



## GRDC: Legume demonstrations for reliable profitability in the Western Region

**Location:** Kayanaba, Dandaragan

**Soil Type:** Clay loam

**Previous Rotations:** 2015 – Pasture  
2016 – Pasture,  
2017 – Canola

**Plot Size:** 12.5 m x 200 m

**Aim:** To assess the profitability of multiple types of legume crops to determine which legumes will suit different areas and rotation systems. This demonstration site is part of a state-wide project, led by the Liebe Group across the Kwinana West, Kwinana East and Geraldton port zones.



**Methodology:** The site was sown on the 16<sup>th</sup> June 2018 with the use a John Deere paralink bar with help from the grower, Charles Roberts. It was sown into moist soil and emerged soon after sowing.

The treatments used are 4 different varieties of legumes. These include Wharton field peas, Barlock lupins, Hurricane lentils and Striker chickpeas. These treatments have been replicated twice throughout the site.

	Field Pea	Chickpea	Lentil	Lupin
<b>Herbicide</b>	Glyphosate @ 1.5 L/ha Oxyflourfen @ 75 ml/ha Metribuzin @ 0.25 g/ha Trifluralin @ 2 L/ha	Glyphosate @ 3 L/ha Oxyflourfen @ 150 ml/ha Trifluralin @ 2 L/ha Simazine @ 0.55 kg/ha Balance @ 100g/ha	Glyphosate @ 3 L/ha Oxyflourfen @ 150 ml/ha Metribuzin @ 0.25 g/ha Trifluralin @ 1 L/ha	Glyphosate @ 3 L/ha Oxyflourfen @ 150 ml/ha Metribuzin @ 0.25 g/ha Trifluralin @ 2 L/ha Simazine @ 1.1 kg/ha
<b>Insecticide</b>	Chlorpyrifos @ 500 ml/ha			

Figure 1: Pre-seeding chemical application rates applied on 15<sup>th</sup> June 2018 and seeding rates for each treatment.

## Rainfall:

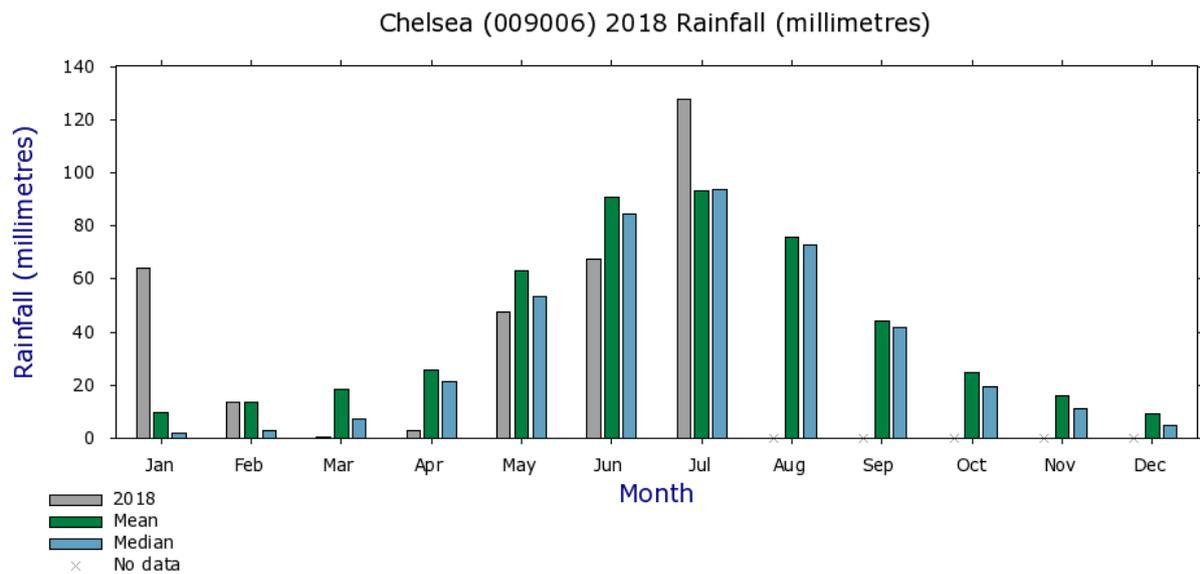


Figure 2: Mean monthly rainfall amount recorded at the Chelsea rainfall site from 1930 to 2018 period.

