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PREVENTING PEACH CANKER

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PREVENTING PEACH CANKER

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"Peach canker" is of widespread and common occurrence, appearing practically in all peach orchards in Ontario and on all of the more important varieties. This disease must be considered as one of the major troubles affecting this crop, since cankered branches are often seriously weakened, diseased twigs or small branches die back, heart rot may be induced and the trees suffer general loss in vigour.

Fig. 1.—(A) A canker which originated at a dead twig. (B) The same canker cleaned to show the extent of the lesion. Both photographed June 15, 1935.

Older cankers (Figure 1) generally are conspicuous, characterized by shrivelled, blackish, loose, dead bark, and several more or less circular ridges around the canker, and very often accompanied by gummy masses. The earlier stages, with which the grower may be less familiar, appear in the spring as slightly sunken areas sometimes discoloured externally, but which internally show moist, brown bark tissues (Figure 2). These dead tissues dry out in the course of the summer, the surface of the canker becomes more depressed, and its margin more noticeable. Gum usually oozes from the young canker, but it should be remembered that gum may be discharged following injuries of other kinds.

FIG. 2.—Incipient cankers at bases of dead twigs on nursery stock. The dark areas on the bark were recently killed by the canker fungus. Photographed April 27, 1933.

Intensive study of peach canker disease, conducted over a period of five years at the Dominion Laboratory of Plant Pathology, St. Catharines, Ont., has advanced our knowledge of this disease sufficiently to indicate a number of factors in orchard management which have been found to influence the amount of canker present. These are briefly discussed in this bulletin, since it is believed they are of great importance in the prevention of canker.

THE CAUSE OF THE DISEASE

In Ontario, the disease is caused by the fungus *Valsa cincta,* Fr., which is capable of infecting the tree through dead areas or wounds. An interesting and important point in this connection is that infection occurs most readily shortly before and for some time after leaf fall, and to a lesser extent during the remainder of the dormant season. In this respect canker is different from most fungus diseases that orchardists have to combat. As the fungus may continue to be active within a canker for a number of seasons, cankers are usually perennial, and the new tissue formed in the growing season is invaded during the subsequent dormant period. This alternation of healing and killing is responsible for the appearance of the circular ridges around older cankers.

THE RELATION OF PRUNING TO CANKER

In view of the infection period for this disease, the time of year at which peach trees are pruned is of the utmost importance. Where pruning is done in the fall or early winter, healing processes are necessarily delayed and the wounds remain open for a long period, during which a certain amount of the bark surrounding the wound dries out and dies. As a result, both of this long exposure to infection and of the establishment of dead areas, a relatively large percentage of wounds made at that time of year become cankered. From the standpoint of canker control the preferable time to prune is late spring or early summer in order to enable the wounds to heal properly and rapidly. From the practical point of view, this may be too late, conflicting as it would with other operations. It is advisable, however, to delay pruning as late as possible, at least until after the middle of January or, better still, until March.

The origin of many cankers can be traced to the careless habit of leaving pruning stubs which do not heal over but die back and provide an ideal point for canker to develop. On the other hand, where pruning cuts are made clean, close, and parallel to the supporting limbs or branches the probability is that healing will be rapid and complete. Careless manipulation of pruning tools, which cause scraping and slashing of the bark, also provide wounds which may easily become infected and give rise to canker.

Care should be taken to remove dead wood when pruning. It is even advisable to make a second inspection in June, to remove any which may have been overlooked or which may have developed in the meantime. This operation might well be carried on along with thinning. Where possible, cankers on twigs and small branches should also be cut off eight to twelve inches below the point where the canker appears. All prunings should be burned as soon as possible.

THE RELATION OF INJURIES TO CANKER

While the origin of the majority of cankers can be traced to pruning stubs and dead wood, damage to the trees resulting from various other causes such as scraping the trunks, branches or limbs while cultivating, breakage during storms or in harvesting operations may be followed by canker at the points of injury. This is particularly true of injuries during harvest, shortly after which the period of infection begins. Much of this type of injury can be avoided by greater care. Where breakages do occur they should be attended to at once and treated as outlined below.

Injuries caused by the oriental peach moth, peach tree borers, and bark borers, all have an influence on the occurrence of canker in so far as they produce dead areas which may become infected. Any measures which can be taken to control these insects are an indirect aid in prevention of canker.

RELATION OF CULTIVATION TO CANKER

The cultivation of peach orchards plays a very important part in the rate of occurence of peach canker. This has been very well illustrated in the experimental orchard used in the study of this disease. Over a period of five years, three plots in this orchard have been sown to a cover crop: (1) at the recommended time (July 15); (2) a month earlier (June 15); and (3) a month later (August 15). Records show that there was a remarkable increase in the number of cankers in the plot cultivated till August 15. Such cankers originated mostly at dead twigs and leaf scars. Furthermore, winter injuries on the trunks and cankered crotches were much more prevalent in this plot than in the remainder of the orchard. Striking evidence was thus obtained that the delay in seasonal maturity resulting from prolonged cultivation was responsible for the increased susceptibility of these trees to canker. In accordance with good horticultural

practice, it is recommended that the season of open cultivation of peach orchards should cease the first week in July to allow the trees to become properly matured before winter. While it is desirable to keep the trees in good thrifty condition, over-stimulation of growth by continued late cultivation or by excessive or late applications of fertilizer is to be avoided.

THE RELATION OF BROWN ROT TO CANKER

Following blossom or fruit infection, the brown rot fungus frequently progresses into the twigs or spurs. The lesions thus produced may become infected with the canker organism, enlarge and assume importance. Since brown rot infection of the twigs most frequently follows fruit infection, the application of summer sprays, effective in the control of brown rot, will have an additional value in preventing the twig injuries which may give rise to canker. The removal of mummied fruit from the trees and pruning out of affected twigs is also an important help.

