

A new inoculant for Persian Clover (*Trifolium Resupinatum*) Cv Maral

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There are many criteria recognized for a good inoculant strain (1). The commercial inoculant *Rhizobium trifolii* strain TA1 was poorly effective on Persian clover (*Trifolium resupinatum* L.) cv Maral, a relatively new and increasingly useful pasture species in southeastern Australia (2). Field trials were conducted to select a more suitable inoculant strain.

Methods

At each of four locations in south-west Victoria non limiting nutrients were applied before sowing, and seed either inoculated and lime coated at field rates of inoculation, or drill rows were liquid inoculated (peat suspended in water) at high rates. Herbage yield and nitrogen content were regarded as indices of nitrogen fixation. Three selected *R. trifolii* strains, together with TA1 and WU95 were studied in detail.

Results and Discussion

One strain CC2483g was consistently superior at low competition (naturalised *R. trifolii*) sites (Table 1), and nodule occupancy was always higher compared with strain TA1 (3).

Table 1. Relative field N₂ fixation response of *T. resupinatum* cv Maral to inoculation with *R. trifolii* strain CC2483g compared with TA1

Location	Naturalised soil population No. <i>R. trifolii</i> /g soil	Relative shoot dry wt. response (TA1 = 100)			
		1983	1984	1985	1986
Greenwald	2.5 x 10 ²	159*†			
Hamilton PRI	3.1 x 10 ⁴		112†	119	
Mooralla	1.2 x 10 ⁴		105†		
Mirranatwa	<10			158*	149*

* Significant response (P<0.05); †100 x recommended inoculation rate

CC2483g was most persistent at Mirranatwa but poorly persistent at Hamilton, 18 months after sowing. The good effectiveness of CC2483g on a broad range of *Trifolium* species (Table 2), together with satisfactory growth in broth and peat culture have led to the commercial production of a new inoculant for Persian clover cv Maral in 1987.

Table 2. Effectiveness of *R. trifolii* strain CC2483g on some *Trifolium* species important to Australian agriculture

>TA1*	Effectiveness =TA1*	<TA1*
<i>T. resupinatum</i> cv Maral	<i>T. subterraneum</i> cv Enfield	<i>T. pratense</i>
<i>T. resupinatum</i> cv Tressor	<i>T. subterraneum</i> cv Woogenellup	cv Redquin
<i>T. resupinatum</i> SA5316	<i>T. yannicum</i> cv Trikkala	
<i>T. repens</i> cv Haifa	<i>T. fragiferum</i> cv Palestine	
<i>T. subterraneum</i> 89822H	<i>T. balansae</i> cv Paradana	
	<i>T. resupinatum</i> SA18920	

* Difference significant at (P<0.05)

1. Brockwell, J., Daitloff, A., Roughley, R.J. and Date, R.A. 1982. in "Nitrogen Fixation in Legumes" (Ed. J.M. Vincent). 173-91. Publ. Academic Press Aust.
2. Cunningham, P.J. 1984. Proc. 7th Aust. Legume Nodulation Conf., Sydney. A.I.A.S. Occ. Publ. No. 12. 103-4.
3. Cunningham, P.J., Gault, R.R. and Brockwell, J. 1986. Proc. 8th Aust. Nitrogen Fixation Conf., Adelaide, A.I.A.S. Occ. Publ. No. 25. 149-50.