



One flush away from death:

Factors that contribute to the
vortex of urban tree mortality

Presented by

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One “flush” away from death...

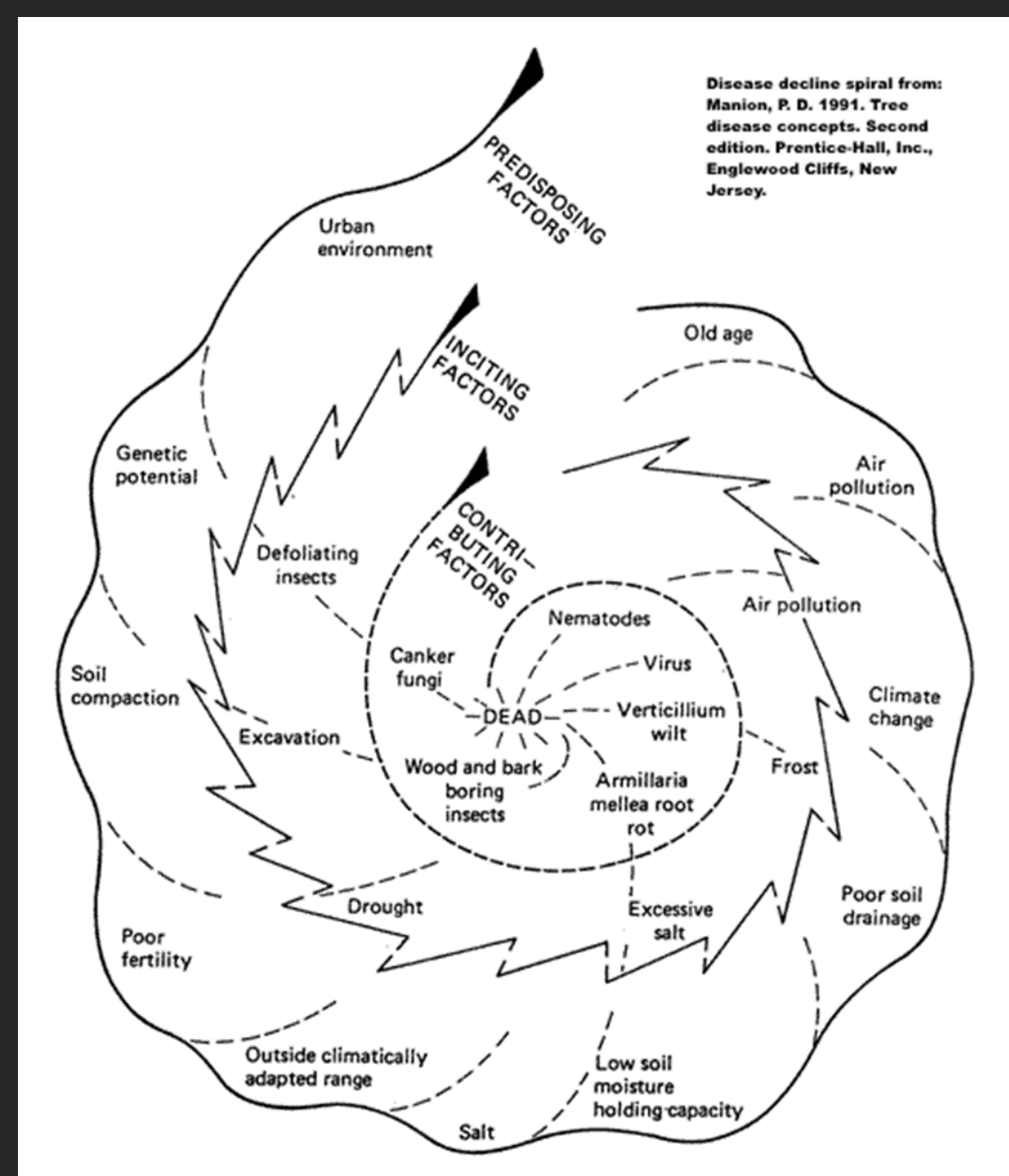


...so, tree mortality is like a toilet?

