2025 QUEENSLAND WINTER CROP SOWING GUIDE

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

QUEENSLAND
SEPTEMBER 2024

GRDC NATIONAL VARIETY TRIALS™

ARE YOU GROWING THE BEST VARIETY FOR YOUR SITUATION?

grdc.com.au

Title:
2025 Queensland Winter Crop Sowing Guide

GRDC Code: ALB2309-001SAX

ISSN: 2652-3582 (online), 2652-3574 (print)

Published:
September 2024

Acknowledgements:
Sincere thanks to the following contributors, without whose help through their time and industry knowledge this publication would not have been possible:

The University of Sydney – Robert Park, Davinder Singh, Jo-Ann Geist, Matthew Williams.

In addition, GRDC would like to thank the numerous breeding companies and their representatives for their contributions.

GRDC contact details:
PO Box 5367
KINGSTON ACT 2604
02 6166 4500
comms@grdc.com.au
grdc.com.au

Design and production:
Coretext, coretext.com.au

COVER: Condamine cereals 2022.
PHOTO: Laurie Fitzgerald

TABLE OF CONTENTS

This guide can be downloaded to your computer or tablet at:
grdc.com.au/queensland-winter-crop-sowing-guide

DISEASE RATING COLOUR RANGE

Disease severity scale from very susceptible (VS) to resistant (R)

VS	SVS	S	MSS	MS	MRMS	MR	RMR	R
VI	IVI	I	MII	MI	MTMI	MT	TMT	T

R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, MSS = moderately susceptible to susceptible, S = susceptible, SVS = susceptible to very susceptible, VS = very susceptible

T = tolerant, TMT = tolerant to moderately tolerant, MT = moderately tolerant, MTMI = moderately tolerant to moderately intolerant, MI = moderately intolerant, MII = moderately intolerant to intolerant, I = intolerant, IVI = intolerant to very intolerant, VI = very intolerant

COLOUR GRADIENT LEGEND: MEAN VARIETY YIELD PERFORMANCE

LOW **HIGH**

Long-term mean yield illustrated by colour gradient from lowest (red) to highest (green), comparable on an annual basis.

INTRODUCTION

The *2025 Queensland Winter Crop Sowing Guide* 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 that will allow them to make informed choices when deciding on what varieties of wheat, barley or chickpea to sow in their paddocks.

The guide covers released varieties that have undergone paddock evaluation in Queensland.

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 readily available or there is concern that it may not carry robust disease resistances and may compromise the industry. However, if seed of varieties not mentioned in this guide is obtained, please ensure that you are provided with current and reliable information by the vendor.

There are many varieties that appear in this guide for growers to consider as being suited to their individual paddock conditions. At the time of printing there are several recently released varieties for growers in Queensland to consider, made up of seven wheat varieties and two barley varieties. Three wheat varieties are from Australian Grain Technologies, named Intrigue$^{\Phi}$, Leverage$^{\Phi}$ and Sundancer$^{\Phi}$, one wheat variety from Seed Excellence named Stockman$^{\Phi}$, one wheat variety named LRPB Tracer$^{\Phi}$ released by LongReach and two wheat varieties released by InterGrain named Brumby$^{\Phi}$ and Jumbuck$^{\Phi}$. There are two barley varieties, one from Secobra named, Spinnaker$^{\Phi}$ and one from InterGrain named, Neo$^{\Phi}$ CL.

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 nvtonline.com.au

Conducted to a set of predetermined protocols, trials are sown and managed to reflect local best practice such as sowing time, fertiliser application, weed management, pest/disease control and fungicide application. The NVT is not designed to grow varieties to their maximum yield potential.

GRDC recognises that sustaining a project of this nature hinges on the collaboration of growers who willingly provide sites and often lend a hand in trial management on their properties. Equally significant is the partnership with seed companies who participate in the NVT program to ensure the continued delivery of performance results for growers.

INTERPRETING LONG-TERM YIELD DATA

A factor analytic (FA) mixed model approach is used in the multi-environment trial (MET) analysis conducted by GRDC, supported by the Statistics for the Australian Grains Industry (SAGI) program. This approach generates long-term MET values for varieties at an individual trial level.

This format provides more detailed data to better understand a variety's performance over several years at the individual trial/environment level, rather than just a single averaged value.

In this *2025 Queensland Winter Crop Sowing Guide*, results are presented for yield in year groupings as designated. Further detailed interrogation of the NVT online dataset using the NVT Long Term Yield Reporter tool will provide more specific performance data on all varieties of each crop species in each NVT location.

Cereal diseases

The first report of stripe rust of wheat was received in late June 2024 from Griffith in southern NSW. This first detection of stripe rust in 2024 was much earlier than the long-term eastern Australian average of 23 July.

Cereal rust pathogens survive from one cropping cycle to the next on living plants (the 'green bridge'). A scarcity of living susceptible plant hosts over the non-cropping summer months, in particular, means cereal rust pathogen populations crash during this time. Stripe rust of wheat has survived every summer since it was first detected in eastern Australia in 1979. Over the intervening period, it has reappeared sometime between 16 May (1984 and 2008) and 5 October (1994), with the overall average being 23 July. In general, years with the most severe epidemics have been those with the earliest first detection.

Pathotype dynamics

A clear trend over the past three seasons has been the initial dominance of pathotype 198 E16 A+ J+ T+ 17+, and the later development of pathotype 239 E237 A- 17+ 33+. Pathotype 238 E191 A+ 17+ 33+, first detected in 2021 (2.3 per cent of all pathotype identifications), increased in frequency in 2022 (36.4 per cent of all pathotype identifications). Pathotype distribution determines varietal response. It is important to note that varietal response to rust is driven by the pathotype or pathotypes present and recognising the impact the environment plays with respect to the disease triangle.

Long-term nationwide annual surveys of the virulence of the cereal-attacking rust pathogens have been critical in understanding and predicting the responses of cereal varieties to rust diseases and providing direction for resistance breeding. For example, the separation of the eastern and western Australian cereal belts, the common movement of rusts from west to east, and the less common movement of rusts from east to west, have resulted in some important pathotypes (and hence virulences) being restricted to eastern Australia. **Monitoring the occurrence, frequency and distribution of pathotypes of the cereal rust pathogens is foundational in genetic approaches to control these diseases.** (Source: *Cereal Rust Report 2023*, Volume 20, Issue 1.)

Stripe rust on barley

'True' barley stripe rust (*Puccinia striiformis* f. sp. *hordei*) is a major disease of barley in some overseas countries but is not present in Australia. However, barley grass stripe rust and wheat stripe rust can develop to a small extent on some barley varieties, particularly if the diseases are severe on nearby barley grass or wheat.

Barley stripe rust poses a significant threat to the Australian barley industry. Report any unusually severe infections of stripe rust on barley to your agronomist and send samples to the Australian cereal rust survey (for details, see page 7).

RESISTANCE RATING SYSTEM FOR RUSTS AND FOLIAR DISEASES

A standard disease resistance rating system has been adopted for all crops in all states across Australia. The two tables in Appendix 1 (Rusts and foliar diseases on page 5 and Standard disease ratings on page 6), help to explain to explain the values and their implications for growers and advisers.

APPENDIX 1: RUSTS AND FOLIAR DISEASES

Rating	Management option description	For growers: what do I see?	For growers: what do I do?
Resistant (R)	Disease may be found but will be at such a level that no economic management is required, even in instances of high disease pressure.	Trace levels of disease may be found.	No economic management decisions required.
Moderately resistant (MR)	Disease may be observed but no economic management decisions will be required. Preventive sprays are not necessary but disease should be monitored. Management of seed quality may be required.	The disease may be observed at very low levels.	No economic management decisions required. Monitor crops for disease development.
Moderately susceptible (MS)	In the presence of inoculum and in seasons conducive to disease, the disease will be seen more readily when inspecting the crop. If the disease appears early in the season, then an economic management decision (preventive spray) may be appropriate. Later occurrence of the disease may not require any action. Management of seed quality will be required.	In the presence of inoculum, the disease will be seen more readily when inspecting the crop.	Monitor crops for disease development. In the presence of inoculum and in seasons conducive to disease, an economic management decision may be appropriate (for example, preventive spray). Later occurrence of the disease may not require any action.
Susceptible (S)	The disease will be easily found in the crop. Management decisions will be required to reduce yield loss and will most probably be economic to do so. Management of seed quality will be required.	In the presence of inoculum, the disease will often be easily found in the crop. The disease will be observed readily in the crop.	Management decisions will be required to reduce yield loss and will most probably be economic to do so.

Standard disease ratings	
Rating	Alpha code
Resistant	R
Resistant to moderately resistant	RMR
Moderately resistant	MR
Moderately resistant to moderately susceptible	MRMS
Moderately susceptible	MS
Moderately susceptible to susceptible	MSS
Susceptible	S
Susceptible to very susceptible	SVS
Very susceptible	VS

RESISTANCE: WHAT DOES IT MEAN TO ME AS A GROWER?

STRIPE RUST AS AN EXAMPLE

Response to stripe rust is determined by the interaction of genes for resistance in a variety and genes for virulence in the pathogen population.

The reaction of a wheat variety to stripe rust depends on two forms of resistance:

- seedling genes – which are effective from seedling emergence through to maturity, provided the matching virulence gene in the pathogen population is absent; and
- adult plant resistance (APR) genes – which become effective at various growth stages, ranging from the fourth leaf stage through to full head emergence. APR will also be effective provided that matching virulence is not present in the pathogen.

Both seedling and APR genes, and combinations of both, provide varying levels of crop protection that can be influenced by environment (temperature, crop nutrition, management) and disease pressure.

Growers need to be aware that varieties that predominantly rely on APR for stripe rust protection might be more susceptible to stripe rust infection earlier in the season until the APR provides protection. Wheat varieties with APR can benefit from early stripe rust control by fertiliser, seed or foliar fungicides. If unsure speak to your local agronomist.

Cereal diseases pose a constant, significant threat to the Australian grains industry. In the past, entire crops have been wiped out in Queensland and across Australia. Growers and the wider industry have been the beneficiaries of the combined efforts of breeders and work conducted by the Plant Breeding Institute, University of Sydney (situated in Cobbitty, NSW) over the past 100 years.

In any given year there are numerous pathotypes (sometimes referred to as races or strains) of the different diseases that attack our crop varieties. Surveys of the rust populations have been carried out each year since 1921 by the Plant Breeding Institute. This information is crucial in assessing current makeup and levels of the rusts and thereby preempting potential threats to the industry. The Plant Breeding Institute also rates the rust responses of tens of thousands of potential new cereal varieties each year, undertakes innovative genetic investigations to find new sources of rust resistance and crossing for breeding companies, as well as training students in plant breeding and pathology.

The best protection for varieties is to have genetic resistance to the diseases present in the production environment. Protection is afforded by resistance in the plant host to the invading pathogen. The wheat varieties' ratings to the three rusts that appear in Table 1 (page 13) are based on the most prevalent strains (race, pathotype) identified by the surveys conducted by the Plant Breeding Institute in the years prior to publishing the guide.

