

“Causes of Tree Decline”

City of Bowling Green Workshop

June 11, 2005

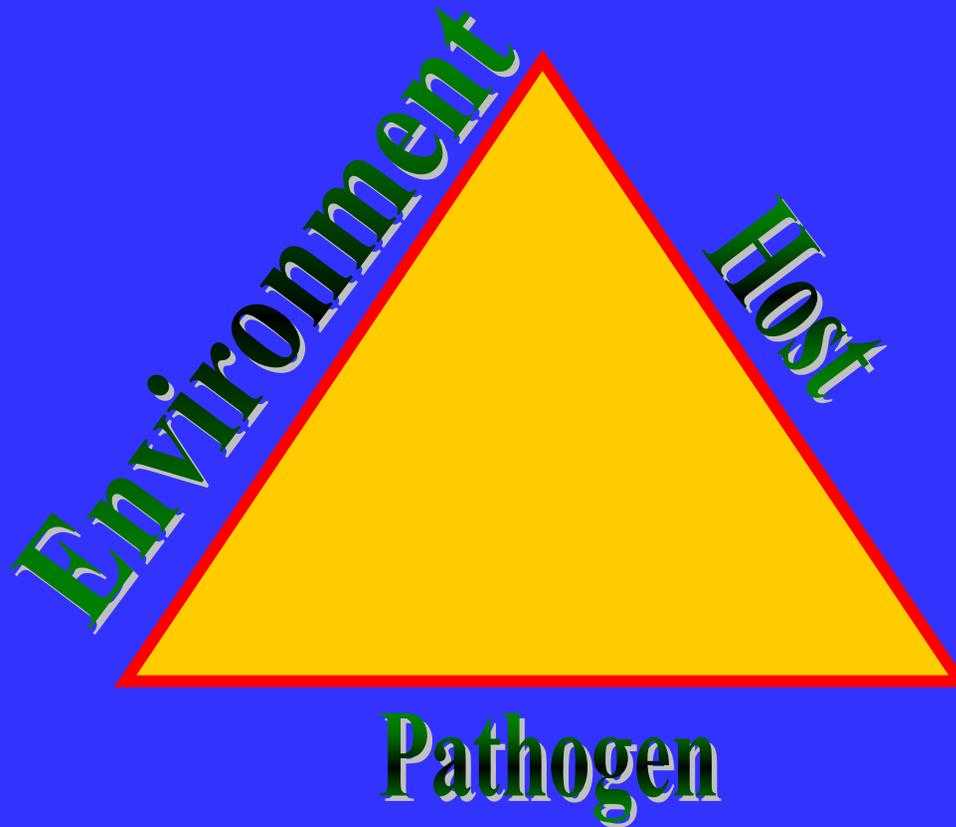


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The Disease Triangle



Some Symptoms of Tree Decline, A Complex Disease

- Slow growth, including poor annual twig growth
- Sparse, undersized, distorted, often chlorotic foliage
- Browning of leaf margins
- Premature autumn color
- Large “distress” crops of seeds
- Progressive dieback of twigs and branches
- Adventitious sprouts where dieback occurred



From: “Diseases of Trees and Shrubs”

- Sinclair, Lyon & Johnson

Non – Life Threatening Pathogen Caused

Tree Diseases



ANTHRACNOSE

Leaf Blighting and Deformation

Damage to Plant not Severe

Proliferates in Cool Wet Weather

Anthracnose

Plants commonly affected

2005 included:

1. Sycamore
2. Maple
3. Ash
4. Dogwood





Leaf blight: anthracnose on maple.



Leaf blight: anthracnose on ash.

LEAF SCAB

Leaf Blighting and Deformation

Damage to Plant Sometimes Severe

Proliferates in Cool Wet Weather

Common on Rose Family

- Crabapples
- Cherries



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The Host Plant: Apple Scab Susceptibility.

