Chickpea, Germplasm, HRZ North East (Dookie), Victoria

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Aim

To investigate the adaptability of a range of chickpea varieties and breeding lines to acidic soils of the Dookie region.

Treatments

Varieties: See Table 2 below.

Table 1. Site Details

	Dookie
Sowing Date	29 April
Stubble height (cm)	30
Row Spacing (cm)	22.5
Fertiliser (kg/ha)[1]	50

[1] MAP (9.2, 20.2, 0, 2.7)

All varieties were sown at 35 seeds/m^2. Pre-emergent chemical was treflan and post emergent was clethodim for grass weeds.

Results and Interpretation

- Key Message: This trial was sown to showcase to growers, the viability of growing chickpeas in the region and evaluate varietal performance in the local conditions at Dookie 2019.
  Desi varieties were among top three of the highest yielding varieties. Grain yields were very good (0.90-1.53 t/ha) considering the very dry finish at Dookie.

- Dry Matter Production at Harvest: Dry matter varied across seed types and varieties. The Kabuli variety, CICA1454 produced almost twice as much dry matter (6.04 t/ha) at harvest than the highest yielding Desi variety, Neelam (3.61 t/ha; Table 1). Despite large differences in biomass, both these varieties produced similar grain yield and were the highest yielding for each chickpea type (Table 1).

- Thousand Seed Weight (TSW): As expected, Kabuli varieties had higher TSW than Desi varieties. Genesis Kalkee had the highest TSW of 291 whereas Desi variety Howzat had a TSW of 152g.

- Grain Yield and Harvest Index: Harvest indices were higher in the Desi varieties, Neelam and Howzat than all other varieties. There is a correlation between harvest index (HI) and yield in desi chickpea varieties.
  Neelam, Howzat and CICA 1521 were the highest yielding desi varieties ranging from 1.40-1.36 t/ha. Of the Kabuli varieties, CICA1454 produced the 18% more grain yield (1.53 t/ha) than Genesis Kalkee (1.29 t/ha)

- Conclusions: Chickpeas were a viable crop for the north east region of Victoria despite facing a very dry spring. Low background disease pressure and the dry spring meant little to no yield penalty due to disease. Yield was lost through the creation of large canopy's in some Kabuli types that couldn't fulfil the potential due to the water stress from flowering until maturity.

Table 1. Dry matter (DM) production at maturity, thousand seed weight (TSW), grain yield and harvest index, of chickpeas at the Dookie site in 2019.

Variety	Type	DM Production (t/ha)	TSW (grams)	Grain Yield (t/ha)	Harvest Index (%)
CICA1454	Kabuli	6.04	233	1.53	25
Neelam	Desi	3.61	153	1.41	40
Howzat	Desi	3.58	152	1.40	38
CICA1521	Desi	5.32	173	1.36	25
Genesis Kalkee	Kabuli	4.79	291	1.29	27
CICA1352	Kabuli	4.78	266	1.18	28
D11022>F101>13F3TMWR2005	Desi	4.56	157	1.16	23
PBA Striker	Desi	5.10	165	1.14	22
Genesis090	Kabuli	3.96	206	1.13	23
PBA Monarch	Kabuli	4.17	274	1.05	29
PBA Maiden	Desi	4.12	162	0.92	23
D12084>14F3TMWR2AB008	Desi	3.77	146	0.90	25
LSD (P<0.05)		1.42	16	0.22	8.3

