

Diseases of Orchids in Hawaii

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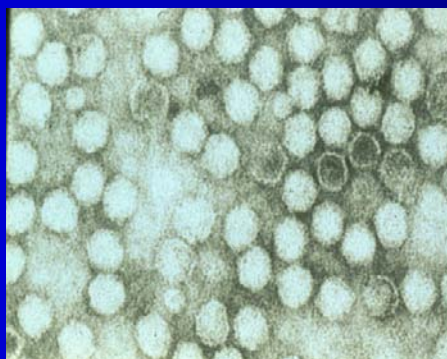
Viral Diseases

2 common viral diseases on orchids:

1) Cymbidium Mosaic Virus (CyMV)

2) [Odontoglossum ringspot virus (ORSV)] Tobacco Mosaic Virus Orchid strain TMV-O

**Electron
micrographs of
virus particles**



Cymbidium Mosaic Virus (CyMV):

Common in Hawaii; most common on orchids world wide.

The virus particle is stable.

Easily transmitted. Easily moved from one plant to another.

Many orchid hosts.

Several common symptomless hosts.

Petal streaks and spots caused by CyMV on dendrobium.



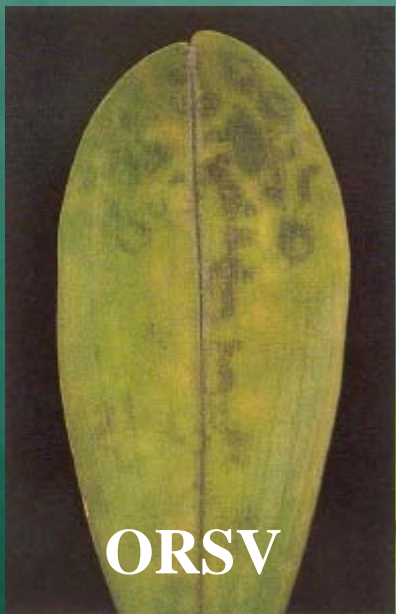
Cattleya

Necrotic flecks and streaks
over entire flower

More severe during the winter months.



ORSV



ORSV



CyMV: Circular dark spots on *Cattleya* leaves

**Vandas are symptomless hosts; all
infected with CyMV due to propagation by
cuttings.**



Viral Disease Management

Prevention and Sanitation

Only purchase plants without symptoms;

Be familiar with symptomless hosts;

Screen plant stock using ELIZA;

Keep new plants quarantined;

Discard all plants with symptoms of viral infection; or grow them in isolation.

Bacterial Diseases

2 Common Bacteria in Commercial Dendrobium fields

☑ *Erwinia chrysanthemi*

☑ *Burkholderia gladioli* pv *gladioli*

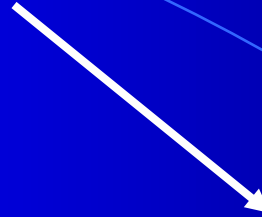
(*Pseudomonas gladioli* pv *gladioli*)

