High growth and productivity of New Zealand grown Coast Redwood – implications for genetic selection and management

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Coast redwood (Sequoia sempervirens) was first introduced in New Zealand in the early 20th Century as an exotic plantation forestry species. For a variety of reasons it was not successful and Monterey pine (Pinus radiata) became the dominant forestry species. Coast redwood was treated in New Zealand as a fringe forestry species until the early 2000’s when the lobbying by Professor William Libby (UC Berkeley) prompted a re-examination of the species.

This presentation will discuss what New Zealand has learnt on managing coast redwood and how it has the potential to become a major forestry species for the country. New Zealand does not have the same frequency of fog as the Californian coastal ranges, however, there is little evidence of water limitations impacting growth and productivity. A number of provenances brought into New Zealand from the Kuser clonal provenance collection were highly productive on favourable sites - no matter the provenance’s origin. It was found that provenances from this collection had medium-to-high genetic control expressed for the diameter at breast height growth rate, wood density, and percentage heartwood. Analysis of growth and stand density between New Zealand grown coast redwood and secondary growth Californian coast redwood found that the New Zealand stands were typically more productive. Despite the higher productivity, lumber grade recovery and wood density of New Zealand grown coast redwood was comparable to Californian secondary growth coast redwood. Pruning and thinning trials of young stands (<15 years) has demonstrated that New Zealand grown coast redwood can respond dynamically to silvicultural treatments - even when stocking is below carrying capacity. The physiological and genetic drivers of the above will be discussed as well as its implications on forestry management.