

C5. Sowing Time x Variety x Plant population, LRZ (Yenda), New South Wales

Aim

To test the yield response of eight chickpea varieties across 3 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.
Desi – Genesis 509, PBA Slasher, Genesis 509, CICA0511, CICA0603, Flipper.
Sowing dates: 20th April (Early), 15th May, 18th June (late).
Plant populations: Targeted 25 & 40 plants/m².
Row Spacing/Stubble: 30 cm into standing light stubble.
Fertiliser: Legume Starter @ 115 kg/ha at sowing.

Results and Interpretation

- Grain yield - The effects of variety and time of sowing as single factors were significant ($P < 0.05$). The interaction of variety x time of sowing and plant population x time of sowing was also significant ($P < 0.05$). All other interactions were not significant. PBA Slasher and Genesis509 were the highest or equal highest yielding varieties at all sowing dates. CICA0603 performed similarly to these at the mid and late sowing dates, but yielded lower when sown early. Yield was generally maximised at the 15 May sowing produced the highest or equal highest yields, although CICA0603 showed increased yield at the latest sowing date (18 June). CICA0603, Genesis079 and Genesis090 showed the largest yield penalty from early sowing at this site (54-63%). Excellent finishing conditions assisted flowering and grain fill at the last sowing, but during a more normal season in this low rainfall zone, greater stresses and lower yield would be expected. At the earliest (20 April) sowing, yields were halved compared to the mid sowing (15 May). Early sowing (in this favourable season) increased plant dry matter production, height and lodging particularly in the varieties Genesis 079, Flipper, Genesis 090 & CICA0603. Increasing plant density increased this effect. Lodging lead to excessive shading, poorer flower set and increased pod abortion, ultimately lowering grain yield. Lodging was less severe in PBA Slasher and Genesis 509. Disease pressure was highest for early sown plots.

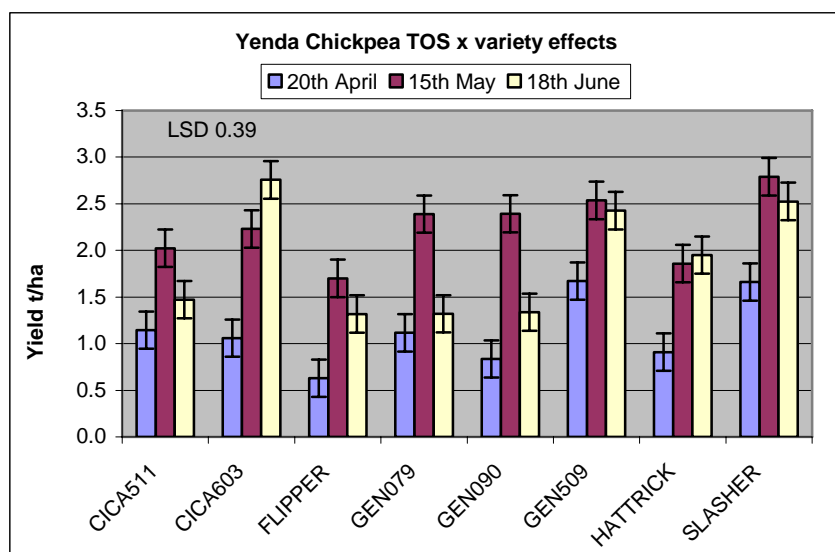


Figure C5.1. The interaction effect of sowing date and genotype on grain yield (t/ha) at Yenda in 2010.

