

Orchid Pests and Diseases

Las Cruces Orchid Society Presentation

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Plant Disorder

- Any abnormal growth or development of a plant.
- Many living and non-living factors can cause plant disorders.
- A plant disease is a disorder specifically caused by an infectious microorganism.

Causal Agents

Insects and other Pests

- Scale
- Mealybugs
- Aphids
- Cockroaches and Sowbugs
- Spider mites
- Snails and Slugs
- Millipedes

Infectious Microorganisms

- Fungi
- Bacteria
- Viruses

Physiological Disorders

- Water
- Light
- Temperature
- Nutrients
- Potting problems
- Chemical toxicity
- Poor air quality



Insects and other Pests

- Common and persistent problems.
- Often begin by bringing an infested plant into the collection.
- Exclude new plants until you are certain they are pest free.

Scale Insects

- Two types feed on orchids – hard (armored) scale and soft scale.
- Adult scale are sedentary.
- Hard scale feed under a protective, waxy covering.
- Females lay eggs under covering (up to 150 per female).
- Juveniles = Crawlers
- Produce “honeydew” and attract ants.



Soft Scale Insects

- No protective “armor.”
- May be covered by a waxy coating.
- Females lay eggs underneath themselves providing protection.
- Produce “honeydew” and attract ants.



Mealybugs

- Bodies are covered by a waxy, cottony, felt-like secretion.
- Adults retain legs and are mobile.
- Each female lays 100-200 eggs.
- Produce “honeydew” and attract ants.



Aphids

- Produce large amounts of “honeydew” and attract ants.
- Primarily a pest on the flowers.
- Do not cause serious harm to the plants, but can transmit some viruses.



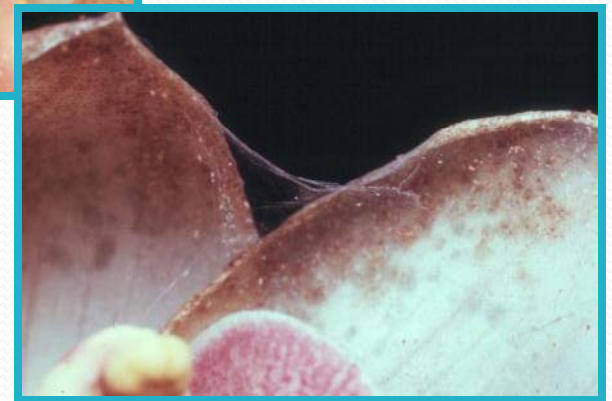
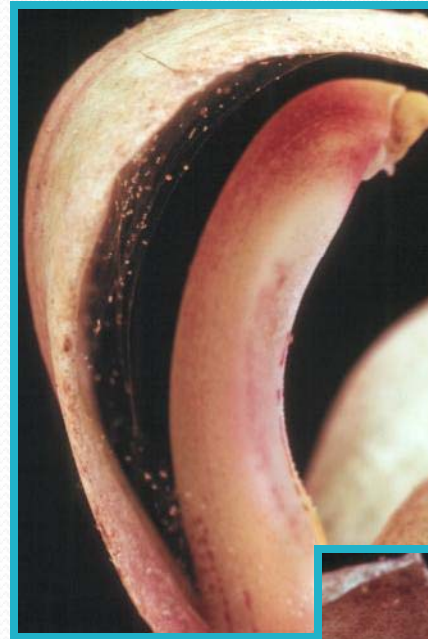
Cockroaches and Sowbugs

- Common in decaying orchid mix.
- Generally not a serious problem, but may damage flower.
- Feed on the flowers at night.



Spider Mites

- Generally a problem under hot, dry conditions.
- Generally not noticed until considerable damage has been done.
- Spin “spider-like” webs.
- Cause a slivering effect on the leaves.



Snails and Slugs

- Serious pests of buds, flowers and leaves.
- Hard to find as they are generally nocturnal.



Millipedes

- Found in decaying potting mix.
- Feed on roots.
- Favored by excess moisture (often a sign of overwatering).



