

## Medic pasture composition changes over three years of chemical and physical manipulation At Merredin, Western Australia

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Pastures grown in Western Australia's eastern wheatbelt generally become ryegrass and capeweed dominant within a few years. This trial was established to follow the effect of chemical grass control and soil manipulation by shallow cultivation and an intervening wheat crop.

### Methods

A 50:50 mixture of Serena and Circle Valley (*Medicago polymorpha*) was seeded at 14 kg/ha on 20 May 1986 at Merredin. The soil type was a duplex sand over clay at 0.35 cm (colgar series). A randomized split block with two treatment was superimposed on the new pasture. The treatments were (i) untreated control and (ii) Fusilade (Fluazifop-butyl 212 g ai) at 0.5 L/ha applied on the same pasture plots in 1986, 1987 and 1988. Sheep were periodically grazed to simulate real pasture conditions. Superphosphate was applied each year to all plots at 100 kg/ha. In 1987, two treatments were cultivated to a depth of 15 mm and two other treatments were seeded to wheat on 9 June. The experiment was replicated four times.

### Results and discussion

The application of Fusilade each year reduced the oven-dry weight (DM) of ryegrass but did not affect medic plant densities or DM (Table I & II). The shallow cultivation in 1987 increased the DM of medic and with Fusilade, further increases were obtained. In the controls, cultivation doubled ryegrass production, but halved capeweed production (Table I).

**Table I: Influence of shallow cultivation in 1987 with and without Fusilade on the production of medic, ryegrass and capeweed**

	Medic Plant No.	Medic (DM kg/ha)	Ryegrass DM (kg/ha)	Capeweed DM (kg/ha)
Control: Undisturbed	111	234	172	528
Shallow cultivation	176	508	309	255
Fusilade: Undisturbed	45	189	0	634
Shallow cultivation	146	797	0	359
LSD P=0.05	72	145	121	276

In 1988 medic production was highest following the 1987 wheat crop. Shallow cultivation in control plots increased ryegrass DM in 1988. Fusilade treatment reduced ryegrass but capeweed DM was double compared to control except following wheat.

**Table II: Influence of shallow cultivation and wheat production in 1987 on the production of medic, ryegrass and capeweed in 1988**

	Medic Plant No.	Medic DM (kg/ha)	Ryegrass DM (kg/ha)	Capeweed DM (kg/ha)
Control: Undisturbed	169	954	272	1112
Shallow cultivation	78	377	758	1110
Wheat	109	1140	82	1450
Fusilade: Undisturbed	77	515	19	2486
Shallow cultivation	105	784	65	2307
Wheat	140	1480	13	940
LSD P=0.05	15	169	74	673

While Fusilade was effective in controlling ryegrass in the medic pasture, it stimulated capeweed production, but not at the expense of medic production.