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**SOUTH AUSTRALIA**  
OCTOBER 2023

# 2024 SOUTH AUSTRALIAN CROP SOWING GUIDE

MARCH 2024 UPDATE



**ARE YOU GROWING THE BEST  
VARIETY FOR YOUR SITUATION?**

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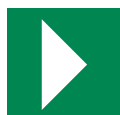
**COVER:** Field peas at Lameroo, SA

**PHOTO:** Marni Griffiths, SARDI

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[www.grdc.com.au/NVT-south-australian-crop-sowing-guide](http://www.grdc.com.au/NVT-south-australian-crop-sowing-guide)  
Remember to update it each October.

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## THE SOUTH AUSTRALIAN CROP SOWING GUIDE

The *South Australian Crop Sowing Guide* outlines information on current varieties of the major winter crops suitable to be grown in South Australia to assist growers in making decisions on variety selection for the upcoming season.

This edition of the *SA Crop Sowing Guide* has been compiled by officers within the South Australian Research and Development Institute (SARDI) and collaborating researchers.

It is proudly sponsored by the South Australian Grain Industry Trust (SAGIT) in association with the Department of Primary Industries and Regions and the Grains Research and Development Corporation (GRDC).

The SARDI Crop Sciences Division officers acknowledge the sponsorship of this guide by SAGIT and GRDC, the contributions of agronomy and vetch breeding research staff in SA, as well as collaborators around Australia in producing results published in this edition.

Editor: Melissa McCallum, SARDI, Crop Sciences



# SA grain growers funding research solutions

**The South Australian Grain Industry Trust, on average, invests \$2 million a year in supporting research crucial to advancing South Australia's \$4.6 billion grain industry. These projects deliver real improvements in countless areas of grain growing, farming systems, soil management, harvesting, storage, processing and marketing, and providing technical information to growers.**

## In 2023, SAGIT is investing in these new projects:

- Evaluation of agronomic practices for SHO safflower production, Agrilink Agricultural Consultants
- Are crop yields limited by iron deficiency on calcareous soils of the Yorke Peninsula, Agricultural Consulting and Research Pty Ltd
- Eyre Peninsula internship in applied grains research 2024, AIR EP
- Publication of the 2024 Farm Gross Margin Guide for SA, Ag Excellence Alliance
- Powdery mildew control in wheat - extension project, AgXtra
- Genetic and fungicidal control of septoria tritici blotch and stripe rust in wheat, AgXtra
- Soil salinity thresholds for chickpeas, faba beans and lentils, Agronomy Solutions
- Regional internship in applied grains research, Hart Field Site Group
- Improving efficacy of glufosinate for annual ryegrass control in canola, Hart Field Site Group
- MacKillop Farm Management Group Annual Trial Results Book 2023-2025, McKillop Farm Management Group
- Frost Research and Learning Centre, Mid North High Rainfall Zone
- Enhancing farmer knowledge of soil function to improve management outcomes, Mallee Sustainable Farming
- SA Crop Variety Sowing Guide publication, SARDI
- Profitable vetch - agronomy, breeding and market development, SARDI
- Using grain protein maps to optimise nitrogen fertiliser to paddock scale nitrogen variability, Trengove Consulting
- Processing solutions for a novel high-protein food ingredient from vetch, University of Adelaide / SARDI
- Pairing pulses for improved yield, protein, agronomy, and profit, University of Adelaide / SARDI
- Optimising crop establishment under dry and marginal soil moisture, University of Adelaide
- Colour preservation in faba beans to enhance quality and value, University of Adelaide / SARDI
- Preparing for a pulse protein market - pulse options for expansion areas, University of Adelaide / SARDI
- Minimising market access risks in herbicide tolerant pulses, University of Adelaide / SARDI
- Higher barley yield through improved microbial interactions, University of Adelaide
- Developing new breeding material to stabilise barley yields, University of Adelaide
- Improving industry response to white grain disorder and fusarium head blight outbreaks while protecting export markets, University of Adelaide / SARDI
- Manipulating spike architecture to improve wheat yield, University of Adelaide / SARDI
- Screening for genetic components of head-retention in barley, University of Adelaide
- Delivery of beneficial organisms through seed coating to improve grain yield, University of Adelaide
- Pesticide effects on soil microbial functions in contrasting SA soils, University of SA

## SAGIT is also supporting these ongoing projects:

- Developing a new high value noodle market for South Australian growers, Australian Export Grains Innovation Centre
- Managing crown rot on upper EP – a joint learning experience, AIR EP
- Eyre Peninsula internship in applied grains research 2023, AIR EP
- Lead agriculture teacher for South Australia – growing curriculum and learning, AgCommunicators
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- Sulphur dynamics and budgets in two contrasting soil profiles, Agronomy Solutions
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- Improved resilience of soil function through crop management, CSIRO
- Lentil varieties for low rainfall and sandy soil environments, Global Grain Genetics
- Variety selection and weed management options for genetically modified canola, Hart Field-Site Group
- Reducing wheat yield loss from Barley Yellow Dwarf Virus in the HRZ, MacKillop Farm Management Group
- Improving management of Group A resistant barley grass in current farming systems, SARDI / University of Adelaide
- Measuring and managing yield loss caused by Phoma root in lentil and faba bean, SARDI / University of Adelaide
- Extension support for SA Drought Hub Internship Program, SARDI/University of Adelaide
- Ground truthing wheat and barley flowering time in the Mid North and Mallee using the Mesonet, SARDI
- Eyre Peninsula Farming Systems Summary 2021-2023, SARDI
- Improved management of variable phosphorus requirement and strategies for highly responsive soils, Trengove Consulting
- Harvest and use of medic pods on-farm, University of Adelaide
- Agronomy strategies for frost management in pulse crops, University of Adelaide / SARDI
- Realising cereal yield potential using crop physiology and drone technology, University of Adelaide / SARDI
- Revegetation for enhanced biocontrol of pest conical snails, University of Adelaide
- Enhancing grain production and quality traits for bread wheat, University of Adelaide
- Canola profitability as a break crop in the Upper North? Upper North Farming Systems
- Developing a DGT methodology to assess bioavailability of herbicide residues, University of South Australia



# INTRODUCTION

## NATIONAL VARIETY TRIALS (NVT)

The variety trial results presented in this book are sourced from the NVT program, SAGIT and AgriFutures Oat Agronomy projects and the National Vetch Breeding Program.

NVT provide independent information on varieties for growers. The aim of each NVT is to document a ranking of new and widely adopted varieties according to grain yield and to provide grain quality information relevant to delivery standards. NVT are also used by pathologists to determine disease resistance ratings used in the sowing guide.

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

It is acknowledged that an ongoing project of this type would not be possible without the cooperation of growers prepared to contribute sites, and who often assist with the management of trials on their property.

## PLANT BREEDER'S RIGHTS (PBR)

Varieties subject to Plant Breeder's Rights at the time of printing are annotated with the symbol (b). It should be noted that unauthorised commercial propagation or any sale, conditioning, export, import or stocking of propagation material of these varieties is an infringement under the *Plant Breeder's Rights Act 1994*. Intentional infringement of a PBR attracts a penalty of \$85,000 for individuals. The penalty for corporations is up to five times greater.

## END POINT ROYALTIES (EPRS)

EPRs payable for 2023-24 are quoted from [varietycentral.com.au](http://varietycentral.com.au) and are quoted \$/tonne ex-GST. Compliance with EPR systems is vital to ensure the future of the Australian grains industry through the funding of new varieties and long-term productivity gains. EPRs for 2024-25 harvest will become available early in 2024 on the Variety Central website.

## INTERPRETING LONG-TERM YIELD RESULTS

The long-term yield results presented in the crop sowing guide is an output of NVT long-term multi-environment trial (MET) analysis. NVT run trials in all cropping regions of South Australia (for example, Lower Eyre Peninsula, Mid North, Murray Mallee) and other states across Australia, and use a five-year rolling results set.

A mixed-model approach is used in the MET analysis using expertise from the GRDC-supported Statistics for the Australia Grains Industry (SAGI) program. This approach generates long-term MET results for varieties at an individual trial level.

The output used in this sowing guide presents the MET results on a region-by-year basis across the five years used in the MET results set. The analysis, and subsequent reporting systems, have allowed NVT to bring together very large results sets and make more refined, relevant and robust results about the relative performance of each variety across different locations and seasons. Readers can now use these more detailed results to better understand a variety's performance over several years – rather than just a single averaged value.

Readers can further interrogate the results online to better understand the performance of varieties under a range of situations using the NVT Long Term Yield Reporter tool. The long-term yield results are best viewed at the individual trial/environment level; however, these detailed results sets are too large for printed sowing guides or quick-reference summaries such as the *South Australian Crop Sowing Guide*.

Users can choose to view results in year or yield-based groupings and can filter results to region or location selections to suit their own needs. In this sowing guide, we present results in year groups and only for varieties present in trials.

The NVT Long Term Yield Reporter tool is designed to run on all web-browsing platforms on computers, tablets and phones, and is available online at [app.nvt.grdc.com.au/lty/table](http://app.nvt.grdc.com.au/lty/table).

## LEGEND: MEAN VARIETY YIELD PERFORMANCE



LOWEST

HIGHEST

Long-term mean yield illustrated by colour gradient from lowest (red) to highest (green).

## DISEASE RATING COLOUR RANGE

|    |     |   |     |    |      |    |     |   |
|----|-----|---|-----|----|------|----|-----|---|
| VS | SVS | S | MSS | MS | MRMS | MR | RMR | R |
|----|-----|---|-----|----|------|----|-----|---|

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.



# WHEAT

Melissa McCallum and Tara Garrard, SARDI

Since publication of the 2023 sowing guide, Genie<sup>®</sup>, IGW6783, LRPB Matador<sup>®</sup>, LRPB Major<sup>®</sup>, Mowhawk<sup>®</sup>, Soaker<sup>®</sup>, Stockade<sup>®</sup> and Tomahawk CL Plus<sup>®</sup> have been released. The sowing guide continues to include the introduction of selected winter and feed wheats.

These newly released varieties have not necessarily been included in the NVT release pathway. As such, there is no NVT disease or yield data available. Contact your local seed marketer or breeder for more detail on these varieties. This includes Genie<sup>®</sup>, IGW6783 and Soaker<sup>®</sup>.

A summary of the most important selection criteria, grain yield, quality, maturity classification and disease rating information for each variety is provided in Tables 1 and 3. While the varieties listed are considered likely to provide the best return within each quality grade, growers need to consider their individual farm and paddock situation and make their selection based on all available information for their region.

## USEFUL RESOURCES

More information about the overview of wheat production in Australia can be found on the Australian Export Grains Innovation Centre website: [aegic.org.au/australian-grains/wheat](https://aegic.org.au/australian-grains/wheat)

Information about Australian wheat classification can be found on the Grains Australia website: [grainsaustralia.com.au](https://grainsaustralia.com.au)

Information about the Australian wheat trade and current Grain Trade Australia (GTA) receival standards can be found on the GTA website: [graintrade.org.au](https://graintrade.org.au)

## DOMESTIC FLOUR MILLERS' WHEAT VARIETY PREFERENCES

Most of SA's wheat is exported to the Middle East for flat and pan bread production and, to a lesser extent, noodle production. Domestic flour millers purchase a small proportion of South Australian wheat either from marketers or directly from growers. Domestic millers may have different quality requirements to export markets due to different end products and processes employed. For further information, contact Laucke Flour Mills on 03 5431 5201.

**Table 1: Wheat varieties suitable for planting in South Australia.**

| Variety                          | Maximum grade | Maturity classification | (\$/t) | Release | Breeder       |
|----------------------------------|---------------|-------------------------|--------|---------|---------------|
| <b>Conventional</b>              |               |                         |        |         |               |
| Accroc <sup>db</sup>             | FEED          | S (+W)                  | 4.00   | 2016    | RAGT          |
| Anapurna                         | FEED          | S (+W)                  | 3.20   | 2020    | AGT           |
| Ascot <sup>db</sup>              | APW           | M                       | 3.50   | 2020    | BASF          |
| Ballista <sup>db</sup>           | AH            | Q-M                     | 3.50   | 2020    | AGT           |
| BigRed <sup>db</sup>             | FEED          | M-S (+W)                | 3.65   | 2022    | AGF Seeds     |
| Brumby <sup>db</sup>             | APW           | M                       | 3.50   | 2022    | InterGrain    |
| Calibre <sup>db</sup>            | AH            | Q-M                     | 3.50   | 2021    | AGT           |
| Catapult <sup>db</sup>           | AH            | M                       | 3.25   | 2019    | AGT           |
| Cutlass <sup>db</sup>            | APW           | M                       | 3.00   | 2015    | AGT           |
| Denison <sup>db</sup>            | APW           | S                       | 3.40   | 2020    | AGT           |
| DS Bennett <sup>db</sup>         | ASW           | S (+W)                  | 4.25   | 2018    | S&W Seeds     |
| Genie <sup>db</sup>              | AH            | M                       | 3.50   | 2023    | InterGrain    |
| Illabo <sup>db</sup>             | AH            | M (+W)                  | 3.50   | 2018    | AGT           |
| Kingston <sup>db</sup>           | AH            | Q-M                     | 3.50   | 2022    | BASF          |
| Longsword <sup>db</sup>          | AWW           | Q (+W)                  | 2.75   | 2017    | AGT           |
| LRPB Bale <sup>db</sup>          | APW           | S                       | 3.50   | 2021    | LongReach     |
| LRPB Dual <sup>db</sup>          | AH            | M-S                     | 3.50   | 2021    | LongReach     |
| LRPB Impala <sup>db</sup>        | ASFT          | M                       | 3.50   | 2011    | LongReach     |
| LRPB Major <sup>db</sup>         | AH            | M-S                     | 4.00   | 2023    | LongReach     |
| LRPB Matador <sup>db</sup>       | AH            | Q-M                     | 3.50   | 2023    | LongReach     |
| LRPB Nighthawk <sup>db</sup>     | APW           | VS                      | 4.25   | 2019    | LongReach     |
| LRPB Oryx <sup>db</sup>          | ASFT          | M                       | 3.75   | 2018    | LongReach     |
| Mowhawk <sup>db</sup>            | APW           | Q (+W)                  | 4.00   | 2023    | LongReach     |
| Reilly <sup>db</sup>             | AH            | M                       | 3.50   | 2022    | BASF          |
| RGT Calabro                      | FEED          | S (+W)                  | 4.00   | 2017    | RAGT          |
| RGT Cesario <sup>db</sup>        | FEED          | S (+W)                  | 4.00   | 2021    | RAGT          |
| RockStar <sup>db</sup>           | AH            | M                       | 3.50   | 2019    | InterGrain    |
| Scepter <sup>db</sup>            | AH            | Q-M                     | 3.25   | 2015    | AGT           |
| Stockade <sup>db</sup>           | APW           | VS                      | 3.65   | 2022    | LongReach     |
| Vixen <sup>db</sup>              | AH            | Q                       | 3.50   | 2018    | InterGrain    |
| <b>Herbicide tolerant</b>        |               |                         |        |         |               |
| Chief CL Plus <sup>db</sup>      | APW           | M                       | 4.25   | 2016    | InterGrain    |
| Hammer CL Plus <sup>db</sup>     | AH            | Q-M                     | 4.25   | 2020    | AGT           |
| IGW6783                          | APW           | Q-M                     | TBC    | 2023    | InterGrain    |
| LRPB Anvil CL Plus <sup>db</sup> | AH            | VQ-Q                    | 4.25   | 2022    | LongReach/GIA |
| Razor CL Plus <sup>db</sup>      | ASW           | Q-M                     | 3.30   | 2018    | AGT           |
| Sheriff CL Plus <sup>db</sup>    | APW           | M                       | 4.25   | 2016    | InterGrain    |
| Soaker <sup>db</sup>             | APW           | Q-M                     | 3.50   | 2023    | LongReach/GIA |
| Tomahawk CL Plus <sup>db</sup>   | APW           | Q-M                     | 4.15   | 2023    | AGT           |
| Valiant CL Plus <sup>db</sup>    | AH            | M-S                     | 4.35   | 2021    | InterGrain    |

Maximum Grade: AH = Australian Hard, APW = Australian Premium White, ASFT = Australian Soft, ASW = Australian Stardard White, AWW = Australian White Wheat, FEED = Australian Feed.  
Maturity: VQ = very quick, Q = quick, M = mid, S = slow, VS = very slow, (+W) = winter wheat.



## MATURITY CLASSIFICATIONS

Maturity classifications and terminology have been assigned using the industry guidelines provided by Australian Crop Breeders, available at [australiancropbreeders.com.au](http://australiancropbreeders.com.au). Table 1 shows the maturity description of each variety and associated boundary varieties used as a reference guide in Table 2.

Varieties differ in their maturity speed from germination to full head emergence. It is important to match variety maturity with sowing time as flowering time is critical for optimising potential wheat yield. Growers need to understand the optimal flowering periods for their environment and, therefore, the associated sowing period for the different maturity speeds. The optimal flowering

period is a compromise between frost risk, moisture stress and heat stress events and differs from region to region.

The majority of widely adapted, quick to mid-developing wheat varieties are suited to early to mid-May sowing. There is an increasing number of varieties in the mid to slow range that may offer potential for late April to early May sowing, with evaluation of these varieties ongoing. Winter varieties are suited for germination from mid-March and April dates and may also provide dual-purpose options at these earlier sowing dates. More information on early sowing winter varieties is available at [grdc.com.au/resources-and-publications/all-publications/publications/2020/ten-tips-for-early-sown-wheat](http://grdc.com.au/resources-and-publications/all-publications/publications/2020/ten-tips-for-early-sown-wheat).

**Table 2: Maturity description and boundary varieties (quick and slow) for Australia wheat varieties assigned by Australian Crop Breeders.**

| Maturity description      | Quick wheat boundary   | Slow wheat boundary  |
|---------------------------|--|--|
| Very quick spring         | N/A  | Axe <sup>db</sup>  |
| Very quick – quick spring | > Axe <sup>db</sup>  | Vixen <sup>db</sup>  |
| Quick spring              | > Vixen <sup>db</sup>  | Corack <sup>db</sup> /LRPB Mustang <sup>db</sup>                                     |
| Quick – mid spring        | > Corack <sup>db</sup> /LRPB Mustang <sup>db</sup>                                     | Mace <sup>db</sup> /Suntop <sup>db</sup>   |
| Mid spring                | > Mace <sup>db</sup> /Suntop <sup>db</sup>   | LRPB Reliant <sup>db</sup> /Sheriff CL Plus <sup>db</sup> /LRPB Trojan <sup>db</sup> |
| Mid – slow spring         | > LRPB Reliant <sup>db</sup> /Sheriff CL Plus <sup>db</sup> /LRPB Trojan <sup>db</sup> | Yitpi <sup>db</sup> /EGA Gregory <sup>db</sup>                                       |
| Slow spring               | > Yitpi <sup>db</sup> /EGA Gregory <sup>db</sup>                                       | Sunzell  |
| Slow – very slow spring   | > Sunzell  | Sunmax <sup>db</sup>   |
| Very slow spring          | > Sunmax <sup>db</sup>   | N/A  |
| Quick winter              | N/A  | Illabo <sup>db</sup>   |
| Mid winter                | > Illabo <sup>db</sup>   | Accroc <sup>db</sup>   |
| Slow winter               | > Accroc <sup>db</sup>   | N/A  |

Available at [australiancropbreeders.com.au](http://australiancropbreeders.com.au).

**Table 3: Disease responses of selected wheat varieties and reaction to common disorders.**

| Variety                         | Rust     |          |        | Septoria tritici blotch | Yellow leaf spot | Powdery mildew | Root lesion nematode |                   | CCN     | Eyespot | Crown rot | Black point |
|---------------------------------|----------|----------|--------|-------------------------|------------------|----------------|----------------------|-------------------|---------|---------|-----------|-------------|
|                                 | Stem     | Stripe   | Leaf   |                         |                  |                | <i>P. neglectus</i>  | <i>P. thornei</i> |         |         |           |             |
| Accroc <sup>Ⓢ</sup>             | MS       | RMR      | SVS    | MS                      | MRMS             | MSS            | S                    | MSS               | S       | MSS (P) | SVS       | MRMS        |
| Anapurna                        | MSS      | RMR      | MS     | MRMS                    | MRMS             | RMR            | MS                   | S (P)             | MRMS    | –       | SVS       | MSS         |
| Ascot <sup>Ⓢ</sup>              | MRMS     | MSS      | RMR    | S                       | MRMS             | S              | S                    | S                 | MR      | S       | S         | S           |
| Ballista <sup>Ⓢ</sup>           | MR       | MSS      | S      | SVS                     | MS               | SVS            | S                    | MRMS              | MRMS    | S       | S         | MS          |
| Beckom <sup>Ⓢ</sup>             | MRMS     | MRMS     | MSS    | S                       | MSS              | MSS            | S                    | MSS               | R       | –       | S         | MRMS        |
| BigRed <sup>Ⓢ</sup>             | S        | RMR      | MRMS   | MR                      | MR               | RMR            | MS                   | MS                | S       | –       | S (P)     | MR (P)      |
| Brumby <sup>Ⓢ</sup>             | MR       | MS       | SVS    | S                       | MRMS             | R/S            | MRMS                 | MS                | MRMS    | S       | S         | MS (P)      |
| Calibre <sup>Ⓢ</sup>            | MR       | S        | S      | S                       | MRMS             | S              | S                    | MSS               | MRMS    | S       | S         | MS (P)      |
| Catapult <sup>Ⓢ</sup>           | MR       | S        | S      | MSS                     | MRMS             | S              | S                    | MS                | R       | S       | MSS       | S           |
| Chief CL Plus <sup>Ⓢ</sup>      | MR       | SVS      | MR     | S                       | MRMS             | SVS            | MRMS                 | MSS               | MS      | S       | MSS       | MS          |
| Cutlass <sup>Ⓢ</sup>            | R        | MSS      | RMR    | MSS                     | MSS              | MSS            | MSS                  | MSS               | MR      | –       | S         | MS          |
| Denison <sup>Ⓢ</sup>            | MS       | S        | S      | MSS                     | MRMS             | S              | S                    | S                 | MS      | S       | MSS       | MS          |
| DS Bennett <sup>Ⓢ</sup>         | MS       | S        | SVS    | MSS                     | MRMS             | R              | S                    | S                 | S       | –       | VS        | MSS         |
| Hammer CL Plus <sup>Ⓢ</sup>     | MR       | MS       | S      | MSS                     | MRMS             | S              | MSS                  | S                 | MRMS    | S       | MSS       | MRMS        |
| Illabo <sup>Ⓢ</sup>             | MRMS     | MRMS     | S      | MSS                     | MS               | R              | MSS                  | MSS               | MRMS    | S       | S         | MRMS        |
| Kingston <sup>Ⓢ</sup>           | S        | MSS      | S      | S                       | MSS              | S              | S                    | MRMS              | R       | S       | S         | S           |
| Longsword <sup>Ⓢ</sup>          | MR       | R/S      | MR#    | MS                      | MRMS             | S              | MRMS                 | MRMS              | MRMS    | S       | MSS       | MS          |
| LRPB Anvil CL Plus <sup>Ⓢ</sup> | MR       | S        | SVS    | VS                      | MSS              | VS             | MSS                  | S                 | MRMS    | S       | MSS       | S (P)       |
| LRPB Impala <sup>Ⓢ</sup>        | MR       | MRMS     | SVS    | SVS                     | MSS              | R              | SVS                  | S                 | MSS     | –       | MSS       | MS          |
| LRPB Major <sup>Ⓢ</sup>         | MRMS (P) | MRMS (P) | MR (P) | MSS (P)                 | MS (P)           | MSS            | –                    | –                 | –       | –       | –         | –           |
| LRPB Matador <sup>Ⓢ</sup>       | MS (P)   | MS (P)   | S (P)  | SVS (P)                 | MRMS (P)         | MS             | –                    | –                 | –       | –       | –         | –           |
| LRPB Trojan <sup>Ⓢ</sup>        | MRMS     | S        | MR#    | S                       | MSS              | S              | MSS                  | MSS               | MS      | MS      | MS        | MS          |
| Manning <sup>Ⓢ</sup>            | MR       | RMR      | MSS    | MRMS/S                  | MRMS             | MS             | MSS                  | S                 | S       | MS (P)  | VS        | S           |
| Mowhawk <sup>Ⓢ</sup>            | RMR (P)  | MRMS (P) | MR (P) | MSS (P)                 | MRMS (P)         | MR             | –                    | –                 | –       | –       | –         | –           |
| Razor CL Plus <sup>Ⓢ</sup>      | MRMS     | MS       | S      | SVS                     | MSS              | S              | S                    | MS                | MR      | S       | S         | MS          |
| Reilly <sup>Ⓢ</sup>             | MR       | MS       | MSS    | S                       | S                | S              | MS                   | MSS               | R       | S       | S         | MSS (P)     |
| RGT Calabro                     | MS       | RMR      | MSS    | MRMS                    | MR               | RMR            | S                    | MS                | S       | –       | SVS       | MS          |
| RGT Cesario <sup>Ⓢ</sup>        | R        | RMR      | RMR    | MRMS                    | MR               | RMR            | MRMS                 | MSS               | MSS (P) | –       | VS        | –           |
| RGT Zanzibar                    | VS       | MRMS     | SVS    | MSS                     | MS               | MR             | S                    | MS (P)            | MSS     | –       | S         | MRMS        |
| RockStar <sup>Ⓢ</sup>           | MRMS     | S        | S      | S                       | MRMS             | SVS            | MRMS                 | MS                | MSS     | S       | S         | MSS         |
| Scepter <sup>Ⓢ</sup>            | MRMS     | MSS      | MSS    | S                       | MRMS             | SVS            | S                    | MSS               | MRMS    | MS (P)  | MSS       | MS          |
| Sheriff CL Plus <sup>Ⓢ</sup>    | MS       | S        | SVS    | S                       | MRMS             | SVS            | MRMS                 | MRMS              | MS      | S       | S         | MS          |
| Stockade <sup>Ⓢ</sup>           | MS       | MR       | MR (P) | MS                      | MRMS             | SVS            | S                    | MSS               | MRMS    | –       | S         | MRMS (P)    |
| Tomahawk CL Plus <sup>Ⓢ</sup>   | MR (P)   | MSS (P)  | S (P)  | S (P)                   | MRMS (P)         | SVS            | –                    | –                 | –       | –       | –         | –           |
| Valiant CL Plus <sup>Ⓢ</sup>    | MR       | MSS      | S      | MSS                     | MRMS             | VS             | S                    | S (P)             | MSS (P) | S       | S         | MS (P)      |
| Vixen <sup>Ⓢ</sup>              | MRMS     | SVS      | SVS    | S                       | MRMS             | SVS            | MRMS                 | MS                | MSS     | SVS     | S         | MSS         |
| Willaura <sup>Ⓢ</sup>           | MR       | S        | MRMS   | S                       | MS               | S              | MS                   | MS                | MS      | –       | S         | MRMS (P)    |
| Yitpi <sup>Ⓢ</sup>              | S        | MS       | S      | S                       | SVS              | MS             | MSS                  | S                 | MR      | –       | S         | MS          |

R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible, – variety yet to be fully evaluated.

/ = pathotype differences (the second score after a / is the response to a rarer strain), # = may be more susceptible to alternate pathotypes (warning), (P) = provisional rating.

Black point is not a disease but is a physiological response to certain humid conditions.

Information on disease reaction was supplied by the Cereal Pathology Group (SARDI) under the GRDC NVT Pathology investment DAS1905-013SAX. Contact Dr Tara Garrard: [tara.garrard@sa.gov.au](mailto:tara.garrard@sa.gov.au)



## WHEAT VARIETY NOTES

### Ascot<sup>®</sup>

Ascot<sup>®</sup> is an Australian Premium White (APW) quality, mid maturing variety suited to medium to high-rainfall zones and irrigated cropping. Released in 2020 (tested as BSWDH10-215) and bred by BASF, seed is available and marketed by Seednet. EPR \$3.50 ex-GST.

### Ballista<sup>®</sup>

Ballista<sup>®</sup> is an Australian Hard (AH) quality, quick-mid maturing variety, similar to Mace<sup>®</sup> but slightly quicker than Scepter<sup>®</sup>. Released in 2020 (tested as RAC2598), bred and marketed by AGT, seed is available from AGT affiliates and eligible for Seed Sharing™. EPR \$3.50 ex-GST.

### Brumby<sup>®</sup>

Brumby<sup>®</sup> is a mid maturing APW wheat variety. Released in 2022 (tested as IGW6683), seed is available from local resellers or InterGrain Seedclub members. EPR \$3.50 ex-GST.

### Calibre<sup>®</sup>

Calibre<sup>®</sup> is a quick-mid maturing variety similar to Mace<sup>®</sup> with an AH classification. Calibre<sup>®</sup> is largely derived from Scepter<sup>®</sup> with improved coleoptile length and good sprouting tolerance. Calibre<sup>®</sup> was released in 2021 (tested as RAC2721), bred and marketed by AGT. Seed is available from AGT affiliates and eligible for Seed Sharing™. EPR \$3.50 ex-GST.

### Catapult<sup>®</sup>

Catapult<sup>®</sup> is an AH wheat with a mid maturity, allowing the variety to take earlier planting opportunities for late April to early May. Catapult<sup>®</sup> was released in 2019 (tested as RAC2484), bred and marketed by AGT. Seed is available from AGT affiliates and eligible for Seed Sharing™. EPR \$3.25 ex-GST.

### Chief CL Plus<sup>®</sup>

Chief CL Plus<sup>®</sup> is a mid maturing, imidazolinone-tolerant (Clearfield® Plus) APW wheat. Chief CL Plus<sup>®</sup> was released in 2016 (tested as IGW6089). Seed is available from local resellers or InterGrain Seedclub members. EPR \$4.25 ex-GST.

### Cutlass<sup>®</sup>

Cutlass<sup>®</sup> has an APW classification in SA and is a mid maturing variety. It is photoperiod sensitive and has a similar development pattern to Yitpi<sup>®</sup>. While generally lower yielding from May sowing dates compared with faster-developing varieties, its unique flowering behaviour has applications for earlier sowing and frost management where Yitpi<sup>®</sup> has been successful. Cutlass<sup>®</sup> was released in 2015 (tested as RAC2069), bred and marketed by AGT. Seed is available from AGT affiliates and eligible for Seed Sharing™. EPR \$3.00 ex-GST.

### Denison<sup>®</sup>

Denison<sup>®</sup> is an APW quality, slow maturing variety suited to mid to late April sowing. Denison<sup>®</sup> shows competitive yields from early sowing and is also competitive from May sowing dates; however, early sowing and adaptability of the variety has had limited evaluation. Released in 2020 (tested as WAGT734), bred and marketed by AGT. Seed is available from AGT affiliates and eligible for Seed Sharing™. EPR \$3.40 ex-GST.

### NEW – Genie<sup>®</sup>

Genie<sup>®</sup> is an AH variety with a mid maturity. Slightly longer than RockStar<sup>®</sup> to mature, it is suited to late April sowing. With an improved coleoptile length, it can be sown deeper when moisture is marginal. Best suited to medium to high-rainfall zones. Genie<sup>®</sup> has been entered into the NVT system for the 2023 season. Released in 2023 (tested as IGW6754), bred by InterGrain. Seed is available from local resellers or InterGrain Seedclub members. EPR \$3.50 ex-GST.

### Hammer CL Plus<sup>®</sup>

Hammer CL Plus<sup>®</sup> is an imidazolinone-tolerant (Clearfield® Plus) AH variety with two-gene tolerance to label rates of Intervix® herbicide. It is a quick-mid maturing variety closely related to Mace<sup>®</sup>. Released 2020 (tested as OAGT0016), bred and marketed by AGT. Seed is available from AGT affiliates. It is not eligible for AGT Seed Sharing™. EPR \$4.25 ex-GST.

### NEW – IGW6783

IGW6783 is an imidazolinone-tolerant APW wheat with a quick-mid maturity. Suited to a mid-May sowing date and targeted for the low to medium-rainfall zones. IGW6783 has been entered into the NVT system for the 2023 season and seed is available for the 2024 growing season. Released in 2023 and bred by InterGrain. Seed is available from local resellers or InterGrain Seedclub members. EPR TBC.

**Kingston<sup>Ⓢ</sup>**

Kingston<sup>Ⓢ</sup> is quick-mid maturity AH wheat. It is a compact plant type with broad adaptability. Released in 2022 (tested as BSWDH04-062) by BASF. Seed is available through Seednet. EPR \$3.50 ex-GST.