**Water soaked leaf spot;
probably started at leaf
wound (Dendrobium)**



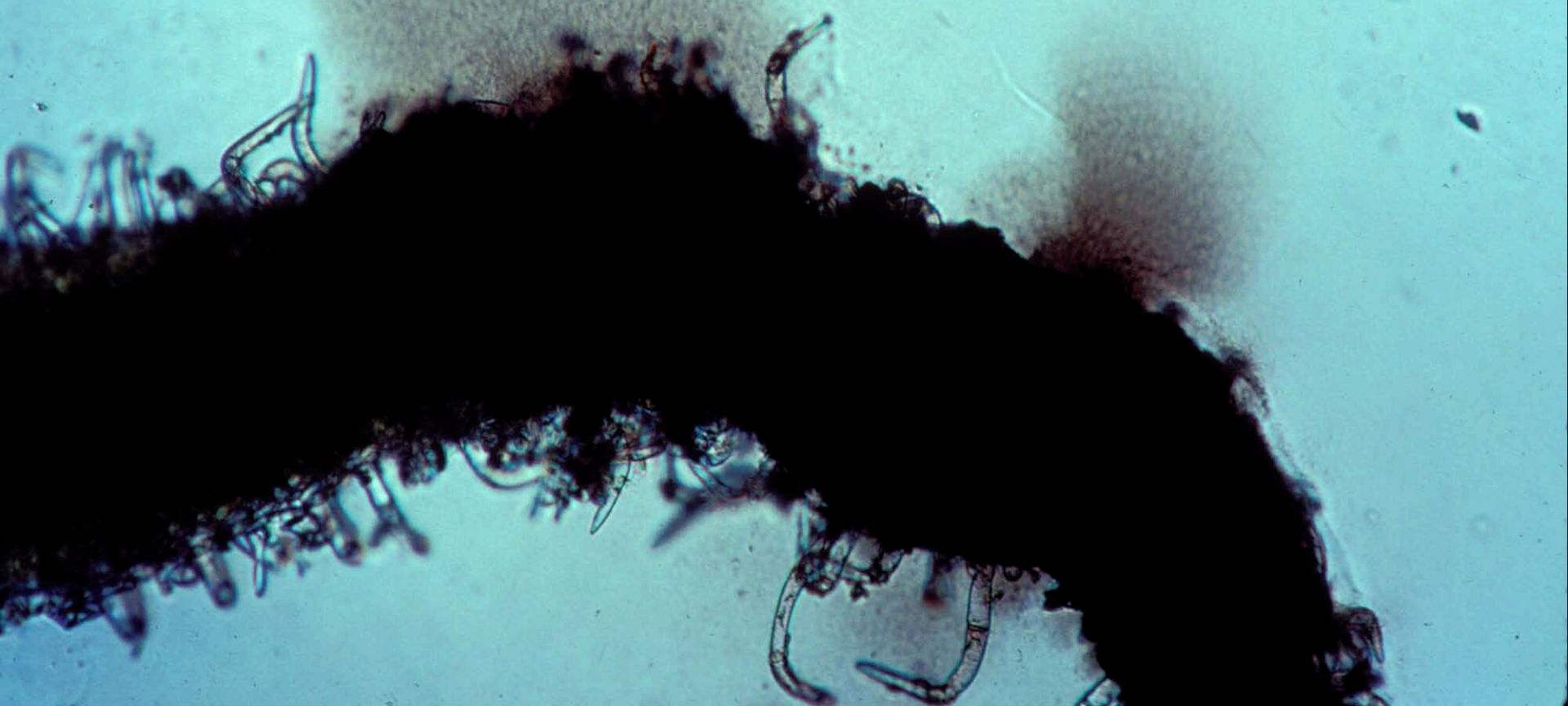
Soft rot of Phalaenopsis leaf

Pseudostems or canes break as the internal structure is destroyed by bacteria

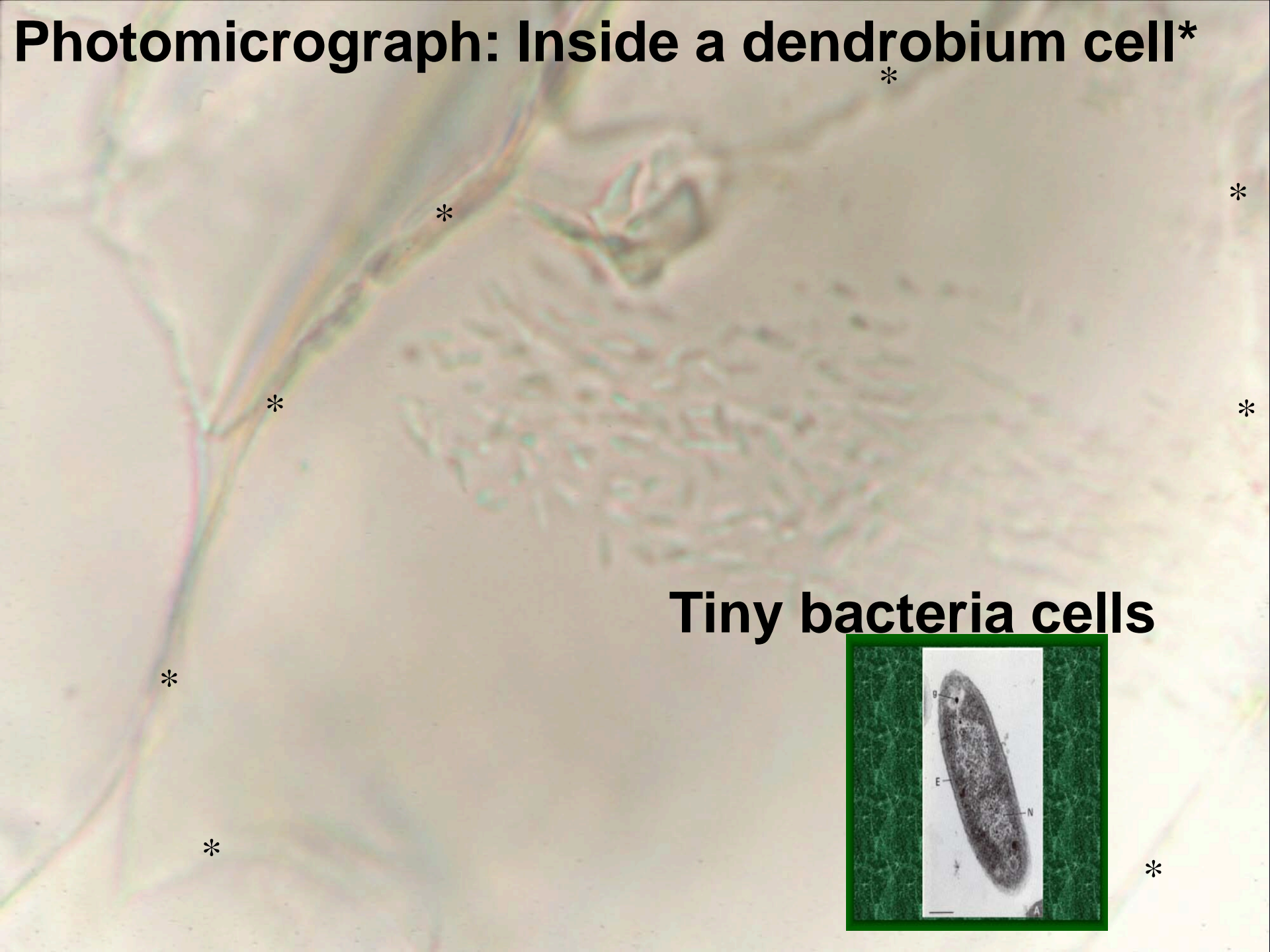


**Example of high number of bacteria that
emerge from diseased host tissue;
Marjoram leaf spot**

**Cloud of trillions of
Bacterial cells**



Photomicrograph: Inside a dendrobium cell*



Tiny bacteria cells



Weevils aid the movement of bacteria; they probe or walk on diseased plants then infect healthy plants in the process.



Water-soaked tissues indicate bacterial disease



Wounds made by probing weevils

Bacterial Disease Management

Prevention:

Do not transport diseased plants to your nursery;

Carefully check all new plants;

Use solid covered greenhouses.

Sanitation:

Gather all infected plants and remove from the nursery.

OR

Set up a Hospital. Assign an area for sick plants. Keep DRY. Place diseased but precious plants in the Hospital.

Avoid going in and out of the hospital.

