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EXHAUSTIVE OUTLINE OF METHODS OF PREVENTING SPREAD OF BLIGHT IN ORCHARDS

Pear blight is one of the evils which Grande Ronde valley will have to fight against with more or less vim as the orchards increase and the pest spreads. One of the best articles that has been compiled in this relation is one written by the department of plant pathology and entomology at O. A. C. It follows:

What Is Fire Blight.

Fire blight is the most serious of all the diseases which attack the pear and apple. It is a contagious disease of bacterial origin which, under proper conditions, may attack any part of the tree. Besides the pear and apple, the quince, wild crab-apple, hawthorns, mountain ash, serviceberry and some other pomaceous trees are subject to attacks of this disease.

Cause of Disease.

Fire blight is caused by a minute organism belonging to the group of bacteria and known technically as *Bacillus amylovorus*. It is a rod-shaped, motile germ which divides very rapidly by simple fission and is found in immense numbers in the diseased tissue. The germs are so minute that they measure only about 1-25000 of an inch in length and are visible only under the highest magnification of the compound microscope.

Proofs of the Bacterial Nature of the Disease.

Myriads of germs are present in all freshly blighted portions of the tree and in the sticky ooze from exuding cankers. Pure cultures of the organism may be obtained from diseased tissue and cultivated for generation after generation on suitable culture me-

dia. Healthy tissue inoculated with germs from such a pure culture will become characteristically diseased. The germs are found in abundance in the tissues so inoculated and when grown in pure culture and compared with germs from naturally infected tissue, and with those used to produce the artificial infection, are found to be identical.

Part of the Tree Affected.

The germs live almost entirely in the sappy-portion of the bark, though in some vigorous-growing varieties of pears the germs have been known to invade the sap wood to a limited extent. When inoculated into the growing tips of branches, into the blossom, or the fruit, the germs are found generally throughout the tissues.

Distribution.

Fire blight occurs in more or less severity in nearly all parts of the United States where pears and apples are grown. It was first reported in the Hudson River valley, N. Y., about 1792 and was doubtless indigenous in the eastern United States.

In Oregon Fire Blight has appeared in two general localities—one in the southwestern part of the state, including the Rogue River valley, the other in the northeastern part. The former region has doubtless become infested by the spread of the disease north from California, while the eastern part of the state has been infected through Idaho or Washington along the northern route.

Life Cycle of the Blight Organism.

Beginning in the spring the first apparent damage produced by the disease in an infected orchard is the

blighting of the blossoms. Infection is brought about by insects, principally bees, which have visited a case of hold-over blight and become covered with the organisms contained in the sticky exudation, inoculating the flowers in their search for nectar. The organisms divide and multiply in the nectar and are able to enter the living tissues through the unprotected nectaries. Having entered the tissues they quickly blight the blossoms, pass down the blossom-stem and into the fruit spur, killing the tissues and cutting off the leaves from water supply causing them to shrivel and dry, thus producing "fruit spur blight." The latter occurs several weeks after blossom infection. In very serious cases nearly all the fruit spurs may be blighted in this way and the trees set no fruit. Usually the germs die out and do not grow into the twig or branch on which the spur occurs but occasionally the germs may continue into the bark of the branch at the base of the fruit spur and form a typical canker. Fruit spurs on the larger branches are a fruitful source of body infection and many cases of blight canker originate in this way.

Appearance of the Disease.

The name "Fire Blight" is given to this disease because of the characteristic appearance of pear foliage on twigs or branches which have been killed by the blight organisms. The leaves turn black as though scorched by fire and frequently remain on the tree during the following winter. It should be noted that this color of the foliage is characteristic of the

pear when it has been killed during the growing season. If a grower not familiar with the pear blight desires to know how the "twig blight" looks let him girdle a twig in mid-summer and watch the results. The foliage of the fruit spurs, killed by the blight has much the same appearance as that of the twigs. On the apple the foliage of twig and fruit spur blight turns brown and dry.

The cankers are also quite characteristic but are very variable in appearance, dependent on the age of the branch attacked and upon the condition of the tree. The disease progresses most rapidly in the fleshy outer layer of the bark and at first produces a watery appearance in the affected area. Later the tissues of the bark are more or less broken down and the cankers become dark in color and slightly sunken and are filled with a gummy substance which in active cankers exudes. This exudate is at first sticky and contains myriads of the germs. It is attractive to insects which visit such cankers in great abundance and become covered with the organisms. If after becoming infected in this way they visit the blossoms for nectar they inoculate the blossom with the germs which find an easy access to the tissues of the blossom through the nectaries.

Besides the blight cankers found on the limbs and trunks one frequently finds in some varieties of pears and Spitzenberg apples a large canker at the surface of the ground extending up on the trunk for some distance and down the large roots. This condition is called "collar rot," and may result from a blight canker appearing on the trunk and running down into the collar, or may result from infection taking place off at or near the surface of the ground. Wounds made by borers or gnawing animals may furnish the point of infection.

A root rot may be caused by the

organisms gaining entrance to the bark of roots through infection in the tips of water sprouts which come off some distance from the tree. This condition is common in some varieties of pears.

A pear tree when badly cankered is easily recognized at a distance in the early autumn by the general reddish cast to the foliage. When the foliage of only a part of the tree is

reddish it indicates that a large canker has wholly or partly girdled one of the large branches. If the foliage of the whole tree is equally affected we should look for a canker at the collar or roots. It should be mentioned, however, that any disorder of the root system, whether due to pear blight or some fungus or physiological

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FAITH IN UNION COUNTY

Upon retiring from the Observer, which I founded 14 years ago, many friends asked me "Where are you going to move to?" and not a few were surprised when I told them I entertained no thought whatever of leaving grand old Union County. This was natural for the general rule has been for those selling out to move away.

For several years I have been impressed with the possibilities of a rapid growth of this city and county and that I would engage in the real estate business. The opportunity came and if you think I can be of any service to you in either selling or buying I will be pleased to do so.

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GEORGE H. CURREY,

108 Elm Street, two doors north of City Recorder's Office. Phone Main 744