

Tree diseases

Indigenous pathogens and native tree species

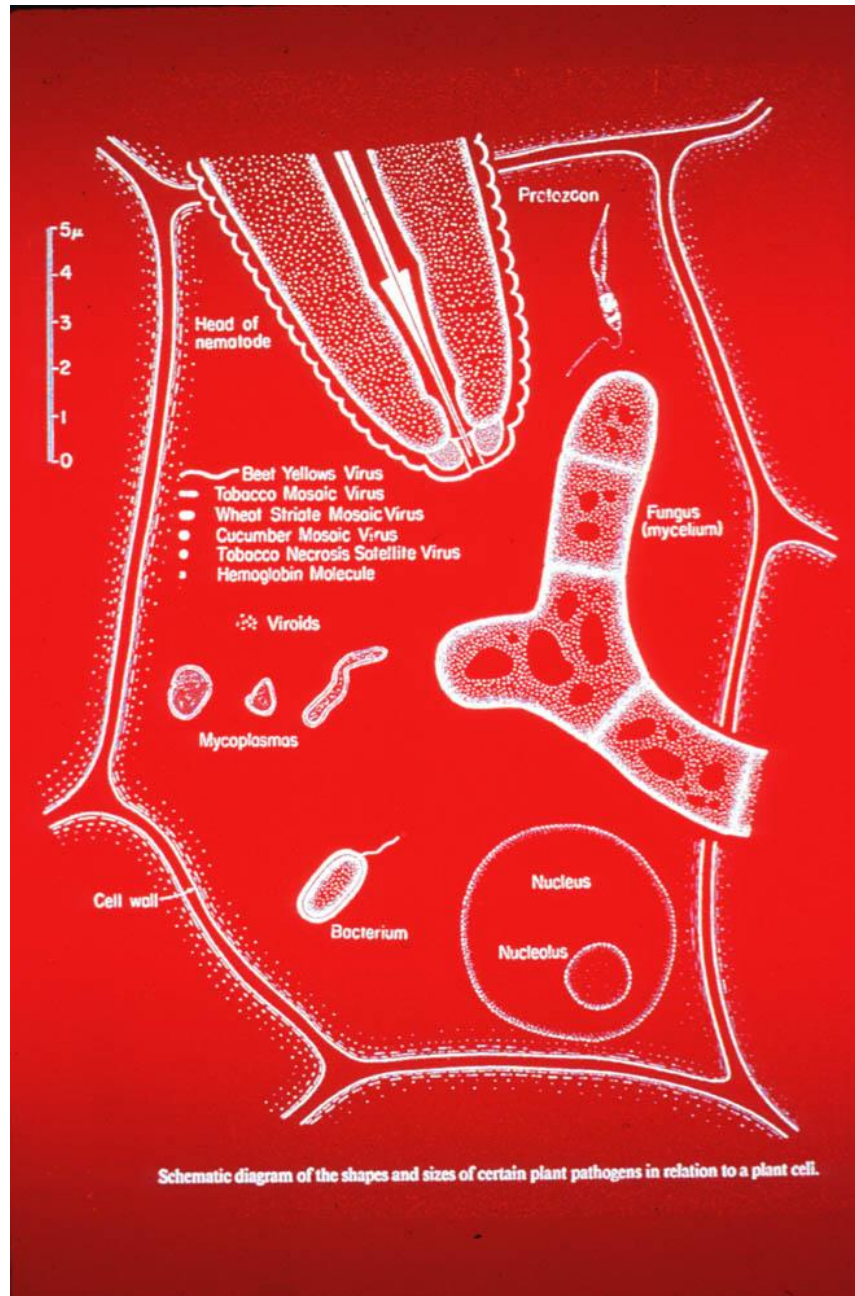
- peaceful coexistence
- develop only in response to natural or artificial interruptions

Introduction of exotic (i.e., foreign) pathogens

- Possibility of major losses
- Lack of innate genetic resistance
- Lack of biological controls

