
THESIS SUMMARIES

STUDIES ON VARIATION IN POPULATIONS OF *DACTYLIS GLOMERATA* L. (M.Agr.Sc. Thesis)

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POPULATIONS of cocksfoot were collected from inland and high altitude areas throughout the South Island and compared with commercial samples. Two trials were designed to evaluate the effect of mountain climate and soil infertility on their performance.

At a high altitude site, (1 520 m, Mt Cockayne, Craigieburn Range, Canterbury) with a fertile potting soil, only minor differences in yield between populations were found. The main factor limiting growth was considered to be the short length of the growing season. Over a period of one year, total dry matter production amounted to 9 600 kg/ha, about half of which was produced in the six-week period following snow-melt.

In a glasshouse trial with an acid high country yellow-brown earth subsoil, the growth of twelve populations was compared with three rates of added phosphate. Differences between populations in P uptake and utilization were observed. One population, originating from a high country yellow-brown earth site was superior to all others at a low level of added P. This superiority was attributed to an ability to absorb P from low soil solution concentrations. Plant aluminium levels were found to be high when P was limiting. Differences between populations in Al content were considered to be the product of, and not the cause of yield differences between populations,