

## **C4. Sowing Time x Variety x Plant population, M-HRZ (Wagga Wagga), New South Wales**

### **Aim**

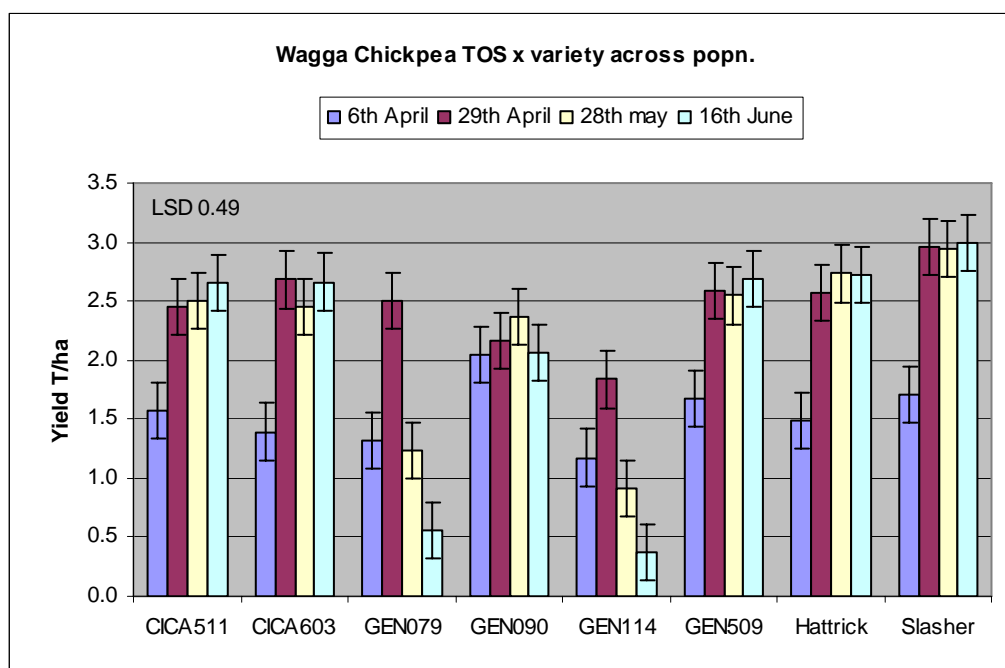
To test the yield response of eight chickpea varieties across 4 different sowing times and two targeted plant populations in southern NSW. The information from this trial will be used to improve current grower sowing time recommendations, variety selections and targeted plant population at each sowing time.

### **Treatments**

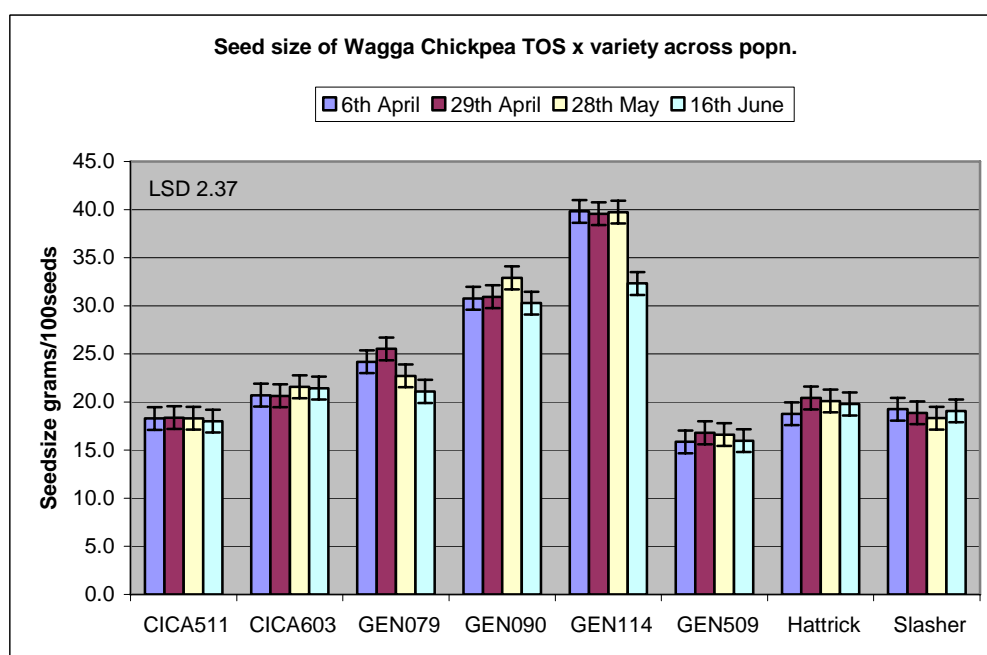
Varieties:	Kabuli – Genesis 079, Genesis 090, Genesis 114 Desi – Genesis 509, PBA Slasher, Genesis 509, CICA0511, CICA0603
Sowing dates:	6 <sup>th</sup> April (early), 29 <sup>th</sup> April, 28 <sup>th</sup> May, 16 <sup>th</sup> June (late)
Plant populations:	Targeted 25 & 40 plants/m <sup>2</sup>
Row Spacing/Stubble:	30 cm into standing light stubble
Fertiliser:	Legume Starter @ 115 kg/ha at sowing