Introduction of exotic tree into indigenous pathogen area

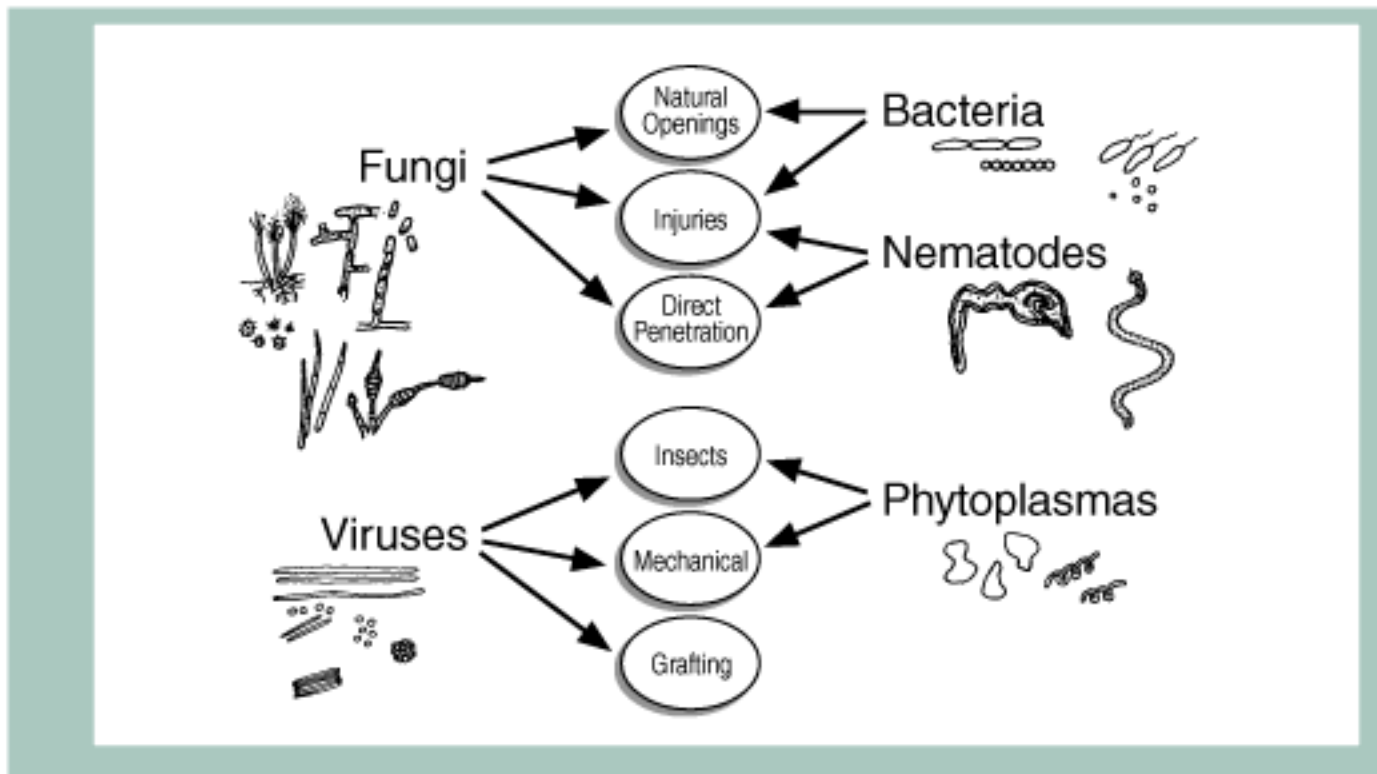