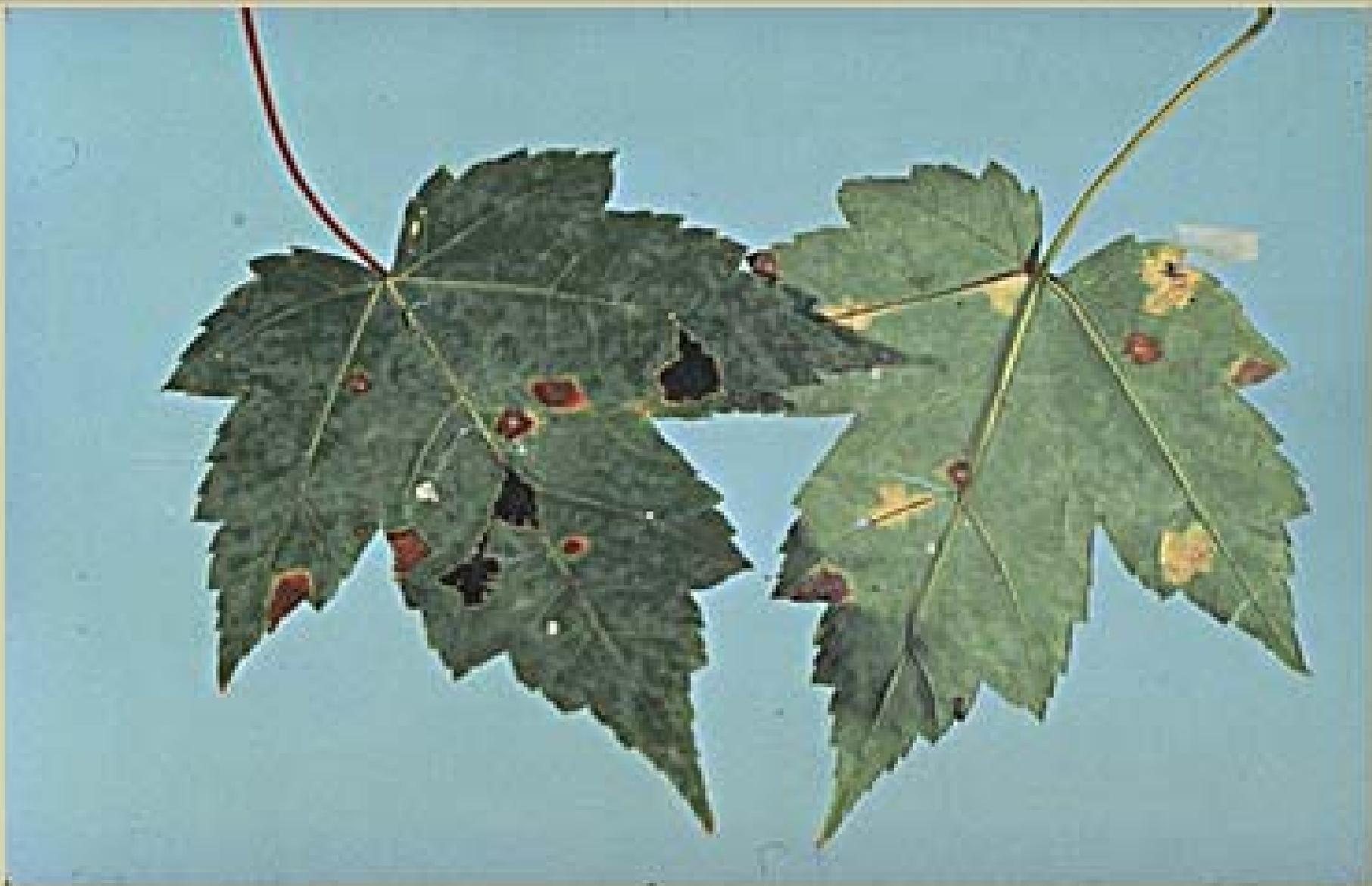
LEAF SPOTS

Leaf Blighting and Deformation

Damage to Plant not Severe

Proliferates in Cool Wet Weather

Common on Red and Silver Maples



Leaf spots: tar spot and *Phyllosticta* leaf spot on maple.

