

- Carefully inspect new plant material for evidence of galls or swellings on roots, crowns, or lower stems. Do not bring diseased plant material into the landscape area.

- Avoid injuring roots and stems when establishing plants.

- Control insects that may feed on lower stems, crowns, or roots.

- Once the disease is discovered, carefully remove all infected plants. Also, if possible, remove soil in the area of the galls.

- Always wash cutting and pruning tools thoroughly with soap

and water and disinfect them frequently. Disinfect tools by immersing them in alcohol or germicidal soap.

- For 2 to 3 years after the discovery of crown gall-infected plants, rotate the area to a nonhost plant. Plants reported to be non-hosts for *A. tumefaciens* include andromeda, barberry, birch, boxwood, cedar, firethorn, golden-rain-tree, holly, maidenhair tree, mimosa, mountain laurel, redbud, smoke tree, sweet gum, and tuliptree.



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Use chemicals only according to the directions on the label. Follow all directions, precautions, and restrictions that are listed.

**For more information**, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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## Crown Gall of Ornamentals

Crown gall is a soilborne bacterial disease caused by *Agrobacterium tumefaciens*. The host range of this bacterium is very wide and includes annual periwinkle, arborvitae, ash, begonia, birch, cactus, camellia, chrysanthemum, coleus, coreopsis, cypress, dianthus, dogwood, elm, euonymus, fig, gardenia, geranium, hawthorne, holly, hydrangea, impatiens, ivy, juniper, kalanchoe, ligustrum, maple, marigold, oxalis, pachysandra, pecan, petunia, philodendron, phlox, poplar, prunus, pyracantha, oak, ornamental pear, rhododendron, rose, Russian olive, saintpaulia, salvia, sunflower, verbena, viburnum, willow, wisteria, zinnia, and more. In addition to ornamentals, cotton, grape, tobacco, and many vegetables are also susceptible to attack by *A. tumefaciens*.

**Symptoms.** Initially, small, soft, green or white swellings appear on lower stems at the soil line or crown of the plant. Swellings or galls may also appear on roots and sometimes on the lower stems or trunks. As the galls continue to develop and enlarge, the surface layers may become brown, woody, and roughened. With old galls, the surface layers often decay and slough off. Galls can be spherical or contorted into a variety of shapes.

Plants with galls usually become unthrifty and possibly stunted. Plant death may eventually occur.

### **Persistence And Transmission.**

*Agrobacterium tumefaciens* is a soilborne bacterium that is often introduced into landscape beds on diseased plant material or infested soil. The bacterium enters through wounds on the roots or crowns of the plant. These wounds may occur as points of lateral root emergence, or they may be caused by pruning, insects, cultivation, or other mechanical damage. Once inside the plant, the bacterium transfers some of its genetic material into the plant's cells. These cells begin to enlarge and multiply at an abnormally rapid rate, and small swellings begin to appear on the roots and crowns. Once gall formation begins, the development will continue even in the absence of live bacteria. As galls age and start to decay, bacteria are released into the soil where they may survive for 2 years.

**Control.** Crown gall of ornamentals can be controlled by the following strategies:

- Avoid introducing *A. tumefaciens* from diseased or galled plant material into landscape beds. Plant a resistant crop in the area once the disease is introduced.

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