

Potassium & Sulphur Nutrition Trial

AIM: To assess the response of Lentils to Potassium and Sulphur nutrition
To assess which nutrients increases yield and/or NDVI, thereby increasing ground cover

CROP: Lentils and Chickpeas

OUTCOMES DESIRED: To determine the nutrient that gives the biggest response in yield
To assess any differences in biomass/ground cover using NDVI methods

Table 1. Summary of lentil assessments.

Trt. No.	Pre-plant Treatment /ha	PSPE Treatment /ha	Canopy Closure NDVI RI%	Yield T/ha	Yield % of T2
5	MAP + Gypsum 2.5T		117	1.62 a	114
3	MAP	Nutrisync D @ 375ml	109	1.58 ab	111
6	MAP + MOP @ 40kg		118	1.57 ab	110
7	MAP + SOP 50kg		104	1.52 ab	106
9	MAP	Fainal K @ 2000ml	115	1.52 ab	106
8	MAP	Nutrisync D @ 750ml	113	1.46 ab	103
2	*MAP		101	1.42 abc	100
1	UTC		100	1.38 bc	97
4	MAP + SOA @ 50kg		88	1.24 c	87
Co-efficient of Variation				13%	
LSD 5%				0.21	

- Means followed by the same letter do not significantly differ
- *MAP rate is 80kg/ha sown with seed for all treatments besides UTC
- NDVI RI% (Response Index) is an indication of crop biomass measured as a % of treatment 2.

Soil Test Results	SULPHUR	POTASSIUM
	mg/kg	mg/kg
0-10 cm	3.1	200
10-30 cm	1.7	260
30-50 cm	2.5	170
50-70cm	2.3	140
Benchmark	5.0	200



Government of South Australia
Northern and Yorke Natural Resources Management Board



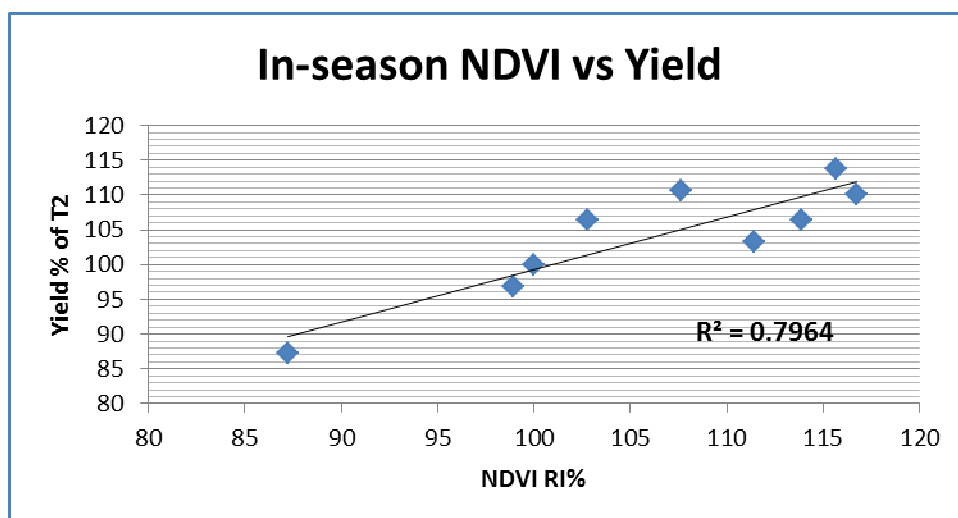
GRDC
Grains Research & Development Corporation



CARING FOR OUR COUNTRY

This trial was sown relatively early and yielded well considering the below average growing season rainfall received at the site. Whilst there are no apparent nutrient deficiencies at the trial site (both nutrients are marginal), it is interesting to note that every treatment besides one yielded above the untreated control and the standard MAP treatment.

There were some early visual responses with the gypsum treatment having better vigour and the SOA (Sulphate of Ammonia) treatment showing signs of restricting growth. These results were reflected in the canopy closure NDVI assessments. The NDVI assessments gave a good indication of the yield which is apparent in the below graph.



Graph 1. In season NDVI vs Yield expressed as a % of T2.

The surprise top yielding treatment was gypsum which one would typically expect to only respond over a period of 2-5 years. However, because the gypsum (along with all other treatments) was predrilled prior to planting, the beneficial effects of gypsum would have been 'sped up' compared to the usual application method of spreading and incorporating by sowing. When pre-drilled, the available sulphur would have been readily accessed by the roots.

Muriate and Sulphate of Potash both gave strong yield increases indicating that potassium is likely to be in demand late in the season when it is hard for the roots to extract this element from the dry topsoil.

The foliar applications of Nutrisync D and Fainal K, whilst not showing a significant yield increase over the standard treatment of 80 kg/Ha MAP, did give an indication that these products are of benefit to lentil production.

The other treatment of note is the minimal decrease in yield that the untreated control gave below the standard 80 kg/Ha MAP treatment. This shows that phosphorous is in relatively high levels at this site. However, continual non-application of starter fertiliser will deplete reserves and eventually see crop yield collapse.



Government of South Australia
Northern and Yorke Natural
Resources Management Board



This is a Grain & Graze 2 project, funded by GRDC & the Australian Government's Caring for our Country initiative

GRDC
Grains
Research &
Development
Corporation



CARING
FOR
OUR
COUNTRY