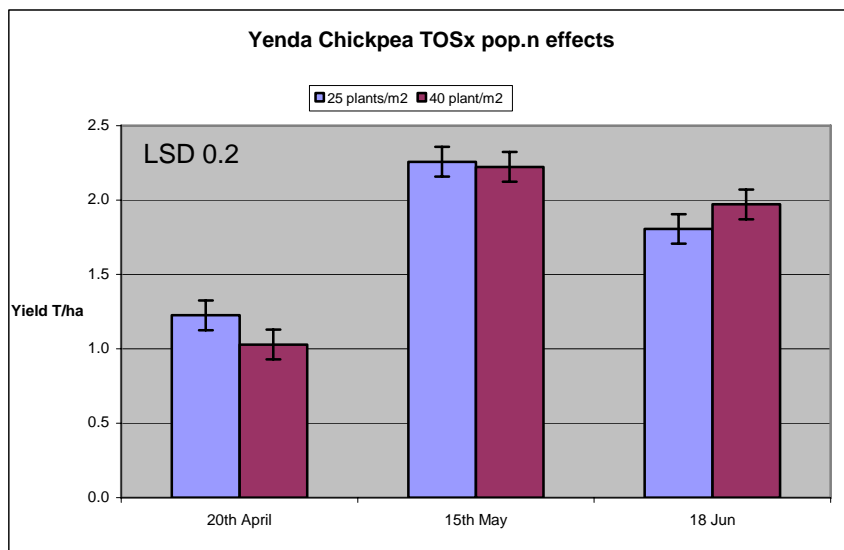


Figure C5.2. The interaction effect of sowing date and plant density on grain yield (t/ha) at Yenda in 2010.

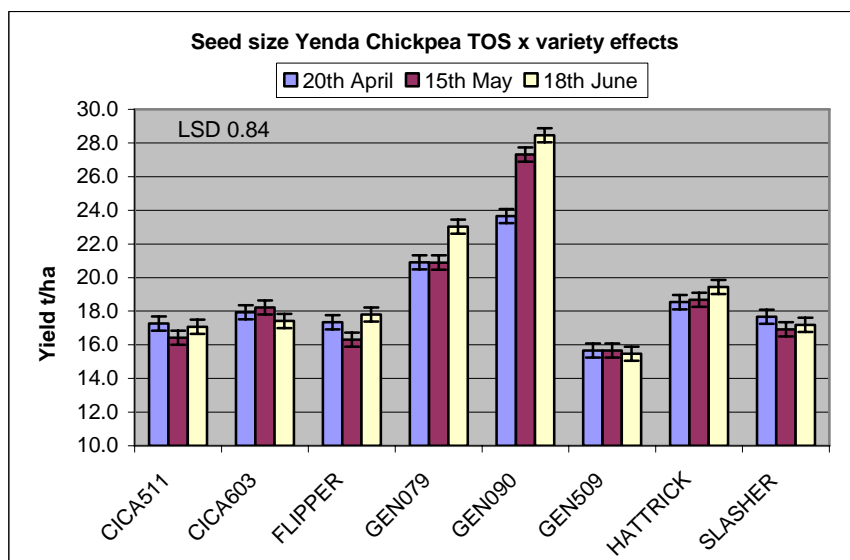


Figure C5.3. The interaction effect of sowing date and plant density on grain weight (g/100seed) at Yenda in 2010.

- Grain weight - Grain weight largely reflected varietal differences. Grain weight of kabuli types was higher than desi types. Genesis 090 showed considerably higher grain weight than Genesis 079. As sowings were delayed, seeds of kabuli's increased in size, whereas sowing time had little or no effect on grain weight in desis chickpeas. There was a significant interaction between sowing time and variety for grain weight ($P < 0.05$).

Key Findings and Comments

- Early to late May was optimum for planting chickpeas at Yenda in 2010. This season was one of the most favourable experienced for many years. However, during a normal season in this lower rain zone, greater moisture and heat stresses will occur, later sowings will be more exposed to climate stress and yields will be lower. These findings support conclusions from the Wagga Time of Sowing trial reported above - late April to early May is the optimal window to plant chickpeas in southern NSW. In the drier Yenda environment (compared to Wagga), sowings should be targeted more towards the first half of this window.
- PBA Slasher, CICA0603 and Genesis 509 (all desi types) were the best varieties especially when sown in May and June. Genesis 090 and Genesis 079 (kabuli) performed well at the May planting only.
- Plant population had little or no affect on yield or seed size