

Tree Pests and Disease

Outline for Health Management Plan: White Pine (*Pinus strobus*)

Edmonds: 323-331, 556

Blister rust: <http://www.umaine.edu/fes/Classes/int256/DiseaseID/dis11/dis11.htm>

Weevil: http://www.na.fs.fed.us/spfo/pubs/fidls/wp_weevil/weevil.htm

Blister rust and weevil: http://www.na.fs.fed.us/spfo/pubs/howtos/ht_white/white.htm

White pine decline: http://media.ume.maine.edu/courses/FES/White_Pine_Decline.htm

I. Consider forest management objectives:

II. Tree adaptations .

A. *Site.*

1. Soils

2. Establishment.

3. Competitors.

B. *Climate.*

b) Degree of tree adaptations to stress and environment.

2. Inciting factors: Factors directly initiating disease.

3. Contributing factors: Factors detrimentally affecting the tree only after it has become diseased.

C. *Control options: (Silvicultural, biological, breeding, legal, chemical, mech., none)*

1. Preemptive:

a) What can increase tree resistance:

b) What else can decrease stress(es) (pathogen(s)):

2. **Currents, gooseberries (*Ribes* spp.):**

- a) Symptom(s):
- b) Diseased function(s):
 - (i) Tissue functions initially affected:

 - (ii) Potential impact on whole plant functioning:

3. Primary stress(es) [pathogen(s)]:

- a) Abiotic factor(s) &/or Latin name(s): ***Cronartium ribicola***
- b) Signs: **Rust fungus – requires two hosts, 5 spore stages**

c) Mechanism of how primary stress agent disrupts tree function:

4. Environment:

B. Development - Interaction of disease triangle over time.

1. Predisposing factors:

a) Degree of stress - Life cycle

b) Degree of tree adaptations to stress and environment.

(i) Introduced pathogen -

(ii) Tree Age:

2. Inciting factor for disease: Factors directly initiating disease.

a)

3. Contributing factors: Factors detrimentally affecting the tree only after it has become diseased.

a)

C. Control options: (Silvicultural, biological, breeding, legal, chemical, mech., none)

1. Preemptive:

- a) What can increase tree resistance:

- b) What else can decrease stress(es) (pathogen(s)):
 - (i) ***Ribes* eradication - Rocky Mountains.**

 - (ii) ***Ribes* control in Maine.**

 - (iii) **Avoid high-hazard sites and conditions.**

 - (iv) **Pruning.**

 - (v) **Noninfected nursery stock.**

B. Development - Interaction of disease triangle over time.

1. Predisposing factors:

a) Degree of tree adaptations to stress and environment.

b) Degree of stress.

2. Inciting factors: Factors directly initiating disease.

3. Contributing factors: Factors detrimentally affecting the tree only after it has become diseased.

C. *Control options: (Silvicultural, biological, breeding, legal, chemical, mech., none)*

1. Preemptive:

a) What can increase tree resistance:

b) What else can decrease stress:

2. Reactive:

3. Feasibility of option(s):

a) Economic: cost vs. value.

b) Ecological: Influence on other species in forest.

c) Political: Laws and regulations.

VI. Recommendations.

A. *Preemptive measures.*

B. *Monitor and Survey:*

C. *Reactive measures.*

VII. Terms

White pine weevil

Sheperds crook

Pissodes strobe

White pine blister rust

Canker

Cronartium ribicola

Spermagonia

Aecia

Uredia

Telia

Basidia

Necrotroph

Basidiospores

High-hazard sites

Shelterwood

Pruning

White pine decline

Pole-size stands

Soil barriers

Old fields

Drought

Salvage