

KEY FEATURES

- The release of Genesis™ 508 heralded the new beginning for the southern Australia desi chickpea industry.
- It was the first released desi chickpea that was resistant to ascochyta blight, showing no or minimal yield loss under high a ascochyta disease pressure
- Its small sized, darker grain is suited mainly to splitting markets.
- It is best suited to medium – high rainfall regions in southern Australia.
- Its yield and seed quality suffer in short season environments or years.
- It is being superseded now because it is lower yielding than Genesis™ 509 and Genesis™ 090 in south-eastern Australia.
- Genesis™ 508 is mid-late flowering with medium plant height and acceptable harvestability.
- It is susceptible to phytophthora root rot.

Where Genesis™ 508 fits into the farming system:

Genesis™ 508 when released provided the first low ascochyta blight risk, lower input and respectable yielding desi chickpea option to growers in south- eastern Australia. It is being replaced by either Genesis™ 509 as a desi alternative or by Genesis™ 090 as a small kabuli alternative, depending upon marketing preferences. Genesis™ 508 is not well suited to shorter season areas in southern Australia, or to northern Australia where phytophthora resistance is important in variety selection.

Variety Characteristics:

Breeding: Genesis™ 508 (tested as FLIP94-508C) is an introduction from the International Center for Agricultural Research in the Dry Areas (ICARDA), Syria. It was selected and released by the Victorian Department of Primary Industries as part of the National Chickpea Breeding Program.

Agronomic Characteristics: Genesis™ 508 is a respectable yielding, reasonably well adapted desi chickpea with resistance to ascochyta blight. It's flowering and maturity time is later than Howzat or Genesis™ 509. Genesis™ 508 has medium plant height, and moderate susceptibility to lodging. It is susceptible to phytophthora.

Seed size will predominately be in the 5-6mm (14-17g/100 seeds) range, smaller and darker than Howzat. It is therefore less preferred for whole seed markets.

Agronomic features & disease resistance:

Variety	Type	Seed Weight (g/100)	Main seed sizes (mm)	Seed colour	Flowering time	Maturity time	Plant height	Lodging	Ascochyta blight	Botrytis grey mould	Phytophthora
Flipper ^(b)	Desi	18	6-7	light brown	mid-late	mid-late	med-tall	MR	MR	S	MS-MR
Genesis™ 508	Desi	15	5-6	brown	Mid-Late	Mid-late	medium	MR	R	MS	S
Genesis™ 509	Desi	16	5-6	brown	Mid	early-mid	medium	MR	R	MS	S
Howzat ^(d)	Desi	21	6-7	light brown	Mid	mid	medium	MS	MS-S	MS	MS
Jimbour ^(b)	Desi	20	6-7	light brown	Mid	mid	med-tall	MR	S	S	MR
Yorker ^(b)	Desi	21	6-7	light brown	mid-late	mid	medium	MR	MS-MR	S	MR
Almaz ^(b)	Kabuli	41	8-9	cream	late	late	medium	MR	MS-MR	S	S
Genesis™ 079	Kabuli	25	6-7	cream	early	early	short	MR	R	MS	S
Genesis™ 090	Kabuli	30	7-8	cream	mid	mid-late	medium	MR	R	S	S
Genesis™ 425	Kabuli	32	7-8	Cream	mid	mid-late	medium	MR	R	S	MS
Kaniva	Kabuli	38	7-9	cream	late	late	medium	MS	VS	VS	VS
Nafice ^(b)	Kabuli	43	8-9	cream	Late	late	medium	MR	MS-MR	S	S

S = susceptible, MS = moderately susceptible, MR = moderately resistant, R = resistant.

Yield and adaptation

Genesis™ 508 is best suited to medium to high rainfall areas in south-eastern Australia, but its yields and grain quality have suffered in recent drier season. Genesis™ 508 is susceptible to phytophthora and has inferior grain quality to other varieties more suited to northern NSW and southern Queensland

Ideally grow Genesis™ 508 while replacement varieties are multiplied.

On release it was best suited:

- In medium to high rainfall zones in southern Australia
- In medium to high ascochyta risk situations
- In low rainfall zones only if prepared to accept yield and quality penalties
- If not prepared to apply multiple fungicide applications
- If not prepared to risk yield loss to ascochyta blight

Genesis™ 508 was no longer evaluated in NVT trials after 2007.