Over time, a variety's rating to a particular rust disease may change. This is due to random changes that occur within the makeup of the pathogen that enables it to overcome the genetic resistance of a variety. This is not due to any changes in the variety itself.

In this guide, the variety ratings for a specific disease relate to the most prevalent rust strain occurring in Queensland at the time of printing. Determining the origins of such exotic incursions is another example of the critical work that is undertaken by the Plant Breeding Institute. The response of some of these varieties may differ should another pathotype of stripe rust build up and become common. Further, more specific information is available in reports that can be downloaded on the Plant Breeding Institute Rust Laboratory website (sydney.edu.au/science/our-research/research-areas/life-and-environmental-sciences/cereal-rust-research.html)

Growers should monitor all crops and any suspicious lesions should be collected. Keep samples dry, wrap in paper (not 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

Rusted plant samples
Samples can be mailed in paper envelopes. Do not use plastic wrapping or plastic-lined packages. If possible, include the latitude and longitude of the sample location, date of collection, cultivar, and your full contact details.

Reply Paid sample envelopes can be obtained by contacting:
Jo-Ann Geist
ACRCP Research Hub Coordinator
The University of Sydney
Faculty of Science, School of Life and Environmental Sciences
Plant Breeding Institute
107 Cobbitty Road
Cobbitty NSW 2570
Phone: 02 9351 8864 or 0400 813 740

jo-ann.geist@sydney.edu.au
sydney.edu.au/science/our-research/research-areas/life-and-environmental-sciences/cereal-rust-research.html

For disease sample testing contact:
Lisa Kelly, QDAF, Queensland
Phone: 0477 747 040 or email lisa.kelly@daf.qld.gov.au for sample dispatch details.

The disease ratings in the report are current at the time of publication. Regularly visit nvt.grdc.com.au/nvt-disease-ratings to find the latest NVT disease ratings.

END POINT ROYALTIES (EPR)

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: varietycentral.com.au/about-end-point-royalties/how-it-works

PLANT BREEDER'S RIGHTS (PBR)

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 breeder's rights (PBR) is a type of intellectual property right/set of rights. It is a protection that allows the breeder/owner of the variety to place restrictions on what growers and others can do with it.

Throughout this guide, varieties protected under PBR legislation are signified by the symbol ⓟ. Plant breeder's rights are exclusive commercial rights to a registered variety. In relation to propagating material of the registered variety, the breeder has exclusive rights to:

- produce or reproduce the material;
- condition the material for the purpose of propagation (conditioning includes cleaning, coating, sorting, packaging and grading);
- offer the material for sale;
- sell the material;
- import the material;
- export the material; and
- stock the material for any of the purposes described in the previous dot points.

In most instances the breeder will license these rights to a selected seed company (the licensee). Exceptions to PBR are the rights of growers to save seed for sowing future commercial crops. However, harvested material derived from farm-saved seed will be subject to the end point royalty (EPR) applying to that variety.

Where EPRs apply, growers will be required to enter arrangements with the breeder or licensee whereby royalties are paid on delivery of the grain. Some varieties may have a seed royalty (SR) paid on purchase of seed rather than an EPR. Royalties collected are used to support ongoing research and the breeding of new and improved varieties.

SEED VARIETY LICENCES

The seed variety licence is a legally binding contract between the PBR owner of the EPR variety or the licensed commercialisation party and the grower. The variety licence contains the terms and conditions that a grower needs to abide by when using a new variety.

INTRICACIES OF SEED SHARING™

Seed Sharing™ (first introduced as AGT Seed Sharing™, and now a generic term used by growers) provides a way to explore the potential that a new variety may offer to your overall farming system. Despite becoming more popular recently, there are key features to be aware of:

- Breeding companies may have slightly different restrictions on Seed Sharing™, so it is important to read the licensing agreement for each variety.
- Clearfield® varieties are not able to be purchased through a Seed Sharing™ arrangement.
- Seed Sharing™ is an agreement between a licensed grower of a variety and another grower that has agreed to use the seed for the sole purpose of producing another generation of that variety.
- End point royalties are not required to be paid on any seed that is sold through a Seed Sharing™ agreement. Since another generation is being created it is not an end point, in contrast to going to a feedlot, a domestic mill or for export.
- Retail agronomy businesses can facilitate a Seed Sharing™ transaction between two farming businesses but cannot enter into such an agreement. The restricting clause identifies that the purchasing party agrees to be liable for the EPRs that are due following the harvest of the subsequent crop.

TIMING IS ESSENTIAL FOR SUCCESS

Growers face numerous decisions before sowing. 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 and different disease inoculum loads and weeds, both current and possibly in the seedbank; 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 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, more than simply trying to achieve a given sowing rate. Aim for an even established plant density of between 100 to 200 plants per square metre for wheat and barley, and 20 to 30 plants/m^2 for chickpeas, rather than 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. Varieties' coleoptile length is shorter in central Queensland due to the higher temperatures usually experienced around sowing. Chickpeas can tolerate a greater sowing depth if chasing moisture.

AN INDUSTRY GUIDE FOR WHEAT VARIETY MATURITY DESCRIPTION

The wheat-breeding members of Australian Crop Breeders (ACB) have worked together to develop a consistent approach to describing wheat variety maturity. It is their intent to use this system on company fact sheets, and they encourage the rest of the industry to adopt this system in their publications to provide growers with consistency and transparency. It is hoped to develop a similar approach for the other crops that are represented by Australian Crop Breeders.

The purpose of this Wheat Variety Maturity Description document (Appendix 2, page 9) is to provide growers, agronomists, extension officers, plant breeders and others with a consistent approach to wheat variety maturity (relative heading date) description. As a core component of adaptability and variety management, it is important that the industry have access to a clear and sufficiently detailed method of describing relative maturity in Australia's field crops.

For further information, or to discuss this document, please feel free to contact ACB at enquiries@australiancropbreeders.com.au.

APPENDIX 2: WHEAT VARIETY MATURITY DESCRIPTION

Northern region

Maturity[m] description	Quick wheat boundary	Slow wheat boundary
Very quick spring	N/A	–
Very quick – quick spring	–	–
Quick spring	–	Sunprime[Φ]
Quick – mid spring	Sunprime[Φ]	Suntop[Φ]
Mid spring	Suntop[Φ]	LRPB Reliant[Φ]
Mid – slow spring	LRPB Reliant[Φ]	Coota[Φ]
Slow spring	Coota[Φ]	Sunzell
Slow – very slow spring	Sunzell[Φ]	Sunmax[Φ]
Very slow spring	Sunmax[Φ]	N/A

[m] Maturity is defined as the time taken from seedling emergence until 50 per cent of tillers have heads that are 50 per cent visible (GS55) above the flag leaf auricle.

Source: Australian Crop Breeders Ltd

PHOTO: ARTHUR MOSTEAD

WHEAT

KEY POINTS

Recently released varieties available for sowing

- Intrigue$^{\Phi}$, Leverage$^{\Phi}$ and Sundancer$^{\Phi}$ released by Australian Grain Technologies
- LRPB Tracer$^{\Phi}$ released by LongReach Plant Breeders
- Stockman$^{\Phi}$ released by Seed Excellence
- Jumbuck$^{\Phi}$ and Brumby$^{\Phi}$ released by InterGrain

Varieties planned for removal in 2025

Carinya$^{\Phi}$, Cunningham$^{\Phi}$, Janz, LRPB Gazelle$^{\Phi}$, Sunguard$^{\Phi}$, Sunstate, Sunvale, Ventura$^{\Phi}$

Reclassification in 2025

LRPB Gauntlet$^{\Phi}$ to Australian Hard (AH)

Refer to grainsaustralia.com.au

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. Variety yellow spot ratings appear in Table 1.

False black chaff

This physiological disorder can readily occur in susceptible varieties. It causes brown-black, slight to extensive striations on the glume and, in extreme cases, along the tillers. It is 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. Variety crown rot ratings appear in Table 1.

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.

Stripe rust has been common and widespread throughout eastern Australia in recent seasons. The sole reason for this uptick in the disease was two incursions of exotic stripe rust pathotypes, which were first detected in 2017 (pathotype 198E16 A+ J+ T+ 17+, or '198') and in 2018 (pathotype 239E237 A- 17+ 33+, or '239'). Pathotype 198 was first detected in Europe and somehow made its way to South America, where it caused severe stripe rust epidemics on more than three million hectares of wheat in Argentina in the 2016-17 and 2017-18 cropping seasons. Many growers there applied fungicides but were unable to control the disease and suffered significant economic losses. Yield losses of between 53 and 70 per cent were recorded in the seven most susceptible varieties being grown. Pathotype 239 was first detected by staff at the University of Sydney in 2018 and likely originated from Europe.

These two incursions now mean that Australia has experienced four wheat stripe rust incursions, with the two most recent being the first time that two genetically different isolates of a cereal rust attacking pathogen have been introduced into Australia in quick succession.

The first confirmed report of stripe rust of wheat for 2024 was received from Griffith, southern NSW, in late June. (Source: Professor Robert Park and Dr Mumta Chhetri, Plant Breeding Institute.)

Growers should monitor their paddocks for any infestation and send rust samples to University of Sydney, Australian Rust Survey, Reply Paid 88076, Narellan NSW 2567. Variety stripe rust ratings appear in Table 1.

Reply Paid sample envelopes can be obtained by contacting:
Jo-Ann Geist, ACRCP Research Hub Coordinator
The University of Sydney
Faculty of Science, School of Life & Environmental Sciences
Plant Breeding Institute
107 Cobbitty Road
Cobbitty NSW 2570
Phone: +61 2 9351 8864
Email: jo-ann.geist@sydney.edu.au

Leaf rust and stem rust

From seedling stage onward, regular scouting of crops should be made to determine if rust spores have infected plant leaves and are developing in crops. If the cultivar has less than an MR level of resistance, fungicide application should be considered. Variety ratings for leaf and stem rust appear in Table 1.

Root lesion nematode

Root lesion nematode (RLN) is widespread in the northern grain region and can significantly reduce wheat yields. RLN is also hosted by many non-cereal crops so that 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 nematode species or levels are on your farm. If wheat is to be sown in nematode-infested soil, the tolerant varieties (listed as T, TMT or MT in Table 1) 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 grown. The reaction of a wheat variety may differ to the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*. This should be checked for individual varieties in Table 1.

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 discoloration at the germ end of wheat and barley caryopsis. In wheat, the discoloration 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. Variety black point ratings appear in Table 1.

Russian wheat aphid

Russian wheat aphid (RWA) was initially found in SA and Victoria in 2016 and has subsequently been found in NSW and Tasmania and, for the first time, in WA in 2020. RWA was detected in crops on the Liverpool Plains and around Moree in September 2023. Grain growers and agronomists across Queensland are urged to regularly monitor cereal paddocks for signs of RWA.

