2020 QUEENSLAND WINTER CROP SOWING GUIDE

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

QUEENSLAND
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This guide can be downloaded to your computer or tablet at:
https://grdc.com.au/queensland-winter-crop-sowing-guide
Remember to download a new one each November.

INTRODUCTION

INTRODUCTION

The 2020 winter crop sowing guide for Queensland contains the latest information for wheat, barley and chickpea varieties. This guide draws on the advice, knowledge and experience of numerous individuals in the cropping industry. Its aim is to provide growers with relevant information which will allow them to make informed choices when deciding on what varieties of wheat, barley or chickpea to sow in their paddocks. National Variety Trials (NVT) seek to collect the most relevant varieties for each region and test them alongside the elite lines from the breeding programs. For all the information on the released wheat, barley and chickpea varieties in the NVT trials conducted in Queensland, visit the website www.nvtonline.com.au.

Only varieties deemed suitable for conditions experienced in Queensland have been included in this guide. If a variety is not mentioned, there is either no commercial seed available or there is concern that it may not carry robust disease resistances and may compromise the industry. However, if you obtain seed of varieties not mentioned in this guide, please ensure that the vendor gives you current and reliable information.

DISEASES

Cereal diseases pose a significant threat to the Australian grains industry. Growers should monitor all crops and collect any suspicious lesions. Keep samples dry, do not wrap in plastic and contact your local Department of Primary Industries representative or your agronomist.

Send rust samples to:

University of Sydney,
Australian Rust Survey,
Reply Paid 88076,
Narellan NSW 2567.

Reply Paid sample envelopes can be obtained by contacting:

Bethany Clark,
University of Sydney Plant Breeding Institute,
Cereal Rust Laboratory,
107 Cobbitty Road,
Cobbitty NSW 2570.

Phone: +61 2 93518849
Email: bethany.clark@sydney.edu.au

For pulse disease sample testing contact:

Lisa Kelly, Queensland Department Agriculture and Fisheries, for sample dispatch details.

Phone: +61 477 747 040
Email: lisa.kelly@daf.qld.gov.au

END POINT ROYALTIES

End point royalties (EPRs) are an essential income source for Australia's breeding programs. The collection of these royalties is evolving and now there are two main systems:

- automatic deduction of EPRs by grain traders buying from a grower; or
- royalty managers directly invoicing growers for EPRs.

More information: GRDC 'End Point Royalties' Fact Sheet, www.grdc.com.au/GRDC-FS-EndPointRoyalty

PLANT BREEDING RIGHTS

The *Plant Breeder's Rights Act 1994* gives variety owners the exclusive right to sell their varieties, including the right to collect royalties for commercial use. Plant Breeders Rights (PBR) is a type of intellectual property right/set of rights. It is a protection of a variety that allows the breeder/owner of the variety to place restrictions on what growers and others can do with it.

TIMING IS ESSENTIAL FOR SUCCESS

Growers face numerous decisions before sowing, so getting each decision correct is important and will ultimately affect final grain yield and farm profitability. Put simply: know your paddock, know your varieties and get your timing right. Concentrate on the aspects of your farming operation that you can control and try not to worry about the rest.

Relevant information on individual wheat, barley and chickpea varieties is summarised in this guide. The information is a collation of data from the NVT program conducted across the region. The guide benchmarks the yield performance of regionally important varieties together with individual disease and agronomic ratings.

Timing of each element associated with grain production is critical and can be the difference between success and failure.

Crucial elements include:

1) selecting a crop and then a variety that will fit in with your paddock rotation plan;
2) knowing as much as possible about each individual paddock; this includes the overall nutritional status, different disease inoculum loads and weeds, both current and possibly in the seed bank. However, it does require a steely resolve to stick to a farm rotation plan in the face of varying commodity prices; and
3) not second-guessing any aspect; if in doubt get the relevant tests done. Variety selection is part of the overall plan, and decisions need to be made not just for the current season but also for the long-term. Soil tests should be taken well before sowing to estimate nutrient levels; they are extremely beneficial when used in conjunction with existing records of grain production and grain protein to determine a nutritional program for the crop.

Growers need to ensure that their preferred variety for sowing is good quality, taking into account purity, germination and vigour. This is particularly relevant for growers looking to use retained seed. Aim for an even establishment across the paddock, rather than simply trying to achieve a given sowing rate. Aim for an even established plant density of between 100 and 200 plants per metre squared for wheat and barley and 20 to 30 plants/m^2 for chickpeas rather than just relying on a set planting rate based on kilograms per hectare. Ensure there is good seed-to-soil contact by sowing into moisture and firming with the use of press wheels.

Another important consideration for growers is to ensure that the variety selected has the correct maturity to correspond with planting time, to minimise the risk of crop damage from both frost and heat.

Be mindful of a variety's coleoptile length. A variety's coleoptile length is shorter in central Queensland due to the higher temperatures usually experienced at sowing time. Chickpeas can tolerate a greater sowing depth if chasing moisture.

PREDICTA® B TESTING SERVICE

Growers are faced with numerous decisions prior to sowing, and knowing the disease status of a paddock helps in determining which crop and which variety to sow. Guessing a paddock's disease status is dangerous and whenever possible growers should avail themselves of the PREDICTA® B testing service. The service quantifies the level of inoculum of a number of soil diseases that are common to paddocks in the northern region and can be accessed at (http://pir.sa.gov.au/research/services/molecular_diagnostics/predicta_b).

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Additional information provided by representatives from numerous breeding and marketing companies.

2020 WHEAT CROP SOWING GUIDE

KEY POINTS

New varieties available for sowing

- LongReach Hellfire$^{\Phi}$, a main season, Australian Prime Hard (APH) bread wheat variety from LongReach Plant Breeders (LRPB)
- Sunchaser$^{\Phi}$, a main season, APH bread wheat variety from Australian Grain Technologies (AGT)
- Westcourt$^{\Phi}$, a main season, Australian Premium Durum (APDR) wheat variety from Australian Grain Technologies (AGT)

Planned for removal in 2020

Refer to www.wheatquality.com.au.

- EGA Bounty$^{\Phi}$, EGA Eaglehawk, LongReach Dakota$^{\Phi}$, Merinda$^{\Phi}$, Naparoo$^{\Phi}$, EGA Stampede, EGA Wills

Planned for removal in 2021

Refer to www.wheatquality.com.au.

- Clearfield WHT JNZ$^{\Phi}$, Zulu, Zebu

DISEASE CHARACTERISTICS

Yellow spot

Seedling disease alone rarely results in significant grain yield losses; for grain yield losses to occur, a wet spring will be needed for the disease to develop on adult plants and affect the top three leaves, which are the leaves that drive yield. Previous advice on spraying is still valid; delay decisions on fungicide spraying for yellow spot control until plants are close to heading and most of the yield-determining leaves have emerged.

False black chaff

This disorder can readily occur in susceptible varieties. It is a physiological disorder causing brown/black discolouration, slight to extensive ridges on the glume and, in extreme cases, along the tillers. It is a disease associated with the stem rust resistance gene *Sr2,* which is common in Australian cultivars.

Crown rot

Crown rot survives for several seasons on decaying stubble from host cereal crops and from grass weeds in non-host crops. Infection of the stem bases of the young crop is high with a wet autumn/winter, but above ground symptoms are normally only seen when the plant undergoes water stress at the end of the season.

Stripe rust

Historically, the spread of stripe rust occurs in spring. With night-time temperatures increasing above 20°C, the epidemic usually slows down from late October to early November in Queensland.

Leaf rust and stem rust

From seedling stage onward, crops should be regularly scouted to determine if rust spores have infected plant leaves and are developing in crops. If the cultivar is less than moderately resistant, fungicide application should be considered.