National Variety Trials – Regional Long Term Yields as % of Howzat[Ⓛ]: 2000-2007

Variety Name	NSW		Vic		SA			
	South-East	North-East	Wimmera	Mallee	Lower EP	Mid North	Yorke P	South East
Flipper [Ⓛ]	92 (10)	93 (32)	93 (8)	93 (5)	-	91 (3)	-	-
Genesis™ 090	97 (4)	-	105 (17)	104 (16)	96 (4)	98 (8)	98 (6)	97 (4)
Genesis™ 508	89 (7)	89 (7)	89 (17)	88 (16)	87 (4)	89 (8)	89 (6)	90 (4)
Genesis™ 509	100 (9)	99 (5)	107 (21)	106 (19)	96 (4)	99 (12)	98 (8)	99 (4)
Genesis™ 510	100 (7)	100 (5)	104 (16)	103 (14)	-	100 (8)	99 (5)	99 (3)
Howzat [Ⓛ]	100 (14)	100 (32)	100 (21)	100 (19)	100 (7)	100 (19)	100 (10)	100 (10)
Sonali	96 (7)	96 (6)	95 (17)	95 (16)	96 (4)	96 (8)	97 (6)	97 (4)
Yorker [Ⓛ]	95 (11)	95 (33)	98 (7)	98 (5)	-	96 (3)	-	-
<i>Howzat[Ⓛ] yield (t/ha)</i>	<i>1.54 (14)</i>	<i>1.65 (32)</i>	<i>0.91 (21)</i>	<i>0.92 (19)</i>	<i>1.43 (7)</i>	<i>1.51 (19)</i>	<i>1.46 (10)</i>	<i>2.15 (10)</i>

- Genesis™ 508 not evaluated in NVT after 2007. Numbers in () = site years. Yield data courtesy of Aust Crop Accreditation System – National Variety Trials. Data also courtesy of SARDI, DPI Vic, NSW DPI before 2005



Photo: Genesis 508 (FLIP94-508c) (left) vs Tyson (right) at Horsham 2003 when no fungicides applied (DPI Vic photo)

Quality Characteristics

Seed size of Genesis™ 508 will predominately be in the 5-6mm (14-17g/100 seeds) range, smaller and darker than Howzat[Ⓛ]. It is therefore less preferred for whole seed markets, and segregation from these other desis occurs. It is however suited to splitting markets.

Management Package

(Consult local grower guides for more detailed information)

This VMP updates and reinforces those management issues with Genesis™ 508 chickpeas that may be different to other chickpea varieties. Refer to existing guides for other general chickpea management issues.

Seeding Date and Rate:

- Target the sowing date used for desi chickpeas in your region before ascochyta became a problem.
- Sow at 50 plants/sqm (approx 80-100 kg/ha, subject to seed size & germination test)
- Inoculate with Group N Chickpea rhizobial inoculum at sowing.

Row Spacing:

Trials and commercial experience with chickpeas in southern areas is that it may be safe to widen chickpea row spacing to 30 cm or more, even to 60 or 90cm, providing greater harvest efficiencies. Stubble cover must however be present to avoid evaporation losses.

Herbicide Sensitivity:

Herbicide tolerance trials in Victoria and South Australia (Wimmera clay and alkaline sandy loam soils) show that herbicides commonly used in chickpea production can be used on Genesis™ 508 with the same degree of safety. Severe seasonal effects on herbicide activity do however occur.

Disease Management:

To minimise yield losses to ascochyta blight, botrytis grey mould and phytophthora, follow local best management guidelines for your region, eg see disease management guides on www.pulseaus.com.au or Departmental web sites. Use a seed dressing (containing thiram or thiabendazole plus thiram) for the control of ascochyta blight, botrytis grey mould and common root rots.

Ascochyta blight disease management with Genesis™ 508 is the same as with the other ascochyta resistant varieties like Genesis™ 090 or Genesis™ 509:

- Fungicide sprays are unlikely to be required before podding, but monitor crops for signs of disease.
- Use a foliar fungicide at early podding prior to rain to ensure pods are protected, and high quality, disease free grain is produced.
- Pods of Genesis™ 508 can be affected by ascochyta blight, and this can result in poor quality, discoloured grain or seed abortion and yield loss in severe situations.
- Further fungicide applications during podding may be required if ascochyta blight is present in the crop in a high risk situation where there is an extended pod filling period and a rainfall event is predicted.

There is a risk of botrytis grey mould infection in Genesis™ 508 if a dense, bulky canopy develops.

- Fungicide applications from canopy closure stage will assist in controlling botrytis grey mould if disease is present or in tall bulky crops in an area prone to infection.

Yield loss due to ascochyta blight in research trials where severe ascochyta blight was induced

Variety	Horsham (VIC) 2005 yield (t/ha) A difference of greater than 0.25 t/ha is required for significant differences				Hart (SA) 2005 yield (t/ha) A difference of greater than 0.20 t/ha is required for significant differences			
	Nil	Podding	Strategic	Fortnightly	Nil	Podding	Strategic	Fortnightly
Genesis™ 509	2.37	2.30	2.34	2.30	1.51	1.70	1.74	1.85
Genesis™ 090	2.13	2.39	2.46	2.29	1.37	1.83	1.77	1.81
Genesis™ 508	2.13	2.01	2.08	2.24	1.3	1.43	1.58	1.62
Howzat ^o	0.38	0.88	0.82	2.34	0.05	0.49	0.89	1.89

Nil = no fungicide applied; Strategic = Vic: 5 fungicide applications (6-8 weeks after emergence, mid-late vegetative stage, early podding and mid podding); SA: 3 fungicide applications 8 weeks after sowing, early flowering and early podding; Fortnightly = fortnightly fungicide spray from 8 weeks after sowing; Podding = 1 application at early podding. All applications 2L/ha of Chlorothalonil (720g/L).

