

**Compulsory Competitive Tendering.** The collection of seed using the guidelines outlined above means an increase in plant costs due to the extra labour and time involved. Some nurseries who are not ethically aligned to these guidelines may produce large numbers of plants ignoring provenance diversity. As the question of provenance cannot be easily proved or disproved, the opportunity for less reputable operators to take advantage of their clients is becoming more apparent as the market for indigenous plants increases.

**Environmental Weeds.** This is an issue that threatens the viability of vegetation communities the world over. Up to 65% to 70% of exotic species in Victoria have been introduced deliberately for ornament (most species) or utility (Carr et al., 1992). Many plants invading the Australian bush are ideal horticultural subjects, e.g. *Pittosporum undulatum* (sweet pittosporum) which is an Australian plant that is invading many other native vegetation communities. The horticultural industry sells it because it has a good form all year round, has highly perfumed flowers, is extremely hardy, and is easy to propagate. The selling of this species is now listed as an "environmentally threatening process" under the Victorian Flora and Fauna Guarantee Act. Similarly, hybridisation in the field between indigenous and introduced plants of the same genus has also assisted weed invasion (Carr et al., 1992).

#### LITERATURE CITED

Carr, G.W., J.V. Yogovic, and K.E. Robinson. 1992. Environmental weed invasions in Victoria - Conservation and Management implications. DCNR & Ecol. Hort. pp. 5-10.

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## Some Observations of the Effect of Smoke on the Germination of South-Eastern Australian Native Species

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#### INTRODUCTION

An initial "screening" program was initiated in 1995 by the Melbourne Indigenous Seedbank (MIS) to investigate the effect of smoke on selected Victorian plant species. These traditionally difficult-to-germinate species were selected because they belonged to the families discussed by Dixon et al. (1995) as being responsive to smoke treatment in Western Australia. The seed of species that were selected for testing came from the seed storage facilities of the MIS or from donations of seed from the community. Species not acquired from storage or donation will be collected and tested through 1996-97 to complete the "screening" process. Additional information in relation to the effect of plant-derived smoke upon germination has come from "smoking sessions" facilitated by Greening Australia Victoria, which have enabled nursery growers to smoke treat seed from selected species and then propagate these under conventional nursery conditions.

**Table 1.** Preliminary germination results (germinants per gram) of treated (smoked) and control samples of seed undertaken in the MHS germination cabinet.

Family	Species Name	Common name	Collection date	Unsmoked	Smoked
Poaceae	<i>Bothriochloa macra</i>	red-leg grass	29-01-93	27	155
Liliaceae	<i>Burchardia umbellata</i>	milkmaids	28-12-92	39	72
	<i>Dianella revoluta</i>	black-anther flax-lily	04-01-90	23	67
	<i>D. tasmanica</i>	Tasman flax-lily	14-01-94	25	67
Myrtaceae	<i>Eucalyptus camaldulensis</i>	river red gum	09-09-94	689	830
	<i>E. cephalocarpa</i>	silver-leaf stringybark	01-12-92	147	248
	<i>Leptospermum myrsinoides</i>	silky tea-tree	15-03-95	881	1495
	<i>Melaleuca ericifolia</i>	swamp paperbark	19-01-94	1084	2154
Apiaceae	<i>Trachymene anisocarpa</i>	wild parsnip	14-01-93	66	112
Chenopodiaceae	<i>Enchylaena tomentosa</i>	ruby saltbush	1995	51	97

**Table 2.** Preliminary germination observations (germinants per gram) of treated (smoked) and control samples of seed undertaken under nursery conditions.

Family	Species name	Common name	Collection date	Unsmoked	Smoked
Poaceae	<i>Stipa rudis</i> ssp. <i>rudis</i>	veined spear-grass	03-01-95	2	13
Cyperaceae	<i>Gahnia sieberiana</i>	red-fruited saw-sedge	Unsure	0	24
Proteaceae	<i>Banksia marginata</i>	silver banksia	04-05-95	0.9	2.2



## OBSERVATIONS AND RESULTS

**Laboratory Germination Testing.** Table 1 shows the response of species tested to date in the "screening" MIS germination tests. The number of germinants per gram for each of the treated and control seed batch has been recorded. Please note that this data is based on one sample of seed from a single seed batch and therefore cannot be considered statistically significant. The purpose of this project is to gauge the range of Victorian species on which further and more detailed laboratory and greenhouse germination testing may be warranted.

**Nursery Greenhouse Observations.** Seed that was smoked was also sown under normal conditions in several Melbourne nurseries specialising in the propagation of local native species. These nurseries differ in the equipment, procedure, and conditions they employ to raise seedlings. Therefore the inclusion of these observations cannot be regarded as comparable with the data obtained from the laboratory experimentation or between the nurseries involved in the project. Table 2 shows germination results for treated and control seed of species sown on seedling trays under nursery conditions.

## THE FUTURE

The results of these "screening" tests represent a starting point for the further development and refinement of smoke-induced germination improvement as a procedure for south-eastern Australian species. Species on which smoke treatment has been shown to increase germination rate will need to be confirmed with more extensive tests in both laboratory and greenhouse conditions. This future testing should involve a range of smoke application techniques to determine the most cost-effective and convenient method of application for those involved in the vegetation restoration industry. Such a range might include direct-smoke application (as in these tests), smoked water samples, smoked substrate (seed-raising media or filter paper), or artificial compounds which may contain the active constituent within the smoke that is responsible for increasing germination.

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## LITERATURE CITED

**Dixon, K.W., S. Roche, and J.S. Pate.** 1995. The promotive effect of smoke derived from burnt native vegetation on seed germination of Western Australian plants. *Oecologia*. 101:185-192.