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WINTER INJURY IS STUDIED

EVAPORATION IS CAUSE OF INJURY, NOT FROST.

Low Temperature Has Little Effect on the Disease.

BY GEORGE L. LUTSEN
(Expert Horticulturist at Union Experiment Station)

Eastern Oregon Experiment Station
Union, Feb. 28.—(Special)—At first it was thought by plant physiologists that what is known as "winter injury" was caused by a freezing of the sap in the cells which would burst the cell walls and ruin their structure.

Injury Due to Evaporation.

The theory that freezing and bursting the cell wall has been proven to be a fallacy and it was later shown that the injury was due to the evaporation of water from the trees and the checking of rise of moisture from the roots caused by the continued freezing weather. It is a well known fact that trees whose cells are filled with water will give off more moisture than those whose cells are fairly dry. This gives us the reason why trees which enter the winter before the sap has gone down or before they are ready, are much more susceptible to winter injury.

May Attack Any Part of Tree.

This disease (we call it a disease because any abnormal condition of a plant is a disease), may follow pruning in the form of a "die back" caus-

ing the branches to become discolored and die some little distance below the cut.

It may also attack branches, trunk or roots of a tree without any previous injury had been made by the pruning tools. When the branches are attacked they generally die, leaving the bark, and, in most cases, the wood discolored. Sometimes they put out a few straggling leaves or shoots but they nearly always die in the long run.

The most serious damage generally done to the trunk of the tree, especially the older trees, is the splitting of the wood. Sometimes cracks are made an inch wide and they may extend to the heart of the tree. On the stem of the young trees it takes about the same form as it does on the branches of the larger trees.

When the roots are injured the effect of the injury on the growth is noticed sooner than when the part above ground is injured. The trees will die or recover much more quickly when the roots are affected.

Temperature Not the Only Factor.

For a long time it was thought that it was wholly a matter of temperature and that when the thermometer went below a certain point all of the trees would be injured but this has been found not to be the case. Much variation was noticed in the seriousness with which the trees were affected even in the same orchard. Then it was thought to be a varietal difference, the orchardists thinking that it mostly depended upon the difference in the resistance of the various varieties but after a few years of experience this was also disproven.

It is now believed that there are many factors which aid in determining the seriousness of this trouble, such as age of trees, temperature, variety (to some extent), condition of soil, wind, past and present condition of trees, and how the trees enter into the dormant season.

As a rule young trees are more susceptible to injury than the older ones but they also get over it more quickly and the ultimate effect is not apt to be as serious unless they are killed outright.

The influence of the temperature is not nearly as great as it is often supposed to be. While a certain degree of coldness is necessary to cause winter injury yet there are other factors which are equally if not more important.

The condition of the soil is one of these important factors and trees growing on a water logged soil are very susceptible to winter injury. The orchards of Eastern Oregon are, as a rule, not planted on such a soil but our dry sandy soils are equally as unsuitable for the trees unless the soils are protected.

The wind is another factor which greatly aids in drying out the trees during the cold spell especially here in the Grande Ronde valley where a cold wind blows most all winter.

Probably the most important factor influencing the seriousness of winter injury in Eastern Oregon is the condition in which the trees are found when the frosts come in the fall and what previous care they have had. It is an acknowledged fact that trees which are irrigated or cultivated late in the fall are in poor condition to withstand a cold spell. Trees low in vitality caused by diseases or overbearing are much more apt to winter kill than are trees of good vigor.

If the ground is covered with snow during the cold weather, root injury is not apt to occur but in this case the injury is apt to be found at or a little above the snow line. Winter killing of the roots is most serious where the roots are near the surface and where the soil is unprotected.

Preventative Measures Best.
In controlling this, as is the case with any other disease, preventative measures are the best. Trees that are thoroughly mature and ready to go into the rest period when the frosts come on in the fall and planted on a soil which is properly protected with a cover crop or a straw mulch are not very apt to be seriously winter injured. In some cases it may be advisable to wrap young trees with old gunny sack or something of that sort to protect them.

After the damage has been done it is best to cut off the injured branches and if the trunk is badly cracked the wound should be cut out to live wood, properly disinfected and the opening filled with grafting wax unless it is too large when it should be stuffed nearly full of newspapers and a coat of grafting wax applied to the outside. In some cases it may be advisable to cut young trees off at the snow line

If that part of the tree which was above the snow line is dead. However, no cutting should be done while the branches or trees are frozen.

In dealing with any disease it must always be borne in mind that it is better to prevent it if possible than to try to cure it after the injury has been done.

The Tailors' union at Toronto, Ont., is demanding an increase in wages. Clothing prices may be advanced.

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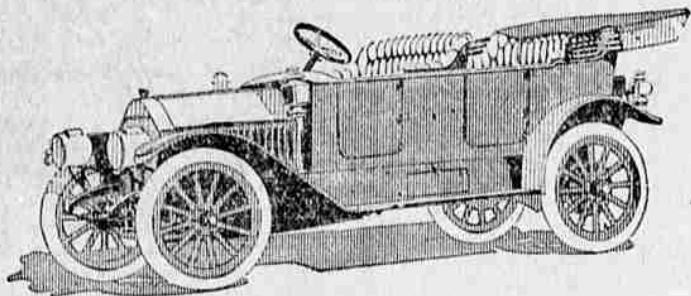
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