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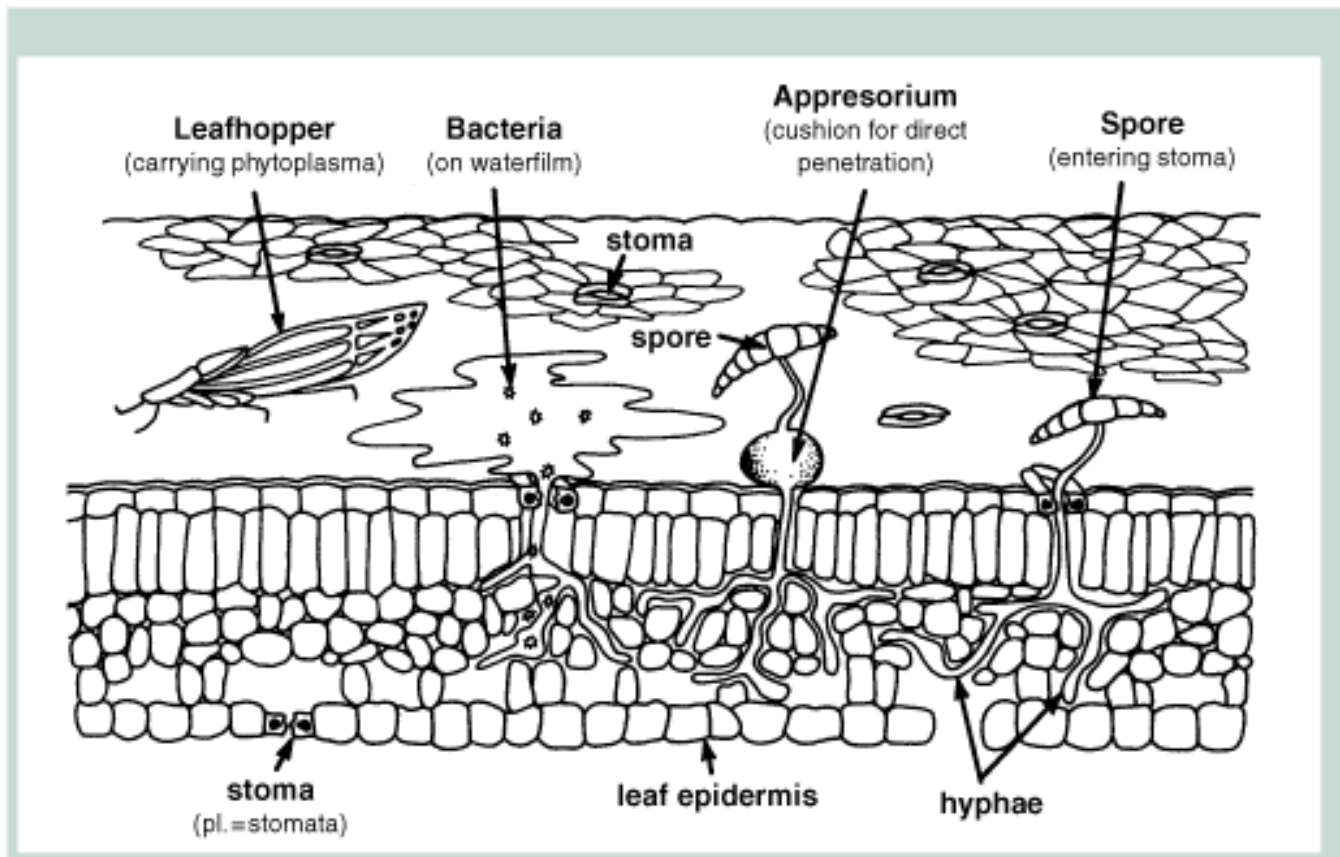
Symptoms vs. Causal Agents