● **Orchid Pathogens and Pests**

● **Pathogens**

● **Fungi Kingdom Fungi**

● **Bacteria Prokaryotic**

● **Virus Prokaryotic**

● **Nematodes Kingdom Animal**

Pests: Insects

Mealybugs

Thrips

Beetles

Weevils

Midges

Leaf Cutting Bee

Aphids

Moths

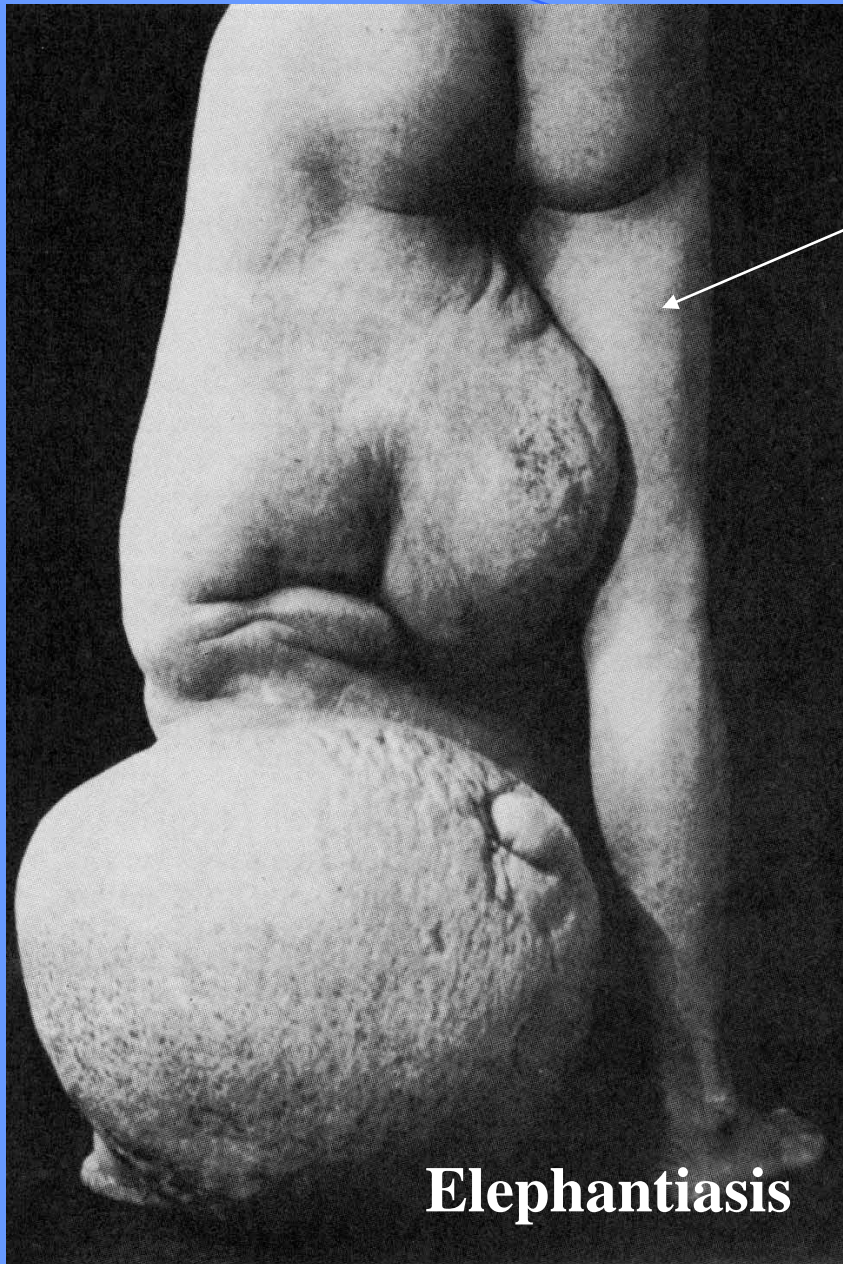
Scales

Pests: Mites

Pests: Mollusks: Snails and Slugs

- **Nematodes**
- **Round worms; Over 10,000 species.**
- **Some attack humans**
- **Eye worm.**
- **Trichinosis; man is infected by**
- **consuming infected pork.**
- **Elephantiasis; huge malformations**
- **from infection and blocking of the**
- **lymph glands; spread by**
- **mosquitoes.**

