

KEY FEATURES

- Desi type chickpea with small sized grain.
- A desi alternative to Genesis™ 090 and other small kabuli chickpeas.
- Resistant to ascochyta blight, showing no or minimal yield loss under high a ascochyta disease pressure.
- Susceptible to phytophthora root rot.
- Higher yielding than Genesis™ 508 and similar to Howzat[Ⓛ] in south-eastern Australia.
- Broadly adapted mid-flowering variety with moderate resistance to lodging, medium plant height and good harvestability.
- Not suitable for crop topping and its height makes it unsuitable for weed wiping.
- Suits many farming systems including inter-row sowing into standing stubbles and wider (>30cm) row spacings.

Where Genesis™ 509 fits into the farming system:

Genesis™ 509 provides a low ascochyta blight risk, low input and high yielding desi chickpea option to growers in south-eastern Australia. It is expected to replace Genesis™ 508 and provide a desi alternative to Genesis™ 090 dependent upon marketing preferences. It may also be an alternative in short season areas where earlier maturity is a regular advantage.

It is less suited to northern Australia where phytophthora resistance is important in variety selection.

Variety Characteristics:

Breeding: Genesis™ 090 (tested as FLIP94-509C) 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 in 2008 as part of the National Chickpea Breeding Program.

Agronomic Characteristics: Genesis™ 509 is a high yielding and widely adapted desi chickpea with resistance to ascochyta blight. It's flowering time is similar to Howzat[Ⓛ], but maturity time is approximately 5 days earlier. Genesis™ 509 has medium plant height, and moderate resistance to lodging. Genesis™ 509 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 [Ⓛ]	Desi	18	6-7	light brown	mid-late	mid-late	med-tall	MR	MR	S	MS-MR
Genesis™ 509	Desi	16	5-6	brown	Mid	early-mid	medium	MR	R	MS	S
Howzat [Ⓛ]	Desi	21	6-7	light brown	Mid	mid	medium	MS	MS-S	MS	MS
Jimbour [Ⓛ]	Desi	20	6-7	light brown	Mid	mid	med-tall	MR	S	S	MR
Yorker [Ⓛ]	Desi	21	6-7	light brown	mid-late	mid	medium	MR	MS-MR	S	MR
Almaz [Ⓛ]	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 [Ⓛ]	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™ 509 is best suited to south-eastern Australia where it has the highest or equal highest long-term experimental yield among desi varieties, including situations where ascochyta blight is well managed. Genesis™ 509 is not available in Western Australia because Genesis™ 510 has been released there as a locally adapted variety. Genesis™ 509 is susceptible to phytophthora and has inferior grain quality to other varieties more suited to northern NSW and southern Queensland

National Variety Trials – desi trials Long Term Yields as % of Howzat: 2000-2008.

Variety Name	Southern & Western Australia		Northern Australia	
	High rainfall southern	Low rainfall southern and western	High rainfall northern	Low rainfall northern
Amethyst	92 (5)	-	90 (27)	92 (31)
Flipper [Ⓛ]	90 (32)	90 (34)	91 (42)	90 (43)
Genesis™ 079	104 (21)	101 (18)	-	-
Genesis™ 090	99 (66)	92 (59)	-	96 (5)
Genesis™ 425	-	88 (6)	-	89 (5)
Genesis™ 509	100 (75)	98 (53)	96 (6)	-
Genesis™ 510	100 (53)	99 (54)	98 (6)	-
Genesis™ 836	96 (44)	97 (63)	92 (6)	93 (4)
Howzat [Ⓛ]	100 (79)	100 (68)	100 (43)	100 (41)
Jimbour [Ⓛ]	99 (7)	-	97 (49)	99 (56)
Kyabra [Ⓛ]	97 (4)	98 (6)	98 (31)	99 (41)
Sonali	95 (69)	97 (66)	94 (8)	94 (4)
Yorker [Ⓛ]	94 (35)	91 (43)	92 (45)	91 (47)
Howzat[Ⓛ] yield (kg/ha)	1467 (79)	1142 (66)	1824 (43)	1590 (41)

* 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

Quality Characteristics:

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, and segregation from these other desis may occur. It is however suited to splitting markets.



Genesis™ 509



Howzat[Ⓛ]

Management Package

(Consult local grower guides for more detailed information)

This VMP updates and reinforces those management issues with Genesis™ 509 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/m² (approx 80-100 kg/ha, subject to seed size & germination test)
- Inoculate with Group N Chickpea rhizobial inoculum at sowing.

Row Spacing:

Trial work and commercial experience has shown that chickpea's can be grown successfully and harvested efficiently at a range of row spacing's. At the wider spacing's (>30 cm) stubble cover maintained may help avoid evaporation losses. Genesis™ 509 is of medium height and moderately resistant to lodging, and may fit into systems of inter-row sowing in wider rows into standing stubble. It may not be as responsive as other varieties to wide row systems, so research is continuing.

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™ 509 with the same degree of safety. Severe seasonal effects on herbicide activity occur, so work is ongoing to validate findings under differing seasonal conditions.

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™ 509 is the same as with the other ascochyta resistant varieties like Genesis™ 090 or Genesis™ 079:

- 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™ 509 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™ 509 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 ^(d)	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).

Insect control:

Monitoring and early budworm control is critical with all chickpea crops. .

Frost, cold and heat:

Chickpeas are an indeterminate crop which can have the ability to recover from severe weather events (eg frost and heat) and respond to late spring rains. Genesis 509 has an advantage over Genesis™ 090 or larger kabulis like Almaz^(d) in medium and shorter growing season areas as it pods earlier and may avoid grain fill under hot dry conditions.

Crop topping and Weed wiping:

Genesis™ 509 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 and Harvest:

- 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 it is a small, darker coloured desi, Genesis™ 509 is likely to be 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™ 509 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™ 509 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™ 509 is widely available and was 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™ 509 seed is available through registered seed re-sellers listed on the AACT website.

	<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>	
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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).

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