

GRAFT TRANSMISSION AND SYMPTOMOLOGY OF LIBERIBACTERS FROM SELECTED INDIGENOUS SOUTH AFRICAN MEMBERS OF THE RUTACEAE

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“*Candidatus Liberibacter africanus*” (Laf), is a phloem limited, gram-negative bacterium associated with citrus greening disease, an economical debilitating disease of commercially grown citrus in South Africa. Laf is vectored by the African psyllid, *Trioza erytreae* (Figure 1). Common symptoms of this disease include chlorosis of infected leaves, tree stunting and malformed fruit production. In addition to Laf, Liberibacters closely related to this bacterium have been identified from Rutaceous tree species indigenous to South Africa including *Calodendrum capense*, *Clausena anisata*, *Vepris lanceolata* and *Zanthoxylum capense*, the latter three being native hosts of *T. erytreae*. These Liberibacters are known as ‘*Candidatus Liberibacter africanus* subsp. *Capensis*’ (LafC), ‘*Candidatus Liberibacter africanus* subsp. *Clausenae*’ (LafCl), ‘*Candidatus Liberibacter africanus* subsp. *Vepridis*’ (LafV) and ‘*Candidatus Liberibacter africanus* subsp. *Zanthoxyli*’ (LafZ). We aimed to determine the host range of the different Liberibacter species identified from South Africa by graft inoculation studies as possible host promiscuity of Liberibacter subspecies could help answer how Laf came to be a pathogen of citrus on the African continent.

To determine the host range of various Liberibacters from South Africa, LafC, LafCl, LafV and LafZ positive bark strips were graft inoculated onto *Citrus sinensis* trees. These trees were monitored for symptom expression over a period of one year and tested for the presence of Liberibacters at three month intervals. One year after inoculation, none of the trees tested positive for the different Liberibacter species although many of the recipient citrus trees died. The host range of Laf was determined by grafting bud sticks from Laf positive citrus trees onto recipient *C. capense*, *Cl. anisata*, *V. lanceolata* and *Z. capense* trees. Nine months post inoculation, none of the recipient trees tested positive for Laf following PCR analysis. Contrary to citrus transmissions described above, all of the Laf-recipient trees remained healthy.

The host range of the various Liberibacter species and the effects of these bacteria on their respective hosts is yet unknown. By determining whether these bacteria are capable of infecting other Rutaceous hosts we hope to establish whether such a transmission event will have detrimental effects on the ‘new hosts’ species. If transmission does occur, this will give further insights into the possible evolutionary pathway of Laf.



Figure 1: *Trioza erytrea* adults and eggs on the young growing branches of a *Vepris lanceolata* seedling