Root lesion nematodes

These nematodes are widespread in the northern grain region and can significantly reduce wheat yields. Root lesion nematodes (RLN) are also hosted by many non-cereal crops, so the absence of a winter cereal crop in recent seasons does not mean that there are low levels of nematodes in the soil. A soil test should be considered prior to planting if you do not know which species are on your farm, or their density. If wheat is to be sown in nematode-infested soil, the tolerant varieties (listed as T, TMT or MT in Tables 1A and 1B) should be considered for best yield. Also, choose a variety that has a higher resistance rating to maximise yield and leave fewer nematodes in the soil to attack the next crop to be grown. A wheat variety may react differently to

the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*. This should be checked in Tables 1A and 1B.

Bunt

To avoid bunt, wheat seed should be treated with a fungicidal dressing if it has been saved from a crop grown from untreated seed.

Black point

Black point is a brown/black discolouration at the germ end of wheat and barley caryopsis. In wheat, the discolouration occurs in the outer pericarp and inner seed coat tissue. Black point is a physiological response to a certain set of environmental conditions, such as heavy morning dews, rainfall and high humidity.

TABLE 1A Bread and noodle wheats – disease and agronomy ratings.

Variety	Wheat Quality Australia (WQA) maximum quality classification*	Disease ratings (www.nvtonline.com.au)										Agronomy
					P. thornei		*P. neglectus*		Rust			
		Yellow spot	Crown rot	Common root rot	resistance%	tolerance*	resistance%	tolerance*	Stem	Leaf	Stripe	Black point#
BREAD AND NOODLE WHEATS												
Coolah(Φ)	APH	MSS	MSS	S	MS	TMT	MSS	TMT[P]	MR	MR	RMR	S
DS Faraday(Φ)	APH	MSS	S	S	MSS	MT	S	MTMI[P]	MR	MR	RMR	MSS
Elmore CL Plus(Φ)	AH	S	S	S	MSS	MII	S	TMT[P]	MR	RMR	MRMS	MS
EGA Gregory(Φ)	APH	S	S	MSS	MSS	TMT	S	MT	MR	MR	MR	MSS
EGA Kidman(Φ)	APH	S	S	MS	MSS	MTMI	SVS	MII	MR	MR	MRMS	MSS
Kennedy	FEED	MSS	S	MS	S	MTMI	S	MTMI	MR	MR	MSS	R
LongReach Dart(Φ)	APH	MS	MSS	MS	MS	MI	MSS	MI[P]	MR	S	MR	MRMS[P]
LongReach Flanker(Φ)	APH	MSS	MSS	MSS	MSS	TMT	S	MT	MR	MR	RMR	MS
LongReach Gauntlet(Φ)	APH	MS	MSS	MSS	MR	MT	S	MTMI[P]	RMR	MSS	MRMS	MRMS
LongReach Hellfire(Φ)	APH	MSS[P]	—	—	—	—	—	—	MR[P]	MSS[P]	MR[P]	—
LongReach Lancer(Φ)	APH	MRMS	MSS	S	MS	TMT	S	MTMI[P]	R	RMR	MR	MRMS
LongReach Mustang(Φ)	APH	MSS	MSS	MS	MSS	MI	S	MI[P]	MRMS	S	RMR	MS
LongReach Reliant(Φ)	APH	S	MS	MSS	MSS	TMT	SVS	MTMI[P]	R	MR	MR	MS
LongReach Spitfire(Φ)	APH	S	MS	MSS	MS	MTMI	MSS	MTMI	MR	MSS	MR	S
Mitch(Φ)	AH	MSS	MS	MS	S	MT	S	T[P]	MRMS	S	MR	MRMS
Sunchaser(Φ)	APH	MS[P]	—	—	—	—	—	—	MR[P]	R[P]	MRMS[P]	—
Sunmate(Φ)	APH	MSS	MSS	MS	MRMS	TMT	S	MTMI[P]	MRMS	MRMS	MRMS	MS
Sunmax(Φ)	APH	MS	MSS	MSS	MS	MTMI	S	TMT[P]	MR	MSS	RMR	MRMS
Sunprime(Φ)	APH	MSS	MSS[P]	MSS[P]	S	—	S	—	MRMS	RMR	MR	MS
Suntime(Φ)	APH	S	MSS	S	MRMS	MT	S	MTMI[P]	MRMS	MS	RMR	MS
Suntop(Φ)	APH	MSS	MSS	MS	MRMS	TMT	S	MT	MRMS	MRMS	MRMS	MSS
Sunvale	APH	MSS	MSS	MS	MSS	MTMI	S	MI	RMR	S	MR	RMR

TABLE 1B Specialty wheats – disease and agronomy ratings.

Variety	Wheat Quality Australia (WQA) maximum quality classification*	Disease ratings (www.nvtonline.com.au)										Agronomy
					P. thornei		*P. neglectus*		Rust			
		Yellow spot	Crown rot	Common root rot	resistance%	tolerance*	resistance%	tolerance*	Stem	Leaf	Stripe	Black point#
DURUM WHEATS												
Caparoi(Φ)	APDR	MR	VS	MRMS	MR	TMT	MS	MI[P]	RMR	RMR	MR	MSS
DBA-Aurora(Φ)	APDR	MRMS	VS	MSS	RMR	MT	MRMS	IVI[P]	RMR	MR	RMR	MSS
DBA Bindaroi(Φ)	APDR	MRMS	SVS	MSS	MR	MT	MRMS	MI[P]	MRMS	MR	RMR	MRMS
DBA Lillaroi(Φ)	APDR	MRMS	SVS	MSS	RMR	MT	MRMS	MII[P]	RMR	RMR	RMR	MS
DBA Vittaroi(Φ)	APDR	MRMS	SVS	MSS	MR	MI	MS	MII[P]	MR	MR	MR	MSS
EGA Bellaroi(Φ)	APDR	MR	VS	MR	MR	MTMI	MS	MII	MR	MRMS	MR	RMR
Jandaroi(Φ)	APDR	MRMS	VS	MR	MRMS	MTMI	MRMS	MI[P]	MR	MR	MR	RMR
Westcourt(Φ)	APDR	MRMS[P]	—	—	—	—	—	—	RMR	RMR	RMR	—

TABLE 1B cont. next page

(CONTINUED) TABLE 1B Specialty wheats – disease and agronomy ratings.

Variety	Wheat Quality Australia (WQA) maximum quality classification◆	Disease ratings (www.nvtonline.com.au)										Agronomy
					P. thornei		*P. neglectus*		Rust			
		Yellow spot	Crown rot	Common root rot	resistance%	tolerance*	resistance%	tolerance*	Stem	Leaf	Stripe	Black point#
SOFT WHEATS												
LongReach Gazelle$^{\Phi}$	ASFT	MSS	S	MSS	S	MII	S	MT [P]	MR	MR	MR	MS [P]
LongReach Impala$^{\Phi}$	ASFT	MSS	MSS	MSS	S	MII	SVS	MTMI [P]	MR	SVS	MR	MS
LongReach Oryx$^{\Phi}$	ASFT	MSS	MSS	MSS	MSS	IVI [P]	MSS	I [P]	MR	R	RMR	MS
FEED WHEATS												
EGA Stampede	FEED	MSS	SVS	MS	S	IVI	MSS	MT [P]	RMR	MRMS	MR	MRMS
GBA Hunter	FEED	MR	MSS	MS	SVS	MT	VS	MT	RMR	—	MRMS	MS [P]
Condamine	FEED	MSS	MSS	MSS	MS	TMT [P]	S	TMT [P]	MRMS	MRMS	MR	MRMS
FORAGE WHEATS												
DS Bennett$^{\Phi}$	FEED	MRMS	VS	S	MSS	—	S	—	MRMS	S	MRMS	S
Manning$^{\Phi}$	FEED	MRMS	VS	SVS	S	—	MSS	—	RMR	MS	RMR	S
Naparoo$^{\Phi}$	FEED	—	—	—	S	—	SVS	—	—	—	—	—
SQP Revenue$^{\Phi}$	FEED	MS	S	SVS	S	—	S	—	RMR	VS	R	MS
Sunlamb$^{\Phi}$	ASW	MRMS	S	MS	MSS	—	MSS	—	RMR	MS	MRMS	MS