Frost, cold and heat:

The flowering time of Genesis™ 508 and its flowering and podding duration necessitates longer growing seasons. It is disadvantage over Genesis™ 509 in medium and shorter growing season areas where grain filling is often under hotter and drier conditions.

Crop topping, Weed wiping, Desiccation and Harvest:

Genesis™ 508 is not suited to either crop topping or weed wiping to prevent weed seed set, particularly ryegrass. Grain yield loss and weed seed set will be severe if early ryegrass escapes proceed through to crop maturity. Desiccation may be beneficial to enable early harvest and ensure desi quality is achieved. Harvester settings will need to be similar to that for other desi chickpeas. Early harvest is recommended to maximise yield and reduce seed staining through weathering, disease and pests. Crop lifters should not be required. Wider rows (60-90cm) improve harvest efficiency.

Marketing:

- Because Genesis™ 508 is a small, darker desi, it is segregated from other larger, lighter coloured desis like Howzat[®], Jimbour[®], Flipper[®], Yorker[®].
- It is also possible that it could receive prices lower than these other, more sought after desi types, depending on demand.
- Genesis™ 508 has an End Point Royalty (EPR) of \$5.50 per tonne (inc GST) marketed which includes management, administration costs and a plant breeder's return.
- Genesis™ 508 grain will be able to be freely marketed to Authorised Trading Companies (ATCs) established through agreements with Australian Agricultural Crop Technologies (AACT).
- ATCs include the majority of pulse trading companies within Australia and are listed on the AACT website. The ATC will deduct EPR from grower payments automatically. Any commercial pulse trading company is welcome to apply to be an ATC.

Seed Availability and PBR:

Genesis™ 508 is no longer widely available, given there are better alternatives. It is still being commercialised through Australian Agricultural Crop Technologies (AACT). Seed will be covered by a licence and growers will be required to sign a Seed Variety Licence Agreement. Genesis™ 508 seed is available through registered seed re-sellers listed on the AACT website.

 australian agricultural CROP TECHNOLOGIES	<p>For details on registered seed re-sellers or Authorised Trading Companies contact: Australian Agricultural Crop Technologies national office: Ph (02) 6795 3050 or visit the website www.aacrotech.com</p>	
---	---	---

Agronomic Enquiries: Contact:

Wayne Hawthorne (Pulse Aust)	0429 647 455	Trevor Bray (Pulse Aust)	0428 606 886
Alan Meldrum (Pulse Aust)	0427 384 760	Kristy Hobson (Vic DPI)	03 5362 2111
Larn McMurray (SARDI)	08 8842 6265	Jason Brand DPI Vic	03 5362 2341
Peter Matthews, I&I NSW.	02 6977 3333		

Other Reading: For field chickpea management guidelines, see:

- Grain Legume Handbook 2008
- Pulse Australia publications: "Chickpea disease management strategy for southern region GRDC" and supplements, and "Pulse seed treatments and foliar fungicides" (www.pulseaus.com.au)
- SARDI fact sheet "Chickpea variety sowing guide" www.sardi.sa.gov.au/pdfserve/fieldcrops/research_info/sowing_guide/chickpeas.pdf)
- I&I NSW publications (www.agric.nsw.gov.au): "Winter Crop Variety Sowing Guide"; Pulse Point 20 "Germination testing and seed rate calculation"; "Weed Control in Winter Crops"; "Insect and Mite Control in Winter Crops";
- Vic DPI "Winter Crop Summary" and fact sheets (www.dpi.vic.gov.au).

Acknowledgements: The contribution of the following people to either the extensive field testing, or the production of this or the original publication is gratefully acknowledged: Larn McMurray, Pulse Research Agronomist, SARDI; Jason Brand, Pulse Research Agronomist, Vic DPI; Eric Armstrong, Pulse Research Officer, I&I DPI; Jenny Davidson; Plant Pathologist, SARDI; Mark Seymour, Research Agronomist, Dept. Agric and Food, WA; Trevor Bretag, formerly Plant Pathologist, DPI Vic; Michael Lines, Research Agronomist, SARDI; Kristy Hobson, Plant Breeder (Chickpeas), DPI Vic; Wayne Hawthorne, Trevor Bray Pulse Australia.

Disclaimer: Recommendations have been made from information available to date and considered reliable, and will be updated as further information comes to hand. Readers who act on this information do so at their own risk. No liability or responsibility is accepted for any actions or outcomes arising from use of the material contained in this publication.

This VMP has been jointly prepared by: Wayne Hawthorne, Pulse Australia; Kristy Hobson and Jason Brand, Vic DPI; Larn McMurray, SARDI on information and data from, SARDI, DPI Victoria, I&I NSW, DAFWA and NVT.

Reproduction of this VMP in any edited form must be approved by Pulse Australia © 2005.

