

Chickpeas

C1 Kabuli Varieties, LRZ Southern Mallee (Curyo), Victoria

C2 Disease Management, MRZ (Pimpinio), Victoria

C3 Delayed Sowing Varieties, MRZ (Pimpinio), Victoria

C4 Crop Topping, LRZ Central Mallee (Kulwin), Victoria

Note: Trials have been brought together in one report as there were generally no agronomic treatment effects due to the extreme dry conditions.

Aims

C1. To investigate the potential yield and profitability of a range of kabuli chickpea varieties.

C2. To investigate optimum disease management strategies across a range of chickpea varieties, differing in ascochyta blight susceptibility.

C3. To investigate the impact of delayed sowing on grain yield and quality (compared with varieties in C2)

C4. To investigate the opportunity for crop topping in varieties of chickpeas differing in maturity in the central mallee.

Treatments

Varieties: See result tables below

Fungicide Regimes for Trial C2:

Regime	Chemical & Application Rate ¹	Timing
Fortnightly	chlorothalonil 500 @ 2 L/ha	Fortnightly starting 6 weeks after emergence. Total = 8 applications.
Strategically	chlorothalonil 500 @ 2 L/ha	Strategically from vegetatively through to podding. Total = 3 applications.
Podding	chlorothalonil 500 @ 2 L/ha	Podding. Total = 1 application.
Nil	Nil	Nil

1. Refers to application rate of the product; Ascochyta Blight inoculant applied 18th July

Crop Topping Treatment Trial C4:

Treatment	Detail
Nil	No desiccant applied (Harvested at correct time)
Early Crop-top	Paraquat 250 @800ml /ha applied 7-14 days pre ryegrass milky dough stage.
Mid Crop-top	Paraquat 250 @800ml /ha applied at ryegrass milky dough stage ("Recommended").
Late Crop-top	Paraquat 250 @800ml /ha applied 7-14 days post ryegrass milky dough stage.

Other Details

	Trial Site		
	Pimpinio	Curyo	Kulwin
Sowing Date	14 May, 26 June	1 May	24 April
Stubble (height cm)	Standing (15)	Standing (10)	Standing (10)
Row Spacing (cm)	30	36	30
Plant Density (plant/m²)	35	35	35
Fertiliser (kg/ha)¹	80	60	60

1. MAP (9.2, 20.2, 0, 2.7) + Zn (2.5)

Results and Interpretation

- Key Messages: A new isolate of ascochyta blight was discovered at Curyo in 2015 which has virulence on previously resistant chickpea varieties. Growers are encouraged to closely monitor all chickpea crops in 2016 and use a preventative fungicide strategy to minimise the risk of disease.

Trial C1. Kubuli Varieties at Curyo

- Establishment for all chickpea varieties was generally slightly less than the target of 35 plants/m² (Table 1.). Early growth was generally adequate given the dry conditions. On July 29, despite the dry season a significant outbreak of ascochyta blight was noted. Symptom assessment indicated that this isolate of ascochyta was different from those observed previously in Victorian trials, having virulence on resistant lines such as Genesis090 and PBA Slasher (Table 1). In addition, there appeared to be differences in resistance to this isolate with CICA1454 showing fewer symptoms and PBA Striker, being significantly affected. The isolate from this trial has been provided to pathologists and glasshouse assessments appeared to confirm field ratings.

When the disease was first noted, immediately a fortnightly fungicide regime was instigated of half of each plot aiming to assess the potential impact of this isolate on grain yield. From the disease scores in table 1 it can be observed that fungicide application did slow disease progression for all varieties. However, due to the dry spring condition and low yield potential, there was no impact on grain yields. Despite the disease Genesis090 was the highest yielding line and potentially broke even in terms of net income (0.51 t/ha & \$8/ha; Table 2). Seed size was extremely small compared with previous seasons with all seed size indexes (SSI) being less than 8 and several less than 7. In comparison, in 2013 at Curyo the SSI of Genesis 090 was 7.40, Kalkee was 8.35 and PBA Monarch was 7.90.

Table 1. Establishment (pl/m²) and Ascochyta Blight symptoms of kabuli chickpea at Curyo in 2015.

