

Chickpea, Nutrition, LRZ Central Mallee (Ouyen), Victoria

Aim

To investigate the response of chickpea to application of macro and micro-nutrients on a sandhill and swale soil.

Treatments

Variety: Genesis090

Treatments: See Table 1. The All_Nut treatment had 10 kg/ha N, 15 kg/ha P, 30 kg/ha K, 12 kg/ha S, 2.5 kg/ha Zn, 2 kg/ha Cu, 3.5 kg/ha Mn and 0.06 kg/ha Mo.

Soil types: Sandhill and swale

Other Site Details

Stubble (height cm)	Standing (10)
Row Spacing (cm)	30
Plant density (plants/m²)	35

Results and Interpretation

- **Key Messages:** Grain yields were generally low in 2018 due to dry seasonal conditions and frost events during the vegetative and reproductive stages. There was no yield response to the soil nutrition treatments on both soil types. All the treatments except all nutrient minus phosphorus resulted in significantly higher biomass than the nil on the swale.
- The dry growing season conditions may have reduced movement and uptake of the applied macro and micro-nutrients by the crop. Hence, results should be treated with caution.
- **Establishment and Plant Growth:** Due to the dry start to the season, establishment and early growth was very slow. Growth during the rest of the season was impacted by extremely dry seasonal conditions which may have reduced movement and uptake of the applied nutrient by the crop. Furthermore, vegetative and reproductive frost events significantly impacted plant growth and caused flower and pod abortion.
- **Biomass at Maturity:** Biomass at maturity ranged between 1.65 and 2.15 t/ha on the swale and 1.19 t/ha and 1.78 t/ha on the sandhill. The slightly lower biomass production on the sandhill than the swale is probably due to the lower water holding capacity of the sandhill. On the swale, all the soil nutrition treatments except all nutrient minus phosphorus had significantly higher biomass than the nil. A significant reduction in biomass when phosphorus was omitted was observed on the swale. On the sandhill, responses to the soil nutrition treatments were not significant. On both soil types, movement and uptake of the applied macro and micro-nutrients by the crop may have been reduced by the dry growing season conditions. Hence, results should be treated with caution.
- **Grain Yield:** Grain yields were generally low in 2018 and ranged between 1.07 and 1.22 t/ha on the swale and 0.72 and 0.84 t/ha on the sandhill. On both soil types, there was no yield response to the soil nutrition treatments, probably due to very dry seasonal conditions and several reproductive frost events.

Table 1. Biomass (t/ha) and grain yield (t/ha) response of chickpea to application of various soil nutrients on sandhill and swale soil types at Ouyen in 2018.

Treatment	Swale		Sandhill	
	Biomass (t/ha)	Grain Yield (t/ha)	Biomass (t/ha)	Grain Yield (t/ha)
No fertilizer	1.41	1.12	1.19	0.75
Nut_All	2.14	1.07	1.43	0.82
Nut_All - N	1.97	1.10	1.74	0.83
Nut_All - P	1.65	1.17	1.63	0.72
Nut_All -K	2.06	1.10	1.46	0.78
Nut_All - S	1.89	1.10	1.69	0.82
Nut_All - Zn	1.87	1.16	1.78	0.83
Nut_All - Cu	2.05	1.09	1.48	0.84
Nut_All - Mn	2.15	1.22	1.52	0.79
Nut_All - Mo	1.98	1.12	1.44	0.72
LSD (P<0.05)	0.36	ns	ns	ns
CV	13.0	12.2	17.4	12.3