

AGRICULTURAL EXPERIMENT STATION
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BERCKMAN BLIGHT

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A serious blight of the various varieties of Thuja orientalis has become very destructive in the Oregon nurseries and home gardens during the past few years. This disease has been investigated during the past year by the Oregon State Experiment Station with funds provided in House Bill No. 465 enacted by the last session of the State Legislature. Preliminary control experiments have been so promising that general trial control recommendations can be suggested at this time.

Cause of Berckman Blight

The cause of Berckman blight is a new and undescribed species of fungus which belongs to the genus known as Coryneum. Careful examination will show large numbers of black spore masses on the blighted twigs. These spores are responsible for the spread of the disease from one plant to another, as well as from one nursery to another. In order to grow healthy plants it will be necessary to destroy these blighted twigs and spores, and to protect the healthy foliage with some suitable fungicide.

Plants Affected

The same disease has been found on the following varieties of Thuja orientalis: aurca nana, (Berckman's golden arbor-vitae), beverleyensis, bonita, Bakers, elegantissima and compacta. It probably occurs on all varieties of T. orientalis. The blighting on other species of plants is probably caused by other organisms, and should be sent to the college for determination.

Control Suggestions

When to spray--Experiments conducted during the past year have shown that a single application of the proper fungicide made in early September, or before the early fall rains, was sufficient to check the disease on plants that were heavily infected the preceding year. However, in special cases where different methods of watering are practiced, or during unusually wet seasons, it may be desirable to spray again in January or even as late as April. There is very little, if any, spread of the disease during the dry season, or when

the plants are kept dry. The larger the number of sprays applied to heavily infected trees, the better chance there is for complete protection. Plants should be sprayed or dipped just before sale to insure the grower that his plants will remain free from the disease at least one year after they are sold.

What to spray--All varieties of *T. orientalis* (see list above) should be sprayed. Healthy plants as well as diseased plants should be sprayed. Small cuttings are as susceptible as the larger plants to the disease. These should be dipped or sprayed before planting, and should be included in the regular fall spray. It is much easier to keep a plant clean than to clean it up after it becomes infected.

What spray to use--Of the large number of sprays and spray combinations tested during the past year, the following three copper sprays gave the best results: Bordeaux mixture, either a 4-4-50 or a 4-2-50 mixture; copper oxide 1 pound in 50 gallons of water; or basic copper sulphate, 2 pounds in 50 gallons of water. The 4-4-50 Bordeaux mixture gave a conspicuous residue that soon disappeared when the fall rains began. Very little residue resulted from the 4-2-50 mixture, and no residue from either the copper oxide or the basic copper sulphate. Only the home-made mixtures of Bordeaux have been tested, but the better commercial mixtures may give control. Generally speaking, the home-made Bordeaux mixtures are superior to the commercial mixtures. It is suggested that the grower try any one of these three types of sprays.

How to prepare the sprays--Bordeaux mixture should be prepared as outlined in Oregon State Agricultural College Extension Bulletin 477. Proper amounts of the stock solutions should be used to equal either the 4-4-50 or 4-2-50 combination.

Copper oxide and basic copper sulphate are finely ground insoluble copper compounds. The spray consists of a suspension of these small particles. It is necessary to constantly shake or agitate the spray to keep the materials suspended. Mixing the copper compound with the spreader to be used before adding large amounts of water will help keep the materials suspended. The spreader is dissolved in a small amount of water and added to the proper amount of copper. (1 pound in 50 gallons of water equals 1 ounce in 3 gallons of water). Water is then added to bring the amount up to the required volume.

Spreaders or wetting agents--In order to insure a uniform spray coverage it is necessary to add a wetting agent or spreader to the regular spray materials. This should be added to the Bordeaux mixture as well as the copper oxide or basic copper sulphate. In all of our tests, Aresket 300 has been used at the rate of $\frac{1}{2}$ pound per 100 gallons of spray material. However, spreaders of the Pomo or Vatsol type could be used. Be sure all the foliage is wet, both inside the plant as well as the outside. Sprays of this type should be applied only on days suitable for drying, as they will be removed from the plants unless they dry before a rain.

Pruning--It is desirable to remove all dead branches and dead foliage. This destroys many of the spores and also allows light to enter the plant and stimulate new growth. Pruning should be done during the dry season and before the sprays are applied. If trees are pruned for shape during the winter months, such pruning should be followed by a spray, as the fungus will enter these unprotected cut areas.

NOTE:-

The above suggestions are based on only one year's results, and should be accepted as such. They should be considered as a trial, rather than a guarantee of perfect control.