Legend: Disease and agronomy tables (refers to Tables 1A and 1B)

R = Resistant
RMR = Resistant – Moderately Resistant
MR = Moderately Resistant
MRMS = Moderately Resistant – Moderately Susceptible
MS = Moderately Susceptible
MSS = Moderately Susceptible – Susceptible
S = Susceptible
SVS = Susceptible – Very Susceptible
VS = Very Susceptible
— = indicates that a rating is not available.
T = Tolerant
TMT = Tolerant – Moderately Tolerant
MT = Moderately Tolerant
MTMI = Moderately Tolerant – Moderately Intolerant
MI = Moderately Intolerant
MII = Moderately Intolerant – Intolerant
I = Intolerant
IVI = Intolerant – Very Intolerant
VI = Very Intolerant

◆ Wheat Quality Australia (WQA), www.wheatquality.com.au maximum classifications describe suitability for export markets and not always reflect the varietal preference of domestic millers. (Note: APH = Australian Prime Hard, AH = Australian Hard), Please refer to Grain Trade Australia, 2018/19 Grain Trading Standards, www.graintrade.org.au for more information.

* RLN tolerance – the root lesion nematode (*P. thornei* and *P. neglectus*) tolerance ratings that appear in this sowing guide are based on field data collected in the northern grain region rather than national consensus ratings.

% RLN resistance – the root lesion nematode (*P. thornei* and *P. neglectus*) resistance ratings that appear in this sowing guide are national consensus ratings based on glasshouse and field data collected from all Australian grain regions.

\# Black point will not cause a reduction in yield but may result in grain receiving a different classification.

[S] Indicates a variety was scored as a susceptible reaction in some experiments.

[P] Provisional information. Disease and agronomic scores based on one year of data. RLN data relating to these varieties is based on less than four years of testing.

TABLE 2A Bread and noodle wheats – varietal details.

Variety	Varietal information							Comments (as supplied by breeding companies)
	Pedigree	Plant Breeders Rights (PBR)	End Point Royalties (EPR)	Licensee	Released by [oo]	EPR rate $/tonne (GST exclusive)	Year of release	
BREAD AND NOODLE WHEATS								
Coolah[◊]	EGA Gregory[◊]/VQ2791//EGA Gregory[◊]	◊	✓	AGT	AGT	$3.50	2016	Established as the highest yielding 'EGA Gregory[◊]' type suitable for planting in late-April/early-May. Slightly shorter in stature than EGA Gregory[◊], it has better lodging resistance combined with good foliar disease resistance.
DS Faraday[◊]	EGA Gregory[◊]/ UQ01484//3*EGA Gregory[◊]	◊	✓	Seednet	Dow Seeds	$4.25	2017	A good early season APH wheat with enhanced PHS tolerances and a solid rust package.
Elmore CL Plus[◊]	Janz*2//Wilg4/11A///Annuello	◊	✓	AGT	AGT	$3.55	2012	Tolerant to clearfield herbicides.
EGA Gregory[◊]	Pelsart/2*Batavia DH	◊	✓	Advanta Seeds	EGA	$2.10	2004	A good early season variety for paddocks with a history of root lesion nematodes.
EGA Kidman[◊]	Pelsart/2*Batavia DH	◊	✓	Austgrains	EGA	Closed loop	2008	APH variety that has quality attributes suited to the sponge and dough markets in Asia.
Kennedy	Hartog/Veery#5		✓	Heritage Seeds	QDAF	$1.45	1998	Kennedy has a shorter coleoptile length, compared to other varieties, which does not adversely affect establishment in average conditions. Note new maximum classification.
LongReach Dart[◊]	Sunbrook/Janz//Kukri[◊]	◊	✓	Advanta Seeds	LPB	$4.00	2012	Very quick-maturing variety with low tiller numbers suited to both later plantings and dryer seasons, with good adult protection from diseases such as yellow leaf spot (YLS) and stripe rust.
LongReach Flanker[◊]	EGA Gregory[◊]//EGA Gregory[◊]/ Lang[◊]	◊	✓	Advanta Seeds	LPB	$4.25	2015	APH variety well suited to Queensland with sound diseases resistance.
LongReach Gauntlet[◊]	Kukri/Sunvale	◊	✓	Seednet	LPB	$3.00	2012	Early to main season APH variety similar in maturity to Sunvale. Has good yellow spot and RLN (*P. thornei*) resistance and a solid grain-receivals package.
LongReach Hellfire[◊]	EGA Gregory[◊]/2*LPB05-2148	◊	✓	Advanta Seeds	LPB	$4.25	2020	Mid–quick maturing high-yielding main season APH variety with protein accumulation similar to LongReach Spitfire[◊]. Good early vigour and RLN tolerance. Demonstrated yield performance under crown rot pressure.
LongReach Lancer[◊]	VI184/Chara[◊]/Chara[◊]/3/Lang[◊]	◊	✓	Advanta Seeds	LPB	$4.25	2013	Slower maturing APH spring wheat with a compact canopy, solid grain quality and rust packages.
LongReach Mustang[◊]	EGA Gregory[◊]/LPB1117	◊	✓	Advanta Seeds	LPB	$4.25	2017	Quick-maturing APH variety with compact canopy and reliable grain package. Good foliar and soil disease package with highly competitive yield.
LongReach Reliant[◊]	LongReach Crusader[◊]/EGA Gregory[◊]	◊	✓	Advanta Seeds	LPB	$4.25	2016	A high-yielding APH variety with excellent early vigour and robust grain package, well suited to main season planting windows throughout the Queensland cropping zone.
LongReach Spitfire[◊]	Drysdale[◊]/Kukri[◊]	◊	✓	Advanta Seeds	LPB	$3.50	2011	APH variety well suited to Queensland conditions. Provides a good grain package and solid disease resistance.
Mitch[◊]	QT10422/Giles	◊	✓	AGT	AGT	$3.25	2014	A very high-yielding AH variety for early to mid-May planting with high relative levels of yellow leaf spot and crown rot tolerance; with strong straw it has performed well in irrigated situation.
Sunchaser[◊]	SUN626B/B1289F	◊	✓	AGT	AGT	$3.50	2019	An alternative for the popular variety Suntop[◊]. Sunchaser[◊] has a similar fit in terms of maturity and yield performance with improved characteristics of note. Good grain size and low screenings, moderately long coleoptile, improved crown rot resistance and similar tolerance.
Sunmate[◊]	Sunco/2*Pastor//SUN436E	◊	✓	AGT	AGT	$3.25	2014	Quick APH variety with similar maturity to LongReach[◊] Spitfire but higher long-term yield. It has moderate resistance to RLN (*P. thornei*).
Sunmax[◊]	CRW142.16/2*Sunzell	◊	✓	AGT	AGT	$3.50	2015	Currently the best option for sowing opportunities in mid-April. Sunmax[◊]'s long maturity sets it apart from other varieties, extending the planting window in the northern region. Not suitable for Central Queensland.
Sunprime[◊]	SUN445//EGA Gregory[◊]	◊	✓	AGT	AGT	$3.50	2018	A quicker maturing APH variety with higher, stable grain yield and good *P. thornei* tolerance.
Suntime[◊]	SUN457A/SUN405B	◊	✓	AGT	AGT	$3.50	2015	An APH disease-resistant variety for sowing early in the season.
Suntop[◊]	Sunco/2*Pastor//SUN436E	◊	✓	AGT	AGT	$3.25	2012	A consistently high-yielding APH variety, possessing a solid disease-resistance package including an elevated level of tolerance to crown rot infection.
Sunvale	Cook*2/VPM1//3*Cook			AGT	SU	Nil	1993	A variety suitable for early planting with good resistance to black point & RLN.

