

## C6. Chickpea Fertiliser rate x placement, LRZ Yenda, New South Wales

### Aim

Investigate the effects of fertiliser rates and its placement on the germination & establishment of deci and kabuli type chickpeas. Secondly to measure the grain yield responses to fertiliser rates. The information from this trial plus others is used to validate and improve grower recommendations.

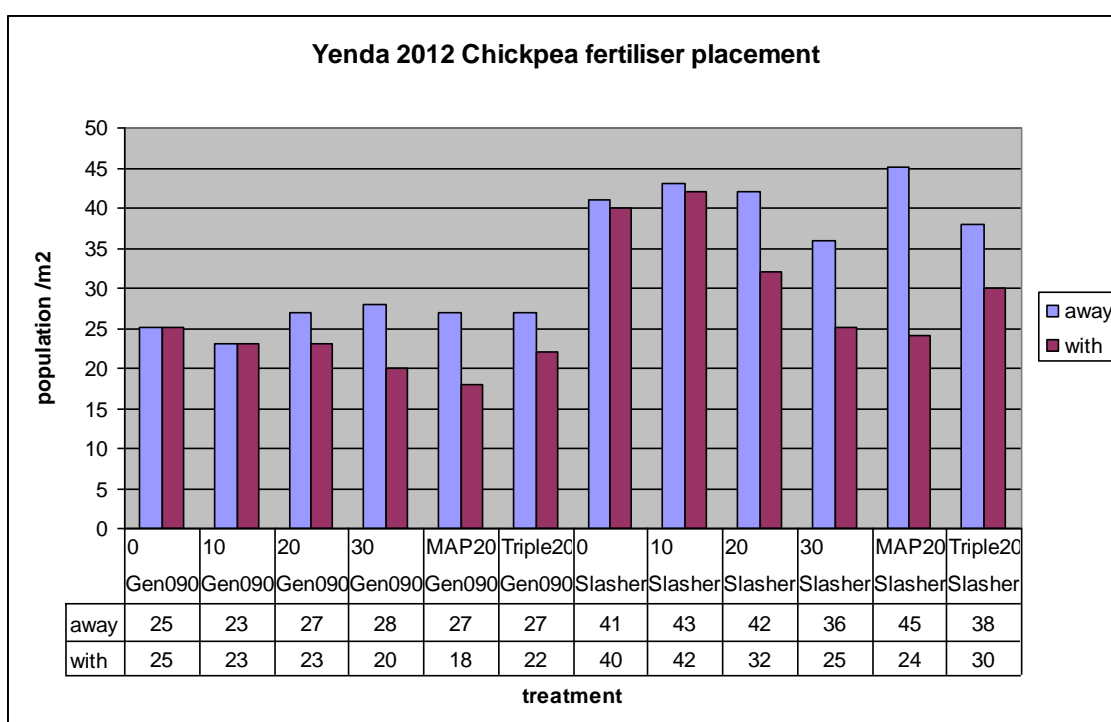
### Treatments

- Varieties (2): Desi - PBA Slasher.  
Kabuli – Genesis 090.
- Fertiliser rate (6): Single super at Nil, 10, 20 & 30kg/ha of Phosphorus and 20 kg/ha of P as MAP and tri phos.
- Sowing dates: 17<sup>th</sup> May
- Row Spacing/Stubble: 30 cm / burnt stubble.
- Fertiliser placements: Sown with seed in same sowing boot (WITH)  
Sown separately to seed (AWAY)
- Target chickpea pop.n: 35 plants/m<sup>2</sup>

### Results

#### Plant establishment

Plant establishment of Gen090 was below target population. However, Desi and Kabuli types responded similarly to fertiliser treatments. Zero and 10 kg P/ha rate did not effect seedling emergence.



