

KEY FEATURES

- **Kabuli chickpea with predominantly 7 and 8 mm seed, slightly larger than Genesis™ 090, but smaller than Almaz**
- **Resistant to ascochyta blight**
- **Moderately susceptible to phytophthora (but the least susceptible kabuli variety)**
- **Higher yielding than Almaz but slightly less than Genesis™ 090**
- **Broadly adapted with mid season maturity, medium plant height, moderate lodging resistance and good harvestability**
- **Caution recommended when using Balance® as some evidence suggests poor tolerance.**

Genesis™ 425 provides a low ascochyta blight risk, high yielding kabuli chickpea option to growers in New South Wales where phytophthora root rot and ascochyta blight are problems. It is an alternative to desi varieties in northern Australia, dependent upon marketing preferences, and an alternative to the small seeded kabuli Genesis™ 090 where a higher level of phytophthora resistance is required.

Breeding and Development

Genesis™ 425 (tested as S95425) is an introduction from the International Center for Agricultural Research in the Dry Areas (ICARDA), Syria. It was jointly selected and released by the NSW and Victorian Department of Primary Industries as part of the National Chickpea Breeding Program.

Characteristics

Genesis™ 425 is a high yielding and widely adapted small seeded kabuli chickpea with resistance to ascochyta blight, showing no or minimal yield loss in trials subjected to high ascochyta disease pressure. Its flowering time, plant height and lodging resistance are similar to Genesis™ 090 in northern Australia. Seed size will predominately be in the 7 and 8 mm range and other grain quality characteristics are generally consistent with other kabuli chickpea varieties. Genesis™ 425 is at lower risk of yield loss due to phytophthora than other kabuli varieties but yield losses will occur if phytophthora is severe.

Agronomic Features and 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
Genesis 425	Kabuli	32	7-8	cream	mid	mid-late	medium	MR	R	S	MS
Genesis 090	Kabuli	30	7-8	cream	mid	mid-late	medium	MR	R	S	S
Almaz	Kabuli	41	8-9	cream	late	late	medium	MR	MS-MR	S	S
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
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

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

Yield and adaptation

Genesis™ 425 has consistently yielded higher than Almaz but slightly lower than Genesis™ 090 in long-term experiments across Australia. Genesis™ 425 is specifically adapted to areas where phytophthora and ascochyta blight are likely to cause yield loss, essentially in areas of New South Wales. Where phytophthora is not an issue and ascochyta blight is the major limitation to production, Genesis™ 090 is considered a higher yielding and more reliable small seeded kabuli option than Genesis™ 425.

Grain yield as a percentage (%) of Genesis™ 090's long term yield (2003 - 2007 inclusive)

Variety	Vic	SA	NSW (north east)	NSW (north west)	NSW (southern)
Genesis 090 yield (t/ha)	0.92	1.64	1.87	1.24	1.13
Genesis 425	90	95	94	90	94
Genesis 090	100	100	100	100	100
Almaz	69	80	84	81	77
Nafice	65	77	81	76	75
Flipper	89*	93*	-	-	95*
Genesis 509	102*	101*	-	-	103*
Howzat	96*	103*	-	-	104*
Jimbour	-	-	-	-	103*
Yorker	94*	98*	-	-	98*

Trials are managed to control ascochyta blight based on regional strategies.

Yield of desi types from long term desi trials (2003- 2007) where Genesis 090 is included for comparison.

Direct yield comparisons of Genesis 425 with desi types are not available.

In fungicide management research trials under high disease pressure there has been nil or minimal yield loss in untreated plots of Genesis™ 425 when compared with plots sprayed regularly with fungicide.

Examples of yield loss due to ascochyta blight under different fungicide regimes in research trials

Variety	Tamworth (NSW) 2005 yield (t/ha)		Horsham (Vic) 2005 yield (t/ha)			
	A difference of greater than 0.36 t/ha is required for significant differences		A difference of greater than 0.27 t/ha is required for significant differences			
	Low ascochyta	High ascochyta	Nil	Podding	Strategic	Fortnight
Genesis 425	3.04	2.98	1.58	1.76	1.83	1.75
Genesis 090	-	-	1.72	1.82	1.67	1.74
Kaniva	-	-	0.00	0.00	0.07	1.49
Nafice	-	-	1.05	1.14	1.22	1.48
Almaz	-	-	1.00	1.18	1.20	1.59
Flipper	3.16	2.40	-	-	-	-
Yorker	3.29	2.27	-	-	-	-
Jimbour	3.23	1.45	-	-	-	-
Genesis 509*	3.18	2.98	2.37	2.30	2.34	2.30
Howzat*	3.55	0.95	0.38	0.88	0.82	2.34

Tamworth: Low ascochyta = regular chlorothalonil (720 g/L) 1L/ha, high ascochyta = nil fungicide; Horsham: Nil = no fungicide applied;

Strategic = 4 fungicide applications (6-8 weeks after emergence, mid-late vegetative stage, early podding and mid podding);

Fortnight = fortnightly fungicide spray from 8 weeks after sowing;

Podding = 1 application at early podding (all applications were 2 L/ha of Chlorothalonil (720 g/L)).

Management Package

(Consult local grower guides for more detailed information)

Sowing Date and Seeding Rate

- Target the sowing date used for chickpeas in your region before ascochyta blight became a problem. Gains in yield and grain quality can be made from timely sowing.
- In northern NSW sow at desi chickpea plant populations, 20-30 plants/m² (approx 60-90 kg/ha, subject to seed size and germination test).
- Inoculate with Group N Chickpea rhizobial inoculum at sowing.

Diseases

- Resistance to ascochyta blight means 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. Despite good foliar resistance to ascochyta blight, the pods of Genesis™ 425 can be affected by the disease and this can result in poor quality, discoloured grain or seed abortion and yield loss in severe situations.
- In high rainfall or high ascochyta blight risk situations where there is an extended pod filling period, further fungicide applications during podding may be required if ascochyta blight is present in the crop and a rainfall event is predicted.
- 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.
- Use a seed dressing (containing thiram or thiabendazole plus thiram) for the control of ascochyta blight, botrytis grey mould and common root rots.
- 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.

Herbicide Sensitivity

There are some indications from northern NSW and SA that Genesis™ 425 may be sensitive to Balance®. Limited herbicide tolerance trials in Victoria and South Australia (Wimmera clay and alkaline sandy loam soils) show that other herbicides commonly used in Howzat chickpeas were used on Genesis™ 425 with the same degree of safety. Severe seasonal effects on herbicide activity occur, so work is ongoing to validate findings under differing seasonal conditions.

Harvest

- Harvester settings will need to be similar to that for other kabuli chickpeas.
- Early harvest is recommended to maximise yield and reduce seed staining through weathering, disease and pests.
- Desiccation may be beneficial to enable early harvest and ensure kabuli quality is achieved.

Grain Marketing

- Genesis™ 425 has an End Point Royalty (EPR) of \$5.00 per tonne marketed which includes management, administration costs and a plant breeder's return.
- Genesis™ 425 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 Commercialisation

Genesis™ 425 will be available for sowing in 2008, and is 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™ 425 seed is available through 142 registered seed re-sellers listed on the AACT website.



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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.aacroptech.com



Agronomic enquiries

For more detailed information check local management guidelines or contact:

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