

Assessment of multiple climate change effects on plantation forests in New Zealand

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Corresponding author: Michael Watt, Scion, Christchurch. michael.watt@scionresearch.com

Summary

This report provides a summary of predicted climate change impacts and future biosecurity threats to New Zealand's plantation forests, including:

- *Productivity increase:*
 - slight increase in *Pinus radiata* productivity due to changing conditions.
 - marked increase in *Pinus radiata* productivity due to increasing CO₂, with average gain across New Zealand of 19 per cent by 2040 and 37 per cent by 2090.
- *Wind risk* – marked increase in wind risk due to taller and more slender trees.
- *Fire risk* – increase in average season length with 'very high and extreme' climatic fire risk by 71 per cent up to 2040 and by 83 per cent up to 2090.
- *Biotic risks:*
 - slight increases or decreases for the two most significant current biotic risks (two needle case diseases), depending on region and disease.
 - insects – cause little damage currently, but may increase due to projected increases in population and host susceptibility.
 - potential impact of new introductions of pests and pathogens have not been fully accounted for but should not be underestimated.
 - Potentially invasive weed species are likely to expand their range under climate change.