

M2. Field Pea and Lentil Sowing Date x Soil Type, Mid North (Hart), South Australia

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Aim

To compare new lentil varieties with current commercial varieties as well as current commercial field pea varieties and Kasper type pea blends on two different soil types.

Treatments

Varieties: Lentils: PBA Blitz, PBA Flash, PBA Jumbo, Nipper, Nugget and CIPAL0902
 Peas: PBA Gunyah, PBA Twilight, PBA Oura and Kasper
 Blends: 'Kasper Mix' (50% Kasper, 25% PBA Gunyah and 25% PBA Twilight) and
 'TwiKasYah' (33% Kasper, 33% PBA Gunyah and 33% PBA Twilight)
Sowing dates: 22 May (Early-Mid), 19 June (Mid-Late)
Soil types: Western site: shallow, hard setting, higher salinity
 Eastern site: deeper, well-structured and more friable
Fertiliser: MAP + Zn @ 90kg/ha

Background

Interest in growing lentils has increased in recent years due to high grain prices and grain yields, and this has pushed lentil production into more marginal pulse growing areas. Recently released lentil varieties with improved disease characteristics and a variety of maturity timings may be better suited to these environments. Field peas are still considered to be a reliable break crop in these areas despite lower prices so they are included in the trials.

Two "Kasper type" seed mixtures (Blends) with a wider maturity range have also been included to compare against standard varieties. Two trial sites were established one on a less suitable soil type (West Site) with higher EC soil and the other was placed on a deeper soil more suited to pulse production (East Site), this has been done to compare varieties in less favourable conditions.

Results and Interpretation

- Across both sites lentils produced an average grain yield of 0.94t/ha and peas 1.43t/ha. The average grain yield for the western site was 1.10t/ha and at the better suited eastern site the grain yield was 1.27t/ha.
- All varieties and both sites responded the same way to time of sowing, whereby, as sowing was delayed grain yields declined (Table 1). At the Eastern site a yield decrease was 0.54t/ha for both crops while at the Western site the yield decrease was smaller and 0.32t/ha for lentil and 0.22 t/ha for field pea.
- Across both times of sowing all lentils performed similarly at the eastern site, producing an average yield of 0.99t/ha with a range from 0.89t/ha (Nipper) to 1.07t/ha (CIPAL902) (Table 2). At the western site with less suitable soil type there were significant differences where Nipper produced the lowest grain yield (0.63t/ha) and the earlier maturing variety, PBA Blitz produced 1.07t/ha. Nugget was also significantly lower yielding than some other varieties.
- All field pea varieties produced similar grain yields ranging from 1.48t/ha ('TwiKasYah') to 1.61t/ha (PBA Oura) at the eastern site and 1.24t/ha (Kasper) to 1.43 (PBA Twilight) at the less suited western site (Table 3). The Kasper mixtures all produced similar yields showing that there are no detrimental effects of mixing these similar seed types and conversely no improvements under the seasonal conditions of last year.

Table 1. Average lentil and field pea grain yield (t/ha) for time of sowing and site at Hart in 2012.

TOS	Grain yield t/ha			
	Lentils		Field peas	
	East site	West site	East site	West site
May-22	1.26	1.04	1.82	1.43
Jun-19	0.73	0.72	1.28	1.21
Yield decrease	0.54	0.32	0.54	0.22
LSD 0.05	0.08	0.13	0.12	0.17

Table 2. Lentil variety grain yields averages for time of sowing at the east and west site, letters indicated statistically similar varieties.

Variety	Grain yield (t/ha)	
	East	West
Nipper	0.89 a	0.63a
Nugget	0.99a	0.72ab
PBA Jumbo	1.00a	0.91bc
CIPAL902	1.07a	0.97c
PBA Flash	1.02a	0.98c
PBA Blitz	0.99a	1.07c
LSD 0.05	ns	0.22

Table 3. Field pea variety grain yields averages for time of sowing at the east and west site.

Variety	Grain yield (t/ha)	
	East	West
Kaspa	1.50	1.24
Kaspa Mix	1.52	1.37
PBA Gunyah	1.59	1.31
PBA Oura	1.61	1.26
PBA Twilight	1.60	1.43
'TwiKasYah'	1.48	1.30
LSD 0.05	ns	ns

Key Findings and Comments

- Overall lentil and pea grain yields averaged 1.18 t/ha across all sites and treatments. There was no significant foliar disease and the major yield limiting factor was the lack of late season rainfall, only 25mm in September and October. Although only small the slightly higher grain yield at the eastern site compared to the western site highlights the importance of paddock and crop selection to maximise pulse yields in these more marginal areas. A similar result was found in 2011 where there was a 0.46t/ha yield increase from the western site to the eastern site, 1.76 t/ha to 2.23 t/ha respectively.
- There was a clear advantage observed from sowing early in 2012, all varieties from both crops were significantly penalised as sowing was delayed until the 19th of June. This result was also observed at Hart in 2011 in similar trials.
- In previous seasons variety maturity timings have had a strong influence on grain yield. In 2012 this was only observed in lentils at the eastern site. It is likely that the shorter seasoned varieties PBA Blitz and PBA Flash were able to take advantage of the better soil type and available moisture to mature before the season finished off. The peas at both sites and the lentils at the western site all produced similar yields despite maturity timings. A similar result

was observed in field peas at other Pulse Breeding Australia trials around the mid north, such as Snowtown and Balaklava in 2012. The steady decline in soil moisture without a specific timing to the end of the season may explain why there was little difference between varieties. All varieties may have used all available moisture and therefore produced similar grain yields.