

2009

Utilising laser scanning in horticulture

A remote sensing system based on laser technology has proved itself as a valuable precision tool in European horticulture.

British apple orchards have successfully used Laser Imaging, Detection And Ranging (LIDAR) to sense chemical application rate requirements for trees of different sizes and densities. This project evaluated LIDAR use on a range of local apple, avocado and winegrape canopies at different growth stages, said project leader Dr David Manktelow.

“We compared LIDAR scan data with physical and other canopy measurements to assess its potential in areas like quantitative pruning assessments, yield potential assessment and block variability mapping.”

Overall, the project sought to demonstrate LIDAR technology and its potential uses to local industry and associated industry researchers. As part of the trials, the LIDAR unit was mounted on a vertical stand fitted to a tractor three point linkage to allow scans along orchard and shelter rows, David explained.

“The barriers to practical implementation of this technology have been cost, mechanical reliability in a tough environment and the computer processing capability (and programmer ability) to cope with truly

massive datasets. All three problems are being overcome, with costs of the technology dropping dramatically.”

Lincoln Agritech has since successfully implemented a prototype sprayer control system based on LIDAR readings that can process data to differentiate between crop training wires and posts and turn sprayer nozzles on and off in the presence or absence of the crop canopy.

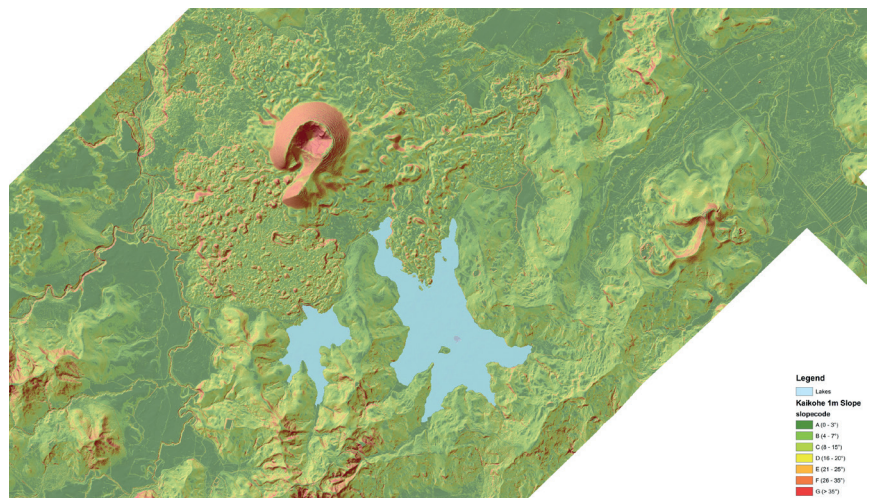
David said the project provided local researchers and consultants with a useful opportunity to see LIDAR technology at work and gain some understanding of its potential uses and limitations.

“The software we had in 2009 to run the hardware and to process the data provided useful results, but was not

In 2009, a project to introduce and test the technical and practical feasibility of LIDAR (Laser Imaging, Detection and Ranging) technology for measuring local fruit crop canopies attracted SFF funding.

reliable enough to immediately apply the technology in the industry in a commercially useful way.

“However, work with LIDAR in local fruit crops has continued. Dramatic reductions in hardware costs and improvements in reliability and software processing capability have reached a point that will see effective applications in local horticultural research and in commercial production.”



Slope data of an area in Northland taken by LIDAR. Photo: Landcare Research.