**LRPB Anvil CL Plus<sup>Ⓢ</sup>**

LRPB Anvil CL Plus<sup>Ⓢ</sup> is a very quick-quick maturity, two-gene imidazolinone-tolerant (Clearfield® Plus) AH wheat that can be sprayed by label rates of registered imidazolinone herbicides. Quick to maturity with a similar, if not faster, development pattern to Vixen<sup>Ⓢ</sup>. It has good early vigour, providing good weed competition early. LRPB Anvil CL Plus<sup>Ⓢ</sup> is well suited to the low-medium rainfall zones, providing a fast-maturing, imidazolinone-tolerant variety choice to growers. Released in 2022 (tested as LPB17-6157), the variety was originally bred by Grains Innovation Australia with further development by LongReach Plant Breeders. Seed is available through Pacific Seeds. EPR \$4.25 ex-GST.

**LRPB Bale<sup>Ⓢ</sup>**

LRPB Bale<sup>Ⓢ</sup> is an APW quality wheat with a slow maturity. It is an awnless variety with a long coleoptile. It has a LRPB Scout<sup>Ⓢ</sup> background originating from germplasm produced by CSIRO. Maturing later than Yitpi<sup>Ⓢ</sup>, its awnless qualities and delayed flowering allows it to be delivered as grain or cut for hay. Released in 2021 (tested as LPB18-7946) by LongReach Plant Breeders. Seed is available through farmer-to-farmer trade. EPR \$3.50 ex-GST.

**LRPB Dual<sup>Ⓢ</sup>**

LRPB Dual<sup>Ⓢ</sup> is an AH quality wheat with a mid-slow maturity. It is also an awnless variety with a long coleoptile length. Bred from germplasm produced by CSIRO with a LRPB Scout<sup>Ⓢ</sup>/Yitpi<sup>Ⓢ</sup> background, it has a unique maturity pattern flowering between LRPB Trojan<sup>Ⓢ</sup> and Yitpi<sup>Ⓢ</sup>. Its awnless nature lends it to dual-purpose applications as it can be cut for hay or delivered as grain, offering options in frost-prone areas. Released in 2021 (tested as LPB18-7982) by LongReach Plant Breeders. Seed available through LongReach seed network. EPR \$3.50 ex-GST.

**NEW – LRPB Matador<sup>Ⓢ</sup>**

LRPB Matador<sup>Ⓢ</sup> is a quick-mid maturing AH wheat. Bred from a cross with Scepter<sup>Ⓢ</sup> it has a similar maturity but with a shorter canopy. Evaluation is currently limited in NVT. Released in 2023 (tested as LPB18-4160) by LongReach Plant Breeders. Seed available through Pacific Seeds. EPR \$3.50 ex-GST.

**NEW – LRPB Major<sup>Ⓢ</sup>**

LRPB Major<sup>Ⓢ</sup> is a mid-slow AH wheat. It is suited to an Anzac Day sowing due to its slower growth pattern. Also suited to the longer season growing environments in the mid-high rainfall zones. Released in 2023 (tested as LPB18-7203) by LongReach Plant Breeders. Seed is available through Pacific Seeds. EPR 4.00 ex-GST.

**LRPB Nighthawk<sup>Ⓢ</sup>**

LRPB Nighthawk<sup>Ⓢ</sup> is an APW quality wheat with a very slow maturity but still a spring wheat. Primarily suited to mid-April germination opportunities within SA. It is suited to early planting or grazing opportunities similar to winter wheats in the higher-rainfall zones. Released in 2019 (tested as LPB14-0392) by LongReach Plant Breeders. Seed is available from Pacific Seeds. EPR \$4.25 ex-GST.

**Razor CL Plus<sup>Ⓢ</sup>**

Razor CL Plus<sup>Ⓢ</sup> is a quick-mid maturity, imidazolinone-tolerant (Clearfield® Plus) Australian Standard White (ASW) wheat. It has stable yields across a range of environments and provides highly competitive yields within the Clearfield® wheat varieties. Released in 2018 (tested as RAC2517), bred and marketed by AGT. Seed is available from AGT affiliates. It is not eligible for AGT Seed Sharing™. EPR \$3.30 ex-GST.

**Reilly<sup>Ⓢ</sup>**

Reilly<sup>Ⓢ</sup> is a mid maturity AH wheat. Best suited to the low to medium-rainfall zone, it has a medium plant height. Released in 2022 (tested as BH120020S-11) by BASF. Seed is available through Seednet. EPR \$3.50 ex-GST.

**RockStar<sup>Ⓢ</sup>**

RockStar<sup>Ⓢ</sup> is an AH quality wheat with a mid maturity. RockStar<sup>Ⓢ</sup> has been shown to have wide adaptability to a range of environments and sowing dates. Released in 2019 (tested as IGW1341). Seed is available from local resellers and InterGrain Seedclub members. EPR \$3.50 ex-GST.

**Scepter<sup>®</sup>**

Scepter<sup>®</sup> is a quick-mid maturing AH wheat largely derived from Mace<sup>®</sup>. It is a very widely adapted variety that is suited to most May sowing dates. Released in 2015 (tested as RAC2182), bred and marketed by AGT. Seed is available from AGT Affiliates, retailers or through Seed Sharing™. EPR \$3.25 ex-GST.

**Sheriff CL Plus<sup>®</sup>**

Sheriff CL Plus<sup>®</sup> is an imidazolinone-tolerant (Clearfield<sup>®</sup> Plus) APW wheat. It is mid maturing and is similar to LRPB Trojan<sup>®</sup> in developmental speed and can therefore be sown slightly earlier than the other Clearfield<sup>®</sup> Plus varieties. Released in 2016 (tested as IGW6155). Seed is available from local resellers or InterGrain Seedclub members. EPR \$4.25 ex-GST.

**NEW – Soaker<sup>®</sup>**

Soaker<sup>®</sup> is a single-gene, imidazolinone-tolerant APW wheat. It is a quick-mid maturing wheat largely derived from Scepter<sup>®</sup>. With agronomic characteristics similar to Scepter<sup>®</sup> with the benefit of imidazolinone-tolerance, well suited to a lentil rotation and residual imidazolinone. Released in 2023 (tested as LPB19-6184) the variety was originally bred by Grains Innovation Australia with further development by LongReach Plant Breeders. Seed exclusively available through AG Schilling & Co. EPR \$3.50 ex-GST.

**NEW – Stockade<sup>®</sup>**

Stockade<sup>®</sup> is a new, spring, very slow maturing APW wheat, similar to that of winter wheat Accroc<sup>®</sup>. Suited to high-rainfall zones due to its slow maturity. Released in 2022 (tested as LPB16-0598), bred by LongReach Plant Breeders. Seed is exclusively available from AGF Seeds. EPR 3.65 ex-GST.

**NEW – Tomahawk CL Plus<sup>®</sup>**

Tomahawk CL Plus<sup>®</sup> is an imidazolinone-tolerant APW wheat. It is a quick-mid maturing wheat with a similar maturity to Scepter<sup>®</sup>. It is agronomically similar to Scepter<sup>®</sup> with the advantage of imidazolinone-tolerance. Released in 2023 (tested as RAC3261), bred by AGT. Seed is available from AGT affiliates. It is not eligible for AGT Seed Sharing™. EPR \$4.15 ex-GST.

**Valiant CL Plus<sup>®</sup>**

Valiant CL Plus<sup>®</sup> is an imidazolinone-tolerant (Clearfield<sup>®</sup> Plus) AH wheat. It is mid-slow maturing, providing the phenology fit for sowing in April. Released in 2021 (tested as IGW4502). Seed is available from local resellers or InterGrain Seedclub members. EPR \$4.35 ex-GST.

**Vixen<sup>®</sup>**

Vixen<sup>®</sup> is a quick maturity variety with an AH quality in SA. Vixen<sup>®</sup> has wide adaptability across a range of environments within SA and is consistently high yielding from May sowing dates. Released in 2018 (tested as IGW4279). Seed is available through local resellers or InterGrain Seedclub members. EPR \$3.50 ex-GST.

**SOFT WHEATS****LRPB Impala<sup>®</sup>**

LRPB Impala<sup>®</sup> is a mid maturity soft biscuit (Australian Soft, ASFT) wheat targeted to eastern Australia. LRPB Impala<sup>®</sup> produces large grain with low screening losses. Released in 2011 (tested as C51021) by LongReach Plant Breeders. Seed is available from Pacific Seeds. EPR \$3.50 ex-GST.

**LRPB Orion<sup>®</sup>**

LRPB Orion<sup>®</sup> is a mid-slow maturing soft biscuit (ASFT) wheat targeted to eastern Australia. It is an awnless variety with a long coleoptile. Released in 2009 (tested as LPB04-2039) by LongReach Plant Breeders. Seed is available from Pacific Seeds and is approved for farmer-to-farmer trade. EPR \$3.00 ex-GST.

**LRPB Oryx<sup>®</sup>**

LRPB Oryx<sup>®</sup> is a mid maturing soft biscuit (ASF1) wheat targeted to eastern Australia. It is a variety with large seed size and low screenings. It also has low protein accumulation, meeting the quality requirements for Allied Mills and Arnotts. Released in 2018 (tested as LPB12-0152) by LongReach Plant Breeders. Seed is available from Pacific Seeds. EPR \$3.75 ex-GST.



**Table 4: Upper Eyre Peninsula main season wheat yield performance. NVT data 2018–22.**

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

| Variety                          | Classification | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------------|----------------|-------------------|------|------|------|------|------|
|                                  |                | Mean yield (t/ha) | 1.30 | 1.24 | 1.47 | 2.23 | 4.20 |
|                                  |                | No. trials        | 6    | 7    | 6    | 6    | 7    |
| CONVENTIONAL                     |                |                   |      |      |      |      |      |
| Ballista <sup>db</sup>           | AH             | 26                | –    | 117  | 113  | 112  | 110  |
| Boree <sup>db</sup>              | AH             | 19                | –    | –    | 108  | 110  | 105  |
| Brumby <sup>db</sup>             | APW            | 13                | –    | –    | –    | 111  | 106  |
| Calibre <sup>db</sup>            | AH             | 19                | –    | –    | 116  | 117  | 107  |
| Catapult <sup>db</sup>           | AH             | 32                | 106  | 104  | 107  | 108  | 104  |
| Cosmick <sup>db</sup>            | AH             | 32                | 100  | 101  | 102  | 100  | 98   |
| Cutlass <sup>db</sup>            | APW            | 32                | 100  | 91   | 101  | 92   | 104  |
| Devil <sup>db</sup>              | AH             | 26                | –    | 108  | 110  | 110  | 106  |
| EG Titanium                      | AH             | 19                | –    | –    | 96   | 94   | 103  |
| Emu Rock <sup>db</sup>           | AH             | 32                | 96   | 110  | 97   | 104  | 97   |
| LRPB Dual <sup>db</sup>          | AH             | 13                | –    | –    | –    | 98   | 95   |
| LRPB Matador <sup>db</sup>       | AH             | 7                 | –    | –    | –    | –    | 108  |
| LRPB Trojan <sup>db</sup>        | APW            | 32                | 101  | 96   | 101  | 97   | 107  |
| Mace <sup>db</sup>               | AH             | 32                | 106  | 100  | 100  | 108  | 93   |
| Reilly <sup>db</sup>             | AH             | 7                 | –    | –    | –    | –    | 104  |
| RockStar <sup>db</sup>           | AH             | 32                | 108  | 109  | 112  | 109  | 112  |
| Scepter <sup>db</sup>            | AH             | 32                | 109  | 108  | 109  | 112  | 102  |
| Sunmaster <sup>db</sup>          | APH            | 13                | –    | –    | –    | 98   | 104  |
| Vixen <sup>db</sup>              | AH             | 32                | 107  | 121  | 111  | 116  | 109  |
| Yitpi <sup>db</sup>              | AH             | 32                | 95   | 90   | 93   | 93   | 97   |
| HERBICIDE TOLERANT               |                |                   |      |      |      |      |      |
| Chief CL Plus <sup>db</sup>      | APW            | 32                | 107  | 84   | 95   | 102  | 91   |
| Grenade CL Plus <sup>db</sup>    | AH             | 32                | 94   | 99   | 94   | 95   | 92   |
| Hammer CL Plus <sup>db</sup>     | AH             | 26                | –    | 99   | 98   | 104  | 90   |
| Kord CL Plus <sup>db</sup>       | AH             | 32                | 98   | 91   | 93   | 97   | 84   |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 19                | –    | –    | 101  | 110  | 85   |
| Razor CL Plus <sup>db</sup>      | ASW            | 32                | 103  | 111  | 103  | 110  | 98   |
| Sheriff CL Plus <sup>db</sup>    | APW            | 32                | 105  | 98   | 101  | 104  | 101  |
| Sunblade CL Plus <sup>db</sup>   | AH             | 19                | –    | –    | 107  | 102  | 109  |
| Tomahawk CL Plus <sup>db</sup>   | APW            | 7                 | –    | –    | –    | –    | 107  |
| Valiant CL Plus <sup>db</sup>    | AH             | 13                | –    | –    | –    | 95   | 103  |

– denotes no data available.

**Table 5: Lower Eyre Peninsula main season wheat yield performance. NVT data 2018–22.**

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

| Variety                          | Classification | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------------|----------------|-------------------|------|------|------|------|------|
|                                  |                | Mean yield (t/ha) | 3.65 | 5.80 | 3.96 | 3.93 | 5.82 |
|                                  |                | No. trials        | 3    | 1    | 3    | 2    | 2    |
| CONVENTIONAL                     |                |                   |      |      |      |      |      |
| Ascot <sup>db</sup>              | APW            | 8                 | –    | 107  | 103  | 95   | 104  |
| Ballista <sup>db</sup>           | AH             | 8                 | –    | 110  | 111  | 108  | 107  |
| Boree <sup>db</sup>              | AH             | 7                 | –    | –    | 110  | 109  | 105  |
| Brumby <sup>db</sup>             | APW            | 4                 | –    | –    | –    | 112  | 106  |
| Calibre <sup>db</sup>            | AH             | 7                 | –    | –    | 104  | 112  | 105  |
| Catapult <sup>db</sup>           | AH             | 11                | 107  | 99   | 102  | 107  | 102  |
| Cosmick <sup>db</sup>            | AH             | 11                | 100  | 97   | 99   | 101  | 100  |
| Cutlass <sup>db</sup>            | APW            | 11                | 100  | 90   | 98   | 98   | 104  |
| Denison <sup>db</sup>            | APW            | 4                 | –    | –    | –    | 108  | 105  |
| Devil <sup>db</sup>              | AH             | 8                 | –    | 107  | 112  | 110  | 106  |
| EG Titanium                      | AH             | 7                 | –    | –    | 86   | 94   | 99   |
| Emu Rock <sup>db</sup>           | AH             | 11                | 96   | 107  | 95   | 96   | 95   |
| Kingston <sup>db</sup>           | AH             | 7                 | –    | –    | 114  | 97   | 109  |
| LRPB Cobra <sup>db</sup>         | AH             | 11                | 98   | 110  | 105  | 94   | 104  |
| LRPB Dual <sup>db</sup>          | AH             | 4                 | –    | –    | –    | 94   | 92   |
| LRPB Matador <sup>db</sup>       | AH             | 2                 | –    | –    | –    | –    | 105  |
| LRPB Trojan <sup>db</sup>        | APW            | 11                | 102  | 100  | 102  | 99   | 105  |
| Mace <sup>db</sup>               | AH             | 11                | 104  | 102  | 104  | 107  | 96   |
| Reilly <sup>db</sup>             | AH             | 7                 | –    | –    | 94   | 98   | 100  |
| RockStar <sup>db</sup>           | AH             | 11                | 111  | 105  | 111  | 109  | 109  |
| Scepter <sup>db</sup>            | AH             | 11                | 111  | 105  | 111  | 111  | 103  |
| Sunmaster <sup>db</sup>          | APH            | 4                 | –    | –    | –    | 104  | 107  |
| Vixen <sup>db</sup>              | AH             | 11                | 111  | 122  | 118  | 109  | 106  |
| Yitpi <sup>db</sup>              | AH             | 11                | 93   | 89   | 84   | 93   | 94   |
| Zen <sup>db</sup>                | FEED           | 11                | 102  | 90   | 99   | 106  | 96   |
| HERBICIDE TOLERANT               |                |                   |      |      |      |      |      |
| Chief CL Plus <sup>db</sup>      | APW            | 11                | 104  | 97   | 105  | 106  | 96   |
| Grenade CL Plus <sup>db</sup>    | AH             | 11                | 92   | 95   | 91   | 94   | 94   |
| Hammer CL Plus <sup>db</sup>     | AH             | 7                 | –    | –    | 94   | 102  | 93   |
| Kord CL Plus <sup>db</sup>       | AH             | 11                | 93   | 86   | 87   | 98   | 90   |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 4                 | –    | –    | –    | 109  | 92   |
| Razor CL Plus <sup>db</sup>      | ASW            | 11                | 103  | 107  | 102  | 104  | 97   |
| Sheriff CL Plus <sup>db</sup>    | APW            | 11                | 105  | 103  | 105  | 104  | 101  |
| Sunblade CL Plus <sup>db</sup>   | AH             | 7                 | –    | –    | 107  | 102  | 107  |
| Tomahawk CL Plus <sup>db</sup>   | APW            | 2                 | –    | –    | –    | –    | 106  |
| Valiant CL Plus <sup>db</sup>    | AH             | 7                 | –    | –    | 102  | 100  | 104  |

– denotes no data available.

**Table 6: Yorke Peninsula main season wheat yield performance. NVT data 2018–22.**

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

| Variety                          | Classification | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------------|----------------|-------------------|------|------|------|------|------|
|                                  |                | Mean yield (t/ha) | 3.98 | 3.17 | 3.51 | 4.12 | 6.24 |
|                                  |                | No. trials        | 3    | 4    | 3    | 4    | 3    |
| CONVENTIONAL                     |                |                   |      |      |      |      |      |
| Ascot <sup>db</sup>              | APW            | 14                | –    | 101  | 102  | 100  | 104  |
| Ballista <sup>db</sup>           | AH             | 14                | –    | 114  | 109  | 110  | 106  |
| Boree <sup>db</sup>              | AH             | 10                | –    | –    | 107  | 108  | 104  |
| Brumby <sup>db</sup>             | APW            | 7                 | –    | –    | –    | 108  | 106  |
| Calibre <sup>db</sup>            | AH             | 10                | –    | –    | 108  | 110  | 104  |
| Catapult <sup>db</sup>           | AH             | 17                | 107  | 105  | 104  | 106  | 103  |
| Cosmick <sup>db</sup>            | AH             | 17                | 98   | 101  | 100  | 98   | 100  |
| Cutlass <sup>db</sup>            | APW            | 17                | 100  | 97   | 100  | 95   | 106  |
| Denison <sup>db</sup>            | APW            | 10                | –    | –    | 107  | 107  | 106  |
| Devil <sup>db</sup>              | AH             | 14                | –    | 110  | 108  | 109  | 105  |
| EG Titanium                      | AH             | 10                | –    | –    | 96   | 96   | 101  |
| Emu Rock <sup>db</sup>           | AH             | 17                | 100  | 100  | 97   | 102  | 93   |
| Kingston <sup>db</sup>           | AH             | 10                | –    | –    | 108  | 108  | 109  |
| LRPB Dual <sup>db</sup>          | AH             | 7                 | –    | –    | –    | 96   | 93   |
| LRPB Matador <sup>db</sup>       | AH             | 3                 | –    | –    | –    | –    | 104  |
| LRPB Trojan <sup>db</sup>        | APW            | 17                | 104  | 100  | 103  | 101  | 106  |
| Mace <sup>db</sup>               | AH             | 17                | 99   | 101  | 101  | 104  | 95   |
| Reilly <sup>db</sup>             | AH             | 10                | –    | –    | 99   | 101  | 100  |
| RockStar <sup>db</sup>           | AH             | 16                | 110  | 111  | 110  | 109  | 109  |
| Scepter <sup>db</sup>            | AH             | 17                | 104  | 109  | 107  | 109  | 102  |
| Sunmaster <sup>db</sup>          | APH            | 7                 | –    | –    | –    | 99   | 107  |
| Vixen <sup>db</sup>              | AH             | 17                | 108  | 115  | 111  | 115  | 104  |
| Yitpi <sup>db</sup>              | AH             | 17                | 100  | 90   | 92   | 94   | 96   |
| Zen <sup>db</sup>                | FEED           | 17                | 96   | 96   | 98   | 98   | 96   |
| HERBICIDE TOLERANT               |                |                   |      |      |      |      |      |
| Chief CL Plus <sup>db</sup>      | APW            | 17                | 97   | 94   | 100  | 102  | 96   |
| Grenade CL Plus <sup>db</sup>    | AH             | 17                | 94   | 95   | 93   | 94   | 93   |
| Hammer CL Plus <sup>db</sup>     | AH             | 10                | –    | –    | 96   | 99   | 93   |
| Kord CL Plus <sup>db</sup>       | AH             | 17                | 92   | 91   | 90   | 92   | 90   |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 10                | –    | –    | 98   | 102  | 90   |
| Razor CL Plus <sup>db</sup>      | ASW            | 17                | 102  | 105  | 101  | 106  | 96   |
| Sheriff CL Plus <sup>db</sup>    | APW            | 17                | 103  | 101  | 103  | 105  | 101  |
| Sunblade CL Plus <sup>db</sup>   | AH             | 14                | –    | 107  | 106  | 103  | 107  |
| Valiant CL Plus <sup>db</sup>    | AH             | 10                | –    | –    | 101  | 97   | 104  |

– denotes no data available.

**Table 7: Mid North main season wheat yield performance. NVT data 2018–22.**

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

| Variety                          | Classification | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------------|----------------|-------------------|------|------|------|------|------|
|                                  |                | Mean yield (t/ha) | 2.74 | 2.84 | 5.09 | 4.55 | 6.54 |
|                                  |                | No. trials        | 2    | 4    | 4    | 4    | 4    |
| CONVENTIONAL                     |                |                   |      |      |      |      |      |
| Ascot <sup>db</sup>              | APW            | 16                | –    | 98   | 103  | 101  | 104  |
| Ballista <sup>db</sup>           | AH             | 16                | –    | 112  | 110  | 109  | 109  |
| Boree <sup>db</sup>              | AH             | 12                | –    | –    | 106  | 107  | 104  |
| Brumby <sup>db</sup>             | APW            | 8                 | –    | –    | –    | 108  | 106  |
| Calibre <sup>db</sup>            | AH             | 12                | –    | –    | 109  | 112  | 105  |
| Catapult <sup>db</sup>           | AH             | 18                | 105  | 106  | 104  | 107  | 101  |
| Cosmick <sup>db</sup>            | AH             | 18                | 100  | 101  | 99   | 99   | 103  |
| Cutlass <sup>db</sup>            | APW            | 18                | 93   | 94   | 97   | 101  | 107  |
| Denison <sup>db</sup>            | APW            | 12                | –    | –    | 105  | 109  | 103  |
| Devil <sup>db</sup>              | AH             | 16                | –    | 110  | 107  | 107  | 105  |
| EG Titanium                      | AH             | 12                | –    | –    | 98   | 101  | 95   |
| Emu Rock <sup>db</sup>           | AH             | 18                | 102  | 102  | 102  | 98   | 93   |
| Kingston <sup>db</sup>           | AH             | 12                | –    | –    | 109  | 105  | 104  |
| LRPB Bale <sup>db</sup>          | APW            | 8                 | –    | –    | –    | 91   | 88   |
| LRPB Dual <sup>db</sup>          | AH             | 8                 | –    | –    | –    | 98   | 91   |
| LRPB Impala <sup>db</sup>        | ASFT           | 5                 | 91   | 91   | 95   | 95   | 98   |
| LRPB Major <sup>db</sup>         | AH             | 4                 | –    | –    | –    | –    | 101  |
| LRPB Matador <sup>db</sup>       | AH             | 4                 | –    | –    | –    | –    | 103  |
| LRPB Oryx <sup>db</sup>          | ASFT           | 2                 | –    | –    | –    | 92   | 102  |
| LRPB Trojan <sup>db</sup>        | APW            | 18                | 97   | 97   | 102  | 103  | 103  |
| Mace <sup>db</sup>               | AH             | 18                | 107  | 106  | 99   | 100  | 94   |
| Reilly <sup>db</sup>             | AH             | 12                | –    | –    | 104  | 103  | 102  |
| RGT Zanzibar                     | FEED           | 18                | 85   | 86   | 100  | 100  | 121  |
| RockStar <sup>db</sup>           | AH             | 18                | 107  | 109  | 109  | 110  | 109  |
| Scepter <sup>db</sup>            | AH             | 18                | 110  | 111  | 105  | 106  | 103  |
| Sunmaster <sup>db</sup>          | APH            | 8                 | –    | –    | –    | 100  | 113  |
| Vixen <sup>db</sup>              | AH             | 18                | 115  | 116  | 113  | 109  | 105  |
| Yitpi <sup>db</sup>              | AH             | 18                | 91   | 90   | 95   | 97   | 92   |
| Zen <sup>db</sup>                | FEED           | 18                | 100  | 100  | 94   | 97   | 95   |
| HERBICIDE TOLERANT               |                |                   |      |      |      |      |      |
| Chief CL Plus <sup>db</sup>      | APW            | 18                | 102  | 101  | 95   | 97   | 90   |
| Kord CL Plus <sup>db</sup>       | AH             | 18                | 96   | 95   | 90   | 92   | 91   |
| Grenade CL Plus <sup>db</sup>    | AH             | 18                | 96   | 95   | 95   | 94   | 96   |
| Hammer CL Plus <sup>db</sup>     | AH             | 12                | –    | –    | 96   | 97   | 92   |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 8                 | –    | –    | –    | 96   | 94   |
| Razor CL Plus <sup>db</sup>      | ASW            | 18                | 108  | 108  | 104  | 102  | 96   |
| Sheriff CL Plus <sup>db</sup>    | APW            | 18                | 103  | 103  | 102  | 103  | 97   |
| Sunblade CL Plus <sup>db</sup>   | AH             | 16                | –    | 103  | 105  | 104  | 109  |
| Tomahawk CL Plus <sup>db</sup>   | APW            | 4                 | –    | –    | –    | –    | 106  |
| Valiant CL Plus <sup>db</sup>    | AH             | 12                | –    | –    | 99   | 100  | 105  |

– denotes no data available.



**Table 8: Murray Mallee main season wheat yield performance. NVT data 2018–22.**

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

| Variety                          | Classification | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------------|----------------|-------------------|------|------|------|------|------|
|                                  |                | Mean yield (t/ha) | 1.48 | 1.33 | 3.04 | 1.48 | 3.30 |
|                                  |                | No. trials        | 5    | 6    | 6    | 4    | 5    |
| CONVENTIONAL                     |                |                   |      |      |      |      |      |
| Ballista <sup>db</sup>           | AH             | 21                | –    | 112  | 111  | 111  | 110  |
| Boree <sup>db</sup>              | AH             | 15                | –    | –    | 108  | 106  | 102  |
| Brumby <sup>db</sup>             | APW            | 9                 | –    | –    | –    | 106  | 104  |
| Calibre <sup>db</sup>            | AH             | 15                | –    | –    | 113  | 115  | 108  |
| Catapult <sup>db</sup>           | AH             | 26                | 107  | 109  | 106  | 105  | 101  |
| Cosmick <sup>db</sup>            | AH             | 26                | 101  | 103  | 102  | 102  | 102  |
| Cutlass <sup>db</sup>            | APW            | 26                | 98   | 107  | 102  | 96   | 105  |
| EG Titanium                      | AH             | 15                | –    | –    | 95   | 97   | 99   |
| Emu Rock <sup>db</sup>           | AH             | 26                | 100  | 91   | 96   | 104  | 97   |
| LRPB Dual <sup>db</sup>          | AH             | 9                 | –    | –    | –    | 102  | 97   |
| LRPB Scout <sup>db</sup>         | AH             | 26                | 101  | 102  | 101  | 106  | 109  |
| LRPB Trojan <sup>db</sup>        | APW            | 26                | 99   | 103  | 101  | 97   | 103  |
| Mace <sup>db</sup>               | AH             | 26                | 103  | 99   | 101  | 101  | 91   |
| Reilly <sup>db</sup>             | AH             | 5                 | –    | –    | –    | –    | 108  |
| RockStar <sup>db</sup>           | AH             | 26                | 110  | 114  | 111  | 107  | 109  |
| Scepter <sup>db</sup>            | AH             | 26                | 109  | 110  | 109  | 107  | 101  |
| Sunmaster <sup>db</sup>          | APH            | 9                 | –    | –    | –    | 99   | 108  |
| Tungsten <sup>db</sup>           | AH             | 15                | –    | –    | 96   | 98   | 99   |
| Vixen <sup>db</sup>              | AH             | 26                | 111  | 104  | 109  | 111  | 106  |
| Yitpi <sup>db</sup>              | AH             | 26                | 94   | 96   | 92   | 95   | 94   |
| HERBICIDE TOLERANT               |                |                   |      |      |      |      |      |
| Chief CL Plus <sup>db</sup>      | APW            | 26                | 98   | 96   | 96   | 92   | 83   |
| Grenade CL Plus <sup>db</sup>    | AH             | 26                | 95   | 93   | 94   | 98   | 97   |
| Hammer CL Plus <sup>db</sup>     | AH             | 21                | –    | 98   | 98   | 101  | 92   |
| Kord CL Plus <sup>db</sup>       | AH             | 26                | 96   | 95   | 93   | 96   | 90   |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 9                 | –    | –    | –    | 105  | 92   |
| Razor CL Plus <sup>db</sup>      | ASW            | 26                | 105  | 99   | 102  | 107  | 98   |
| Sheriff CL Plus <sup>db</sup>    | APW            | 26                | 102  | 101  | 101  | 99   | 95   |
| Sunblade CL Plus <sup>db</sup>   | AH             | 21                | –    | 107  | 106  | 104  | 110  |
| Tomahawk CL Plus <sup>db</sup>   | APW            | 5                 | –    | –    | –    | –    | 104  |
| Valiant CL Plus <sup>db</sup>    | AH             | 9                 | –    | –    | –    | 97   | 103  |

– denotes no data available.

**Table 9: South East main season wheat yield performance. NVT data 2018–22. Data for 2021 not available.**

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

| Variety                          | Classification | Year              | 2018 | 2019 | 2020 | 2021               | 2022 |
|----------------------------------|----------------|-------------------|------|------|------|--------------------|------|
|                                  |                | Mean yield (t/ha) | 5.12 | 6.72 | 5.06 | 0.00               | 6.16 |
|                                  |                | No. trials        | 3    | 2    | 1    | 0                  | 1    |
| CONVENTIONAL                     |                |                   |      |      |      |                    |      |
| Ballista <sup>db</sup>           | AH             | 4                 | –    | 110  | 108  | Data not available | 109  |
| Beckom <sup>db</sup>             | AH             | 7                 | 107  | 109  | 106  |                    | 112  |
| Boree <sup>db</sup>              | AH             | 2                 | –    | –    | 106  |                    | 102  |
| Brumby <sup>db</sup>             | APW            | 1                 | –    | –    | –    |                    | 106  |
| Calibre <sup>db</sup>            | AH             | 2                 | –    | –    | 107  |                    | 104  |
| Catapult <sup>db</sup>           | AH             | 7                 | 104  | 105  | 104  |                    | 99   |
| Coolah <sup>db</sup>             | AH             | 7                 | 94   | 96   | 95   |                    | 106  |
| Cutlass <sup>db</sup>            | APW            | 7                 | 101  | 102  | 99   |                    | 110  |
| Denison <sup>db</sup>            | APW            | 2                 | –    | –    | 106  |                    | 102  |
| EG Jet <sup>db</sup>             | APW            | 7                 | 103  | 104  | 99   |                    | 117  |
| EG Titanium                      | AH             | 7                 | 95   | 97   | 98   |                    | 93   |
| Emu Rock <sup>db</sup>           | AH             | 7                 | 95   | 96   | 99   |                    | 90   |
| Kingston <sup>db</sup>           | AH             | 1                 | –    | –    | –    |                    | 102  |
| LRPB Dual <sup>db</sup>          | AH             | 1                 | –    | –    | –    |                    | 89   |
| LRPB Major <sup>db</sup>         | AH             | 1                 | –    | –    | –    |                    | 103  |
| LRPB Matador <sup>db</sup>       | AH             | 1                 | –    | –    | –    |                    | 102  |
| LRPB Trojan <sup>db</sup>        | APW            | 7                 | 103  | 105  | 103  |                    | 104  |
| Mace <sup>db</sup>               | AH             | 7                 | 101  | 98   | 100  |                    | 91   |
| Reilly <sup>db</sup>             | AH             | 1                 | –    | –    | –    |                    | 103  |
| RGT Zanzibar                     | FEED           | 7                 | 105  | 110  | 102  |                    | 130  |
| RockStar <sup>db</sup>           | AH             | 7                 | 110  | 112  | 109  |                    | 109  |
| Scepter <sup>db</sup>            | AH             | 7                 | 108  | 106  | 106  |                    | 102  |
| Sunmaster <sup>db</sup>          | APH            | 1                 | –    | –    | –    |                    | 118  |
| Vixen <sup>db</sup>              | AH             | 7                 | 110  | 111  | 111  |                    | 103  |
| Yitpi <sup>db</sup>              | AH             | 7                 | 92   | 93   | 95   |                    | 89   |
| HERBICIDE TOLERANT               |                |                   |      |      |      |                    |      |
| Chief CL Plus <sup>db</sup>      | APW            | 7                 | 101  | 98   | 100  | Data not available | 86   |
| Grenade CL Plus <sup>db</sup>    | AH             | 7                 | 93   | 92   | 93   |                    | 97   |
| Hammer CL Plus <sup>db</sup>     | AH             | 2                 | –    | –    | 96   |                    | 90   |
| Kord CL Plus <sup>db</sup>       | AH             | 7                 | 91   | 88   | 90   |                    | 91   |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 1                 | –    | –    | –    |                    | 94   |
| Razor CL Plus <sup>db</sup>      | ASW            | 7                 | 101  | 100  | 102  |                    | 94   |
| Sheriff CL Plus <sup>db</sup>    | APW            | 7                 | 103  | 103  | 103  |                    | 94   |
| Sunblade CL Plus <sup>db</sup>   | AH             | 4                 | –    | 107  | 104  |                    | 112  |
| Tomahawk CL Plus <sup>db</sup>   | APW            | 1                 | –    | –    | –    |                    | 105  |
| Valiant CL Plus <sup>db</sup>    | AH             | 2                 | –    | –    | 100  |                    | 107  |

– denotes no data available.

