

Grape Crown Gall

Bacterium –
Agrobacterium vitis



Stewart et al, 2005.

- Only found in grape
- Survives in living tissue and in grape debris in soil
- Colonizes vines systemically
- Can be isolated from the sap
- Infection initiated at wound site
 - freeze injuries, graft unions, pruning, training vines, vineyard maintenance induced injuries
- Infected vines can remain symptomless until injured

Grape Crown Gall - Disease

Tumors / galls on trunks



- Vineyards in colder climates
 - susceptible as freeze injuries provide the site of infection
- Reduce vine vigor, growth & yield
- Can effect healing of graft unions
- Can kill young vines at soil line
- *A. vitis* colonizes wound site
 - causes plant cells to overproduce plant growth hormones leading to gall (tumor) formation and enlargement
- Can introduce by field-propagation using infected cuttings

Creasap et al, 2006.

Grape Crown Gall - Symptoms

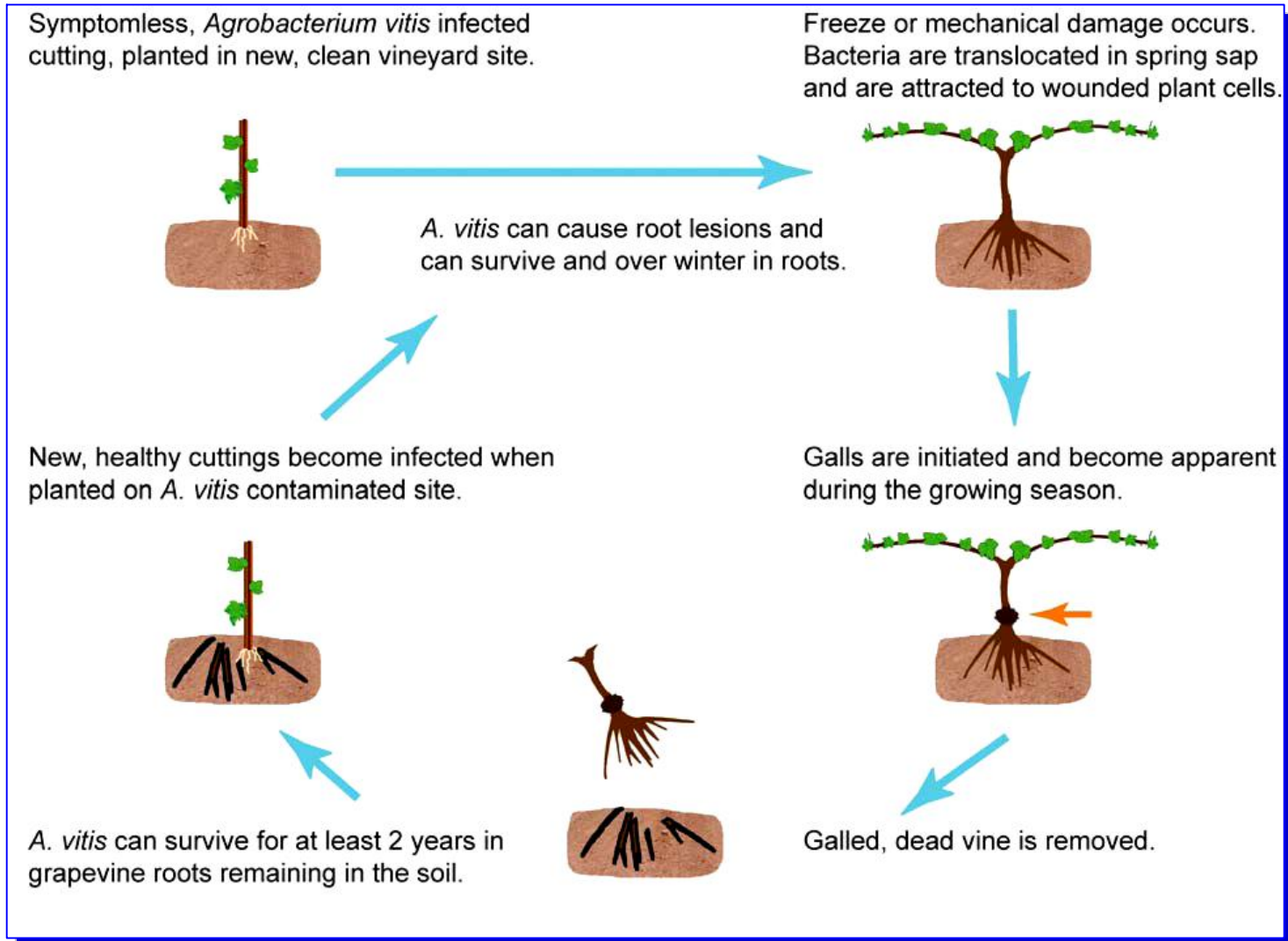
Galls at graft union



Stewart et al, 2005.

- Galls or tumors
 - on lower trunk more common, can lead to girdling
 - on canes at graft unions
 - at nodes where buds removed from rootstocks
 - initiated in the cambium and vascular tissue which affects nutrient flow and vine health
 - normally first observed in early summer
 - newly formed galls are creamy tan- or white- to light green-coloured soft masses of disorganized plant cells
 - Become desiccated in autumn becoming dark and necrotic

Grape Crown Gall – Spread



Stewart et al, 2005.

Grape Crown Gall - Control

Gall below soil line



Stewart et al, 2005.

- No effective chemical treatment
 - bacteria survive in xylem
- Only found in soil where grape is grown
 - plant pathogen-free vines in non-vineyard soil
- Focus on prevention of injuries and maintenance of healthy vines
 - remove dead and sick vines, including root mass and debris
- Crown gall-free vines can be propagated by shoot tip culture
 - seedlings can be planted in clean mother blocks and used as a source of propagation material
- Domestic grapevine certification program to provide virus- and crown gall-free nuclear stock

Internet Information Sources Used

- Stewart, E., Wenner, N., Long, L. and Overton, B. 2005. **Crown gall of grape: understanding the disease, prevention and management.**
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- Creasap, J. and Burr, T. 2006. **Grape crown gall.**
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- B.C. Ministry of Agriculture and Lands: **Crown gall of grape**
(*Agrobacterium vitis*)
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Thank you! – How to contact me



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