomato

- Eriophyid mites
- Need a strong hand lens or dissecting microscope to see them
- Cream to pale orange colored

www.omafra.gov.on.ca

Russet mites on tomato

- Other hosts: Potato and pepper but usually not a problem on those hosts
- Symptoms:
  - Bronze discoloration of leaves and stems (russeting)
  - Severe infestations, stems will lose their hairs
  - Fruit: russeting and cracking od fruit, uneven ripening
  - Plants will die from severe infections

Russet mites on tomato

www.growingproduce.com

Russet mites on tomato

- Management:
  - Applications of sulfur or Abamectin
  - Remove alternate weed host like nightshade and morning glory

Plant diseases can be bought at the grocery store.