Manion's Tree Decline Spiral

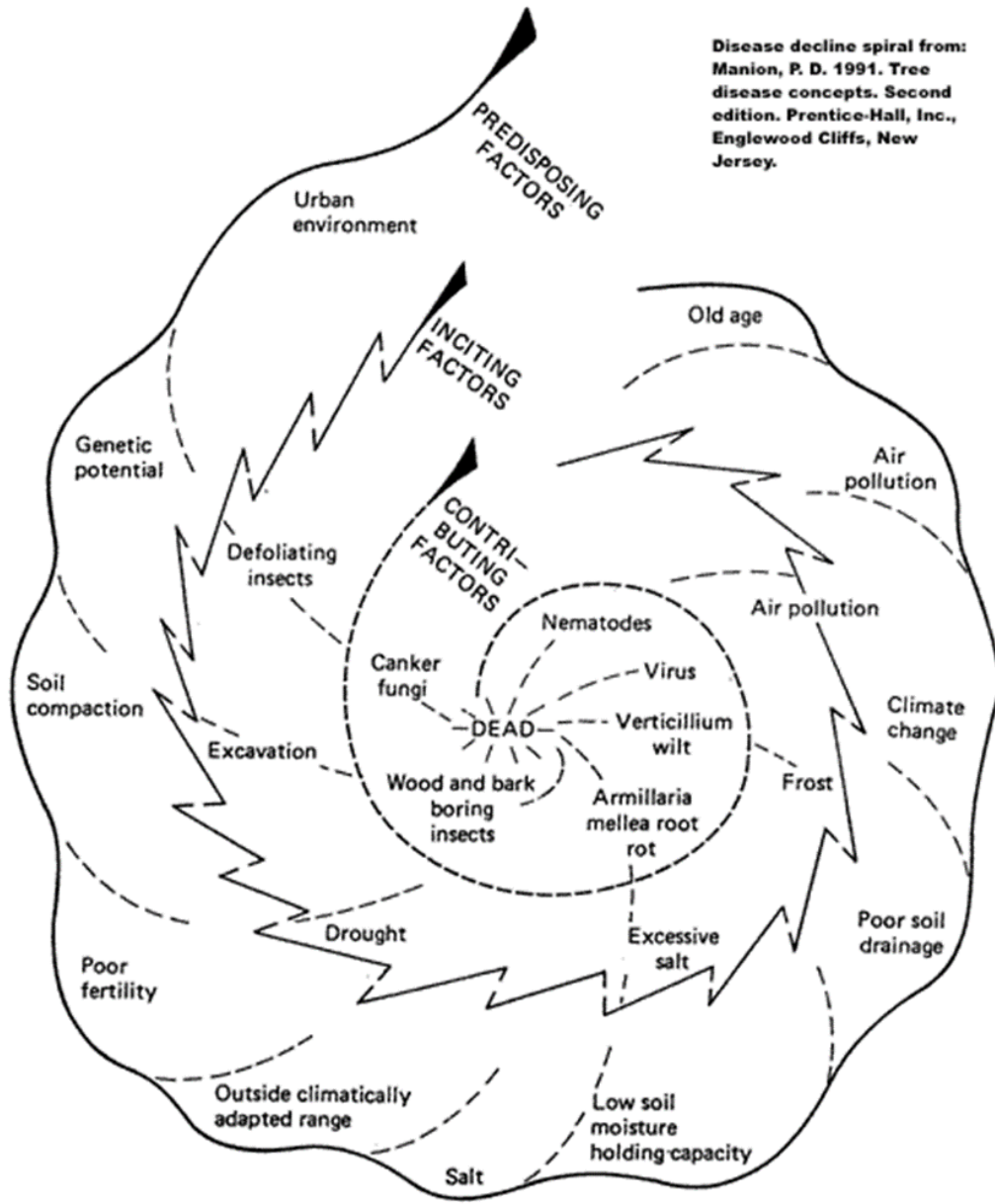


Key takeaway: many factors compound