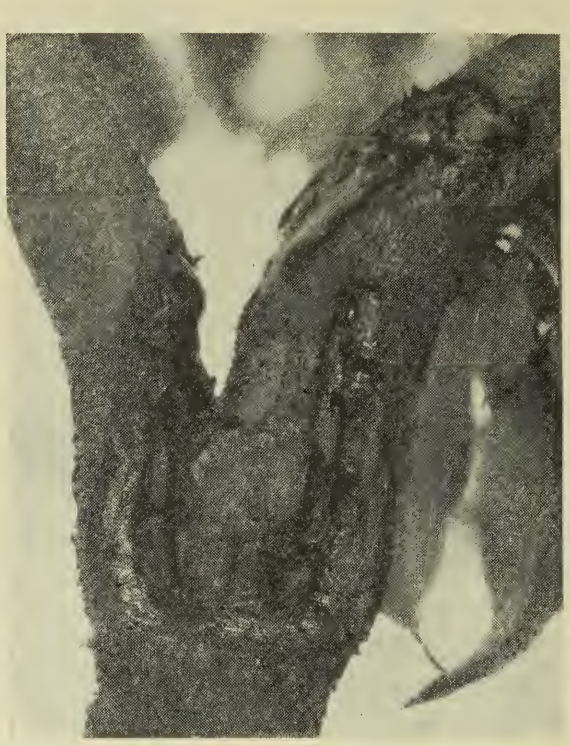

FIG. 3.—Canker from pruning stub at top of whip (1929). Cleaned May 21, 1931. Photographed June 26, 1931.

DISINFECTION OF WOUNDS

The possibility of disinfecting pruning wounds, etc., as a protection against canker infection has been studied. A number of disinfectants have been tried with indifferent results, some being decidedly toxic to the wood. In addition, their application did not enhance healing and their value is doubtful except in the case of large wounds which may be treated in the same way as cankers. Large cankers which cannot be removed, and which are located at crucial points, as on trunks and large branches, should be cleaned out thoroughly in late spring (Figures 3 and 4), removing all gum and brown bark. Cleaning should be followed immediately by disinfection with mercuric chloride 1:500 (corrosive sublimate, 1 ounce to 3 gallons water), and by the application of a protective material such as white lead, free from turpentine and mixed with a small quantity of boiled linseed oil to make a thin paste. Any approved asphalt preparation for use on

trees may be substituted for white lead. Treatment of cankers is more effective in young trees than in old ones where growth is slight and wounds do not heal readily. Treated cankers should be inspected each spring, until healed, as it may be necessary to treat them a second time.

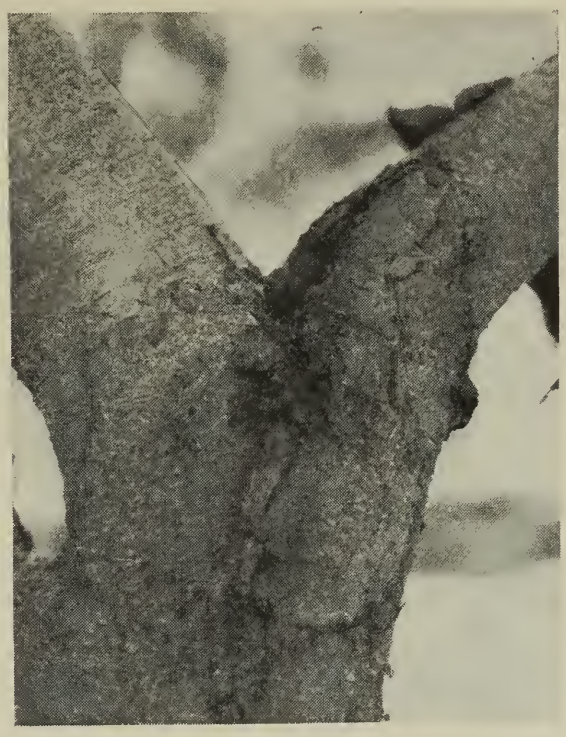

FIG. 4.—The same canker as in Fig. 3. nearly healed when photographed June 15, 1935.

In conclusion, it may be stated that while it may not be possible to keep orchards entirely free from canker, it is thought that considerable reduction in the prevalence of this disease would result from the pruning and cultivation practices enumerated above. The time to begin is when the orchard is newly planted, since cankers developing on very young trees are frequently situated on the main branches or trunk and are likely to result in permanent weakness. The development of sturdy, well-formed crotches is desirable, not only from the horticultural standpoint, but also because it has an important bearing on canker, for weak crotches are vulnerable points for attack.

SUMMARY

(1) In Ontario, peach canker is caused by a fungus, *Valsa cincta* Fr., which usually infects the tree in the fall and winter by way of wounds and dead areas.

(2) Peach trees should be pruned not earlier than the middle of January, preferably in March or April, never in the fall.

(3) Care should be taken to practise close pruning and to avoid unnecessary wounding. All pruning cuts involving the removal of lateral branches should be made parallel to the branch which remains on the tree. Stubs of any kind should be avoided.

(4) Cut out dead wood at pruning time. Any that is overlooked or that develops afterwards should be removed not later than the end of June.

(5) Gather and burn all prunings as soon as possible.

(6) Open cultivation of the orchard should not be carried on after the first week in July. Study carefully the fertilizer requirements of the orchard in order to avoid prolonging the growing period unduly.

(7) Spray for the control of brown rot. Any rotting and mummied fruits appearing, should be removed.

(8) Cankers on the trunks and main structural branches, especially in young trees, should be thoroughly cleaned in the spring, disinfected with 1:500 corrosive sublimate and covered with a non-injurious water-proofing preparation.

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