GRDC continues to promote the FITE (find, identify, threshold approach and enact) strategy, which has been developed to provide growers and advisers with a simple guide to RWA management. It involves:

- **Find** – Look for aphids, especially where leaf rolling and other characteristic plant symptoms of infection, including leaf streaking, are observed on cereal crops and grasses.
- **Identify** – Positively identify RWA by consulting with an industry specialist.
- **Threshold approach** – Before deciding on your plan of attack, consider thresholds for control, the presence of natural aphid enemies in the crop, crop growth stage and potential yield losses. To help determine the cost-effectiveness of chemical treatment, growers are urged to use the RWA action threshold calculator, pir.sa.gov.au/research/services/rwa_action_threshold_calculator.
- **Enact** – Take appropriate action: manage your next steps, including encouraging beneficial insects and protecting honeybees before implementing control options.

For more information refer to the GRDC Russian wheat aphid resources page (grdc.com.au/resources-and-publications/resources/Russian-wheat-aphid) or contact your regional GRDC office.

Wheat quality and classification

Wheat quality refers to the performance of grain in meeting the requirements of its use in flour milling, breads, noodles, cereals, pasta or animal feed. Quality is determined by the genetic attributes of the variety grown and the environmental conditions during crop growth.

Classification identifies varieties with the proven capability to deliver the requirements of each class, creating a solid foundation for consistent processing and end product performance. The classification process involves assessing the inherent quality characteristics of new wheat varieties, and then classifying them according to distinct quality attributes required by processors and end users.

This foundation, along with Wheat Standards – which are designed to ensure defects and contamination are absent – gives customers an assurance that Australian wheat is of the highest quality.

WHEAT VARIETY DISEASE AND AGRONOMY RATINGS

Table 1 contains varietal ratings for the predominant diseases of wheat in Queensland. Varieties of most relevance to Queensland growers are listed in alphabetical order and disease ratings are colour-coded to match resistance and susceptibility ratings.

Table 1: Bread and durum wheats – disease and agronomy ratings.

Variety	Leaf rust resistance**	Stem rust resistance	Stripe rust (2024 east coast) resistance	Black point resistance	Crown rot resistance	*Pratylenchus neglectus*		*Pratylenchus thornei*		Yellow leaf spot resistance
						Resistance[n]	Tolerance*	Resistance[n]	Tolerance*	
BREAD WHEATS										
Borlaug 100[Φ]	MR	MR	SVS	MSS	MSS	S	T	MS	TMT	MRMS
Brumby[Φ]	SVS	MR	MS	MSS	S	MRMS	TMT	MS (P)	MI	MRMS
Calibre[Φ]	S	MR	S	MSS	S	S	MT	MSS	MII	MRMS
Coolah[Φ]	RMR	MR	MSS	S	MSS	S	MT	MS	MT	MSS
Coota[Φ]	MR	RMR	S	MS	MSS	MR	MI	MS	MTMI	MSS
Intrigue[Φ]	MR#	MRMS	MR	S (P)	MS	S	–	MRMS	TMT	MRMS
Jillaroo[Φ]	S	MS	MSS	MS	S	S	I	MS (P)	MII	MS
Jumbuck[Φ]	RMR (P)	MRMS (P)	MR (P)	–	–	–	–	–	–	MS (P)
Leverage[Φ]	RMR#	MR	MRMS	MSS (P)	S	S	–	MS	MT	MRMS
LRPB Flanker[Φ]	RMR	MR	MRMS	MS	MSS	S	MT	MSS	MT	MSS
LRPB Hellfire[Φ]	MSS	MR	MR	S	MSS	MSS	MTMI	MSS	MI	MSS
LRPB Lancer[Φ]	RMR	R	RMR	MRMS	MSS	S	MTMI	MS	TMT	MS
LRPB Mustang[Φ]	MSS	MRMS	MR	MS	MSS	S	MI	MSS	MTMI	MSS
LRPB Raider[Φ]	RMR	RMR	MR	MSS	S	MSS	MTMI	MS	TMT	MSS
LRPB Reliant[Φ]	RMR	R	MR	MS	MS	SVS	MTMI	MSS	TMT	S
LRPB Spitfire[Φ]	S	MR	MRMS	MSS	MS	MSS	MI	MS	MTMI	S
LRPB Stealth[Φ]	RMR#	R	RMR	MRMS	MSS	MSS	MTMI	S	MTMI	MS
LRPB Tracer[Φ]	MR# (P)	MS (P)	MR (P)	–	–	–	–	–	–	S (P)
Rebel 65[Φ]	MRMS	MSS	MS	MSS	S	S	TMT	MRMS	TMT	MSS
Rebel Rat	MRMS#	MRMS	MS	MSS	MSS	S	T	MSS	MT	MRMS
RockStar[Φ]	S	MRMS	S	MSS	S	MRMS	I	MS	MI	MRMS
SEA Condamine	RMR	MRMS	MSS	MRMS	MSS	S	MT	MS	MT	MSS
Stockman[Φ]	MR	MS	MRMS	MSS (P)	S	MSS	–	S	MTMI	MSS
Sunblade CL Plus[Φ]	MSS	MS	MRMS	MRMS	S	MSS	MI	MRMS	MT	MSS
Suncentral[Φ]	RMR	MRMS	–	MRMS	MSS	MRMS	MI	MRMS	MT	MSS
Sunchaser[Φ]	R	MR	–	MRMS	MSS	MSS	MTMI	MSS	MT	MS
Sundancer[Φ]	RMR	MR	MR	MSS (P)	MSS	MSS	–	MS	MT	MS
Sunflex[Φ]	RMR#	MR	MRMS	MSS	MSS	S	MI	MSS	MI	MS
Sunmaster[Φ]	RMR	MS	MRMS	MR	MSS	MRMS	MTMI	MS	TMT	MSS
Sunmax[Φ]	MS	MRMS	RMR	MRMS	MSS	S	MT	MS	MI	MSS
Suntop[Φ]	MR	MRMS	MRMS	MSS	MSS	S	MT	MRMS	TMT	MSS
Valiant[Φ] CL Plus	S	MR	S	MS (P)	MSS	S	MII	S (P)	IVI	MRMS
Vixen[Φ]	SVS	MRMS	SVS	MSS	S	MRMS	I	MS	I	MRMS

Continued on next page

Variety	Leaf rust resistance**	Stem rust resistance	Stripe rust (2023 east coast) resistance	Black point resistance	Crown rot resistance	*Pratylenchus neglectus*		*Pratylenchus thornei*		Yellow leaf spot resistance
						Resistance[n]	Tolerance*	Resistance[n]	Tolerance*	
DURUM WHEATS										
DBA Bindaroi(Φ)	MR	MR	MS	MRMS	SVS	MRMS	MI	MR	MTMI	MS
DBA Lillaroi(Φ)	RMR	RMR	MS	MS	SVS	MRMS	MI	RMR	MT	MRMS
DBA Mataroi(Φ)	MR	MRMS	MS	MS	SVS	MS	MT	RMR	MI	MRMS
DBA Vittaroi(Φ)	RMR	MR	MS	MSS	SVS	MS	I	MR	MI	MRMS
Westcourt(Φ)	RMR	RMR	MR	MSS	VS	MS	MI	MR	MT	MRMS

R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, MSS = moderately susceptible to susceptible, S = susceptible, SVS = susceptible to very susceptible, VS = very susceptible, T = tolerant, TMT = tolerant to moderately tolerant, MT = moderately tolerant, MTMI = moderately tolerant to moderately intolerant, MI = moderately intolerant, MII = moderately intolerant to intolerant, I = intolerant, IVI = intolerant to very intolerant, VI = very intolerant.

(P) = provisional rating

= May be more susceptible to alternate pathotypes (warning)
– = rating not available

* 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.

[n] 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.

DISEASE RATING COLOUR RANGE

VS	SVS	S	MSS	MS	MRMS	MR	RMR	R
VI	IVI	I	MII	MI	MTMI	MT	TMT	T

Table 2: Bread and durum wheats – varietal details.

Variety	Varietal information							Comments (as supplied by breeding companies)	Maturity grouping	Australian wheat class♠
	Pedigree	End point royalty (EPR)	Grower-to-grower sales permitted	Licensee ◊	Released by ◊	EPR rate $/tonne (GST exclusive)	Year of release			
BREAD WHEATS										
Borlaug 100Ⓓ		✓	Yes	Rebel	Rebel	$4.55	2018	A mid-season variety, released for its high long-term average yield in the northern NSW and Queensland regions, where livestock markets erode APH premiums. Proven to outyield in both dry conditions and exceed in irrigation. Very strong straw strength, low screening and *P. thornei* tolerant. While stripe rust presents in wetter years it is easily controlled with low-cost fungicide applications.	Quick – mid spring	AH
BrumbyⒹ		✓	Yes	InterGrain	InterGrain	$3.50	2023	BrumbyⒹ is a broadly adapted, high-yielding, mid maturing (slightly later than ScepterⒹ while earlier than RockStarⒹ) potential APW wheat, with an exceptional disease resistance profile. With a long-term yield comparable to RockStarⒹ, BrumbyⒹ is well suited to medium-high rainfall areas. A robust disease package, including useful stripe rust and good stem rust and yellow leaf spot resistance.	Mid spring	FEED
CalibreⒹ	Scepter Ⓓ derivative	✓	Yes	AGT	AGT	$3.50	2021	CalibreⒹ established itself as an extremely high-yielding variety after one season in the Queensland NVT. CalibreⒹ has a moderately long coleoptile and suitable disease resistance and tolerances for the northern region. CalibreⒹ matches other feed varieties for yield but has the potential to make the APH classification grade.	Quick – mid spring	APH
CoolahⒹ	EGA GregoryⒹ/VQ2791// EGA GregoryⒹ	✓	Yes	AGT	AGT	$3.50	2016	CoolahⒹ has been an outstanding performer in the slow spring maturity group. As a replacement for EGA GregoryⒹ it is slightly shorter in stature and has better lodging resistance. Combined with good foliar disease resistance, CoolahⒹ is a clear choice for late April/early May planting opportunities throughout Queensland and NSW.	Slow spring	APH
CootaⒹ		✓	Yes	AGT	AGT	$3.60	2020	An elite yielding variety for early sowing options in NSW and Queensland. An alternative to LRPB LancerⒹ and EGA GregoryⒹ types, it has a short plant height and large seed size. CootaⒹ has a good disease profile accentuated by its ability to maintain yield in the presence of crown rot. CootaⒹ has a flexible maturity and performs well in high and low yield-potential situations.	Mid – slow spring	APH
IntrigueⒹ		✓	Yes	AGT	AGT	$4.00	2024	IntrigueⒹ is a facinating new variety for the northern region. Combining excellent foliar disease resistance with tolerance to the major constraints in the northern region: crown rot and root lesion nematode. IntrigueⒹ is well adapted to early and main season sowing and tough environments.	Mid – slow spring	APH
JillarooⒹ		✓	Yes	InterGrain	InterGrain	$3.50	2022	A high-yielding, quick – mid maturing spring wheat with AH classification (potential APH in 2023). JillarooⒹ features a moderate plant height with semi-erect growth habit and good disease package to yellow leaf spot, *P. thornei* resistance and crown rot resistance.	Quick – mid spring	AH
JumbuckⒹ		Yes	Yes	InterGrain	InterGrain	$3.60	2024	Classification pending (potential Australian Hard). Mid–slow maturity wheat suited to late April/early May sowings, slightly quicker in maturity than LRPB LancerⒹ. JumbuckⒹ exhibits excellent yield stability in high and lower-yielding environments. JumbuckⒹ has a medium plant height with good lodging tolerance and robust leaf disease package. JumbuckⒹ was developed by breeders at CIMMYT and brought to Australia through the CIMMYT Australia ICARDA Germplasm Evaluation (CAIGE) program, supported through GRDC's long-term investment. InterGrain is commercialising JumbuckⒹ.	Mid – slow spring	FEED

Continued on next page

Table 2: Bread and durum wheats – varietal details (continued).