over time and contribute to tree mortality

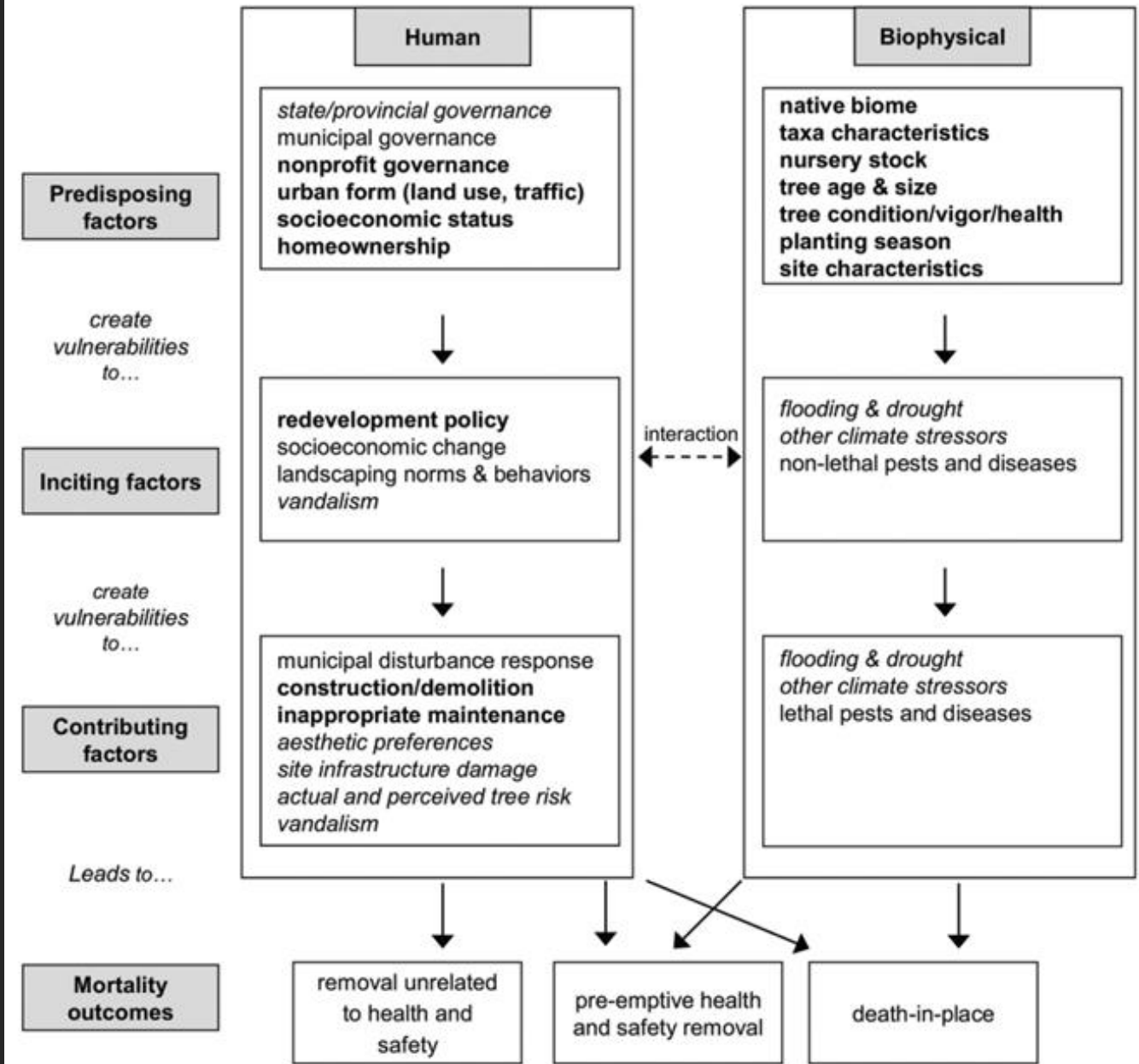


Manion (1991)

