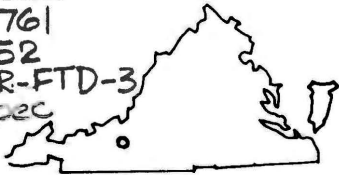


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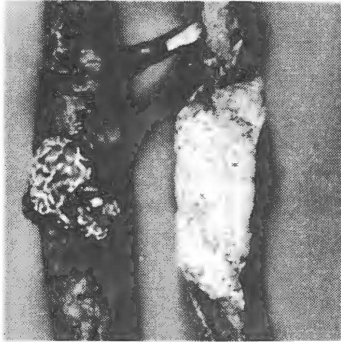
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Forest Tree Diseases of Virginia

BLACKSBURG, VA.

September 1968

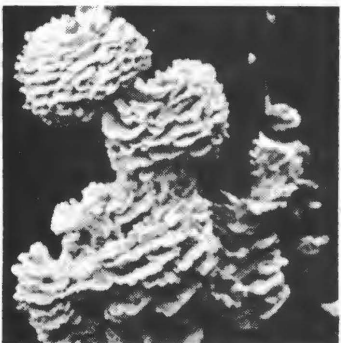
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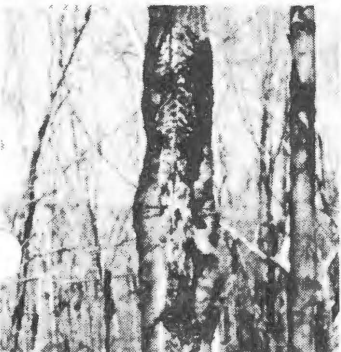
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Winter Drying

by

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Winter drying and subsequent death of plant tissues is very common in Virginia where many species are at the northern edge of their range. However, all species of plants native to an area may be damaged by this phenomenon of winter drying of tissues. Large numbers of trees, especially loblolly pine, have been damaged during the recent severe winter.

The source of seed has been demonstrated to affect the survival of loblolly pine in northern areas of its range. Trees grown from seed collected from trees found in the same region thrived, whereas those grown from seed collected further south were highly susceptible to winter dessication and death of tissues.

Suspects: Any species of plant is susceptible to winter drying when exposed to drying conditions for a sufficient length of time; however, plants which retain their leaves during the winter months are more likely to be affected than are deciduous species. Tip dieback may occur in some hardwood species, but this dieback is most probably due to hard frosts early in the spring which kill terminal buds and twigs.

Conifers of all types are particularly susceptible to this damage. Portions of the plants which are beneath the snow are usually not affected.

Cause: Winter drying and killing of tissues has been extensively investigated and yet the exact cause is still questionable. The most likely explanation involves frozen soil water and exposure of the plant to drying winds. Damage is most likely to occur on warm winter days which have been preceded by a prolonged period of very low temperature. Under such conditions soil water is frozen and no longer available to the plant and/or the water present in the plant stem is frozen and blocks the upward movement of water to the leaves. During periods of warmth and a slight wind with low relative humidity, leaves begin to lose

water to the air which cannot be replaced due to the frozen condition of the soil and stem water. The extent of leaf damage (marginal scorch or death of the entire leaf) depends upon the length of the exposure to such conditions as does the survival of the entire plant. Winter drying is not the same as blackening of foliage due to late spring frosts.

Symptoms: Winter injury is usually difficult to recognize due to the many symptoms which may occur. Symptoms of winter drying do not occur until the following spring and may be expressed as marginal scorch, tip burn of needles, mottling of leaves, leaf fall to various extents, death of entire leaves, twigs or plants. The color of leaves when totally killed is usually a uniform tan, and the leaves are very dry and brittle. Terminal buds are seldom killed, and affected plants appear to be tufted when new growth begins. Many root diseases which are caused by organisms, especially nematodes, result in symptoms very similar to those resulting from winter drying, and careful diagnosis is necessary to separate the two.

Control: The maintenance of healthy, vigorously growing plants will reduce the amount of damage. If soil moisture is low, plants should be watered during the fall to insure an adequate moisture supply before winter begins. Ornamental conifers should be heavily mulched to reduce soil water freezing and plants may be shaded to prevent warming and drying of foliage. Under forest conditions or in areas of large ornamental plantings, species should be selected for resistance and grown from seeds or planting stock originating in the area.