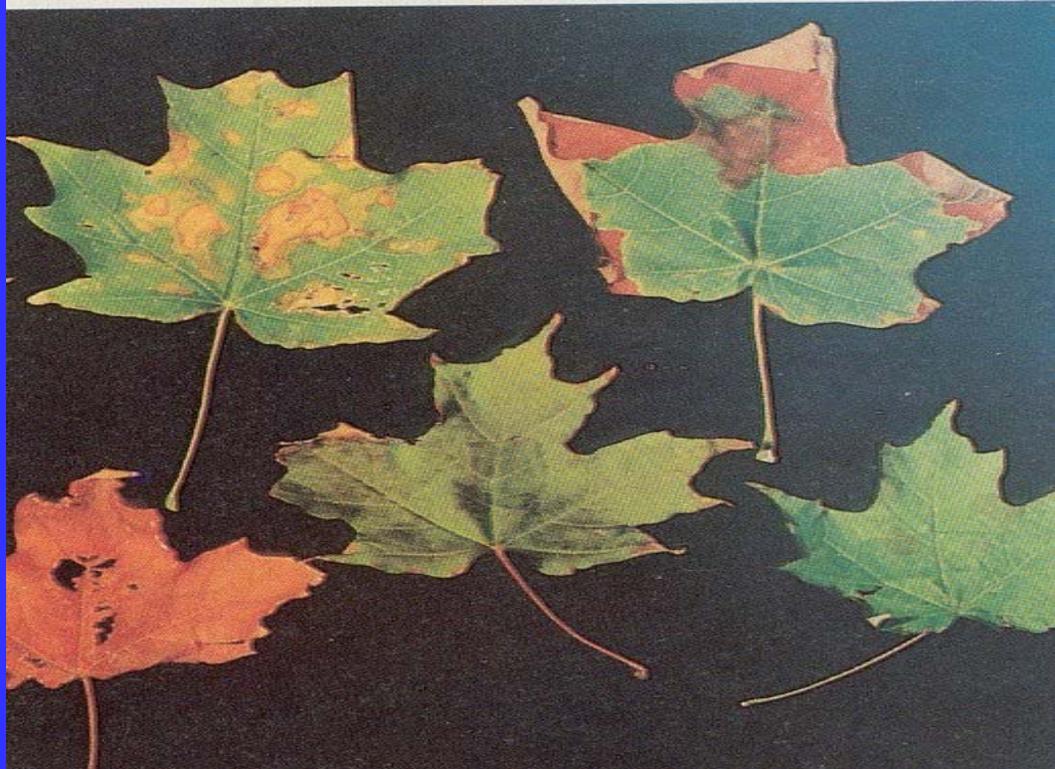


**Leaf blotch disease:
Guignardia leaf blotch on Aesculus.**

Non – Life Threatening