Lymphatic Filariasis, is a disorder of the lymphatic system



Elephantiasis

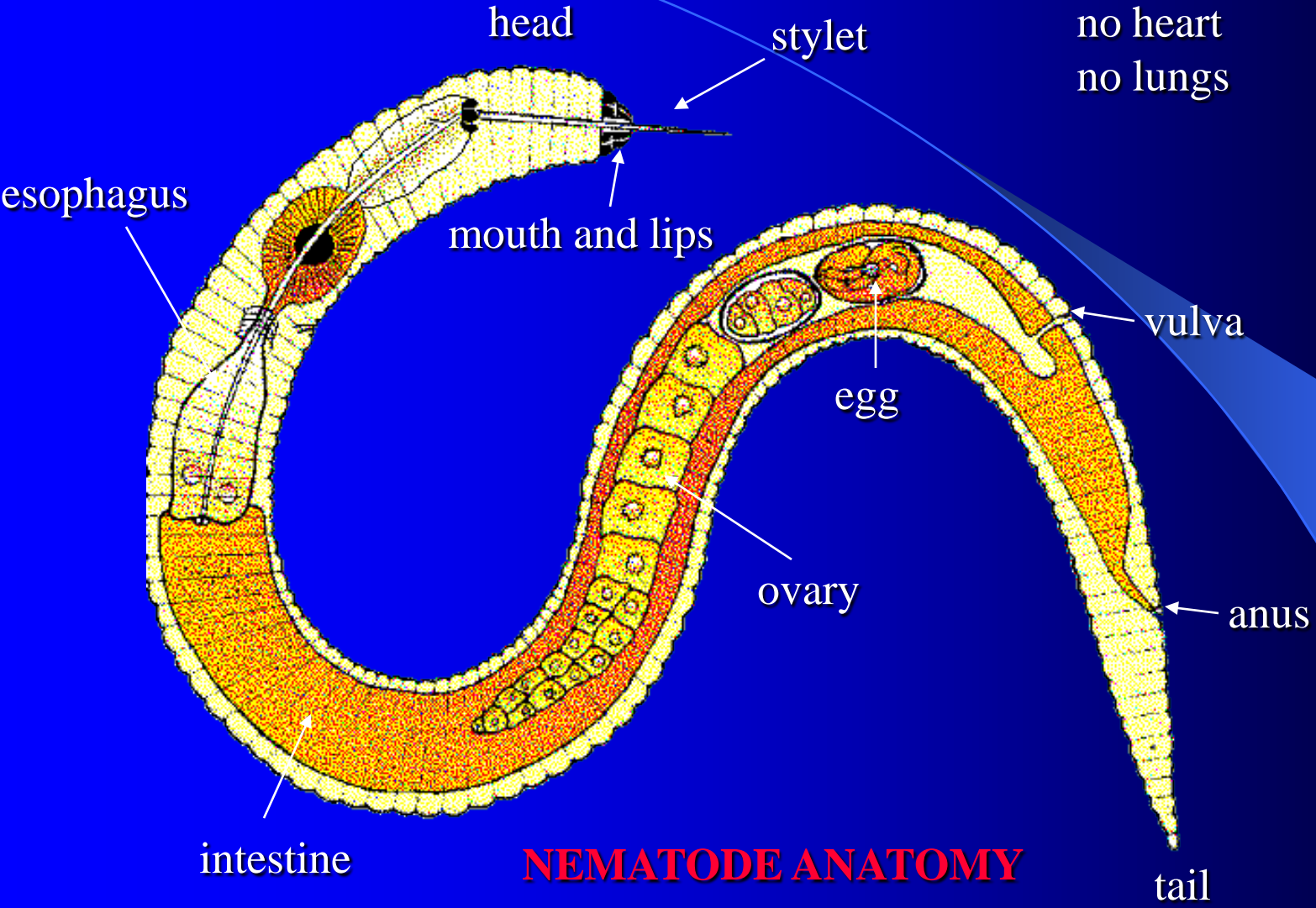


Eye worm

- **Plant Parasitic nematodes**
- All have a spear or stylet, that is used for feeding.
- Many types of nematodes cause diseases of a wide range of crop plants.
- Orchids: Foliar nematodes or *Aphelenchoides*