The July rainfall amount was above average for the area, whilst the growing season months prior to this were slightly below average. This large amount of rainfall in July has increased the water logging throughout the paddock and the treatments can be seen to have some small visible areas of waterlogging present towards the end of the plots.

## Results/Observations:

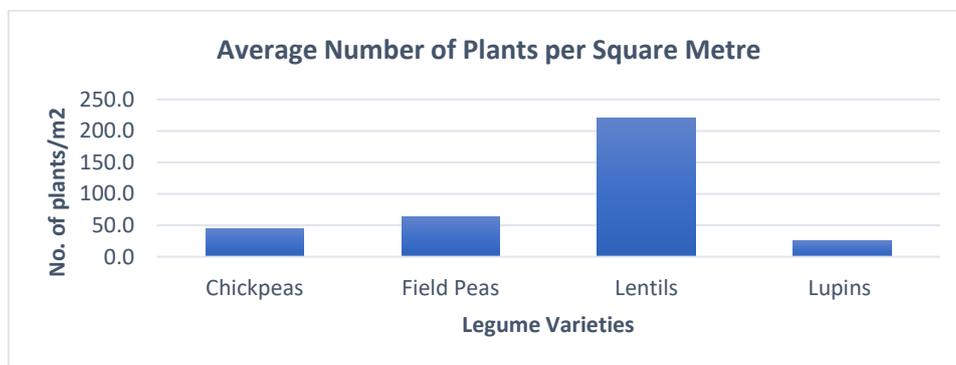


Figure 3: Average plants per meter squared for each legume variety, recorded on the 16<sup>th</sup> July 2018, 4 weeks after the sowing date.

Plant establishment counts were completed on the 12<sup>th</sup> July 2018, 4 weeks after the sowing date. At this point it was noticeable the lupins had suffered chemical damage as their growth and germination appeared stunted. Further investigation showed that there was a layer of chemical within the soil that was preventing some germinated seeds from establishing fully. This has however only affected the lupins and the remaining 3 legume varieties were unaffected.

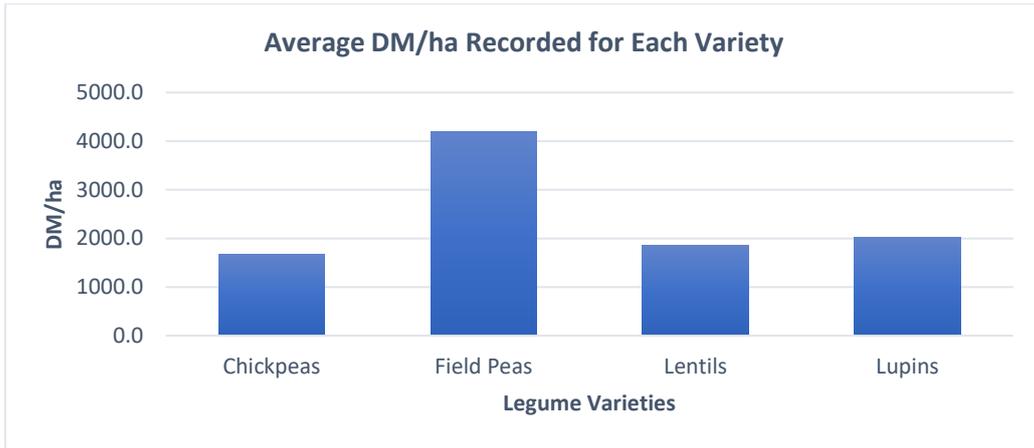


Figure 4: The overall average dry matter/ha recorded for each variety of legume used at the Liebe Legume Demonstration Site. Taken on the 27<sup>th</sup> August 2018.

The Wharton field peas showed the highest dry matter per hectare at 4205 g of DM/ha in comparison to the other 3 varieties. The coverage of the Wharton field peas has also decreased the number of weeds throughout the crop due to the large canopy it has created. This canopy has been further helped by the field peas running up the canola stubble from the previous year.

**Future:** Next year this trial site will be sown into a cereal crop. From this we will be able to determine the impacts the legumes have had on the soil environment and the potential profit increase that has come from adding them into the rotation. This project is a 2 year project sponsored by GRDC and led by the Liebe Group.

