

Increasing the efficiency of herbicides for management of dense infestations of wilding conifers

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Summary Introduced conifers are the backbone of commercial forestry in New Zealand worth c. \$5 billion per year (NZ) in export earnings. However, invasion by wilding conifers is arguably New Zealand's most serious and intractable weed problem. Wilding conifers are thought to occupy ca. 1.8 million ha (4%), and may invade 20% of New Zealand's land area within 35 years. Although effective, the current control methods are costly and heavily dependent on herbicides, sometimes at rates that exceed label recommendations, particularly for management of dense infestations. Transformation of control requires significant rate reductions and new application systems to both reduce cost and risk of negative environmental impacts, while maintaining efficacy. The pathway to reducing herbicide rates, while maintaining or

increasing biological efficacy, is by identifying adjuvants that enhance plant uptake and translocation of active ingredients and improving spray distribution throughout the canopy using targeted application systems. We will present the results of preliminary controlled studies conducted to understand factors affecting the uptake of triclopyr into *Pinus contorta* Douglas ex Loudon needles. The aim of these studies is to identify opportunities to reduce rates currently used in operational programmes. We will also outline the aims, objectives and challenges of a broader programme aimed at increasing the efficiency of chemical control across a range of wilding infestation levels.

Keywords Herbicide uptake, triclopyr, picloram, adjuvants, *Pinus contorta*.