TABLE 2B Specialty wheats – varietal details.

Variety	Varietal information							Comments (as supplied by breeding companies)
	Pedigree	Plant Breeders Rights (PBR)	End Point Royalties (EPR)	Licensee	Released by ∞	EPR rate $/tonne (GST exclusive)	Year of release	
DURUM WHEATS								
Caparoi(ϕ)	LY2.6.3/930054	ϕ	✓	Seednet	NSW DPI	$2.60	2009	Main season variety, around one to two weeks slower than Jandaroi(ϕ). Well suited to drier areas and performs well under irrigation.
DBA-Aurora(ϕ)	Tamaroi*2/Kalka//RH920318/Kalka///Kalka*2/Tamaroi	ϕ	✓	SADGA	UA	$3.00	2014	A high-yielding variety, particularly in the SE Queensland zone which possesses good semolina and colour-stability attributes. To achieve high protein (>13%), nitrogen inputs need to be carefully managed. Performs very well under irrgation, but this will increase the chances of lodging due to very high yield potential.
DBA Bindaroi(ϕ)	Caparoi(ϕ)/261102	ϕ	✓	Seednet	NSW DPI	$3.50	2017	Recommended for dryland cropping. Higher yielding and better grain quality than Caparoi(ϕ). Best crown rot resistance rating compared with all released durum varieties in 2015 and 2016 NVT. Best performance compared with all released durum varieties in DBA yield loss trials.
DBA Lillaroi(ϕ)	—	ϕ	✓	Seednet	NSW DPI	$3.30	2015	This variety is preferred by millers, highest semolina yield, highest yellow pigment, highest 1000 grain weight, lowest screenings compared with other released varieties. Medium early variety, about two to three days later than Jandaroi(ϕ). Higher yielding than Jandaroi(ϕ) and is suited to dry seasons. Performs better than Jandaroi(ϕ) in double cropping e.g. after a cotton crop.
DBA Vittaroi(ϕ)	200856/980990	ϕ	✓	Seednet	NSW DPI	$3.30	2017	Recommended for irrigated cropping. Short stature and high tolerance to lodging. High yield combined with excellent grain protein achievement and grain and semolina quality under irrigated conditions relative to EGA Bellaroi(ϕ).
EGA Bellaroi(ϕ)	920405/920274	ϕ	✓	Seednet	EGA	$2.50	2002	Outclassed due to lower yield potential. Very good grain and semolina quality but poor dough strength. Performs very well under irrigation.
Jandaroi(ϕ)	920777/111566	ϕ	✓	Seednet	NSW DPI	$2.50	2006	Reputed for high grain quality, low screenings and tolerance to weathering. Exceptional dough strength. Quick variety with good semolina colour and yield over WOLLAROI and EGA Bellaroi(ϕ). Performs well in drier areas.
Westcourt(ϕ)	WID22209/WID22301	ϕ	✓	AGT	AGT	$3.50	2019	Westcourt(ϕ) is a durum variety specifically bred to perform in the northern durum growing region, offering a dominant package of yield, disease resistance and grain quality.
SOFT WHEATS								
LongReach Gazelle(ϕ)	24K1056/VPM/3*Vasco	ϕ	✓	Pacific Seeds	LPB	$4.00	2012	Longer season soft (biscuit) wheat with low protein accumulation and good standbility. Well suited to high production systems and early planting.
LongReach Impala(ϕ)	TEAL/C93.8//9908	ϕ	✓	Pacific Seeds	LPB	$3.50	2012	A high-yielding, quick maturing, awned, soft (biscuit) wheat. Has improved disease resistance compared to other soft varieties.
LongReach Oryx(ϕ)	C41001/LongReach Impala(ϕ)	ϕ	✓	Pacific Seeds	LPB	$3.75	2018	A high-yielding soft (biscuit) wheat, midseason maturity. Well adapted to the northern dryland cropping region with a shorter canopy, possessing good resistance to all three major rusts.
FEED WHEATS								
EGA Stampede	—	ϕ	✓	Nuseed	QDAF	$3.00	2008	Very high-yielding stock feed wheat with good rust-resistance package.
GBA Hunter	Attila//Altar84/Aos/3/Attila	ϕ	✓	Viterra	GBA	$2.00	2005	Prolific tillering awned variety. High yield potential.
Condamine	UQ01800	No	✓	Seed Exchage Australia	UQ	$3.00	2018	A high-yielding variety in Central Queensland, with large kernel size, low screenings, stiff straw. Milling classification expected in 2019.
FORAGE WHEATS								
DS Bennett(ϕ)	Drysdale(ϕ)//K89.67/TC14.2	ϕ	✓	Seednet	Dow Seeds	$4.25	2018	A tall, white-grained, awnless winter wheat suited for early sowing opportunities. Photoperiod sensitivity with flowering generally 7 to 10 days longer than EGA Wedgetail(ϕ). Provides excellent biomass accumulation.
Manning(ϕ)	—	ϕ	✓	GrainSearch	Ausgrainz	$3.50	2013	A white-grained, awnless, long-season winter wheat with barley yellow dwarf virus (BYDV) resistance. It is suitable for grazing and grain production in high-rainfall and irrigation zones.
Naparoo(ϕ)	3Ag14/3*M3087//2*Birch11	ϕ	✓	AGT	AGT	$2.50	2007	Naparoo(ϕ) is a dual-purpose, winter wheat suitable for early sowing opportunities. Naparoo(ϕ) is an awnless variety, and offers excellent dry matter production as well as the ability to produce competitive grain yields after grazing.
SQP Revenue(ϕ)	—	ϕ	✓	GrainSearch	CSIRO	$3.50	2010	A red-grained, awnless, winter wheat suitable for grazing and grain production in the high-rainfall and irrigation zones of eastern Australia.
Sunlamb(ϕ)	2*Baconora/Sunlin	ϕ	✓	AGT	AGT	$2.75	2015	Suitable for early-April sowing. It differs from other dual-purpose wheats in that it is a spring wheat and does not have a strong vernalisation requirement. When planted early it has a long grazing period due to its unique combination of photoperiod sensitivity and cold responsiveness.

TABLE 3A NVT – Central Queensland – wheat early season 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

Variety	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	2.50	4.37	3.85	2.39	2.47
	No. trials	3	4	1	5	3
Coolah(ƀ)	16	109	106	118	134	127
LongReach Flanker(ƀ)	16	107	108	127	128	127
Mitch(ƀ)	6	108	–	–	–	125
EGA Gregory(ƀ)	16	101	105	123	120	122
DS Faraday(ƀ)	8	–	–	–	113	118
LongReach Lancer(ƀ)	16	97	98	114	120	131
LongReach Gauntlet(ƀ)	16	92	98	120	111	131
Suntime(ƀ)	13	–	99	106	115	116
Sunvale	16	89	96	114	111	127
Sunmax(ƀ)	8	–	–	–	107	91

TABLE 3B NVT – Central Queensland – wheat main season 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

