

Grapevine Grafting Disorders

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Grapevine grafting disorders are still a reality in vineyards.

Grafting is the process of connecting two varieties to achieve a plant that produces the above ground canopy and crop (cultivars of *Vitis vinifera* L., called scion) and below ground a root system from bred *Vitis* species (*Vitis berlandieri*, *riparia*, *rupestris*), referred to as the rootstock. The rootstock which will produce the root system must be resistant or tolerant to soil issues such as Phylloxera, and abiotic problems like salinity or calcium (chalk).

The main grafting methods used for grapevine are:

- Omega graft (mechanized technique used by most nurseries)
- Cleft graft (not really used currently by nurseries; could be used for direct hand grafting in the field)
- T-bud, chip bud and bark grafts (hand grafting used in the vineyard)

Successful grafting in plants requires the development of a functional vascular system between the scion and the rootstock (figure 1). Understanding the spatial organisation of the graft interface is important for the evaluation of new rootstock genotypes and for the development of new grafting technologies.

Figure 2 illustrates a longitudinal section of Caladoc on SO4 (omega graft) presenting grafting disorders. The practical issue is that grafting disorders are not always easily spotted from nurseries which will eventually lead, over years, to grapevine mortality in vineyards.

References

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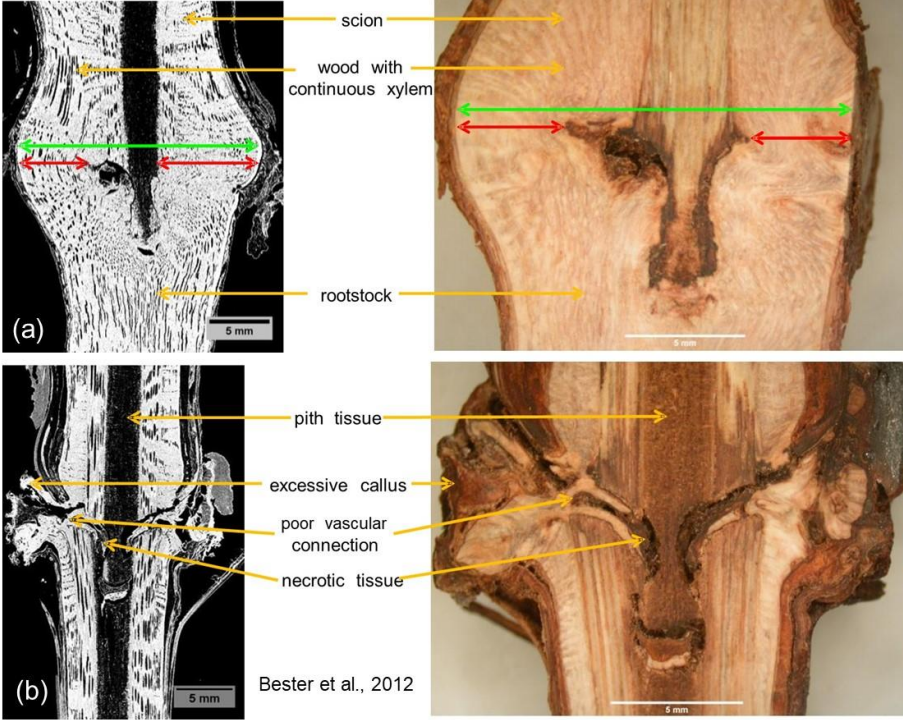


Figure 1: Longitudinal sections and tomography views of Omega graft zones of Pinot gris on 110 Richter: (a) is a healthy plant with good vascular continuity and no grafting disorder symptoms; (b) is a sick plant with poor vascular continuity and classical symptoms of graft incompatibility (from Bester et al., 2012).

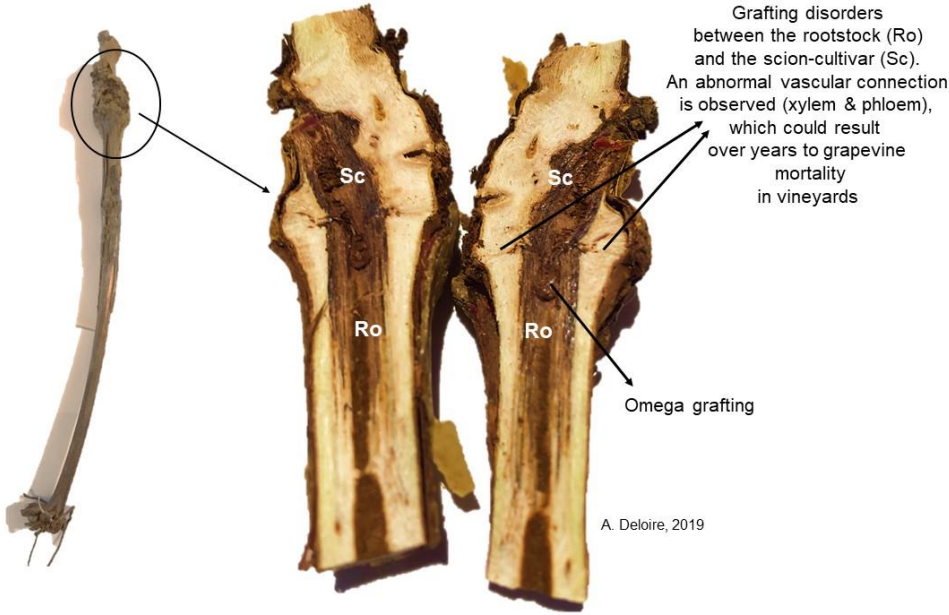


Figure 2: Omega grafting of Caladoc-SO4. Simple longitudinal section shows grafting disorders that could lead to vine mortality over years in vineyards. The grafting disorders are not easy to spot within the nursery.