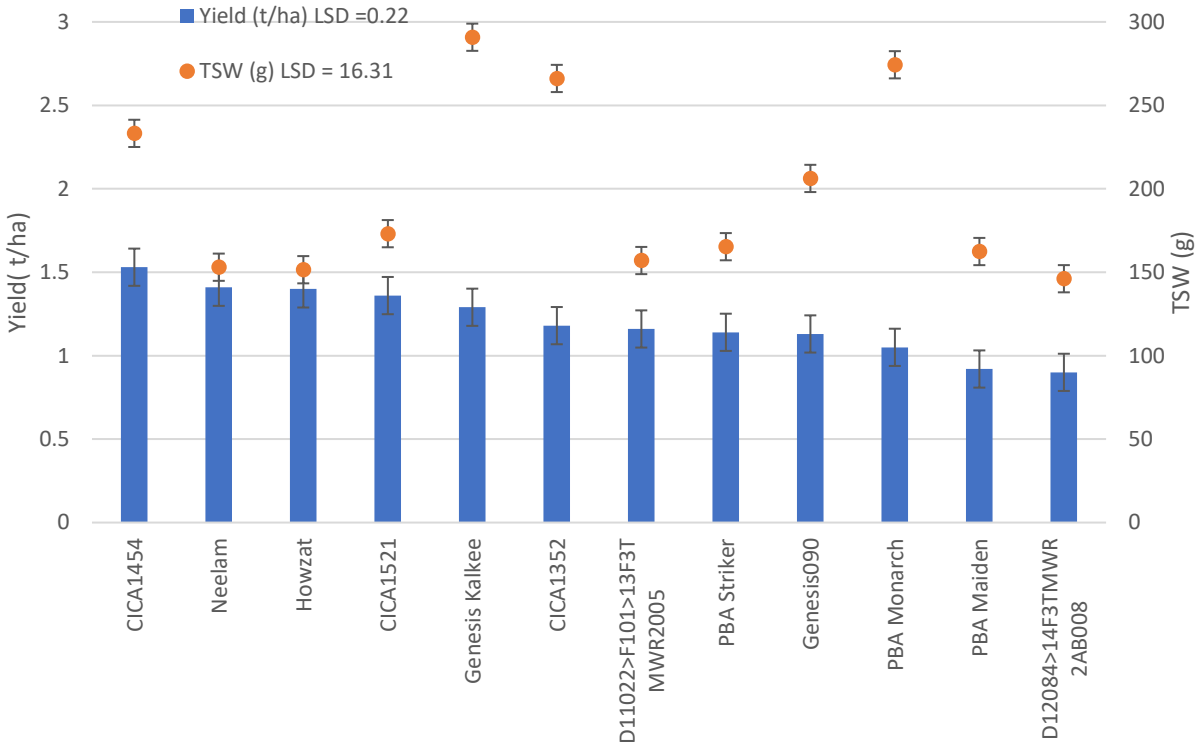

Figure 1. Grain Yield (t/ha) and thousand seed weights (TSW) of chickpea varieties 2019.

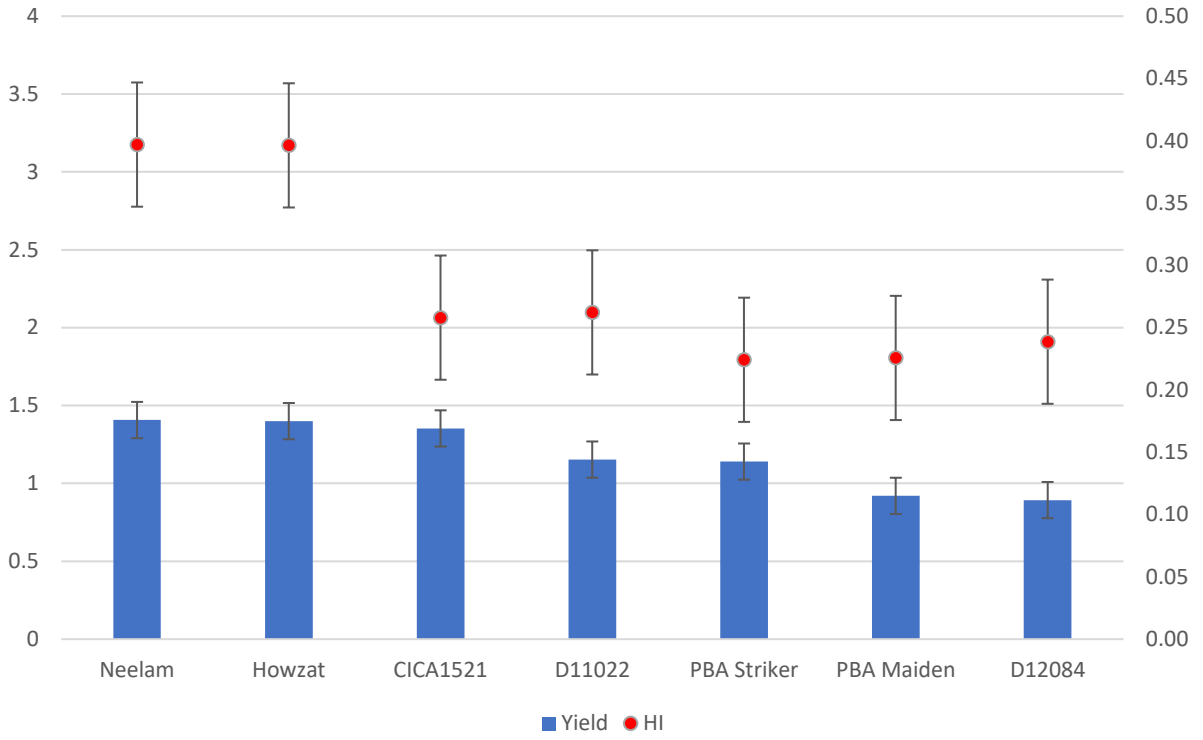

Figure 2. Grain Yield (t/ha) and Harvest Index (HI) of desi chickpea varieties 2019.