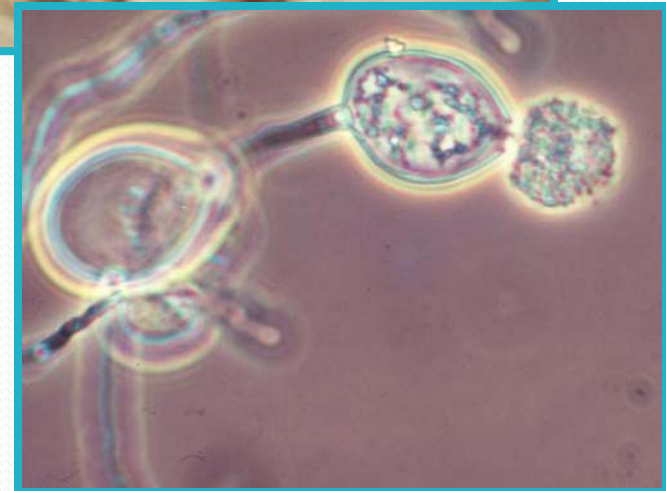


Infectious Diseases

- Encouraged by:
 - Excess moisture
 - Moisture on foliage or in leaf axils at night
 - Poor air circulation.
 - Overcrowding.
 - Poor sanitation practices.

Fungi

- Organisms that feed off of living and non-living (decaying) organic matter.
- Generally microscopic.
- Live in soil (potting medium), water, plants, and debris.
- Infect by direct penetration of the host plant.
- Local vs. systemic infection.



Fungal Root, Rhizome and Pseudobulb Rots

- Favored by excess moisture and broken down potting mix.
- Come from soil (potting mix) and water.
- Become systemic and spread quickly killing the plant.



Fungal Leaf Spots

- Leaves damaged by sunburn, cold, root loss, etc. are most likely to be attacked.
- Dark spots surrounded by yellow tissue.
- May become sunken, enlarge and/or spread.
- Generally are not systemic, but can result in serious damage (loss of foliage).



Fungal Leaf Blights



Phythphthora



Pythium

Flower spots

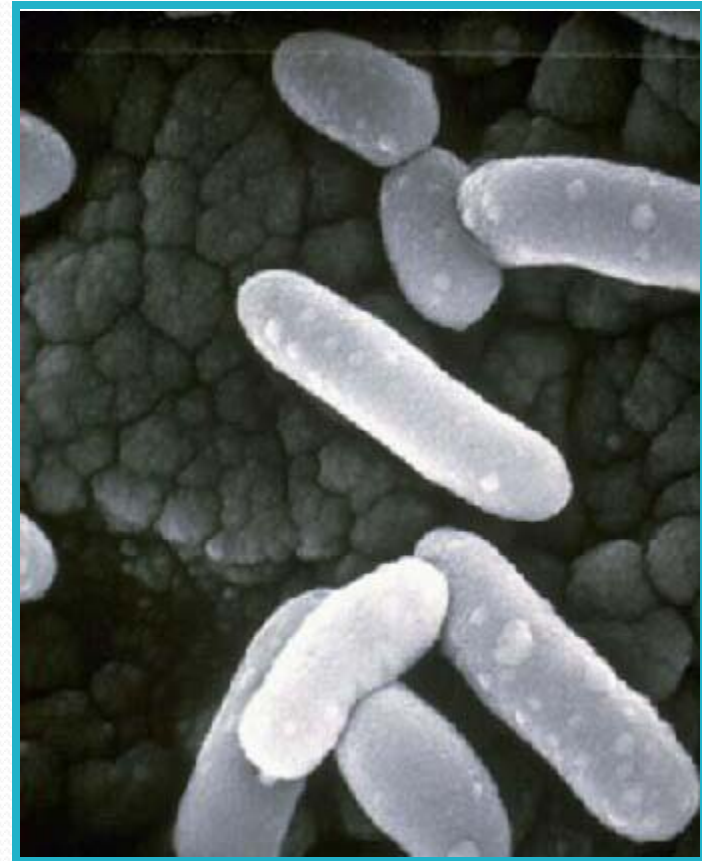
- Generally caused by fungi.
- Favored by excess moisture (low air flow).
- Do not “hurt” plant.
- Once spots appear, you can prevent spread, but can't get rid of already occurring spots.



