

Disclaimer:

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Professional advice should be sought for specific recommendations to ensure access to the most up to date information and knowledge.

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Impact of Sowing Set-up in Chickpeas

Trial ID:	LB1801	Location:	Pampas
		Investigator:	Linda Bailey
			Trial Year: 2018

Objective:	To evaluate the impact of sowing depth, method, plant population and sowing time on chickpea production			
Variety:	PBA Seamer			
Row Spacing:	32 cm			
Fertiliser:	80 kg/ha Granulock Supreme Z			
Time of Planting:	Early		Late	
Planting Date:	30/05/2018		16/07/2019	
Planting Equipment:	Disc	Tyne	Disc	Tyne
Planting Depth: (Soil depth above seed)	Shallow 5-6 cm Deep 9 cm	Shallow 6 cm Deep 10 cm	Shallow 6 cm Deep 10 cm	Shallow 6 cm Deep 15 cm
Target Plant Populations:	10, 20, 30 and 40 plants/m ²			
Harvest Date:	1/12/2018			
Harvest Equipment:	Small Plot Harvester			
Keywords:	Planting date, planter type, planting depth, plant population, chickpea			

NB Late planted deep tyne plots were deeper than planned and impacted on plant establishment and yield.

Emergence, biomass (NDVI) and yield were the primary assessments.

Statistical Design and Analysis

The trial was designed as a Split Plot with planting date as the main plot with planter type, depth and plant population as the sub plots. The trial design required a complex analysis, conducted by biometricians from SAGI.

Key Points:

- Yields and plant establishment relationships were analysed on the basis of plant populations achieved, not targeted
- There was a significant interaction between all variables (ie there was no consistent relationship between yield and establishment from combinations of planting date, planter type and depth)

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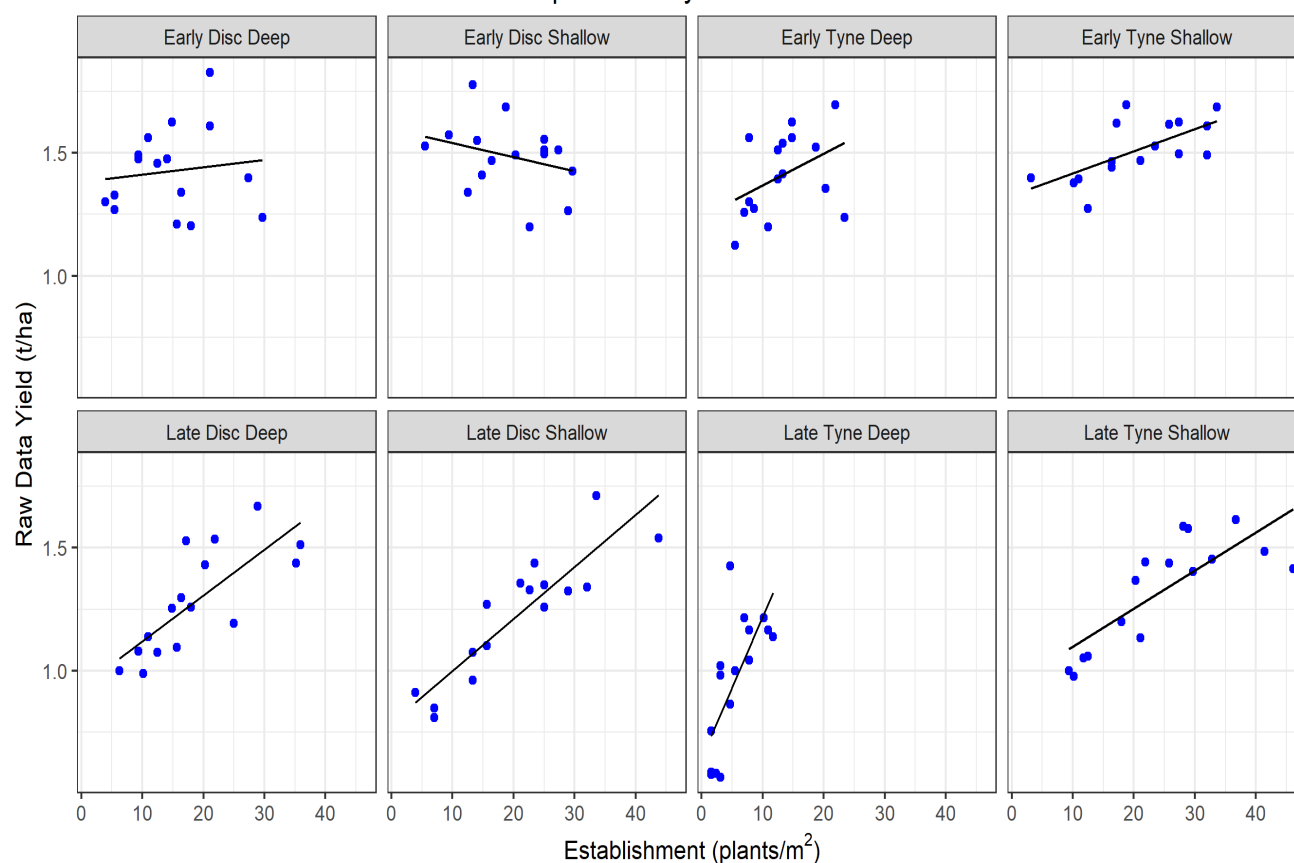
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2018