Variety	Sown Seed wt	Establishment (pl/m ²)	Ascochyta Blight Score ¹					
			Nil			Fungicide		
			13 Aug	9 Sep	Change	13 Aug	9 Sep	Change
Genesis090	27.6	26	3.0	4.3	1.3	4.0	4.0	0.0
CICA1156	28.8	25	2.7	4.0	1.3	2.7	3.0	0.3
CICA1452	33.7	31	2.7	4.3	1.7	3.0	3.7	0.7
PBA Striker	19.6	31	4.3	6.0	1.7	5.0	5.0	0.0
CICA1454	30.4	28	2.0	3.3	1.3	2.7	2.4	-0.3
CICA1455	26.9	27	3.3	4.3	1.0	3.0	3.7	0.7
CICA1451	42.3	23	3.7	5.3	1.7	4.3	5.0	0.7
Almaz	35.2	31	3.0	4.7	1.7	3.7	3.7	0.0
CICA1352	37.8	30	3.0	4.0	1.0	3.3	3.7	0.3
CICA1453	37.5	27	2.0	3.7	1.7	2.3	3.0	0.7
Kalkee	41.4	28	3.0	4.0	1.0	3.0	3.0	0.0
PBA Monarch	36.1	25	3.0	5.0	2.0	3.7	4.3	0.7
Average		28	3.0	4.4	1.4	3.4	3.7	0.3
LSD($p < 0.05$)		5	1.2	1		1.3	1	
CV(%)		7.2	14.4	10		16.4	11.5	

Ascochyta blight was first observed in all plots of chickpeas, including resistant lines, 29 July. A fortnightly fungicide regime was implemented over half of each plot to prevent any further spread and half of the plot left untreated to allow full symptoms expression. Trial was assessed 13 Aug and 9 Sept to assess effectiveness of treatments.

Table 2. Grain Yield (t/ha), Seed Size Index (SSI) and estimated Net Income (\$/ha) of kabuli chickpeas at Curyo in 2015 (compared with the Desi, PBA Striker). *Net Income based on the following grain prices: Desi = \$450/t; Kabuli = <7mm-\$330, 7-8mm-\$550, 8-9mm-750, 9-10mm-\$850, 10-11mm-\$1000 with fixed management costs of \$220/ha.*

Variety	Grain Yield (t/ha)	SSI	Net Income (\$/ha)
Genesis090	0.51	6.99	\$8
CICA1156	0.49	6.95	-\$11
CICA1452	0.49	6.89	-\$12
PBA Striker	0.49		-\$51
CICA1454	0.45	7.08	-\$16
CICA1455	0.45	6.85	-\$38
CICA1451	0.42	7.44	-\$4
Almaz	0.38	7.09	-\$55
CICA1352	0.38	7.52	-\$23
CICA1453	0.36	7.13	-\$66
Kalkee	0.33	7.36	-\$66
PBA Monarch	0.29	7.39	-\$88
Average	0.42	7.15	-\$35
LSD($p<0.05$)	0.10	0.15	58
CV(%)	6.7	0.5	47

Trial C2 and C3. Disease Management and delayed sowing at Pimpinio

- Growth throughout the season was generally slow and plants often looked stressed due to the dry conditions. Very low levels of ascochyta blight were noted in August, but symptoms did not progress and had no impact on grain yield. Generally grain yields were higher in the early sown trials compared with delayed sowing (Table 3). PBA Striker was the highest yielding variety and CICA1453 lowest.

Table 3. Grain Yield (t/ha) of chickpeas at Pimpinio in 2015 sown May 14 and June 26. *Note: data for 14 May is from the disease management trial where minimal disease symptoms that had no effect on yield were observed.*

Variety	14 May	26 Jun	Average
Almaz	0.17	0.13	0.15
CICA1352	0.21	0.25	0.23
CICA1451	0.24	0.20	0.22
CICA1452	0.26	0.20	0.23
CICA1453	0.16	0.07	0.12
CICA1454	0.23	0.18	0.20
CICA1455	0.26	0.11	0.18
Genesis090	0.27	0.19	0.23
Howzat	0.33	0.12	0.22
Kalkee	0.18	0.15	0.16
PBA Maiden	0.35	0.31	0.33
PBA Monarch	0.24	0.32	0.28
PBA Slasher	0.33	0.16	0.25
PBA Striker	0.47	0.37	0.42
Average	0.26	0.20	
LSD	0.07	0.08	
CV%	14.9	8.70	

Trial C4. Crop Topping at Kulwin

- Establishment for all chickpea varieties was generally slightly less than the target of 35 plants/m² (Table 4). Early growth and growth throughout the season was generally good due to the early break. Minor issues related to suspected clopyralid damage or insects was noted early, but plants appeared to growth through it. All crop topping treatments were unable to be applied due to the dry hot finish to the season. Grain yield ranged between 0.45 and 0.28 t/ha with the desi's PBA Slasher and Striker having the highest yields.

Table 4. Establishment (pl/m²) and Grain Yield (t/ha) chickpea varieties in a crop topping at Kulwin in 2015. *Note: No Crop Topping treatments applied due to dry conditions.*

Variety	Establishment (pl/m²)	Grain Yield (t/ha)
PBA Slasher	26	0.45
PBA Striker	27	0.45
PBA Maiden	27	0.41
Genesis090	28	0.33
PBA Monarch	25	0.28
Isd (<i>P</i> <0.05)	ns	0.12
CV(%)	4.9	3.50