Achala KC and Gary Vallad
FPA Grower’s Meeting
Wimauma, FL
03/04/2016

Pomegranate Diseases:
What do we know and where are we heading?
Contents

• Major diseases of pomegranate in Florida
  • Anthracnose (*Colletotrichum* sp.)
  • Shoot blight and stem canker (*Botryosphaeriaceae*)

• Disease management

• Research plans for 2016
Anthracnose
What is Anthracnose?

- General term used to describe diseases that result in a wide range of symptoms
- Leaf spots, blotches or distortion, defoliation, shoot blight, twig cankers and dieback
- Infects many deciduous and evergreen trees and shrubs, fruits, vegetables, various legumes, and turf grass
- Caused by different fungal pathogen
  - in pomegranate, caused by *Colletotrichum* sp.
Anthracnose on Peach
Colletotrichum acutatum and Colletotrichum gloeosporioides

• Disease cycle
The fungus overwinters on mummified fruit and in cracks and crevices in the bark. The fungus can also overwinter on other host species near the orchard.

Anthracnose is spread by the dispersal of fungal spores that occurs by splashing rain. Warm, moist weather favors disease development (75–86°F). Once young peach fruit are infected, the fungus grows through the fruit and into the phloem of the twig. The infected twig remains alive throughout the winter and dies in the spring. Once the twig dies, the fungus sporulates on the surface of the twig.

• Disease management
Orchard floor and orchard perimeter management that eliminates leguminous hosts and wild Prunus species should be practiced to prevent the spread of disease.

• PennState Extension
Disease cycle
Overwintering on the ground, within infected buds, the bark of twigs, and branch cankers
• With favorable environmental conditions, the overwintering fungi sporulate and the spores are spread by wind and splashing rains to newly emerging leaves where infection begins
• From infected leaves, the fungus grows into the veins, through the petioles, and into the stem where it overwinters

Disease management
• Sanitation, the removal and destruction of fallen leaves (a spore overwintering site and the source of some spores for early spring infections), reduces the potential for infection.
• Infected twigs and branch cankers, a source of spores, should be pruned out.
• All diseased plant parts should be buried, burned, or removed from the site to prevent reinfection.

University of Illinois Extension
Anthracnose disease cycle
Example corn stalk rot

Anthracnose of pomegranate
Colletotrichum sp.
Anthracnose of pomegranate

*Colletotrichum* sp.
Anthracnose of pomegranate

Colletotrichum sp.
Anthracnose disease cycle on pomegranate
Disease management

• Cultural practices
  • Orchard floor and orchard perimeter management that eliminates other hosts should be practiced to prevent the spread of disease.
  • Sanitation, the removal and destruction of fallen leaves (a spore overwintering site and the source of some spores for early spring infections), reduces the potential for infection.
  • Infected twigs and branch cankers, a source of spores, should be pruned out.
  • All diseased plant parts should be buried, burned, or removed from the site to prevent reinfection.

• Use of resistant varieties

• Use of fungicides
Botryosphaeriaceae
Botryosphaeria stem canker/dieback

- Caused by different species of Botryosphaeriaceae
- Species-rich family that includes number of pathogen species occurring worldwide on a vast number of annual and perennial hosts
- Causes cankers, dieback, leafspots, fruit rot, and eventually death of many economically important woody perennial crops
  - Washington State University Extension
- In pomegranate, causes shoot blight, stem canker and fruit rot
  - Caused by *Neofusicoccum parvum* and *Lasiodiplodia* sp.
Symptoms: Bytryosphaeria canker
Symptoms: Bytryosphaeria shoot blight
Typical life cycle of canker fungi

http://nysipm.cornell.edu/factsheets/treefruit/diseases/pc/pc_cycle.gif
Disease management

• Cultural practices
  • Moisture control
  • Pruning in dry weather
  • Cuts should be made at an angle to allow water to drain from wood surfaces
  • Prune early in the season when spore production is low or late in the season when wounds are less susceptible and heal more rapidly
  • Prevent or reduce wounding, including sunscald and winter injury to trunks
  • Sanitation- pruning tools, weed control, remove dead material
  • Improve vigor

• Use of resistant varieties

• Use of fungicides

• www.nwgc.org

• Washington State University Extension
Disease management

Example Botryosphaeria die back on grapes

Infected trunks are cut off and removed

Remove infected wood from the vineyard to avoid the risk of re-infection

Infected branches have been removed and new ones are trained

Infected branches have been removed and new water shoots are trained up

2016 Research Plan
2016 Research plan

• Fungicide efficacy trial
  • Rotation and frequency of application
    • Merivon (Fluxapyroxad + Pyraclostrobin)
    • Luna Experience (Fluopyram + Tebuconazole)
    • Penncozeb

• Screening for disease resistance

• Spore release and dispersal

• Pathogen survival in Leaf litters, fruit residue, and plant debris
2016 Research plan

- Sampling flower buds and fruits
- Labels
  - Location
  - Variety
  - Date of collection
  - Contact information
Acknowledgment

• Dr. William Castle
• Cindy Weinstein
• McTeer Farms - Haines City, FL
• Cee Bee’s Citrus - Odessa, FL
• Sutherland’s Pomegranate Field - Plant City, FL
• Florida Pomegranate Association
• FDACS Specialty Crop Block Grant Program
• GCREC Staff and Team Vallad
Thank You