

# Caragabal

## Caragabal site attributes

2023

### Background

The Caragabal site is characterised by a soil with a silty loam topsoil overlying clay at depth. The trials were sown into good seedbed moisture and a full moisture profile after a wet 2022 and good rains in March 2023. The season turned very dry from mid-July with 40 mm total rainfall recorded from then until mid-October. There were several days in September with maximum temperature above 30 °C. Winter growth was excellent and crops set up high yield potential (especially early sown lupins and faba beans) but terminal heat and moisture stress limited grain yield.

### Rainfall and temperature

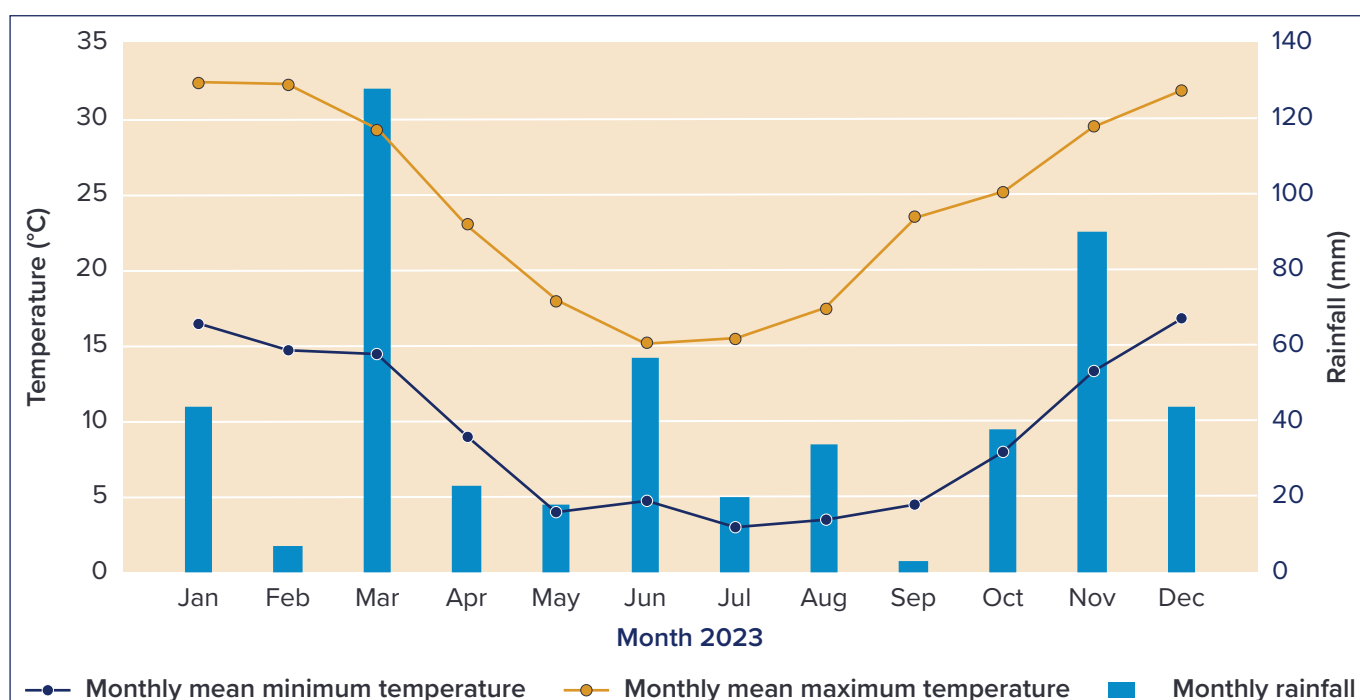


Figure 4: Monthly rainfall and mean minimum and maximum temperature at Caragabal in 2023.



## Soil characteristics

Sampled April 2023		Soil depth (cm)				
Characteristic	Unit	0–10	10–20	20–40	40–70	70–100
pH (CaCl <sub>2</sub> )		5.9	5.5	7.1	7.0	7.8
Organic Carbon	%	1.2	0.6	0.5	0.4	0.4
Phosphorus (Colwell)	mg/kg	34	17	5	6	5
Nitrate N	mg/kg	28	8	5	3	2
Ammonium N	mg/kg	1	1	1	1	1
Cation exchange capacity (CEC)	meq/100 g	9.0	6.3	10.1	16.6	25.1
Exc. calcium	%	73.3	72.2	67.2	54.1	65.2
Exc. magnesium	%	9.3	12.9	24.4	37.5	27.3
Exc. potassium	%	17	15	7.1	5.1	3.8
Exc. sodium	%	0.4	0.2	1.4	3.3	3.7
Exc. aluminium	%	0	0	0	0	0
Clay	%	9.2	8.0	13.5	41.2	37.1
Sand	%	61.5	66.3	63.7	42	42.6
Silt	%	29.3	25.7	22.8	16.8	20.4