Variety	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	2.22	4.26	3.74	2.66	2.33
	No. trials	4	4	5	5	2
Mitch(ƀ)	16	–	106	104	112	95
Sunchaser(ƀ)	2	–	–	–	–	106
LongReach Reliant(ƀ)	20	103	108	109	102	103
LongReach Flanker(ƀ)	20	103	106	106	103	94
LongReach Hellfire(ƀ)	2	–	–	–	–	104
Suntop(ƀ)	20	108	103	101	104	99
Sunmate(ƀ)	12	109	102	–	106	107
LongReach Mustang(ƀ)	12	–	–	105	97	110
Sunprime(ƀ)	7	–	–	–	101	109
EGA Gregory(ƀ)	20	98	101	98	97	89
Elmore CL Plus(ƀ)	20	97	98	95	99	103
Kennedy	13	96	96	100	–	–
Coolah(ƀ)	11	–	100	94	97	–
LongReach Spitfire(ƀ)	20	97	94	93	94	95
LongReach Gauntlet(ƀ)	20	87	93	93	86	87
LongReach Dart(ƀ)	20	83	85	86	82	93

Legend: Annual variety yield performance

Lowest — Highest

Legend: TABLE 2A (p. 9) and 2B (opposite)

∞ AGT = Australian Grain Technologies
CSIRO = Commonwealth Scientific and Industrial Research Organisation
DPI&F = Queensland Department of Agriculture and Fisheries
EGA = Enterprise Grains Australia
GBA = Grain Biotech Australia
LPB = LongReach Plant Breeders
NSW DPI = New South Wales Department of Primary Industries
SU = Sydney University Plant Breeding Institute
UA = University of Adelaide
UQ = University of Queensland.

ƀ Varieties displaying this symbol are protected under the Plant Breeders Rights Act 1994. Unauthorised sale of seed of these varieties is an infringement under this Act.

TABLE 3C NVT – South-East Queensland – wheat early season 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	4.02	4.06	5.39	2.06	2.00
Variety	No. trials	2	2	2	2	1
Sunmax(b)	7	–	107	111	113	113
Coolah(b)	9	109	108	106	110	98
LongReach Flanker(b)	9	113	112	104	100	81
Mitch(b)	9	106	104	104	110	103
EGA Gregory(b)	9	108	108	100	97	80
DS Faraday(b)	3	–	–	–	93	77
Suntime(b)	9	98	99	96	102	98
LongReach Lancer(b)	9	103	97	91	95	88
LongReach Gauntlet(b)	9	104	97	86	85	73
Sunvale	9	98	94	85	89	80

TABLE 3D NVT – South-East Queensland – wheat main season 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	3.88	3.78	5.56	1.99	2.58
Variety	No. trials	2	2	2	1	1
Mitch(b)	6	–	106	113	117	109
LongReach Flanker(b)	8	109	112	107	97	106
LongReach Reliant(b)	8	109	116	102	104	99
Coolah(b)	3	–	–	105	110	–
Suntop(b)	8	104	106	103	119	101
Sunchaser(b)	1	–	–	–	–	99
EGA Gregory(b)	8	105	107	103	91	105
LongReach Hellfire(b)	1	–	–	–	–	104
Sunmate(b)	6	99	102	–	122	97
LongReach Mustang(b)	4	–	–	95	104	98
Sunprime(b)	2	–	–	–	106	98
Elmore CL Plus(b)	8	94	97	98	95	103
LongReach Gauntlet(b)	8	97	99	95	91	103
LongReach Spitfire(b)	8	97	94	95	104	96
Kennedy	6	98	90	97	–	–
EGA Kidman(b)	2	–	101	–	–	–
LongReach Dart(b)	8	85	86	87	97	99

TABLE 3E NVT – South-West Queensland – wheat early season 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	1.96	3.35	4.69	1.87	2.82
Variety	No. trials	6	9	5	8	2
Coolah(b)	30	102	114	106	134	94
LongReach Flanker(b)	30	96	117	104	133	95
Mitch(b)	30	104	112	106	128	95
EGA Gregory(b)	30	92	110	98	127	89
DS Faraday(b)	10	–	–	–	120	95
Sunmax(b)	24	–	99	106	112	99
LongReach Lancer(b)	30	98	107	95	117	88
Suntime(b)	30	96	100	96	117	86
LongReach Gauntlet(b)	30	92	106	90	111	87
Sunvale	30	89	100	87	114	79

TABLE 3F NVT – South-West Queensland – wheat main season 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	2.39	3.28	4.41	1.94	2.05
Variety	No. trials	5	8	8	8	3
LongReach Reliant(b)	32	115	111	106	115	120
LongReach Flanker(b)	32	118	102	109	107	117
Mitch(b)	27	–	100	115	106	108
Sunchaser(b)	3	–	–	–	–	107
Suntop(b)	32	103	107	108	108	107
LongReach Hellfire(b)	3	–	–	–	–	100
Coolah(b)	16	–	–	110	104	–
LongReach Mustang(b)	19	–	–	99	112	103
Sunmate(b)	24	95	108	–	107	101
Sunprime(b)	11	–	–	–	107	101
EGA Gregory(b)	32	113	96	102	99	111
Elmore CL Plus(b)	32	98	97	96	98	93
LongReach Gauntlet(b)	32	101	95	96	94	97
LongReach Spitfire(b)	32	91	98	95	93	94
Kennedy	21	90	96	95	–	–
EGA Kidman(b)	16	–	98	86	–	–
LongReach Dart(b)	32	81	94	88	87	76

Legend: Annual variety yield performance

Lowest — Highest

2020 BARLEY CROP SOWING GUIDE

KEY POINTS

New varieties available for sowing

- LG Alestar$^{\Phi}$, medium to long-season variety available through Elders
- Banks$^{\Phi}$, later maturing variety from Intergrain
- Leabrook$^{\Phi}$, earlier maturing variety available through Seednet

Newly accredited varieties

- RGT Planet$^{\Phi}$, has been granted accreditation by the Malting and Brewing Industry Barley Technical Committee

Varieties under evaluation

- LG Alestar$^{\Phi}$, target-decision date is 2020
- Banks$^{\Phi}$ has been held over for further Stage 2 assessment
- Leabrook$^{\Phi}$, target decision date is 2020

MARKETING BARLEY

Large, plump, bright-coloured grain with high hectolitre weight is preferred for both the malt and livestock industries. Price dockages will be incurred if grain does not meet specifications. Barley trading standards can be accessed from: www.graintrade.org.au.

MALTING BARLEY

In Queensland, domestic brewing demand is high for Westminster$^{\Phi}$, medium for Commander$^{\Phi}$ and currently developing for Compass$^{\Phi}$.

DISEASE CHARACTERISTICS

Leaf diseases

Powdery mildew

Although powdery mildew is often present in susceptible barley varieties the disease seldom causes grain yield losses above 10 to 15 per cent.

Leaf rust and stem rust

Leaf rust and stem rust can cause significant loss of grain yield in excess of 50 per cent, especially in wetter environments and later sowings. Epidemics of stem rust have been rare in recent years, but leaf rust has been a persistent problem. Crops of varieties rated moderately susceptible or above should be regularly monitored from mid-elongation for the presence of leaf rust. If present, it is likely to appear on older leaves as small brown pustules or small green dots in senescing leaf tissue. Varieties rated susceptible to very susceptible should be sprayed once the disease is detected. In favourable seasons, fungicide application may be warranted in varieties with levels of resistance less than moderate.

Barley stripe rust

Barley stripe rust ratings have not been included in the disease table as this disease is not currently present in Australia. However, some barley varieties can be infected by barley grass stripe rust and even wheat stripe rust. Introduction of true barley stripe rust poses a serious threat to the industry. Growers should monitor crops, and any suspicious lesions should be collected and sent to the Australian Cereal Rust Survey, PBI, Private Bag 4011, Narellan, NSW 2567.

Net blotch

There are two forms of net blotch: the spot form and the net form. As the common names suggest, spot form is seen as dark brown to black round to oval spots while net form is more likely to occur as brown elongate lesions or stripes. Both forms survive on infested barley stubble, while net form can also be seed-borne. Growers need to be aware if grain is infected as this can introduce the disease to clean areas. Seed treatments are available. Leaves can be infected by both forms of the pathogen at the same time.