**Figure 1.** The effects of fertiliser rate and placement on chickpea emergence of Gen090 and PBA Slasher.

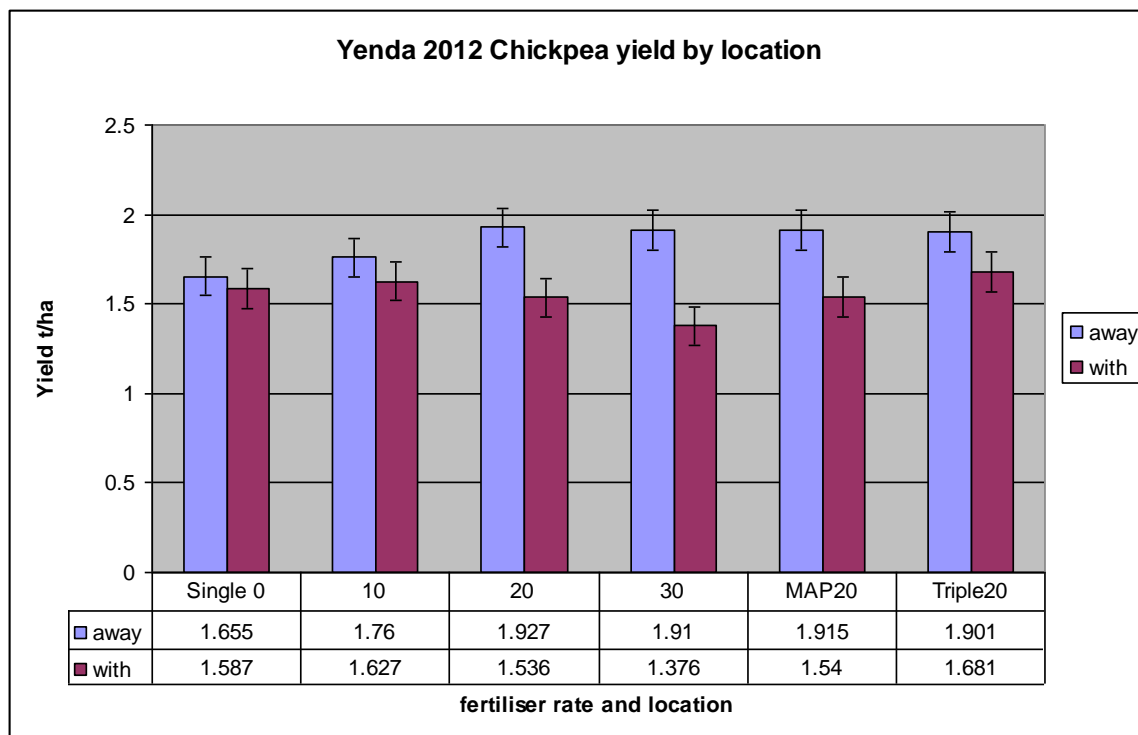
At 20 Kg P/ha significant reductions in population occurred when seed and fertiliser were sown together compared to being physically separated. At the 20 kg P/ha rate single and triple P formulations behaved similarly with population reduced by 15-18% and 21-24% for Gen090 and

PBA Slasher. MAP at 20 Kg P/ha had the greatest impact on plant population, with reductions of 33% and 46% for Gen090 and PBA Slasher, respectively.

It can be clearly stated that both varieties suffered severe plant establishment losses from fertiliser placement with increasing fertiliser rates.

### Yield results

At the 20 & 30 kg P/ha fertiliser rates, there was significant yield decline detected with both PBA Slasher and Genesis090 when the fertiliser was placed with the seed. Even in the low rainfall 2012 cropping season the reduced plant establishment limited yield of chickpea.



**Figure 2.** The effects of fertiliser rate and placement on chickpea yield averaged across varieties.

This research for a second season provides an explanation of why some southern NSW growers have had difficulty getting the crop established successfully.

The choice of fertiliser type has impacted on emergence and warrants further investigation to determine seasonal and species dynamics of this effect. As the majority of seeding units available commercially place seed and fertiliser in the same zone, producers need to be made aware of the negative consequences to plant establishment chickpea when using high fertiliser rates and especially so with MAP.

### Summary

- Both desi and kabuli chickpea varieties suffered severe plant establishment reductions from fertiliser placement with the seed and with increasing fertiliser rates.
- Fertiliser rates of 20 kg P/ha and above placed with the seed had a significant negative effect on grain yields.
- Yields increased with fertiliser rate up to about 20kg/ha of P in this particular season and soil type
- Over two seasons fertiliser placement has been shown to influence plant establishment and yield of chickpea.