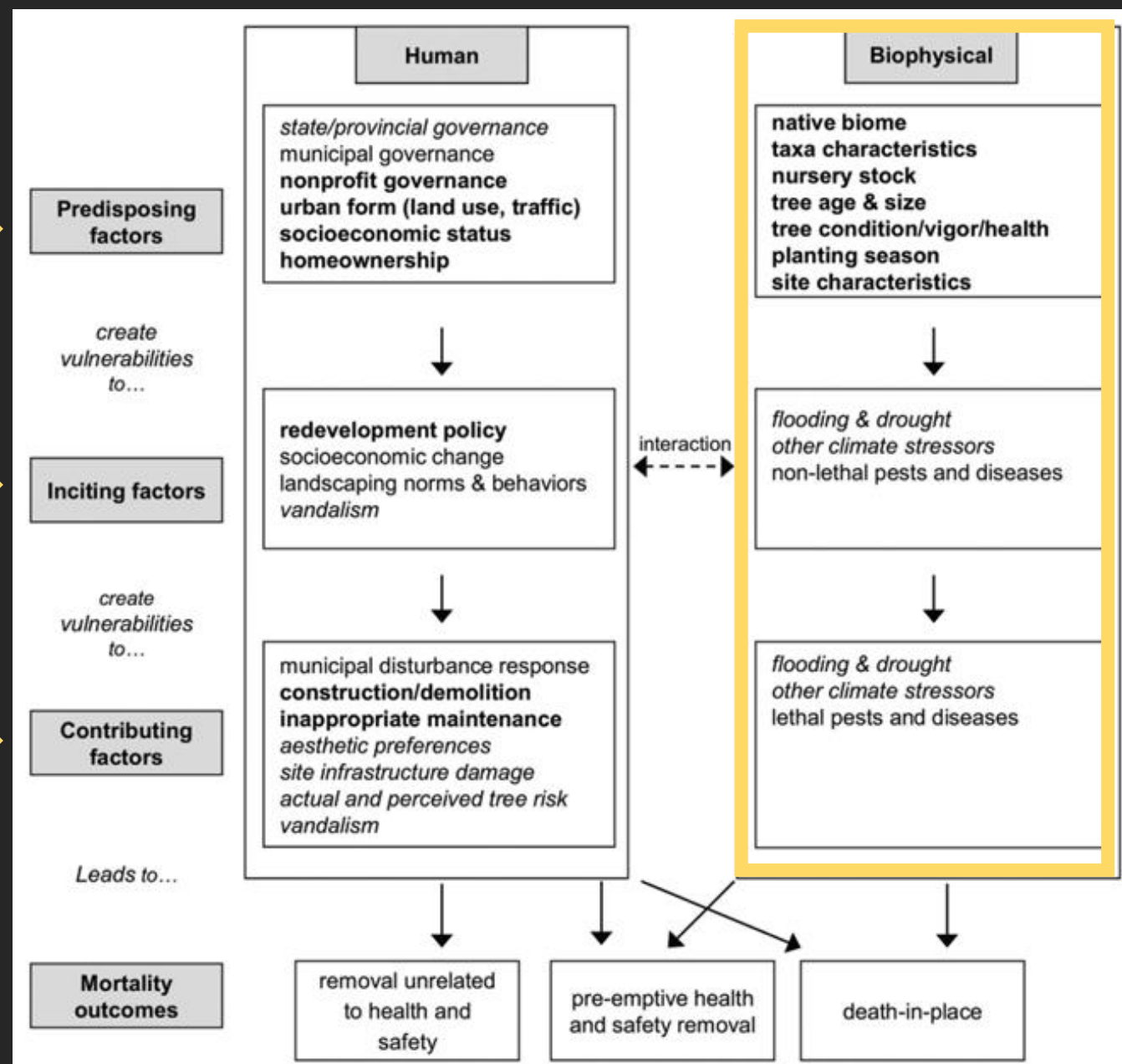
Disease decline spiral from:
Manion, P. D. 1991. Tree
disease concepts. Second
edition. Prentice-Hall, Inc.,
Englewood Cliffs, New
Jersey.