Variety	Varietal information							Comments (as supplied by breeding companies)	Maturity grouping	Australian wheat class♠
	Pedigree	End point royalty (EPR)	Grower-to-grower sales permitted	Licensee ◊	Released by ◊	EPR rate $/tonne (GST exclusive)	Year of release			
BREAD WHEATS										
Leverage(D)	SUN704B/Coolah(D)	✓	Yes	AGT	AGT	$4.00	2018	Leverage(D) possesses a good dose of EGA Gregory(D) genetics through its parent Coolah(D) and builds upon the yield potential of both. Leverage(D) has a rating of MRMS for stripe rust and is rated MRMS to yellow leaf spot, which is an uncommon rating for varieties that are well adapted to NSW and Queensland.	Mid – slow spring	APH
LRPB Flanker(D)	EGA Gregory(D)//EGA Gregory(D)/Lang	✓	Yes	Pacific Seeds	LRPB	$4.25	2015	APH variety well suited to Queensland with sound diseases resistance.	Mid – slow spring	APH
LRPB Hellfire(D)	EGA Gregory(D)/ 2*LPB05-2148	✓	Yes	Pacific Seeds	LRPB	$4.25	2019	Quick – mid spring maturing, high-yielding main season APH variety with protein accumulation similar to LRPB Spitfire(D). Good early vigour and RLN tolerance. Demonstrated yield performance under crown rot pressure.	Quick – mid spring	APH
LRPB Lancer(D)	VII84/Chara//Chara/3/ Lang	✓	Yes	Pacific Seeds	LRPB	$4.25	2013	Slower maturing APH spring wheat with a compact canopy, solid grain quality and rust packages.	Mid – slow spring	APH
LRPB Mustang(D)	EGA Gregory(D)/LPB1117	✓	Yes	Pacific Seeds	LRPB	$4.25	2017	Quick maturing APH variety with compact canopy and reliable grain package. Good foliar and soil disease package with highly competitive yield.	Quick spring	APH
LRPB Raider(D)	LRPB Lancer(D)/LPB10-2506	✓	Yes	Pacific Seeds	LRPB	$4.25	2021	A short, higher tillering LRPB Reliant(D) plant type that showed relatively high and stable yield performance across early and main season NVT in 2020-21. Slow spring maturity best suited to mid-April to early May sowing times across a range of growing environments. Robust disease profile based on LRPB Lancer(D) genetics with APH classification.	Slow spring	APH
LRPB Reliant(D)	LRPB Crusader(D)/EGA Gregory(D)	✓	Yes	Pacific Seeds	LRPB	$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.	Mid spring	APH
LRPB Spitfire(D)	Drysdale/Kukri	✓	Yes	Pacific Seeds	LRPB	$3.50	2010	APH variety well suited to Queensland conditions. Provides a good grain package and solid disease resistance.	Quick – mid spring	APH
LRPB Stealth(D)	LRPB Lancer(D)/ Sunguard(D)	✓	Yes	Pacific Seeds	LRPB	$4.25	2020	A mid – slow spring maturing APH variety demonstrating excellent crown rot resistance and the ability to maintain yield in tight finishes, along with a solid disease package. Moderate to long coleoptile with excellent black point resistance. Well suited to all Queensland production environments.	Mid – slow spring	APH
LRPB Tracer(D)	Beckom(D)/LRPB Mustang(D)	✓	No	Pacific Seeds	LRPB	$4.25	2023	Quick – mid spring maturing variety suitable for main to late season seeding opportunities across Queensland. Strong performance in sodic soil yield trials combined with a good disease package for northern production systems. Compact canopy with APH classification.	Quick – mid spring	APH
RockStar(D)	Mace(D)/IGW3119	✓	Yes	InterGrain	InterGrain	$3.50	2020	RockStar(D) is a high-yielding, mid – slow flowering variety, with a slightly quicker time to flowering than LRPB Lancer(D). It has excellent yield stability across its sowing window and very good lodging tolerance. RockStar(D) has good grain size, good test weight and has a moderate plant height, reducing stubble loads in high-yielding environments.	Mid – slow spring	APH
SEA Condamine	UQ01800	✓	No	Seed Excellence	Uniquest	$3.00	2018	A tall, main season maturity, high-yielding variety in central Queensland, it has a short grain-filling period, large kernel size, low screenings and stiff straw.	Quick – mid spring	FEED

Continued on next page

Table 2: Bread and durum wheats – varietal details (continued).

Variety	Varietal information							Comments (as supplied by breeding companies)	Maturity grouping	Australian wheat class♠
	Pedigree	End point royalty (EPR)	Grower-to-grower sales permitted	Licensee ◊	Released by ◊	EPR rate $/tonne (GST exclusive)	Year of release			
BREAD WHEATS										
Stockman(Þ)	Cross between EGA Gregory(Þ) and a CIMMYT winter wheat	✓	No	Seed Excellence	Seed Excellence	$3.00	2023	Stockman(Þ) is a quick – mid maturity, awnless hay wheat. Its quick maturity relative to other hay wheats allows Stockman(Þ) to be sown relatively late and harvested early to allow a summer crop. Excellent standability, good rust resistance package and large kernel size.	Quick – mid spring	FEED
Sunblade CL Plus(Þ)	RAC1664/2*Suntop(Þ)	✓	No	AGT	AGT	$4.35	2020	The first Clearfield® Intervix® tolerant variety granted an APH classification. Sunblade CL Plus(Þ) is a mid spring variety that demonstrates exceptional yield performance and is suitable for the entire northern region. A replacement for Elmore CL Plus(Þ).	Mid spring	APH
Suncentral(Þ)	RAC1629/2*Suntop(Þ)	✓	YES	AGT	AGT	$3.60	2020	Exceptional yield performance from an APH-classified variety. Suncentral's(Þ) quick – mid spring maturity makes it uniquely suited to central and south-west Queensland. Suncentral(Þ) shares a lot of characteristics with Suntop(Þ) but is a quicker maturing variety and has a better physical grain package. Suncentral(Þ) has outyielded Suntop(Þ) in AGT crown rot trials.	Quick – mid spring	APH
Sunchaser(Þ)	SUN626B/B1289F	✓	YES	AGT	AGT	$3.50	2019	An alternative for the popular variety Suntop(Þ). Sunchaser(Þ) 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.	Quick – mid spring	APH
Sundancer(Þ)	SUN765D/LRPB Lancer(Þ)	✓	YES	AGT	AGT	$4.00	2023	Sundancer(Þ) is a mid – slow maturing variety suited to late April and early May plantings, with a relative maturity very similar to LRPB Lancer(Þ) in this planting window. When sown later into May, Sundancer(Þ) is slightly quicker to reach head emergence than LRPB Lancer(Þ). Sundancer(Þ) has a solid disease resistance package with strong stripe rust resistance, longer coleoptile than LRPB Lancer(Þ) and other early season varieties.	Mid – slow spring	APH
Sunflex(Þ)	QT13334/SUN574A	✓	YES	AGT	AGT	$3.60	2020	As a slow spring variety, Sunflex(Þ) is at the very slow end and is a high-yielding option for early sowing situations throughout Queensland and NSW, with particular adaptation to high-yield situations. Sunflex(Þ) has a shorter plant type, consistently large seed size and low screenings, as well as a moderately long coleoptile.	Slow spring	APH
Sunlamb(Þ)	2*Baconora/Sunlin	✓	YES	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.	Very slow spring	ASW
Sunmaster(Þ)	RAC1629/2*Suntop(Þ)	✓	YES	AGT	AGT	$3.60	2020	A mid spring variety with greatly improved yield performance compared with its major parent Suntop(Þ). Sunmaster(Þ) has a similar adaptation pattern but in a shorter plant type. A genuine replacement for Suntop(Þ). Sunmaster(Þ) has outyielded Suntop(Þ) in AGT crown rot trials.	Mid spring	APH
Sunmax(Þ)	CRW142.16/2*Sunzell	✓	Yes	AGT	AGT	$3.50	2015	As a very slow spring variety, Sunmax(Þ) has shown its ability to maintain its maturity in all early sowing situations. Suited for mid-April sowing in southern Queensland and northern NSW.	Very slow spring	APH
Suntop(Þ)	Sunco/2*Pastor//SUN436E	✓	Yes	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.	Mid spring	APH

Continued on next page

Table 2: Bread and durum wheats – varietal details (continued).