## YIELD PERFORMANCE EXPERIMENTS FROM 2018–22

The yield results presented are ME) data shown on a yearly regional group mean and an overall performance mean for the region. All yields are expressed as a percentage of mean yield from NVT data 2018–22 inclusive, along with some observations in adjacent columns. Further results can be found on the NVT website ([nvt.grdc.com.au](http://nvt.grdc.com.au)).

## GRAIN QUALITY FROM 2018–22

Grain quality for individual varieties varies between years. However, the trends across sites for a single year tend to be more consistent for a variety. Long-term results highlight trends in variety performance and consistency across seasons. Tables 10 and 17 summarise the variation in test weight for bread wheat and durum wheat varieties, respectively. Test weight is expressed as the mean test weight from NVT data from 2018 to 2022 inclusive. Table 18 summarises the variation in screening percentages in durum wheat varieties. Screenings are expressed as the mean percentage of grain less than two millimetres in size from NVT data 2018–22 inclusive, along with some observations in adjacent columns.

Further results can be found on the NVT website ([nvt.grdc.com.au](http://nvt.grdc.com.au)).

**Table 10: South Australian wheat test weight performance. NVT data 2018–22.**

| Variety                          | Classification |            | Test weight (kg/hectolitre) |       |       |       |       |
|----------------------------------|----------------|------------|-----------------------------|-------|-------|-------|-------|
|                                  |                | Year       | 2018                        | 2019  | 2020  | 2021  | 2022  |
|                                  |                | No. trials | 19                          | 22    | 23    | 20    | 21    |
| CONVENTIONAL                     |                |            |                             |       |       |       |       |
| Ascot <sup>db</sup>              | APW            | 39         | –                           | 82.88 | 81.17 | 79.37 | 81.50 |
| Ballista <sup>db</sup>           | AH             | 86         | –                           | 81.58 | 80.90 | 79.43 | 79.25 |
| Brumby <sup>db</sup>             | APW            | 41         | –                           | –     | –     | 80.54 | 79.70 |
| Calibre <sup>db</sup>            | AH             | 64         | –                           | –     | 80.22 | 79.44 | 79.01 |
| Catapult <sup>db</sup>           | AH             | 105        | 81.12                       | 82.72 | 82.18 | 81.67 | 80.55 |
| Cutlass <sup>db</sup>            | APW            | 105        | 81.39                       | 82.42 | 82.06 | 81.12 | 80.25 |
| Denison <sup>db</sup>            | APW            | 27         | –                           | –     | 82.01 | 82.23 | 80.09 |
| Kingston <sup>db</sup>           | AH             | 29         | –                           | –     | 81.85 | 82.53 | 82.21 |
| LRPB Bale <sup>db</sup>          | APW            | 8          | –                           | –     | –     | 85.47 | 81.28 |
| LRPB Dual <sup>db</sup>          | AH             | 41         | –                           | –     | –     | 81.87 | 81.00 |
| LRPB Major <sup>db</sup>         | AH             | 5          | –                           | –     | –     | –     | 81.92 |
| LRPB Matador <sup>db</sup>       | AH             | 16         | –                           | –     | –     | –     | 80.38 |
| Reilly <sup>db</sup>             | AH             | 41         | –                           | –     | 82.04 | 82.41 | 81.41 |
| RockStar <sup>db</sup>           | AH             | 104        | 80.00                       | 81.74 | 81.81 | 80.18 | 79.95 |
| Scepter <sup>db</sup>            | AH             | 105        | 80.86                       | 82.97 | 82.01 | 81.17 | 80.48 |
| Vixen <sup>db</sup>              | AH             | 105        | 78.91                       | 81.31 | 80.49 | 79.11 | 78.24 |
| HERBICIDE TOLERANT               |                |            |                             |       |       |       |       |
| Hammer CL Plus <sup>db</sup>     | AH             | 75         | –                           | 81.53 | 81.28 | 81.00 | 80.21 |
| LRPB Anvil CL Plus <sup>db</sup> | AH             | 50         | –                           | –     | 81.31 | 82.17 | 79.92 |
| Sheriff CL Plus <sup>db</sup>    | APW            | 105        | 80.77                       | 81.96 | 81.86 | 80.72 | 80.74 |
| Tomahawk CL Plus <sup>db</sup>   | APW            | 21         | –                           | –     | –     | –     | 80.60 |
| Valiant CL Plus <sup>db</sup>    | AH             | 52         | –                           | –     | 82.34 | 82.14 | 82.38 |

– denotes no data available.

## WINTER WHEAT VARIETY NOTES

Winter wheats may facilitate early germination opportunities prior to 20 April in frost-prone environments. Winter wheats have an obligate requirement for cold (vernalisation) in order to flower. While limited yield results are provided in this guide, new varieties and breeding lines continue to be trialled in early sown NVT and agronomy trials supported by GRDC. Further information on variety performance and agronomy can be found as part of GRDC's Management of Early Sown Wheat and 'Hyper Yielding Cereals' projects.

**Table 11: South East long season wheat yield performance. NVT data 2020 and 2022.**

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

| Variety                       | Classification | Year              | 2020 | 2022 |
|-------------------------------|----------------|-------------------|------|------|
|                               |                | Mean yield (t/ha) | 6.07 | 5.72 |
|                               |                | No. trials        | 1    | 1    |
| CONVENTIONAL                  |                |                   |      |      |
| Accroc <sup>db</sup>          | FEED           | 2                 | 116  | 120  |
| Anapurna                      | FEED           | 2                 | 110  | 128  |
| BigRed <sup>db</sup>          | FEED           | 1                 | –    | 127  |
| Denison <sup>db</sup>         | APW            | 2                 | 103  | 76   |
| DS Bennett <sup>db</sup>      | ASW            | 2                 | 101  | 84   |
| EGA Wedgetail <sup>db</sup>   | APW*           | 2                 | 90   | 79   |
| Illabo <sup>db</sup>          | AH             | 2                 | 102  | 104  |
| Longsword <sup>db</sup>       | AWW            | 2                 | 97   | 90   |
| LRPB Beaufort <sup>db</sup>   | FEED           | 2                 | 122  | 121  |
| LRPB Nighthawk <sup>db</sup>  | APW            | 2                 | 93   | 96   |
| Manning <sup>db</sup>         | FEED           | 2                 | 107  | 105  |
| RGT Calabro                   | FEED           | 2                 | 121  | 126  |
| RGT Cesario <sup>db</sup>     | FEED           | 1                 | –    | 122  |
| RGT Zanzibar                  | FEED           | 2                 | 114  | 111  |
| Severn <sup>db</sup>          | FEED           | 1                 | –    | 95   |
| Stockade <sup>db</sup>        | APW            | 1                 | –    | 109  |
| Willaura <sup>db</sup>        | AH             | 1                 | –    | 91   |
| HERBICIDE TOLERANT            |                |                   |      |      |
| Valiant CL Plus <sup>db</sup> | AH             | 1                 | –    | 88   |

– denotes no data available. \* denotes default classification.



## MILLING WHEATS

### DS Bennett<sup>Ⓢ</sup>

DS Bennett<sup>Ⓢ</sup> is a slow, white, winter wheat with an ASW classification. It has a slow growth pattern and is suited to early sowing (from mid-March) in longer growing season environments. Its awnless characteristic and winter growth type means it can be used as a dual-purpose crop for grazing and grain, as well as being suited for hay. Released in 2018 (tested as ADV11.9419), bred by S&W Seeds. Seed is available from Seednet partners. EPR \$4.25 ex-GST.

### Illabo<sup>Ⓢ</sup>

Illabo<sup>Ⓢ</sup> is an AH white wheat with a mid winter maturity. It was released in 2018 by AGT and has an AH classification in SA. It can be sown early due to its vernalisation requirement, with its slower maturity lending it to grazing opportunities. Primarily suited to medium-high rainfall zones with a mid to long growing season. Illabo<sup>Ⓢ</sup> is a uniquely placed variety as it is the only AH winter wheat available in SA. Released in 2018 (tested as V09150-01), bred and marketed by AGT. Seed is available from AGT Affiliates, retailers or through Seed Sharing™. EPR \$3.50 ex-GST.

**Table 12: South East early season wheat yield performance. NVT data 2018–22. Data for 2021 not available.**

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

| Variety                      | Classification | Year              | 2018 | 2019 | 2020 | 2021               | 2022 |
|------------------------------|----------------|-------------------|------|------|------|--------------------|------|
|                              |                | Mean yield (t/ha) | 7.49 | 8.02 | 6.30 | 0.00               | 5.29 |
|                              |                | No. trials        | 1    | 1    | 1    | 0                  | 1    |
| CONVENTIONAL                 |                |                   |      |      |      |                    |      |
| Accroc <sup>Ⓢ</sup>          | FEED           | 4                 | 118  | 117  | 110  | Data not available | 129  |
| Ascot <sup>Ⓢ</sup>           | APW            | 2                 | —    | —    | 104  |                    | 103  |
| Beckom <sup>Ⓢ</sup>          | AH             | 4                 | 93   | 96   | 107  |                    | 97   |
| BigRed <sup>Ⓢ</sup>          | FEED           | 1                 | —    | —    | —    |                    | 138  |
| Catapult <sup>Ⓢ</sup>        | AH             | 4                 | 94   | 96   | 103  |                    | 85   |
| Coota <sup>Ⓢ</sup>           | AH             | 3                 | —    | 94   | 102  |                    | 86   |
| Cutlass <sup>Ⓢ</sup>         | APW            | 4                 | 98   | 89   | 97   |                    | 85   |
| Denison <sup>Ⓢ</sup>         | APW            | 3                 | —    | 93   | 100  |                    | 84   |
| DS Bennett <sup>Ⓢ</sup>      | ASW            | 4                 | 110  | 107  | 104  |                    | 108  |
| DS Pascal <sup>Ⓢ</sup>       | APW            | 4                 | 101  | 108  | 105  |                    | 110  |
| EG Jet <sup>Ⓢ</sup>          | APW            | 3                 | —    | 112  | 109  |                    | 117  |
| EG Titanium                  | AH             | 3                 | —    | 90   | 89   |                    | 81   |
| EGA Wedgetail <sup>Ⓢ</sup>   | APW*           | 4                 | 99   | 94   | 89   |                    | 91   |
| Illabo <sup>Ⓢ</sup>          | AH             | 4                 | 103  | 106  | 103  |                    | 110  |
| Longsword <sup>Ⓢ</sup>       | AWW            | 4                 | 99   | 95   | 101  |                    | 95   |
| LRPB Beaufort <sup>Ⓢ</sup>   | FEED           | 4                 | 114  | 116  | 115  |                    | 121  |
| LRPB Major <sup>Ⓢ</sup>      | AH             | 1                 | —    | —    | —    |                    | 101  |
| LRPB Nighthawk <sup>Ⓢ</sup>  | APW            | 4                 | 103  | 101  | 97   |                    | 101  |
| LRPB Trojan <sup>Ⓢ</sup>     | APW            | 4                 | 91   | 96   | 102  |                    | 88   |
| Manning <sup>Ⓢ</sup>         | FEED           | 4                 | 108  | 114  | 97   |                    | 119  |
| Mowhawk <sup>Ⓢ</sup>         | APW            | 1                 | —    | —    | —    |                    | 112  |
| RGT Calabro                  | FEED           | 4                 | 114  | 119  | 109  |                    | 131  |
| RGT Cesario <sup>Ⓢ</sup>     | FEED           | 2                 | —    | —    | 111  |                    | 127  |
| RGT Waugh <sup>Ⓢ</sup>       | FEED           | 2                 | —    | —    | 113  |                    | 142  |
| RGT Zanzibar                 | FEED           | 4                 | 113  | 111  | 118  |                    | 123  |
| RockStar <sup>Ⓢ</sup>        | AH             | 3                 | —    | 110  | 115  |                    | 107  |
| Severn <sup>Ⓢ</sup>          | FEED           | 2                 | 104  | —    | —    |                    | 110  |
| Stockade <sup>Ⓢ</sup>        | APW            | 1                 | —    | —    | —    |                    | 116  |
| Sunflex <sup>Ⓢ</sup>         | AH             | 4                 | 102  | 106  | 104  |                    | 100  |
| Willaura <sup>Ⓢ</sup>        | AH             | 1                 | —    | —    | —    |                    | 90   |
| HERBICIDE TOLERANT           |                |                   |      |      |      |                    |      |
| Sheriff CL Plus <sup>Ⓢ</sup> | APW            | 3                 | —    | 95   | 102  | Data not available | 88   |
| Valiant CL Plus <sup>Ⓢ</sup> | AH             | 2                 | —    | —    | 106  |                    | 103  |

– denotes no data available. \* denotes default classification.

## Longsword<sup>Ⓛ</sup>

Longsword<sup>Ⓛ</sup> is a quick winter maturing variety and classified as an Australian White Wheat (AWW). Its quick winter development means that once its vernalisation requirement is met, it is very fast to flower. It is most suited to April sowing dates. Released in 2017 (tested as RAC2341), bred and marketed by AGT. Seed is available from AGT Affiliates, retailers or through Seed Sharing™. EPR \$2.75 ex-GST.

## NEW – Mowhawk<sup>Ⓛ</sup>

Mowhawk<sup>Ⓛ</sup> is a quick winter wheat with an APW classification. It has a vernalisation requirement, but it is quick to flower and mature once the vernalisation requirements have been met. Mowhawk<sup>Ⓛ</sup> has a similar development pattern to Longsword<sup>Ⓛ</sup> and is suited to early sowing in warmer environments. Released in 2023 (tested as LPB19-14343) by LongReach Plant Breeders. Seed is available through LongReach Seed Growers. EPR 4.00 ex-GST.

## FEED WINTER WHEATS

### Accroc<sup>Ⓛ</sup>

Accroc<sup>Ⓛ</sup> is a slow maturity red winter wheat, feed grain quality. It is suited to the high-rainfall zone and for sowing from late February to early April for early grazing. Very high-yielding variety with good options for grazing and grain production. Released in 2016 (tested as SFR86-054). Seed is available via Seed Force Broadacre Commercial Partners. EPR \$4.00 ex-GST.

### Anapurna

Anapurna is red feed wheat with a slow maturity. It is an imported European variety introduced by AGT in collaboration with Field Applied Research (FAR) Australia as part of the 'Hyper Yielding Cereals' project. Anapurna is most suited to a long growing season in the high-rainfall zones of SA. It is best suited to early planting and provides grazing opportunities from early sowing in high-rainfall environments. Anapurna has long vegetative growth phases and similar maturity to Accroc<sup>Ⓛ</sup>. It was released in 2020. Seed is available from AGT Affiliates, retailers or through Seed Sharing™. EPR \$3.20 ex-GST.

**Table 13: Upper Eyre Peninsula and Murray Mallee early break wheat yield performance. NVT data 2020–22.**

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

| Variety                      | Classification | Upper Eyre Peninsula |      |      |      | Murray Mallee     |      |      |
|------------------------------|----------------|----------------------|------|------|------|-------------------|------|------|
|                              |                | Year                 | 2020 | 2021 | 2022 | Year              | 2020 | 2022 |
|                              |                | Mean yield (t/ha)    | 2.00 | 3.82 | 4.61 | Mean yield (t/ha) | 3.69 | 3.03 |
|                              |                | No. trials           | 1    | 1    | 1    | No. trials        | 1    | 2    |
| <b>CONVENTIONAL</b>          |                |                      |      |      |      |                   |      |      |
| Catapult <sup>Ⓛ</sup>        | AH             | 3                    | 97   | 106  | 101  | 3                 | 106  | 103  |
| Cutlass <sup>Ⓛ</sup>         | APW            | 3                    | 104  | 110  | 106  | 3                 | 108  | 106  |
| Denison <sup>Ⓛ</sup>         | APW            | 3                    | 102  | 111  | 107  | 3                 | 105  | 108  |
| DS Bennett <sup>Ⓛ</sup>      | ASW            | 3                    | 114  | 100  | 123  | 3                 | 113  | 118  |
| Illabo <sup>Ⓛ</sup>          | AH             | 3                    | 113  | 107  | 103  | 3                 | 108  | 98   |
| Longsword <sup>Ⓛ</sup>       | AWW            | 3                    | 104  | 100  | 101  | 3                 | 93   | 91   |
| LRPB Bale <sup>Ⓛ</sup>       | APW            | 2                    | –    | 97   | 98   | 2                 | –    | 98   |
| LRPB Nighthawk <sup>Ⓛ</sup>  | APW            | 3                    | 102  | 95   | 100  | 3                 | 101  | 98   |
| Mowhawk <sup>Ⓛ</sup>         | APW            | 1                    | –    | –    | 105  | 2                 | –    | 104  |
| RockStar <sup>Ⓛ</sup>        | AH             | 3                    | 97   | 106  | 112  | 3                 | 127  | 114  |
| Stockade <sup>Ⓛ</sup>        | APW            | 1                    | –    | –    | 118  | 2                 | –    | 115  |
| Yitpi <sup>Ⓛ</sup>           | AH             | 3                    | 96   | 98   | 92   | 3                 | 85   | 94   |
| <b>HERBICIDE TOLERANT</b>    |                |                      |      |      |      |                   |      |      |
| Sheriff CL Plus <sup>Ⓛ</sup> | APW            | 3                    | 90   | 92   | 93   | 3                 | 95   | 96   |
| Valiant CL Plus <sup>Ⓛ</sup> | AH             | 2                    | –    | 109  | 105  | 2                 | –    | 106  |

– denotes no data available.

**BigRed<sup>Ⓛ</sup>**

BigRed<sup>Ⓛ</sup> is a mid-slow maturing red feed winter wheat. Suited for the medium to high-rainfall zones and performs well under irrigation. It can be used as a dual-purpose variety when early sowing is achieved. Released in 2022 (tested as AGFWH004718), bred by AGF Seeds. Seed is available from AGF Seeds and through participating resellers. EPR \$3.65 ex-GST.

**Manning<sup>Ⓛ</sup>**

Manning<sup>Ⓛ</sup> is a very slow maturing winter wheat, classified as a white feed wheat in SA. It is an awnless type and its slow growth pattern enable dual-purpose uses, including grazing, while still maintaining high yield potential. Best suited to high-rainfall environments with a long growing season, Manning<sup>Ⓛ</sup> provides competitive high yields within those environments. Released in 2013 (CS9274). Seed is available from GrainSearch affiliates or contact GrainSearch for more details. EPR \$3.50 ex-GST.

**RGT Calabro**

RGT Calabro is a slow maturing, red feed grain, awned winter wheat. Well suited to the long growing seasons of the high-rainfall zone. It has a very high yield potential and performs well from sowing in late February to March with potential for early grazing. Released in 2017 (tested as SFR86-036). Seed is available via Seed Force Broadacre Commercial Partners. EPR \$4.00 ex-GST.

**RGT Cesario<sup>Ⓛ</sup>**

RGT Cesario<sup>Ⓛ</sup> is a slow maturing red winter wheat. It is an awnless variety that has very high yield potential in high-rainfall zones of SA with a long growing season. Well suited to early grazing combined with the high yield making it a variety well suited to dual-purpose uses. Released in 2021 (tested as SFR86-090). Seed is available via Seed Force Broadacre Commercial Partners. EPR \$4.00 ex-GST.

**DURUM WHEAT VARIETY NOTES**

There are no released durum varieties suited for earlier planting. The development speed of durum varieties was compared with Scepter<sup>Ⓛ</sup> and LRPB Trojan<sup>Ⓛ</sup> in time-of-sowing trials across a range of dates in May at Loxton and Tarlee in SA in the 2018 season (SAGIT-funded project S518). From these trials, most of the durum varieties were characterised as quick to mid or mid-maturing within the range of Scepter<sup>Ⓛ</sup> and LRPB Trojan<sup>Ⓛ</sup> and therefore suited to early-mid May sowing in SA.

**Bitalli<sup>Ⓛ</sup>**

Bitalli<sup>Ⓛ</sup> is a quick-mid maturity wheat, slightly slower than Saintly<sup>Ⓛ</sup>, which is eligible for Australian Premium Durum (ADR) in SA. Bitalli<sup>Ⓛ</sup> is widely adapted and well suited to durum growing regions across the Mid North and Yorke Peninsula. Bitalli<sup>Ⓛ</sup> offers good physical grain characteristics including low screenings and good test weights. Released in 2019 (tested as AGTD088), bred and marketed by AGT. Seed is available through AGT Affiliates, retailers or through Seed Sharing™. EPR \$3.50 ex-GST.

**DBA Artemis<sup>Ⓛ</sup>**

DBA Artemis<sup>Ⓛ</sup> is a quick-mid maturity variety that is eligible for ADR in SA. It is one of the slowest maturing durum varieties available. Released in 2019 (tested as UAD1154197) by Durum Breeding Australia's Southern Node (University of Adelaide). Seed is available through farmer-to-farmer trade. EPR \$3.00 ex-GST.

**DBA Spes<sup>Ⓛ</sup>**

DBA Spes<sup>Ⓛ</sup> is a quick-mid maturity variety that is eligible for ADR in SA. Released in 2018 (tested as UAD1154192) by the Durum Breeding Australia's Southern Node (University of Adelaide). Seed is available through farmer-to-farmer trade. EPR \$3.00 ex-GST.

**Table 14: Suitable durum wheat varieties for planting in South Australia.**

| Variety                  | Maximum grade | Maturity classification | (\$/t) | Release | Breeder                |
|--------------------------|---------------|-------------------------|--------|---------|------------------------|
| Bitalli <sup>Ⓛ</sup>     | ADR           | Q-M                     | 3.50   | 2019    | AGT                    |
| DBA Spes <sup>Ⓛ</sup>    | ADR           | Q-M                     | 3.00   | 2018    | University of Adelaide |
| DBA Vittaro <sup>Ⓛ</sup> | ADR           | Q-M                     | 3.30   | 2017    | NSW DPI                |
| DBA-Artemis <sup>Ⓛ</sup> | ADR           | Q-M                     | 3.00   | 2019    | University of Adelaide |
| DBA-Aurora <sup>Ⓛ</sup>  | ADR           | Q-M                     | 3.00   | 2014    | University of Adelaide |
| Patron <sup>Ⓛ</sup>      | ADR           | Q-M                     | 4.00   | 2022    | AGT                    |
| Saintly <sup>Ⓛ</sup>     | ADR           | Q                       | 3.00   | 2008    | AGT                    |
| Westcourt <sup>Ⓛ</sup>   | ADR           | Q-M                     | 3.50   | 2019    | AGT                    |

– denotes no data available. Maximum grade: ADR = Australia Premium Durum. Maturity classification: Q = quick, Q-M = quick-mid.

**DBA Vittaroi<sup>db</sup>**

DBA Vittaroi<sup>db</sup> is a quick-mid maturity variety that is eligible for ADR in SA. It is shorter in stature than DBA-Aurora<sup>db</sup> with good straw strength and tolerance to lodging. Released in 2017 (tested as TD280913) by Durum Breeding Australia's Northern Node (Tamworth, NSW DPI). Seed is available from Seednet. EPR \$3.30 ex-GST.

**DBA-Aurora<sup>db</sup>**

DBA-Aurora<sup>db</sup> is a quick-mid maturity variety that is eligible for ADR in SA. DBA-Aurora<sup>db</sup> has grain size and screening levels consistent with other varieties available. Released in 2014 (tested as UAD0951096) from the Durum Breeding Australia's Southern Node (University of Adelaide). Seed is available through farmer-to-farmer trade. EPR \$3.00 ex-GST.

**Patron<sup>db</sup>**

Patron<sup>db</sup> is a quick-mid maturity variety that is eligible for ADR in SA. It is a high-yielding variety that has good grain quality characteristics. It is best suited to the medium-high yield potential environments of SA. Released in 2022 (tested as AGTD109), bred and marketed by AGT. Seed is available through AGT Affiliates, retailers or through Seed Sharing™. EPR \$4.00 ex-GST.

**Westcourt<sup>db</sup>**

Westcourt<sup>db</sup> is a quick-mid maturing wheat eligible for ADR in SA. It has good physical grain quality characteristics with low screenings. Released in 2019 (tested as AGTD090), bred and marketed by AGT. Seed is available through AGT Affiliates, retailers or through Seed Sharing™. EPR \$3.50 ex-GST.

**Table 15: Disease responses of durum wheat varieties and reaction to common disorders.**

| Variety                    | Rust |        |        | Septoria tritici blotch | Yellow leaf spot | Powdery mildew | Black point | CCN | Crown rot |
|----------------------------|------|--------|--------|-------------------------|------------------|----------------|-------------|-----|-----------|
|                            | Stem | Stripe | Leaf   |                         |                  |                |             |     |           |
| Bitalli <sup>db</sup>      | RMR  | MRMS   | MR     | MSS                     | MRMS             | S              | MS          | MSS | SVS       |
| DBA Spes <sup>db</sup>     | R    | MS     | RMR    | S                       | MRMS             | S              | MS          | MS  | VS        |
| DBA Vittaroi <sup>db</sup> | MR   | MS     | RMR    | MSS                     | MRMS             | MRMS           | MSS         | S   | SVS       |
| DBA-Artemis <sup>db</sup>  | MR   | MRMS   | RMR    | MRMS/S                  | MRMS             | SVS            | MS          | MS  | VS        |
| Patron <sup>db</sup>       | RMR  | MRMS   | MR (P) | MR (P)                  | MRMS             | SVS            | S (P)       | S   | SVS (P)   |
| Westcourt <sup>db</sup>    | RMR  | MR     | RMR    | MS                      | MRMS             | S              | MSS         | MSS | VS        |

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

/ = pathotype differences (the second score after a / is the response to a rarer strain), # = may be more susceptible to alternate pathotypes (warning), (P) = provisional rating.

Black point is not a disease but is a physiological response to certain humid conditions.

Information on disease reaction was supplied by the Cereal Pathology Group (SARDI) under the GRDC NVT Pathology investment DAS1905-013SAX. Contact Dr Tara Garrard: [tara.garrard@sa.gov.au](mailto:tara.garrard@sa.gov.au)

**Table 16: Yorke Peninsula durum wheat yield performance. NVT data 2018–22.**

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

| Variety                    | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|-------------------|------|------|------|------|------|
|                            | Mean yield (t/ha) | 4.38 | 2.63 | 3.70 | 3.05 | 5.80 |
|                            | No. trials        | 2    | 3    | 2    | 3    | 2    |
| Bitalli <sup>db</sup>      | 12                | 109  | 113  | 104  | 109  | 106  |
| DBA Spes <sup>db</sup>     | 12                | 101  | 100  | 104  | 103  | 101  |
| DBA Vittaroi <sup>db</sup> | 12                | 103  | 104  | 99   | 106  | 94   |
| DBA-Artemis <sup>db</sup>  | 12                | 100  | 98   | 105  | 100  | 107  |
| DBA-Aurora <sup>db</sup>   | 12                | 104  | 104  | 105  | 107  | 101  |
| Patron <sup>db</sup>       | 5                 | –    | –    | –    | 111  | 116  |
| Saintly <sup>db</sup>      | 12                | 102  | 105  | 97   | 102  | 96   |
| Westcourt <sup>db</sup>    | 12                | 104  | 106  | 102  | 100  | 109  |

– denotes no data available.



**Table 17: Mid North durum wheat yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 1.84 | 3.00 | 5.02 | 5.01 | 7.14 |
|                           | No. trials        | 2    | 3    | 3    | 3    | 3    |
| Bitalli <sup>Ⓛ</sup>      | 14                | 115  | 109  | 105  | 103  | 111  |
| DBA Spes <sup>Ⓛ</sup>     | 14                | 107  | 99   | 106  | 106  | 106  |
| DBA Vittaroi <sup>Ⓛ</sup> | 14                | 112  | 100  | 105  | 102  | 100  |
| DBA-Artemis <sup>Ⓛ</sup>  | 14                | 98   | 100  | 103  | 105  | 108  |
| DBA-Aurora <sup>Ⓛ</sup>   | 14                | 113  | 101  | 109  | 107  | 109  |
| Patron <sup>Ⓛ</sup>       | 6                 | –    | –    | –    | 110  | 126  |
| Saintly <sup>Ⓛ</sup>      | 14                | 105  | 102  | 99   | 97   | 96   |
| Westcourt <sup>Ⓛ</sup>    | 14                | 97   | 107  | 97   | 98   | 106  |

– denotes no data available.

**Table 18: Mid North and Yorke Peninsula durum wheat test weight performance. NVT data 2018–22.**

| Variety                  | Test weight (kg/hectolitre) |      |      |      |      |      |                 |      |      |      |      |      |
|--------------------------|-----------------------------|------|------|------|------|------|-----------------|------|------|------|------|------|
|                          | Mid North                   |      |      |      |      |      | Yorke Peninsula |      |      |      |      |      |
|                          | Year                        | 2018 | 2019 | 2020 | 2021 | 2022 | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|                          | No. trials                  | 2    | 3    | 3    | 3    | 3    | No. Trials      | 2    | 3    | 2    | 3    | 2    |
| Bitalli <sup>Ⓛ</sup>     | 14                          | 76.6 | 82.2 | 84.2 | 83.7 | 81.9 | 12              | 80.9 | 81.9 | 80.9 | 79.7 | 79.0 |
| DBA Spes <sup>Ⓛ</sup>    | 14                          | 74.6 | 80.3 | 82.8 | 82.6 | 80.7 | 12              | 79.7 | 80.6 | 77.7 | 77.7 | 75.2 |
| DBA-Artemis <sup>Ⓛ</sup> | 14                          | 74.7 | 81.0 | 83.1 | 83.5 | 81.0 | 12              | 80.2 | 81.4 | 77.8 | 79.4 | 76.2 |
| DBA-Aurora <sup>Ⓛ</sup>  | 14                          | 74.9 | 81.3 | 82.7 | 82.8 | 81.0 | 12              | 79.5 | 80.8 | 78.9 | 79.2 | 70.7 |
| Patron <sup>Ⓛ</sup>      | 6                           | –    | –    | –    | 83.8 | 81.4 | 5               | –    | –    | –    | 80.0 | 77.3 |
| Westcourt <sup>Ⓛ</sup>   | 14                          | 75.7 | 82.2 | 84.1 | 84.3 | 82.0 | 12              | 82.5 | 83.1 | 80.4 | 81.7 | 79.8 |

– denotes no data available.

