

Balansa clover is more competitive against seedling annual ryegrass than are subterranean clover, berseem clover, and murex medic

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Introduction

Developing non-chemical options for controlling herbicide-resistant annual ryegrass (*Lolium rigidum* G.) is of increasing importance as resistance spreads. One potential option is the sowing of annual pasture legumes that can suppress the early growth of the ryegrass, be grazed, and then be forage harvested before the seeds are set. There is little information on the relative competitiveness of different annual legume species during the first 10 weeks after emergence or the importance of seed size on their competitiveness. A glasshouse study examined the ability of six annual legumes to suppress the early growth of annual ryegrass 10 weeks after emergence.

Methods

A group of six readily available annual legumes—balansa clover (*Trifolium michelianum*), sub clover, (*T. subterraneum*), murex medic (*Medicago murex*), berseem clover (*T. alexandrinum*), and purple vetch (*Vicia benghalensis*)—that included legumes from small to large seed size were sown at five sowing rates (Table 1). The rates were selected to cover the potential rates that could be used by farmers. Annual ryegrass was planted in mixtures with each of the legumes at a rate equivalent to 200 plants/m². The plants were grown in pots in the glasshouse, and legume dry matter and their ability to suppress ryegrass was measured.

Results and discussion

Increasing the seeding rate of all legumes increased their ability to suppress early growth of ryegrass (Table 2). Seed size was not a primary factor influencing competitiveness, with the smaller-seeded balansa and berseem clovers being more effective at suppressing ryegrass than the larger-seeded subterranean clovers Goulburn and Trikkala. Such factors as canopy structure and relative growth rates were concluded to be important parameters influencing the competitiveness of the species.

Table 1. Sowing rate (kg/ha) and seed wt (mg) of each of the six annual legume species/cultivars.

Species	Seed wt	Rate				
		1	2	3	4	5
<i>Vicia benghalensis</i> cv. Popany vetch	46.0	45.0	67.5	101.2	151.8	227.8
<i>Trifolium subterraneum</i> cv. Trikkala	9.6	15.0	22.5	33.7	50.6	75.9
<i>Medicago murex</i> cv. Zodiac	5.9	12.0	18.0	27.0	40.5	60.7
<i>Trifolium subterraneum</i> cv. Goulburn	5.9	10.0	15.0	22.5	33.7	50.6
<i>Trifolium alexandrinum</i> cv. Elite II	3.7	10.0	15.0	22.5	33.7	50.6
<i>Trifolium michelianum</i> cv. Paradanna	0.9	9.0	13.5	20.2	30.3	45.5

Table 2. Effect of legume seeding rate and species on ryegrass herbage yield (g DM/m²) at 10 weeks after emergence.

Seeding rate	Species						No legume
	Balansa	Berseem	Trikkala	Murex	Goulburn	Vetch	
Rate 1	58.2	75.3	138.8	157.5	136.7	100.6	290.4
Rate 2	31.9	68.7	63.5	118.2	122.9	70.5	
Rate 3	19.8	39.7	65.0	96.0	100.1	52.7	
Rate 4	18.7	39.5	59.7	69.4	86.5	37.1	
Rate 5	19.2	29.9	34.6	79.4	64.1	48.0	
L.S.D (5%): 29.3							