Variety	Varietal information							Comments (as supplied by breeding companies)	Maturity grouping	Australian wheat class♠
	Pedigree	End point royalty (EPR)	Grower-to-grower sales permitted	Licensee ◊	Released by ◊	EPR rate $/tonne (GST exclusive)	Year of release			
BREAD WHEATS										
Valiant(Þ) CL Plus	Mace(Þ)/IGW3119	✓	No	InterGrain	InterGrain	$4.35	2021	A high-yielding, slow maturity Clearfield® tolerant spring wheat with a similar maturity to LRPB Stealth(Þ). Check current herbicide registrations for registered product rates and adhere to recommended plant growth stages for application timing. Moderate plant height and a long coleoptile. Bred and marketed by InterGrain.	Slow spring	FEED
Vixen(Þ)	Mace(Þ)/IGW3119	✓	Yes	InterGrain	InterGrain	$3.50	2018	A mid – quick variety, similar in maturity to LRPB Spitfire(Þ). Suited to sowing from mid-May onward. High yield potential with very good lodging resistance and strong physical grain characteristics. It has good grain size and produces low screenings. Vixen(Þ) has a short–moderate plant height, providing reduced stubble loads in high-yielding environments.	Quick – mid spring	AH
DURUM WHEATS										
DBA Bindaroi(Þ)	Caparoi(Þ)/261102	✓	Contact licensee	Seednet	NSW DPIRD	$3.50	2017	Higher yielding with lower screenings and good protein achievement. Better grain quality than Caparoi(Þ), with higher semolina yellow colour compared to DBA Lillaroi(Þ). Best performance compared with all released durum varieties in DBA yield loss trials.	Quick spring	ADR
DBA Lillaroi(Þ)	960273/980596	✓	Contact licensee	Seednet	NSW DPIRD	$3.30	2015	This variety is preferred by millers. Highest semolina yield, high yellow pigment, highest 1000 grain weight, lowest screenings compared with other released varieties. Medium early variety, around two to three days later than Jandaroi(Þ). Excellent yield performance in Queensland NVT and is suited to dry seasons, including double cropping, with excellent protein achievement.	Quick spring	ADR
DBA Mataroi(Þ)	234194/Yawa	✓	Contact licensee	Seednet	NSW DPIRD	$3.50	2021	DBA Mataroi(Þ) is a high-yielding, quick maturing durum wheat, adapted to the dryland durum-producing areas of NSW (including western NSW) and Queensland. DBA Mataroi(Þ) has erect plant growth and medium stature and straw strength similar with Caparoi(Þ). It has demonstrated grain, semolina and pasta-making quality comparable with Caparoi(Þ), as well as low screenings.	Quick spring	ADR
DBA Vittaroi(Þ)	200856/980990	✓	Contact licensee	Seednet	NSW DPIRD	$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(Þ). Higher semolina yellow colour compared with DBA Lillaroi(Þ). Achieves lower screenings.	Quick – mid spring	ADR
Westcourt(Þ)	WID22209/WID22301	✓	YES	AGT	AGT	$3.50	2019	Westcourt(Þ) is a durum variety specifically bred to perform in the northern durum-growing region. Displaying exceptional yield and offering a dominant package of disease resistance, moderately long coleoptile and grain quality, including very low screenings and milling qualities similar to DBA Lillaroi(Þ).	Quick – mid spring	ADR

◊ AGT – GT – Australian Grain Technologies, DAF – Department of Agriculture and Fisheries, Queensland, EGA – Enterprise Grains Australia, LRPB – LongReach Plant Breeders, NSW DPIRD – New South Wales Department of Primary Industries and Regional Development, SADGA – South Australian Durum Growers Association, SU – Sydney University Plant Breeding Institute, UA – University of Adelaide.

(Þ) Varieties displaying this symbol are protected under the *Plant Breeder's Rights Act 1994*. Unauthorised sale of seed of these varieties is an infringement under this Act.

♠ Australian Wheat Class, Wheat Quality Australia (WQA), grainsaustralia.com.au, maximum classifications describe suitability for export markets and do not always reflect the varietal preference of domestic millers.

Note: APH – Australian Prime Hard, AH – Australian Hard, ASW – Australian Standard White, ADR – Australian Premium Durum, FEED – Australian Feed.

GRDC

WHEAT VARIETY YIELD PERFORMANCE

Tables 3a to 3h contain wheat grain yield results for selected varieties within each NVT region in Queensland for the past five seasons. Data is presented (as a percentage) for each variety relative to the mean trial yield for the location within each year. Varieties are listed in descending order of average yield over the period.

Table 3a: NVT Central Queensland – wheat early season 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	2.92	3.25	3.08	5.75	4.86
	No. trials	5	5	5	5	1
Leverage[Φ]	6	–	–	–	109	108
Sundancer[Φ]	1	–	–	–	–	107
Jumbuck[Φ]	1	–	–	–	–	109
Intrigue[Φ]	6	–	–	–	101	107
Rebel 65^	6	–	–	–	106	107
Rebel Rat	5	–	–	–	106	–
LRPB Raider[Φ]	16	–	108	107	101	104
Borlaug 100[Φ]	7	–	112	–	108	101
Sunflex[Φ]	16	109	107	–	102	101
Coolah[Φ]	21	114	106	106	99	102
LRPB Stealth[Φ]	21	114	106	107	96	101
LRPB Flanker[Φ]	21	112	106	105	97	102
Coota[Φ]	21	111	103	105	98	100
RockStar[Φ]	6	–	–	107	–	98
Jillaroo[Φ]	1	–	–	–	–	100
LRPB Reliant[Φ]	20	113	100	104	92	–
LRPB Lancer[Φ]	21	102	97	103	93	97
Brumby[Φ]	1	–	–	–	–	95
Valiant[Φ] CL Plus	6	–	–	92	–	92
Sunmax[Φ]	16	78	71	–	98	98
Vixen[Φ]	1	–	–	–	–	94

– denotes no data available.

Legend: Annual variety yield performance

Lowest Highest

Long-term mean yield illustrated by colour gradient from low (red) to high (green), comparable to an annual basis.

Table 3b: NVT Central Queensland – wheat main season 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	3.36	3.21	3.16	5.63	4.34
	No. trials	5	5	5	4	1
Rebel 65(Ф)	1	–	–	–	–	114
Borlaug 100(Ф)	6	–	–	112	110	114
SEA Condamine	20	111	109	109	110	112
Rebel Rat	9	–	108	–	110	–
Jumbuck(Ф)	1	–	–	–	–	109
Brumby(Ф)	1	–	–	–	–	107
Sunblade CL Plus(Ф)	20	108	101	108	104	103
Calibre(Ф)	10	–	–	107	106	108
Sunmaster(Ф)	20	106	103	107	104	103
Suncentral(Ф)	19	101	101	105	101	–
Leverage(Ф)	1	–	–	–	–	104
Catapult(Ф)	10	–	–	99	102	102
Jillaroo(Ф)	8	–	–	105	100	107
LRPB Flanker(Ф)	20	100	103	95	102	101
Intrigue(Ф)	5	–	–	–	98	108
Coota(Ф)	15	–	97	100	100	101
LRPB Reliant(Ф)	20	102	99	99	98	104
Stockman(Ф)	10	–	95	104	–	100
Suntop(Ф)	20	101	98	102	97	98
LRPB Stealth(Ф)	5	–	–	–	99	103
Sunchaser(Ф)	19	97	99	101	96	–
RockStar(Ф)	10	–	–	94	102	98
Sundancer(Ф)	1	–	–	–	–	99
LRPB Hellfire(Ф)	20	101	93	102	93	97
Sunprime(Ф)	20	97	93	102	94	100
Vixen(Ф)	10	–	–	99	97	99
LRPB Lancer(Ф)	5	–	–	–	94	94
LRPB Spitfire(Ф)	20	95	93	97	90	92
LRPB Tracer(Ф)	1	–	–	–	–	94
LRPB Mustang(Ф)	20	90	91	98	90	98

– denotes no data available.

Continued on next page

Table 3c: NVT South-East Queensland – wheat early season 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	2.88	3.61	0.00	4.78	4.31
	No. trials	2	1	0	1	1
Intrigue[Φ]	2	–	–		107	117
Jumbuck[Φ]	1	–	–		–	115
Leverage[Φ]	2	–	–		118	114
Brumby[Φ]	1	–	–		–	109
Sundancer[Φ]	2	–	–		114	113
LRPB Raider[Φ]	3	–	110		108	109
RockStar[Φ]	1	–	–		–	106
Coota[Φ]	5	110	106		103	106
Coolah[Φ]	5	108	108	No trial	102	107
LRPB Stealth[Φ]	5	108	110		98	107
LRPB Reliant[Φ]	4	107	117		89	–
Sunflex[Φ]	5	104	102		106	103
LRPB Flanker[Φ]	5	103	112		95	106
Rebel 65[Φ]	2	–	–		101	106
LRPB Lancer[Φ]	5	104	105		91	102
Sunmax[Φ]	5	107	90		101	93
Valiant[Φ] CL Plus	1	–	–		–	91

– denotes no data available.

Table 3d: NVT South-East Queensland – wheat main season 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	1.76	3.82	0.00	0.00	3.82
Variety	No. trials	2	2	0	0	2
Jillaroo(Ф)	2	–	–			105
Calibre(Ф)	2	–	–			108
Borlaug 100(Ф)	6	106	115			105
Intrigue(Ф)	2	–	–			107
Rebel Rat	4	–	110			105
Vixen(Ф)	2	–	–			105
Suncentral(Ф)	6	107	106			107
Sunmaster(Ф)	6	107	104			107
LRPB Mustang(Ф)	6	107	109			101
Sunblade CL Plus(Ф)	6	109	103			106
Brumby(Ф)	2	–	–			107
Sunprime(Ф)	6	107	109			100
SEA Condamine	6	100	110			102
Sunchaser(Ф)	6	98	106			100
Catapult(Ф)	2	–	–			103
LRPB Tracer(Ф)	2	–	–	No trial	No trial	100
LRPB Reliant(Ф)	6	94	105			100
Stockman(Ф)	4	–	107			94
Coota(Ф)	6	104	100			100
Suntop(Ф)	6	99	102			100
Rebel 65(Ф)	2	–	–			102
LRPB Hellfire(Ф)	6	99	104			96
Jumbuck(Ф)	2	–	–			105
LRPB Stealth(Ф)	2	–	–			99
RockStar(Ф)	2	–	–			103
Leverage(Ф)	2	–	–			106
Sundancer(Ф)	2	–	–			102
LRPB Flanker(Ф)	6	89	95			98
LRPB Spitfire(Ф)	6	94	100			90
LRPB Raider(Ф)	4	–	90			100
LRPB Lancer(Ф)	2	–	–			93

– denotes no data available.

Continued on next page

Table 3e: NVT South-East Queensland – wheat (durum) 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	0.78	4.02	0.00	5.09	2.62
Variety	No. trials	1	1	0	1	1
DBA Mataroi(Þ)	4	104	103		105	108
Westcourt(Þ)	4	102	102		104	107
DBA Lillaroi(Þ)	4	99	104	No trial	98	95
DBA Vittaroi(Þ)	4	86	97		101	88
DBA Bindaroi(Þ)	4	91	95		98	90

Table 3f: NVT South-West Queensland – wheat early season 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	1.17	2.99	3.94	4.84	2.94
Variety	No. trials	3	5	8	6	7
Leverage(Þ)	13	–	–	–	112	115
Jumbuck(Þ)	7	–	–	–	–	110
Sundancer(Þ)	13	–	–	–	108	117
Intrigue(Þ)	13	–	–	–	105	118
LRPB Raider(Þ)	26	–	119	112	108	106
RockStar(Þ)	15	–	–	109	–	113
Coota(Þ)	29	103	109	108	102	107
Coolah(Þ)	29	101	111	107	102	106
Sunflex(Þ)	21	102	106	–	103	105
LRPB Stealth(Þ)	29	106	107	105	99	109
Brumby(Þ)	7	–	–	–	–	111
LRPB Flanker^	29	101	109	100	99	104
Rebel 65(Þ)	13	–	–	–	103	100
LRPB Reliant(Þ)	22	100	111	97	95	–
LRPB Lancer(Þ)	29	110	95	98	93	107
Sunmax(Þ)	29	79	103	97	105	84
LRPB Nighthawk(Þ)	26	–	95	96	109	83
Valiant(Þ) CL Plus	15	–	–	90	–	98

– denotes no data available.

