Common Diseases Impacting Virginia's Trees

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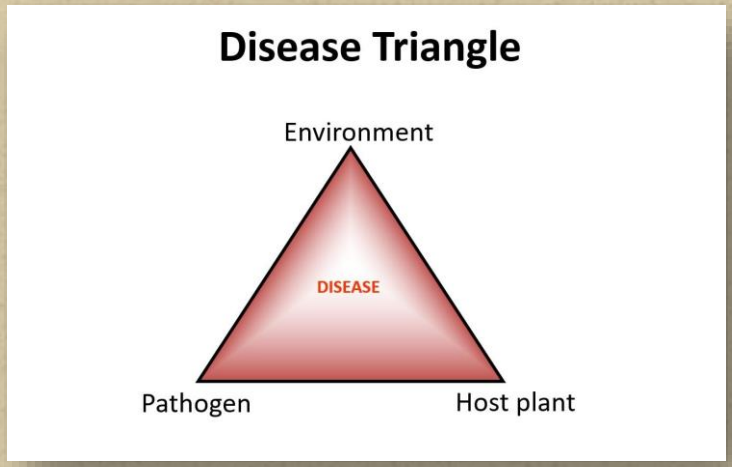
Tree Diseases

- Forest Pathology- the study of tree diseases in forests, plantations, nurseries, urban and landscape settings
- It also encompasses wood decay and degradation



Tree Diseases

- Tree pathogenic organisms include bacteria, viruses, nematodes and most commonly, fungi
- Transmission→ Infection → Colonization → Parasitism → Symptom Development → Reproduction → Transmission

Bacterial Leaf Scorch

Bacterial Leaf Scorch

- Caused by bacterial infection of a tree's water conducting tissue
- Bacteria are vectored by insects (spittlebugs, sharpshooters, leafhoppers
- Infection is perennial

Penn State Department of Plant Pathology & Environmental Microbiology Archives, Penn State University, Bugwood.org

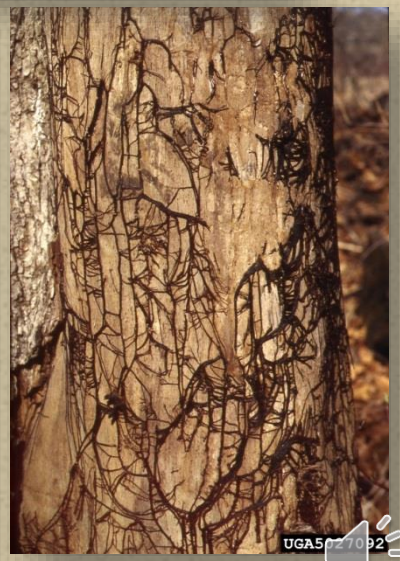
Bacterial Leaf Scorch

- Bacteria overwinter in roots and stems and each year they spread to new xylem vessels
- Leaf margins turn yellow or red, then leaves wilt and turn brown in summer
- Scorched leaves are retained until fall

Penn State Department of Plant Pathology & Environmental Microbiology Archives, Penn State University, Bugwood.org

Armillaria Root Rot

- General name for group of diseases caused by fungus in genus *Armillaria*
- Pathogen of roots and lower stems
- Important decomposer of wood
- Primarily only attack stressed trees, both hardwood and conifers



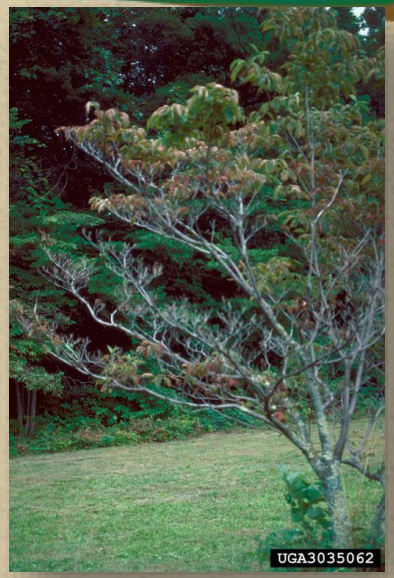
Anthracnose

- Group of diseases on hardwoods causing lesions on leaves, twigs, and fruit
- Lesions begin around leaf veins but then expand to other tissue
- Cosmetic damage, no serious damage*