**Table 19: Mid North and Yorke Peninsula durum wheat screenings performance. NVT data 2018–22.**

| Variety                  | Screenings (% < 2.00mm) |      |      |      |      |      |                 |      |      |      |      |      |
|--------------------------|-------------------------|------|------|------|------|------|-----------------|------|------|------|------|------|
|                          | Mid North               |      |      |      |      |      | Yorke Peninsula |      |      |      |      |      |
|                          | Year                    | 2018 | 2019 | 2020 | 2021 | 2022 | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|                          | No. trials              | 2    | 3    | 3    | 3    | 3    | No. Trials      | 2    | 3    | 2    | 3    | 2    |
| Bitalli <sup>Ⓛ</sup>     | 14                      | 7.38 | 4.31 | 0.44 | 1.96 | 0.56 | 12              | 0.42 | 1.33 | 1.65 | 2.15 | 0.77 |
| DBA Spes <sup>Ⓛ</sup>    | 14                      | 9.01 | 4.36 | 0.97 | 2.58 | 0.60 | 12              | 1.01 | 2.46 | 1.78 | 2.97 | 1.17 |
| DBA-Artemis <sup>Ⓛ</sup> | 14                      | 8.30 | 3.93 | 1.32 | 1.79 | 0.64 | 12              | 0.78 | 1.95 | 2.79 | 2.35 | 1.34 |
| DBA-Aurora <sup>Ⓛ</sup>  | 14                      | 5.45 | 3.59 | 1.10 | 1.84 | 0.53 | 12              | 0.68 | 2.36 | 2.13 | 2.12 | 1.17 |
| Patron <sup>Ⓛ</sup>      | 6                       | –    | –    | –    | 1.28 | 0.50 | 5               | –    | –    | –    | 1.43 | 0.99 |
| Westcourt <sup>Ⓛ</sup>   | 14                      | 8.34 | 1.50 | 0.39 | 0.81 | 0.30 | 12              | 0.15 | 0.51 | 0.71 | 0.81 | 0.42 |

– denotes no data available.

## ACKNOWLEDGEMENTS

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# BARLEY

By Melissa McCallum and Tara Garrard, SARDI

This sowing guide provides data and guidance on the most suitable barley varieties for sowing in South Australia in 2024. Since publication of the 2023 guide, the new varieties Neo<sup>®</sup>, Newton<sup>®</sup>, IGB21130 and SCA21-Y003 have been released, with a suite of potential varieties undergoing malt accreditation.

These newly released varieties have not necessarily been included in the NVT release pathway. As such, there is no NVT disease or yield data available. Contact your local seed marketer or breeder for more detail on these varieties. This includes Neo<sup>®</sup>, Newton<sup>®</sup> and IGB21130.

The decision to grow a malting, food or feed variety may depend on one or more factors, such as:

- market demand and malting varietal storage segregations in bulk storage facilities;
- the difference in payments between malting and feed grades compared with yield differences;
- the likelihood of producing a malting-grade barley within malt receival specifications; and
- disease resistance and agronomic considerations.

**Table 1: Suitable barley varieties for planting in South Australia, listed according to herbicide tolerance in alphabetical order.**

| Variety                   | Maximum grade | Maturity classification | Herbicide tolerance | (\$/t) | Release | Breeder                        |
|---------------------------|---------------|-------------------------|---------------------|--------|---------|--------------------------------|
| <b>CONVENTIONAL</b>       |               |                         |                     |        |         |                                |
| Beast <sup>®</sup>        | FEED          | VQ                      | –                   | 4.00   | 2020    | AGT                            |
| Buff <sup>®</sup>         | FEED          | Q                       | –                   | 3.50   | 2018    | InterGrain                     |
| Combat <sup>®</sup>       | FEED          | VQ-Q                    | –                   | 3.50   | 2022    | InterGrain                     |
| Compass <sup>®</sup>      | Malt          | VQ-Q                    | –                   | 3.80   | 2015    | University of Adelaide         |
| Cyclops <sup>®</sup>      | FEED          | VQ-Q                    | –                   | 4.00   | 2021    | AGT                            |
| Fathom <sup>®</sup>       | FEED          | Q                       | –                   | 2.00   | 2014    | University of Adelaide         |
| IGB21130                  | FEED          | Q-M                     | –                   | TBD    | 2024    | InterGrain                     |
| La Trobe <sup>®</sup>     | Malt          | VQ-Q                    | –                   | 4.00   | 2013    | InterGrain                     |
| Laperouse <sup>®</sup>    | FEED          | VQ-Q                    | –                   | 3.80   | 2020    | University of Adelaide/Secobra |
| Leabrook <sup>®</sup>     | Malt          | VQ-Q                    | –                   | 3.80   | 2019    | University of Adelaide         |
| Minotaur <sup>®</sup>     | FEED          | Q                       | –                   | 4.00   | 2021    | AGT                            |
| Newton <sup>®</sup>       | FEED          | M (+W)                  | –                   | 3.50   | 2023    | Secobra                        |
| RGT Planet <sup>®</sup>   | Malt          | Q                       | –                   | 4.00   | 2017    | RAGT                           |
| Rosalind <sup>®</sup>     | FEED          | VQ-Q                    | –                   | 3.50   | 2015    | InterGrain                     |
| SCA21-Y003                | FEED          | VQ-Q                    | –                   | 4.00   | 2024    | Secobra                        |
| <b>HERBICIDE TOLERANT</b> |               |                         |                     |        |         |                                |
| Commodus <sup>®</sup> CL  | FEED          | VQ-Q                    | Imidazolinone       | 4.25   | 2021    | InterGrain/GIA                 |
| Maximus <sup>®</sup> CL   | Malt          | VQ-Q                    | Imidazolinone       | 4.25   | 2020    | InterGrain                     |
| Neo <sup>®</sup>          | FEED          | Q                       | Imidazolinone       | 4.25   | 2023    | InterGrain                     |
| Spartacus CL <sup>®</sup> | Malt          | VQ-Q                    | Imidazolinone       | 4.25   | 2016    | InterGrain                     |
| Titan AX <sup>®</sup>     | FEED          | Q                       | Group 1/A           | 4.55   | 2022    | AGT                            |
| Zena <sup>®</sup> CL      | FEED          | Q                       | Imidazolinone       | 4.25   | 2022    | InterGrain/GIA                 |

**Maturity:** VQ = very quick, Q = quick, M = mid, S = slow, VS = very slow, (+W) = winter barley.  
GIA = Grains Innovation Australia.

## MARKETING

Growers need to consider which varietal option will lead to the greatest profitability. The difference in the price premium paid for malt relative to feed may counteract the yield difference between malt and feed or food varieties. Other scenarios may favour high-yielding feed or food varieties where there is a low probability of achieving malt and a desire for lower input costs.

Among malt and food varieties, differential pricing will be a continuing trend and growers need to consider market premiums and discounts as well as agronomic performance to maximise profitability. Newer food and malt varieties are now offering good yield potential. Varieties accredited and varieties undergoing malt evaluation now have similar yield potential as feed varieties, making it worthwhile for growers to consider including some malting varieties in their cropping program.

It is important that growers contact their grain marketers to discuss market demand prior to sowing a malting variety. Malting barley is grown, stored and sold on a variety-specific basis and it is important to ascertain if the variety chosen is able to be stored and marketed in your area. The Grains Australia preferred list is updated annually as a guide to industry on the market-preferred varieties and can be found online at [grainsaustralia.com.au](http://grainsaustralia.com.au).

The preferred list is determined by marketing companies and reflects their opinion on which malting varieties will be sought by purchasers of Australian malting barley. In many cases accreditation of a new variety does not mean the variety will be a preferred variety. Preferred varieties are listed once market demand is established.

Table 2 lists some of the current varieties under malt barley evaluation by the Malting and Brewing Industry Barley Technical Committee (MBIBTC) in conjunction with Pilot Malting Australia, Pilot Brewing Australia and Grains Australia Barley Council, including the anticipated timeline for accreditation. Accreditation is only granted if the variety satisfies the selection criteria set by the MBIBTC and the Barley Council.

Information includes:

- list of preferred malting barley varieties, [grainsaustralia.com.au/master-lists/malting-variety-list/#barley-master-list/preferred](http://grainsaustralia.com.au/master-lists/malting-variety-list/#barley-master-list/preferred)
- updated status of malting barley evaluation, [grainsaustralia.com.au/master-lists/malting-variety-list/#barley-master-list/varieties-under-evaluation](http://grainsaustralia.com.au/master-lists/malting-variety-list/#barley-master-list/varieties-under-evaluation)

## BARLEY VARIETY NOTES

### Beast<sup>®</sup>

Beast<sup>®</sup> is a very quick maturing variety that is undergoing malt evaluation with Grains Australia, with a decision expected in 2024. It is suited to medium to low-rainfall environments and performs well in stressed growing conditions. It is similar in plant type to Compass<sup>®</sup>, offering useful early vigour and weed competitiveness, but care should be taken in lodging-susceptible conditions. It was released in 2020 (tested as AGTB0113) and is bred and marketed by AGT. Seed is available through AGT Affiliates and is eligible for AGT Seed Sharing™. EPR \$4.00 ex-GST.

### Combat<sup>®</sup>

Combat<sup>®</sup> is a very quick-quick maturing feed barley. It has a semi-prostrate growth habit that will provide improved weed competition over the erect growth habit of Rosalind<sup>®</sup> and similar varieties. Combat<sup>®</sup> was released in 2022 (tested as IGB1944) and is bred by InterGrain. Seed is available from local resellers or InterGrain Seedclub members. EPR \$3.50 ex-GST.

### Commodus<sup>®</sup> CL

Commodus<sup>®</sup> CL is an imidazolinone-tolerant barley with very quick-quick maturity that is undergoing malt evaluation with Grains Australia, with a decision expected in 2024. Commodus<sup>®</sup> CL is closely related to Compass<sup>®</sup> and performs similar agronomically with the addition of imidazolinone tolerance. It is suited to the low-medium rainfall environments but with a similar risk of head loss and lodging as Compass<sup>®</sup>. It was released in 2021 (tested as IGB1908) and bred by Grains Innovation Australia and InterGrain. Seed is available through InterGrain Seedclub members. EPR \$4.25 ex-GST.

### Compass<sup>®</sup>

Compass<sup>®</sup> is a very quick-quick maturing malt accredited variety. It is prone to lodging and head loss in high-yielding environments. It was released in 2015 (tested as WI4593) and bred by University of Adelaide. Seed is available from Seednet. EPR \$3.80 ex-GST.

### Cyclops<sup>®</sup>

Cyclops<sup>®</sup> is a very quick-quick maturing variety that is undergoing malt evaluation with Grains Australia, with a decision expected in 2024. It has an erect plant type like Hindmarsh<sup>®</sup> and Spartacus CL<sup>®</sup> with a similar maturity pattern to Spartacus CL<sup>®</sup>. It was released in 2021 (tested as AGTB0200) and is bred and marketed by AGT. Seed is available through AGT Affiliates. EPR \$4.00 ex-GST.

**Table 2: Released varieties undergoing malt evaluation and expected timeline (Grains Australia).**

| Variety                   | Year 0           | Stage 1            | Stage 2   | Target decision date |
|---------------------------|------------------|--------------------|-----------|----------------------|
| Beast <sup>db</sup>       | 2020 (accepted)  | 2021 (passed)      | 2023      | 2024                 |
| Commodus <sup>db</sup> CL | 2021 (accepted)  | 2021 (passed)      | 2022/2023 | 2024                 |
| Cyclops <sup>db</sup>     | 2021 (accepted)  | 2021 (passed)      | 2023      | 2024                 |
| IGB21130                  | 2023 (accepted)  | 2024               | 2025      | 2026                 |
| Laperouse <sup>db</sup>   | 2019 (accepted)  | 2020/2021 (passed) | 2021/2023 | 2024                 |
| Minotaur <sup>db</sup>    | 2021 (accepted)  | 2021/2022 (passed) | 2023      | 2024                 |
| Neo <sup>db</sup>         | 2023 (accepted)  | 2023               | 2024      | 2025                 |
| SCA21-Y003                | 2023 (submitted) | –                  | –         | –                    |
| Titan AX <sup>db</sup>    | 2023 (accepted)  | 2023               | 2024      | 2025                 |
| Yeti <sup>db</sup>        | 2020 (accepted)  | 2020/2022 (passed) | 2023      | 2025                 |
| Zena <sup>db</sup> CL     | 2022 (accepted)  | 2022 (passed)      | 2024      | 2024                 |

**Table 3: Disease reactions of selected barley varieties.**

|                            | Leaf rust | Net form net blotch | Spot form net blotch | Leaf scald | Ramularia leaf spot | Root lesion nematode |                   | Cereal cyst nematode | Crown rot | Black point |
|----------------------------|-----------|---------------------|----------------------|------------|---------------------|----------------------|-------------------|----------------------|-----------|-------------|
|                            |           |                     |                      |            |                     | <i>P. neglectus</i>  | <i>P. thornei</i> |                      |           |             |
| Beast <sup>db</sup>        | MS-SVS    | MR-S                | MS                   | SVS        | SVS (P)             | MRMS                 | MRMS              | MR                   | S         | MSS         |
| Combat <sup>db</sup>       | MSS       | MR-MSS              | RMR                  | S          | SVS (P)             | MR                   | MS                | MRMS                 | S (P)     | MSS (P)     |
| Commodus <sup>db</sup> CL  | S         | MR-MSS              | MSS                  | MSS-SVS    | SVS (P)             | MRMS                 | MRMS              | R                    | S (P)     | MS          |
| Compass <sup>db</sup>      | VS        | MRMS-S              | MS                   | MSS-SVS    | SVS (P)             | MRMS                 | MR                | R                    | S         | MSS         |
| Cyclops <sup>db</sup>      | VS        | MR-MS               | MS                   | S          | SVS (P)             | MRMS                 | MRMS              | S                    | S (P)     | MS          |
| Fandaga <sup>db</sup>      | MSS       | MR-VS               | S                    | SVS        | VS (P)              | MR                   | MR                | R                    | MSS (P)   | MRMS (P)    |
| Fathom <sup>db</sup>       | MRMS-S    | MSS-SVS             | RMR                  | R-S        | SVS (P)             | MRMS                 | MR                | R                    | SVS       | MSS         |
| Kiwi                       | RMR-MS    | R-MRMS              | MSS                  | SVS        | VS (P)              | MRMS                 | RMR               | S                    | S         | MS          |
| Laperouse <sup>db</sup>    | SVS       | MR-MS               | MRMS                 | SVS        | VS (P)              | MR                   | MR                | S                    | S         | MSS         |
| Leabrook <sup>db</sup>     | SVS       | MR-MSS              | MS                   | MRMS-SVS   | VS (P)              | MRMS                 | RMR               | RMR                  | S         | MS          |
| LG Alestar <sup>db</sup>   | MS        | MR-S                | S                    | SVS        | SVS (P)             | MR                   | MR                | R <sup>^</sup> (P)   | S         | MRMS        |
| Maximus <sup>db</sup> CL   | S         | MR-MS               | MS                   | R-SVS      | VS (P)              | MRMS                 | MR                | R                    | S         | MSS         |
| Minotaur <sup>db</sup>     | S-VS      | MR-MS               | S                    | VS         | SVS (P)             | MRMS                 | MR                | R                    | MS        | MS          |
| RGT Planet <sup>db</sup>   | MRMS-MS   | MRMS-SVS            | SVS                  | R-SVS      | VS (P)              | MRMS                 | MR                | R (P)                | MSS       | MRMS        |
| Rosalind <sup>db</sup>     | MR-MS     | R-MRMS              | S                    | MR-S       | VS (P)              | MRMS                 | MR                | R                    | MSS       | MS          |
| SCA21-Y003                 | MSS       | MR-MSS              | SVS                  | R/S        | SVS (P)             | MR                   | MS                | S                    | MSS (P)   | MS (P)      |
| Scope CL <sup>db</sup>     | MS-SVS    | R-MR                | MSS                  | MRMS-SVS   | SVS (P)             | MRMS                 | MRMS              | S                    | S         | MS          |
| Spartacus CL <sup>db</sup> | S         | MS-VS               | S                    | R-SVS      | VS (P)              | MRMS                 | MRMS              | R                    | S         | MSS         |
| Titan AX <sup>db</sup>     | SVS       | MRMS-MSS            | MS                   | VS         | VS (P)              | R                    | MR                | MR (P)               | MSS (P)   | MSS (P)     |
| Westminster <sup>db</sup>  | MRMS      | R-S                 | S                    | R-S        | VS (P)              | MRMS                 | MS                | –                    | S         | MRMS        |
| Yeti <sup>db</sup>         | MSS-VS    | MR-MS               | MS-MSS               | VS         | VS (P)              | MR                   | MR                | RMR                  | S         | MSS         |
| Zena <sup>db</sup> CL      | MS        | MR-MSS              | S                    | R-S        | VS (P)              | MRMS                 | MR                | R                    | MSS (P)   | MRMS (P)    |

R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible, – = range, / = pathotype differences (the second score after a / is the response to a rarer strain), # = may be more susceptible to alternate pathotypes (warning), ^ = line contains a few susceptible off types, (P) = provisional rating.

A range of reactions is provided where different strains of the pathogen exist and where the variety may respond differently to them.

Information on disease reaction was supplied by the Cereal Pathology Group (SARDI) under the GRDC NVT Pathology investment DAS1905-013SAX. Contact Dr Tara Garrard: [tara.garrard@sa.gov.au](mailto:tara.garrard@sa.gov.au)



**NEW – IGB21130**

IGB21130 is a quick-mid maturing barley variety that is undergoing malt evaluation with Grains Australia. It is slower to mature than RGT Planet<sup>®</sup>, making it one of the slowest barley varieties available. Similar plant type to RGT Planet<sup>®</sup> but IGB21130 is shorter in height. Best suited to the longer growing seasons of the medium to high-rainfall zones where RGT Planet<sup>®</sup> has performed well. IGB21130 has been entered into the NVT system for the 2023 season. It is to be released in 2024 with seed available for the 2025 season. Bred by InterGrain, EPR TBC.

**Laperouse<sup>®</sup>**

Laperouse<sup>®</sup> is a very quick-quick maturing variety undergoing malt evaluation with Grains Australia, with a decision expected in 2024. It has a medium plant height with a growth pattern similar to Compass<sup>®</sup> but a slightly longer time to heading. It was released in 2020 (tested as WI4952) and bred by the University of Adelaide and SECOBRA Recherches. Seed is available and marketed by Seednet. EPR \$3.80 ex-GST.

**Leabrook<sup>®</sup>**

Leabrook<sup>®</sup> is a very quick-quick maturing variety with malt accreditation. It is closely related to Compass<sup>®</sup>, achieving high yields across a range of environments but susceptible to lodging and head loss. It has shown good physical grain quality with high retention and low screenings and low-moderate test weight. It was released in 2019 (tested as WI4896) and bred by the University of Adelaide. Seed is available from Seednet. EPR \$3.80 ex-GST.

**Maximus<sup>®</sup> CL**

Maximus<sup>®</sup> CL is a very quick-quick maturing, imidazolinone-tolerant barley that has malt accreditation. It has improved grain size compared with Spartacus CL<sup>®</sup>. It has a short coleoptile length and it is recommended that sowing depth be considered carefully. It was released in 2020 (tested as IGB1705T) and bred by InterGrain. Seed is available through InterGrain Seedclub members. EPR \$4.25 ex-GST.

**Minotaur<sup>®</sup>**

Minotaur<sup>®</sup> is quick maturing variety that is undergoing malt evaluation with Grains Australia, with a decision expected in 2024. It is an RGT Planet<sup>®</sup>-type variety reaching awn peep a day or two later. Best suited to medium to high-rainfall environments. It was released in 2021 (tested as AGTB0213) and is bred and marketed by AGT. Seed is available through AGT Affiliates. EPR \$4.00 ex-GST.

**NEW – Neo<sup>®</sup>**

Neo<sup>®</sup> is a quick maturing variety with imidazolinone tolerance. It is also undergoing malt accreditation with Grains Australia, a decision is expected in 2025. It has similar agronomic characteristics to RGT Planet<sup>®</sup> but with improved grain size. Neo<sup>®</sup> has been entered into the NVT system for the 2023 season. Released in 2023 (tested as IGB22102T) and bred by InterGrain. Seed is available through InterGrain Seedclub members. EPR \$4.25 ex-GST.

**NEW – Newton<sup>®</sup>**

Newton<sup>®</sup> is a mid maturing winter feed barley. The first new winter barley since Urambie in 2005. It requires a period of cold temperatures (vernalisation) to switch from vegetative to reproductive growth. Its time to flowering is comparable to winter wheat DS Bennett<sup>®</sup>. Newton<sup>®</sup> is a two-row barley that is suited to early sowing and has the potential to be grazed while maintaining yield potential. It has a high tillering potential and prostrate growth habit, producing high biomass and weed competitiveness. Canopy management is needed in high-rainfall areas with early sowing to achieve high yield potential and maintain harvestability. Newton<sup>®</sup> has been entered into the NVT system for the 2023 season, with prior evaluation in 'Hyper Yielding Cereals' projects. Released in 2023 and bred by SECOBRA Recherches. Seed is available from Seednet. EPR \$3.50 ex-GST.

**RGT Planet<sup>®</sup>**

RGT Planet<sup>®</sup> is a quick maturing variety with malt accreditation. It has performed well in medium to high-rainfall zones. It sets a high number of grains per head and is prone to lower test weights, small grain size and high screenings under suboptimal grain fill conditions. It has good head retention and straw strength, reducing yield losses due to lodging and head loss. It was released in 2017 (tested as SFR85-014) and bred by RAGT Seeds. Seed is available via Seed Force broadacre commercial partners. EPR \$4.00 ex-GST.

## NEW – SCA21-Y003

SCA21-Y003 is a very quick-quick maturing variety that has been submitted for malt accreditation with Grains Australia. SCA21-Y003 has a prostrate growth habit and a mature height between Laperouse<sup>®</sup> and RGT Planet<sup>®</sup>. Targeted for medium to high-rainfall zones where RGT Planet<sup>®</sup> has performed well. It will be released in early 2024, bred by SECOBRA Recherches. Seed will be available for the 2025 season through Seednet. EPR \$4.00 ex-GST.

## Spartacus CL<sup>®</sup>

Spartacus CL<sup>®</sup> is very quick-quick maturing imidazolinone-tolerant barley with malt accreditation. It is very quick maturing with a similar plant type and flowering behaviour to Hindmarsh<sup>®</sup> and La Trobe<sup>®</sup>. It has good head retention and straw strength but is susceptible to brackling in some seasonal conditions prior to harvest. It was released in 2016 (tested as IGB1334) and bred by InterGrain. Seed is available from local resellers and InterGrain Seedclub members. EPR \$4.25 ex-GST.

## Titan AX<sup>®</sup>

Titan AX<sup>®</sup> is a quick maturing variety with tolerance to Sipcam Aggressor<sup>®</sup> (Group 1) herbicides currently undergoing malt accreditation with Grains Australia. It is the world's first CoAXium<sup>®</sup> barley variety bred out of a partnership between AGT, Sipcam Australia and Albaugh (a US-based crop protection company). It is derived from Compass<sup>®</sup> and provides similar agronomic characteristics with the added benefit of being tolerant to Group 1 herbicides. It was released in 2022 (tested as AGTB0325) and is bred and marketed by AGT. Seed is available through AGT Affiliates. EPR \$4.55 ex-GST.

## Zena<sup>®</sup> CL

Zena<sup>®</sup> CL is a quick maturing, imidazolinone-tolerant variety that is undergoing malt evaluation with Grains Australia, with a decision expected by 2024. Closely related to RGT Planet<sup>®</sup>, it performs well in medium to high-rainfall zones. However, evaluation in NVT is limited. It was released in 2022 (tested as IGB20125T) and bred by Grains Innovation Australia and InterGrain. Seed is available through InterGrain Seedclub members. EPR \$3.50 ex-GST.

## YIELD PERFORMANCE EXPERIMENTS FROM 2018 TO 2022

The yield results presented are multi-environment trial (MET) data shown on a yearly regional group mean and an overall performance mean for the region. All yields are expressed as a percentage of mean yield from NVT data from 2018 to 2022 inclusive, along with some observations in adjacent columns. Further results can be found on the NVT website ([nvt.grdc.com.au](http://nvt.grdc.com.au)).

## GRAIN QUALITY FROM 2018 TO 2022

Grain quality for individual varieties varies between years. However, the trends across sites for a single year tend to be more consistent for a variety. Long-term results highlight trends in variety performance and consistency. Table 10 highlights the variation in test weight. Test weight is expressed as the mean test weight from NVT data 2018 to 2022 inclusive.

Table 11 highlights the variation in retention percentages. Retention is expressed as the mean percentage of grain greater than 2.5mm in size from NVT data from 2018 to 2022 inclusive.

Further results can be found on the NVT website at [nvt.grdc.com.au](http://nvt.grdc.com.au).

**Table 4: Upper Eyre Peninsula barley yield performance. NVT data 2018–22.**

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

| Variety                    | Classification      | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|---------------------|-----------------|------|------|------|------|------|
|                            |                     | Mean yield t/ha | 2.07 | 2.46 | 2.07 | 3.19 | 5.86 |
|                            |                     | No. trials      | 4    | 4    | 3    | 4    | 4    |
| CONVENTIONAL               |                     |                 |      |      |      |      |      |
| Beast <sup>db</sup>        | FEED – malt pending | 15              | –    | 120  | 120  | 117  | 95   |
| Combat <sup>db</sup>       | FEED                | 4               | –    | –    | –    | –    | 110  |
| Commander <sup>db</sup>    | Malt                | 19              | 107  | 98   | 93   | 99   | 95   |
| Compass <sup>db</sup>      | Malt                | 19              | 115  | 116  | 117  | 113  | 91   |
| Cyclops <sup>db</sup>      | FEED – malt pending | 11              | –    | –    | 112  | 114  | 106  |
| Fathom <sup>db</sup>       | FEED                | 19              | 115  | 112  | 108  | 106  | 94   |
| La Trobe <sup>db</sup>     | Malt                | 19              | 113  | 109  | 103  | 103  | 92   |
| Laperouse <sup>db</sup>    | FEED – malt pending | 19              | 113  | 110  | 110  | 113  | 101  |
| Leabrook <sup>db</sup>     | Malt                | 19              | 115  | 116  | 117  | 114  | 99   |
| Minotaur <sup>db</sup>     | FEED – malt pending | 11              | –    | –    | 108  | 110  | 112  |
| RGT Planet <sup>db</sup>   | Malt                | 19              | 93   | 97   | 96   | 94   | 115  |
| Rosalind <sup>db</sup>     | FEED                | 19              | 108  | 112  | 112  | 109  | 107  |
| SCA21-Y003                 | FEED – malt pending | 4               | –    | –    | –    | –    | 114  |
| Yeti <sup>db</sup>         | FEED – malt pending | 15              | –    | 113  | 118  | 117  | 101  |
| HERBICIDE TOLERANT         |                     |                 |      |      |      |      |      |
| Commodus <sup>db</sup> CL  | FEED – malt pending | 11              | –    | –    | 114  | 111  | 91   |
| Maximus <sup>db</sup> CL   | Malt                | 19              | 112  | 112  | 112  | 113  | 97   |
| Scope CL <sup>db</sup>     | Malt                | 19              | 99   | 93   | 89   | 92   | 88   |
| Spartacus CL <sup>db</sup> | Malt                | 19              | 110  | 109  | 109  | 108  | 93   |
| Titan AX <sup>db</sup>     | FEED – malt pending | 8               | –    | –    | –    | 114  | 97   |
| Zena <sup>db</sup> CL      | FEED – malt pending | 4               | –    | –    | –    | –    | 110  |

– denotes no data available.

**Table 5: Lower Eyre Peninsula barley yield performance. NVT data 2018–22.**

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

| Variety                    | Classification      | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|---------------------|-----------------|------|------|------|------|------|
|                            |                     | Mean yield t/ha | 5.98 | 1.10 | 3.34 | 5.34 | 5.79 |
|                            |                     | No. trials      | 2    | 1    | 3    | 2    | 2    |
| CONVENTIONAL               |                     |                 |      |      |      |      |      |
| Beast <sup>db</sup>        | FEED – malt pending | 8               | –    | 151  | 97   | 102  | 99   |
| Combat <sup>db</sup>       | FEED                | 4               | –    | –    | –    | 112  | 111  |
| Commander <sup>db</sup>    | Malt                | 10              | 97   | 83   | 95   | 98   | 96   |
| Compass <sup>db</sup>      | Malt                | 10              | 98   | 149  | 85   | 98   | 95   |
| Cyclops <sup>db</sup>      | FEED – malt pending | 7               | –    | –    | 118  | 109  | 107  |
| Fathom <sup>db</sup>       | FEED                | 10              | 102  | 134  | 93   | 104  | 99   |
| La Trobe <sup>db</sup>     | Malt                | 10              | 101  | 127  | 101  | 107  | 97   |
| Laperouse <sup>db</sup>    | FEED – malt pending | 10              | 102  | 107  | 114  | 101  | 100  |
| Leabrook <sup>db</sup>     | Malt                | 10              | 102  | 138  | 93   | 101  | 101  |
| Minotaur <sup>db</sup>     | FEED – malt pending | 7               | –    | –    | 121  | 106  | 109  |
| RGT Planet <sup>db</sup>   | Malt                | 10              | 107  | 78   | 108  | 105  | 111  |
| Rosalind <sup>db</sup>     | FEED                | 10              | 108  | 122  | 113  | 108  | 107  |
| SCA21-Y003                 | FEED – malt pending | 2               | –    | –    | –    | –    | 110  |
| Yeti <sup>db</sup>         | FEED – malt pending | 8               | –    | 131  | 113  | 101  | 101  |
| HERBICIDE TOLERANT         |                     |                 |      |      |      |      |      |
| Commodus <sup>db</sup> CL  | FEED – malt pending | 7               | –    | –    | 85   | 98   | 95   |
| Maximus <sup>db</sup> CL   | Malt                | 10              | 103  | 127  | 118  | 104  | 99   |
| Spartacus CL <sup>db</sup> | Malt                | 10              | 101  | 130  | 108  | 104  | 96   |
| Titan AX <sup>db</sup>     | FEED – malt pending | 2               | –    | –    | –    | –    | 100  |
| Zena <sup>db</sup> CL      | FEED – malt pending | 4               | –    | –    | –    | 103  | 108  |

– denotes no data available.

**Table 6: Yorke Peninsula yield performance. NVT data 2018–22.**

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

| Variety                    | Classification      | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|---------------------|-----------------|------|------|------|------|------|
|                            |                     | Mean yield t/ha | 5.12 | 3.80 | 3.88 | 4.78 | 5.61 |
|                            |                     | No. trials      | 3    | 3    | 4    | 4    | 4    |
| CONVENTIONAL               |                     |                 |      |      |      |      |      |
| Beast <sup>db</sup>        | FEED – malt pending | 15              | –    | 107  | 99   | 109  | 99   |
| Combat <sup>db</sup>       | FEED                | 8               | –    | –    | –    | 114  | 109  |
| Commander <sup>db</sup>    | Malt                | 18              | 96   | 96   | 100  | 104  | 95   |
| Compass <sup>db</sup>      | Malt                | 18              | 100  | 105  | 95   | 108  | 96   |
| Cyclops <sup>db</sup>      | FEED – malt pending | 12              | –    | –    | 110  | 113  | 106  |
| Fathom <sup>db</sup>       | FEED                | 18              | 103  | 106  | 96   | 106  | 97   |
| La Trobe <sup>db</sup>     | Malt                | 18              | 103  | 104  | 94   | 102  | 95   |
| Laperouse <sup>db</sup>    | FEED – malt pending | 18              | 98   | 99   | 105  | 107  | 101  |
| Leabrook <sup>db</sup>     | Malt                | 18              | 102  | 106  | 101  | 110  | 102  |
| Minotaur <sup>db</sup>     | FEED – malt pending | 12              | –    | –    | 112  | 107  | 109  |
| RGT Planet <sup>db</sup>   | Malt                | 18              | 107  | 105  | 109  | 100  | 111  |
| Rosalind <sup>db</sup>     | FEED                | 18              | 107  | 107  | 105  | 104  | 107  |
| SCA21-Y003                 | FEED – malt pending | 8               | –    | –    | –    | 102  | 112  |
| Yeti <sup>db</sup>         | FEED – malt pending | 15              | –    | 102  | 103  | 104  | 102  |
| HERBICIDE TOLERANT         |                     |                 |      |      |      |      |      |
| Commodus <sup>db</sup> CL  | FEED – malt pending | 12              | –    | –    | 94   | 106  | 96   |
| Maximus <sup>db</sup> CL   | Malt                | 18              | 100  | 101  | 100  | 102  | 98   |
| Spartacus CL <sup>db</sup> | Malt                | 18              | 100  | 101  | 96   | 100  | 95   |
| Titan AX <sup>db</sup>     | FEED – malt pending | 4               | –    | –    | –    | –    | 100  |
| Zena <sup>db</sup> CL      | FEED – malt pending | 8               | –    | –    | –    | 100  | 109  |

– denotes no data available.