Non-Pathogen
Tree Diseases



Leaf Scorch



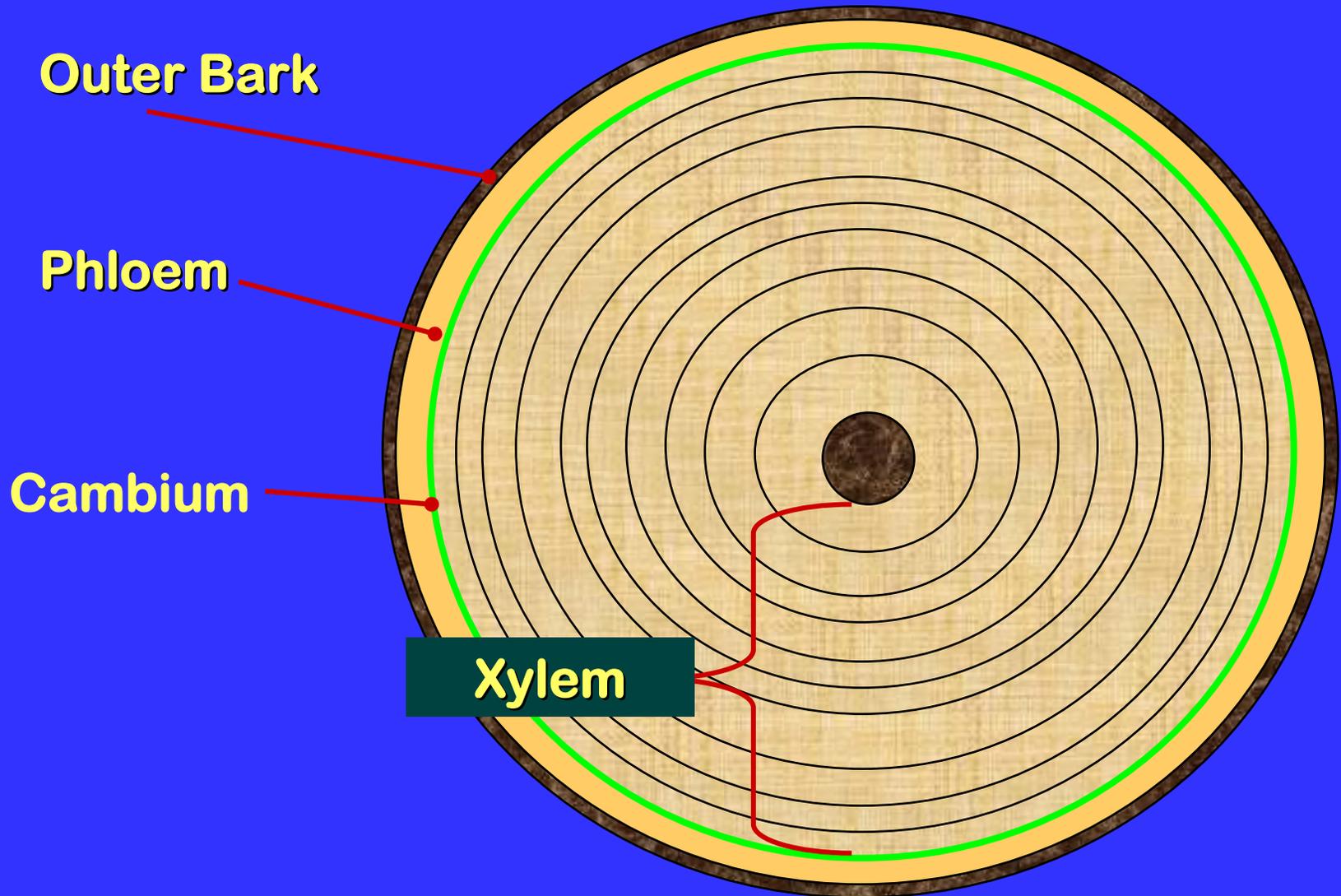


Nutrient deficiency: iron chlorosis.

