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IMPROVING REGENERATION BY PRECISION SEEDING, WITH SOIL AMENDMENTS

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BACKGROUND

Many degraded areas in the Carnarvon region of WA have eroded duplex soils with exposed clay B horizons. These soils are often scalded and are inherently saline and sodic.

Natural regeneration of these degraded soils is slow due to the effects of poor infiltration and lack of sites for seed entrapment. Direct seeding techniques employing cultivation and soil ameliorants are being tested to improve the establishment of native shrubs

SOIL AMENDMENTS

In a trial at Minilya, *Maireana aphylla* (spiny bluebush) was sown on an eroded duplex soils by the Mallen Niche Seeder (Malcolm and Allen 1981). Several rates of gypsum and other soil amendments were added to the seed placements in an attempt to improve establishment (Table 1).

EFFECT OF GYPSUM, MULCH AND BITUMEN

Adding gypsum improved the number of seedlings per placement (Table 1). Increasing the amount of gypsum, also increased the number of seedlings per placement.

Using mulch and bitumenous spray, without gypsum, increased the number of seedlings per placement by 62%. Mulch and bitumen with gypsum, increased the number of seedlings per placement by 26 to 55%. Compared with sowing seeds with no treatment, mulch, bitumen and gypsum treatments in some cases trebled the number of seedlings per placement.

Increasing the amount of gypsum with mulch and bitumen did not increase the number of seedlings per placement (Table 1).

Table 1. Mean number of seedlings per placement

Treatment	Mean No. of seedlings per placement	Standard error	Treatment	Mean No. of seedlings per placement	Standard error	Increase in seedlings per placement (%)
GO	1.5	0.3	NG0	3.8	0.8	62
G1	2.1	0.5	NG1	4.3	0.8	51
G2	1.7	0.2	NG2	3.8	0.7	55
G4	2.6	0.3	NG4	3.6	0.3	26
G8	2.8	0.6	NG8	4.3	0.2	35

Key to treatments

Note:

GO = no gypsum added

G1 to G8 = gypsum added at rates of 1 tonne per hectare to 8 tonnes per hectare

NG0 = mulch and bitumen added without gypsum

NG1 to NG8 = mulch and bitumen added with gypsum at rate of 1 tonne per hectare to 8 tonnes with hectare.

CONCLUSION

This research has demonstrated that the establishment of spiny bluebush from direct seeding, can be significantly improved by the use of soil ameliorants.

It has also shown that adequate levels of establishment can be achieved, by direct seeding, without ameliorants.

REFERENCE

Malcolm, C.V. and Allen, R.J. (1981). The Mallen Niche Seeder for plant establishment on difficult sites. *Aust. Range. J.* 3, 106-109.