Head and root diseases

Head blight

Head blight can be caused by several *Fusarium* species or *Eutiarosporella*. Spores are stubble-borne and infection usually occurs following wet conditions at and shortly after head emergence.

Loose smut

Barley varieties with Hindmarsh$^{(l)}$ in their pedigree are more susceptible to loose smut. Control is achieved by applying a registered seed dressing at sowing.

Covered smut

Covered smut is seed and soil-borne. Contaminated grain is not usually accepted by end users unless at a heavy discount. Control is by using a recommended seed dressing.

Black point

Black point is a brown-black discolouration at the germ end of wheat and barley caryopsis. In barley, black point appears mainly in the lemma and palea tissue (glume), and in severe cases discolouration can also occur in the testa. Black point is a physiological response to a certain set of environmental conditions such as heavy morning dews, rainfall and high humidity.

Crown rot

Crown rot survives for several seasons on decaying stubble from host cereal crops and from grass weeds in non-host crops. Infection of the stem bases of the young crop is high with a wet autumn/winter, but above ground symptoms are normally only seen when the plant undergoes water stress at the end of the season. Barley crops do not usually display the typical ‘white heads’ that are seen in infected wheat crops.

Root lesion nematodes

These nematodes are widespread in the northern grain region and can significantly reduce grain yields. Root lesion nematodes (RLN) are also hosted by many non-cereal crops so the absence of a winter cereal crop in recent seasons does not mean that there are low levels of nematodes in the soil. Barley is considered more tolerant than most wheats, yet significant yield losses can occur in some varieties. A soil test should be considered prior to planting if you do not know which species are on your farm, or their density. If barley is to be sown in nematode-infested soil, the tolerant varieties (listed as T, TMT or MT in Table 4) should be considered for best yield. Choose a variety that has a higher resistance rating to maximise yield and leave fewer nematodes in the soil to attack the next crop to be planted. The response of a barley variety may differ between the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*; refer to Table 4.

Insects

Malting barley can only be treated with specific grain protectants for control of insects. Check with all potential end users to ensure that a particular insecticide is acceptable.

TABLE 4 Barley – disease ratings.

Variety	Root lesion nematode				Crown rot	Common root rot	Black point[#]	Leaf rust	Leaf scale	Net blotch		Powdery mildew
	P. thornei		*P. neglectus*									
	resistance[%]	tolerance[*]	resistance[%]	tolerance[*]						Net form[Ų]	Spot form	
LG Alestar[Φ]	MR	MTMI(p)	MR	I(p)	S	MSS	MRMS	MS	S	S/MR	MSS	RMR
Banks[Φ]	MR	TMT(p)	MRMS	MII(p)	MSS	MSS	MS	S	S	MS	MSS	MRMS/S
Compass[Φ]	MR	TMT	MRMS	TMT	S	MS	MSS	VS	SVS	MRMS/MSS	MRMS	MRMS/S
Commander[Φ]	MRMS	MT	MRMS	MTMI	S	MSS	MSS	S	VS	MSS	MSS	MRMS/S
Fathom[Φ]	MR	–	MRMS	–	SVS	MSS	MSS	MRMS	MS	MRMS/S	RMR	MRMS/S
Granger[Φ]	MRMS	MTMI(p)	MRMS	MII(p)	SVS	S	MS	MRMS	SVS	MRMS/SVS	SVS	RMR
Hindmarsh[Φ]	MRMS	TMT	MRMS	MTMI(p)	S	S	MSS	MSS	VS	MS	SVS	MRMS/SVS
La Trobe[Φ]	MRMS	MT	MRMS	MT(p)	SVS	S	MSS	MSS	SVS	MS	SVS	MRMS/SVS
Leabrook[Φ]	RMR	MT(p)	MR	MT(p)	S	MS	MSS	SVS	VS	MRMS	MRMS	MRMS/S
RGT Planet[Φ]	MR	–	MRMS	TMT(p)	S	MSS	MRMS	MRMS	MSS	S/MRMS	S	R
Rosalind[Φ]	MR	T(p)	MRMS	MT(p)	MSS	S	MSS	MR	S	MRMS	MSS	MRMS/SVS
Scope[Φ]	MRMS	MI(p)	MRMS	MI(p)	SVS	MS	MS	S	SVS	MSS	MSS	RMR
Shepherd[Φ]	MSS	MI	MRMS	MI(p)	MSS	MSS	MRMS	MRMS	SVS	SVS/MSS	SVS	S
Spartacus CL[Φ]	MRMS	MI(p)	MRMS	–	S	MS	MSS	MSS	VS	MS	SVS	MRMS/SVS
Westminster[Φ]	MS	I	MRMS	IVI	S	MSS	MRMS	MRMS	MS	S/MRMS	S	R

Legend: Disease and agronomy tables (refers to Table 4)
R = Resistant
RMR = Resistant – Moderately Resistant
MR = Moderately Resistant
MRMS = Moderately Resistant – Moderately Susceptible
MS = Moderately Susceptible
MSS = Moderately Susceptible – Susceptible
S = Susceptible
SVS = Susceptible – Very Susceptible
VS = Very Susceptible
— = indicates that a rating is not available.
T = Tolerant
TMT = Tolerant – Moderately Tolerant
MT = Moderately Tolerant
MTMI = Moderately Tolerant – Moderately Intolerant
MI = Moderately Intolerant
MII = Moderately Intolerant – Intolerant
I = Intolerant
IVI = Intolerant – Very Intolerant
VI = Very Intolerant

* RLN tolerance – The root lesion nematode (*P. thornei* and *P. neglectus*) tolerance ratings that appear in this planting guide are based on field data collected in the northern grain region rather than national consensus ratings.

% RLN resistance – The root-lesion nematode (*P. thornei* and *P. neglectus*) resistance ratings that appear in this planting guide are national consensus ratings based on glasshouse and field data collected from all Australian grain regions.

Ų In this column, ratings separated by "/" denotes different responses to different pathotypes.

[P] RLN data relating to these varieties is based on less than four years of testing and is to be considered provisional information.

TABLE 5 Barley – varietal details.