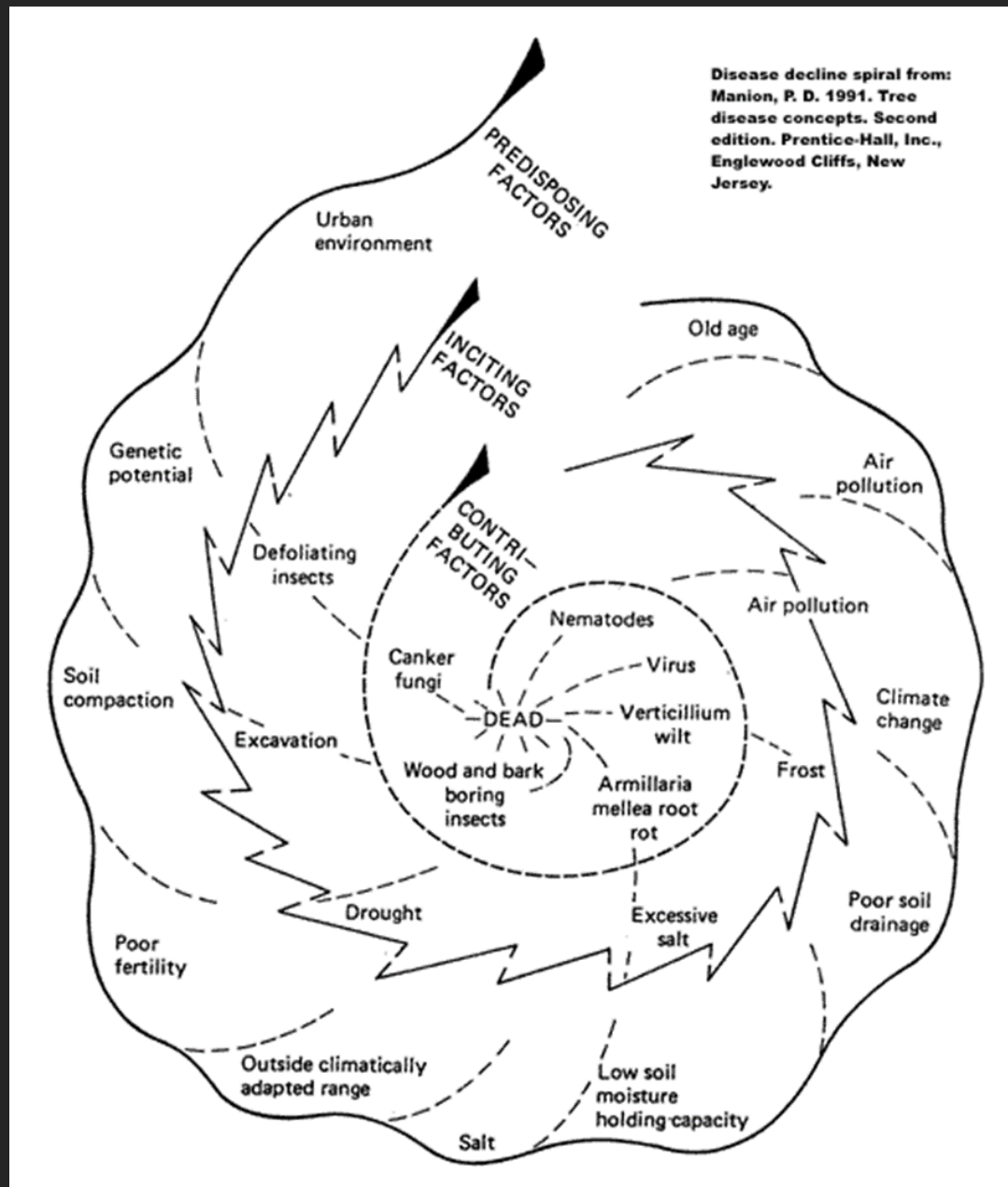


Manion (1991)