Table 3g: NVT South-West Queensland – wheat main season 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	1.17	2.83	3.84	4.81	2.72
	No. trials	3	6	8	2	7
Intrigue(Ф)	9	–	–	–	112	111
Sunmaster(Ф)	26	113	105	109	118	110
Suncentral(Ф)	26	114	104	109	116	111
Sunblade CL Plus^	26	111	106	108	111	108
Borlaug 100(Ф)	26	114	109	105	106	107
Calibre(Ф)	17	–	–	107	95	106
Rebel Rat	23	–	106	104	108	106
Brumby(Ф)	7	–	–	–	–	103
Leverage(Ф)	7	–	–	–	–	101
Jillaroo(Ф)	17	–	–	107	87	105
Jumbuck(Ф)	7	–	–	–	–	100
Suntop(Ф)	26	107	101	103	110	105
Sunchaser(Ф)	26	109	100	102	110	106
LRPB Mustang(Ф)	26	109	102	103	96	108
Sunprime(Ф)	26	108	104	103	94	105
SEA Condamine	26	106	105	101	102	101
LRPB Reliant(Ф)	26	98	106	103	99	98
Sundancer(Ф)	7	–	–	–	–	99
LRPB Raider(Ф)	23	–	100	103	109	96
LRPB Hellfire(Ф)	26	104	102	100	99	101
Vixen(Ф)	17	–	–	102	81	105
LRPB Stealth(Ф)	9	–	–	–	103	99
Coota(Ф)	26	96	104	102	90	97
Rebel 65(Ф)	7	–	–	–	–	95
Boree(Ф)	23	–	102	102	86	100
LRPB Tracer(Ф)	7	–	–	–	–	102
Stockman(Ф)	21	–	102	96	–	97
RockStar(Ф)	17	–	–	99	86	95
LRPB Flanker(Ф)	26	88	98	96	96	92
LRPB Lancer(Ф)	9	–	–	–	100	93
LRPB Spitfire(Ф)	26	96	94	91	88	95

– denotes no data available.

Table 3h: NVT South-West Queensland – wheat (durum) 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	0.00	0.00	2.62	4.37	3.34
	No. trials	0	0	1	1	1
DBA Mataroi(Ф)	3	Trial failed	Trial failed	108	108	106
Westcourt(Ф)	3			107	109	104
DBA Vittaroi(Ф)	3			98	97	94
DBA Lillaroi(Ф)	3			99	89	101
DBA Bindaroi^	3			94	97	92

BARLEY

KEY POINTS

Recently released varieties available for sowing

- Neo CL$^{\Phi}$ released by InterGrain
- Spinnaker$^{\Phi}$ released by SECOBRA Research

Varieties under malting evaluation and testing stage as at May 2024

Varieties relevant to Queensland growers currently undergoing malting evaluation assessment are listed in Table 4a: Barley varieties under malting evaluation.

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 at graintrade.org.au

Malting barley

In Queensland, preferred malting barley varieties (as determined by market demand) varies between the individual markets – either the domestic Australian brewing markets or the export brewing markets.

Domestic market demand is currently rated as outclassed for Commander$^{\Phi}$ and high for Maximus CL$^{\Phi}$ and RGT Planet$^{\Phi}$, while export market demand is currently rated as outclassed for Commander$^{\Phi}$ and high for Maximus CL$^{\Phi}$ and RGT Planet$^{\Phi}$.

Barley varieties on the preferred list are determined by marketing companies that are members of Grains Australia and reflect those malting varieties which, in their opinion, are sought by purchasers of Australian malting barley. A new variety accreditation does not mean the variety will be a preferred variety until market demand is established.

(Source: grainsaustralia.com.au/master-lists/malting-variety-list)

Malt is made from premium quality barley and provides the characteristic flavours, aromas and colours that beer drinkers are familiar with and also contributes to the whole brewing process (along with water, hops and yeast).

Table 4a, last updated May 2024 (grainsaustralia.com.au), lists the varieties under malt barley evaluation by the Malting and Brewing Industry Barley Technical Committee (MBIBTC) in conjunction with PBA and Grains Australia.

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. Variety ratings for powdery mildew appear in Table 4.

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 MS 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 S to VS should be sprayed once the disease is detected. In favourable seasons, fungicide application may be warranted in varieties with levels of resistance less than MR. Variety ratings for leaf rust appear in Table 4.

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 elongated 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. Variety ratings for net blotch appear in Table 4.

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$^{\Phi}$ 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. Variety ratings for black point appear in Table 4.

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. Variety ratings for crown rot appear in Table 4.

Root lesion nematode

Root lesion nematode (RLN) is widespread in the northern grain region and can significantly reduce grain yields. RLN is also hosted by many non-cereal crops so the absence of a winter cereal crop in recent seasons does not mean 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 or levels of RLN are on your farm. If barley is to be sown in nematode-infested soil, the tolerant varieties (listed as T, TMT or MT and highlighted in green) 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* (see 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.

BARLEY VARIETY DISEASE RATINGS

Table 4 contains varietal ratings for the predominant diseases of barley in Queensland. Varieties of most relevance to Queensland growers are listed in alphabetical order and disease ratings are colour-coded to match resistance and susceptibility ratings.

Table 4: Barley disease and agronomy ratings.

Variety	Black point resistance	Crown rot resistance	Leaf rust resistance	Net blotch		Powdery mildew resistance	*P. neglectus*		*P. thornei*	
				Net form resistance**	Spot form resistance		Resistance[m]	Tolerance*	Resistance[m]	Tolerance*
Beast[Φ]	MSS	S	S	MRMS	MS	S	MRMS	MI	MRMS	TMT
Commander[Φ]	MSS	S	S-SVS	MS-S	MSS	MSS	MRMS	MTMI	MRMS	MT
Commodus[Φ] CL	MS	S	S	MRMS	MRMS	MSS	MRMS	TMT	MRMS	MTMI
Compass[Φ]	MSS	MSS	SVS	MS	MS	S	MRMS	TMT	MR	TMT
Fathom[Φ]	MSS	SVS	MS	MS	MRMS	MRMS	MRMS	T	MR	MT
Laperouse[Φ]	MSS	S	SVS	MRMS	MR	MSS	MRMS	MI	MR	MTMI
La Trobe[Φ]	MSS	S	MS-S	MS	S	MSS	MRMS	MT	MRMS	MT
Leabrook[Φ]	MS	S	SVS	MS	MRMS	S	MRMS	MT	RMR	TMT
LG Alestar[Φ]	MRMS	S	MS	MSS	S	MR	MR	I	MR	MTMI
Maximus[Φ] CL	MSS	S	S	MRMS	MRMS	S	MRMS	MT	MRMS	MI
Minotaur[Φ]	MRMS	MSS	SVS	MRMS	S	S	MRMS	MI	MRMS	TMT
Neo[Φ] CL	MRMS (P)	–	S (P)	MRMS-S (P)	RMR (P)	RMR (P)	RMR (P)	–	MR (P)	–
RGT Planet[Φ]	MRMS	MSS	MRMS	MRMS-S	S	RMR	MRMS	MT	MR	MI
Rosalind[Φ]	MS	S	MRMS	MRMS	MS	MSS	MRMS	MT	MRMS	TMT
Spartacus CL[Φ]	MSS	S	MSS	MS	S	MSS	MRMS	MII	MRMS	MI
Spinnaker[Φ]	MRMS	S	MSS	S	MS	RMR	MR	–	MS	MTMI
Titan AX[Φ]	MSS	S	S	MRMS	MRMS	MSS	MR	–	MR	TMT
Yeti[Φ]	MSS	S	S	MS	MRMS	S	MR	TMT	MR	MT
Zena[Φ] CL	MRMS (P)	S	MSS	MS	S	RMR	MRMS	–	MR	MT

R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, MSS = moderately susceptible to susceptible, S = susceptible, SVS = susceptible to very susceptible, VS = very susceptible T = tolerant, TMT = tolerant to moderately tolerant, MT = moderately tolerant, MTMI = moderately tolerant to moderately intolerant, MI = moderately intolerant, MII = moderately intolerant to intolerant, I = intolerant, IVI = intolerant to very intolerant, VI = very intolerant.
(P) = provisional rating. – = rating not available.

* 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.

[m] 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.

** Ratings separated by '-' denotes a range in reaction.

DISEASE RATING COLOUR RANGE

VS	SVS	S	MSS	MS	MRMS	MR	RMR	R
VI	IVI	I	MII	MI	MTMI	MT	TMT	T

Table 4a: Barley varieties under malting evaluation details.

This table, last updated May 2024 (grainsaustralia.com.au) lists the varieties currently under malt barley evaluation by the Malting and Brewing Industry Barley Technical Committee (MBIBTC) in conjunction with PBA and Grains Australia, including new varieties accepted into the evaluation program. Accreditation is granted providing the variety satisfies the selection criteria set by MBIBTC and Grains Australia.

Variety	Stage 0	Stage 1	Stage 2	Target decision/ date β	Comment
Laperouse(Φ)	2019 (accepted)	2020-21 (passed)	2021–24 (in progress)	2025	Insufficient grain was available to complete full evaluation in 2023 and stage 2 evaluation will be continued in 2024
Yeti(Φ)	2020 (accepted)	2020–22 (passed)	2023-24 (in progress)	2024	Grain available to continue stage 2 evaluation in 2024
Beast(Φ)	2020 (accepted)	2021 (passed)	2023-24 (in progress)	2025	Grain available to continue stage 2 evaluation in 2024
Commodus(Φ) CL	2021 (accepted)	2021 (passed)	2022-23 (passed)	2025	Variety granted malting accreditation
Minotaur(Φ)	2021 (accepted)	2021-22 (passed)	2023 (passed)	2024	Variety granted malting accreditation
Zena(Φ) CL	2022 (accepted)	2022 (passed)	2023 (passed)	2024	Variety granted malting accreditation
Titan AX(Φ)	2023 (accepted)	2023 (passed)	2024 (in progress)	2025	Grain available to commence stage 2 evaluation in 2024
Neo(Φ) CL	2023 (accepted)	2023 (passed)	2024 (in progress)	2025	Commence stage 2 evaluation in 2024
Spinnaker(Φ)	2024 (accepted)	2024 (in progress)	2025	2026	Grain available to commencestage 1 evaluation in 2024
Cyclops(Φ)	2021 (accepted)	2021 (passed)	2023-24 (in progress)	2025	Grain available to continue stage 2 evaluation in 2024

β Decision date refers to an accreditation decision.

Table 5: Barley varietal details.

