Lentil time of sowing – Grass Patch

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Key Messages

- In 2020 lentils produced similar biomass from all times of sowing
- Seed yields were highest from June sowing

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.

Aims

- To better define the sowing and flowering window of lentils in WA.
- To evaluate the response of released and near-release lentil lines to a wide range of sowing times.

Trial Details

Property	Michale Ietto's, Browns Road, Grass Patch East, GPS - 33°19'15.26"S 121°48'44.98"E
Plot size & replication	2 m centres x 10 m sown x 3 reps
Soil type	Sandy loam duplex
Soil pH ($CaCl_2$)	0-10 cm:5.4 10-20 cm: 7.2
EC (dS/m)	0-10 cm: 0.149 10-20 cm: 0.3
Sowing date	TOS1 – April 28, TOS 2 May 12 TOS 3 June 2
Sowing rate	Variety dependent: Target 100 p/m^2
Fertiliser	100 kg/ha Superphosphate
Herbicides, insecticides & fungicides	24th April Roundup Ultra 1.2 L/ha + Hammer 30 mL/ha + sulphate of ammonia 2%, IBS for each time ofsowing – Terbyne Xtreme 0.86 kg/ha + 1.25L/ha Triflurex, 14th May and 8th June 1 L/ha Pyrinex Super (400 g/L chlorpyrifos + 20 g/L bifenthrin), 21st July 100 mL/ha Factor + 38 mL/ha Haloxyfop 520 + 1% Hasten, 6th August 500 mL/ha Sumisclex, 8th October Affirm (17 g/L emamectin present as emamectin benzoate)) 150 mL/ha + BS1000 0.02%, 15th October 30 mL/ha of Trojan (150 g/L gamma-cyhalothrin)
Harvested	20th November – machine harvest
Growing season rainfall	148 mm

Treatments

3 times of sowing (TOS) x 18 lentil lines (see Table 1)
3 replicates
Split plot design with TOS randomised within replicate blocks

Results

Table 1 Seed yield (hand harvest, kg/ha) of lentil in a time of sowing experiment at Grass Patch in 2020.

	TOS				
Line	28-Apr	12-May	2-Jun	Mean	Significance for variety
10H001L-11HS2007	1,451	1,783	3,126	2,120	cde
10H010L-12-13HHI4002	1,349	1,047	1,976	1,457	a
11H159L-3-14HHI4004	955	1,339	2,589	1,628	ab
11H199L-14H4001	2,037	2,301	3,491	2,610	fg
13H039L-1-14HSHI2002	1,350	1,317	2,075	1,581	ab
CIPAL1504	1,372	1,773	2,769	1,972	bcde
CIPAL1522	1,283	1,586	2,377	1,749	abc
CIPAL1701	1,981	2,854	3,113	2,649	g
PBA Kelpie XT	1,983	1,952	2,635	2,190	de
CIPAL1801	1,426	2,059	2,844	2,110	cde
CIPAL1802	1,785	1,941	2,618	2,115	cde
CIPAL1821	1,704	1,857	2,792	2,118	cde
PBA ACE	842	1,153	2,603	1,533	a
PBA BOLT	1,656	2,058	2,819	2,178	de
PBA FLASH	1,940	2,097	2,717	2,251	ef
PBA HALLMARK	816	1,770	2,800	1,795	abcd
PBA Highland XT	1,742	2,250	2,956	2,316	efg
PBA JUMBO2	1,431	1,164	2,681	1,759	abc
Mean	1,506	1,795	2,721	2,007	
	P	LSD			
TOS	0.034	839			
Variety	<.001	397			
TOS.Variety	0.41	858			
		690	same TOS		