**Table 7: Mid North barley yield performance. NVT data 2018–22.**

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

| Variety                    | Classification      | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|---------------------|-----------------|------|------|------|------|------|
|                            |                     | Mean yield t/ha | 2.57 | 3.69 | 5.17 | 5.25 | 7.36 |
|                            |                     | No. trials      | 2    | 3    | 4    | 3    | 4    |
| CONVENTIONAL               |                     |                 |      |      |      |      |      |
| Beast <sup>db</sup>        | FEED – malt pending | 14              | –    | 119  | 96   | 105  | 96   |
| Combat <sup>db</sup>       | FEED                | 7               | –    | –    | –    | 111  | 108  |
| Commander <sup>db</sup>    | Malt                | 16              | 100  | 94   | 98   | 101  | 93   |
| Compass <sup>db</sup>      | Malt                | 16              | 118  | 113  | 93   | 103  | 95   |
| Cyclops <sup>db</sup>      | FEED – malt pending | 11              | –    | –    | 106  | 111  | 101  |
| Fathom <sup>db</sup>       | FEED                | 16              | 117  | 113  | 97   | 102  | 95   |
| La Trobe <sup>db</sup>     | Malt                | 16              | 115  | 111  | 96   | 99   | 91   |
| Laperouse <sup>db</sup>    | FEED – malt pending | 16              | 111  | 107  | 100  | 106  | 96   |
| Leabrook <sup>db</sup>     | Malt                | 16              | 118  | 114  | 99   | 106  | 101  |
| Minotaur <sup>db</sup>     | FEED – malt pending | 11              | –    | –    | 108  | 109  | 107  |
| RGT Planet <sup>db</sup>   | Malt                | 16              | 95   | 100  | 112  | 103  | 114  |
| Rosalind <sup>db</sup>     | FEED                | 16              | 113  | 115  | 105  | 105  | 105  |
| SCA21-Y003                 | FEED – malt pending | 7               | –    | –    | –    | 105  | 114  |
| Yeti <sup>db</sup>         | FEED – malt pending | 14              | –    | 112  | 98   | 105  | 99   |
| HERBICIDE TOLERANT         |                     |                 |      |      |      |      |      |
| Commodus <sup>db</sup> CL  | FEED – malt pending | 11              | –    | –    | 93   | 101  | 94   |
| Maximus <sup>db</sup> CL   | Malt                | 16              | 115  | 112  | 96   | 103  | 93   |
| Spartacus CL <sup>db</sup> | Malt                | 16              | 113  | 111  | 94   | 100  | 91   |
| Titan AX <sup>db</sup>     | FEED – malt pending | 4               | –    | –    | –    | –    | 97   |
| Zena <sup>db</sup> CL      | FEED – malt pending | 7               | –    | –    | –    | 102  | 113  |

– denotes no data available.



**Table 8: Murray Mallee yield performance. NVT data 2018–22.**

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

| Variety                   | Classification      | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|---------------------|-----------------|------|------|------|------|------|
|                           |                     | Mean yield t/ha | 1.97 | 2.69 | 3.68 | 2.08 | 4.04 |
|                           |                     | No. trials      | 2    | 2    | 4    | 4    | 3    |
| CONVENTIONAL              |                     |                 |      |      |      |      |      |
| Beast <sup>Ⓓ</sup>        | FEED – malt pending | 13              | –    | 121  | 110  | 119  | 100  |
| Combat <sup>Ⓓ</sup>       | FEED                | 7               | –    | –    | –    | 118  | 117  |
| Commander <sup>Ⓓ</sup>    | Malt                | 15              | 99   | 89   | 94   | 105  | 98   |
| Compass <sup>Ⓓ</sup>      | Malt                | 15              | 110  | 120  | 108  | 118  | 98   |
| Cyclops <sup>Ⓓ</sup>      | FEED – malt pending | 11              | –    | –    | 110  | 117  | 107  |
| Fathom <sup>Ⓓ</sup>       | FEED                | 15              | 106  | 111  | 106  | 111  | 100  |
| La Trobe <sup>Ⓓ</sup>     | Malt                | 15              | 100  | 103  | 101  | 101  | 95   |
| Laperouse <sup>Ⓓ</sup>    | FEED – malt pending | 15              | 102  | 101  | 102  | 109  | 98   |
| Leabrook <sup>Ⓓ</sup>     | Malt                | 15              | 111  | 119  | 111  | 120  | 104  |
| Minotaur <sup>Ⓓ</sup>     | FEED – malt pending | 11              | –    | –    | 108  | 108  | 108  |
| RGT Planet <sup>Ⓓ</sup>   | Malt                | 15              | 101  | 99   | 106  | 99   | 113  |
| Rosalind <sup>Ⓓ</sup>     | FEED                | 15              | 105  | 112  | 110  | 106  | 105  |
| SCA21-Y003                | FEED – malt pending | 3               | –    | –    | –    | –    | 112  |
| Yeti <sup>Ⓓ</sup>         | FEED – malt pending | 13              | –    | 113  | 107  | 108  | 97   |
| HERBICIDE TOLERANT        |                     |                 |      |      |      |      |      |
| Commodus <sup>Ⓓ</sup> CL  | FEED – malt pending | 11              | –    | –    | 106  | 115  | 97   |
| Maximus <sup>Ⓓ</sup> CL   | Malt                | 15              | 100  | 105  | 102  | 101  | 93   |
| Scope CL <sup>Ⓓ</sup>     | Malt                | 15              | 94   | 89   | 89   | 91   | 90   |
| Spartacus CL <sup>Ⓓ</sup> | Malt                | 15              | 99   | 105  | 100  | 99   | 92   |
| Titan AX <sup>Ⓓ</sup>     | FEED – malt pending | 7               | –    | –    | –    | 122  | 103  |
| Zena <sup>Ⓓ</sup> CL      | FEED – malt pending | 3               | –    | –    | –    | –    | 109  |

– denotes no data available.

**Table 9: South East main season yield performance. NVT data 2018–22. Data for 2021 not available.**

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

| Variety                    | Classification      | Year            | 2018 | 2019 | 2020 | 2021               | 2022 |
|----------------------------|---------------------|-----------------|------|------|------|--------------------|------|
|                            |                     | Mean yield t/ha | 5.37 | 5.61 | 6.40 | 0.00               | 6.10 |
|                            |                     | No. trials      | 2    | 2    | 1    | 0                  | 1    |
| CONVENTIONAL               |                     |                 |      |      |      |                    |      |
| Beast <sup>db</sup>        | FEED – malt pending | 4               | –    | 106  | 98   | Data not available | 92   |
| Combat <sup>db</sup>       | FEED                | 1               | –    | –    | –    |                    | 106  |
| Commander <sup>db</sup>    | Malt                | 6               | 101  | 93   | 97   |                    | 93   |
| Compass <sup>db</sup>      | Malt                | 6               | 101  | 100  | 96   |                    | 90   |
| Cyclops <sup>db</sup>      | FEED – malt pending | 2               | –    | –    | 106  |                    | 100  |
| Fathom <sup>db</sup>       | FEED                | 6               | 101  | 104  | 100  |                    | 92   |
| La Trobe <sup>db</sup>     | Malt                | 6               | 98   | 106  | 99   |                    | 90   |
| Laperouse <sup>db</sup>    | FEED – malt pending | 6               | 105  | 103  | 98   |                    | 96   |
| Leabrook <sup>db</sup>     | Malt                | 6               | 104  | 103  | 100  |                    | 97   |
| Minotaur <sup>db</sup>     | FEED – malt pending | 2               | –    | –    | 107  |                    | 108  |
| RGT Planet <sup>db</sup>   | Malt                | 6               | 104  | 106  | 112  |                    | 116  |
| Rosalind <sup>db</sup>     | FEED                | 6               | 104  | 112  | 106  |                    | 105  |
| SCA21-Y003                 | FEED – malt pending | 1               | –    | –    | –    | 115                |      |
| Yeti <sup>db</sup>         | FEED – malt pending | 4               | –    | 106  | 98   | 98                 |      |
| HERBICIDE TOLERANT         |                     |                 |      |      |      |                    |      |
| Commodus <sup>db</sup> CL  | FEED – malt pending | 2               | –    | –    | 95   | Data not available | 90   |
| Maximus <sup>db</sup> CL   | Malt                | 6               | 101  | 108  | 96   |                    | 92   |
| Spartacus CL <sup>db</sup> | Malt                | 6               | 98   | 106  | 96   |                    | 90   |
| Titan AX <sup>db</sup>     | FEED – malt pending | 1               | –    | –    | –    |                    | 93   |
| Zena <sup>db</sup> CL      | FEED – malt pending | 1               | –    | –    | –    |                    | 112  |

– denotes no data available.

**Table 10: South East long season yield performance. NVT data 2018–22. Data for 2018, 2019 and 2021 not available.**

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

| Variety                    | Classification      | Year            | 2018               | 2019               | 2020 | 2021               | 2022 |
|----------------------------|---------------------|-----------------|--------------------|--------------------|------|--------------------|------|
|                            |                     | Mean yield t/ha | 0.00               | 0.00               | 5.26 | 0.00               | 5.54 |
|                            |                     | No. trials      | 0                  | 0                  | 1    | 0                  | 1    |
| CONVENTIONAL               |                     |                 |                    |                    |      |                    |      |
| Commander <sup>db</sup>    | Malt                | 2               | Data not available | Data not available | 97   | Data not available | 96   |
| Compass <sup>db</sup>      | Malt                | 2               |                    |                    | 104  |                    | 109  |
| Cyclops <sup>db</sup>      | FEED – malt pending | 2               |                    |                    | 127  |                    | 125  |
| Laperouse <sup>db</sup>    | FEED – malt pending | 2               |                    |                    | 106  |                    | 103  |
| Leabrook <sup>db</sup>     | Malt                | 2               |                    |                    | 114  |                    | 126  |
| Minotaur <sup>db</sup>     | FEED – malt pending | 2               |                    |                    | 113  |                    | 107  |
| RGT Planet <sup>db</sup>   | Malt                | 2               |                    |                    | 114  |                    | 103  |
| Rosalind <sup>db</sup>     | FEED                | 2               |                    |                    | 119  |                    | 130  |
| SCA21-Y003                 | FEED – malt pending | 1               |                    |                    | –    |                    | 109  |
| Urambie <sup>db</sup>      | FEED                | 2               |                    |                    | 81   |                    | 94   |
| Westminster <sup>db</sup>  | Malt                | 2               |                    |                    | 86   |                    | 91   |
| Yeti <sup>db</sup>         | FEED – malt pending | 2               | 111                | 112                |      |                    |      |
| HERBICIDE TOLERANT         |                     |                 |                    |                    |      |                    |      |
| Maximus <sup>db</sup> CL   | Malt                | 2               | Data not available | Data not available | 104  | Data not available | 103  |
| Spartacus <sup>db</sup> CL | Malt                | 2               |                    |                    | 108  |                    | 114  |
| Titan AX <sup>db</sup>     | FEED – malt pending | 1               |                    |                    | –    |                    | 107  |
| Zena <sup>db</sup> CL      | FEED – malt pending | 1               |                    |                    | –    |                    | 103  |

– denotes no data available.

Table 11: South Australian barley test weight performance. NVT data 2018–22.

| Variety                    |            | Test weight (kg/hectolitre) |      |      |      |      |
|----------------------------|------------|-----------------------------|------|------|------|------|
|                            | Year       | 2018                        | 2019 | 2020 | 2021 | 2022 |
|                            | No. trials | 16                          | 15   | 19   | 17   | 18   |
| CONVENTIONAL               |            |                             |      |      |      |      |
| Beast <sup>db</sup>        | 69         | –                           | 70.5 | 68.8 | 70.2 | 68.4 |
| Combat <sup>db</sup>       | 31         | –                           | –    | –    | 71.3 | 67.8 |
| Commander <sup>db</sup>    | 85         | 67.2                        | 69.7 | 68.5 | 70.4 | 68.1 |
| Compass <sup>db</sup>      | 85         | 67.1                        | 69.8 | 68.1 | 69.6 | 66.9 |
| Cyclops <sup>db</sup>      | 54         | –                           | –    | 69.3 | 70.8 | 69.0 |
| Fathom <sup>db</sup>       | 85         | 66.9                        | 68.9 | 68.6 | 69.2 | 68.0 |
| La Trobe <sup>db</sup>     | 85         | 68.8                        | 71.2 | 69.1 | 71.2 | 69.6 |
| Laperouse <sup>db</sup>    | 85         | 68.2                        | 71.0 | 69.7 | 71.5 | 70.0 |
| Leabrook <sup>db</sup>     | 85         | 67.0                        | 69.5 | 68.3 | 70.2 | 67.4 |
| Minotaur <sup>db</sup>     | 54         | –                           | –    | 70.2 | 71.4 | 69.8 |
| RGT Planet <sup>db</sup>   | 85         | 66.9                        | 68.9 | 68.7 | 70.0 | 67.4 |
| Rosalind <sup>db</sup>     | 85         | 67.6                        | 70.6 | 69.1 | 70.9 | 68.2 |
| SCA21-Y003                 | 25         | –                           | –    | –    | 71.3 | 67.7 |
| Yeti <sup>db</sup>         | 69         | –                           | 70.6 | 68.7 | 70.7 | 68.4 |
| HERBICIDE TOLERANT         |            |                             |      |      |      |      |
| Commodus <sup>db</sup> CL  | 54         | –                           | –    | 68.6 | 70.0 | 67.6 |
| Maximus <sup>db</sup> CL   | 85         | 70.0                        | 72.0 | 70.5 | 72.2 | 69.7 |
| Scope CL <sup>db</sup>     | 53         | 68.5                        | 70.1 | 70.1 | 70.8 | 68.9 |
| Spartacus CL <sup>db</sup> | 85         | 69.1                        | 71.5 | 69.3 | 71.6 | 69.7 |
| Titan AX <sup>db</sup>     | 26         | –                           | –    | –    | 69.7 | 67.5 |
| Zena <sup>db</sup> CL      | 27         | –                           | –    | –    | 70.0 | 67.2 |

– denotes no data available.

**Table 12: South Australian barley retention performance. NVT data 2018–22.**

| Variety                   |            | Retention (% > 2.5mm) |       |       |       |       |
|---------------------------|------------|-----------------------|-------|-------|-------|-------|
|                           | Year       | 2018                  | 2019  | 2020  | 2021  | 2022  |
|                           | No. trials | 16                    | 15    | 19    | 17    | 18    |
| CONVENTIONAL              |            |                       |       |       |       |       |
| Beast <sup>Ⓓ</sup>        | 69         | –                     | 91.41 | 92.00 | 95.22 | 97.43 |
| Combat <sup>Ⓓ</sup>       | 31         | –                     | –     | –     | 93.11 | 96.82 |
| Commander <sup>Ⓓ</sup>    | 85         | 83.79                 | 76.69 | 88.19 | 91.10 | 95.32 |
| Compass <sup>Ⓓ</sup>      | 85         | 86.21                 | 85.24 | 89.58 | 91.86 | 96.47 |
| Cyclops <sup>Ⓓ</sup>      | 54         | –                     | –     | 86.13 | 89.86 | 94.93 |
| Fathom <sup>Ⓓ</sup>       | 85         | 83.10                 | 83.15 | 87.34 | 92.54 | 96.60 |
| La Trobe <sup>Ⓓ</sup>     | 85         | 72.26                 | 71.03 | 74.03 | 91.66 | 91.83 |
| Laperouse <sup>Ⓓ</sup>    | 85         | 85.08                 | 83.05 | 88.32 | 85.46 | 96.34 |
| Leabrook <sup>Ⓓ</sup>     | 85         | 88.82                 | 87.45 | 92.26 | 93.44 | 96.73 |
| Minotaur <sup>Ⓓ</sup>     | 54         | –                     | –     | 84.00 | 87.21 | 96.53 |
| RGT Planet <sup>Ⓓ</sup>   | 85         | 71.96                 | 63.82 | 81.91 | 84.82 | 95.22 |
| Rosalind <sup>Ⓓ</sup>     | 85         | 74.46                 | 74.50 | 80.91 | 85.35 | 94.71 |
| SCA21-Y003                | 25         | –                     | –     | –     | 89.54 | 96.60 |
| Yeti <sup>Ⓓ</sup>         | 69         | –                     | 87.23 | 90.90 | 94.44 | 96.81 |
| HERBICIDE TOLERANT        |            |                       |       |       |       |       |
| Commodus <sup>Ⓓ</sup> CL  | 54         | –                     | –     | 88.32 | 92.01 | 95.64 |
| Maximus <sup>Ⓓ</sup> CL   | 85         | 84.86                 | 80.67 | 86.84 | 93.76 | 95.72 |
| Scope CL <sup>Ⓓ</sup>     | 53         | 72.18                 | 64.63 | 69.49 | 80.15 | 93.64 |
| Spartacus CL <sup>Ⓓ</sup> | 85         | 79.29                 | 77.14 | 78.33 | 89.02 | 93.80 |
| Titan AX <sup>Ⓓ</sup>     | 26         | –                     | –     | –     | 92.79 | 97.32 |
| Zena <sup>Ⓓ</sup> CL      | 27         | –                     | –     | –     | 86.73 | 95.33 |

– denotes no data available.

## ACKNOWLEDGEMENTS

We thank Kenton Porker and Hugh Wallwork for input into previous versions of this sowing guide.



## RESEARCH SUMMARY

### UA619

#### FAST FACTS

##### PROBLEM

Head loss in barley is a significant issue, requiring further understanding to develop mitigation tactics, screening tools and resistant varieties.

##### PROJECT

Delayed harvest was used to develop a head loss susceptibility index for barley and explore head loss management.

##### PARTICIPANTS

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##### DATES

Start: 1 April 2019

Finish: 1 February 2022

## REVEALING THE BASIS FOR HEAD LOSS IN BARLEY

This project assessed the use of plant growth regulators (PGRs) to manage barley head loss and identify screening tools for developing tolerant varieties. By subjecting a series of major barley cultivars to delayed harvest during the research, a variety classification system for head loss risk in multiple SA growing environments was also developed.

The PGR Trinexapac ethyl (Moddus Evo®) was found to have economic value if more than 26 heads/m<sup>2</sup> are lost at approximately 14 days after optimal harvest date.

Differences in peduncle composition were identified that will help in the breeding of less susceptible barley varieties.

#### BACKGROUND

Barley head loss presents a significant risk of yield loss for SA growers. The causes and value of potential treatments are not well understood and exploring the phenomenon can help growers understand their risks and plan interventions.

Varietal head loss resistance is one of the top three objectives for barley breeders. A better understanding of factors that minimise head loss will identify traits that support development of more resilient cultivars.

#### RESEARCH AIMS

The core objectives of the project were to:

- Reduce yield losses to environmentally induced head loss in barley.
- Fine tune the effectiveness of plant growth regulators (PGRs) as a management strategy.
- Provide growers with up-to-date information on head loss sensitivity in current barley cultivars.
- Develop a new screening method for head retention in breeding programs

#### IN THE FIELD

Field trials for this investment were established in 2019 and 2020 at Cooke Plains, Minlaton and Riverton to provide a broad spread of barley growing environments. These trials were planted with Spartacus CL, RGT Planet, Compass and Schooner.

Trials were treated with either 20kg/ha gibberellic acid (GA) or 400ml/ha Trinexapac ethyl (Syngenta Moddus Evo®) at Zadok's growth stage 37 – 39 for head loss suppression as per the label. Untreated trials provided a control.

Rates of head loss were assessed every seven days after harvest ripe.



Losses were also analysed by cultivar, with genetic differences becoming most clear 21 days after harvest ripe. Mean rates of head loss at this point were: Spartacus 20 heads/m<sup>2</sup>; Planet 35 heads/m<sup>2</sup>; Compass 47 heads/m<sup>2</sup>; and Schooner 107 heads/m<sup>2</sup>.

The differences were consistent across all growing environments, as were the benefits of applying PGRs.

Field and greenhouse grown plants were tested under controlled wind conditions (wind tunnel) to determine a relationship between wind loads and head loss. Head loss sensitivity in the field could be partially replicated in the controlled tests, but only with the addition of turbulence generators, suggesting this may be a factor influencing cultivar sensitivity in field settings.

Finally, barley stems that had been successfully treated with PGRs were collected and analysed using X-ray computed tomography (CT) scanning, which revealed an accumulation of dense cell material in the peduncle that appeared to strengthen the upper stem and correlated with significant reductions in head loss. (See photo.)

This effect has been analysed further in SAGIT UA721 to determine whether it is repeatable across seasons and genotypes. If so, it could provide a screening protocol for breeding head loss resistant varieties.

## RESULTS

Timely harvest (where possible) remains one of the most effective ways to reduce head loss.

The differences between treatments were insignificant at harvest ripe. However, after 7 days of harvest delay, the 50 per cent probability of head loss in untreated trials was 6.6 heads/m<sup>2</sup> while the same metric for PGR-treated sites was just 1.1 heads/m<sup>2</sup>.

After 14 days, the 50 per cent probability of head loss was 24.3 heads/m<sup>2</sup> in untreated trials and 7.2 heads/m<sup>2</sup> with PGR. After 21 days, these rates had risen to 36.4 heads/m<sup>2</sup> and 15.2 heads/m<sup>2</sup> respectively, then 58.7 heads/m<sup>2</sup> and 24.4 heads/m<sup>2</sup> after 28 days.

GA treatment significantly enhanced the probability of head loss in all cases.

PGR applications were found to be economically rewarding when they had the potential to save 26 heads/m<sup>2</sup> or more, based on a market price of \$260/t for delivered barley and a total application cost of \$46.72/ha for Moddus Evo® at 400ml/ha.

## VALUE FOR GROWERS

This project has provided SA barley growers with economic guidelines for using Moddus Evo® to suppress head loss and has delivered a refined head loss susceptibility index for major barley varieties in diverse SA growing environments.

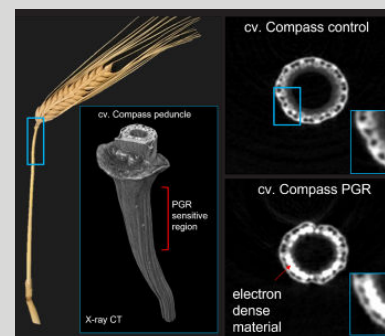
Barley breeders have also gained a potential screening protocol for breeding head loss resistant cultivars, which should accelerate the availability of more tolerant barley varieties.

### MORE INFORMATION:

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X-ray CT Scans of Compass barley with and without the application of a Plant Growth Regulator, showing the accumulation of cell material in the peduncle following PGR treatment.

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# OAT

By Brianna Guidera, Melissa McCallum,  
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This sowing guide provides data and guidance on the most suitable oat varieties for sowing in South Australia in 2024.

No new oat varieties have been released since the publication of the 2023 sowing guide. The oat variety descriptions in this publication serve as a guide to select varieties for specific end-uses (milling or feed grain and oaten hay) with disease resistance, key agronomic traits and hay and grain yield potential described where independent data was available.

## IS MILLING QUALITY REQUIRED?

The probability of a variety meeting the classification criteria for milling grade is an important consideration when selecting a variety for milling end-use. This is greatly influenced by seasonal conditions. Premium milling varieties such as Yallara<sup>®</sup>, Mitika<sup>®</sup>, Bilby<sup>®</sup>, Kowari<sup>®</sup>, Bannister<sup>®</sup> and Durack<sup>®</sup> will reach the classification criteria for milling grade more often than other varieties. Some other varieties may reach milling grade criteria but would not be accepted for milling. It is imperative that you check with your miller about the quality standards and varieties that are accepted for milling before you sow a grain crop for this end-use.

## IS EXPORT HAY QUALITY REQUIRED?

Hay quality is essential to meet export hay standards and is greatly influenced by seasonal and nutritional conditions. However, some varieties are more likely to produce higher-quality hay than others. It is imperative that you check with your hay processor about the quality standards required to make export-grade quality hay before you sow a hay crop.

## OATS FOR GRAZING

This guide has no guidelines for oats suited to grazing or feed grain production and repeated grazing from early sowing. A more comprehensive guide for grazing varieties is contained in the *Winter Crop Variety Sowing Guide* produced annually by NSW DPI.

## OAT VARIETY NOTES

Fact sheets or pamphlets describing all varieties released by the former National Oat Breeding Program are available from the relevant commercial partner for the variety. Yield and quality information for grain varieties is available in this guide and on the NVT website ([nvtonline.com.au](http://nvtonline.com.au)). Varieties are displayed in alphabetical order and do not represent a preference of variety by the authors.

In the absence of breeding trial data, combined hay and grain yield data for selected varieties is from trials funded by both SAGIT (S319 Improving the productivity of oats) and AgriFutures Australia ('National Hay Agronomy' project PRJ-011029).

**Table 1: Oat variety agronomy and disease reactions.**

| Variety                 | Plant height | Maturity | Probability of reaching milling grade | Rust              |                   | Barley yellow dwarf virus <sup>1</sup> | CCN        | Stem nematode |           | Septoria          | Bacterial blight | Red leather leaf <sup>1</sup> |
|-------------------------|--------------|----------|---------------------------------------|-------------------|-------------------|--|------------|---------------|-----------|-------------------|------------------|-------------------------------|
|                         |              |          |                                       | Stem <sup>1</sup> | Leaf <sup>1</sup> |  | Resistance | Resistance    | Tolerance |                   |                  |                               |
| MILLING OATS            |              |          |                                       |                   |                   |  |            |               |           |                   |                  |                               |
| Bannister <sup>db</sup> | TD           | Q        | H                                     | S                 | MSS               | MS                                     | MR         | MRMS          | MT        | MSS               | S                | S                             |
| Bilby <sup>db</sup>     | D            | Q        | H                                     | S                 | MS                | S                                      | S          | S             | MI        | S                 | SVS              | MS                            |
| Durack <sup>db</sup>    | MT           | VQ       | H                                     | S                 | MSS               | S                                      | MRMS       | S             | MI (P)    | S                 | S                | SVS                           |
| Koala <sup>db</sup>     | TD           | QM       | MH-H                                  | MSS               | MSS               | MSS                                    | R          | S             | MT (P)    | MSS               | S                | S                             |
| Kowari <sup>db</sup>    | D            | Q        | H                                     | S                 | S                 | S                                      | S          | S             | I         | S                 | S                | S                             |
| Mitika <sup>db</sup>    | D            | Q        | H                                     | S                 | MSS               | SVS                                    | VS         | S             | MI (P)    | SVS               | S                | SVS                           |
| Williams <sup>db</sup>  | ST           | Q        | MH                                    | S                 | MRMS              | MSS                                    | S          | S             | MI (P)    | MSS               | MSS              | MS                            |
| Yallara <sup>db</sup>   | MT           | Q        | VH                                    | MSS               | S                 | MSS                                    | R          | MS            | MI (P)    | MSS               | S                | VS                            |
| 13008-18                | MT           | Q        | pending                               | S                 | SVS               | MS                                     | MR         | S             | I         | MS                | S                | S                             |
| HAY/FEED OATS           |              |          |                                       |                   |                   |  |            |               |           |                   |                  |                               |
| Brusher <sup>db</sup>   | T            | Q        | –                                     | SVS               | –                 | SVS (P)                                | MR         | S             | MI (P)    | MSS               | S                | MR-SVS                        |
| Forester <sup>db</sup>  | MT           | VS       | –                                     | R-S               | –                 | MR-S                                   | MS         | S             | MI        | S                 | MS-S             | MR                            |
| Kingbale <sup>db</sup>  | T            | M        | –                                     | S                 | MRMS              | MS (P)                                 | R          | MR            | MT        | MSS               | MSS (P)          | MRMS-S                        |
| Koorabup <sup>db</sup>  | MT           | QM       | –                                     | S                 | MSS               | MSS                                    | MRMS       | S             | I         | MRMS <sup>#</sup> | SVS              | SVS                           |
| Mulgara <sup>db</sup>   | T            | Q        | –                                     | S                 | MR                | MS                                     | R          | MR            | MT (P)    | S/MRMS            | MSS              | SVS                           |
| Tungoo <sup>db</sup>    | MT           | MS       | –                                     | S                 | MR                | MSS                                    | MR         | R             | MT (P)    | MRMS <sup>#</sup> | S                | MRMS                          |
| Wintaroo <sup>db</sup>  | T            | M        | –                                     | S                 | MSS               | MS                                     | R          | MR            | MT (P)    | MSS               | S                | S                             |

Source: Cereal Pathology Group (SARDI)

**Colour key:** Green is a good choice, yellow use caution and brown shades either do not use or develop a management package if this disease is yield limiting in your environment.**Plant height:** D = dwarf, TD = tall dwarf, T = tall, ST = short tall, MT = moderate tall. **Maturity:** VQ = very quick, Q = quick, QM = quick-mid, M = mid, MS = mid slow, S = slow, VS = very slow.**Probability of reaching milling grade:** L = low, ML = moderately low, M = medium, MH = moderately high, H = high, VH = very high, – = not applicable.**Disease ratings:** VS = very susceptible, S = susceptible, MS = moderately susceptible, MR = moderately resistant, R = resistant,

VI = very intolerant, I = intolerant, MI = moderately intolerant, MT = moderately tolerant, T = tolerant, VT = very tolerant.

<sup>1</sup> Pathogens are very variable so a range of possible reactions may be observed. - indicates the range of observed scores depending on different pathogen strains.

/ indicates reaction to less common strains. (P) = provisional ratings – treat with caution. # may be more susceptible to atltnerate pathotypes.

**Table 2: Mid North (Hart) oat hay and grain yield performance.**

Yield expressed as a percentage of site mean yield.

| Variety                |                 | Hay yield (t/ha) |      |      | Grain yield (t/ha) |      |      |
|------------------------|-----------------|------------------|------|------|--------------------|------|------|
|                        | Year            | 2019             | 2020 | 2021 | 2019               | 2020 | 2021 |
|                        | Mean yield t/ha | 2.90             | 3.10 | 4.20 | 1.30               | 2.50 | 1.70 |
|                        | No. trials      | 1                | 1    | 1    | 1                  | 1    | 1    |
| Brusher <sup>db</sup>  | 3               | 107              | 113  | 101  | 102                | 84   | 93   |
| Durack <sup>db</sup>   | 3               | 105              | 102  | 102  | 121                | 90   | 114  |
| Koorabup <sup>db</sup> | 3               | 105              | 97   | 94   | 113                | 114  | 102  |
| Mulgara <sup>db</sup>  | 3               | 114              | 98   | 102  | 126                | 96   | 102  |
| Williams <sup>db</sup> | 3               | 91               | 96   | 100  | 102                | 113  | 119  |
| Wintaroo               | 3               | 111              | 104  | 108  | 97                 | 85   | 92   |
| Yallara <sup>db</sup>  | 3               | 112              | 105  | 114  | 124                | 110  | 107  |

– denotes no data available.

Data 2019–21 from AgriFutures project PRJ-011029 'National Hay Agronomy'

**Table 3: Mid North (Tarlee) oat hay and grain yield performance.**

Yield expressed as a percentage of site mean yield.

| Variety                 |                 | Hay yield (t/ha) |      |       |       | Grain yield (t/ha) |      |      |
|-------------------------|-----------------|------------------|------|-------|-------|--------------------|------|------|
|                         | Year            | 2019             | 2020 | 2021  | 2022  | 2019               | 2020 | 2021 |
|                         | Mean yield t/ha | 9.60             | 9.30 | 10.40 | 11.94 | 3.30               | 4.20 | 4.30 |
|                         | No. trials      | 1                | 1    | 1     | 1     | 1                  | 1    | 1    |
| <b>MILLING OATS</b>     |                 |                  |      |       |       |                    |      |      |
| Bannister <sup>db</sup> | 4               | 102              | 101  | 102   | 102   | 145                | 133  | 123  |
| Bilby <sup>db</sup>     | 2               | –                | 93   | 84    | –     | –                  | 109  | 107  |
| Durack <sup>db</sup>    | 3               | 88               | 86   | 89    | –     | 110                | 83   | 78   |
| Kowari <sup>db</sup>    | 3               | 98               | 92   | 89    | –     | 135                | 110  | 96   |
| Mitika <sup>db</sup>    | 3               | 93               | 83   | 86    | –     | 115                | 100  | 93   |
| Williams <sup>db</sup>  | 3               | 97               | 93   | 98    | –     | 126                | 121  | 117  |
| Yallara <sup>db</sup>   | 4               | 109              | 105  | 108   | 85    | 90                 | 84   | 88   |
| <b>HAY/FEED OATS</b>    |                 |                  |      |       |       |                    |      |      |
| Archer <sup>db</sup>    | 1               | –                | –    | –     | 94    | –                  | –    | –    |
| Brusher <sup>db</sup>   | 3               | 96               | 98   | –     | 93    | 73                 | 79   | –    |
| Kingbale <sup>db</sup>  | 4               | 107              | 114  | 126   | 115   | 96                 | 88   | 95   |
| Koorabup <sup>db</sup>  | 4               | 98               | 101  | 98    | 94    | 90                 | 95   | 86   |
| Kultarr <sup>db</sup>   | 1               | –                | –    | –     | 108   | –                  | –    | –    |
| Mulgara <sup>db</sup>   | 3               | 116              | 108  | –     | 90    | 82                 | 81   | –    |
| Wallaby <sup>db</sup>   | 1               | –                | –    | –     | 119   | –                  | –    | –    |
| Wintaroo                | 3               | 104              | 111  | –     | 92    | 92                 | 91   | –    |

– denotes no data available.