### **Results and Interpretation**

- Grain Yield - Variety, time of sowing, and plant population were statistically significant ( $P < 0.005$ ). The only significant interaction for grain yield was variety x time of sowing. Targeted plant populations of 40 plants/m<sup>2</sup> yielded on average 9% higher yielding than 25 plants/m<sup>2</sup> ( $P < 0.005$ ) (data not shown). PBA Slasher, PBA Hattrick, Genesis 509, CICA0511 and CICA0603 generally yielded similarly and equal highest at all sowing dates (Figure C4.1). There was little sowing date response between varieties at the earliest sowing date. Genesis 090 yielded higher than all varieties except Genesis 509 and PBA Slasher, while Genesis 114 yielded lower than these three varieties. There was no sowing date response between the last three sowing dates for any of the varieties in this trial except Genesis 114 and Genesis079, which were also the lowest yielding varieties at the two latest sowing dates. This is a reflection of the favourable seasonal conditions and the wet spring experienced in 2010. However, later sowings can be risky in drier years with short springs. Sowing earlier than late April predisposes the crop to disease, particularly ascochyta, and results in excessive vegetative growth (as occurred this season) resulting in poor pod set and lodging. Our investigations over a range of different seasons (2008 to 2010) show that late April - early May has been the optimal time to sow chickpea in this region. The kabuli lines Genesis 079 and Genesis 114 yielded significantly lower than all other varieties and showed a far greater yield decline with delayed sowing. The only other kabuli line, Genesis 090 was more consistent across sowing dates and generally yielded similar to the desi lines. Severe wet conditions at planting and follow up rain did have greater impact on establishment of kabuli lines, and this may have contributed to their reduced grain yields.
- Grain Weight - Variety and time of sowing effects and their interaction were significantly different ( $P < 0.005$ ). Seeds of kabuli lines were bigger, especially Genesis 114. Desi lines varied between 19-20 g/100 seeds, however Genesis 509 had the smallest seeds (16g /100 seeds). Sowing time effects were small, some varieties (particularly kabuli) had smaller seeds at the last sowing date (16 June).



**Figure C4.1.** The interaction effect of sowing date and genotype on grain yield (t/ha) at Wagga in 2010.



**Figure C4.2.** The interaction effect of sowing date and genotype on grain weight (g/100seed) at Wagga in 2010.

### Key Findings and Comments

- Late April - early May has proven to be the optimal time to plant chickpeas in southern NSW. This finding has been consistent over a range of seasons (2008 to 2010). Sowing any earlier runs the risk of producing excessive dry matter, increases disease risk, increases flower abortion and consequently lowers pod set. Sowing later increases drought risk and reduces yield potential. The kabuli lines Genesis 079 and Genesis 114 were particularly sensitive to sowing delays.
- PBA Slasher, PBA Hattrick, Genesis 509, CICA0511 and CICA0603 generally yielded similarly and equal highest at all sowing dates.
- Kabuli varieties, particularly Genesis 079 and Genesis 114, yielded well below the desi varieties.

- Seed size largely reflected varietal differences, tended to fall in some varieties (particularly the kabuli types) at the last sowing date (16 June) and was unaffected by plant population.
- The lower plant populations (25 plants/m<sup>2</sup>) did limit yield by about 9%.