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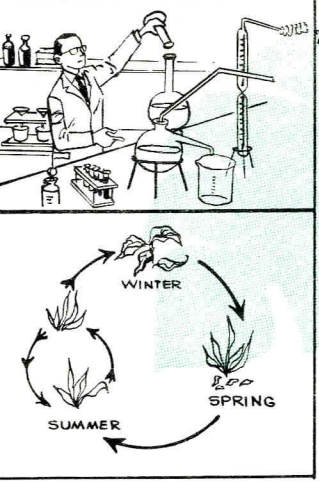

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PLANT DISEASES

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JOHN L. WEIHING
Extension Plant Pathologist

INJURY in EVERGREENS DUE to WEATHER

The worst enemy of our evergreens in Nebraska is the weather. Every year the University of Nebraska receives numerous specimens that show winter injury. Excess moisture, drouth, extreme temperature changes all decidedly influence the physiology of the tree and it is not unusual for Nebraska to have all these weather conditions in one season.

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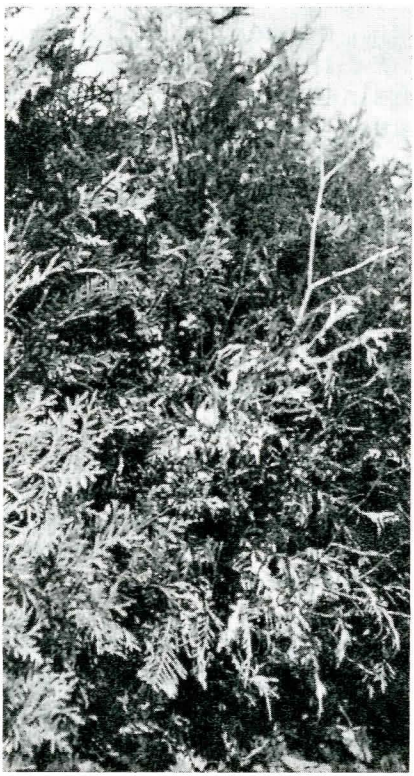

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Symptoms: Weather injury is shown by dead tips of branches and twigs. In some instances the injury is so severe as to kill the entire tree or bush.

Causes: Spring frosts - Injury is most severe when low temperatures occur in very late spring after new growth is well advanced. Because of frost pockets, trees growing in hollows and valleys are damaged more often than those on higher ground.

Autumn frosts - A cool summer followed by a warm autumn prolongs the growing season. Under such conditions the twigs and branches fail to mature properly and are subject to damage from early autumn frosts. Unseasonable cold waves in the fall may result in much damage.

Winter injury - Trees frequently suffer severely during the winter despite their dormant condition. Their winter hardiness is influenced by drainage, location, natural protection, species of tree, and character of the root system, as well as by the combination of unfavorable weather conditions. Pine roots are most likely to freeze in poorly drained soils. The effects of frozen roots are seldom noted until the following summer. At that time the tree may wilt and die. Injury to roots occurs most commonly during winters of little snowfall or in soils bare of small plants and other vegetation.

The ability of the tree to withstand low temperatures is also governed by the maturity of the wood. Trees fed excessive amounts of nitrogenous fertilizers, or those making considerable growth in late fall, are most commonly injured.

Winter drying - Winter injury to evergreens is rarely caused by excessive cold during the winter. The damage is caused, rather, by excessive and rapid fluctuations in temperature.

Evergreens lose water continuously. Of course water loss is quite reduced during the winter months, but it may be considerably increased by warmth. Plants subjected to drying winds or growing in warm, sunny spots lose more

water than protected plants. Unless the water lost during this period is replaced by absorption through the roots, the leaves wilt, turn brown, and die.

Prevention of winter injury: Naturally, one cannot control the weather. In some instances, however, several precautions can be taken to reduce the possibility of winter damage.

1. The selection of well drained soils as sites for trees cannot be overemphasized. Trees will withstand low temperatures better in well drained soil.

2. Be sure the evergreen has ample water during the the winter months. Thoroughly soak the soil around the tree or shrub before freezing weather sets in. Winter watering in desirable when the soil is not frozen and when soil moisture is low.

3. Deep freezing may be prevented by placing mulches of oak leaf mold or peat moss underneath the evergreen. This will help the roots absorb water and avoid winter injury.

4. Plant the evergreens where they may be protected from winds and sun. Both wind and warmth during the winter months causes drying out of the foliage to the point of injury. Foundation planting sometimes must be made in sunny spots or windy locations. In this instance, select hardy varieties suitable to the location.

5. Maintaining a fertile, well aerated soil not only increases root growth, but also tends to encourage deeper rooting. Both of these factors help to reduce the possibility of winter injury. Better aeration can be obtained by spading the soil around the tree and by improving water drainage. Digging should be shallow, so as not to disturb the feeding roots near the surface.

Care of winter injured plants: Drastic pruning of winter-injured plants is not advisable. It is impractical to prune winter-injured needles of evergreens, but all dead wood should, of course, be removed.

An application of fertilizer in the spring following winter injury encourages the formation of new tissue. This will make it possible for the tree to withstand summer conditions better. For evergreen trees, apply two to four pounds of 10-6-4 or 8-5-3 fertilizer per inch of trunk diameter. Spread it uniformly around the tree. Cover a large enough area so that not more than four pounds of fertilizer is applied per 100 square feet.