

Possible alleopathy in consol lovegrass

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Root exudates of lovegrass (*Eragrostis curvula*) stimulated and depressed the growth of other species (1). In experiments examining the use of lovegrass to control spiny burrgrass (*Cenchrus spp.*) (2), clear boundaries between species, suggested alleopathic rather than simple competitive effects. In a pot experiment, shoot growth of five monocots and capeweed (*Arctotheca calendula*) were suppressed, and that of three legume species increased when grown in soil from lovegrass plots.

Methods

Consol and 4660 lovegrass; annual ryegrass; Cooba oats; Osprey wheat; capeweed; Nungarin subterranean clover; Unicrop lupins and CUF 101 lucerne were grown in pots of soil in which Consol lovegrass had grown for 5 years and soil from an adjacent area where the grass had been absent. All pots received a base application of fertiliser. The dry weights of plant tops were determined in November 1985 after 10 weeks growth and subject to an analysis of variance.

Results and discussion

Shoot dry weights of the grasses and capeweed were decreased in soil where Consol had been growing previously, but those of the three legumes were increased (Table 1). The cause of these differences was suspected to be alleopathy. For all species and cultivars, differences between the two soils were highly significant ($P < 0.01$).

Table 1. Effect of soils on shoot yields (g/pot)

Species	Soil:	-Consol	+Consol	Difference
Consol		2.6	1.2	-1.4
4660		2.8	1.5	-1.3
Rye grass		2.8	1.3	-1.5
Oats		4.7	2.5	-2.2
Wheat		3.2	1.9	-1.3
Capeweed		3.4	2.3	-1.1
Nungarin		1.4	3.4	2.0
Lupins		1.7	4.5	2.8
Lucerne		0.1	1.0	0.9

In this experiment, capeweed was an exception to the generalisation that root exudates stimulated the growth of dicotyledonous plants and depressed monocots (1). It is possible that legumes alone were stimulated. Although growth of grasses and capeweed were depressed, no plants died. Under more extreme circumstances however, and over a longer period of time, the effect may enable Consol to achieve dominance over species which are susceptible.

1. Visser J.H. (1965). Proc. 9th Int. Grassld. Congr. 453-455.
2. Johnston W.H. (1989). Aust. J. Expl. Agric. 29, 37-42.