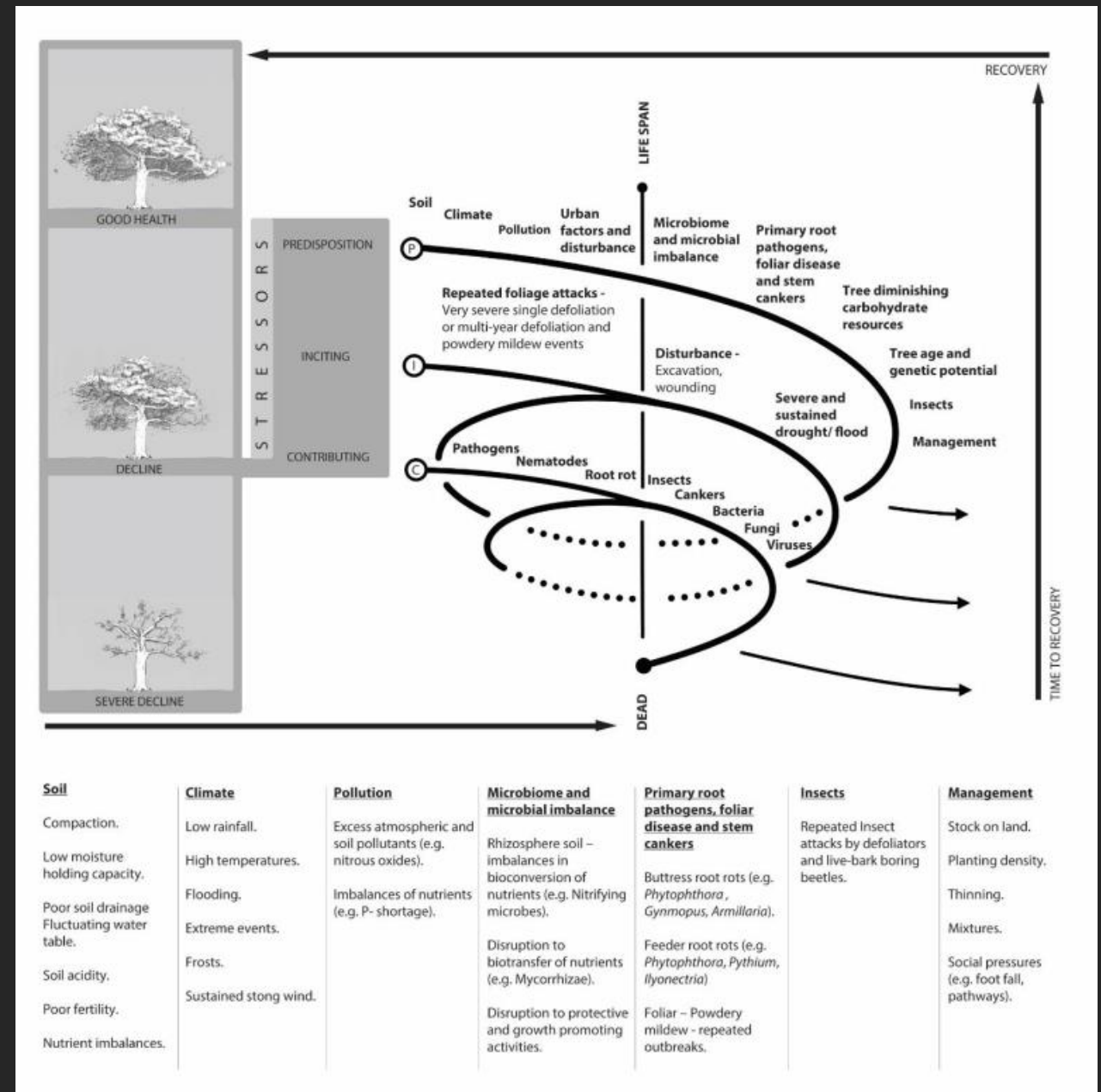


Hilbert et al. (2019)

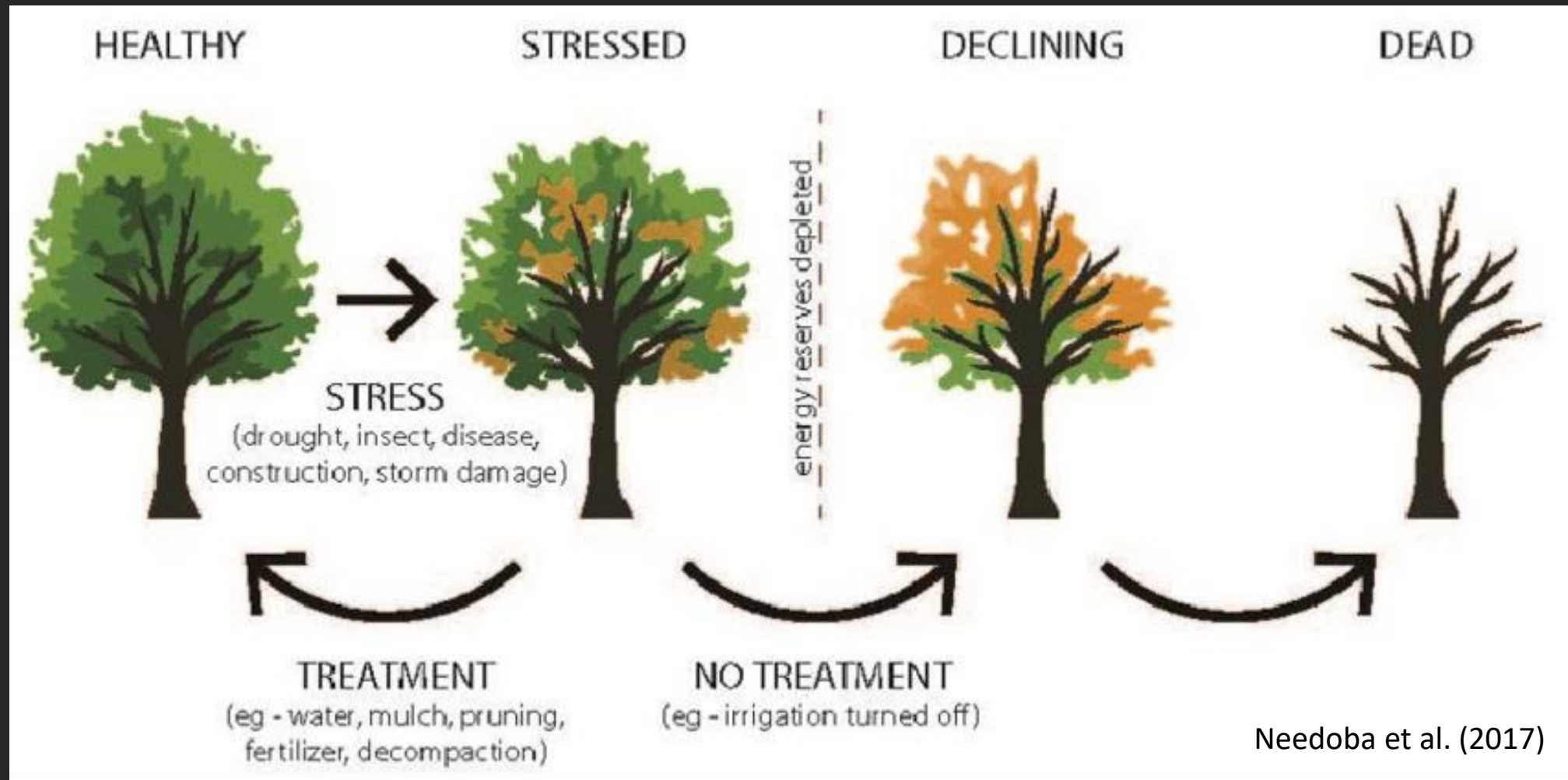




Manion (1991)