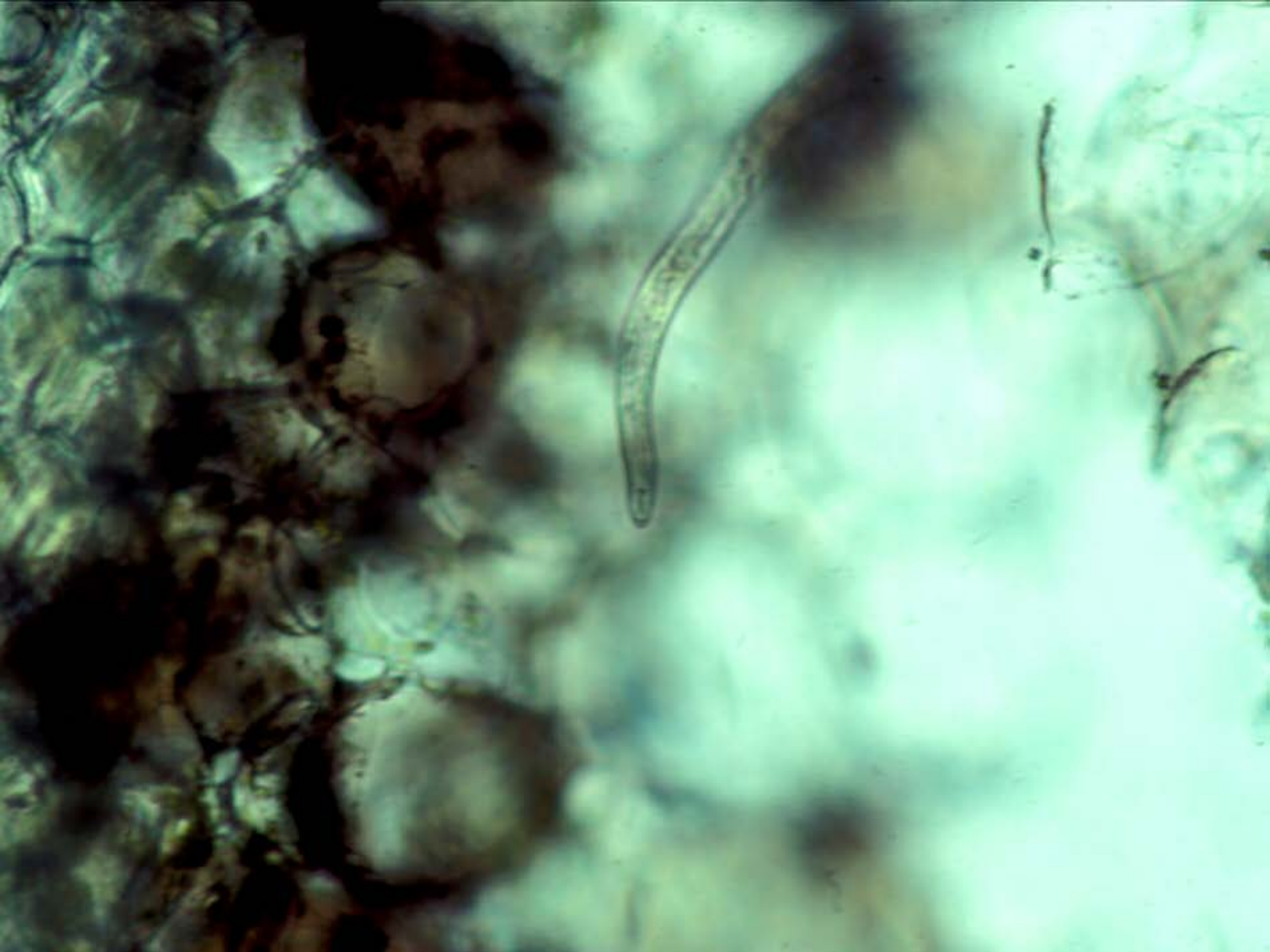


no brain
no heart
no lungs



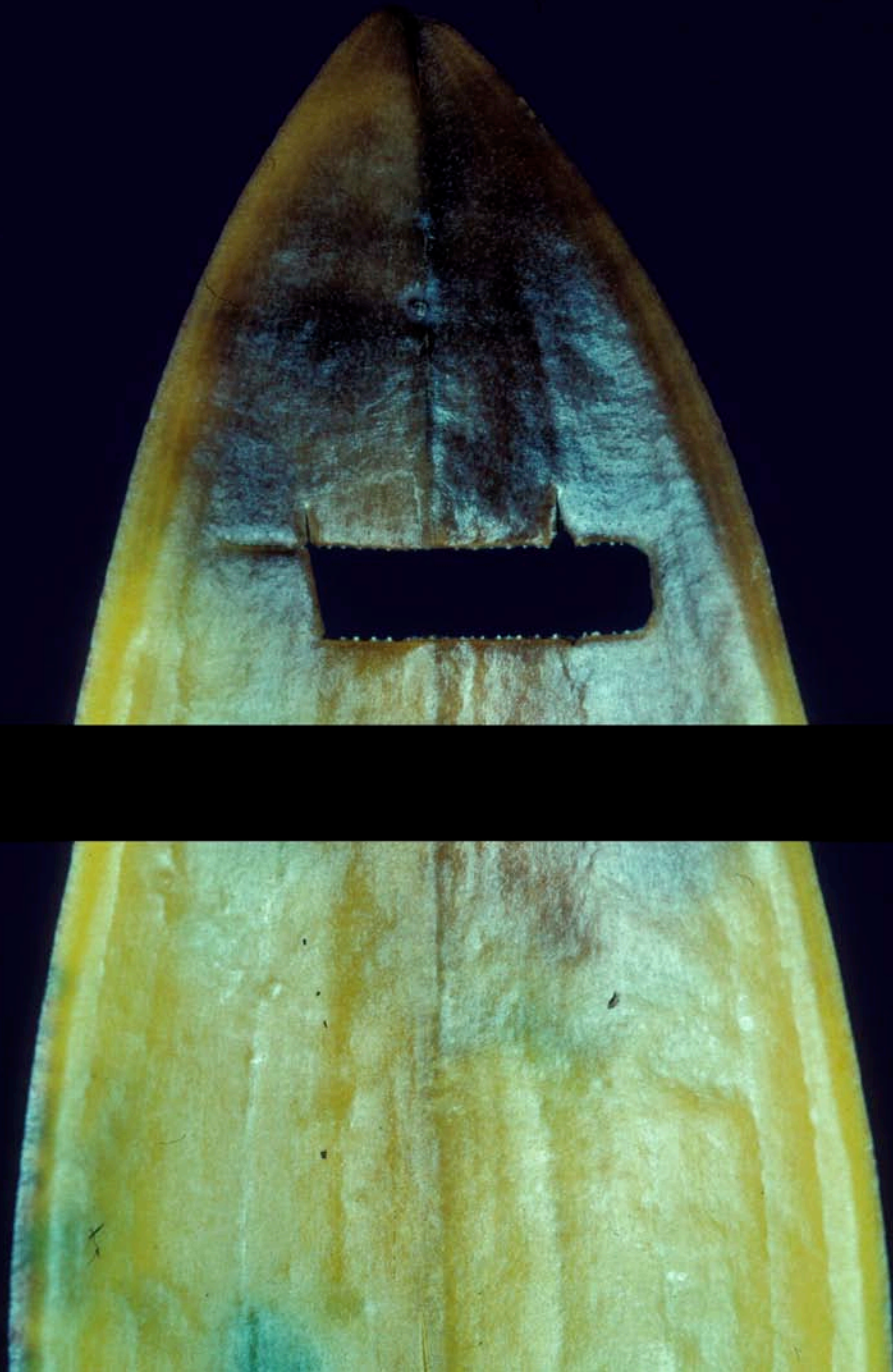
NEMATODE ANATOMY

















- **Foliar Nematode Biology:**

- Live in and outside of root system

- Depend on moisture

- Lay eggs.

- With dry weather, the nematodes migrate back to the root system or die.

- Prevention

No chemical (nematicide) registered on orchids

Sanitation (dilute bleach)

Reduce Moisture