The figure below shows the pattern of yield responses to establishment counts for all treatment combinations

1. Similar yield levels were achieved from all planter type and depth combinations at the early planting date
2. There was no consistent yield response to plant population at the early planting date (Increases in yield were apparent with establishment from Tyne planting but varied response with Disc planting)
3. There was a strong yield response to establishment at the late planting date (Less ability for crop response to low plant populations)
4. Poorer establishment and yield was achieved from the Late Tyne Deep planting treatment

Relationship between yield and establishment



Statistical Predictions:

Planting Date	Planter	Depth	Slope	SE Slope	LSD Slope	Intercept	SE Intercept	LSD Intercept
Early	Disc	Deep	0.003	0.005	de	1.38	0.085	ab
Early	Disc	Shallow	-0.006	0.005	e	1.60	0.11	a
Early	Tyne	Deep	0.013	0.007	bcd	1.24	0.10	b
Early	Tyne	Shallow	0.009	0.004	cd	1.33	0.10	ab
Late	Disc	Deep	0.019	0.004	bc	0.93	0.09	c
Late	Disc	Shallow	0.021	0.003	b	0.79	0.08	cd
Late	Tyne	Deep	0.057	0.011	a	0.65	0.07	d
Late	Tyne	Shallow	0.015	0.003	bc	0.945	0.09	c

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Overall Table of Means

Crop Name:		Chickpea		
Crop Variety:		PBA Seamer		
Crop Stage:		#Flowering		
Assessment Date:		26/6/2018 & 7/08/2018	3/9/2018 & 23/10/2018	1/12/2018
Planting to Assessment:		27DP1 & 22DP2	96DP1 & 99DP2	185DP1 & 138DP2
Assessment Type:		EMERGENCE	NDVI	YIELD
Assessment Unit:		/m ²	Ratio	t/ha
Trt No.	Treatment			
TABLE OF A MEANS (Time of Planting)				
1	Early	17.0	0.710	1.46
2	Late	17.4	0.839	1.20
TABLE OF B MEANS (Planter and Depth)				
1	Disc Shallow	20.0	0.785	1.36
2	Disc Deep	16.7	0.774	1.35
3	Tyne Shallow	22.6	0.785	1.42
4	Tyne Deep	9.4	0.755	1.18
TABLE OF C MEANS (Plant Population)				
1	10 Plants/m ²	8.7	0.721	1.15
2	20 Plants/m ²	14.1	0.777	1.30
3	30 Plants/m ²	20.4	0.798	1.43
4	40 Plants/m ²	25.5	0.803	1.42

Data for NDVI results at flowering were conducted at different dates for the two planting times.

Assessment Type

NDVI = normalized difference vegetation index

DP1 = Days after planting 1

DP2 = Days after planting 2

Comments:

This trial was established to evaluate the impact of sowing depth, method and plant population on chickpea growth and yield, and to determine if these effects were influenced by sowing date. PBA Seamer® chickpeas were planted on 30/05/2018 (early timing) and 16/07/2018 (late timing) near Pampas, QLD on a deep, coarse structured, black cracking clay (Condamine soil). A small plot planter, with disc or tyne, was used to achieve either a shallow (5 cm) or deep (10 cm) seed placement for four target plant populations (10, 20, 30 and 40 plants/m²).

The pattern of results was very complex with inconsistent yield responses to plant population at the early sowing time but a strong response to plant population at the late sowing. The trial was also impacted by deeper than planned sowing of the Tyne Deep plots at the late sowing. There was no obvious impact of planter type on chickpea yield in this trial.