Denman et al. (2022)

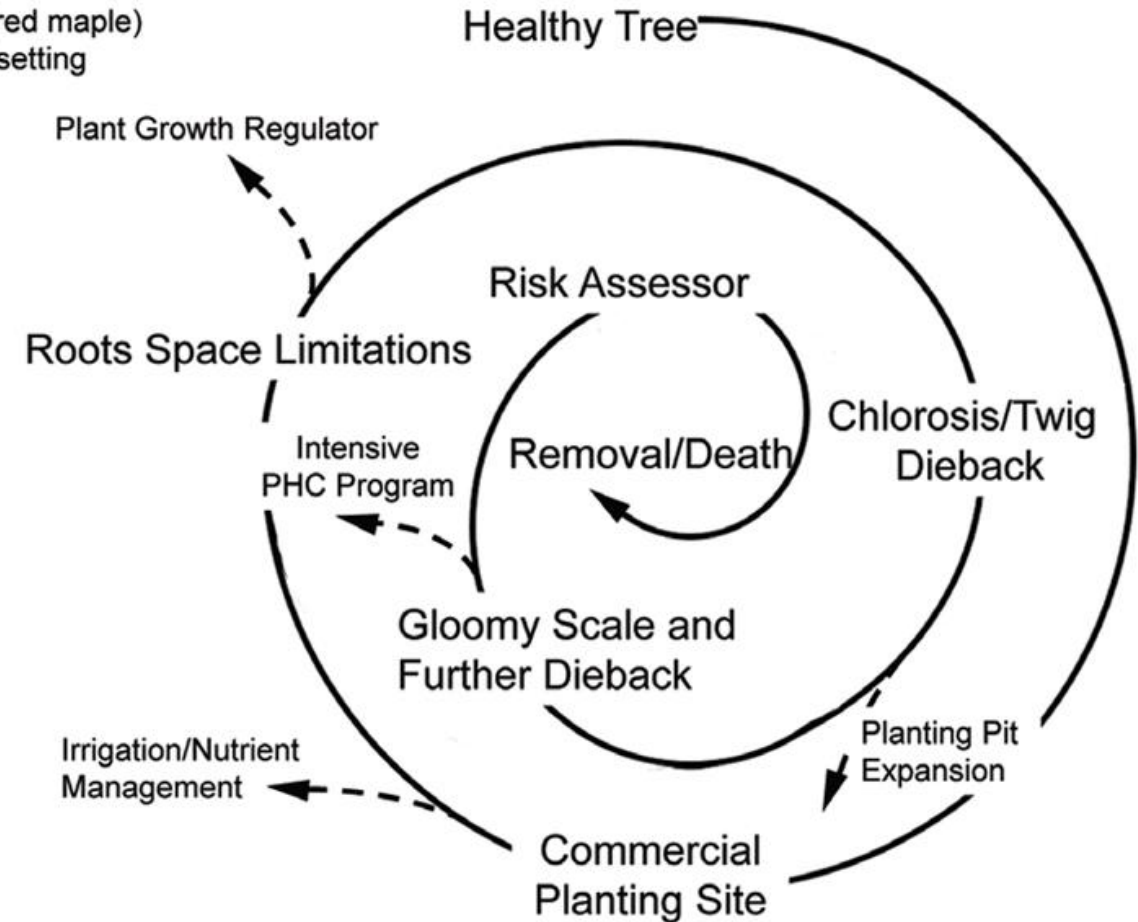


Once trees are in decline, it is difficult to restore them to health

Second best option: treat stressed trees



B. *Acer rubrum* (red maple)
planted in urban setting



Diagnosis is all about becoming a *tree detective*

To uncover the problem –

- Ask the homeowner questions
- Find out more about tree history
- Look at the environment



Be Systematic in Diagnosis

1. Identify Tree
2. Look at Damage Pattern
3. Site Examination
4. Examine Foliage
5. Examine Trunk & Branches
6. Examine Roots & Collar



Determine the causal agent...what do I look for?