	Bacteria	Fungi	Viruses	Nematodes	Phytoplasmas
Wilts	√	√		√	√
Leaf Spots & Blights	√	√	√		
Fruit Rots	√	√			
Root Rots	√	√		√	
Damping Off		√			
Distorted Growth	√	√	√	√	√

Methods of infection by pathogens



Ways pathogens can infect a leaf



Leaf blights / spots

Cephaleuros virescens (Algal leaf spot) betel-nut, mango,

- *Cylindrocladium* on palm
- *Gliocladium* on palm
- *Septoria*
- *Colletotrichum*- coconut
- *Phyllosticta*
- *Cercospora*
- *Ascochyta*
- *Phoma*
- *Mycosphaerella*
- *Oidium*
- *Pseudoepicoccum*
- *Colletotrichum*
- *Corynespora*

Anthracnose



Avocado



Mango



Ash



Sycamor

e



Sycamor

e

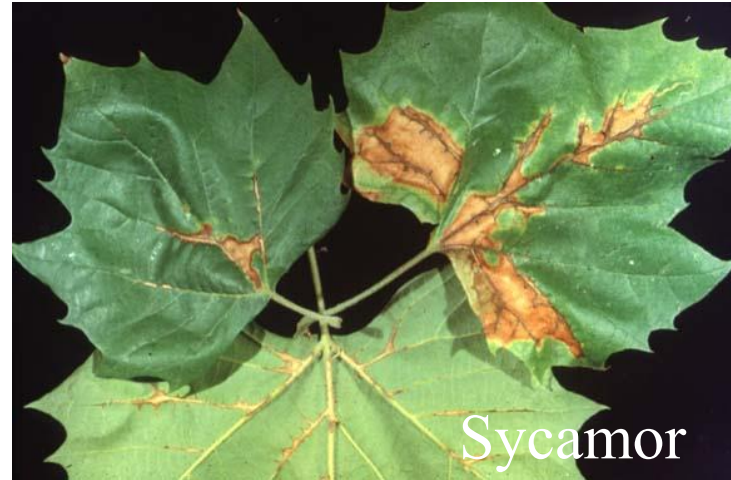


Sycamor

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Symptoms on some trees

- Small dead spots on leaves.
- Dead leaf margins and tips.
- Brown, dead leaf areas along the leaf veins.
- Premature defoliation.
- Twig death.
- Formation of a witches broom.



Rot Roots

- *Phytophthora* rot root - example on papaya, citrus spp.
- *Ganoderma*- example ironwood
- *Fusarium*-likely
- *Pythium*-likely
- *Macrophomina*-likely
- *Sclerotium rolfsii*-likely
- *Pseudoepicocum*-likely
- *Hetobasidion*-likely

Collar Rots

- *Botryodiplodia theobromae*- on breadfruit
- *Phellinus noxius*-breadfruit, flame tree, ironwood
- *Marasmiellus* spp-likely
- *Sclerotium rolfsii*-common on vegetables

Vascular wilt

- *Ralstonia* (bacterium)-example ironwood

Cankers

- *Botryodiplodia*-ironwood
- *Dothiorella* (Fusicoccum)-likely
- *Xanthomonas* (bacterium) (Citrus canker) - citrus
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Symptoms



Tissue Necrosis

Cankers = localized necrotic lesions

- **Sunken or swollen or both**
- **Mainly caused by fungi and bacteria**
- **Mechanical injury and insects can cause**

Apple canker caused by *Nectria galligena*

Viruses

- *Coconut tinangaja viroid*

Rust Diseases

- *Coleosporium plumeria*- plumeria
- *Aecidium fragiforme*- agathis spp.

Shoot Blights

- *Pestalotiopsis*
- *Colletotrichum*
- *Botryosphaeria*
- *Phytophthora* bud rot -
- *Xanthomonas campestris*- mango

Betel Nut Bud rot

- *Phytophthora arecae* or *palmivora*



Heart rot [host-Coconut; pathogen- *Phytophthora katsurae*]:

Phytophthora katsurae has been reported
from Japan, Taiwan, Australia and Papua
New Guinea.



Parasitic plants

- *Cassytha filiformis*
- *Cuscuta campestris*

Nematodes

- *Meloidogyne*
- *Helicotylenchus*