Pulse field trial site at Caragabal, 19 May 2023

## Crop sequence and key management dates

Crop sequence		Site management 2023		
Year	Crop	Activity	Date	Comments
2022	Wheat	Sowing	19 April	SD1 faba beans, lupins and vetch
			19 May	SD2 faba beans, lupins and vetch
				Chickpea and field pea comparison
		Harvest	7 November	All species and varieties

# Chickpea and field pea variety comparison

## Caragabal 2023

### Key findings

#### Chickpeas

- There were only small differences in grain yield between the chickpea varieties with CBA Captain<sup>Ⓛ</sup> and PBA Slasher<sup>Ⓛ</sup> the highest at 1.7 t/ha, and PBA HatTrick<sup>Ⓛ</sup> and PBA Seamer<sup>Ⓛ</sup> the lowest at 1.5 t/ha.
- CBA Captain<sup>Ⓛ</sup> produced the largest seed (24.2 g/100 seeds), while PBA HatTrick<sup>Ⓛ</sup> and PBA Slasher<sup>Ⓛ</sup> had the smallest (22.4 g/100 seeds).
- The application of nitrogen (N) early post-emergent (100 kg N/ha as urea) did not increase grain yield of CBA Captain<sup>Ⓛ</sup> but did increase peak biomass from 6.4 to 7.3 t/ha, and seed N concentration from 3.5 to 3.8%.

#### Field peas

- APB Bondi<sup>Ⓛ</sup> was the highest yielding variety at 1.9 t/ha and Sturt<sup>Ⓛ</sup> the lowest at 1.1 t/ha.
- Seed size was correlated to grain yield, with APB Bondi<sup>Ⓛ</sup> the largest (17.6 g/100 seeds) and Sturt<sup>Ⓛ</sup> the smallest (15.2 g/100 seeds).
- The application of N early post-emergent (100 kg N/ha as urea) to PBA Butler<sup>Ⓛ</sup> did not increase grain yield, peak biomass nor seed N concentration.



Chickpea variety CBA Captain<sup>Ⓛ</sup> +N (L) and nil N (R) at Caragabal, 17 August 2023

## Trial details

Separate chickpea and field pea variety comparison trials were conducted at Caragabal in 2023 to determine suitability of the species and varieties to the region. Nitrogen (100 kg N/ha, as urea) was applied early post-emergent (3 June) to CBA Captain<sup>Ⓢ</sup> chickpeas and PBA Butler<sup>Ⓢ</sup> field peas to determine how background soil nitrogen levels influence pulse nitrogen fixation. The samples for nitrogen fixation are yet to be analysed.

**Table 20:** Trial management details of chickpea and field pea comparison trials at Caragabal in 2023.

Management	2023
Sowing date	19 May
Starter fertiliser	Single super @ 130 kg/ha (broadcast pre-sowing); MAP @ 70 kg/ha (at seeding)
Nitrogen applied	3 June: 100 kg N/ha (as urea) to + N treatments – CBA Captain <sup>Ⓢ</sup> and PBA Butler <sup>Ⓢ</sup>
Pre-emergent herbicide	Simazine 900 @ 0.5 kg/ha + Reflex <sup>®</sup> @ 0.9 L/ha*
Target plant population	Chickpea: 40 plants/m <sup>2</sup> Field pea: 40 plants/m <sup>2</sup>
Varieties	Chickpea: CBA Captain <sup>Ⓢ</sup> , PBA HatTrick <sup>Ⓢ</sup> , PBA Seamer <sup>Ⓢ</sup> , PBA Slasher <sup>Ⓢ</sup> Field pea: APB Bondi <sup>Ⓢ</sup> , PBA Butler <sup>Ⓢ</sup> , PBA Taylor <sup>Ⓢ</sup> , Sturt <sup>Ⓢ</sup>



**Field pea variety comparison at Caragabal, 17 August 2023**

## Results

**Table 21:** Grain yield, seed size, peak biomass and seed N (select varieties only) of chickpeas and field peas at Caragabal in 2023.

	Grain yield (t/ha)	Seed size (g/100 seeds)	Peak biomass (t/ha)	Seed N (%)
<b>Chickpeas</b>				
CBA Captain	1.7	24.2	6.4	3.5
CBA Captain +N	1.6	23.6	7.3	3.8
PBA HatTrick	1.5	22.4	–	–
PBA Seamer	1.5	23.9	–	–
PBA Slasher	1.7	22.5	–	–
l.s.d. ( $P = 0.05$ )	0.12	0.58	0.31	0.16
<b>Field peas</b>				
APB Bondi	1.9	17.6	–	–
PBA Butler	1.7	16.7	8.0	4.2
PBA Butler +N	1.6	16.4	8.2	4.3
PBA Taylor	1.7	16.7	–	–
Sturt	1.1	15.2	–	–
l.s.d. ( $P = 0.05$ )	0.24	0.90	n.s.	n.s.

n.s. = not significantly different