

## Longevity of high-temperature embryo dormancy in *Medicago murex* and *trifolium Subterraneum*

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The presence of high temperature dormancy in seeds of subterranean clover has been recognised for some years. Although rare in medic, there is a suggestion that it may be present in *M. murex* (D. Gillespie pers. comm.). An experiment was carried out to examine the longevity of dormancy in both *Medicago murex* and *Trifolium subterraneum*.

### Methods

Burrs of 2 lines of *Medicago murex* (CD26 and CD53) and four cultivars of *Trifolium subterraneum* (Woogenellup, Junee, Seaton Park and Dalkeith) were collected from plots in two blocks of a field experiment at Forbes, NSW (33°23'S) on 9 December 1987. Sub-samples of 200 burrs from each plot were placed in an alternating temperature cabinet, set on a diurnal cycle of 60-15°C, on 6 January 1988. Burrs were withdrawn after 2, 8, 16, or 32 weeks and hand threshed. From each sample 3 lots of 100 seeds were nicked and placed on two layers of moist Whatman No. 1 filter paper in petri dishes which were placed in a constant temperature room at 20°C and in germination cabinets set at either 24 and 30°C. The filter paper was kept moist and the number of germinated seeds were counted daily for four days.

### Results and discussion

**Table 1. Germination percentages (retransformed data). Treatment time means not superscripted by the same letter (a- c) and temperature means not superscripted by the same letter (x-z) are significantly different (P=0.05).**

Cultivar	Germination temperature	No. of weeks at 60°/15°C			
		2	8	16	32
Junee	20	41 <sup>az</sup>	93 <sup>bz</sup>	98 <sup>cz</sup>	96 <sup>bcz</sup>
	24	21 <sup>ay</sup>	52 <sup>by</sup>	64 <sup>cy</sup>	81 <sup>dy</sup>
	30	0 <sup>ax</sup>	5 <sup>ax</sup>	9 <sup>ax</sup>	0 <sup>ax</sup>
Dalkeith	20	91 <sup>az</sup>	100 <sup>bz</sup>	100 <sup>bz</sup>	94 <sup>ay</sup>
	24	29 <sup>ay</sup>	92 <sup>by</sup>	85 <sup>by</sup>	89 <sup>by</sup>
	30	0 <sup>ax</sup>	39 <sup>cx</sup>	19 <sup>bx</sup>	7 <sup>abx</sup>
CD 26	20	97 <sup>by</sup>	100 <sup>cz</sup>	100 <sup>cz</sup>	81 <sup>ay</sup>
	24	66 <sup>ay</sup>	94 <sup>cy</sup>	85 <sup>by</sup>	97 <sup>cz</sup>
	30	24 <sup>ax</sup>	81 <sup>cx</sup>	66 <sup>bx</sup>	10 <sup>ax</sup>
CD 53	20	98 <sup>bz</sup>	100 <sup>by</sup>	100 <sup>bz</sup>	87 <sup>ay</sup>
	24	86 <sup>ay</sup>	98 <sup>bcy</sup>	96 <sup>by</sup>	99 <sup>cz</sup>
	30	37 <sup>ax</sup>	86 <sup>bx</sup>	77 <sup>bx</sup>	29 <sup>ax</sup>

After two weeks at 60°/15°C all lines displayed some degree of high-temperature dormancy. At 16 weeks (equivalent to one summer in the field) embryo dormancy was ranked in the order Junee = Seaton Park > Dalkeith = Woogenellup > CD26 > CD 53. Seeds of both murex lines became more high-temperature dormant with time beyond 8 weeks and had reverted to initial 2 week levels by 32 weeks.