

Lentil agronomy

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Key findings

- Lentil varieties yielded similarly in varying soil types and at different times of sowing.
- New early maturing lentil varieties PBA Flash (3.6 t/ha) and PBA Blitz (3.57 t/ha) were highest yielding.
- Lentils were equal or higher yielding than PBA Gunyah field peas under favourable conditions in 2010.

Why do the trials?

Interest in growing lentils has increased in recent years primarily due to high relative grain prices. However the availability of more varieties with improved agronomic adaptation, disease resistance and grain quality has also generated renewed interest in growers from more marginal lentil growing areas. Experiments were established to assess the advantages of new lentil varieties with current standards and a field pea at different sowing times and on varying soil types.

How was it done?

Plot size	1.5m x 10m	Fertiliser rate	MAP @ 75kg/ha with seed
Sowing date	TOS 1: 30 th April 2010 TOS 2: 21 st May 2010	Inoculant	-
Varieties (plant density)	PBA Gunyah (OZP0602) @ 55 plants/sq m & PBA Blitz (CIPAL610), PBA Flash (CIPAL411), Boomer, Nipper, Nugget all @ 120 plants/sq m	Row Spacing	22.5 cm (9")
Sites	West (at top of Hart site hill), East (at bottom of Hart site hill).		
Trial design	Split, split plot with 3 reps, blocked by rep, then site then sowing date.		
Fungicides	All plots were treated with Carbendazim @ 500 mL/ha 22/09/2010		

Results

Seasonal conditions favoured plant growth and grain yield in 2010. Low levels of both ascochyta blight and botrytis grey mould were identified, particularly at the heavier textured East site, however, disease was controlled by foliar fungicides.

Dry matter production (Table 1) was over 8 t/ha in the early sown lentil plots and grain yields ranged from 3.2 t/ha (Nugget East site) to 3.6 t/ha (PBA Flash East site). Field peas were lower yielding with yields of 3.1 t/ha at the West site and 2.65 t/ha at the East site (Table 2).

Sowing date had no effect on grain yield however dry matter was 16% higher at the early sowing date when compared with the later sowing date. Generally all lentil varieties performed similarly at both sites although PBA Flash was 11% higher yielding at the East site compared with up the hill at the west site. All varieties including PBA Gunyah field pea yielded the same at the West site. At the East site Nugget lentils were significantly lower yielding and PBA Gunyah was lower yielding than all lentils at this site.

Variety	Dry matter (t/ha)	
	TOS 1	TOS 2
Lentil ave	8.63	7.45
LSD (0.05)	0.61	

Table 1: Average dry matter production of lentil varieties at each sowing time (tonnes/hectare).

Variety	Grain yield (t/ha)	
	East site	West site
Boomer	3.35	3.31
PBA Blitz	3.57	3.30
PBA Flash	3.60	3.26
Nipper	3.30	3.29
Nugget	3.24	3.30
PBA Gunyah	2.65	3.09
Site mean	3.28	3.26
LSD (0.05)	0.29	

Table 2: Yield of lentil varieties at each site (tonnes/hectare).

Grain size varied between lentil varieties (Tables 3 and 4), with Nipper having the smallest and Boomer the largest grain weight across sowing dates and sites. Boomer lentils had a slightly higher grain weight when sown earlier. Otherwise there were little differences due to sowing date or site location.

Variety	100 grain weight (g)		
	East site	West site	Average
Boomer	7.5	7.4	7.5
PBA Blitz	5.3	5.2	5.2
PBA Flash	4.9	4.9	4.9
Nipper	3.4	3.4	3.4
Nugget	4.2	4.2	4.2
PBA Gunyah	22.1	21.5	21.8
Lentil average	5.1	5	5.1
LSD (0.05)			
Variety			0.2
Site			0.1
Variety*Site			0.2

Table 3: Seed size of lentil varieties at each site and average lentil variety seed size (grams / 100 grains).

Variety	100 grain weight (g)		
	TOS 1	TOS 2	Average
Boomer	7.7	7.3	7.5
PBA Blitz	5.2	5.2	5.2
PBA Flash	4.8	5	4.9
Nipper	3.4	3.5	3.4
Nugget	4.2	4.2	4.2
PBA Gunyah	21.7	21.9	21.8
Lentil average	5.1	5	5.1
LSD (0.05)			
Variety		0.2	
TOS		ns	
Variety*TOS		0.3	

Table 4: Seed size of lentil varieties at each time of sowing and average lentil variety seed size (grams / 100 grains).

Summary

Seasonal conditions favoured lentil growth and production with few impediments to grain yield. Disease started but didn't progress due to fungicide use and a period of dry weather beginning in mid September.

Lentil yields averaged above 3.2 tonnes per hectare at both sites. Yields were similar between varieties, sowing date and sites. The lack of difference between sites was unexpected but showed the potential lentils have regardless of soil type in favourable conditions. This result may not always occur across seasons or on less suited soil types.

Pea yields were equal to or lower yielding than the lentils. This was most likely due to black spot infection and this was likely to have been higher at the East site due to heavier soil type and its proximity to previous stubble. Results from a neighbouring fungicide trial showed over a 1.0 t/ha yield loss in field peas due to uncontrolled black spot infection.

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