Life Threatening Pathogen Caused Tree Diseases



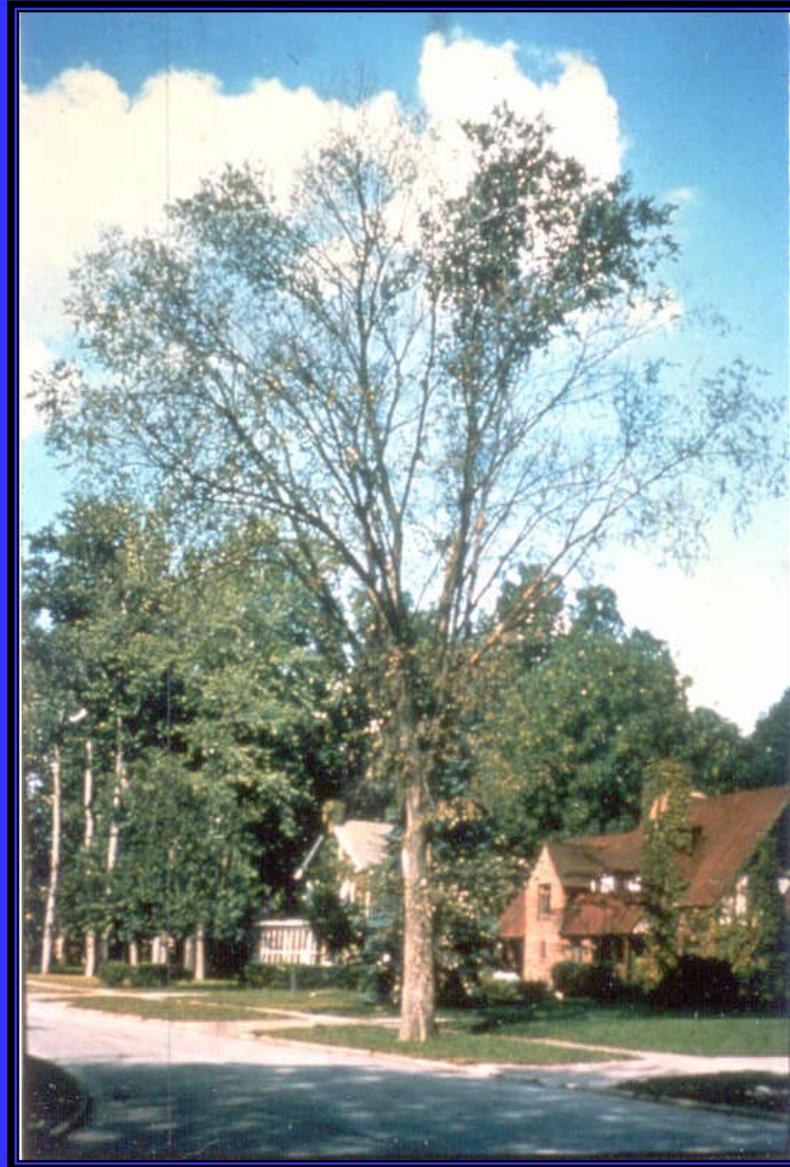
Tree Trunk Basics



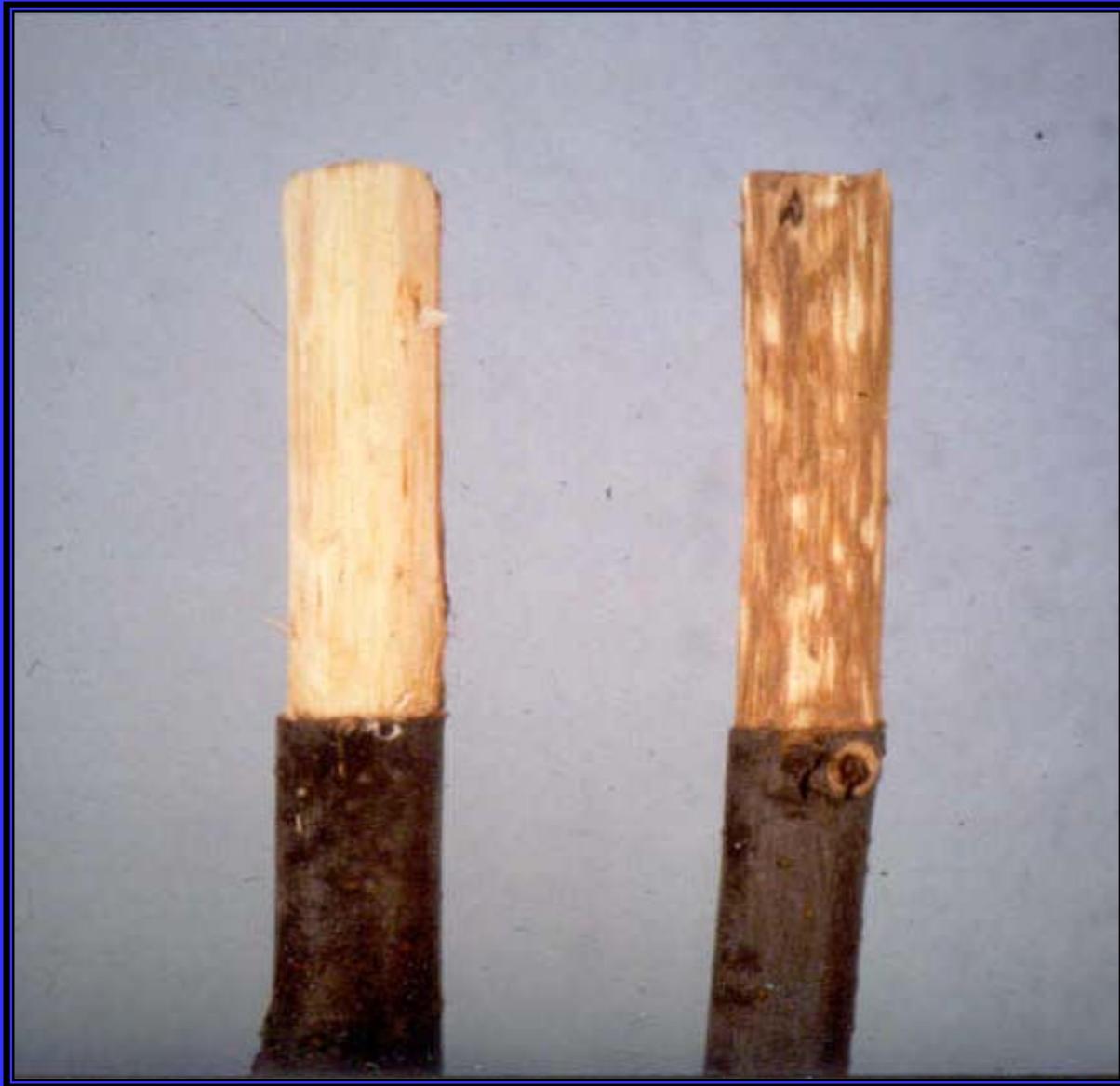
Dutch Elm Disease (DED)

- **Vascular disease caused by bacteria**
- **Symptoms include branch dieback**
- **Bacteria infects Outer Xylem Tissue**
- **Spread by Bark Beetle**
- **Elm trees resistant to DED have been developed**