Anthracnose

*Dogwood anthracnose

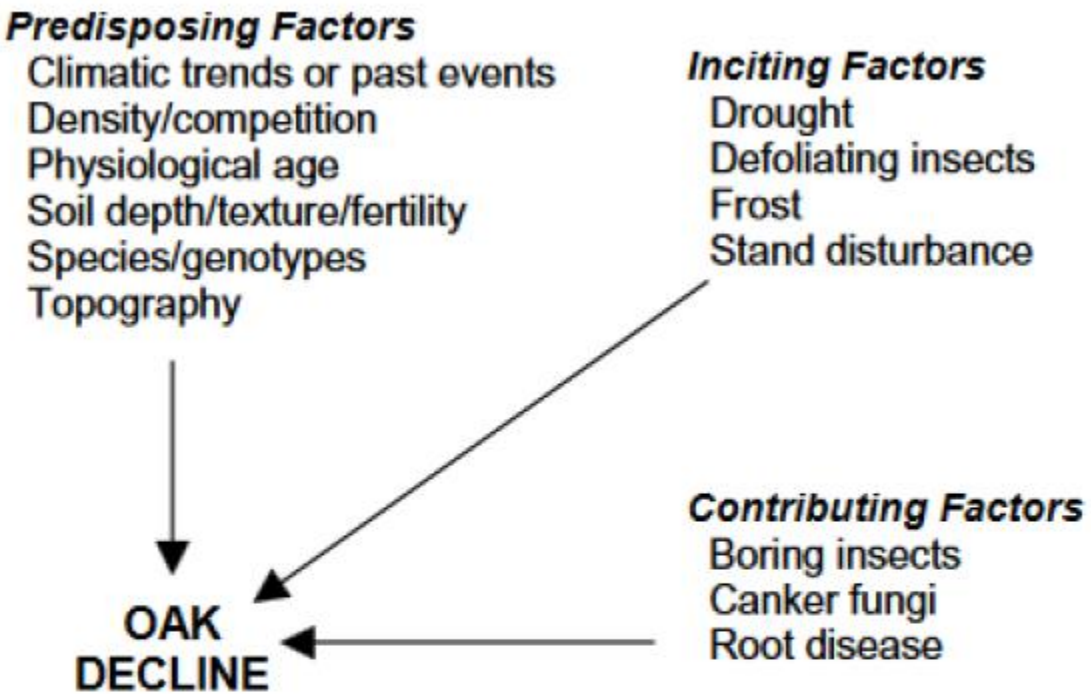
- Introduced from Asia in the late 1970s
- Similar foliar look, but fungus can grow out of leaves and cause girdling cankers on branches and stems
- Decline occurs over several years



Biscogniauxia (Hypoxylon) Canker

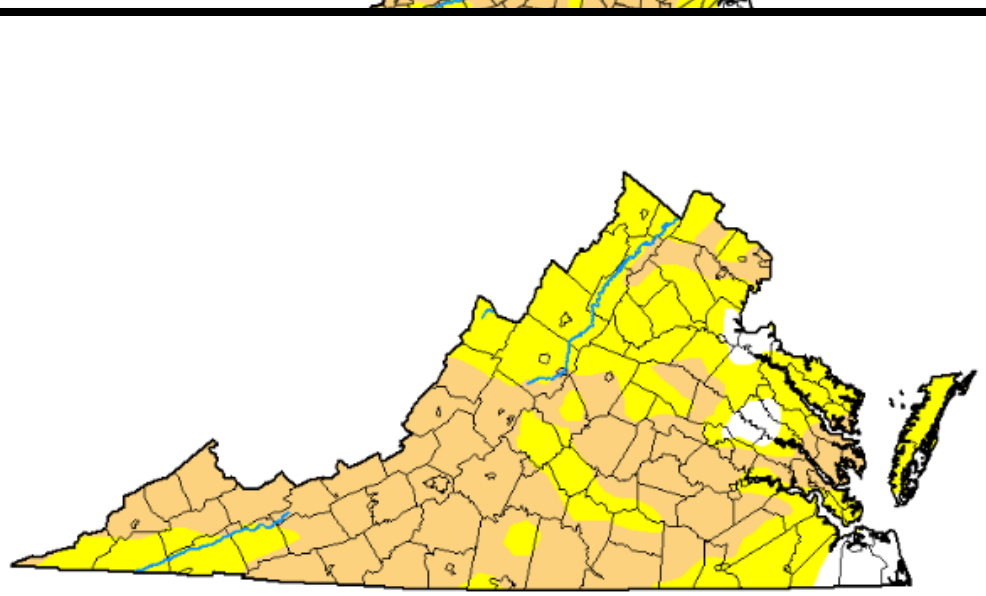
???