Variety	Varietal information						Comments (as supplied by breeding companies)
	End point royalty (EPR)	Grower-to-grower sales permitted	Variety owner ◊	Year of release	Royalty manager, EPR collector	EPR rate $/tonne (GST exclusive)	
Beast[Φ]	✓	Yes	AGT	2020	AGT	$4.00	A very high-yielding feed barley line with particular adaptation to low to moderate-rainfall environments. Beast[Φ] demonstrates excellent grain size (low screenings) and high retention rates. A Compass[Φ] plant type with similar adaptation, early vigour and high biomass production. Beast[Φ] is being evaluated for potential malt accreditation by Grains Australia.
Commander[Φ]	✓	No	University of Adelaide	2008	Seednet	$3.80	Malt variety suited to domestic and export markets. Can lodge if sown too early and in high-yielding situations. Rated susceptible to net form net blotch.
Commodus[Φ] CL	✓	No	InterGrain	2021	InterGrain	$4.25	High-yielding quick maturity imidazoline (IMI) tolerant variety suited to lighter soils and medium to low-rainfall environments. Agronomically similar to Compass[Φ]. Similar lodging tolerance and head loss risk to Compass[Φ] that may require in-season agronomic management. Excellent grain size with high retention levels and low screening. Moderate hectolitre weight.
Compass[Φ]	✓	No	University of Adelaide	2015	Seednet	$3.80	Malt-accredited variety suited to domestic and export markets. Earlier flowering compared with Commander[Φ], high yielding with large grain size, low screenings and high retention. Can lodge if sown too early and in high-yielding situations. Rated VS to leaf rust.
Fathom[Φ]	✓	No	University of Adelaide	2014	Seednet	$2.00	A variety with large grain size and long coleoptile length. Good resistance to spot form net blotch. Rated susceptible to net form net blotch.
Laperouse[Φ]	✓	Contact licensee	SECOBRA Research	2020	Seednet	$3.80	Laperouse[Φ] is a mid-season variety. It has undergone preliminary trial work that indicates its phenology could be better suited to early sowing times than other spring varieties. It has good yield, grain size with lower screenings, disease resistance package, particularly improvements in net blotches, and very good straw strength. Laperouse[Φ] is being evaluated for potential malt accreditation by Grains Australia.
La Trobe[Φ]	✓	Yes	InterGrain	2013	Syngenta	$4.00	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[Φ]	✓	No	University of Adelaide	2019	Seednet	$3.80	Leabrook[Φ] is a mid-early maturing, medium-tall variety. A very high-yielding variety with similar large grain size and lower screenings compared with Compass[Φ]. Good resistance and tolerance to root lesion nematode.
LG Alestar[Φ]	✓	No	Limagrain	2014	Elders	$3.00	LG Alestar[Φ] is a domestic malt profile barley with medium maturity, five days earlier than Gairdner. Maturity is very similar to Commander[Φ] and Compass[Φ]. LG Alestar[Φ] has high test weight, low screenings and a bright grain colour.
Maximus[Φ] CL	✓	No	InterGrain	2020	InterGrain	$4.25	A mid-quick maturity imidazolinone (IMI) tolerant high-yielding barley. Maximus[Φ] CL is similar to Spartacus CL[Φ] with an erect plant type, strong lodging tolerance and low-medium head loss risk. Maximus[Φ] CL has a short coleoptile and it is recommended that sowing depth be adjusted accordingly. The variety also has a good physical grain package, slightly improved over Spartacus CL[Φ].
Minotaur[Φ]	✓	Yes	AGT	2021	AGT	$4.00	Minotaur[Φ] is a lower risk alternative to RGT Planet[Φ] with a similar top-end yield potential but more suited to medium-high rainfall environments. Minotaur[Φ] has a broader adaptation pattern than RGT Planet[Φ], delivering more stable yields across a wider range of environmental conditions. Mid-slow maturity, with improved test weight compared with RGT Planet[Φ]. Minotaur[Φ] is being evaluated for potential malt accreditation by Grains Australia.
Neo[Φ] CL	✓	No	InterGrain	2023	InterGrain	$4.25	A mid-maturing, high-yielding Clearfield® barley, suited to medium to high-rainfall environments, slightly quicker than RGT Planet[Φ]. Medium plant height and good tolerance to lodging, good grain retention and tolerance to head loss. Improved grain plumpness compared with RGT Planet[Φ] and Zena[Φ] CL. Neo[Φ] CL has been accepted into the Grains Australia malt accreditation program. Seed is available for planting in 2024.

Continued on next page

Table 5: Barley varietal details (continued).

Variety	Varietal information						Comments (as supplied by breeding companies)
	End point royalty (EPR)	Grower-to-grower sales permitted	Variety owner ◊	Year of release	Royalty manager, EPR collector	EPR rate $/tonne (GST exclusive)	
RGT Planet[Φ]	✓	No	RAGT	2017	Seed Force Semences	$4.00	Malt-accredited variety. Yielded well in the NVT series. Susceptible to spot and net form of net blotch.
Rosalind[Φ]	✓	Yes	InterGrain	2015	InterGrain	$3.50	Avoid deep sowing due to shorter coleoptile length. Rated VS to powdery mildew.
Spinnaker[Φ]	✓	Contact licensee	SECOBRA Research	2023	Seednet	$4.00	Spinnaker[Φ] can be classified as mid to early maturing and is targeted for sowing in the medium-rainfall areas. It has a potential marketplace fit across most agricultural regions. It has improved physical grain quality, particularly test weight, over RGT Planet[Φ]. Its early growth habit can be described as prostrate, and its mature plant height is between Laperouse[Φ] and RGT Planet[Φ]. It is a low risk for both lodging and head loss. Spinnaker[Φ] has excellent resistance to powdery mildew and intermediate resistance to net form of net blotch. It has susceptible ratings to CCN, spot form of net blotch and leaf scald. Spinnaker[Φ] is being evaluated for malt accreditation by Grains Australia.
Shepherd[Φ]	✓	No	QDAF	2008	Seednet	$2.30	A tall variety with long coleoptile. Susceptible to powdery mildew and SVS to both forms of net blotch.
Spartacus CL[Φ]	✓	No	InterGrain	2016	InterGrain	$4.25	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.
Titan AX[Φ]	✓	Yes	AGT	2022	AGT	$4.55	Titan AX[Φ] is the first CoAXium® barley variety to be released. As such it is tolerant to Sipcam's Aggressor AX® (Group 1) herbicide. Titan AX[Φ] is a Compass[Φ] type with similar agronomic attributes, grain package, coleoptile length and early vigour. Titan AX[Φ] is being evaluated for potential malt accreditation by Grains Australia.
Yeti[Φ]	✓	Yes	AGT	2021	AGT	$4.00	Yeti[Φ] has established itself as the highest yielding barley variety in the northern region. While it has a Compass[Φ] plant type and similar growth habit and early vigour, Yeti[Φ] is shorter in stature and demonstrates better standability. Yeti[Φ] also has large grain size and high retentions. Yeti[Φ] is being evaluated for potential malt accreditation by Grains Australia.
Zena[Φ] CL	✓	No	InterGrain	2022	InterGrain	$4.25	Zena[Φ] CL is an imidazolinone-tolerant barley released in 2022 by InterGrain (tested as IGB20125T). It is closely related to RGT Planet[Φ], hence is similar agronomically, with the addition of the herbicide tolerance. Suited to the medium to high-rainfall environments. The variety has good levels of resistance to powdery mildew and leaf rust. Net form and spot form net blotch will need to be monitored. Zena[Φ] CL has received malt accreditation from Grains Australia. Seed is available through InterGrain Seedclub Members.

BARLEY VARIETY YIELD PERFORMANCE – QUEENSLAND

Tables 6a, 6b and 6c contain barley grain yield results for selected varieties within each NVT region in Queensland for the past five seasons. Data is presented (as a percentage) for each variety relative to the mean trial yield for the location within each year. Varieties are listed in descending order of average yield over the period.

Table 6a: NVT Central Queensland – barley 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	3.48	2.85	3.36	4.15	4.89
Variety	No. trials	2	1	1	2	1
Titan AX(ϕ)	3	–	–	–	98	111
Combat(ϕ)	4	–	–	120	102	106
Leabrook(ϕ)	7	120	107	116	102	102
Neo(ϕ) CL	1	–	-	–	–	107
Yeti(ϕ)	7	118	110	113	103	99
RGT Planet(ϕ)	7	108	109	111	109	104
Beast(ϕ)	7	119	103	115	98	96
Spinnaker(ϕ)	3	–	–	–	112	99
Commodus(ϕ) CL	5	–	98	108	96	99
Compass(ϕ)	7	117	96	110	96	95
Fandaga(ϕ)	1	–	–	–	–	103
Zena(ϕ) CL	4	–	–	101	109	99
Rosalind(ϕ)	7	103	95	102	107	92
Laperouse(ϕ)	7	101	101	98	101	98
Commander(ϕ)	7	102	95	99	96	104
Fathom(ϕ)	6	95	98	–	87	96
Minotaur(ϕ)	4	–	–	88	94	98
Maximus(ϕ) CL	7	86	89	83	101	88
Shepherd(ϕ)	2	75	–	–	–	–
La Trobe(ϕ)	7	91	85	90	94	83
Spartacus CL(ϕ)	7	84	82	83	96	81

– denotes no data available.

Legend: Annual variety yield performance

Lowest Highest

Table 6b: NVT South-East Queensland – barley 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	1.97	4.2	0.00	0.00	3.5
	No. trials	2	2	0	0	2
Yeti(b)	6	118	112			100
Maximus(b) CL	6	109	111			103
Laperouse(b)	6	109	109			105
Titan AX(b)	2	–	–			103
Combat(b)	2	–	–			100
Fathom(b)	6	125	99			98
Neo(b) CL	2	–	–			105
Beast(b)	6	116	106			90
Minotaur(b)	2	–	–			104
Compass(b)	6	114	105			91
Leabrook(b)	6	106	104	No trial	No trial	96
Spartacus CL(b)	6	111	106			89
Spinnaker(b)	2	–	–			102
Commodus(b) CL	4	–	102			94
Rosalind(b)	6	96	107			93
La Trobe(b)	6	113	103			86
Commander(b)	6	95	96			102
RGT Planet(b)	6	87	100			99
Zena(b) CL	2	–	–			99
Fandaga(b)	1	–	–			96
Shepherd(b)	2	87	–			–

– denotes no data available.

Table 6c: NVT South-West Queensland – barley 2019–23.