Dutch Elm Disease



Dutch Elm Disease - Vascular Streaking -



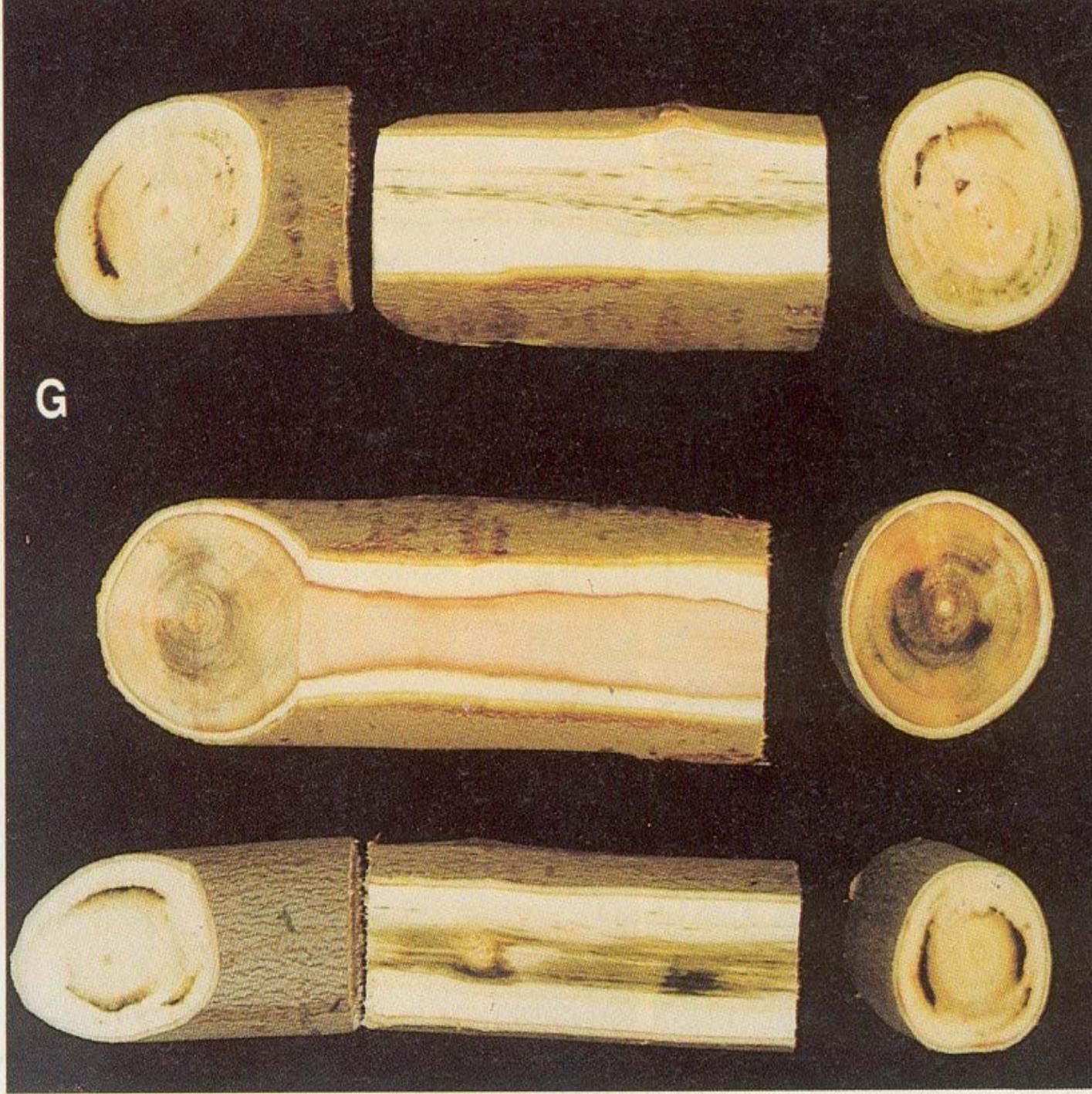
Verticillium Wilt Fungus

Attacked trees may die within one year or decline over several years.

Found across all Ohio counties.

Host plants include ash, catalpa, elm, maple, Russian olive, redbud, smoketree, tuliptree, and viburnum.

Infects plant roots through wounds



Diplodia and Cytospora

- **Vascular disease caused by fungus**
- **Symptoms include branch dieback**
- **Fungus gains entry via wounds**
- **Spread by splashing water**
- **Insect attack secondary issue**



Cytospora on Colorado Spruce



Diplodia on Austrian Pine

Prevention & Cultural Care
Life Threatening
Pathogen & Non Pathogen
Tree Diseases



