ORCHID PESTS & DISEASES
Part 2

Fungus, Bacteria, Virus, Other Damage

VAOS Growers Clinic Presentation
Outline & Objectives

• Recognize difference between:
  – Bacterial Disease
  – Fungal Disease
  – Virus
  – Other damage (heat stress, physical, cold, sunburn, nutritional)

• Focus on new growers & growers with small collections

• Focus on prevention, good culture and readily available treatments
The Good News

• Most fungus, bacterial and virus infections can be prevented through good culture

• Many types of fungus. You don’t need to know what kind of fungus, only differentiate it from bacterial and virus.

• Why? All fungal infections are treated with Fungicides
Prevention & Treatment

• 1\textsuperscript{st} line of defense: Healthy Plants
• 2\textsuperscript{nd} line of defense: Good Culture
• 3\textsuperscript{rd} line of defense: Readily available products (Cinnamon, Hydrogen peroxide, Physan, Neem oil)
• 4\textsuperscript{th} line of defense: Contact & systemic Fungicides & Bactericides
Healthy Plants & Good Culture

• Healthy plants resist disease
• Unhealthy plants attract more problems
• Most fungal/bacterial infections can be avoided by:

Maintaining good culture habits
Maintain Good Culture Habits

• Proper watering – dry out plants
• Good air circulation
• Plant spacing
• Fresh, fast draining open media
• Frequent plant inspection
• Clean growing area (free of debris, disinfected)
• Sterilize cutting tools, pots, wire products
Maintain Good Culture Habits

- Fertilizer & supplement – promote strong, healthy growth
- Isolate new plants
- Discard sickly plants
Treatment Protocol

• 1\textsuperscript{st} – Remove infected tissue with sterile tool
• 2\textsuperscript{nd} – Spray/drench with fungicide/bactericide
• 3\textsuperscript{rd} – Disinfect growing area
• 4\textsuperscript{th} – Treat nearby plants
• 5\textsuperscript{th} – Monitor recovery in “sick bay”
Preventative Treatment

• Preventative spraying for fungal/bacterial infection is effective
  (Preventative pesticide spraying is not recommended)
• Fungicides prevent disease – don’t cure
• Disinfect growing area on regular basis
  – SA -20 (Physan)
  – 10% Clorox bleach solution - 1 part Clorox + 9 parts Water
• Remove spent flowers, dead leaves
• Dust open wounds with cinnamon or fungicide spray when repotting
• SA-20 (Physan) preventative spraying monthly (RF Orchids, Bill Byrd, Carol Wood)
• Banrot drench repotted plants (Sue Bottom)
• Banrot preventative spraying May – Sept (Dr. Motes)
Fungicide/Bactericide/Algaecide

Physan 20

SA-20 Disinfectant
Fungicides

Neem Oil

Safer 3 in 1 fungicide
Bacterial Infection Treatment

Hydrogen peroxide

Cinnamon
Systemic, Combo Fungicide

Banrot 40 wp

Benefits

• Systemic combo
• Cleary’s 3336 wp + Truban
• Leaf AND root fungicide
• Black rot
• Fusarium
• Root rot
• Leaf and flower blights
• Drench plant. Use caution
Bacterial Infections

- Soft, brown rots & spots
- Favor wet, warm conditions
- Watery, foul smelling, mushy
- Easily spread/highly contagious by splashing water
- Water soaked appearance
- Sometime sunken, yellow halo
- May – September – hot Florida
Erwinia on Phal
Bacterial Brown Spot
Bacterial Infection Treatment Options

• Hydrogen peroxide
  – Keep spray bottle in your arsenal
  – Spray or pour on plant
• SA-20 or Physan 20 Disinfectant
  – Keep spray bottle in your arsenal
  – Preventative spraying
  – Spray plants and growing area
Black Rot (Pythium)

- Fast moving black rot
- Immediate action required – will kill plant
- Problem during hot humid weather
- Allow plants to dry out
- Consider destroying plant if badly infected
- Cut away infected tissue
- Treat with hydrogen peroxide, Banrot
- Preventative fungicide spraying helpful
Black Rot
Fungal Disease – Roots and Pseudo bulbs

- Fusarium Wilt
- Root Rot
- Slower moving than bacterial infections
- Cut away infected tissue
  - Cut 2+ inches into healthy tissue
- Drench plant with fungicide to prevent spreading
Fungal Disease - Fusarium Wilt

- Symptoms: Dehydrated, desiccated plant
- Shriveled, wilted leaves
- Reddish/purple discoloration - cut rhizome – purple ring. Keep cutting til healthy tissue
- Difficult to eliminate
- Aggressive – slow, agonizing death to plant
- Spread by unsterilized tools and pots
Fusarium Wilt
Fungal Disease – Root Rot

- Old potting mix
- Poor drainage
- Salt buildup/over fert.
- Contagious, rapid death
- Leaves & p-bulbs yellow, shriveled, thin, twisted
- Brown rot on roots

- Repot
- Cut out infected parts
- Drench with fungicide
- Keep potting media fresh
Fungal Disease – Leaf Spotting

• Unsightly but not fatal
• Wet, warm weather
• Symptoms:
  – Brown leaf tips
  – Heavily spotted leaves
  – Dark purple elongated lesions
  – Sunken, yellow lesions
• See St. Augustine Orchid Society website – extensive examples
• Treatment: Remove infected leaves, spray with fungicide
• Good sanitation and preventative fungicide sprays
Fungal Disease – Leaf Spotting
Fungal Disease – Botrytis

- Symptoms: small, black specks on flowers
- Common infection
- Increased air circ. can eliminate
- Remove infected flowers
- SA-20 (Physan) spray
Virus

• Symptoms
  – Necrotic spots, streaks, rings in leaves
  – Color break on flower
  – No treatment
  – Spread by unsterilized tools
  – Destroy plant or isolate
  – Virus test
    • www.crittercreeklab.com
    • Agdia ImmunoStrip
Virus
Virus Prevention

• Sterilize cutting tools
• Sterilize potting surface – fresh newspaper
• Sterilize pots in 10% bleach solution
  
  10% Clorox bleach solution - 1 part Clorox + 9 parts Water

• Latex gloves or wash hands
Other Damage

- Heat Stress
- Sunburn
- Cold damage
- Physiological
- Nutritional
- Salt buildup
- Poor air quality
Other Damage

Heat Stress

Heat Stress
Other Damage

Sunburn

Physical Damage
Other Damage

Cold Damage

Cold Damage
Fertilizer Burn & Salt Buildup

- Dilute fertilizer to ¼ or ½ strength
- Water before fertilizing?
- Flush pot monthly with fresh water
Nutritional Deficiencies

• Calcium deficiency – yellow leaves, black tips on new growth (cattleyas – spring & summer)
• Magnesium deficiency – Red leaves
• Treatments:
  – Fertilizer with cal and mag
  – Epsom Salts monthly supplement (mag)
  – Calcium Nitrate supplement – alternate with Epsom Salts – ½ tsp
  – Dolomite Lime top dressing (mag & cal)
Summary

• Prevent disease by growing healthy plants and maintaining good culture habits
• Learn the difference between fungus, bacteria and virus symptoms
• Use readily available products first, harsh chemicals last resort
• Consider preventative spraying
More Information

• St. Augustine Orchid Society Website – Pests & Diseases Section
• AOS Website – Pests & Diseases Section & Home remedies
• AOS Webinars: Orchid Pests & Their Management
• You Tube
• First Rays Website (FirstRays.com) – Free info, home remedies

Prepared by Carol Wood, VAOS
Plant photos courtesy of AOS
Use caution in applying chemicals and always follow package instructions.