Oak Decline



Causal factors of oak decline organized by their function in the decline syndrome. From: Starkey et al. 2004.

Disease Spiral



Map released: Thurs. September 26, 2019

Data valid: September 24, 2019 at 8 a.m. EDT

Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Author(s):

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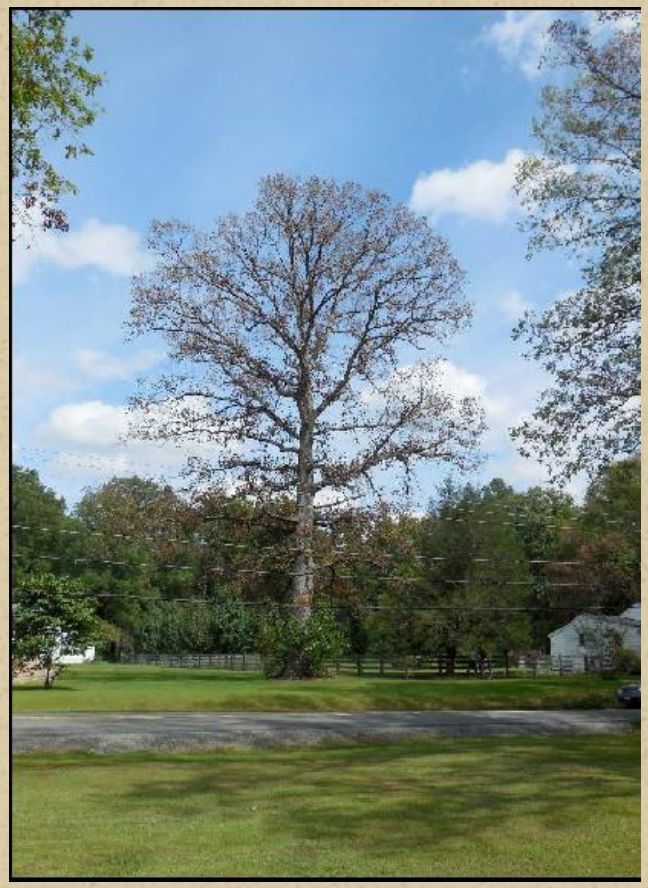
*conditions. Local conditions may vary. See accompanying **text summary** for forecast statements.*

https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?Southeast

Oak Decline



Maple Decline

- Primarily impacts Norway, sugar, and red maples in the Northeast and Midwest
- Similar causal agents to those of oak decline- defoliation, climatic events, de-icing salts

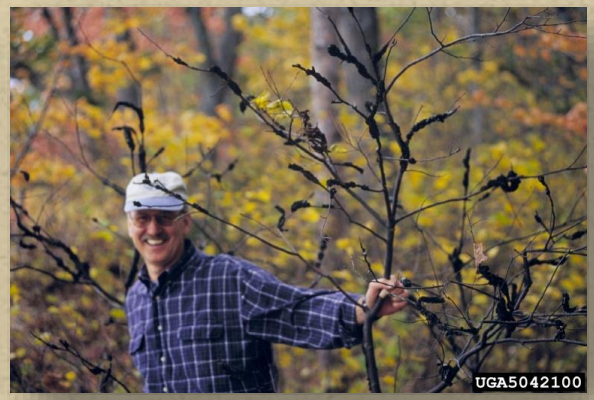
Maple Decline

- Common symptoms:
  - Reduced foliage and twig growth
  - Early color change
  - Crown dieback
  - Root decay

Courtesy of L. Rhodes, The Ohio State University.