- **Symptoms**

- effect of damage; response of tree; visual clues to the source of the problem

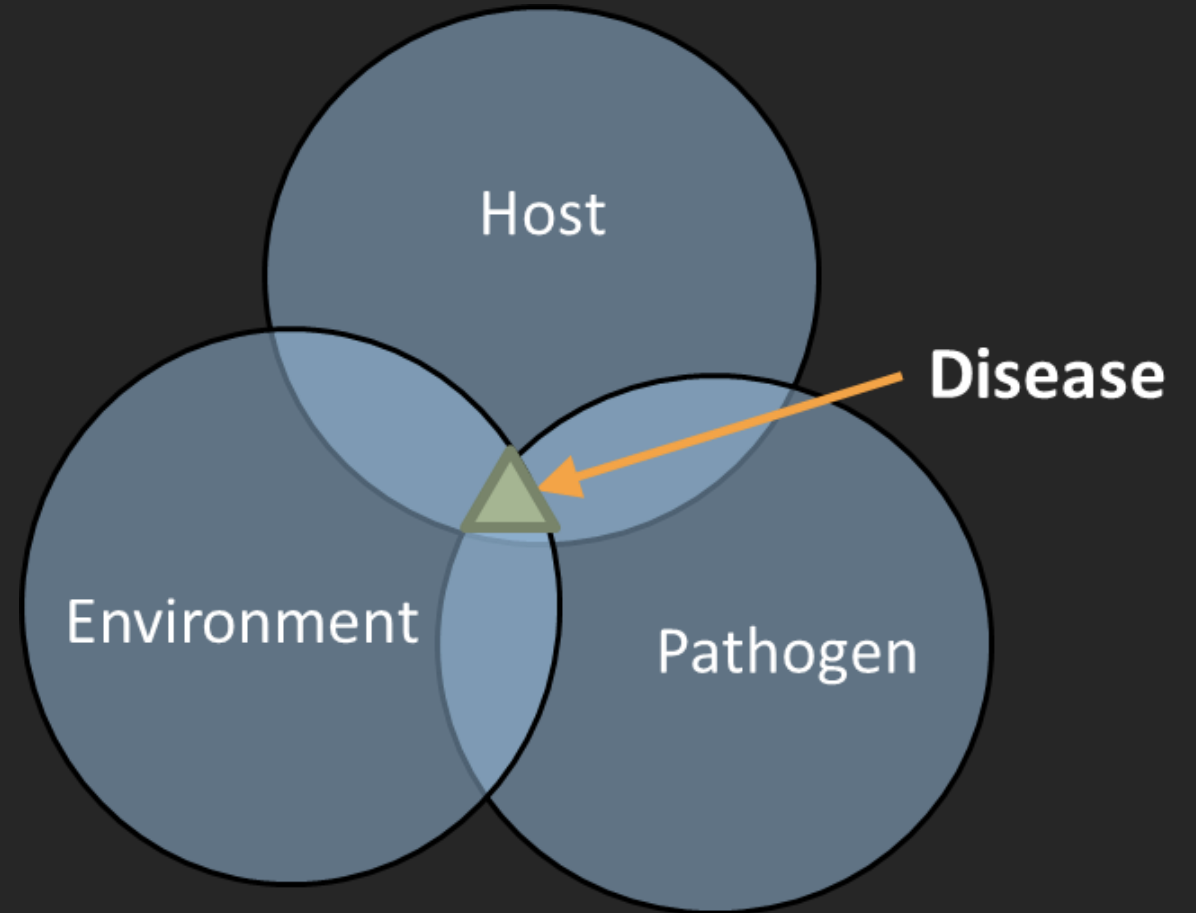
- **Signs**

- physical evidence left behind by cause of injury; show us what the problem is



Treatment Recommendations

- Management recommendations are based on each individual case.
- Eliminate one side of the disease triangle to stop disease.
- Good management strategies employ cultural practices and chemical or biological control options if they are available.



Best option: prevent stressed trees (*do your best*)

Some factors to consider:

- ✓ Native to Mississippi
- ✓ Height and width at maturity
- ✓ Growth rate
- ✓ Spacing (competition)
- ✓ Form
- ✓ Shade preference
- ✓ Evergreen or deciduous
- ✓ Seedling/sapling quality
- ✓ Hardiness
- ✓ Soil type and moisture requirements and tolerances
- ✓ Risk to anthropogenic impacts (e.g., poor maintenance practices, vandalism, construction)
- ✓ Susceptibility to frost, drought, chemical, etc. damage
- ✓ Insect and disease susceptibility



Summary: What kills trees?



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...a lot of things, but it is *usually* a **combination** of abiotic, biotic, and anthropogenic factors that compound over time, not just one factor

A close-up, circular cross-section of a tree trunk showing concentric growth rings in shades of brown and tan. The rings are more densely packed in some areas and more spread out in others, creating a textured, organic pattern.

Questions?

Contact Info



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Survey shout out!

Thank you for taking the time to
help us improve the **Professional
Arborist Association of Mississippi**
Annual Conference!



Day 1 Survey