

PINNAROO, South Australia

Low Rainfall Zone, South Australian Mallee

GPS 35°19'55.52"S, 140°53'39.75"E

Seasonal Snapshot

- Low moisture availability and frost were major abiotic stress experienced at the Pinnaroo pulse validation site in 2018. Just 100 mm of rainfall was received during April – October which is half the amount of rainfall normally expected during the growing season (**Figure 1**). There was also a delayed start to the season with just 7.8 mm rainfall received from January – April.
- Pulse crops were subject to terminal drought with just 17 mm of rainfall recorded during September and October. Frost events were frequent at the site with eight days with a minimum of below 0°C recorded in September (**Figure 2**). Frosts on the 28th and 29th of September appeared to have a detrimental effect on lentils. Biotic stresses did not impact pulse crops at the site in 2018 as pressure from the major pulse crop diseases was negligible.

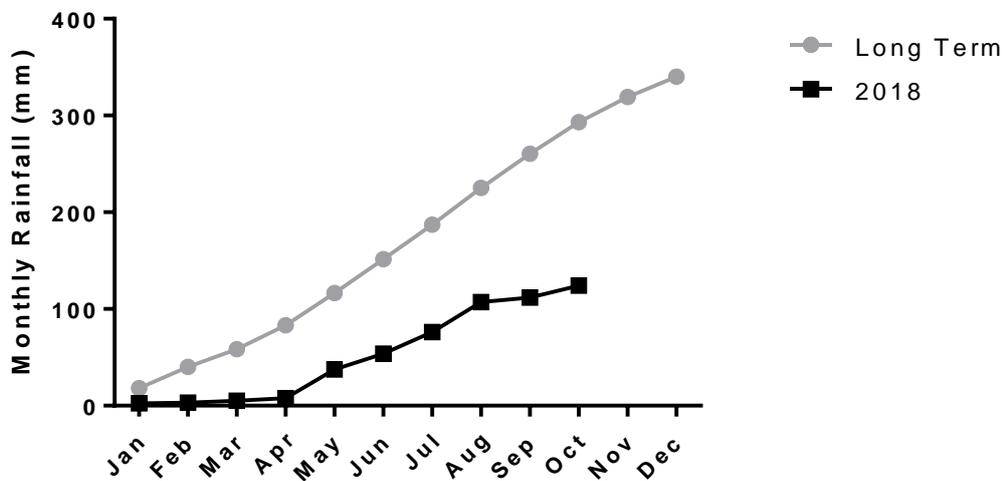


Figure 1. 2018 cumulative rainfall compared to the long-term average at the Pinnaroo pulse validation site.

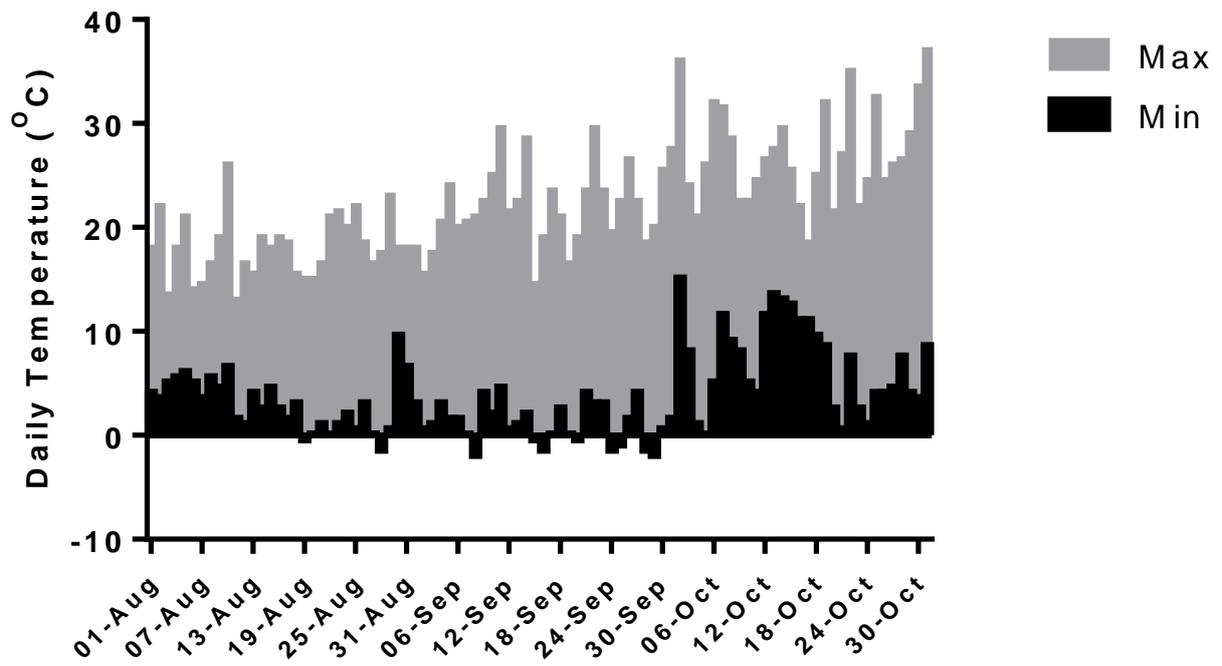


Figure 2. Daily minimum and maximum temperature measured between August and October at the Pinnaroo pulse validation site in 2018.

Soil Characterisation

The Pinnaroo pulse validation site was located in the South Australian Mallee approximately 8 km south of Pinnaroo. Trials were located on two separate soil types at the site. The sand site had a sandy loam textured topsoil and the flat site had loam textured topsoil. Both sites had clay loam subsoils. Key soil properties for both sites are provided in **Table 1** and **Table 2**.

Table 1. Soil properties at the Pinnaroo pulse validation “sand” site.

Depth (cm)	NO ₃ -N (mg/kg)	NH ₄ -N (mg/kg)	P (mg/kg)	K (mg/kg)	S (mg/kg)	OC (%)	EC (dS/m)	pH (CaCl ₂)	pH (H ₂ O)
0-10	5.8	≤1	24	260	22	0.37	0.33	7.8	8.5
10-30	2.3	≤1			45		0.5	8.6	9.4
30-60	1.7	≤1			100		0.63	8.7	9.6
60-90	1.8	≤1			71		0.59	8.7	9.8
90-120	2.1	≤1			73		0.74	8.7	9.8

Table 2. Soil properties at the Pinnaroo pulse validation “flat” site.

Depth (cm)	NO ₃ -N (mg/kg)	NH ₄ -N (mg/kg)	P (mg/kg)	K (mg/kg)	S (mg/kg)	OC (%)	EC (dS/m)	pH (CaCl ₂)	pH (H ₂ O)
0-10	2.2	1.1	10	430	8.2	0.92	0.17	7.9	8.6
10-30	5.3	≤1			8.5		0.24	8.2	9.0
30-60	2.5	≤1			36		0.61	8.5	9.4
60-90	2	≤1			98		1.1	8.7	9.6
90-120	3.7	≤1			130		1.3	8.7	9.5