

ENHANCED GROWTH AND VIGOUR OF *PINUS RADIATA* CUTTINGS AND SEEDLINGS TREATED WITH NOVEL MICROBIAL FORMULATIONS, CHARCOAL AND MIXTURES

R.A. HILL, D.E. PADERES, P.J. WIGLEY, A.H. BROADWELL
and D. THAN

BioDiscovery New Zealand Ltd, 24 Balfour Rd, Parnell, Auckland, New Zealand

Corresponding author: rhill@biodiscovery.co.nz

In 2006 a large scale forest nursery trial, using *Pinus radiata* cuttings, was undertaken at PF Olsen & Co. Ltd. Forezza nursery. Novel formulations containing selected beneficial microbes, natural products, known and novel rooting hormones were evaluated with or without charcoal. All liquid formulations were applied as drenches and all powder formulations as dips. About 6000 pine cuttings were used with 22 treatments, replicated five times and laid out in randomised complete block design. Several novel formulations used in this trial gave enhanced root initiation and development and a significant increase in plant height and plant biomass of *P. radiata*, with or without charcoal, compared with the untreated control. The best bacterial formulations in the *P. radiata* cuttings trial had also performed best in a 2005 seedling trial. These formulations will be further tested on other major crops prior to commercial production. The mode of action is under investigation. However, some suggestions on the role of charcoal and beneficial microbes on plant growth promotion are discussed in this poster.

GROWTH OF *PINUS RADIATA* SEEDLINGS IN THE NURSERY WITH NOVEL MICROBIAL FORMULATIONS

R.A. HILL, D.E. PADERES, P.J. WIGLEY and A.H. BROADWELL

BioDiscovery New Zealand Ltd, 24 Balfour Rd, Parnell, Auckland, New Zealand

Corresponding author: rhill@biodiscovery.co.nz

Selected *Trichoderma* isolates studied and tested from 1991 to 2005 were found to enhance *P. radiata* growth and reduce the incidence of various diseases in the forest nursery and *Armillaria* in forest plantation trials. The best of these *Trichoderma* were commercialised as ArborGuard™ by GroChem NZ Ltd and PF Olsen & Co. Ltd. In 2005, ArborGuard™ and three novel BioDiscovery New Zealand Ltd microbial formulations were included in a major *P. radiata* seedling trial. Control pollinated *Pinus radiata* seed from PF Olsen and Co. Ltd was treated with ArborGuard™. Novel microbial formulations were applied as soil drench. Control seeds were coated with Thiram (fungicide) or untreated. The effects of these formulations on plant growth and dry weight were observed. Application of bacterial treatments resulted in a significant increase in height of pine seedlings compared to all other treatments, and an increase of 33% compared to the untreated control. Application of the *Bacillus* sp. showed an overall increase in plant weight of 70% compared to the untreated control and 60% compared to the fungicide treatment. This effect was significantly greater than that of all other treatments. Field trials to evaluate the performance of the best formulations in forestry plantations are planned for this year.