Data 2019–21 from SAGIT project S319 'Improving Productivity of Oats'

## MILLING VARIETIES

### Bilby<sup>Ⓛ</sup>

Bilby<sup>Ⓛ</sup>, developed by SARDI and commercialised by Barenbrug in 2019, is a dwarf, quick maturing milling oat. It has excellent grain yield comparable with Williams<sup>Ⓛ</sup> and Bannister<sup>Ⓛ</sup> in SA, but with improved grain quality due to lower screenings and a higher groat percentage. Bilby<sup>Ⓛ</sup> has high  $\beta$ -glucan and lower oil than other dwarf varieties with bright grain. It is a cross between two breeders' lines and was tested as 06204-16. Seed is available through Barenbrug Broadacre Agents. EPR \$2.50 ex-GST.

### Koala<sup>Ⓛ</sup>

Koala<sup>Ⓛ</sup>, developed by SARDI and commercialised by Seednet in 2022, is a tall dwarf potential milling line. It has good early vigour similar to Bannister<sup>Ⓛ</sup>, which is one of its parents, and is a mid to quick-maturing variety that can be up to seven days later to head compared with Bannister<sup>Ⓛ</sup> and Williams<sup>Ⓛ</sup>. Grain yield potential is similar to Bannister<sup>Ⓛ</sup> and Williams<sup>Ⓛ</sup> and grain quality comparable with Bannister<sup>Ⓛ</sup>. It was tested as 09143-35. Contact Seednet for seed availability. EPR \$2.50 ex-GST.

### Kowari<sup>Ⓛ</sup>

Kowari<sup>Ⓛ</sup>, developed by SARDI and commercialised by Barenbrug in 2017, is a dwarf quick maturing milling oat variety measuring slightly taller than Mitika<sup>Ⓛ</sup> with similar maturity and grain yield. Grain quality is good with low screenings and an improved  $\beta$ -glucan content compared with older milling varieties. Kowari<sup>Ⓛ</sup> has high protein and slightly higher groat percentage compared with Mitika<sup>Ⓛ</sup>. Seed is available through Barenbrug Broadacre Agents. EPR \$2.50 ex-GST.

### Mitika<sup>Ⓛ</sup>

Mitika<sup>Ⓛ</sup>, developed by SARDI and commercialised by Barenbrug in 2005, is a quick maturing dwarf milling oat with high hectolitre and grain weight, low screenings and moderately high groat percentage. It is also a high feed value oat with low hull lignin and high grain digestibility and is recommended for all rainfall zones where cereal cyst nematode (CCN) or stem nematode is not a problem. Seed is available through Barenbrug Broadacre Agents. EPR \$2.00 ex-GST.

**Table 4: Murray Mallee oat hay and grain yield performance.**

Yield expressed as a percentage of site mean yield.

| Variety                |                 | Hay yield (t/ha) |      |      | Grain yield (t/ha) |      |      |
|------------------------|-----------------|------------------|------|------|--------------------|------|------|
|                        | Year            | 2019             | 2020 | 2021 | 2019               | 2020 | 2021 |
|                        | Mean yield t/ha | 5.80             | 7.40 | 5.80 | 2.20               | 3.30 | 3.30 |
|                        | No. trials      | 1                | 1    | 1    | 1                  | 1    | 1    |
| MILLING OATS           |                 |                  |      |      |                    |      |      |
| Bannister <sup>d</sup> | 3               | 103              | 103  | 107  | 137                | 129  | 124  |
| Bilby <sup>d</sup>     | 2               | –                | 93   | 91   | –                  | 122  | 103  |
| Durack <sup>d</sup>    | 3               | 114              | 90   | 90   | 100                | 89   | 84   |
| Kowari <sup>d</sup>    | 3               | 100              | 89   | 87   | 132                | 113  | 109  |
| Mitika <sup>d</sup>    | 3               | 94               | 81   | 84   | 113                | 95   | 85   |
| Williams <sup>d</sup>  | 3               | 94               | 98   | 95   | 130                | 104  | 117  |
| Yallara <sup>d</sup>   | 3               | 111              | 106  | 107  | 110                | 96   | 86   |
| HAY/FEED OATS          |                 |                  |      |      |                    |      |      |
| Brusher <sup>d</sup>   | 2               | 106              | 105  | –    | 92                 | 83   | –    |
| Kingbale <sup>d</sup>  | 3               | 95               | 98   | 120  | 81                 | 93   | 93   |
| Koorabup <sup>d</sup>  | 3               | 96               | 94   | 94   | 88                 | 88   | 86   |
| Mulgara <sup>d</sup>   | 2               | 108              | 112  | –    | 103                | 91   | –    |
| Wintaroo               | 2               | 105              | 109  | –    | 88                 | 90   | –    |

– denotes no data available.

Data 2019–21 from SAGIT project S319 'Improving Productivity of Oats'

## NEW – 13008-18

13008-18 is a medium-tall oat variety developed by InterGrain and released in 2023. It is a quick maturing variety that has good panicle emergence and flowers slightly later than Bannister<sup>®</sup>. It has good plant height, similar to Williams<sup>®</sup> but shorter than Bannister<sup>®</sup>. Seed will be available from InterGrain Seedclub members and local reseller pending successful milling accreditation. EPR TBC.

## DUAL-PURPOSE VARIETIES

The following varieties have shown promise in agronomy and breeding trials for both grain and hay end-uses.

### Bannister<sup>®</sup>

Bannister<sup>®</sup> is a quick maturing milling oat released by the National Oat Breeding Program in 2012 in Western Australia, but it is also suited to eastern Australia because of its improved disease resistance profile. Bannister<sup>®</sup> is a tall dwarf, 13 centimetres taller than Mitika<sup>®</sup>, and is high yielding for grain. It has shown potential for hay production, although may flower in the boot in harsh finishing seasons. Bannister<sup>®</sup> has slightly lower hectolitre weight, slightly higher screenings and slightly lower groat percentage compared with Mitika<sup>®</sup>. Seed is available through Seednet and Seednet partners. EPR \$2.30 ex-GST for grain and \$2.00 ex-GST for hay.

### Durack<sup>®</sup>

Durack<sup>®</sup> was released in 2016 and is a very quick maturing, medium-tall variety, similar in height to Yallara<sup>®</sup>. This variety is a minimum of one week earlier to flower and cut for hay than any other variety released from the National Oat Breeding Program. It is widely adapted to the low to medium-rainfall zones and late sowing in the high-rainfall regions, although due to its fast development speed it does not have the hay yield potential of other hay varieties. Grain yield is similar to Yallara<sup>®</sup>, and an improvement compared with tall varieties bred for hay. Monitoring the crop will be the key to achieving the highest hay quality through cutting at the correct growth stage. Seed is available through Barenbrug Broadacre Agents. EPR \$2.30 ex-GST for grain and \$2.00 ex-GST for hay.

### Williams<sup>®</sup>

Williams<sup>®</sup> is a short-tall milling variety released by the National Oat Breeding Program in 2013 in Western Australia. It is also suited to eastern Australia because of its improved disease resistance profile. Williams<sup>®</sup> is a high-yielding quick variety with similar maturity to Yallara<sup>®</sup> and 15cm shorter. Williams<sup>®</sup> has similar grain yield to Bannister<sup>®</sup> with slightly inferior grain quality. Screenings can be high, especially in low-rainfall regions or sharp finishes. Williams<sup>®</sup> averages slightly lower hay yield compared with other hay varieties. Hay quality is similar to Wintaroo with slightly lower water-soluble carbohydrates and slightly higher crude protein. Seed is available through Barenbrug Broadacre Agents. EPR \$2.30 ex-GST for grain and \$2.00 ex-GST for hay.

### Yallara<sup>®</sup>

Yallara<sup>®</sup> is a medium-tall milling oat variety developed by SARDI and released in 2009. Yallara<sup>®</sup> is a premium quality oat with the flexibility to cut for hay with fine stems and good hay quality. It performed consistently well for hay yield and quality across the National Hay Agronomy trial program in three challenging seasons at the Hart Field Site, and generally above the site average at low-rainfall sites. Yallara<sup>®</sup> has bright grain and high grain digestibility, making it suitable for the horse racing industry. Seed is available through Seednet and Seednet partners. EPR \$2.00 ex-GST for grain and hay.

INTRO

WHEAT

BARLEY

OAT

CANOLA

FABA BEAN

LENTIL

FIELD PEA

CHICKPEA

LUPIN

VETCH

NOTES



## HAY VARIETIES

### Archer<sup>®</sup>

Archer<sup>®</sup> is a single-gene, imidazolinone oaten hay with a quick maturity, medium plant height, good early vigour and hay colour retention. Improved tolerance to soil residual imidazolinone herbicides, ideal for use where there are residue concerns. Sentry<sup>®</sup> herbicide is registered for incorporation by sowing for hay, forage, seed and grain (domestic feed market only). Excess grain, seed and screenings produced from single-gene imidazolinone oaten hay varieties (Kingbale<sup>®</sup> and Archer<sup>®</sup>) can be used for the domestic oaten grain feed markets and/or consumed on-farm. Grain of these varieties cannot be delivered into bulk handling systems. Released 2022 (tested as GIA1803-040). Bred by GIA and marketed by InterGrain with seed available from local resellers and InterGrain Seedclub members. EPR \$3.65 ex-GST for hay and grain.

### Brusher<sup>®</sup>

Brusher<sup>®</sup> is a quick maturing, tall oat developed by SARDI and commercialised by AEXCO Pty Ltd in 2003. It is earlier to head than Wintaroo with good panicle emergence, which makes it well suited to low-rainfall areas. Grain yield and grain quality are similar to Wintaroo, with higher grain protein. Brusher<sup>®</sup> is moderately low in grain lignin. Seed is available through AEXCO-appointed seed distributors. EPR \$2.00 ex-GST for hay.

### Forester<sup>®</sup>

Forester<sup>®</sup> is a very slow maturing hay variety adapted to high-rainfall and irrigated cropping regions. It was bred by SARDI and commercialised by AEXCO Pty Ltd in 2012. It is three weeks later to head compared with Wintaroo. Forester<sup>®</sup> has excellent hay quality. Seed is available through the authorised AEXCO seed distributor AGF Seeds. EPR \$2.00 ex-GST for hay.

### Kingbale<sup>®</sup>

Kingbale<sup>®</sup> is a single-gene, imidazolinone oaten hay with a mid maturity, tall plant height and similar disease and agronomic profile to Wintaroo. Kingbale<sup>®</sup> has improved tolerance to soil residual imidazolinone herbicides. Registered with Sentry<sup>®</sup> herbicide for hay and seed production only. Sentry<sup>®</sup> is registered for incorporation by sowing for hay, forage, seed and grain (domestic feed market only). Excess grain, seed and screenings produced from single gene imidazolinone oaten hay varieties (Kingbale<sup>®</sup> and Archer<sup>®</sup>) can be used for the domestic oaten grain feed markets and/or consumed on-farm. Grain of these varieties cannot be delivered into bulk handling systems. Bred by GIA and marketed by InterGrain with seed available from local resellers and InterGrain Seedclub members. EPR \$3.65 ex-GST for hay and grain.

### Koorabup<sup>®</sup>

Koorabup<sup>®</sup> is a mid-tall hay variety with quick-mid maturity, bred by SARDI and developed for the WA market. This line is a cross between two advanced WA breeding lines and was commercialised by AEXCO Pty Ltd. It is similar in height, two to four days later in maturity and has similar grain yield and stem diameter compared with Yallara<sup>®</sup> but with lower hay yield. It has improved grain quality compared with other hay varieties. It has excellent hay colour and hay quality, although slightly lower water-soluble carbohydrates than other hay varieties across the 'National Hay Agronomy' trial program. Grain quality is similar to Yallara<sup>®</sup> but with a lower groat percentage. It has low oil and bright grain. Seed is available through AEXC-appointed seed distributors. EPR \$2.00 ex-GST for export hay.

### Kultarr<sup>®</sup>

Kultarr<sup>®</sup> is a quick maturing oaten hay with a tall plant height, similar to Swan. Kultarr<sup>®</sup> is higher yielding than Brusher<sup>®</sup> and Mulgara<sup>®</sup> and slightly later to flower than Brusher<sup>®</sup>, like Mulgara<sup>®</sup>. Preliminary hay quality data indicates the variety has a suitable quality profile. Seed is available for planting in 2023 from local resellers or InterGrain Seedclub members. EPR \$3.00 ex-GST for hay and grain.

## Mulgara<sup>®</sup>

Mulgara<sup>®</sup> is a tall, quick maturing hay oat bred by SARDI and commercialised by AEXCO Pty Ltd in 2009. Hay quality is similar to Wintaroo. Grain yield and quality is similar to Wintaroo with lower screenings, higher protein and groat percentage. Mulgara<sup>®</sup> has high grain hull lignin. It is recommended to replace Wintaroo in areas with stem nematode due to its higher level of resistance. Mulgara<sup>®</sup> seed size is larger than other hay varieties described in this sowing guide. Care should be taken to sow this variety at the correct seed density. Seed is available through AEXCO-appointed seed distributors. EPR \$2.00 ex-GST for hay.

## Tammar<sup>®</sup>

Tammar<sup>®</sup> is a tall, mid-slow hay oat variety, later in cutting time than Tungoo<sup>®</sup> but not as late as Forester<sup>®</sup>. It was bred by SARDI and commercialised by AEXCO. Tammar<sup>®</sup> has excellent hay colour and resists brown leaf at hay cutting. Hay yields are slightly lower than Wintaroo and similar to Tungoo<sup>®</sup> with comparable hay quality. Tammar<sup>®</sup> is recommended for medium and high-rainfall zones and gives a slightly later option for cutting time than Tungoo<sup>®</sup>. Seed is available through AEXCO-appointed seed distributors. EPR \$2.00 ex-GST for hay.

## Tungoo<sup>®</sup>

Tungoo<sup>®</sup> is a medium-tall, mid to late-season hay variety bred by SARDI and commercialised by AEXCO in 2012. It has moderately low hull lignin. Seed is available through AEXCO-appointed seed distributors. EPR \$2.00 ex-GST for hay.

## Wallaby<sup>®</sup>

Wallaby<sup>®</sup> is a mid maturing oaten hay variety with similar hay yields to Mulgara<sup>®</sup> and Brusher<sup>®</sup>. Wallaby<sup>®</sup> has high quality attributes, including good digestibility, high water-soluble carbohydrate levels and low neutral detergent fibres (NDF). Wallaby<sup>®</sup> has a medium to tall plant height and is likely suited to medium and high-rainfall zones. Seed is available for planting in 2023 from local resellers or InterGrain Seedclub members. EPR \$3.00 ex-GST for hay and grain.

## YIELD PERFORMANCE EXPERIMENTS FROM 2017–21

The yield results presented are multi-environment trial (MET) data shown on a yearly regional group mean and an overall performance mean for the region. All yields are expressed as a percentage of mean yield from NVT data from 2018 to 2022 inclusive. Further results can be found on the NVT website ([nvt.grdc.com.au](http://nvt.grdc.com.au)).

**Table 5: Upper Eyre Peninsula oat yield performance. NVT data 2018–22. Data for 2018, 2019 and 2021 not available.**

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

| Variety                 | Year              | 2018               | 2019               | 2020 | 2021               | 2022 |
|-------------------------|-------------------|--------------------|--------------------|------|--------------------|------|
|                         | Mean yield (t/ha) | 0.00               | 0.00               | 1.06 | 0.00               | 2.56 |
|                         | No. trials        | 0                  | 0                  | 1    | 0                  | 1    |
| Bannister <sup>db</sup> | 2                 | Data not available | Data not available | 100  | Data not available | 121  |
| Bilby <sup>db</sup>     | 2                 |                    |                    | 100  |                    | 91   |
| Durack <sup>db</sup>    | 2                 |                    |                    | 100  |                    | 71   |
| Koala <sup>db</sup>     | 2                 |                    |                    | 101  |                    | 141  |
| Koorabup <sup>db</sup>  | 2                 |                    |                    | 100  |                    | 99   |
| Kowari <sup>db</sup>    | 2                 |                    |                    | 100  |                    | 81   |
| Mitika <sup>db</sup>    | 2                 |                    |                    | 100  |                    | 79   |
| Williams <sup>db</sup>  | 2                 |                    |                    | 101  |                    | 111  |
| Yallara <sup>db</sup>   | 2                 |                    |                    | 99   |                    | 97   |
| 13008-18                | 1                 |                    |                    | —    |                    | 117  |

— denotes no data available.

**Table 6: Yorke Peninsula oat yield performance. NVT data 2018–22. Data for 2022 not available.**

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

| Variety                 | Year              | 2018 | 2019 | 2020 | 2021 | 2022               |
|-------------------------|-------------------|------|------|------|------|--------------------|
|                         | Mean yield (t/ha) | 3.21 | 2.28 | 0.86 | 1.70 | 0.00               |
|                         | No. trials        | 1    | 1    | 1    | 1    | 0                  |
| Bannister <sup>db</sup> | 4                 | 104  | 100  | 106  | 95   | Data not available |
| Bilby <sup>db</sup>     | 4                 | 104  | 109  | 107  | 111  |                    |
| Durack <sup>db</sup>    | 4                 | 85   | 92   | 82   | 104  |                    |
| Koala <sup>db</sup>     | 4                 | 97   | 81   | 93   | 60   |                    |
| Koorabup <sup>db</sup>  | 4                 | 74   | 72   | 67   | 81   |                    |
| Kowari <sup>db</sup>    | 4                 | 98   | 104  | 100  | 108  |                    |
| Mitika <sup>db</sup>    | 4                 | 91   | 96   | 91   | 100  |                    |
| Williams <sup>db</sup>  | 4                 | 92   | 97   | 97   | 99   |                    |
| Yallara <sup>db</sup>   | 4                 | 82   | 83   | 76   | 97   |                    |
| 13008-18                | 1                 | —    | —    | —    | 131  |                    |

— denotes no data available.

**Table 7: Mid North oat yield performance. NVT data 2018–22. Data for 2018 not available.**

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

| Variety                 | Year              | 2018               | 2019 | 2020 | 2021 | 2022 |
|-------------------------|-------------------|--------------------|------|------|------|------|
|                         | Mean yield (t/ha) | 0.00               | 2.20 | 3.56 | 3.38 | 6.28 |
|                         | No. trials        | 0                  | 1    | 1    | 1    | 1    |
| Bannister <sup>db</sup> | 4                 | Data not available | 94   | 109  | 107  | 111  |
| Bilby <sup>db</sup>     | 4                 |                    | 109  | 99   | 98   | 96   |
| Durack <sup>db</sup>    | 4                 |                    | 100  | 83   | 90   | 84   |
| Koala <sup>db</sup>     | 4                 |                    | 71   | 107  | 110  | 122  |
| Koorabup <sup>db</sup>  | 4                 |                    | 75   | 86   | 98   | 98   |
| Kowari <sup>db</sup>    | 4                 |                    | 107  | 93   | 94   | 91   |
| Mitika <sup>db</sup>    | 4                 |                    | 100  | 87   | 92   | 90   |
| Williams <sup>db</sup>  | 4                 |                    | 88   | 97   | 103  | 105  |
| Yallara <sup>db</sup>   | 4                 |                    | 88   | 93   | 100  | 96   |
| 13008-18                | 2                 |                    | –    | –    | 112  | 107  |

– denotes no data available.

**Table 8: Murray Mallee oat yield performance. NVT data 2018–22. Data for 2018 and 2021 not available.**

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

| Variety                 | Year              | 2018               | 2019 | 2020 | 2021               | 2022 |
|-------------------------|-------------------|--------------------|------|------|--------------------|------|
|                         | Mean yield (t/ha) | 0.00               | 0.66 | 2.78 | 0.00               | 3.65 |
|                         | No. trials        | 0                  | 1    | 1    | 0                  | 1    |
| Bannister <sup>db</sup> | 3                 | Data not available | 93   | 107  | Data not available | 115  |
| Bilby <sup>db</sup>     | 3                 |                    | 102  | 99   |                    | 93   |
| Durack <sup>db</sup>    | 3                 |                    | 107  | 91   |                    | 80   |
| Koala <sup>db</sup>     | 3                 |                    | 79   | 105  |                    | 133  |
| Koorabup <sup>db</sup>  | 3                 |                    | 93   | 99   |                    | 102  |
| Kowari <sup>db</sup>    | 3                 |                    | 104  | 94   |                    | 86   |
| Mitika <sup>db</sup>    | 3                 |                    | 99   | 92   |                    | 86   |
| Williams <sup>db</sup>  | 3                 |                    | 83   | 104  |                    | 108  |
| Yallara <sup>db</sup>   | 3                 |                    | 105  | 102  |                    | 98   |
| 13008-18                | 1                 |                    | –    | –    |                    | 108  |

– denotes no data available.

**Table 9: South East oat yield performance. NVT data 2018–22.**

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

| Variety                 | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------|-------------------|------|------|------|------|------|
|                         | Mean yield (t/ha) | 2.70 | 5.07 | 5.07 | 4.89 | 2.88 |
|                         | No. trials        | 2    | 2    | 2    | 2    | 2    |
| Bannister <sup>db</sup> | 10                | 114  | 105  | 112  | 109  | 99   |
| Bilby <sup>db</sup>     | 10                | 100  | 102  | 103  | 101  | 102  |
| Durack <sup>db</sup>    | 10                | 80   | 89   | 77   | 84   | 97   |
| Koala <sup>db</sup>     | 10                | 117  | 105  | 114  | 108  | 100  |
| Koorabup <sup>db</sup>  | 10                | 91   | 88   | 79   | 86   | 89   |
| Kowari <sup>db</sup>    | 10                | 92   | 98   | 95   | 95   | 102  |
| Mitika <sup>db</sup>    | 10                | 89   | 95   | 90   | 91   | 101  |
| Williams <sup>db</sup>  | 10                | 116  | 104  | 111  | 104  | 96   |
| Yallara <sup>db</sup>   | 10                | 89   | 89   | 78   | 89   | 89   |
| 13008-18                | 4                 | –    | –    | –    | 116  | 97   |

– denotes no data available.

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# CANOLA

By Andrew Ware, EPAG Research

Since the publication of the 2023 sowing guide, 10 new canola varieties have become available for production in 2024. These include ATR-Swordfish<sup>®</sup>, Hyola<sup>®</sup> Defender CT, Hyola<sup>®</sup> Continuum CL, Nuseed<sup>®</sup> Ceres IML, InVigor<sup>®</sup> LT 4540P, Pioneer<sup>®</sup> PY422G, Pioneer<sup>®</sup> PY525G, Pioneer<sup>®</sup> PY421C, DG Avon TT<sup>®</sup> and a further yet to be named variety from Nutrien Ag Solutions.

There may be further variety releases in the months to follow, with seed possibly being available for planting in 2024, but these cannot be confirmed at this time.

It should be noted that the marketing company responsible for each of the varieties listed in this section has advised that they are planning to have seed available for planting in 2024. However, not all varieties that are still marketed have been tested in NVT in 2023. Some older varieties have not been evaluated in NVT for several years, but seed remains available.

Speciality-type canola varieties such as those marketed under the VICTORY<sup>®</sup> or Monola<sup>®</sup> brands are not included in this sowing guide as there are no delivery points for these varieties in South Australia.

## CANOLA VARIETY NOTES

The selection of the most suitable canola variety for a particular situation needs consideration of maturity, herbicide tolerance, potential for herbicide residue presence, blackleg resistance, relative yield, oil content and early vigour.

- The weed species expected may dictate the need for a herbicide-tolerant production system (for example, triazine, imidazolinone or glyphosate tolerant). It should be noted that any variety with triazine tolerance will incur a yield and oil penalty when grown in situations where they are not warranted.
- Blackleg has the potential to be a very destructive disease in canola and its management through varietal selection, fungicides and cultural practices is important in maximising yield potential. Varietal blackleg resistance and/or fungicide use should be considered, particularly when rotations are close.



## CONVENTIONAL VARIETIES

Conventional varieties (varieties with no herbicide tolerance) are no longer evaluated in NVT in South Australia. No yield data will be reported here for conventional varieties.

### NUSEED® DIAMOND

Early maturing hybrid. Very fast to flower. Medium plant height. Suited to low to medium-rainfall areas. Blackleg resistance rating of RMR (resistance group ABF). Tested in NVT in 2012–20. Bred and marketed by Nuseed.

### NUSEED® QUARTZ

Mid-maturing conventional hybrid. Replacement for AV-Garnet. Medium height. Blackleg resistance rating of R (resistance group ABD). Tested in NVT 2016–20. Bred and marketed by Nuseed.

### OUTLAW<sup>Ⓛ</sup>

An early maturing, open-pollinated variety. Blackleg resistance rating of RMR (resistance group A). Bred and marketed by AGT. EPR \$10.00 ex-GST.

## TRIAZINE-TOLERANT VARIETIES

### AFP CUTUBURY<sup>Ⓛ</sup>

An early-mid maturing, open-pollinated variety. AFP Cutubury<sup>Ⓛ</sup> has tolerance to Group 2 (Group B) herbicides that allows it to be planted into soil residues of Group 2 herbicide. Medium plant height. Suited to low to medium-rainfall areas. Blackleg resistance rating of MS (resistance group AB). Tested in NVT in 2020–23. Bred by Agronomy for Profit Seeds. EPR \$4.00 ex-GST.

### ATR-BLUEFIN<sup>Ⓛ</sup>

An early maturity, open-pollinated, triazine variety. Blackleg resistance rating RMR (resistance group AB). Medium height. Improved early vigour on ATR-Stingray<sup>Ⓛ</sup>. For low to medium-rainfall areas. Tested in NVT in 2020–23. Bred and marketed by Nuseed. EPR \$5.00 ex-GST.

### ATR-BONITO<sup>Ⓛ</sup>

Early-mid season maturing, open-pollinated variety. Short-medium height. Suited to low to medium-rainfall areas. Blackleg resistance rating of MS (resistance group A). Tested in NVT in 2012–23. Marketed by Nuseed. EPR \$5.00 ex-GST.

### NEW – ATR-SWORDFISH<sup>Ⓛ</sup>

Early-mid season maturing, open-pollinated variety. Short-medium height. Suited to low to medium-rainfall areas. Blackleg resistance rating of MRMS (resistance group AB). Tested in NVT in 2021–23. Marketed by Nuseed. EPR \$5.00 ex-GST.

### BANDIT TT<sup>Ⓛ</sup>

An early maturing, open-pollinated variety. Blackleg rating of MRMS (resistance group A). Suited to low to medium-rainfall areas. Tested in NVT in 2021–23. Marketed by AGT. EPR \$10.00 ex-GST.

### NEW – DG AVON TT<sup>Ⓛ</sup>

An early maturity, open-pollinated triazine variety. Suited to low to medium-rainfall areas. Blackleg resistance of MR (resistance group AC). Tested in NVT in 2022–23. Marketed by Nutrien Ag Solutions.

### DG BIDGEE TT<sup>Ⓛ</sup>

An early-mid maturity, open-pollinated triazine variety. Suited to low to medium-rainfall areas. Blackleg resistance of R (resistance group H). Tested in NVT in 2021–23. Marketed by Nutrien Ag Solutions and Seednet. EPR \$5.00 ex-GST.

### DG MURRAY TT<sup>Ⓛ</sup>

A mid-late maturity, open-pollinated triazine variety. Suited to medium to high-rainfall areas. Blackleg resistance of R (resistance group H). Tested in NVT in 2020–22. Marketed by Nutrien Ag Solutions. EPR \$5.00 ex-GST.

### DG TORRENS TT<sup>Ⓛ</sup>

An early-mid maturity, open-pollinated triazine variety. Suited to low to medium-rainfall areas. Blackleg resistance of R (resistance group H). Tested in NVT in 2020–23. Marketed by Nutrien Ag Solutions. EPR \$5.00 ex-GST.

### HYOLA® BLAZER TT

Mid-early maturing TT hybrid. Medium-short plant height. Blackleg resistance rating R (resistance group ADF). Suited to medium to very high-rainfall zones. Tested in NVT in 2019–23. Bred and marketed by Pacific Seeds.

### HYTTEC® TRIDENT

An early maturity, hybrid canola. Medium-tall plant height. Blackleg rating of R (resistance group AD). Suited to the low-rainfall areas. Tested in NVT in 2017–23. Bred and marketed by Nuseed. EPR \$5.00 ex-GST.

**HYTTEC® TRIFECTA**

A mid maturity, hybrid canola. Medium-tall plant height. Provisional blackleg resistance rating of R (resistance group ABD). Suited to the medium to high-rainfall areas. Tested in NVT in 2019–23. Bred and marketed by Nuseed. EPR \$5.00 ex-GST.

**HYTTEC® TROPHY**

An early-mid maturity, hybrid canola. Medium-tall plant height. Blackleg rating of R (resistance group AD). Suited to the low to medium-rainfall areas. Tested in NVT in 2017–23. Bred and marketed by Nuseed. EPR \$5.00 ex-GST.

**HYTTEC® VELOCITY**

An early maturity, hybrid canola. Medium-tall plant height. Blackleg rating of MR (resistance group AB). Suited to the low to medium-rainfall areas. Tested in NVT in 2020–23. Bred and marketed by Nuseed. EPR \$5.00 ex-GST.

**INVIGOR® T 4510**

Early-mid season, triazine-tolerant hybrid variety. Medium plant height. Suited to early/medium rainfall areas. Blackleg resistance rating of MR (resistance group BF). Tested in NVT in 2016–23. Marketed by BASF.

**INVIGOR® T 4511**

Early-mid season, triazine-tolerant hybrid variety. Blackleg resistance rating R (resistance group to be determined). Tested in NVT in 2021–23. Marketed by BASF.

**INVIGOR® T 6010**

Mid-late season, triazine-tolerant hybrid variety. Medium plant height. Suited to medium to high-rainfall areas. Blackleg resistance rating of MRMS (resistance group BC). Tested in NVT in 2019–23. Marketed by BASF.

**RENEGADE TT<sup>Ⓢ</sup>**

An early-mid maturing open-pollinated variety. Blackleg rating of MR (resistance group A). Tested in NVT in 2021–23. Marketed by AGT. EPR \$10.00 ex-GST.

**RGT BASELINE™ TT**

Mid maturing hybrid with similar maturity to SF Ignite TT. Suited to medium-rainfall areas. Medium plant height. Blackleg resistance rating MRMS (resistance group B). Tested in NVT in 2021–23. Marketed by RAGT Australia. EPR \$10.00 ex-GST.

**RGT CAPACITY™ TT**

An early-mid maturing hybrid. Suited to low to medium-rainfall areas. Medium plant height. Blackleg resistance rating MRMS (resistance group B). Tested in NVT in 2019–23. Marketed by RAGT Australia. EPR \$10.00 ex-GST.

**SF DYNATRON TT**

Mid maturing, triazine-tolerant, hybrid canola. Suited to the medium to high-rainfall areas. Medium-tall height with a high oil content. Blackleg rating of MRMS (resistance group BC). Tested in NVT in 2019–23. Marketed by RAGT Australia, exclusively to Nutrien Ag Solutions. EPR \$10.00 ex-GST.

**SF SPARK TT**

Early maturing hybrid. Suited to low to medium-rainfall areas. Medium plant height. Blackleg rating MR (resistance group ABDS). Tested in NVT in 2018–23. Marketed by RAGT Australia. EPR \$10.00 ex-GST.

**DUAL LIBERTYLINK® AND GLYPHOSATE/TRIAZINE TOLERANT****INVIGOR® LT 4530P**

Early-mid maturing, triazine-tolerant and LibertyLink® hybrid variety (classified as GM). Blackleg resistance RMR (resistance group BF). Suited to medium to high-rainfall areas. PodGuard® technology makes it suited to later windrowing timings or direct harvest. Tested in NVT in 2021–23. NVT yields in triazine-tolerant tables. Bred and marketed by BASF.

