

Chickpea Varieties

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Take home messages

- Chickpeas are again a valid crop option with a number of varieties with improved ascochyta blight resistance, high yields and good adaptation now available to growers.
- Variety selection must be based on ascochyta blight pressure, yield and marketing opportunities, and understanding that disease management is critical to success.

Methods

Yield data is from the Victorian component of Pulse Breeding Australia (PBA) Chickpea Program and the National Variety Testing (NVT) System. All sites were managed in a way to reflect best local practice. The Warne and Birchip sites were not harvested due to low yields as a result of drought. For desi types, yield data is not presented for Rainbow (NVT) and Beulah sites (PBA) as they were highly variable due to drought. For kabuli types, yield data is not presented for Ultima (NVT) as it was highly variable due to drought.

Herbicide damage due to Spinnaker® (Imazethapyr) was visible in early spring at both Horsham and Minyip (PBA) sites. This was likely a result of the poor winter and spring growth which resulted in the roots remaining in the chemical zone of the soil. Earlier sown chickpea trials at Horsham were unaffected by Spinnaker® as the roots had grown below the chemical layer prior to winter.

Results

Despite an excellent break to the season, a cold winter and dry spring kept biomass to a minimum. Rain events in early November were too late for Mallee sites and only benefited mid to late flowering varieties in the Wimmera. Disease levels were very low with no ascochyta blight detected at any site.

In the desi trials, the ascochyta blight susceptible Howzat performed well across most sites due to the lack of disease pressure. Of the ascochyta blight resistant desi varieties, Genesis™509 was superior to Genesis™508 at all sites and superior to all other entries at Longerenong. The small seeded kabuli variety Genesis™090 yielded equal or better than Genesis 509 at all sites except at Longerenong. A number of breeding lines showed good adaptation across a number of sites, in particular, CICA0503 and CICA0505. The majority of the advanced breeding lines have Howzat as a parent and this is likely contributing to their high yields and excellent adaptation.

In the kabuli trials, Genesis™090 was the highest yielding variety at all sites except Rainbow, where the early flowering, small seeded Genesis™079 excelled. However in the longer season Wimmera sites Genesis™079 was unable to respond to the November rainfall. Of the larger seeded kabuli

varieties, Genesis™114 yielded the highest across most sites. The breeding line S98167-CLIMAS performed well at Rainbow and Tarranyurk.

Table 1. Victorian desi chickpea yield results (% Genesis™090) from NVT and PBA trials, 2007.

	Mallee	Wimmera				
	NVT	NVT	NVT	PBA	PBA	PBA
	Ultima	Kaniva	Tarranyurk	Horsham	Minyip	Longerenong
Genesis™090 t/ha	0.80	0.94	0.61	1.14	0.61	0.8
Genesis™079	68	104	102	73	72	71
Genesis™508	80	82	93	67	67	85
Genesis™509	96	95	100	80	77	145
Howzat	105	116	116	101	80	98
Sonali	105	102	111	59	76	79
CICA0503	116	111	133	106	99	111
CICA0505	124	98	134	93	87	114
CICA0510	109	110	95	89	52	97
CICA0512	99	103	131	90	91	114
CICA0603	103	104	89	108	75	119
CICA0604	106	101	113	97	102	114
CICA0713	120	94	128	113	121	120
CICA0717	111	119	102	96	102	134
CICA0718	79	101	120	97	91	114
CICA0719	120	91	100	90	75	101
CV (%)	12.8	6.9	9.7	16.5	18.7	14.6
LSD (0.05)	24	13	20	21	23	26

New Varieties

Desi

Genesis™509 has good ascochyta blight resistance and is likely to require only one fungicide application at podding. Grain quality is similar to Genesis™508 and both are less preferred than Howzat. Genesis™509 is higher yielding than Genesis™508 with improved adaptation to both low and medium rainfall areas. Genesis™509 is available in 2008 from Australian Agricultural Crop Technologies (AACT).

The small seeded, ascochyta blight resistant kabuli variety Genesis™090 is a good alternative to current desi varieties in traditional desi growing areas. An earlier flowering and maturing small seeded kabuli, Genesis™079, will be available to growers in 2009. It has shown excellent adaptation to short season environments in South Australia. The price of grain for small kabulis is expected to be higher or similar to that of desis.

The first desi releases from the PBA chickpea program for southern Australia are likely to be CICA0503 and/or CICA0505. Both have had good yields across a wide range of environments and have good ascochyta blight resistance. Seed quality of both lines is larger and a more preferred colour than

Table 2. Victorian kabuli chickpea yield results (% Genesis 090) from breeding trials, 2007.

	Mallee	Wimmera					
	NVT	PBA	NVT	NVT	PBA	PBA	PBA
	Rainbow	Beulah	Kaniva	Tarranyurk	Horsham	Minyip	Longerenong
Genesis TM 090 t/ha	0.37	0.55			0.85	0.62	0.84
Almaz	92	46	50	74	55	83	35
Genesis TM 079	130	99	82	99	63	61	91
Genesis TM 114	111	74	74	68	93	97	86
Nafice	78	33	47	74	62	60	17
S98167-CLIMAS	111		48	108			
CV (%)	12.7	19.7	11.4	13.4	20.7	18.3	16.2
LSD (0.05)	22	21	12	18	23	24	20

Genesis 509. AWB seeds have been selected as the commercial partner for PBA desi chickpeas.

Kabuli

GenesisTM090 has good ascochyta blight resistance and has shown wide adaptation and excellent yield stability, including the drier environments. GenesisTM090 has a smaller sized seed that is approximately 1mm smaller than that of Kaniva. GenesisTM090 is widely available to farmers and has the potential to be grown as a good alternative to desi chickpeas or as a higher yielding but lower value alternative (smaller seed) to kabulis such as Almaz and Nafice. Another small seeded kabuli, GenesisTM079 will be available in 2009 and it has shown better adaptation to short season environments than GenesisTM090, especially in South Australia. Seed of GenesisTM079 is approximately 2 mm smaller than Kaniva and is available through AACT.

Almaz and Nafice are larger seeded kabulis with moderate ascochyta blight resistance. They have larger seed than Kaniva, with Nafice being slightly larger than Almaz. Both have yielded equal or better than Kaniva and offer a much lower disease risk option, however they will require 2 - 4 fungicides to be grown successfully. Seed is available through AWB seeds.

GenesisTM114 will be available to growers in 2009. It has seed similar in size to Almaz and has yielded higher than Almaz, particularly at sites where the season finishes quickly. GenesisTM114 has moderate ascochyta blight resistance and will need to be managed similarly to Almaz. It has an erect plant type with excellent lodging resistance and pods positioned high in the canopy. Seed will be available from AACT.

Commercial practice

Varieties with a resistant rating for ascochyta blight, such as GenesisTM509 and GenesisTM090, will reduce ascochyta blight risk to very low levels. One fungicide spray, however, will be required to protect pods and ensure high quality seed is produced. Varieties with a moderately resistant rating, such as Almaz, will require 2 - 4 strategic fungicide sprays to be successfully grown.

A larger range of chickpea types will be available to farmers in the next 5 years that will give greater marketing opportunities than in the past. Therefore understanding markets will become an important part of variety selection.