Variety	Varietal information						Comments (as supplied by breeding companies)
	Plant Breeders Rights (PBR)	End Point Royalties (EPR)	Variety owner◆	Royalty manager, EPR collector	EPR Rate $/tonne (GST exclusive)	Year of release	
LG Alestar(Ⓟ)	Ⓟ	✓	Limagrain	Elders	$3.00	2019	Undergoing malt accreditation. Medium-long season barley. Good straw strength. Rated moderately susceptible to leaf rust.
Banks(Ⓟ)	Ⓟ	✓	Intergrain	Intergrain	$4.00	2019	Undergoing malt accreditation. Later maturing variety. Rated moderately susceptible to net form of net blotch.
Commander(Ⓟ)	Ⓟ	✓	Uni of Adelaide	Seednet	$3.80	2008	Malt variety suited to domestic and export markets. Can lodge if sown too early and in high-yielding situations. Rated susceptible to net form of net blotch.
Compass(Ⓟ)	Ⓟ	✓	Uni of Adelaide	Seednet	$3.80	2013	Malt-accredited variety. Earlier flowering compared to Commander(Ⓟ) with good grain size. Can lodge if sown too early and in high-yielding situations. Rated very susceptible to leaf rust.
Fathom(Ⓟ)	Ⓟ	✓	Uni of Adelaide	Seednet	$2.00	2012	Feed grade variety, with large grain size and long coleoptile length. Good resistance to spot form of net blotch. Rated susceptible to net form of net blotch.
Granger(Ⓟ)	Ⓟ	✓	Nickersons	Heritage Seeds	$2.95	2013	Malt-accredited variety. Medium to late maturity. Susceptible to Shepherd strain of net form of net blotch and susceptible to very susceptible to spot form of net blotch.
Hindmarsh(Ⓟ)	Ⓟ	✓	Ag Victoria Services	Seednet	$1.50	2006	Food grade variety, segregate for marketing. A semi-dwarf variety, avoid deep sowing due to a shorter coleoptile length. Susceptible to spot form of net blotch and powdery mildew.
La Trobe(Ⓟ)	Ⓟ	✓	InterGrain	InterGrain	$4.00	2013	Malt-accredited variety, suited to the export trade. A semi-dwarf variety, avoid deep sowing due to shorter coleoptile length. Susceptible to spot form of net blotch and powdery mildew.
Leabrook(Ⓟ)	Ⓟ	✓	Uni of Adelaide	Seednet	$3.80	2019	Undergoing malt accreditation. Plant type and maturity very similar to Compass(Ⓟ) with generally larger grain size. Rated susceptible to very susceptible to leaf rust.
RGT Planet(Ⓟ)	Ⓟ	✓	RAGT	Seedforce	$4.00	2017	Malt-accredited variety. Similar maturity to Commander(Ⓟ). Good straw strength. Yielded well in 2016 and 2017 NVT series. Susceptible to spot and net form of net blotch.
Rosalind(Ⓟ)	Ⓟ	✓	InterGrain	InterGrain	$3.50	2015	Feed grade variety. Avoid deep sowing due to shorter coleoptile length. Rated very susceptible to powdery mildew.
Scope(Ⓟ)	Ⓟ	✓	Ag Victoria Services	Seednet	$3.50	2010	Malt-accredited variety. A tall, Clearfield®-tolerant variety. Suffers head loss under some situations.
Shepherd(Ⓟ)	Ⓟ	✓	QDAF	Seednet	$2.30	2008	Feed grade variety. A tall variety with long coleoptile. Susceptible to powdery mildew and susceptible to very susceptible to both forms of net blotch.
Spartacus CL(Ⓟ)	Ⓟ	✓	InterGrain	InterGrain	$4.25	2016	Malt-accredited variety. A semi-dwarf, Clearfield tolerant variety. Avoid deep sowing due to shorter coleoptile length. Susceptible to spot form of net blotch and powdery mildew.
Westminster(Ⓟ)	Ⓟ	✓	Nickersons	Grainsearch	$3.00	2010	Malt-accredited variety. Medium to late maturity. Susceptible to net and spot forms of net blotch.

◆ QDAF = Queensland Department of Agriculture and Fisheries

Ⓟ Varieties displaying this symbol are protected under the Plant Breeders Rights Act. Unauthorised sale of seed of these varieties is an infringement under this Act.

TABLE 6A NVT – Central Queensland – barley 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2017	2018
	Mean yield t/ha	2.55	3.90	1.49	2.35
Variety	No. trials	2	2	2	2
Leabrook[Ф]	6	–	111	123	112
Compass[Ф]	8	111	110	112	108
Banks[Ф]	6	–	107	113	109
Commander[Ф]	8	107	106	117	107
RGT Planet[Ф]	4	–	–	109	108
Shepherd[Ф]	8	103	98	114	103
Rosalind[Ф]	8	106	105	95	100
LG Alestar[Ф]	8	100	100	103	101
Granger[Ф]	4	100	98	–	–
Fathom[Ф]	8	102	103	88	96
La Trobe[Ф]	8	101	102	90	97
Hindmarsh[Ф]	8	101	102	90	97
Scope[Ф]	4	–	–	84	91
Spartacus CL[Ф]	8	96	95	78	89

TABLE 6B NVT – South-East Queensland – barley 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	4.71	3.80	6.66	2.57	2.44
Variety	No. trials	2	2	1	1	1
Leabrook[Ф]	5	–	116	104	108	116
RGT Planet[Ф]	3	–	–	116	120	101
Rosalind[Ф]	7	109	106	108	106	103
Compass[Ф]	7	108	112	98	101	114
Banks[Ф]	5	–	108	101	105	104
Commander[Ф]	7	100	109	96	101	123
Granger[Ф]	7	98	102	105	105	113
Fathom[Ф]	7	106	102	99	97	102
LG Alestar[Ф]	7	98	101	104	106	108
Hindmarsh[Ф]	7	105	101	100	98	96
La Trobe[Ф]	7	105	100	100	97	91
Shepherd[Ф]	7	101	102	94	92	94
Spartacus CL[Ф]	7	105	94	99	90	80
Scope[Ф]	7	94	92	90	87	102
Westminster[Ф]	3	92	88	–	–	–

TABLE 6C NVT – South-West Queensland – barley 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

Variety	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	1.99	4.26	4.34	1.35	3.18
	No. trials	2	1	2	2	1
RGT Planet[◊]	5	–	–	118	110	108
Rosalind[◊]	8	103	115	111	112	107
Leabrook[◊]	6	–	119	102	111	115
Compass[◊]	8	113	116	96	115	111
Fathom[◊]	8	107	110	102	112	103
Hindmarsh[◊]	8	106	108	103	112	101
Banks[◊]	6	–	108	100	111	106
La Trobe[◊]	8	105	108	102	113	100
Spartacus CL[◊]	8	96	108	103	106	96
LG Alestar[◊]	8	97	96	104	93	101
Commander[◊]	8	105	103	92	97	108
Granger[◊]	3	91	97	–	–	–
Shepherd[◊]	8	94	103	90	93	101
Scope[◊]	8	100	91	90	92	93

Legend: Annual variety yield performance

Lowest — Highest

2020 CHICKPEA CROP SOWING GUIDE

KEY POINTS

New varieties available for sowing

- PBA Drummond$^{\Phi}$, an early-season variety available for sowing in Central and South-West Queensland

INTRODUCTION

There are two groups of chickpea, desi and kabuli, mainly distinguished by seed size, shape and colour.

The two types have different production requirements, markets and end uses. Most Australian chickpea production (mainly desi type) is in northern Australia, and nearly all the grain is exported. The main markets for desi chickpea are India, Pakistan, and Indian communities in other parts of the world (such as Britain and Western Canada). Buyers in India and Pakistan prefer larger, light-coloured desi chickpea grain.

Temperature, day length and drought are the three major factors affecting flowering in chickpea. Temperature is generally more important than day length. Flowering and pod set in chickpea requires an average daily temperature of 15°C, and cool wet conditions at flowering can adversely affect pod and seed-set. Flowering is invariably delayed under low temperatures, but more branching occurs.

INOCULATION

All seed should be treated with Group N chickpea inoculant just prior to sowing. Inoculation should occur for every chickpea crop every year, regardless of cropping history or soil type, to ensure nodulation.

DISEASES CHARACTERISTICS

Leaf diseases

Ascochyta blight

Chickpeas can be infected by Ascochyta blight (AB) at several growth stages. Ascochyta inoculum can be found as infected chickpea stubble, internally infected seed, externally infected seed (due to contamination by affected residue) and infected volunteer chickpea plants growing over summer. Variety disease ratings for Ascochyta blight, which appear in Table 7, are based on northern Australia results.

In seasons of high Ascochyta pressure, a reactive foliar fungicide program is required. Monitor the crop 10 to 14 days after each rain event, and if Ascochyta is detected, consult your agronomist.

Botrytis grey mould

Botrytis grey mould (BGM) is an airborne foliar disease present when temperatures are rising, usually above 15°C and canopy closure is likely.

A registered fungicide seed dressing is highly recommended for early control of seedling root rots, seed transmitted Ascochyta blight and botrytis seedling disease. Monitor for botrytis grey mould in spring as temperatures and humidity rise. Apply a fungicide containing either carbendazim or mancozeb once botrytis grey mould has been identified within the crop.

