

Long-term effects of harvest removals and fertiliser on soil nutrients and productivity in planted forests

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Planted forest in New Zealand receive either very little or no nutrient inputs from fertiliser application, largely relying on inherent fertility. Consequently, the long-term productivity of New Zealand's planted forests depends on the maintenance of soil fertility over successive crop harvests. Understanding the impact of harvesting on soil fertility can be challenging as gains in forest productivity through genetics and silvicultural management have the potential to mask any productivity losses that occur due to reductions in soil nutrient supply. This risk to long-term productivity is compounded by aspirations to double productivity on the same land area, placing increased demands on soil nutrient supply. To ensure forest harvest management practices will not lead to a decline in planted forests productive capacity over successive rotations, two long term trials have been sampled at end of rotation to determine the impact of harvest residue removal and fertiliser addition on nutrient supply and forest productivity. The results are nationally important and make a significant contribution towards the international understanding of long-term planted forest nutrient sustainability.