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Tree immunisations could become a reality

Hort Innovation has announced an \$8.7M investment to trial tree immunisations that protect Australia's horticulture industries against the deadly Xylella and Huanglongbing (HLB) diseases.

Hort Innovation chief executive Brett Fifield said the investment aims to safeguard key Australian horticulture industries by immunising trees with RNA-based technology, similar to coronavirus vaccines for humans. The RNA immunisations cause the tree's cells to produce chemicals targeting specific pathogens.

"Xylella and HLB are two of the most threatening bacteria in fruit and nut trees worldwide, and if they found their way into Australia, the results would be catastrophic," Mr Fifield said.

"While these threats are not in Australia currently, being ready is crucial. This project is about preparedness and adds to the more than \$60M investment Hort Innovation is delivering in biosecurity measures to support and protect Australia's \$15.2B horticulture industries.

"The trial will begin with citrus and table grapes, and we will explore opportunities for this technology in almonds, avocados, olives and summerfruit."

The trial will be delivered through Hort Innovation and led by the US-based agricultural biotechnology company Silvec Biologics alongside the University of Queensland. The trial will employ a method developed by Silvec Biologics to immunise trees, vines and bushes against diseases. The researchers will combine this technology with elements of [BioClay](#) to improve how trees are immunised.

Sap-sucking insects spread HLB through tree canopies, rapidly causing death, while Xylella is transmitted by propagation material and leaf-hopper insects. Xylella scorches and weakens leaves, which eventually leads causes the tree to die.

Andrew Harty, Regional Operations Manager Riverland at Costa Group, Australia's largest citrus grower, said research to prevent disease is crucial in preparing the horticulture industry for potential outbreaks.

"Thankfully in Australia we do not have either Xylella or HLB, but as an industry we have to always think ahead. This kind of research, if deployed at scale, could have a huge impact in protecting Australia's citrus industry," Mr Harty said.

Silvec Biologics president Dr Rafael Simon said they are looking forward to partnering with the University of Queensland to combine the BioClay platform with their vector technology.

"The main challenge for RNA-based technology is not the development of the active ingredient, but rather the delivery mechanism. We will leverage the Australian-developed BioClay platform to improve the introduction of our vectors into trees," Dr Simon said.

"The BioClay platform protects the double-stranded RNA, enhancing the active ingredient delivery into trees, and has been validated for viruses, insect pests and fungi in multiple crop host systems."

According to the [Australian Horticulture Statistics Handbook](#), the combined annual production value of almonds, avocados, citrus, olives, table grapes and summerfruit is more than \$3.3 billion. Of these, more than \$1.6 billion are exported each year to 67 different countries.