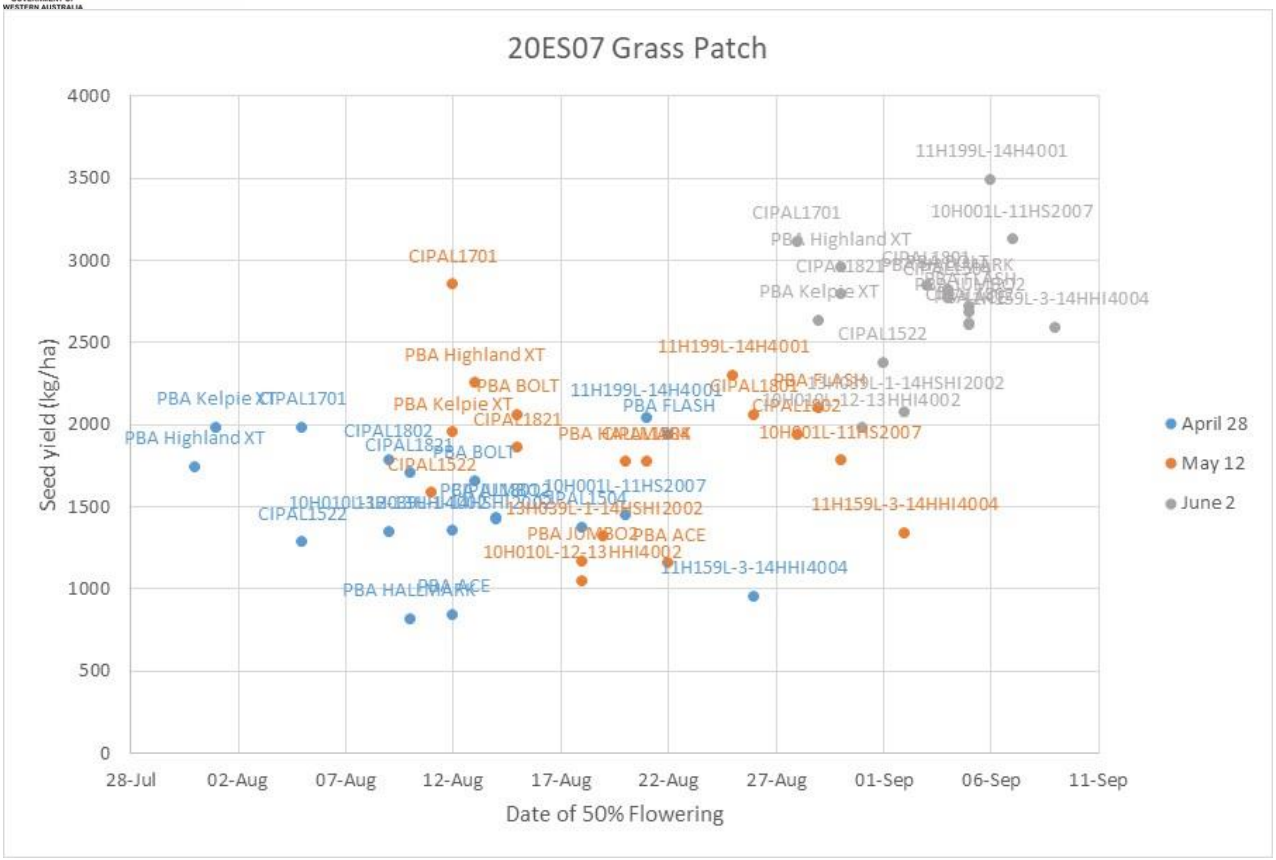

Figure 1 **Date of 50% flowering vs seed yield of lentil varieties for each time of sowing (20ES07) at Grass Patch in 2020.**

Comments

Despite the dry year, lentils grew well at this site and produced good biomass and yields with the mean yield being 2 t/ha. All times of sowing produced similar biomass (~6.2 t/ha), whilst somewhat surprisingly the last time of sowing on June 2 produced the highest yields of 2.7 t/ha. We theorise that the earlier times of sowing may have not set as many pods due to cool dry weather, however in this instance we did not assess pod number so we cannot test that theory.

The results in 2020 indicate a wide time of sowing and flowering window for lentils at Grass Patch. We will attempt to use APSIM to model the biomass and yield results in 2020 and then validate how often similar results are likely to occur.

CIPAL1701 showed promise as an early lentil and 11H199L-14H4001 as a longer season line.

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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