UNIVERSITY OF ILLINOIS EXTENSION
College of Agricultural, Consumer and Environmental Sciences

report on
PLANT
DISEASE

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DEPARTMENT OF CROP SCIENCES
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CROWN GALL

Crown gall, caused by *Agrobacterium tumefaciens*, is an important disease of grape worldwide. This disease occurs on more than 600 species of dicotyledonous plants. Crown gall was first reported in France in 1853. It was reported in the United States in 1889. Crown gall is a common disease of grape in Illinois. Galls form as high as 3-feet or more up the trunk. The disease affects all grape cultivars. Vines with galls at their crowns grow poorly and reduce yields.

Symptoms

The major symptom of crown gall is the fleshy galls that are produced in response to infection, particularly near the soil line (Figures 1, 2, and 3). Early in their development, the galls are more or less spherical, white or flesh-colored, and soft. Then, they develop and become dark brown, knotty, and rough.

Figure 1. *Crown gall on trunks of grapevines. (Courtesy APS, T. J. Burr).*

Figure 2. *Pimplelike galls of crown gall extending up a trunk. (Courtesy APS, T. J. Burr).*

Galls on the lower trunks or major roots disrupt the translocation of water and nutrients which leads to poor growth, gradual dieback, and sometimes death of the vine. Galled vines frequently produce inferior shoot growth. In some cases, infected vines appear stunted and as if they are suffering nutrient deficiency.

Disease cycle

Agrobacterium tumefaciens is a soilborne pathogen and can persist for long periods in plant

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debris in the soil (Figure 4). Wounds on the plants are required for infection. Wounds are made during pruning or any practices that injure the vine. *A. tumefaciens* can survive systemically within grapevines. Thus, pathogen may be introduced into the vineyard on or in planting material. Secondary galls may form in absence of the bacterium.

Figure 3. *Crown gall at the graft union of a grapevine.* (*Courtesy APS, T. J. Burr*).

Disease management

The following practices help to reduce incidence of crown gall in vineyards. 1) Examine plants before planting and discard any that have galls. 2) Wounds by freeze injury appear to be important in the development of crown gall. Thus, preventing winter injury reduces incidence of crown gall. 3) Proper pruning for maximizing vine vigor reduces the incidence of crown gall. 4) Effectively managing other diseases of vines helps to reduce winter injury and crown gall development. There are no effective chemical or biological treatment for management of crown gall of grape available.

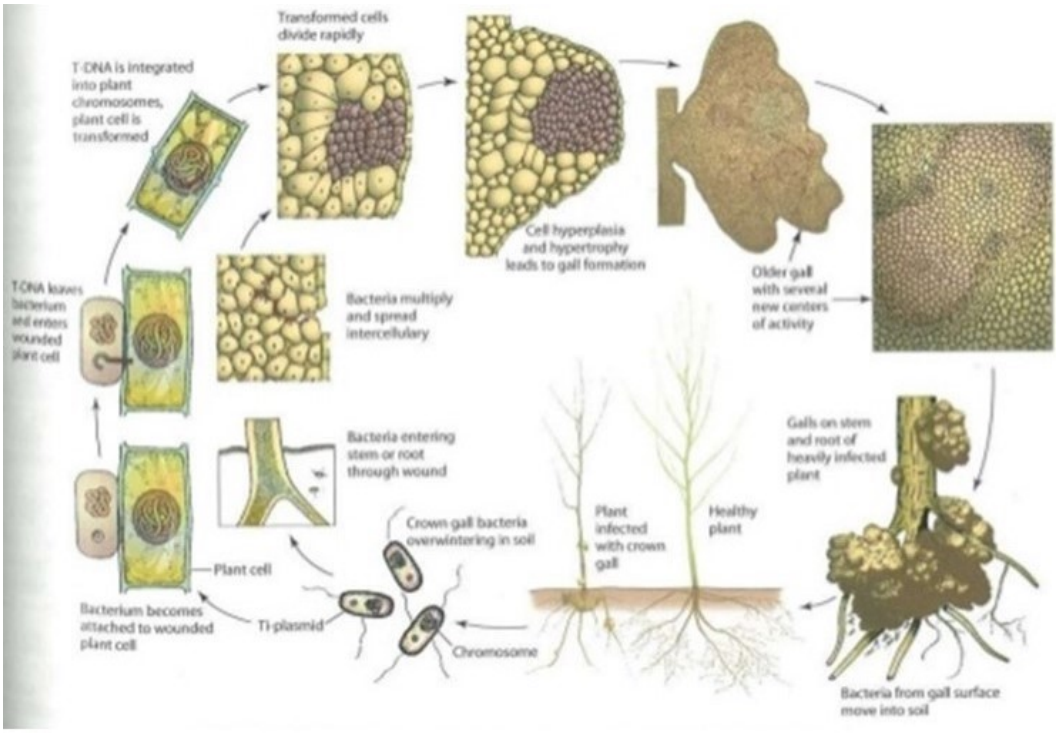

Figure 4. *Disease cycle of crown gall caused by Agrobacterium tumefaciens.* (*Courtesy George Agrios, Plant Pathology, 5th Edition*).