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Shelterbelts/Windbreaks: How to Assess Partial Damage

Cooperative Extension South Dakota State University

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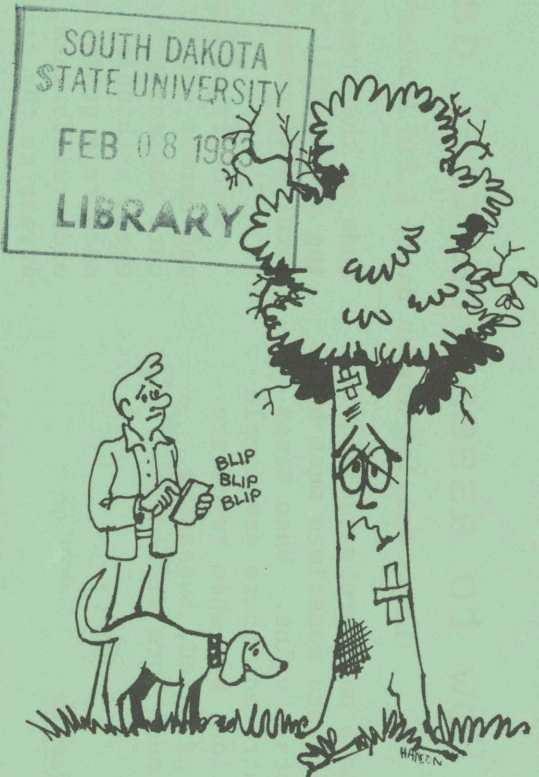
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Shelterbelts/Windbreaks:

How to assess partial damage



Cooperative Extension Service
South Dakota State University
U.S. Department of Agriculture

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Shelterbelts/Windbreaks:

How to assess partial damage

Larry Helwig, Norman Baer, & Sid Dronen*

Damage to trees and shrubs in landscapes and windbreaks sometimes must be assigned a monetary value. When trees are totally destroyed, there are simple formulas to follow, but when trees are only partially affected, assessing damage becomes much more difficult.

Categories of damage

(1) Physical damage. When less than 25% of the total crown has been damaged, there's little need for concern. A knowledgeable person can judiciously prune and remove the conspicuous damage.

Damage to the main stem and/or roots is, of course, more serious. When less than 25% of either the roots or main stem has been damaged, the major emphasis should be on speeding the rate of healing. When 50% or more of either the main stem or roots is affected, the tree should be given the best of attention, because extensive damage decreases the tree's resistance to the effects of wind, insects, and disease.

(2) Fire damage. Fires that move rapidly through a planting with small amounts of fuel are dramatic but of little concern. It's more serious when large amounts of fuel are on the ground and the fire lingers or burns the tree crowns.

The season the fire occurs will also be a factor. A spring or winter fire will be less damaging than one in the fall or summer.

Shorter trees--like those in Christmas tree or nursery plantings--will suffer more damage than those in a shelterbelt.

When you assess fire damage, examine the cambium layer under the bark and the

buds on the branches. Probably a waiting period will be necessary before a total assessment can be completed.

Recovery of partially damaged trees and shrubs can be improved if special care and management are provided. However, a thinning of the tree crowns will encourage grass and weed growth in older windbreaks, causing long-term stress to the trees.

(3) Chemical damage. Although the intensity of damage caused by herbicides varies, most often, portions of tree and shrub crowns will be defoliated and/or parts of the crown will show some degree of discoloration and twisting or cupping of the leaves.

When chemical injury symptoms first occur it is difficult to know how trees will respond. Full recovery should not be assumed. The trees will undergo some degree of stress.

Trees growing on the plains are always subject to climatic stress; additional stress caused by chemical injury can trigger the development of other natural problems such as insect or disease attacks or increase the moisture competition from grass.

Different herbicides, depending on how they are applied, have different effects on trees. Soil applied herbicides, especially those with a long soil residual period, can cause damage for several years; they can kill a tree any time during those years. Trees accidentally sprayed with foliar applied herbicides, if not killed immediately, will often recover within a year or two unless attacked by insects or diseases.

As is the case in fire damaged trees, chances for recovery are improved if the trees receive special care and management practices.

Chemicals with an oil base carrier are especially damaging to trees. Excessive nitrogen is also very damaging.

*Extension forester, SDSU; research forester, SDSU, and state staff forester, SCS, Huron

Information pertinent to
a chemical damage situation

Record information as soon as possible after the damage occurs.

- (1) List name and rate of chemical and other additives thought to cause the problem.
- (2) Give scientific name(s) and number and age of plants involved.
- (3) Diagram the pattern of damage, take photos of damaged foliage (one close-up).
- (4) Record date sprayed, weather for that day, date evaluated.
- (5) Describe management level:
 - (a) vegetation within and in planting perimeter.
 - (b) soil compaction by animals.
 - (c) other pests.
- (6) Describe use of the planting.
- (7) List name and address of applicator.

Send all the information to the Department of Agriculture, Pierre, SD, with chemical applied.

Damage assessment percentages

PHYSICAL

Branches

10-25% damaged: assess 10% damage
25-50% damaged: assess 25% damage

50-75% damaged: assess 50% damage
75%+ damaged: assess 100% damage

Roots and main stem

10-25% damaged: assess 25% damage
25-50% damaged: assess 50% damage
50-75% damaged: assess 75% damage
75%+ damaged: assess 100% damage

FIRE

Fire before growing season: Wait until growth resumes and assess according to procedure in "physical damage to branches."

Fire during growth period where ground fire is intense: Check cambium in 12-inch area above ground for damaged tissue in each species.

Fire during growth period with damage to crown: Assess according to how much of the crown was destroyed. Christmas and landscape trees with crown damage will receive full damage assessment.

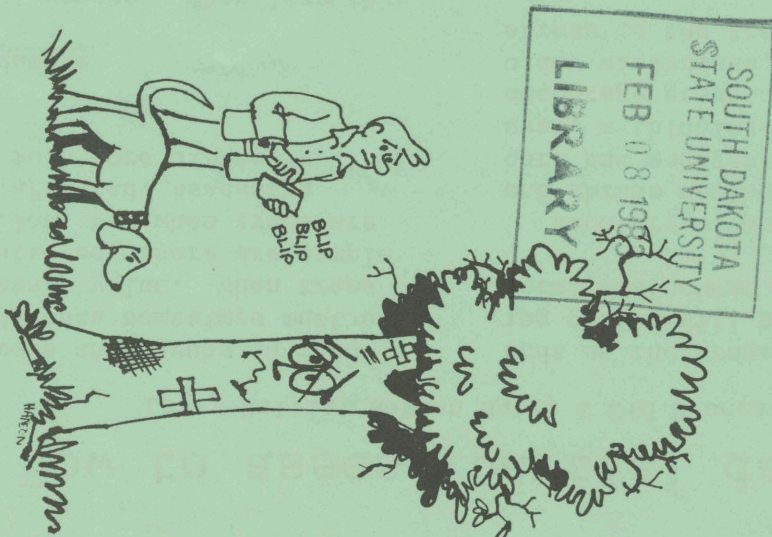
CHEMICAL

5-25% cupped, twisted, and/or burned: assess 25%
25-50% cupped, twisted, and/or burned: assess 50%
Above 50% cupped, twisted, and/or burned: assess 100%

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