



Grass selective herbicides on nodulation of pulses and legume pastures

The aim of this trial was to investigate the effect of grass herbicides on nodulation in legumes

Summary of trial

In work undertaken by the MSFS project it was reported that grass sprays affected the nodulation and possibly the N fixation ability of legumes. Four different types of grass sprays were investigated in relation to the effect of these sprays on nodule number and health. No differences in nodulation between the grass sprays could be determined during the 2002 season.

Why it was conducted:

It has previously been reported that a number of herbicides recommended for use in legumes may significantly reduce nitrogen fixation in Mallee soils by causing a negative effect on nodulation. Reduction in the effective nodule number ranged from 10-60% and the percent of N fixation was reduced by 5-25%. However, not all herbicides were found to cause negative effects ([reference and which herbicides](#)). In 2002 the BCG investigated whether a similar effect occurs on soils of the southern Mallee.

How it was conducted:

The trial was located at the Birchip site. Nugget lentil, Morava vetch, and Caliph medic were sown on the 24th May 2002. Seeding rates were 45kg/ha for Nugget, 40kg/ha for Morava and 8kg/ha for Caliph. Grain Legume Super was applied at sowing at a rate of 80kg/ha.

Four treatments plus the control were analysed to determine the effect of grass herbicides on nodulation. The following treatments were applied:

Description	Timing	Rate ml/ha
Control	-	
Verdict 520 + Uptake 0.5%	4 leaf	75mL
Targa + DC-Trate 1%	4 leaf	250mL
Fusion + DC-Trate 2%	4 leaf	250g
Select + DC-Trate 2%	4 leaf	200mL

Nodulation scores were recorded three weeks post-herbicide application.

The effect of additional N fertiliser at flowering was also planned to be investigated following reports from Canada where positive yield responses to N application were reported. Unfortunately due to the dry conditions the N fertiliser work was not continued.

Results of the trial:

Growing conditions during the early part of the season were reasonable, however due to the dry conditions over Spring the trial was not harvested. At the time of spraying growth was good with 10mm of rain in the week prior to spraying and another 10mm 2 weeks later. All crops nodulated well and we could not discern any differences between treatments (Table 1).

Table 1. Nodulation scores 3 weeks post herbicide application

Treatment	Medic	Vetch	Lentil
Control	4.0	4.0	3.8
Verdict 520 + Uptake 0.5%	3.8	3.8	3.0
Targa + DC-Trate 1%	4.0	3.5	2.8
Fusion + DC-Trate 2%	4.0	3.8	3.5
Select + DC-Trate 2%	4.0	3.5	3.5
Significant difference:	NS	NS	NS

Nodulation Score 1 = no nodules present

2 = few nodules, white to pink in colour

3 = moderate nodules, contents with some pink

4 = good nodulation, contents pink to red in colour

5 = mass of nodules, contents deep pink to red

Interpretation:

There was no discernible effect of the different grass sprays on nodulation. All the legumes (medic, vetch and lentils) nodulated very well. With the very good level of nodulation observed it is likely that N fixation would be at normal levels.

Commercial practice:

At this stage there appears to be no concern in relation to using grass sprays on nodulation and N fixation in legume crops or pastures grown in the southern Mallee.