

Disclaimer:

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Impact of Sowing Set-up in Chickpeas

Trial ID: BD1801	Location: Narrabri	Trial Year: 2018
Investigator: Branko Duric		

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 Z Extra			
Time of Planting:	Early		Late	
Planting Date:	6/06/2018		26/07/2019	
Planting Equipment:	Disc	Tyne	Disc	Tyne
Planting Depth: (Soil depth above seed)	Shallow 4 cm Deep 9 cm	Shallow 4 cm Deep 9 cm	Shallow 4 cm Deep 9 cm	Shallow 4 cm Deep 9 cm
Target Plant Populations:	10, 20, 30 and 40 plants/m ²			
Harvest Date:	27/11/2018			
Harvest Equipment:	Small Plot Harvester			
Keywords:	Planting date, planter type, planting depth, plant population, chickpea			

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

NB Significant kangaroo grazing damage occurred at this site with few crops sown locally due to very dry conditions. Damage was mainly confined to reps 1 and 2 in the early sowing.

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.

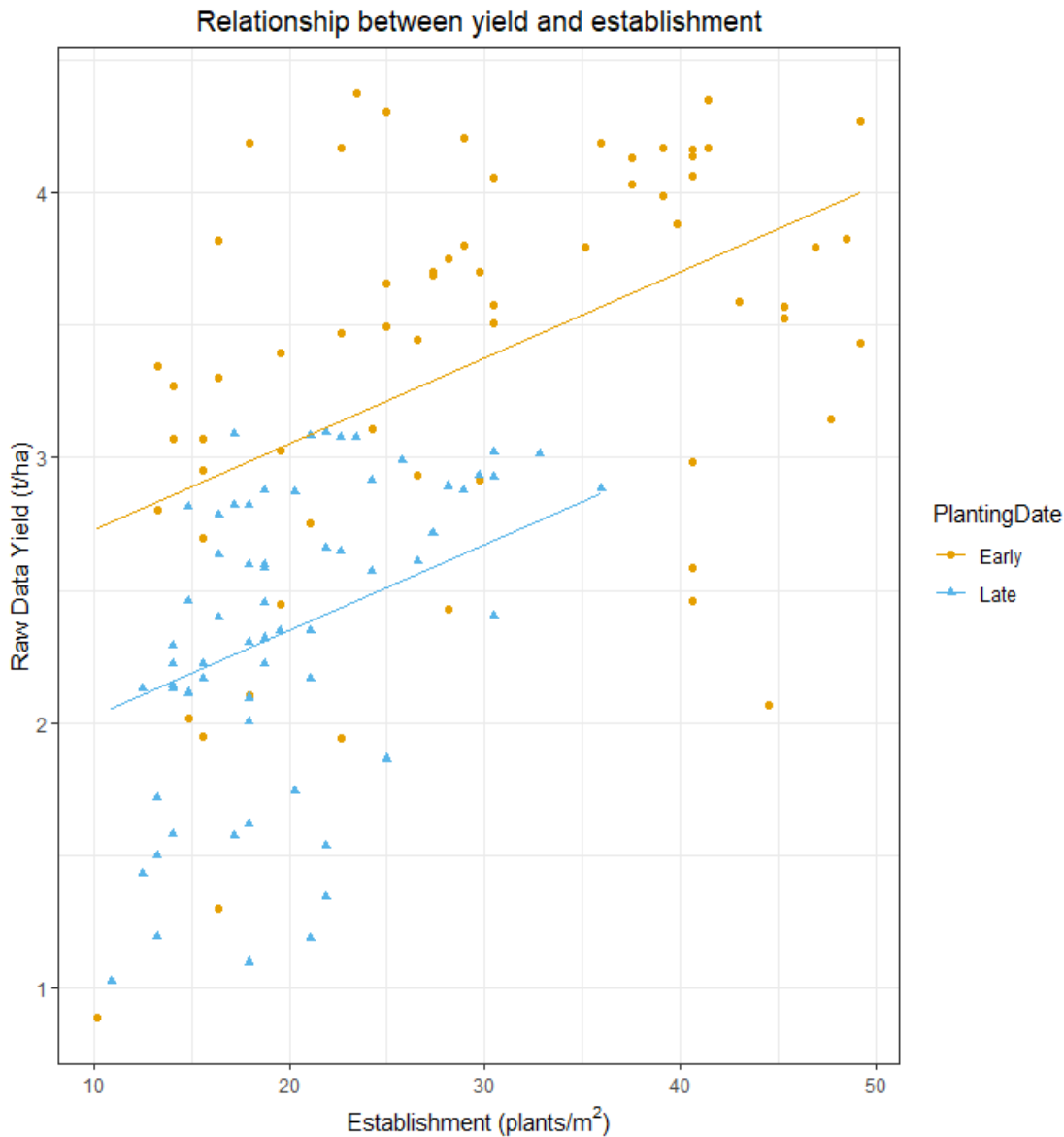
Yield and plant establishment relationships were analysed on the basis of plant populations achieved, not the targeted population

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

1. There was a significant effect of planting date on yield with the early planting achieving increased yield.
2. There was a significant effect of establishment on yield with yields increasing with established plant population.
3. There was no interaction between planting date and establishment. The slope or relationship between yield and establishment was consistent for both planting dates.



Statistical Predictions:

Planting Date	Slope	SE Slope	Intercept	SE Intercept	LSD Intercept
Early	0.032	0.005	2.408	0.254	a
Late	0.032	0.005	1.702	0.229	b

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Overall Table of Means

Crop Name Crop Variety Assessment Date Planting to Assessment: Assessment Type Assessment Unit ARM Action Codes		Chickpea PBA Seamer		
		4/7/2018 & 10/09/2018 28DP1 & 46DP2 EMERGENCE /m ² AL	10/09/2018 96DP1 & 46DP2 NDVI Ratio	27/11/2018 174DP1 & 124DP2 YIELD t/ha
Trt No.	Treatment			
TABLE OF A MEANS (Time of Planting)				
1	Early	27.2t	0.450	3.36
2	Late	19.4t	0.224	2.35
TABLE OF B MEANS (Planter x Depth)				
1	Disc Shallow	22.2t	0.327	2.78
2	Disc Deep	23.0t	0.345	2.85
3	Tyne Shallow	23.0t	0.337	2.86
4	Tyne Deep	23.6t	0.339	2.92
TABLE OF C MEANS (Plant Population)				
1	10 Plants/m ²	14.8t	0.243	2.28
2	20 Plants/m ²	21.0t	0.339	2.90
3	30 Plants/m ²	28.1t	0.381	3.09
4	40 Plants/m ²	31.7t	0.386	3.15

NB Data for NDVI from the same date for both planting times. Early planting at early flowering (10 R3), late planting still at 5 node stage (06 V5)

Assessment Type

NDVI = Normalized difference vegetation index

ARM Action Codes

AL = Automatic log transformation of X+1

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. The trial was established at PBI Narrabri under irrigated conditions. A small plot planter, using disc or tyne, was used to achieve either a shallow (4 cm) or deep (9 cm) seed placement for four target plant populations (10, 20, 30 and 40 plants/m²).

Analysis of yield showed a significant increase in yield (~0.7 t/ha) from the early planting date. Yield significantly increased with larger plant populations. In this situation, there was no effect on yield from the planter used or the depth of planting.