

Faba Bean, Nutrition, HRZ Southern Wimmera (Telangatuk), Victoria

Aim

To investigate the response of faba bean to application of macro and micro-nutrients.

Treatments

Variety: PBA Samira

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.

Other Site Details

Sowing date	01 May
Stubble (height cm)	Standing (20)
Row Spacing (cm)	30
Plant density (plants/m²)	20

Results and Interpretation

- **Key Messages:** Grain yields were low and variable in 2018 due to low soil pH at the site, and waterlogging that occurred during winter. The removal of molybdenum from the fertiliser significantly reduced plant vigor and grain yield. However, due to the high soil variability results should be treated with caution.
- **Establishment and Plant Vigour:** Establishment was generally uniform despite some slug issues earlier in the season. However, plant growth was slow and highly variable due to the dry start to the season. Low soil pH (4.5 in CaCl₂) at the site caused poor root nodulation which resulted in yellowing of leaves, stunting of growth and reduced biomass accumulation. In addition, waterlogging during winter caused further stunting of growth. Despite these limitations, visual assessment of plant vigour, about 23 weeks after sowing, showed significant difference between the soil nutrition treatments. The all nutrient treatment resulted in higher plant vigour than the no fertilizer, all nutrient minus phosphorus and molybdenum treatments (Table 1).
- **Biomass at Maturity:** Despite some visual differences in growth between the treatments, differences in biomass at maturity were not statistically significant. This may be due to high trial site variability. However, it was noted that absence of phosphorus and molybdenum reduced plant growth.
- **Grain Yield:** Grain yield was low in 2018 due to the various constraints that have been previously mentioned. A significant difference in grain yield was found between soil nutrition treatments. Removal of molybdenum from the fertilizer reduced grain yield (Table 1). Interestingly, the all nutrient minus molybdenum treatment had lower biomass yield than the no fertilizer treatment, probably due to nutrient imbalance exacerbating molybdenum deficiency. Molybdenum is also a key nutrient in the nitrogen fixation pathways and deficiency could result in poor nitrogen fixation.

Table 1. Early vigour (1: high, 9: low), biomass (t/ha) and grain yield (t/ha) response of faba bean to application of various macro and micro-nutrients at Telangatuk in 2018.

Treatment	Early Vigour (1: high, 9: low)	Biomass (t/ha)	Grain Yield (t/ha)
No fertilizer	6	5.08	2.10
Nut_All	3	7.82	2.71
Nut_All + Uniform	4	6.95	2.52
Nut_All - N	4	7.05	3.09
Nut_All - P	6	5.65	2.21
Nut_All -K	5	5.01	2.35
Nut_All - S	4	5.68	2.97
Nut_All - Zn	3	5.86	2.62
Nut_All - Cu	4	6.54	2.62
Nut_All - Mn	3	6.43	3.27
Nut_All - Mo	6	2.38	1.10
LSD (P<0.05)	2	ns	1.12
CV	33.2	37.1	26.1