

3.1.5 Grain Legume Trial - Streatham

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Location: Lake Bolac – John Malin property

Aim:

To test a number of grain legume crops grown in a stubble burnt and stubble retained situation and planted with different equipment.

Method:

Various grain legumes were sown in unreplicated areas approximately 50m by 100m. Seed was donated by Wimmera Grain Co, Rupanyup. Fertiliser was 100 kg/ha MAP.

Stubble retained vs burnt:

The northern 80m of the trial site was unburnt and consisted of a heavy wheat stubble. The southern 20 m was burnt. Sowing was with a Shearer trash culti combine fitted with three types of disc openers:

- 4 Barton angled disc openers (supplied by Flexicoil)
- Dutch high speed coulter (supplied by Conserva-Tech)
- Bio blades or cross slot openers (supplied by Namoi Valley Implements)

Legume varieties and management: (from east to west)

White lupins

(i) Brolga beans (*albus lupins*) variety Ludet, treated with rhizobia were sown on 18/4 at 100 kg/ha. Pre-sow herbicide application of 1 l/ha glyphosate, 1.5 l/ha diuron 500, 1 l/ha simazine 500 in 2% ammonium sulphate. 250 ml/ha select in 1% hasten oil applied on 11/7.

Peas, beans, winter sown lentils

On 25/5 the remaining trial area was sprayed with 1.2 l/ha glyphosate, 100 ml fastac, 1.5 l/ha diuron 500, 1 l/ha simazine 500 in 2% ammonium sulphate.

(ii) Peas variety Mukta, treated with 1.5 l/t P Pickle T plus rhizobia were sown at 140 kg/ha on 1/6.

(iii) Beans var Aquadulce, treated with 1.5 l/t P Pickle T plus rhizobia were sown at 100 kg/ha on 1/6. Many blockages occurred as seed boots were too small. 0.5 kg/ha carbendazim was applied in early November for chocolate spot.

(iv) Lentils var Anicia and Cassab, treated with 1.5 l/t P Pickle T and rhizobia were sown on 2/6 at 75 kg/ha.

200 ml/ha select plus 20 ml/ha verdict 520 in 1% hasten oil was applied to the whole area on 18/8.

1 l/ha Bravo 500 was applied to the winter sown lentils on 5/10 due mainly to ascochyta in the Cassab variety. 0.5 kg/ha carbendazim was applied in early November for botrytis which was prevalent in both varieties.

Chickpeas, spring sown lentils

(v) Chickpeas var Kaniva, were treated with 1 l/t apron and 1 l/t spinflo and rhizobia and sown on 20/9 at 100 kg/ha. Applications of 1.5 kg dithane/ha were applied at 14 day intervals beginning 6 weeks after sowing.

(vi) Lentils var Anicia and Cassab, treated with 0.8 l/t spinflo and 0.5 l/t apron and rhizobia were sown on 20/9 at 75 kg/ha.

Navy beans

(vii) Two varieties of navy beans were sown in early November.

Slugs

10 kg/ha slugout was applied to the whole area on 2/6 after observing damage in the lupins.

An additional 5 kg/ha slugger was applied in July to the lupin, pea, bean and winter sown lentil areas.

On 18/8, 250 ml fastac in 1% oil was sprayed to the northern 40m, and 150 ml/ha supracide to the adjacent 20m, leaving the southern 20m of the stubble retained area unsprayed.

5 kg/ha slugger was spread on 24/9 to the spring sown lentil and chickpea areas. These areas also had 1.5 kg/ha slugger applied with the fertiliser in half of the drill.

Half the chickpea and spring sown lentil areas were rolled immediately after sowing.

General observations:

Slugs: Slug damage was significant in lupins, peas, and beans when sown into stubble, but did not occur where stubble was burnt. Winter sown lentils were destroyed by slugs in stubble. The spring sown lentils and chickpeas do not appear to have been affected by slugs. No effects of the fastac or supracide was evident on slug activity.

Lupins: A small part of the lupin area was flooded due to a blocked culvert diverting water onto the trial. Complete death of the plants occurred in this area, highlighting the importance of good surface drains. Despite significant thinning by slugs, the crop developed an excellent canopy on the stubble retained area in spring and yielded well. The pods were carried high on the plant, and harvesting was quite easy

Peas: Part of the pea area was also affected by the surface water from the blocked culvert. The peas looked excellent all year, with some signs that they stood better where stubble was retained. However, the crop lodged severely (despite being promoted as a standing type) and ended up flat on the ground at maturity with high levels of disease. This problem could be addressed we think by later sowing. There was significant shatter loss at harvest, and rocks would be a problem. Yield was improved by stubble retention

Beans: Population was too low due to seeding problems, growth was satisfactory but chocolate spot developed in spring and reduced pod set. Some lodging occurred and harvest losses were significant.

Winter sown lentils: Showed signs of waterlogging damage even in what has been a relatively dry year and developed much more foliar disease than the spring sown lentils. Botrytis and ascochyta were very prevalent in Cassab, and later sowing is suggested. There was little loss at harvest, but the header front had to be on the ground. Sorrel was very bad in these sowings. Foliar disease was less in the isolated patches of lentils growing in stubble which had not been eaten by slugs.

Spring sown lentils: Did not develop foliar diseases, but yields were curtailed by the dry spring. Very severe shattering occurred in both varieties at harvest, and we suspect this may be a feature of spring sown lentil crops. Windrowing may be essential in this instance, but is untried technology for the crop in Australia. Weed control was better than in the winter sowing.

Chickpeas: Developed significant ascochyta where stubble had been burnt, but not where it was retained. The dry conditions restricted yield, but their high value may still make the crop an economic proposition. Yields are not yet to hand.

Navy beans: Grew surprisingly well despite very dry conditions but pod set was very poor probably due to the hot weather.

Yields

Crop	Yields, t/ha, unreplicated	
	Stubble retained	Stubble burnt
White lupins cv Ludet	2.25	2.30
Peas cv Mukta	2.13	1.54
Beans cv Aquadulcie	1.03	1.30
Cassab lentils winter sown	0.00	0.53
Anicia lentils winter sown	0.00	0.14
Chickpeas cv Kaniva	Na	Na
Cassab lentils, spring	0.17	0.18
Anicia lentils, spring	0.46	0.53
Navy beans	0.00	0.00

Further Information:

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