

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

- 1st line of defense: Healthy Plants
- 2nd line of defense: Good Culture
- 3rd line of defense: Readily available products (Cinnamon, Hydrogen peroxide, Physan, Neem oil)
- 4th 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 & supplements – promote strong, healthy growth
- Isolate new plants
- Discard sickly plants

Treatment Protocol

- 1st – Remove infected tissue with sterile tool
- 2nd – Spray/drench with fungicide/bactericide
- 3rd – Disinfect growing area
- 4th – Treat nearby plants
- 5th – 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 (Phyasan)
 - 10% Clorox bleach solution
- Remove spent flowers, dead leaves
- Dust open wounds with cinnamon or fungicide spray when repotting
- SA-20 (Phyasan) 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 Organic fungicide, miticide & insecticide



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 Phyan 20 Disinfectant
 - Keep spray bottle in your arsenal
 - Preventative spraying
 - Spray plants and growing area
- Copper sulfate products (Kocide, Junction, Phytan 35) – use extreme caution - damage to dendrobiums, flowers, sensitive orchids

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



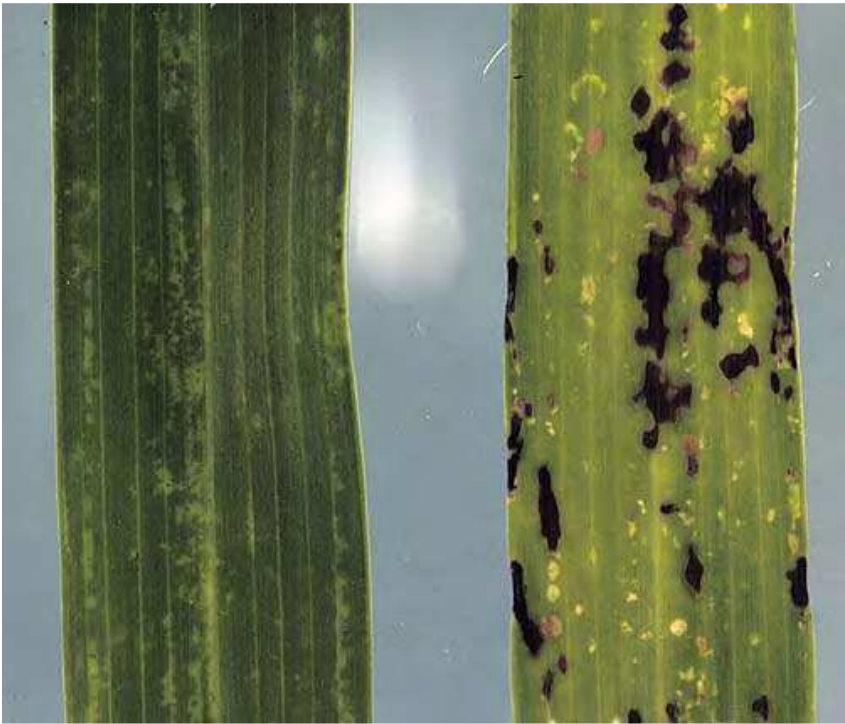
- Symptoms: small, black specks on flowers
- Common infection
- Increased air circ. can eliminate
- Remove infected flowers
- Fungicide spray

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 20% bleach solution or other method
- Latex gloves or wash hands
- Isolate suspected plants from your collection

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 $\frac{1}{4}$ or $\frac{1}{2}$ strength
- Fertilize weekly/weakly
- 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.