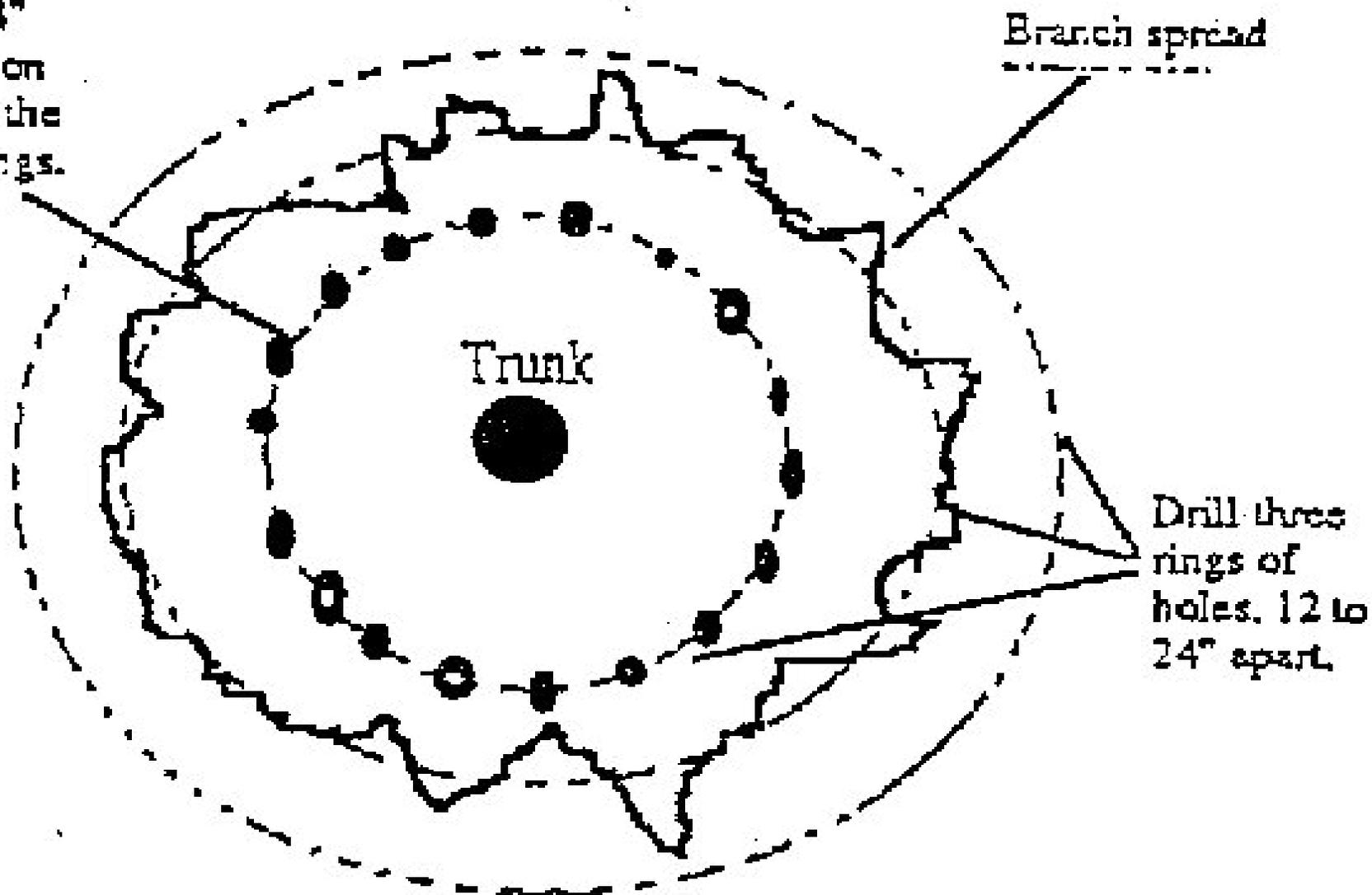
Ten Contributing Factors in Tree Decline and Disease Complexes:

- Defoliation by diseases or insects
- Drought or excess water
- Cold injury to bark tissue
- Root injury from compaction
- Girdling roots
- Direct root damage during construction
- Root injury from excess soil or mulch added over root system
- Herbicide Misuse
- Trunk wounds
- Weed Whacker Misuse
- Nutrient deficiency



Deep Core Aeration—Top View

Drill 1 or 2" holes on 12 to 24" centers on each of the three rings.



Branch spread

Drill three rings of holes, 12 to 24" apart.