Root diseases

Phytophthora root rot

Phytophthora root rot (PRR) is a soil and water borne disease that can establish in any paddock regardless of soil type. Monitor paddocks for affected areas and avoid these if possible as well as avoiding areas that have had pasture legumes (medics and lucerne) and areas that may become water-logged. A soil test should be carried out on all paddocks prior to sowing to ascertain the range and levels of disease present.

Root lesion nematodes

These nematodes are widespread in the northern grain region and can significantly reduce grain yields. Root lesion nematodes (RLN) are also hosted by many non-cereal crops, so the absence of a winter cereal crop in recent seasons does not mean that there are low levels of nematodes in the soil. A soil test should be considered prior to planting if you do not know which species are on your farm, or their density. Choose a variety that has a higher resistance rating to maximise yield and leave fewer nematodes in the soil to attack the next crop to be planted. The reaction of a chickpea variety may differ between the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*; refer to Table 7.

TABLE 7 Chickpea – disease ratings.

Variety	Root lesion nematode				Ascochyta blight	Phytophthora root rot
	P. thornei		*P. neglectus*			
	resistance%	tolerance*	resistance%	tolerance*		
Jimbour	S	MT [P]	–	–	VS	MRMS
Kyabra(Φ)	VS	TMT [P]	MRMS	–	VS	MS
Moti(Φ)	MS	MII [P]	–	–	VS	S
PBA Boundary(Φ)	MS	T [P]	–	–	MS	VS
PBA Drummond(Φ)	–	–	–	–	S	S
PBA HatTrick(Φ)	MRMS	MT [P]	MRMS	–	MS	MR
PBA Pistol(Φ)	MS	–	–	–	VS	S
PBA Seamer(Φ)	MS	–	MRMS	–	MR	MR

Legend: Disease table (refers to Table 7)
R = Resistant
RMR = Resistant – Moderately Resistant
MR = Moderately Resistant
MRMS = Moderately Resistant – Moderately Susceptible
MS = Moderately Susceptible
MSS = Moderately Susceptible – Susceptible
S = Susceptible
SVS = Susceptible – Very Susceptible
VS = Very Susceptible
— = indicates that a rating is not available.
T = Tolerant
TMT = Tolerant – Moderately Tolerant
MT = Moderately Tolerant
MTMI = Moderately Tolerant – Moderately Intolerant
MI = Moderately Intolerant
MII = Moderately Intolerant – Intolerant
I = Intolerant
IVI = Intolerant – Very Intolerant
VI = Very Intolerant

* RLN tolerance – The root-lesion nematode (*P. thornei* and *P. neglectus*) tolerance ratings that appear in this planting guide are based on field data collected in the northern grain region rather than national consensus ratings.

% RLN resistance – The root-lesion nematode (*P. thornei* and *P. neglectus*) resistance ratings that appear in this planting guide are national consensus ratings based on glasshouse and field data collected in the northern and southern grain regions.

[P] RLN data relating to these varieties is based on less than four years of testing and is to be considered provisional information.

TABLE 8 Chickpea – varietal details.

Variety	Varietal information						Comments (as supplied by breeding companies)
	Plant Breeders Rights (PBR)	End Point Royalties (EPR)	Variety owner◆	Royalty manager, EPR collector	EPR Rate $/tonne (GST exclusive)	Year of release	
Jimbour	Ⓟ		QDAF/NSW DPI	None	Nil	2001	Older variety susceptible to all three diseases (AB, PRR, BGM). Tall, erect, lodging resistant. No EPR.
Kyabra®	Ⓟ		QDAF/NSW DPI	Heritage Seeds	Nil	2005	Tall, erect, high-yielding variety with large seed size and susceptible to all three diseases (AB, PRR, BGM). Lodging resistant, bred for southern Queensland but performs well in Central Queensland as well. Amethyst/Norwin/Barwon cross. Seed royalty applies, no EPR.
Moti®	Ⓟ	✓	DAWA	SeedNet	$2.50	2003	WA bred line, tall, erect, high-yielding variety evaluated and released in Central Queensland with no disease resistance. Lodging resistant.
PBA Boundary®	Ⓟ	✓	PBA	SeedNet	$4.00	2011	Moderately susceptible to ascochyta blight but susceptible to phytophthora root rot. Tall, erect with high yield. Lodging resistant and bred for southern Queensland. Jimbour cross.
PBA Drummond®	Ⓟ	✓	PBA	SeedNet	$4.50	2018	Tall, erect, high-yielding variety evaluated and released in Central Queensland with limited ascochyta blight resistance. Lodging resistant. PBA HatTrick® x PBA Pistol® cross.
PBA HatTrick®	Ⓟ	✓	PBA	SeedNet	$4.00	2009	Moderate susceptibility to ascochyta blight and moderate resistance to phytophthora root rot. High yields in and bred for southern Queensland. A cross involving Jimbour.
PBA Pistol®	Ⓟ	✓	PBA	SeedNet	$4.00	2011	PBA Pistol® was released as a Moti® replacement. It is taller and more resistant to lodging, offering improved harvestability, high yielding with large seed size. PBA Pistol® must not be grown south of Theodore/Rolleston due to its susceptibility to ascochyta blight. Evaluated and released in Central Queensland and susceptible to all three diseases (AB, PRR, BGM). Lodging resistant. A Moti® cross.
PBA Seamer®	Ⓟ	✓	PBA	SeedNet	$4.00	2016	Most resistant variety to all three diseases (AB, PRR, BGM). Semi-erect plant type with high yield. Lodging resistant with improved seed quality. PBA HatTrick® cross, bred for southern Queensland conditions.

◆ DAWA = Department of Agriculture, Western Australia
NSW DPI = New South Wales Department of Primary Industries
PBA = Pulse Breeding Australia
QDAF = Queensland Department of Agriculture and Fisheries

Ⓟ Varieties displaying this symbol are protected under the Plant Breeders Rights Act. Unauthorised sale of seed of these varieties is an infringement under this Act.

TABLE 9A NVT – Central Queensland – chickpea desi 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

Variety	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	2.16	2.29	2.84	2.20	1.58
	No. trials	4	2	4	4	3
PBA Drummond®	17	111	114	109	111	119
Moti®	14	109	108	103	103	–
PBA Seamer®	17	104	107	104	105	104
PBA Pistol®	17	105	109	103	104	93
PBA Boundary®	8	104	103	102	–	–
Kyabra®	17	110	102	101	97	100
PBA HatTrick®	17	97	98	99	99	99

TABLE 9B NVT – South-East Queensland – chickpea desi 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017
	Mean yield t/ha	1.76	3.22	2.41	1.57
Variety	No. trials	2	3	3	2
PBA Boundary[Φ]	10	100	102	102	104
Kyabra[Φ]	10	108	101	95	109
Jimbour	10	105	100	97	103
PBA Seamer[Φ]	10	91	101	103	98
PBA HatTrick[Φ]	10	100	99	101	98

TABLE 9C NVT – South-West Queensland – chickpea desi 2014–18.

Long-term predicted grain yield expressed as a percentage of mean yield.

	Year	2014	2015	2016	2017	2018
	Mean yield t/ha	1.51	2.41	3.08	1.24	1.57
Variety	No. trials	4	3	2	3	3
PBA Drummond[Φ]	3	–	–	–	–	110
Kyabra[Φ]	15	103	103	108	105	107
PBA Boundary[Φ]	15	105	104	104	104	103
PBA Seamer[Φ]	15	103	104	99	99	100
Jimbour	15	99	99	102	101	102
PBA HatTrick[Φ]	15	98	98	98	99	98

Legend: Annual variety yield performance

Lowest — Highest

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