Black Knot

- Fungus that attacks cheery and plum trees
- Hard swollen galls on branches and main stem
- Most trees very tolerant of this infection



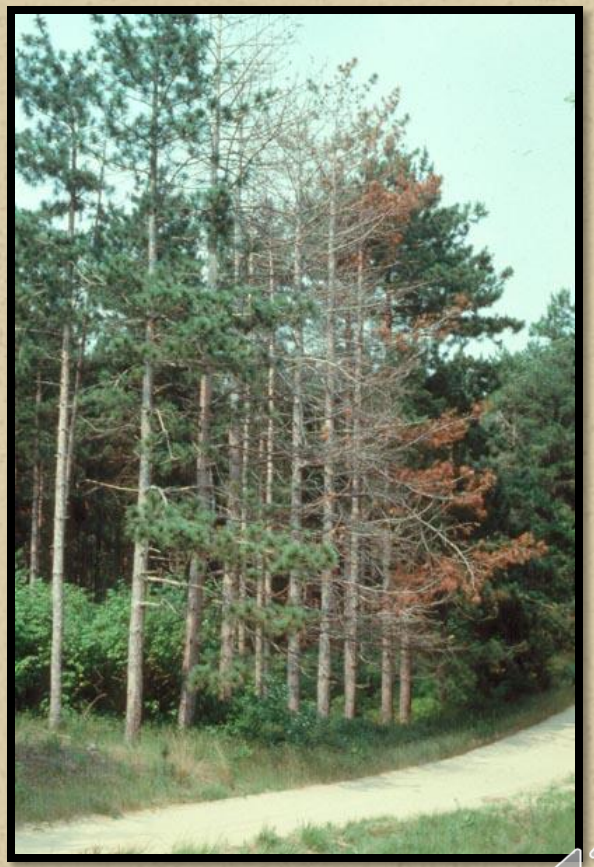
Cedar-Apple Rust

- Requires two hosts- eastern red cedar (or other Juniper sp.) and apple or crabapple
- No real damage- on cedars, occasuionally branch with galls will die, on apples, heavily infested foliage will drop leaves

Heterobasidium Root Disease

- Also known as Annosum, fomes, annosus
- Fungus invades recently cut stumps and spreads through root grafts
- Attacks large roots near base of tree, limiting water and nutrient supply
- All species of conifer susceptible

Heterobasidium Root Disease



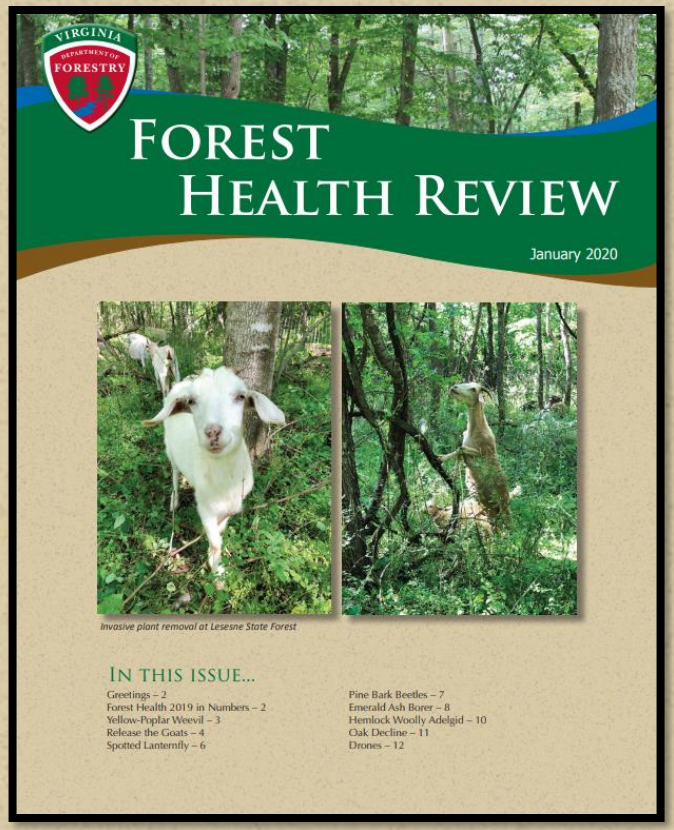
Heterobasidium Root Disease

- Thin stands in summer months
- If thinning in cooler weather, treat cut stumps with borax
- Clearcut stands with > 50% infection
- Avoid wounding trees

Resources

- Virginia Tech Plant Disease Clinic
  - https://www.ppws.vt.edu/extension/plant-disease-clinic.html
- NC Forest Service Forest Health Handbook
  - https://www.ncforestservice.gov › forest_health › forest_health_handbook
- VDOF Forest Health Handbook – soon!

Forest Health Review



http://dof.virginia.gov/infopubs/_fhr/FHR-2020-01_pub.pdf

Questions?

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