



## **G.969 – A status update**

Apple rootstock G.969 is a yield efficient, semi-dwarfing rootstock that according to the Cornell Geneva apple rootstock breeding programme is resistant to fire blight, crown rot, and woolly apple aphid. It is classified as having similar to slightly less vigour than M.7. There are however indications that the vigour of G.969 can vary considerably between sites – in some Hortgro-funded rootstock evaluation trials, G.969 vigour is more similar to that of M9. The G.969 rootstock has already been released by Cornell University to USA, European Union, and New Zealand growers. Currently in South Africa the G.969 rootstock is still awaiting Plant Breeders' Rights and Variety Listing approval and is not yet released to the South African industry. Semi-commercial planting is however allowed in South Africa, pending DUS examination. The plant material is currently uncertified.

According to the US patent US20120096609P1 and US plant patent USPP24073P3, graft union compatibility of G.969 was tested by budding with 15 different scion cultivars. The test results showed that G.969 was compatible with all the cultivars tested. This is unlike G.41 that forms weak graft unions with some scion cultivars.

In 2021, SAPO Trust received reports from two commercial nurseries of a weak graft union formed between G.969 and two different scion varieties. Prior to this, SAPO Trust had not observed graft union issues in any of its G.969 field trials. At the time, there has also been no other reports of graft union issues with G.969 elsewhere in the world.

After the reports, SAPO Trust contacted some of its international partners to query whether there were any other reports of graft union weakness involving G.969. Dr Gennaro Fazio from Cornell University confirmed that some Geneva rootstocks could be more sensitive to virus infected scion material resulting in weak graft unions. Dr Fazio however indicated that G.969 had different breeding parents than G.41 and does not show the same graft union issues experienced with G.41. Subsequently, CIV in Italy reported that graft incompatibility was observed between G.969 and a Royal Gala clone which was virus infected. Lastly, one Brazilian contact indicated that G.969 shows much weaker growth on acidic soils. There is however no evidence that this soil preference may affect the graft union strength.

SAPO Trust further investigated the matter and assessed various factors ranging from plant material quality, trueness-to-type, possible environmental effects, and virus status. SAPO Trust G.969 nucleus plants were subjected to DNA testing by both Cornell University and Cengen and their true-to-type status confirmed. The nucleus plants also tested negative for Plant Certification Scheme viruses from 2011 and up to the 2020 testing season using the ELISA and PCR testing techniques. The plant material was also confirmed to be of good health on delivery and the growing conditions under which they were maintained and grafted were also satisfactory. However, the scion material which was grafted to G.969 in the cases where weak graft unions were observed tested positive for viruses. This suggests that the weak graft union in the reported instances might be due to the presence of viruses in the scion material.

In addition to the above and the ongoing industry funded Provar rootstock evaluations, SAPO Trust also planted a trial to specifically assess the G.969 rootstock graft union - this trial is ongoing. The same scion cultivars previous implicated were used again and were budded at the Tygerhoek facility.

In conclusion, it seems that the presence of viruses in scion material may result in weak graft unions on G.969 rootstock, however it is worthy to note that this result has not been widely observed. The abovementioned SAPO trial should provide a more definitive answer. Other causal factors such as grafting / budding techniques, soil pH levels, propagation methods (tunnels vs open ground), layerbed or tissue cultured material and fertilization and pesticide spraying program regimen should not be ruled out at this stage. Therefore, we advise that nurseries, technical advisors and apple growers closely monitor and report any graft union weakness to SAPO Trust for further investigation.

Please contact SAPO Trust if there appears to be a graft incompatibility issue with the G.969 rootstock.