Botrytis petal blight

Bacteria

- One-celled microorganisms.
- Feed off living and decaying organic matter.
- Generally need an opening for entry into the plant.
- Spread by water.



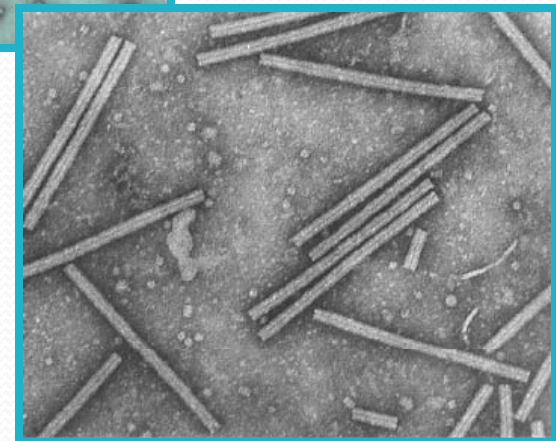
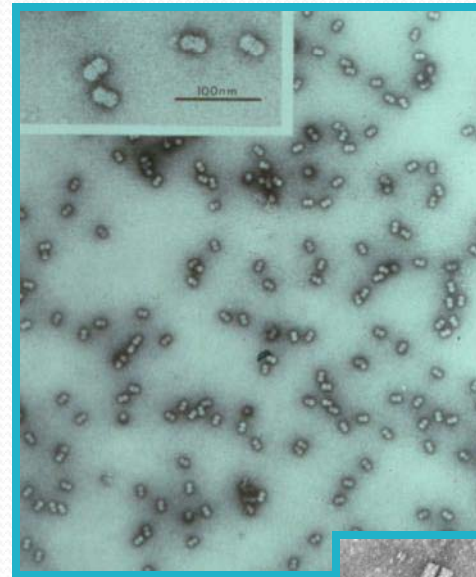
Bacterial Rot

- Favored by warm, wet conditions.
- Enter through wounds.
- Spread by splashing water.
- Dark, water-soaked lesions rapidly increase in size.
- Decayed tissue is soft and has a bad odor.



Viruses

- Extremely tiny microscopic organisms.
- Can not survive outside a living host plant – do not kill plants.
- Cause streaks in leaves and flowers – may cause leaf deformity and stunt plant or slow growth.
- Not curable!





Viruses

- Must have a wound to enter the plant – typically created by cutting tools and handling.
- Best way to reduce virus spread is to use single edge razor blades – ONCE – then dispose.
- Flame sterilization of tools is also effective.
- Dipping tools in bleach is problematic – rubbing alcohol is better, but....
- **ALWAYS** wash hands after smoking or working with a known diseased plant.

Viruses



Viruses





Disease and Pest Prevention

- Provide optimal environmental conditions.
- Provide optimal water and fertilizer.
- Purchase only pest- and disease-free plants.
- Always separate new plants (up to 6 weeks).
- Inspect plants weekly.
- Use good sanitation practices.
- Use fungicides and insecticides only when needed.

Physiological Disorders

- Water
- Light
- Temperature
- Nutrients
- Potting problems
- Chemical toxicity
- Poor air quality





Water

- Improper watering.
 - Too much.
 - Not enough.
 - Inconsistent.
- Water quality.
- Water temperature.
 - Too cold!

Quantity of Water

- Different genera require different amounts of water.
 - Some orchids require a rest period (no water) – e.g. Nobile Dendrobiums.
- Location can influence drying rate.
 - Hanging plants dry out faster.
 - Plants near the heater dry out faster.



Quantity of Water

- Potting media, pot size, and pot type affects the amount of water needed.
 - New mix (fir bark) dries out faster than old mix.
 - Media containing peat or sphagnum moss dries out slower than mix without moss.
 - Small pots dry out faster than large pots.
 - Clay pots dry out faster than plastic pots.
 - Mounted orchids dry out fastest.

