

Lentil and chickpea time of sowing – Grass Patch 2021

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Key Messages

- In 2021 lentils produced similar yields from April 1 to May 14.
- Chickpeas sown in April were lower yielding, with high rates of flower abortion. Highest yield was achieved by sowing in mid-May.

Background

Lentils in the Esperance region are often the first crop sown in mid to late April. From this sowing they germinate well under marginal conditions, can be sown relatively deep to chase moisture and grow rapidly once emerged. However, this results in lentils flowering and setting pods under cool to frosty conditions, resulting in vegetative frost damage and abortion of flowers and pods.

It is unclear if sowing in mid to late April is the best time to sow lentils in order to maximise yields.

Similarly it is not known if the Australian lentil breeding program has lines better suited to April sowing.

Similarly, chickpea is a plant well suited to early sowing as it can be sown deep to chase moisture at depth and has good drought tolerance. However, chickpea is particularly prone to losing flowers in cool temperatures. Chickpea Breeding Australia (CBA) are developing lines with 'improved cold tolerance' and they have made some of their seed available. So it seemed worthwhile to add chickpea to the time of sowing experiment in 2021.

Aims

- To better define the sowing and flowering window of lentil and chickpea in WA.
- To evaluate the response of released and near-release lentil lines to a wide range of sowing times.
- To determine if chickpea lines being developed have improved cold tolerance

Trial Details

Property	Danny Sanderson's, Bishops Road, Grass Patch East, GPS 33.274038 S 121.524373 E
Plot size & replication	2 m centres x 10 m sown x 3 reps
Soil type	Sandy loam duplex
Sowing date	TOS1 – April 1, TOS 2 April 15 TOS 3 May 14 TOS 4 June 8
Sowing rate	Lentil 50 kg/ha and Chickpea 90 kg/ha
Fertiliser	100 kg/ha Superphos Extra
Herbicides	IBS for each time of sowing – Terbyne Xtreme 0.6 kg/ha + 1.1 kg/ha Ultro 900WG Triflurex, 14 th May and 8 th June 1 L/ha
Harvested	Hand harvested as mature, and machine harvested on 12 th , 15 th , 24 th Nov and 9 th December as required.
Growing season rainfall	240 mm April-October, GSR+Store = 269mm

Treatments

4 times of sowing (TOS) x 18 lentil lines + 6 chickpea lines (see Table 1)
 3 replicates
 Split plot design with TOS and species randomised within replicate blocks

Table 1 List of lines

Chickpea	Lentil
CBA Captain	10H001L-11HS2007
D11006>13F3HRMT4PR0004	10H010L-12-13HHI4002
D11006>13F3TMWR2003	11H159L-3-14HHI4004
D12014>14F3TMWR2AB001	11H199L-14H4001
Genesis 090	13H039L-1-14HSHI2002
PBA Striker	CIPAL1504
	CIPAL1522
	CIPAL1701
	CIPAL1801
	CIPAL1802
	CIPAL1821
	PBA ACE
	PBA BOLT
	PBA FLASH
	PBA HALLMARK
	PBA Highland XT
	PBA JUMBO2
	PBA Kelpie XT

Results - Preliminary

We are still processing the samples, so the data and analysis presented is preliminary.

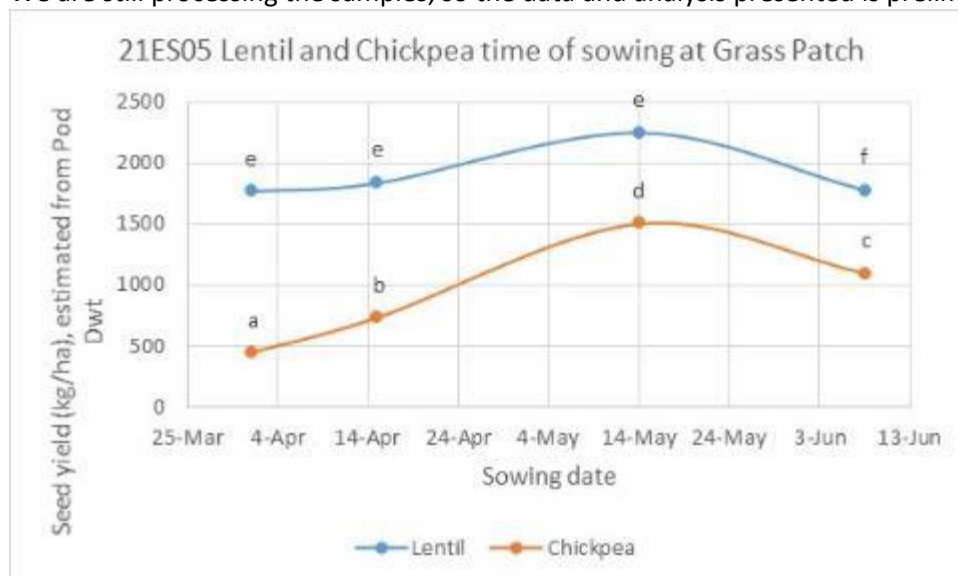


Figure 1 Seed yield (estimate from hand harvest, kg/ha) of lentil and chickpea in a time of sowing experiment at Grass Patch in 2021.

Comments

Chickpea

Time of sowing had a significant effect on the seed yield of chickpea in 2021. Highest yield of 1.5 t/ha was obtained from May 14th sowing and lowest of 0.4 t/ha from April 1st. April sown chickpea flowered early,

some as early as the first weeks of June, but failed to set pods with 95% of flowers not setting pods compared to around 50% for later sowing dates. The breeding line D12014>14F3TMWR2AB001 did set more pods (86% flower abortion) than CBA Captain when sown in April but sowing later was still a better option.

Chickpea varieties responded similarly to time of sowing – with no TOS*Variety interaction. PBA Striker produced highest average yields of 1.3 t/ha, whilst all other lines produced similar yields of 0.9 t/ha. The breeding line D12014>14F3TMWR2AB001 which we noticed to be earliest flowering and tried to set pods earliest produced equal lowest yields on average.

The first 3 weeks of August appears to be the best time for 50% flowering of chickpea at Grass Patch.

Lentil

The response to time of sowing was much flatter for lentil than chickpea with similar yields produced on average for April 1, April 15 and May 14 sowing dates. Breeding lines CIPAL 1504, CIPAL 1701 and CIPAL 1801 and the longer season variety PBA Jumbo2 produced equal top yield across times of sowing.

Acknowledgements

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Links

For other reports related to this trial visit GRDC's on-farm trial web site at <https://www.farmtrials.com.au>

For more information contact

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