



PLANT DISEASES

CROWN GALL

Crown gall, a disease of roots and stems, occurs on a large number of plants. In Washington, it is probably most serious on cherries, apples, and a few other tree fruits. It is also a problem on roses and several other ornamental trees and shrubs. Crown gall and the very similar cane gall also affect raspberries and blackberries.

The name describes the rough galls that develop at the crown—the point at the soil line where the main roots join the stem. Often many similar galls will be found on the secondary or lateral roots. Galls may form on the main stem or branches some distance up from the soil line.

Galls vary considerably in size from 1/4 inch to a foot or more in diameter, with the majority being a few inches across. Young galls are soft on the surface and have a light, tan-colored, frosty appearance. As the galls become older, they grow darker, turning almost black, and usually are hard and woody.

There often is no visible effect on the plant other than the galls, but when galls are numerous or a large gall has girdled the stem, the plant may become stunted and sickly, with small, red or yellow leaves. Top symptoms alone are inconclusive, but the presence of galls confirms the identity of the disease.

Crown gall is caused by the bacterium, *Agrobacterium tumefaciens*. Cane gall of brambles is caused by a closely related bacterium, *Agrobacterium rubi*. Some scientists consider both species to be widely distributed in soil.

The organisms are capable of surviving in soil for at least a year and possibly longer.

The bacteria can enter the plant only through wounds, and much infection in nurseries is through grafting and budding scars. Mechanical injuries of crown and roots by cultivation equipment, animals, and insects are also important entry points.

Crown gall is best controlled in orchard and ornamental trees by elimination of infected trees from the nursery. Plants having suspicious swellings at graft unions or near the soil line should be discarded.

Nursery soil in which crown gall has occurred may be treated with a suitable fumigant, such as chloropicrin or methyl bromide. Growing a nonsusceptible crop, such as grass, for three years will almost eliminate the organism from the soil.

Sterilizing grafting and budding tools in a disinfectant solution of 20 percent commercial bleach or a 1/2 percent solution of potassium permanganate will reduce the spread of bacteria in budding and grafting operations.

Painting galls of tree fruits and nuts with Gallex* has helped reduce the incidence of crown gall. Follow manufacturer's directions for use.

Biological control is available for some non-bearing fruit and ornamental crops. This method involves inoculating newly grafted, recently lifted



Large woody galls at soil line give name to crown gall.

transplants or cuttings with a bacterium that is closely related to the one causing crown gall. This prevents the crown gall bacterium from infecting wounds on the plant. Cultures of this competing bacterium are marketed under the trade name Galltrol.

*Note: Gallex is not labeled for use on crabapple, quince, or chestnut.

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▲Warning. Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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