SEED DORMANCY AND GERMINATION OF A PANEL OF NEW ZEALAND PLANT SPECIES:

Carex trifida, Coprosma robusta, Cyperus ustulatus, Hebe stricta, Muehlenbeckia australis, Myrsine australis, Phormium tenax and Sophora prostrata

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Abstract

Literature was reviewed on the germination and possible uses for revegetation of the New Zealand indigenous species selected. Seeds of *Carex trifida*, *Coprosma robusta*, *Cyperus ustulatus*, *Hebe stricta*, *Leptospermum scoparium*, *Muehlenbeckia australis*, *Myrsine australis*, *Phormium tenax*, *Phormium* 'Yellow Wave' and *Sophora prostrata* were assessed for germination rates, percentage germination, dormancy and the effects that temperature has on germination. Seeds of *Carex*, *Cyperus* and Myrsine showed no germination in light or dark at 20°C. In contrast, 12 weeks of low temperature stratification resulted in a high percentage of seed germinating for *Carex* and *Cyperus*. There was no germination of *Myrsine* despite high viability in the initial germination experiment and the stratification experiment. Removal of the endocarp and a period of stratification increased germination percentage of *Myrsine* to 91%. Germination was low for Muehlenbeckia in the light at 20°C, but 4 weeks of low temperature stratification increased germination rate. After 2 years, 80% of *Coprosma* seeds germinated but germination rate increased after subjecting the seed to 8 weeks or more of stratification. No seeds of *Coprosma* or *Muehlenbeckia* germinated in the dark. Rapid germination of *Hebe* seeds was obtained, with 100% of the seed germinating in the light while only 7% germinated in the dark. *Leptospermum* had rapid germination, with 100% germinating in the light, while only 3% germinated in the dark. A low percentage of *Phormium* seed germinated in both the light and dark in the first month and no further germination was observed. In contrast, 8 weeks or more of low temperature stratification resulted in almost complete germination. There was rapid germination of *Sophora* seeds with 100% of the seed germinating in the light and dark. *Carex* seed had a limited temperature range at which it germinated (22°C to 26°C), while *Cyperus* had a wider range (18°C to 32°C) but did not germinate at low temperatures (6°C to 14°C). The optimum germination range for *Cyperus* was 24°C to 30°C. *Hebe* did not germinate at high temperatures (30°C to 32°C) but successfully germinated at all other temperatures with the optimum germination range being 6°C to 24°C. *Leptospermum* did not germinate at 6°C but had maximum germination at most other temperatures. *Muehlenbeckia* and *Phormium* germinated at all temperatures tested (6°C to 32°C) with the most seed germinating at 20°C for *Muehlenbeckia* and between 14°C to 22°C for *Phormium*. *Sophora* did not germinate at the low temperatures (6°C to 10°C). The germination rate increased with temperature for *Cyperus*, *Hebe*, *Leptospermum*, *Muehlenbeckia*, and *Phormium*. Generally, for *Carex* and *Sophora* as temperature increased germination rate slowed. It appeared that light is required for *Hebe* and *Leptospermu*m to germinate. *Sophora* required scarification but not light. *Coprosma* and *Muehlenbeckia* required light and a period of chilling to increase the rate of germination. A small percentage of the *Phormium* population is not dormant but a period of chilling increased the germination percentage for that portion of the population that is dormant. *Carex* and *Cyperus* required a period of chilling in order to break dormancy. *Myrsine* required removal of endocarp and a period of chilling to germinate. A list of cleaning descriptions and the equipment that was used for each species studied is reported. Preliminary results of a hydroseeding trail using the species studied were also reported.

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