**NEW – INVIGOR® LR 4540P**

Early-mid maturing, slightly later than INVIGOR LR 4540P, glyphosate-tolerant (Truflex®) and LibertyLink® hybrid variety (classified as GM). Provisional blackleg resistance RMR (resistance group B). Suited to medium to high-rainfall areas. PodGuard® technology makes it suited to later windrowing timings or direct harvest. Tested in NVT in 2022–23. NVT yields in triazine-tolerant tables. Bred and marketed by BASF.

## DUAL TRIAZINE AND IMIDAZOLINONE TOLERANT

### NEW – HYOLA® DEFENDER CT

Early-mid maturing variety that carries tolerance to both triazine and Clearfield® herbicide chemistries. Suited to medium to high-rainfall zones. Blackleg resistance rating RMR (resistance group ADF). Also designed for imidazolinone soil carryover situations. Tested in NVT in 2022–23. NVT yields in triazine-tolerant tables. Bred and marketed by Pacific Seeds.

### HYOLA® ENFORCER CT

Early-mid maturing variety that carries tolerance to both triazine and Clearfield® herbicide chemistries. Suited to low to medium-rainfall zones. Blackleg resistance rating R (resistance group ADF). Also designed for imidazolinone soil carryover situations. Tested in NVT in 2019–23. NVT yields in triazine-tolerant tables. Bred and marketed by Pacific Seeds.

### PIONEER® PY520 TC

Mid-maturing variety that carries tolerance to both triazine and Clearfield® herbicide chemistries. Suited to medium to high-rainfall zones. Blackleg rating RMR (resistance group BC). Also designed for imidazolinone soil carryover situations. Tested in NVT in 2021–23. Marketed by Pioneer Brand Seeds.

## GLYPHOSATE-TOLERANT HYBRID VARIETIES

Glyphosate-tolerant varieties have been tested in South Australian NVT trials since 2021 and will have limited data at some sites.

Roundup Ready®, TruFlex® and Optimum Gly® varieties are tolerant to applications of specific formulations of glyphosate herbicide. The difference in the varieties relates to the amount and timing of herbicide that the crop is able to tolerate. Roundup Ready® varieties must not be sprayed after the crop has reached the six true leaf stage, whereas the TruFlex® varieties are able to be sprayed up until the first flower stage and Optimum Gly® varieties are able to be sprayed up until the 10 per cent flower stage.

### DG LOFTY TF

Early-mid maturing TruFlex® hybrid. Suited to low to medium-rainfall zones. Blackleg rating of R (resistance group ABH). Tested in NVT in 2021–23. Marketed by Nutrien Ag Solutions.

### DG HOTHAM TF

Mid maturing TruFlex® hybrid. Suited to medium to high-rainfall zones. Blackleg rating of R (resistance group ABH). Tested in NVT in 2022–23. Marketed by Nutrien Ag Solutions.

### NEW – DG 2104XX

A mid-late maturity, TruFlex® hybrid. Suited to medium to high-rainfall areas. Blackleg resistance of R (resistance group ABH). Tested in NVT in 2022–23. Marketed by Nutrien Ag Solutions.

### INVIGOR® R 4022P

Early-mid maturing TruFlex® hybrid suited to medium-rainfall zones. PodGuard® technology makes it suited to later windrowing timings or direct harvest. Blackleg rating of MR (resistance group ABC). Tested in NVT in 2019–23. Bred and marketed by BASF.

### INVIGOR® R 4520P

Early-mid maturing TruFlex® hybrid variety (slightly later than Invigor® R 4022P). PodGuard® technology makes it suited to later windrowing timings or direct harvest. Blackleg rating of MRMS (resistance group B). Tested in NVT in 2019–23. Bred and marketed by BASF.

### NUSEED® EAGLE TF

Mid maturing TruFlex® hybrid. Suited to medium to high-rainfall areas. Blackleg rating R (resistance group ABD). Tall height. Tested in NVT in 2022–23. Bred and marketed by Nuseed.

### NUSEED® EMU TF

Early maturing TruFlex® hybrid. Suited to low to medium-rainfall areas. Medium plant height. Blackleg rating MR (resistance group AB). Tested in NVT in 2021–23. Bred and marketed by Nuseed.

### NUSEED® HUNTER TF

Early-mid maturing TruFlex® hybrid. Suited to low to medium-rainfall areas. Medium plant height. Blackleg rating RMR (resistance group AB). Tested in NVT in 2021–23. Bred and marketed by Nuseed.

### NUSEED® RAPTOR TF

Early-mid maturing TruFlex® hybrid. Blackleg rating R (resistance group AD). Medium height. Tested in NVT in 2021–23. Bred and marketed by Nuseed.

**PIONEER® 44Y27 RR**

Early-early mid season Roundup Ready® hybrid variety, ideally suited to low to medium-rainfall zones. Blackleg rating RMR (resistance group B). Tested in NVT in 2016–23. Marketed by Pioneer Brand Seeds.

**PIONEER® 44Y30 RR**

Early-mid season Roundup Ready® hybrid variety, with a wide area of adaptation. Blackleg rating RMR (resistance group AB). Tested in NVT in 2020–23. Marketed by Pioneer Brand Seeds.

**PIONEER® 45Y28 RR**

Mid maturing Roundup Ready® hybrid variety. Suited to medium to high-rainfall zones and irrigation. Blackleg rating RMR (resistance group BC). Medium-tall height. Tested in NVT in 2018–23. Marketed by Pioneer Brand Seeds.

**NEW – PIONEER® PY422G**

Early-mid season Optimum Gly® hybrid variety, with a wide area of adaptation. Blackleg rating to be determined (resistance group tbd). Tested in NVT in 2023. Marketed by Pioneer Brand Seeds.

**NEW – PIONEER® PY525G**

Mid maturing Optimum Gly® hybrid variety. Suited to medium to high-rainfall zones. Blackleg rating to be determined (resistance group tbd). Tested in NVT in 2023. Marketed by Pioneer Brand Seeds.

**DUAL IMIDAZOLINONE AND GLYPHOSATE TOLERANT****HYOLA® BATTALION XC**

Dual herbicide-tolerant, early-mid maturity, TruFlex® plus Clearfield® (imidazoline) hybrid canola. Medium to medium-tall plant height. Suited to low to medium-rainfall zones. Blackleg resistance rating R (resistance group ADF). Also designed for imidazoline herbicide residue situations. Tested in NVT in 2019–23. NVT yields in glyphosate-tolerant tables. Bred and marketed by Pacific Seeds.

**HYOLA® GARRISON XC**

Dual herbicide-tolerant, early-mid maturity, TruFlex® plus Clearfield® (imidazoline) hybrid canola. Medium to medium-tall plant height. Suited to low to medium-rainfall zones. Blackleg resistance rating R (resistance group ADF). Also designed for imidazoline herbicide residue situations. Tested in NVT in 2019–23. NVT yields in glyphosate-tolerant tables. Bred and marketed by Pacific Seeds.

**HYOLA® REGIMENT XC**

Dual herbicide-tolerant, early-mid maturity, TruFlex® plus Clearfield® (imidazoline) hybrid canola. Suited to low to high-rainfall zones. Blackleg resistance rating R (resistance group ADFH). Also designed for imidazoline herbicide residue situations. Tested in NVT in 2021–23. NVT yields in glyphosate-tolerant tables. Bred and marketed by Pacific Seeds.

**IMIDAZOLINONE TOLERANT****NEW – HYOLA® CONTINUUM CL**

Early-mid maturing CL hybrid. Suited to medium to very high-rainfall zones. Blackleg resistance rating R (resistance group ADF). Tested in NVT in 2022–23. Bred and marketed by Pacific Seeds.

**HYOLA® SOLSTICE CL**

Early-mid maturing CL hybrid. Suited to low to medium-rainfall zones. Blackleg resistance rating R (resistance group ADFH). Tested in NVT in 2021–23. Bred and marketed by Pacific Seeds.

**NEW – NUSEED® CERES IMI**

Early maturing CL hybrid. Suited to low to medium-rainfall areas. Blackleg rating R (resistance group AD). Tested in NVT in 2021–23. Bred and marketed by Nuseed.

**PIONEER® 43Y92 CL**

Early maturing hybrid. Medium plant height. Suited to low to medium-rainfall areas and short season growing zones. Blackleg resistance rating of R (resistance group B). Tested in NVT in 2016–23. Marketed by Pioneer Brand Seeds.

**PIONEER® 44Y94 CL**

An early-mid maturing hybrid. Blackleg resistance rating of R (resistance group BC). Tested in NVT in 2019–23. Marketed by Pioneer Brand Seeds.

**PIONEER® 45Y93 CL**

A mid maturing hybrid suited to early planting and high to medium-rainfall zones. Medium-tall plant height. A blackleg rating of R (resistance group BC). Tested in NVT in 2017–23. Marketed by Pioneer Brand Seeds.

**PIONEER® 45Y95 CL**

A mid maturing hybrid variety, best suited to medium to high-rainfall zones and irrigation. Medium-tall plant height. Blackleg rating of R (resistance group C). Tested in NVT in 2020–23. Marketed by Pioneer Brand Seeds.

**NEW – PIONEER® PY421C**

An early-mid maturing hybrid variety. Provisional blackleg rating of R (provisional resistance group AC). Tested in NVT in 2022–23. Marketed by Pioneer Brand Seeds.

**WINTER-TYPE IMIDAZOLINONE TOLERANT**

Several winter-type canola varieties are available. These varieties have a high vernalisation (or cold) requirement, which means they are capable of producing high quantities of biomass before they commence flowering and are able to make use of extended growing seasons. This enables them to be grazed over a relatively large window, with often little damage to grain yield. These varieties are not

evaluated in NVT; however, they are suited to some environments that have a long growing season, such as the lower South-East and Kangaroo Island, or in situations where growers are looking to utilise either spring, summer or early autumn rainfall events.

**HYOLA® 970CL**

Long season, winter graze-and-grain dual-purpose Clearfield® hybrid. Pacific Seeds indicates high to very high biomass dry matter (DM) production, good grain yield and oil content. Suited to sowing in autumn (from February to April) and spring (from early to late October) in medium-high through to very high-rainfall zones. Blackleg resistance rating R (resistance group H). Not tested in NVT. Marketed by Pacific Seeds.

**Table 1: Agronomic and disease information for current canola varieties.**

| Variety                    | Herbicide tolerance | Type   | Harvest maturity | Blackleg rating |        |         | Blackleg group | EPR (\$/t) | Release | Seed access          |
|----------------------------|---------------------|--------|------------------|-----------------|--------|---------|----------------|------------|---------|----------------------|
|                            |                     |        |                  | Bare seed       | ILeVO® | Saltro® |                |            |         |                      |
| Nuseed® Diamond            | Conv                | Hybrid | 3                | RMR             | R      | R       | ABF            | —          | 2013    | Nuseed               |
| Nuseed® Quartz             | Conv                | Hybrid | 5                | R               | —      | —       | ABD            | —          | 2017    | Nuseed               |
| Outlaw <sup>®</sup>        | Conv                | OP     | 3                | RMR             | R      | R       | A              | 10         | 2022    | AGT                  |
| AFP Cutubury <sup>®</sup>  | TT**                | OP     | 4                | MS              | RMR    | RMR     | AB             | 4          | 2020    | Agronomy for Profit  |
| ATR-Bluefin <sup>®</sup>   | TT                  | OP     | 3                | RMR             | —      | —       | AB             | 5          | 2021    | Nuseed               |
| ATR-Bonito <sup>®</sup>    | TT                  | OP     | 4                | MS              | RMR    | R       | A              | 5          | 2013    | Nuseed               |
| ATR-Swordfish <sup>®</sup> | TT                  | OP     | 4                | MRMS            | —      | —       | AB             | 5          | 2023    | Nuseed               |
| Bandit TT <sup>®</sup>     | TT                  | OP     | 3                | MRMS            | R      | R       | A              | 10         | 2022    | AGT                  |
| DG Avon TT <sup>®</sup>    | TT                  | OP     | 3                | MR              |        |         | AC             | —          | 2023    | Nutrien Ag Solutions |
| DG Bidgee TT <sup>®</sup>  | TT                  | OP     | 4                | R               | R      | R       | H              | 5          | 2021    | Nutrien Ag Solutions |
| DG Murray TT <sup>®</sup>  | TT                  | OP     | 6                | R               | —      | —       | H              | 5          | 2021    | Nutrien Ag Solutions |
| DG Torrens TT <sup>®</sup> | TT                  | OP     | 4                | R               | —      | R       | H              | 5          | 2022    | Nutrien Ag Solutions |
| Hyola® Blazer TT           | TT                  | Hybrid | 4                | R               | —      | —       | ADF            | —          | 2020    | Pacific Seeds        |
| HyTTec® Trident            | TT                  | Hybrid | 3                | R               | —      | —       | AD             | 5          | 2019    | Nuseed               |
| HyTTec® Trifecta           | TT                  | Hybrid | 5                | R               | —      | —       | ABD            | 5          | 2020    | Nuseed               |
| HyTTec® Trophy             | TT                  | Hybrid | 4                | R               | R      | R       | AD             | 5          | 2017    | Nuseed               |
| HyTTec® Velocity           | TT                  | Hybrid | 3                | MR              | —      | —       | AB             | 5          | 2022    | Nuseed               |
| InVigor® T 4510            | TT                  | Hybrid | 4                | MR              | R      | R       | BF             | —          | 2016    | BASF                 |
| InVigor® T 4511            | TT                  | Hybrid | 4                | R               | R      | —       | tbd            | —          | 2022    | BASF                 |
| InVigor® T 6010            | TT                  | Hybrid | 6                | MRMS            | R      | R       | BC             | —          | 2020    | BASF                 |
| Renegade TT <sup>®</sup>   | TT                  | OP     | 4                | MR              | R      | R       | A              | 10         | 2022    | AGT                  |
| RGT Baseline™ TT           | TT                  | Hybrid | 5                | MRMS            | R      | R       | B              | 10         | 2022    | RAGT Australia       |
| RGT Capacity™ TT           | TT                  | Hybrid | 4                | MRMS            | R      | R       | B              | 10         | 2021    | RAGT Australia       |
| SF Dynatron® TT            | TT                  | Hybrid | 5                | MRMS            | R      | R       | BC             | 10         | 2020    | RAGT Australia       |
| SF Spark® TT               | TT                  | Hybrid | 3                | MR              | R      | R       | ABDS           | 10         | 2018    | RAGT Australia       |
| InVigor® LT 4530P          | TT + LL             | Hybrid | 4                | RMR             | R      | —       | BF             | —          | 2021    | BASF                 |
| InVigor® LR 4540P          | GT (TF) + LL        | Hybrid | 4                | RMR             | R      | —       | B              | —          | 2021    | BASF                 |
| Hyola® Defender CT         | TT + CL             | Hybrid | 4                | RMR             | —      | —       | ADF            | —          | 2023    | Pacific Seeds        |
| Hyola® Enforcer CT         | TT + CL             | Hybrid | 5                | R               | —      | —       | ADF            | —          | 2020    | Pacific Seeds        |
| Pioneer® PY520TC           | TT + CL             | Hybrid | 5                | RMR             | R      | R       | BC             | —          | 2022    | Pioneer              |

Continued on next page



## HYOLA® FEAST CL

Long season, winter graze-and-grain dual-purpose Clearfield® hybrid. Pacific Seeds indicates high to very high biomass DM production, good grain yield and oil content. Will mature seven days earlier than Hyola® 970CL. Suited to sowing in autumn (from February to April) and spring (from early to late October) in medium-high through to very high-rainfall zones. Blackleg resistance rating R (resistance group H). Not tested in NVT. Marketed by Pacific Seeds.

## RGT CLAVIER™ CL

A winter graze-and-grain dual-purpose hybrid variety. Suited to early and spring sowing in high-rainfall areas. Blackleg resistance rating of R (resistance group ACH). Not tested in NVT. Marketed by RAGT Australia. EPR \$12.00 ex-GST.

## RGT NIZZA™ CL

Early winter dual-purpose grazing hybrid. Approximately seven to 10 days earlier to flower than Hyola® 970CL. Seed Force indicates very high biomass with excellent yield and oil content. Suited to early sowing in high-rainfall areas. Blackleg resistance rating R (resistance group B). Not tested in NVT. Marketed by RAGT Australia. EPR \$12.00 ex-GST.

**Table 1: Agronomic and disease information for current canola varieties (continued).**

| Variety             | Herbicide tolerance | Type   | Harvest maturity | Blackleg rating |        |         | Blackleg group | EPR (\$/t) | Release | Seed access          |
|---------------------|---------------------|--------|------------------|-----------------|--------|---------|----------------|------------|---------|----------------------|
|                     |                     |        |                  | Bare seed       | ILeVO® | Saltro® |                |            |         |                      |
| DG Lofty TF         | GT (TF)             | Hybrid | 4                | R               | –      | R       | ABH            | –          | 2021    | Nutrien Ag Solutions |
| DG Hotham TF        | GT (TF)             | Hybrid | 5                | R               | –      | R       | ABH            | –          | 2022    | Nutrien Ag Solutions |
| DG 2104XX           | GT (TF)             | Hybrid | 6                | R               | –      | –       | ABH            | –          | 2023    | Nutrien Ag Solutions |
| InVigor® R 4022P    | GT (TF)             | Hybrid | 4                | MR              | R      | –       | ABC            | –          | 2019    | BASF                 |
| InVigor® R 4520P    | GT (TF)             | Hybrid | 4                | MRMS            | R      | –       | B              | –          | 2020    | BASF                 |
| Nuseed® Eagle TF    | GT (TF)             | Hybrid | 5                | R               | –      | R       | ABD            | –          | 2022    | Nuseed               |
| Nuseed® Emu TF      | GT (TF)             | Hybrid | 3                | MR              | –      | R       | AB             | –          | 2021    | Nuseed               |
| Nuseed® Hunter TF   | GT (TF)             | Hybrid | 4                | RMR             | –      | R       | AB             | –          | 2022    | Nuseed               |
| Nuseed® Raptor TF   | GT (TF)             | Hybrid | 4                | R               | –      | –       | AD             | –          | 2019    | Nuseed               |
| Pioneer® 44Y27 RR   | GT (RR)             | Hybrid | 4                | RMR             | R      | R       | B              | –          | 2017    | Pioneer              |
| Pioneer® 44Y30 RR   | GT (RR)             | Hybrid | 4                | RMR             | –      | R       | AB             | –          | 2021    | Pioneer              |
| Pioneer® 45Y28 RR   | GT (RR)             | Hybrid | 5                | RMR             | –      | R       | BC             | –          | 2018    | Pioneer              |
| Pioneer® PY422G     | GT (OG)             | Hybrid | 4                | tbd             | –      | –       | tbd            | –          | 2023    | Pioneer              |
| Pioneer® PY525G     | GT (OG)             | Hybrid | 5                | tbd             | –      | –       | tbd            | –          | 2023    | Pioneer              |
| Hyola® Battalion XC | GT (TF) + CL        | Hybrid | 4                | R               | –      | –       | ADF            | –          | 2021    | Pacific Seeds        |
| Hyola® Garrison XC  | GT (TF) + CL        | Hybrid | 5                | R               | –      | –       | ADF            | –          | 2020    | Pacific Seeds        |
| Hyola® Regiment XC  | GT (TF) + CL        | Hybrid | 5                | R               | –      | –       | ADFH           | –          | 2022    | Pacific Seeds        |
| Hyola® Continuum CL | CL                  | Hybrid | 4                | R               | –      | –       | ADF            | –          | 2023    | Pacific Seeds        |
| Hyola® Solstice CL  | CL                  | Hybrid | 5                | R               | –      | –       | ADFH           | –          | 2022    | Pacific Seeds        |
| Nuseed® Ceres IMI   | CL                  | Hybrid | 3                | R               | –      | –       | AD             | –          | 2023    | Nuseed               |
| Pioneer® 43Y92 CL   | CL                  | Hybrid | 3                | R               | –      | R       | B              | –          | 2017    | Pioneer              |
| Pioneer® 44Y94 CL   | CL                  | Hybrid | 4                | R               | –      | R       | BC             | –          | 2020    | Pioneer              |
| Pioneer® 45Y93 CL   | CL                  | Hybrid | 5                | R               | –      | R       | BC             | –          | 2018    | Pioneer              |
| Pioneer® 45Y95 CL   | CL                  | Hybrid | 5                | R               | –      | R       | C              | –          | 2021    | Pioneer              |
| Pioneer® PY421C     | CL                  | Hybrid | 4                | RMR             | R      | R       | A              | –          | 2023    | Pioneer              |
| Hyola® 970CL        | CL                  | Hybrid | Winter           | R               | –      | –       | H              | –          | 2018    | Pacific Seeds        |
| Hyola® Feast CL     | CL                  | Hybrid | Winter           | R               | –      | –       | H              | –          | 2020    | Pacific Seeds        |
| RGT Clavier™ CL     | CL                  | Hybrid | Winter           | R               | R      | R       | ACH            | 12         | 2022    | RAGT Australia       |
| RTG Nizza™ CL       | CL                  | Hybrid | Winter           | R               | –      | –       | B              | 12         | 2020    | RAGT Australia       |

TT = triazine tolerant, GT = glyphosate tolerant, TF = TruFlex®, RR = Roundup Ready®, OG = Optimum Gly®, LL = LibertyLink® (glufosinate tolerant), CL = Clearfield® (imidazolinone tolerant), OP = open pollinated. P = provisional ratings – treat with caution, \*\* = tolerant to Group B (Group 2) herbicide residue.

**Harvest maturity key:** 3 = early, 4 = early-mid and mid-early, 5 = mid, 6 = mid-late, winter = very late (information provided by seed companies).

**Blackleg resistance rating key:** R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible, tbd = to be determined.

**Table 2: Upper Eyre Peninsula low-medium rainfall zone. NVT data 2018–22.**

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

|                                 | Year            | 2018               | 2019               | 2020               | 2021               | 2022 |
|---------------------------------|-----------------|--------------------|--------------------|--------------------|--------------------|------|
| <b>TRIAZINE TOLERANT</b>        |                 |                    |                    |                    |                    |      |
|                                 | Mean yield t/ha | 1.11               | 1.16               | 1.21               | 1.10               | 2.69 |
| Variety                         | No. trials      | 2                  | 2                  | 1                  | 1                  | 2    |
| ATR-Bluefin <sup>®</sup>        | 3               | –                  | –                  | –                  | 69                 | 88   |
| ATR-Bonito <sup>®</sup>         | 7               | 92                 | 98                 | 81                 | –                  | 93   |
| ATR-Stingray <sup>®</sup>       | 8               | 86                 | 80                 | 74                 | 78                 | 81   |
| ATR-Swordfish <sup>®</sup>      | 2               | –                  | –                  | –                  | –                  | 93   |
| Bandit TT <sup>®</sup>          | 3               | –                  | –                  | –                  | 98                 | 98   |
| DG Avon TT <sup>®</sup>         | 2               | –                  | –                  | –                  | –                  | 94   |
| Hyola <sup>®</sup> Blazer TT    | 1               | –                  | –                  | 113                | –                  | –    |
| Hyola <sup>®</sup> Defender CT  | 2               | –                  | –                  | –                  | –                  | 111  |
| Hyola <sup>®</sup> Enforcer CT  | 5               | –                  | 97                 | 95                 | –                  | 98   |
| HyTTec <sup>®</sup> Trident     | 7               | 120                | 98                 | 130                | 117                | 109  |
| HyTTec <sup>®</sup> Trophy      | 8               | 109                | 106                | 117                | 112                | 109  |
| HyTTec <sup>®</sup> Velocity    | 2               | –                  | –                  | –                  | –                  | 106  |
| InVigor <sup>®</sup> LT 4530P   | 2               | –                  | –                  | –                  | –                  | 112  |
| InVigor <sup>®</sup> T 4510     | 8               | 111                | 108                | 118                | 104                | 110  |
| InVigor <sup>®</sup> T 4511     | 3               | –                  | –                  | –                  | 112                | 103  |
| Renegade TT <sup>®</sup>        | 3               | –                  | –                  | –                  | 90                 | 107  |
| RGT Capacity <sup>™</sup> TT    | 2               | –                  | –                  | –                  | –                  | 101  |
| SF Dynatron <sup>®</sup> TT     | 2               | –                  | 115                | –                  | –                  | –    |
| SF Spark <sup>®</sup> TT        | 5               | –                  | 97                 | 105                | –                  | 100  |
| <b>IMIDAZOLINONE TOLERANT</b>   |                 |                    |                    |                    |                    |      |
|                                 | Mean yield t/ha | 1.80               | 1.22               | 1.39               | 1.42               | 3.00 |
| Variety                         | No. trials      | 2                  | 2                  | 1                  | 1                  | 2    |
| Hyola <sup>®</sup> Continuum CL | 2               | –                  | –                  | –                  | 98                 | 99   |
| Hyola <sup>®</sup> Equinox CL   | 2               | –                  | –                  | –                  | 109                | 88   |
| Nuseed <sup>®</sup> Ceres IMI   | 2               | –                  | –                  | –                  | 109                | 99   |
| Pioneer <sup>®</sup> 43Y92 CL   | 8               | 101                | 97                 | 92                 | 106                | 97   |
| Pioneer <sup>®</sup> 44Y94 CL   | 2               | –                  | –                  | –                  | 112                | 112  |
| Pioneer <sup>®</sup> 45Y95 CL   | 2               | 112                | –                  | –                  | 110                | –    |
| <b>GLYPHOSATE TOLERANT</b>      |                 |                    |                    |                    |                    |      |
|                                 | Mean yield t/ha | 0.00               | 0.00               | 0.00               | 0.00               | 4.21 |
| Variety                         | No. trials      | 0                  | 0                  | 0                  | 0                  | 1    |
| DG Lofty TF                     | 1               | Data not available | Data not available | Data not available | Data not available | 95   |
| Hyola <sup>®</sup> 410XX        | 1               |                    |                    |                    |                    | 88   |
| Hyola <sup>®</sup> Battalion XC | 1               |                    |                    |                    |                    | 92   |
| Hyola <sup>®</sup> Garrison XC  | 1               |                    |                    |                    |                    | 91   |
| InVigor <sup>®</sup> LR 4540P   | 1               |                    |                    |                    |                    | 111  |
| InVigor <sup>®</sup> R 4022P    | 1               |                    |                    |                    |                    | 107  |
| InVigor <sup>®</sup> R 4520P    | 1               |                    |                    |                    |                    | 117  |
| Nuseed <sup>®</sup> Emu TF      | 1               |                    |                    |                    |                    | 96   |
| Nuseed <sup>®</sup> Hunter TF   | 1               |                    |                    |                    |                    | 111  |
| Nuseed <sup>®</sup> Raptor TF   | 1               |                    |                    |                    |                    | 103  |
| Pioneer <sup>®</sup> 44Y27 RR   | 1               |                    |                    |                    |                    | 108  |
| Pioneer <sup>®</sup> 44Y30 RR   | 1               |                    |                    |                    |                    | 102  |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.



**Table 3: Lower Eyre Peninsula medium-high rainfall zone. NVT data 2018–22.**

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

|                               | Year            | 2018               | 2019               | 2020               | 2021 | 2022               |
|-------------------------------|-----------------|--------------------|--------------------|--------------------|------|--------------------|
| <b>TRIAZINE TOLERANT</b>      |                 |                    |                    |                    |      |                    |
|                               | Mean yield t/ha | 1.22               | 2.35               | 1.90               | 1.99 | 2.65               |
| Variety                       | No. trials      | 1                  | 1                  | 2                  | 2    | 1                  |
| AFP Cutubury <sup>Ⓢ</sup>     | 3               | –                  | –                  | –                  | 83   | 89                 |
| ATR-Bonito <sup>Ⓢ</sup>       | 2               | 91                 | –                  | –                  | –    | 98                 |
| Bandit TT <sup>Ⓢ</sup>        | 1               | –                  | –                  | –                  | 99   | –                  |
| DG Bidgee TT <sup>Ⓢ</sup>     | 1               | –                  | –                  | –                  | –    | 99                 |
| DG Murray TT <sup>Ⓢ</sup>     | 5               | –                  | –                  | 82                 | 83   | 79                 |
| DG Torrens TT <sup>Ⓢ</sup>    | 2               | –                  | –                  | 101                | –    | 96                 |
| Hyola® Blazer TT              | 5               | –                  | –                  | 113                | 114  | 119                |
| Hyola® Defender CT            | 1               | –                  | –                  | –                  | –    | 123                |
| Hyola® Enforcer CT            | 6               | –                  | 106                | 102                | 108  | 94                 |
| HyTTec® Trifecta              | 7               | 116                | 118                | 114                | 117  | 113                |
| HyTTec® Trophy                | 7               | 110                | 111                | 110                | 120  | 113                |
| InVigor® LT 4530P             | 2               | –                  | –                  | –                  | 108  | 119                |
| InVigor® T 4510               | 7               | 103                | 109                | 117                | 116  | 115                |
| InVigor® T 4511               | 3               | –                  | –                  | –                  | 117  | 112                |
| InVigor® T 6010               | 6               | –                  | 113                | 118                | 94   | 112                |
| Pioneer® PY520TC              | 3               | –                  | –                  | –                  | 108  | 115                |
| Renegade TT <sup>Ⓢ</sup>      | 2               | –                  | –                  | –                  | 95   | 125                |
| RGT Baseline™ TT              | 1               | –                  | –                  | –                  | –    | 110                |
| RGT Capacity™ TT              | 3               | –                  | –                  | –                  | 105  | 117                |
| SF Spark® TT                  | 7               | 100                | 100                | 99                 | 105  | 101                |
| <b>IMIDAZOLINONE TOLERANT</b> |                 |                    |                    |                    |      |                    |
|                               | Mean yield t/ha | 1.51               | 2.68               | 1.92               | 1.92 | 2.86               |
| Variety                       | No. trials      | 1                  | 1                  | 2                  | 2    | 1                  |
| Hyola® Continuum CL           | 1               | –                  | –                  | –                  | –    | 111                |
| Hyola® Equinox CL             | 5               | –                  | –                  | 105                | 110  | 89                 |
| Hyola® Solstice CL            | 3               | –                  | –                  | –                  | 116  | 93                 |
| Nuseed™ Ceres IMI             | 1               | –                  | –                  | –                  | 118  | –                  |
| Pioneer® 44Y94 CL             | 6               | –                  | 109                | 114                | 118  | 121                |
| Pioneer® 45Y93 CL             | 4               | 109                | 109                | 108                | –    | –                  |
| Pioneer® 45Y95 CL             | 5               | 111                | 113                | –                  | 112  | 115                |
| Pioneer® PY421C               | 1               | –                  | –                  | –                  | –    | 132                |
| <b>GYLPHOSATE TOLERANT</b>    |                 |                    |                    |                    |      |                    |
|                               | Mean yield t/ha | 0.00               | 0.00               | 0.00               | 1.94 | 0.00               |
| Variety                       | No. trials      | 0                  | 0                  | 0                  | 1    | 0                  |
| DG Bindo TF                   | 1               | Data not available | Data not available | Data not available | 93   | Data not available |
| Hyola® 410XX                  | 1               |                    |                    |                    | 99   |                    |
| Hyola® Battalion XC           | 1               |                    |                    |                    | 99   |                    |
| Hyola® Garrison XC            | 1               |                    |                    |                    | 99   |                    |
| Hyola® Regiment XC            | 1               |                    |                    |                    | 113  |                    |
| InVigor® R 4022P              | 1               |                    |                    |                    | 109  |                    |
| InVigor® R 4520P              | 1               |                    |                    |                    | 112  |                    |
| Nuseed® Condor TF             | 1               |                    |                    |                    | 114  |                    |
| Nuseed® Emu TF                | 1               |                    |                    |                    | 121  |                    |
| Nuseed® Raptor TF             | 1               |                    |                    |                    | 114  |                    |
| Pioneer® 44Y27 RR             | 1               |                    |                    |                    | 120  |                    |
| Pioneer® 44Y30 RR             | 1               |                    |                    |                    | 114  |                    |
| Pioneer® 45Y28 RR             | 1               |                    |                    |                    | 104  |                    |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.

