CROWN GALL

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Crown gall is a bacterial disease which can affect woody and herbaceous plants belonging to over 140 genera in more than 60 families. This disease is caused by the bacterium Agrobacterium tumefaciens and is worldwide in distribution.

Crown gall is characterized by the formation of overgrowths or galls of varying size and form on different parts of the plant. Galls commonly occur on roots but may also appear on the crown (figure 1) and upper stems of some plants. They start out as small swellings, which enlarge slowly, and may attain great size before any effect on plant growth

Figure 1. Crown gall on geranium.

is noticeable. Infected plants gradually decline and appear stunted. Foliage is often chlorotic and the plant may fail to produce flowers.

Diagnosis of crown gall is often difficult if the galls are located on the roots. The only above ground symptom is a gradual decline of the plant similar to that caused by nutrient deficiency. If the decline of a particular plant cannot be explained by nutrient deficiency, an examination of the roots might reveal the cause. Hard, woody galls on several of the roots would indicate crown gall. The size of the galls vary, depending upon the host, from that of a pea to several inches in diameter.

Infection takes place only through wounds on the plant. Wounds may be caused by grafting, temperature extremes, insects or various cultural practices.

In most cases introduction of the crown gall bacterium into an area is by way of infected or contaminated plants. Once it is introduced into soil, the causal bacterium is capable of persisting for several years.

Control of crown gall is based mainly on certain cultural and sanitary practices. Care should be taken to secure disease-free planting stock. All infected plants should be removed and destroyed as soon as they are seen.

The crown gall bacterium cannot be effectively eliminated from soil unless the soil is in confined containers. Steam, vapam, methyl bromide, Vorlex and formaldehyde have been recommended for disinfesting soil contaminated with the crown gall bacterium.

Since the bacterium enters the plant through wounds, care should be taken to avoid wounding the plants. This might involve such things as avoiding close cultivation and controlling root feeding insects.

Strict sanitary practices should be followed in grafting and pruning operations. Tools should be dipped in dilute bleach or alcohol solution between cuts.

Various antibiotics have been recommended for crown gall control. However, in most cases, results have been too erratic to justify their use on a practical basis.