Water Problems



Too Much



Not Enough



Inconsistent



Water Quality

- High soluble salts.
 - Burn roots and tips of foliage.
 - Buildup on foliage can reduce the amount of light that reaches the foliage – slows growth.
 - Clay (porous) pots absorb and hold salts.
- Hard water.
 - High concentrations of magnesium or calcium.

Water Quality Problems



Tip burn



Excessive salts



Hard water

Water Temperature

- Cold water causes cells to collapse resulting in sunken spots on the foliage.





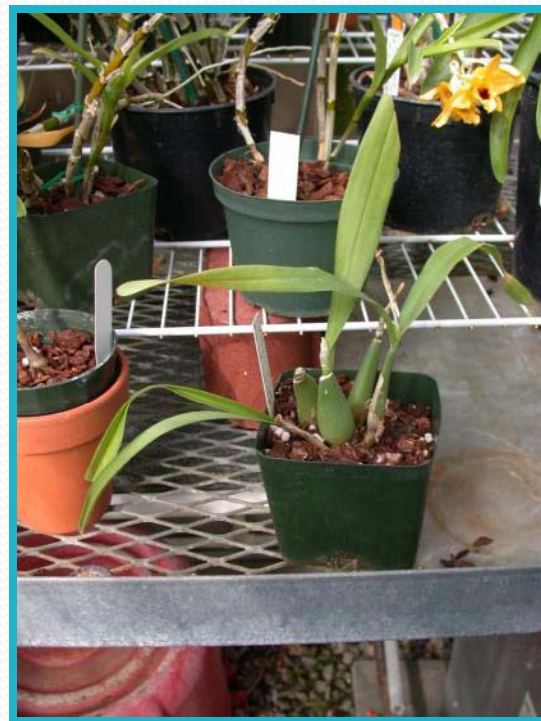
Light Problems

- Different types of orchids require different amounts of light.
- Light is the single most important factor in flowering.
- Light problems:
 - Too much light produces light green to yellow foliage and/or excessive purplish pigmentation.
 - Too much light with high heat can result in sunburned foliage.
 - Not enough light produces dark foliage, weak growth, and plants often will not flower.

Too Much Light



Not Enough Light



Temperature Problems

- Most orchids require a fluctuation in day and night temperature to flower.
- High temperature combined with insufficient moisture and high light can result in rapid desiccation of foliage and roots.
- Low temperature can cause plant cells to collapse.



Nutritional Problems

- Orchids require frequent fertilization for strong growth, good color, and good flowering.
- Some orchid mixes (bark) tend to absorb nutrients.
- Overfertilization results in excess salts and can burn foliage and roots.



Potting Problems

- Broken down potting mix – infrequent repotting.
- Overpotting.
- Improper potting selection – potting vs. mounting.
- Improper timing.



Chemical Toxicity

- Damage results from:
 - Improper concentration.
 - Improper chemical.
 - Applying when temperature is too high.
 - Use of “old” chemicals.
- Damage may be:
 - Loss of foliage.
 - Distortion of new growth.
 - Loss of chlorophyll in all or part of the leaf.
 - Necrotic or yellow spots.
 - Burning of leaf margins and/or root tips.



Poor Air Quality (Bud Blast)

- Flower buds and flowers are sensitive to ethylene in the air - ethylene problems are often related to heaters.
- Other factors that can cause bud blast:
 - Change in environment
 - Dry air
 - Genetics



Genetic Abnormalities

- Deformity caused by genetic problems is common in hybrid orchids.
- May not occur every year, or on every flower.
- Symptoms may look like viruses or physiological disorders.





“Rules of Thumb”

- Pests and diseases are inevitable.
- If leaf spots increase in size or spread from one plant to another, they are most likely caused by fungi or bacteria.
- Water-soaked spots are usually caused by fungi or bacteria.
- If in doubt, removed infected tissue, isolate and treat.
- Don't procrastinate. Act quickly.