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

Variety	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	2.27	3.48	3.83	4.15	2.88
	No. trials	1	2	2	2	2
Spinnaker(b)	4	–	–	–	122	100
Yeti(b)	9	116	110	108	98	111
Neo(b) CL	2	–	–	–	–	104
Combat(b)	6	–	–	107	98	109
RGT Planet(b)	9	101	101	103	113	98
Laperouse(b)	9	104	100	107	102	106
Maximus(b) CL	9	105	94	108	105	103
Minotaur(b)	6	–	–	107	99	103
Zena(b) CL	6	–	–	102	115	95
Rosalind(b)	9	106	99	102	107	98
Titan AX(b)	4	–	–	–	89	110
Leabrook(b)	9	108	108	100	95	104
Beast(b)	9	115	111	99	87	105
Compass(b)	9	109	108	95	84	104
Spartacus CL(b)	9	109	97	99	93	97
Commodus(b) CL	8	–	107	94	86	103
Fathom(b)	9	109	106	98	79	105
La Trobe(b)	9	111	101	95	88	97
Commander(b)	9	90	98	93	93	98
Shepherd(b)	1	89	–	–	–	–

– denotes no data available.

CHICKPEA

KEY POINTS

Variety selection

- Choose varieties that best suit your environment considering sowing time, paddock history, impact of disease and variety maturity

Seed source

- Only sow seed from a reputable source

Paddock history

- Aim for a break of at least three years between chickpea crops

INTRODUCTION

There are two groups of chickpeas, 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 (desi type) production is in northern Australia, and nearly all the grain is exported. The main market for desi chickpeas is India and 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 chickpeas. Temperature is generally more important than day length. Flowering and pod set in chickpeas requires an average daily temperature of 15°C; 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.

DISEASE CHARACTERISTICS

Leaf diseases

Fungal disease control is geared around protection rather than curing. The first fungicide spray must be applied as early as necessary to minimise the spread of the disease. Additional sprays are required if the weather conditions favour the disease. Timing of fungicide sprays is critical. As Ascochyta and Botrytis can spread rapidly, do not delay spraying. A spray in advance of a rainy period is most desirable.

Ascochyta blight

Chickpeas can be infected by Ascochyta blight 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. Avoid planting chickpeas in the same paddock for at least three years or next to last year's chickpea crop. The disease can develop over a wide range of temperatures (5 to 30°C) and needs three to 10 hours of leaf wetness to infect. Small showers can be just as effective in spreading the disease as larger rainfall events. The disease develops quickest when temperatures are 15 to 25°C and humidity is high. The longer the leaf is wet and subject to higher humidity, the more widespread and severe the infection.

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 BGM in spring as temperatures and humidity rise. Apply a fungicide containing either carbendazim or mancozeb once BGM 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. Variety ratings for Phytophthora root rot appear in Table 7.

Root lesion nematode

Root lesion nematode (RLN) is widespread in the northern grain region and can significantly reduce grain yields. RLN is also hosted by many non-cereal crops so the absence of a winter cereal crop in recent seasons does not mean 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 or levels of RLN are on your farm.

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 to the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*. Refer to Table 7 for variety ratings.

CHICKPEA: INTEGRATED DISEASE MANAGEMENT

Summary of strategies

- **Variety selection is critical.** Choose varieties that best address your paddock disease status, especially regarding Ascochyta.
- **Paddock isolation** from chickpea stubble is a high priority (greater than 500 metres).
- **Paddock history.** Aim for a break of at least three years between chickpea crops.
- **Seed source.** Use seed from a paddock where disease was not detected and check germination and vigour.
- **Fungicide seed dressing** is effective and should be used, especially in high disease risk situations.
- **Sowing date.** Do not sow too early, even with an Ascochyta-resistant variety.
- **Sowing depth.** If using an Ascochyta-susceptible variety, sow deeper than normal.
- **Sowing rate.** Aim for 35 to 50 plants per square metre, depending on the situation and crop type.
- **Foliar fungicides.** Ascochyta-resistant varieties still require foliar fungicide at podding. Success is dependent on monitoring, timeliness of spraying and correct fungicide choice. Early detection and correct disease identification are essential.
- **Manage aphids and virus.** Ground surface cover, healthy plants and crop canopy are important. Control aphids at their source (host) crop.
- **Harvest management.** Harvest early to minimise disease infection of seed. Crop desiccation enables even earlier harvest.

Desiccation

Desiccation can occur in chickpea crops when 80 to 85 per cent of pods have turned from green to yellow-brown and 90 per cent of seed has begun to lighten in colour (indicating physiological maturity).

For more information consult pulseaus.com.au

CHICKPEA VARIETY DISEASE RATINGS – QUEENSLAND

Table 7 contains varietal ratings for the predominant diseases of chickpea in Queensland. Varieties of most relevance to Queensland growers are listed in alphabetical order and disease ratings are colour-coded to match resistance and susceptibility ratings.

Table 7: Chickpea disease ratings.

Variety	Ascochyta blight (Pathogen Group 2 – North) resistance	Phytophthora root rot resistance	*Pratylenchus neglectus*		*Pratylenchus thornei*	
			Resistance[m]	Tolerance*	Resistance[m]	Tolerance*
CBA Captain[Φ]	MS	S	MR	MT	MS	MT
Kyabra[Φ]	VS	VS	MRMS	MT	S	MT
PBA Boundary[Φ]	S	VS	RMR	MI	MRMS	MT
PBA Drummond[Φ]	VS	VS	MR	TMT	MRMS	MT
PBA HatTrick[Φ]	S	S	MRMS	MT	MRMS	MTMI
PBA Pistol[Φ]	VS	–	RMR	T	MRMS	MII
PBA Seamer[Φ]	MS	S	MRMS	MI	MRMS	MTMI

R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, MSS = moderately susceptible to susceptible, S = susceptible, SVS = susceptible to very susceptible, VS = very susceptible, T = tolerant, TMT = tolerant to moderately tolerant, MT = moderately tolerant, MTMI = moderately tolerant to moderately intolerant, MI = moderately intolerant, MII = moderately intolerant to intolerant, I = intolerant, IVI = intolerant to very intolerant, VI = very intolerant.
– = rating not available.

* 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.

[m] 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.

DISEASE RATING COLOUR RANGE

VS	SVS	S	MSS	MS	MRMS	MR	RMR	R
VI	IVI	I	MII	MI	MTMI	MT	TMT	T

Table 8: Chickpea varietal details.

Variety	Varietal information						Comments (as supplied by breeding companies)
	End point royalty (EPR)	Grower-to-grower sales permitted	Variety owner ◊	Royalty manager, EPR collector	EPR rate $/tonne (GST exclusive)	Year of release	
CBA Captain[Φ]	✓	No	NSW DPIRD/ GRDC	NSW DPIRD	$4.50	2020	An erect, early to mid maturity, medium height variety with broad adaptation. Yellow-brown seed coat and angular seed shape. Good pod height and low lodging.
Kyabra[Φ]			QDAF/ NSW DPIRD	Heritage Seeds	Nil	2005	Tall, erect, high-yielding variety with large seed size. Susceptible to Ascochyta blight, Phytophthora root rot and Botrytis grey mould. Lodging resistant, bred for southern Queensland but performs well in central Queensland as well. Seed royalty applies. No EPR.
PBA Boundary[Φ]	✓	No	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[Φ]	✓	No	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[Φ]/PBA Pistol[Φ] cross.
PBA HatTrick[Φ]	✓	No	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[Φ]	✓	No	PBA	Seednet	$4.00	2010	PBA Pistol[Φ] was released as a Moti replacement. It is taller, more resistant to lodging, offering improved harvestability, high yielding with large seed size. PBA Pistol[Φ] must not be grown south of Theodore/Rolleston due to its susceptibility to Ascochyta blight. Evaluated and released in central Queensland and susceptible to Ascochyta blight, Phytophthora root rot and Botrytis grey mould. Lodging resistant. A cross involving Moti.
PBA Seamer[Φ]	✓	No	PBA	Seednet	$4.00	2016	Most resistant variety to Ascochyta blight, Phytophthora root rot and Botrytis grey mould. Semi-erect plant type with high yield. Lodging resistant with improved seed quality. A cross involving PBA HatTrick[Φ], bred for southern Queensland conditions.

◊ DAWA – Department of Agriculture, Western Australia, GRDC – Grains Research and Development Corporation, NSW DPIRD – New South Wales Department of Primary Industries and Regional Development, CBA – Chickpea Breeding Australia, PBA – Pulse Breeding Australia, QDAF – Queensland Department of Agriculture and Fisheries.

[Φ] Varieties displaying this symbol are protected under the *Plant Breeder's Rights Act 1994*. Unauthorised sale of seed of these varieties is an infringement under this Act.

CHICKPEA VARIETY YIELD PERFORMANCE – QUEENSLAND

Tables 9a, 9b and 9c contain chickpea grain yield results for selected varieties within each NVT region in Queensland for the past five seasons. Data is presented (as a percentage) for each variety relative to the mean trial yield for the location within each year. Varieties are listed in descending order of average yield over the period.

Table 9a: NVT Central Queensland – chickpea desi 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	1.93	2.45	2.33	3.68	2.81
Variety	No. trials	2	3	3	2	1
PBA Drummond[Ф]	11	106	104	106	109	101
PBA Pistol[Ф]	11	104	101	102	108	100
PBA Seamer[Ф]	11	106	102	101	103	100
CBA Captain[Ф]	10	98	99	99	100	–
Kyabra[Ф]	10	99	99	96	89	–
PBA HatTrick[Ф]	11	94	96	93	89	96

Table 9b: NVT South-East Queensland – chickpea desi 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	0.00	1.39	0.00	0.00	2.44
Variety	No. trials	0	1	0	0	1
PBA Drummond[Ф]	2	No trial	105	No trial	No trial	113
Kyabra[Ф]	2		105			101
CBA Captain[Ф]	2		97			96
PBA Boundary[Ф]	2		99			94
PBA Seamer[Ф]	2		97			92
PBA HatTrick[Ф]	2		98			90

Table 9c: NVT South-West Queensland – chickpea desi 2019–23.

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

	Year	2019	2020	2021	2022	2023
	Mean yield t/ha	0.56	1.28	1.88	2.90	1.35
Variety	No. trials	2	1	2	3	2
PBA Drummond[Ф]	10	96	109	115	98	109
CBA Captain[Ф]	10	107	96	96	103	96
PBA Boundary[Ф]	10	95	101	84	103	97
Kyabra[Ф]	9	74	104	98	92	106
PBA Seamer[Ф]	10	88	85	105	94	92
PBA HatTrick[Ф]	10	85	93	88	99	94

Legend: Annual variety yield performance

Lowest Highest

NOTES

NOTES

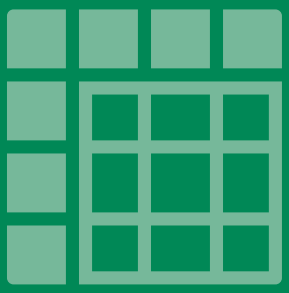
NVT tools

GRDC NATIONAL VARIETY TRIALS™

Harvest Reports & Crop Sowing Guides

Trial results

Long Term Yield Reporter



NVT Disease Ratings

Subscribe

NVT Trial Notification Service

Get an email the moment results for your local NVT trials are available.

NVT publications

Get an email as soon as your selected NVT Harvest Report is published.

nvt.grdc.com.au

@GRDC_NVT