**Table 4: Yorke Peninsula medium-high rainfall zone. NVT data 2018–22. Data for 2018 not available.**

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

|                            | Year            | 2018               | 2019               | 2020               | 2021 | 2022 |
|----------------------------|-----------------|--------------------|--------------------|--------------------|------|------|
| TRIAZINE TOLERANT          |                 |                    |                    |                    |      |      |
|                            | Mean yield t/ha | 0.00               | 1.19               | 1.19               | 2.23 | 3.05 |
| Variety                    | No. trials      | 0                  | 1                  | 1                  | 1    | 1    |
| AFP Cutubury <sup>®</sup>  | 2               | Data not available | –                  | –                  | 86   | 87   |
| ATR-Bonito <sup>®</sup>    | 1               |                    | –                  | –                  | –    | 93   |
| Bandit TT <sup>®</sup>     | 1               |                    | –                  | –                  | 99   | –    |
| DG Bidgee TT <sup>®</sup>  | 2               |                    | –                  | –                  | 95   | 111  |
| DG Murray TT <sup>®</sup>  | 1               |                    | –                  | –                  | –    | 97   |
| DG Torrens TT <sup>®</sup> | 1               |                    | –                  | –                  | –    | 104  |
| Hyola® Blazer TT           | 3               |                    | –                  | 112                | 114  | 120  |
| Hyola® Defender CT         | 1               |                    | –                  | –                  | –    | 118  |
| Hyola® Enforcer CT         | 4               |                    | 110                | 104                | 104  | 102  |
| HyTTec® Trident            | 4               |                    | 113                | 127                | 121  | 105  |
| HyTTec® Trifecta           | 4               |                    | 120                | 113                | 115  | 118  |
| HyTTec® Trophy             | 4               |                    | 114                | 118                | 116  | 113  |
| InVigor® LT 4530P          | 2               |                    | –                  | –                  | 109  | 104  |
| InVigor® T 4510            | 4               |                    | 113                | 120                | 113  | 108  |
| InVigor® T 4511            | 2               |                    | –                  | –                  | 113  | 109  |
| InVigor® T 6010            | 4               |                    | 111                | 97                 | 101  | 114  |
| Pioneer® PY520TC           | 1               |                    | –                  | –                  | 109  | –    |
| Renegade TT <sup>®</sup>   | 2               |                    | –                  | –                  | 102  | 106  |
| RGT Baseline™ TT           | 2               | –                  | –                  | 99                 | 117  |      |
| RGT Capacity™ TT           | 4               | 112                | 110                | 107                | 112  |      |
| SF Dynatron® TT            | 4               | 113                | 115                | 112                | 115  |      |
| SF Spark® TT               | 2               | 100                | 104                | –                  | –    |      |
| IMIDAZOLINONE TOLERANT     |                 |                    |                    |                    |      |      |
|                            | Mean yield t/ha | 0.00               | 1.30               | 1.14               | 2.77 | 3.45 |
| Variety                    | No. trials      | 0                  | 1                  | 1                  | 1    | 1    |
| Hyola® Continuum CL        | 1               | Data not available | –                  | –                  | –    | 105  |
| Hyola® Equinox CL          | 3               |                    | –                  | 108                | 103  | 95   |
| Hyola® Solstice CL         | 2               |                    | –                  | –                  | 107  | 102  |
| Nuseed® Ceres IMI          | 2               |                    | –                  | –                  | 108  | 95   |
| Pioneer® 43Y92 CL          | 1               |                    | –                  | 115                | –    | –    |
| Pioneer® 44Y94 CL          | 4               |                    | 109                | 121                | 113  | 113  |
| Pioneer® 45Y93 CL          | 4               |                    | 104                | 96                 | 103  | 114  |
| Pioneer® 45Y95 CL          | 3               |                    | 113                | –                  | 110  | 116  |
| GLYPHOSATE TOLERANT        |                 |                    |                    |                    |      |      |
|                            | Mean yield t/ha | 0.00               | 0.00               | 0.00               | 2.88 | 3.34 |
| Variety                    | No. trials      | 0                  | 0                  | 0                  | 1    | 1    |
| DG Bindo TF                | 2               | Data not available | Data not available | Data not available | 96   | 97   |
| DG Hotham TF               | 1               |                    |                    |                    | –    | 99   |
| Hyola® 410XX               | 2               |                    |                    |                    | 95   | 90   |
| Hyola® Battalion XC        | 2               |                    |                    |                    | 96   | 93   |
| Hyola® Garrison XC         | 2               |                    |                    |                    | 95   | 93   |
| Hyola® Regiment XC         | 2               |                    |                    |                    | 104  | 103  |
| InVigor® LR 4540P          | 1               |                    |                    |                    | –    | 109  |
| InVigor® R 4022P           | 2               |                    |                    |                    | 106  | 101  |
| InVigor® R 4520P           | 2               |                    |                    |                    | 109  | 111  |
| Nuseed® Emu TF             | 2               |                    |                    |                    | 107  | 90   |
| Nuseed® Hunter TF          | 2               |                    |                    |                    | 110  | 107  |
| Nuseed® Raptor TF          | 2               |                    |                    |                    | 105  | 101  |
| Pioneer® 44Y27 RR          | 2               |                    |                    |                    | 109  | 100  |
| Pioneer® 44Y30 RR          | 2               |                    |                    |                    | 109  | 107  |
| Pioneer® 45Y28 RR          | 2               |                    |                    |                    | 103  | 108  |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.

**Table 5: Mid North medium-high rainfall zone. NVT data 2018–22.**

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

|                               | Year            | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|-----------------|------|------|------|------|------|
| <b>TRIAZINE TOLERANT</b>      |                 |      |      |      |      |      |
|                               | Mean yield t/ha | 1.31 | 1.43 | 2.49 | 2.51 | 3.12 |
| Variety                       | No. trials      | 1    | 3    | 2    | 3    | 3    |
| AFP Cutubury <sup>Ⓛ</sup>     | 6               | –    | –    | –    | 86   | 90   |
| ATR-Bonito <sup>Ⓛ</sup>       | 6               | 88   | –    | 95   | –    | 95   |
| ATR-Stingray <sup>Ⓛ</sup>     | 1               | 85   | –    | –    | –    | –    |
| ATR-Swordfish <sup>Ⓛ</sup>    | 3               | –    | –    | –    | –    | 94   |
| ATR Wahoo <sup>Ⓛ</sup>        | 1               | –    | –    | 93   | –    | –    |
| Bandit TT <sup>Ⓛ</sup>        | 2               | –    | –    | –    | 91   | –    |
| DG Bidgee TT <sup>Ⓛ</sup>     | 5               | –    | –    | –    | 109  | 107  |
| DG Murray TT <sup>Ⓛ</sup>     | 6               | –    | –    | –    | 101  | 96   |
| DG Torrens TT <sup>Ⓛ</sup>    | 3               | –    | –    | –    | –    | 102  |
| Hyola® Blazer TT              | 8               | –    | –    | 113  | 117  | 116  |
| Hyola® Defender CT            | 3               | –    | –    | –    | –    | 115  |
| Hyola® Enforcer CT            | 11              | –    | 111  | 103  | 105  | 100  |
| HyTTec® Trident               | 12              | 126  | 114  | 107  | 116  | 105  |
| HyTTec® Trifecta              | 11              | 119  | 119  | 114  | 118  | 114  |
| HyTTec® Trophy                | 12              | 118  | 113  | 111  | 114  | 110  |
| HyTTec® Velocity              | 3               | –    | –    | –    | –    | 104  |
| InVigor® LT 4530P             | 4               | –    | –    | –    | 94   | 104  |
| InVigor® T 4510               | 12              | 112  | 115  | 111  | 105  | 107  |
| InVigor® T 4511               | 6               | –    | –    | –    | 108  | 107  |
| InVigor® T 6010               | 8               | –    | 111  | 110  | 104  | –    |
| Pioneer® PY520TC              | 5               | –    | –    | –    | 115  | 113  |
| Renegade TT <sup>Ⓛ</sup>      | 5               | –    | –    | –    | 92   | 106  |
| RGT Baseline™ TT              | 6               | –    | –    | –    | 111  | 112  |
| RGT Capacity™ TT              | 10              | –    | 113  | 111  | 104  | 109  |
| SF Dynatron® TT               | 11              | –    | 113  | 113  | 109  | 113  |
| SF Spark® TT                  | 9               | –    | 100  | 100  | 102  | 100  |
| <b>IMIDAZOLINONE TOLERANT</b> |                 |      |      |      |      |      |
|                               | Mean yield t/ha | 1.49 | 1.73 | 2.62 | 2.87 | 3.44 |
| Variety                       | No. trials      | 1    | 3    | 2    | 3    | 3    |
| Hyola® Continuum CL           | 3               | –    | –    | –    | –    | 105  |
| Hyola® Equinox CL             | 8               | –    | –    | 103  | 99   | 95   |
| Hyola® Solstice CL            | 6               | –    | –    | –    | 106  | 100  |
| Nuseed® Ceres IMI             | 4               | –    | –    | –    | 98   | 96   |
| Pioneer® 43Y92 CL             | 9               | 105  | –    | 104  | 100  | 102  |
| Pioneer® 44Y94 CL             | 11              | –    | 107  | 111  | 111  | 112  |
| Pioneer® 45Y93 CL             | 11              | –    | 101  | 107  | 109  | 111  |
| Pioneer® 45Y95 CL             | 9               | 113  | 110  | –    | 114  | 113  |
| Pioneer® PY421C               | 3               | –    | –    | –    | –    | 116  |

Continued on next page

**Table 5: Mid North medium-high rainfall zone. NVT data 2018–22 (continued).**

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

|                            | Year            | 2018               | 2019               | 2020               | 2021 | 2022 |
|----------------------------|-----------------|--------------------|--------------------|--------------------|------|------|
| <b>GLYPHOSATE TOLERANT</b> |                 |                    |                    |                    |      |      |
|                            | Mean yield t/ha | 0.00               | 0.00               | 0.00               | 3.20 | 3.84 |
| Variety                    | No. trials      | 0                  | 0                  | 0                  | 1    | 1    |
| DG Bindo TF                | 2               | Data not available | Data not available | Data not available | 99   | 98   |
| DG Hotham TF               | 1               |                    |                    |                    | –    | 100  |
| DG Lofty TF                | 2               |                    |                    |                    | 96   | 92   |
| Hyola® 410XX               | 2               |                    |                    |                    | 99   | 94   |
| Hyola® Battalion XC        | 2               |                    |                    |                    | 99   | 96   |
| Hyola® Garrison XC         | 2               |                    |                    |                    | 103  | 97   |
| Hyola® Regiment XC         | 2               |                    |                    |                    | 112  | 105  |
| InVigor® LR 4540P          | 1               |                    |                    |                    | –    | 106  |
| InVigor® R 4022P           | 2               |                    |                    |                    | 96   | 99   |
| InVigor® R 4520P           | 2               |                    |                    |                    | 101  | 107  |
| Nuseed® Eagle TF           | 1               |                    |                    |                    | –    | 107  |
| Nuseed® Emu TF             | 2               |                    |                    |                    | 98   | 92   |
| Nuseed® Hunter TF          | 1               |                    |                    |                    | –    | 106  |
| Nuseed® Raptor TF          | 2               |                    |                    |                    | 110  | 103  |
| Pioneer® 44Y27 RR          | 2               |                    |                    |                    | 106  | 100  |
| Pioneer® 44Y30 RR          | 2               |                    |                    |                    | 103  | 104  |
| Pioneer® 45Y28 RR          | 2               |                    |                    |                    | 109  | 107  |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.

**Table 6: Mallee low-medium rainfall zone. NVT data 2018–22. Data for 2021 unavailable.**

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

|                            | Year            | 2018               | 2019               | 2020               | 2021               | 2022 |
|----------------------------|-----------------|--------------------|--------------------|--------------------|--------------------|------|
| TRIAZINE TOLERANT          |                 |                    |                    |                    |                    |      |
|                            | Mean yield t/ha | 0.60               | 0.93               | 1.03               | 0.00               | 1.85 |
| Variety                    | No. trials      | 1                  | 1                  | 1                  | 0                  | 1    |
| ATR-Bluefin <sup>Ⓛ</sup>   | 1               | –                  | –                  | –                  | Data not available | 79   |
| ATR-Bonito <sup>Ⓛ</sup>    | 4               | 80                 | 100                | 97                 |                    | 87   |
| ATR-Stingray <sup>Ⓛ</sup>  | 3               | 106                | –                  | 92                 |                    | 73   |
| ATR-Swordfish <sup>Ⓛ</sup> | 1               | –                  | –                  | –                  |                    | 87   |
| Bandit TT <sup>Ⓛ</sup>     | 1               | –                  | –                  | –                  |                    | 97   |
| DG Avon TT <sup>Ⓛ</sup>    | 1               | –                  | –                  | –                  |                    | 96   |
| Hyola® Blazer TT           | 1               | –                  | –                  | 104                |                    | –    |
| Hyola® Defender CT         | 1               | –                  | –                  | –                  |                    | 113  |
| Hyola® Enforcer CT         | 3               | –                  | 99                 | 106                |                    | 94   |
| HyITec® Trident            | 4               | 149                | 103                | 107                |                    | 117  |
| HyITec® Trophy             | 4               | 111                | 102                | 104                |                    | 114  |
| HyITec® Velocity           | 1               | –                  | –                  | –                  |                    | 115  |
| InVigor® LT 4530P          | 1               | –                  | –                  | –                  |                    | 114  |
| InVigor® T 4510            | 4               | 109                | 107                | 104                |                    | 115  |
| InVigor® T 4511            | 1               | –                  | –                  | –                  |                    | 103  |
| Renegade TT <sup>Ⓛ</sup>   | 1               | –                  | –                  | –                  | 113                |      |
| RGT Capacity™ TT           | 2               | –                  | –                  | 98                 | 106                |      |
| SF Dynatron® TT            | 2               | –                  | 107                | 107                | –                  |      |
| SF Spark® TT               | 3               | –                  | 102                | 100                | 101                |      |
| IMIDAZOLINONE TOLERANT     |                 |                    |                    |                    |                    |      |
|                            | Mean yield t/ha | 0.31               | 0.96               | 1.02               | 0.00               | 2.21 |
| Variety                    | No. trials      | 1                  | 1                  | 1                  | 0                  | 1    |
| Hyola® Continuum CL        | 1               | –                  | –                  | –                  | Data not available | 97   |
| Hyola® Equinox CL          | 1               | –                  | –                  | –                  |                    | 90   |
| Nuseed® Ceres IMI          | 1               | –                  | –                  | –                  |                    | 98   |
| Pioneer® 43Y92 CL          | 4               | 103                | 99                 | 102                |                    | 93   |
| Pioneer® 44Y94 CL          | 2               | –                  | 104                | –                  |                    | 113  |
| Pioneer® 45Y93 CL          | 1               | –                  | 100                | –                  |                    | –    |
| Pioneer® 45Y95 CL          | 1               | 75                 | –                  | –                  |                    | –    |
| GLYPHOSATE TOLERANT        |                 |                    |                    |                    |                    |      |
|                            | Mean yield t/ha | 0.00               | 0.00               | 0.00               | 0.00               | 2.03 |
| Variety                    | No. trials      | 0                  | 0                  | 0                  | 0                  | 1    |
| DG Lofty TF                | 1               | Data not available | Data not available | Data not available | Data not available | 83   |
| Hyola® 410XX               | 1               |                    |                    |                    |                    | 85   |
| Hyola® Battalion XC        | 1               |                    |                    |                    |                    | 88   |
| InVigor® LR 4540P          | 1               |                    |                    |                    |                    | 118  |
| InVigor® R 4022P           | 1               |                    |                    |                    |                    | 105  |
| InVigor® R 4520P           | 1               |                    |                    |                    |                    | 116  |
| Nuseed® Emu TF             | 1               |                    |                    |                    |                    | 98   |
| Nuseed® Hunter TF          | 1               |                    |                    |                    |                    | 116  |
| Nuseed® Raptor TF          | 1               |                    |                    |                    |                    | 97   |
| Pioneer® 44Y27 RR          | 1               |                    |                    |                    |                    | 113  |
| Pioneer® 44Y30 RR          | 1               |                    |                    |                    |                    | 101  |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.

**Table 7: South East medium-high rainfall zone. NVT data 2018–22.**

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

|                               | Year              | 2018     | 2019     | 2020     | 2021     | 2022     |
|-------------------------------|-------------------|----------|----------|----------|----------|----------|
| <b>TRIAZINE TOLERANT</b>      |                   |          |          |          |          |          |
|                               | Mean yield t/ha   | 2.29     | 2.60     | 2.94     | 3.43     | 2.35     |
| <b>Variety</b>                | <b>No. trials</b> | <b>2</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1</b> |
| AFP Cutubury <sup>db</sup>    | 2                 | –        | –        | –        | 86       | 89       |
| ATR-Bonito <sup>db</sup>      | 3                 | 94       | –        | 94       | –        | 93       |
| ATR Wahoo <sup>db</sup>       | 4                 | 92       | –        | 100      | 93       | 105      |
| DG Bidgee TT <sup>db</sup>    | 1                 | –        | –        | –        | –        | 117      |
| DG Murray TT <sup>db</sup>    | 3                 | –        | –        | 92       | 99       | 103      |
| DG Torrens TT <sup>db</sup>   | 1                 | –        | –        | –        | –        | 106      |
| Hyola® Blazer TT              | 3                 | –        | –        | 127      | 117      | 121      |
| Hyola® Defender CT            | 1                 | –        | –        | –        | –        | 123      |
| Hyola® Enforcer CT            | 4                 | –        | 109      | 96       | 104      | 98       |
| HyTTec® Trident               | 2                 | 113      | –        | 100      | –        | –        |
| HyTTec® Trifecta              | 4                 | –        | 114      | 121      | 117      | 117      |
| HyTTec® Trophy                | 5                 | 110      | 110      | 115      | 114      | 111      |
| InVigor® T 4510               | 5                 | 107      | 110      | 111      | 107      | 103      |
| InVigor® T 4511               | 2                 | –        | –        | –        | 109      | 105      |
| InVigor® T 6010               | 4                 | –        | 107      | 121      | 103      | 113      |
| Pioneer® PY520TC              | 2                 | –        | –        | –        | 115      | 121      |
| Renegade TT <sup>db</sup>     | 2                 | –        | –        | –        | 93       | 103      |
| RGT Baseline™ TT              | 2                 | –        | –        | –        | 110      | 124      |
| RGT Capacity™ TT              | 1                 | –        | –        | 118      | –        | –        |
| SF Dynatron® TT               | 3                 | –        | –        | 123      | 110      | 114      |
| <b>IMIDAZOLINONE TOLERANT</b> |                   |          |          |          |          |          |
|                               | Mean yield t/ha   | 2.89     | 3.02     | 3.45     | 3.66     | 2.19     |
| <b>Variety</b>                | <b>No. trials</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1</b> | <b>1</b> |
| Hyola® Continuum CL           | 1                 | –        | –        | –        | –        | 113      |
| Hyola® Equinox CL             | 3                 | –        | –        | 87       | 98       | 85       |
| Hyola® Solstice CL            | 2                 | –        | –        | –        | 105      | 94       |
| Nuseed® Ceres IMI             | 1                 | –        | –        | –        | 99       | –        |
| Pioneer® 43Y92 CL             | 2                 | 102      | 102      | –        | –        | –        |
| Pioneer® 44Y94 CL             | 3                 | –        | 105      | –        | 113      | 116      |
| Pioneer® 45Y93 CL             | 3                 | –        | 101      | –        | 109      | 123      |
| Pioneer® 45Y95 CL             | 4                 | 107      | 108      | –        | 114      | 121      |
| Pioneer® PY421C               | 1                 | –        | –        | –        | –        | 115      |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.

**Table 8: South East low-medium rainfall zone. NVT data 2018–22.**

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

|                               | Year            | 2018               | 2019               | 2020               | 2021 | 2022 |
|-------------------------------|-----------------|--------------------|--------------------|--------------------|------|------|
| <b>TRIAZINE TOLERANT</b>      |                 |                    |                    |                    |      |      |
|                               | Mean yield t/ha | 1.44               | 2.39               | 2.88               | 1.99 | 2.96 |
| Variety                       | No. trials      | 1                  | 1                  | 1                  | 1    | 1    |
| ATR-Bluefin <sup>Ⓢ</sup>      | 2               | –                  | –                  | –                  | 88   | 80   |
| ATR-Bonito <sup>Ⓢ</sup>       | 5               | 84                 | 91                 | 90                 | 95   | 92   |
| ATR-Stingray <sup>Ⓢ</sup>     | 5               | 80                 | 89                 | 78                 | 91   | 83   |
| ATR-Swordfish <sup>Ⓢ</sup>    | 2               | –                  | –                  | –                  | 92   | 86   |
| Bandit TT <sup>Ⓢ</sup>        | 2               | –                  | –                  | –                  | 99   | 97   |
| DG Avon TT <sup>Ⓢ</sup>       | 1               | –                  | –                  | –                  | –    | 87   |
| Hyola® Blazer TT              | 3               | –                  | –                  | 117                | 107  | 115  |
| Hyola® Defender CT            | 1               | –                  | –                  | –                  | –    | 109  |
| Hyola® Enforcer CT            | 4               | –                  | 100                | 107                | 104  | 107  |
| HyITec® Trident               | 5               | 130                | 118                | 114                | 107  | 110  |
| HyITec® Trifecta              | 1               | –                  | –                  | –                  | –    | 111  |
| HyITec® Trophy                | 5               | 115                | 108                | 112                | 105  | 109  |
| HyITec® Velocity              | 1               | –                  | –                  | 105                | –    | –    |
| InVigor® LT 4530P             | 2               | –                  | –                  | –                  | 102  | 103  |
| InVigor® T 4510               | 5               | 113                | 111                | 108                | 103  | 104  |
| InVigor® T 4511               | 2               | –                  | –                  | –                  | 104  | 106  |
| Renegade TT <sup>Ⓢ</sup>      | 2               | –                  | –                  | –                  | 98   | 100  |
| RGT Baseline™ TT              | 1               | –                  | –                  | –                  | –    | 112  |
| RGT Capacity™ TT              | 4               | –                  | 100                | 106                | 104  | 107  |
| SF Dynatron® TT               | 4               | –                  | 109                | 114                | 106  | 111  |
| SF Spark® TT                  | 4               | –                  | 105                | 98                 | 99   | 97   |
| <b>IMIDAZOLINONE TOLERANT</b> |                 |                    |                    |                    |      |      |
|                               | Mean yield t/ha | 1.53               | 3.02               | 3.14               | 2.05 | 2.78 |
| Variety                       | No. trials      | 1                  | 1                  | 1                  | 1    | 1    |
| Hyola® Continuum CL           | 1               | –                  | –                  | –                  | –    | 106  |
| Hyola® Equinox CL             | 1               | –                  | –                  | –                  | –    | 105  |
| Hyola® Solstice CL            | 1               | –                  | –                  | –                  | 101  | –    |
| Nuseed® Ceres IMI             | 2               | –                  | –                  | –                  | 94   | 87   |
| Pioneer® 43Y92 CL             | 5               | 100                | 97                 | 101                | 101  | 102  |
| Pioneer® 44Y94 CL             | 2               | –                  | –                  | –                  | 105  | 111  |
| Pioneer® 45Y95 CL             | 1               | 108                | –                  | –                  | –    | –    |
| <b>GLYPHOSATE TOLERANT</b>    |                 |                    |                    |                    |      |      |
|                               | Mean yield t/ha | 0.00               | 0.00               | 0.00               | 2.03 | 2.99 |
| Variety                       | No. trials      | 0                  | 0                  | 0                  | 1    | 1    |
| DG Lofty TF                   | 2               | Data not available | Data not available | Data not available | 97   | 94   |
| Hyola® 410XX                  | 2               |                    |                    |                    | 100  | 100  |
| Hyola® Battalion XC           | 2               |                    |                    |                    | 99   | 96   |
| Hyola® Garrison XC            | 1               |                    |                    |                    | –    | 103  |
| Hyola® Regiment XC            | 1               |                    |                    |                    | 104  | –    |
| InVigor® LR 4540P             | 1               |                    |                    |                    | –    | 104  |
| InVigor® R 3520               | 1               |                    |                    |                    | 93   | –    |
| InVigor® R 4022P              | 2               |                    |                    |                    | 99   | 98   |
| InVigor® R 4520P              | 2               |                    |                    |                    | 100  | 103  |
| Nuseed® Hunter TF             | 1               |                    |                    |                    | –    | 106  |
| Nuseed® Raptor TF             | 2               |                    |                    |                    | 103  | 106  |
| Pioneer® 44Y27 RR             | 2               |                    |                    |                    | 101  | 102  |
| Pioneer® 44Y30 RR             | 2               |                    |                    |                    | 105  | 110  |

Source: GRDC, NVT 2018–22 MET data analysis by National Statistics Program

NVT are not designed to allow comparison of varieties between herbicide tolerance groups. – denotes no data available.



# KNOW BEFORE YOU SOW

## PREDICTA<sup>®</sup> B and PREDICTA<sup>®</sup> rNod



**Cereal root diseases and poor rhizobia inoculation decisions in grain legumes cost grain growers in excess of \$300 million annually in lost production.**

PREDICTA<sup>®</sup> B and PREDICTA<sup>®</sup> rNod soil testing services and your accredited agronomist can help you to identify before seeding, the soil borne disease risk in cereals, and whether an appropriate rhizobium inoculant should be applied to grain legume crops.

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[http://pir.sa.gov.au/research/services/molecular\\_diagnostics/predicta\\_b](http://pir.sa.gov.au/research/services/molecular_diagnostics/predicta_b)

**PREDICTA<sup>®</sup> B has tests for most soil-borne diseases of cereals and some pulse crops:**

- Crown rot (cereals)
- Rhizoctonia root rot
- Take-all (including oat strain)
- Root lesion nematodes
- Cereal cyst nematode
- Stem nematode
- Blackspot (field peas)
- Yellow leaf spot
- Common root rot
- Pythium clade f
- Charcoal rot
- Ascochyta blight of chickpea
- White grain disorder
- Sclerotinia stem rot

**New PREDICTA<sup>®</sup> rNod has tests for rhizobia:**

- Group E and F (lentil, faba bean, pea and vetch)
- Group N (chickpea)
- Groups G and S (lupin and serradella)

# FABA BEAN

By Amanda Pearce and Sara Blake, SARDI, and Sam Catt, University of Adelaide

Faba bean variety choice for South Australian growers will be the same in 2024, with no new varieties released for the southern region in 2023.

## VARIETIES AND DISEASE MANAGEMENT

In growing regions or seasonal conditions that favour chocolate spot development, all varieties require a protective fungicide spray before canopy closure and often when the crop is at the early flowering stage. Additional applications will be required if wet conditions favour epidemics, particularly when early disease symptoms are evident, soil moisture is high or dense canopy growth retains moisture levels within the canopy. Chocolate spot typically develops during early spring as temperatures increase. However, it can establish earlier and more slowly in crops during cooler weather where there is prolonged high humidity, so faba beans should be monitored from late winter. PBA Amberley<sup>®</sup> is rated moderately resistant to moderately susceptible (MRMS) to chocolate spot and should have less severe disease compared with all other varieties, which are rated susceptible (S) or moderately susceptible (MS).

Ascochyta blight ratings now reflect only pathotype 2, which is aggressive on Farah<sup>®</sup>, as this pathotype is dominant and widespread across the southern region. Resistant varieties allow growers to be more reactive to Ascochyta blight than with susceptible varieties, and disease management strategies can be based on monitoring levels in high-risk situations. Nura<sup>®</sup>, PBA Amberley<sup>®</sup>, PBA Bendoc<sup>®</sup> (provisional) and PBA Samira<sup>®</sup> (provisional) have very good resistance (moderately resistant, MR) to Ascochyta blight. The old varieties, Farah<sup>®</sup> and Fiesta VF, are susceptible (S) to Ascochyta blight

while PBA Rana<sup>®</sup> and PBA Zahra<sup>®</sup> are MRMS. PBA Marne<sup>®</sup> is provisionally rated MS to Ascochyta blight. Prophylactic fungicides are recommended ahead of a rain front in S, MS and MRMS varieties during the vegetative stage to prevent or minimise disease establishment. Additional fungicides will most likely be required, especially in seasons favourable to disease epidemics, particularly during podding to prevent seed staining.

Rust can be an occasional problem in faba beans in seasons favouring disease outbreaks and can cause significant yield loss. The disease can survive over summer on volunteer bean plants and crops need to be monitored to reduce the impact of rust on production. Farah<sup>®</sup>, Fiesta VF, Nura<sup>®</sup>, PBA Amberley<sup>®</sup>, PBA Bendoc<sup>®</sup> and PBA Rana<sup>®</sup> are very susceptible (VS) to rust and often display more pronounced symptoms than PBA Samira<sup>®</sup> and PBA Zahra<sup>®</sup>, which are rated S. PBA Marne<sup>®</sup> is MRMS to rust. Early sown crops are at greater risk, or where beans are sown adjacent to the previous year's bean stubble. Disease control using suitable fungicides may be required before flowering, coinciding with the time chocolate spot management is also being implemented.

Cercospora leaf spot is soil-borne and typically occurs in paddocks with a long-term history of faba beans, particularly where they have been grown in close rotation (less than four to six years) or within close proximity of these paddocks. Early control (from five to eight weeks post sowing) with carbendazim or tebuconazole is most effective in preventing disease establishment and consequent yield loss from this disease. All current faba bean varieties are rated S, making early preventive control measures best practice.

## FABA BEAN VARIETY NOTES

### PBA AMBERLEY<sup>Ⓓ</sup>

PBA Amberley<sup>Ⓓ</sup> is the newest variety, commercially released in 2019. It is a later-flowering type and has shown good adaptation in higher rainfall and longer growing season environments in the South East and Mid North regions of SA. PBA Amberley<sup>Ⓓ</sup> has very good standing ability and a low incidence of 'necking'. PBA Amberley<sup>Ⓓ</sup> seed is similar in size to PBA Samira<sup>Ⓓ</sup> and PBA Marne<sup>Ⓓ</sup> and should be suitable to co-mingle with these other varieties. PBA Amberley<sup>Ⓓ</sup> is commercialised by Seednet. EPR \$3.50 ex-GST.

### PBA BENDOC<sup>Ⓓ</sup>

This variety was developed by the University of Adelaide in collaboration with SARDI. It is the first commercially released variety selected for tolerance to imidazolinone herbicides. This tolerance was developed by conventional mutation breeding techniques in Nura<sup>Ⓓ</sup>. A herbicide-tolerant selection was crossed with PBA Samira<sup>Ⓓ</sup> and PBA Bendoc<sup>Ⓓ</sup> was derived from the progeny of this cross. Imidazolinone-tolerant faba beans are on the Nufarm Intercept® herbicide label for post-emergent application. Herbicide application timings, product label rates, plant-back periods and all label directions for use must be followed. Generally, PBA Bendoc<sup>Ⓓ</sup> yields are comparable with conventional varieties and there is no obvious yield penalty associated with herbicide tolerance. PBA Bendoc<sup>Ⓓ</sup> is similar in flowering time and maturity to Nura<sup>Ⓓ</sup> and PBA Samira<sup>Ⓓ</sup>. PBA Bendoc<sup>Ⓓ</sup> produces small to medium-sized, light brown seeds that are comparable in size to Nura<sup>Ⓓ</sup>. PBA Bendoc<sup>Ⓓ</sup> seed can be co-mingled with Nura<sup>Ⓓ</sup> for the Middle East market. PBA Bendoc<sup>Ⓓ</sup> is licensed to Seednet. EPR \$3.90 ex-GST.

**Table 1: Agronomic and disease characteristics of faba and broad bean varieties.**

| Variety                   | Plant height | Flower time | Maturity  | Lodging resistance | Ascochyta blight* | Chocolate spot  | Cercospora leaf spot <sup>ii</sup> | Rust              | PSbMV seed staining <sup>i</sup> | <i>Pratylenchus neglectus</i> <sup>ii</sup> | <i>Pratylenchus thornei</i> |
|---------------------------|--------------|-------------|-----------|--------------------|-------------------|-----------------|------------------------------------|-------------------|----------------------------------|---|-----------------------------|
| <b>FABA BEAN</b>          |              |             |           |                    |                   |                 |                                    |                   |                                  |   |                             |
| Farah <sup>Ⓓ</sup>        | Medium       | Early-mid   | Early-mid | MS                 | S                 | S               | S                                  | VS                | S                                | MR  | MS                          |
| Fiesta VF                 | Medium       | Early-mid   | Early-mid | MS                 | S                 | S               | S                                  | VS                | S                                | RMR (P)                                     | MS                          |
| Nura <sup>Ⓓ</sup>         | Short        | Mid         | Early-mid | MR                 | MR (P)            | MS              | S                                  | VS                | VS                               | MR  | MS                          |
| PBA Amberley <sup>Ⓓ</sup> | Medium       | Mid         | Mid       | MR                 | MR                | MRMS            | S                                  | VS                | —                                | MR  | MS                          |
| PBA Bendoc <sup>Ⓓ</sup> + | Medium       | Mid         | Early-mid | MS                 | MR                | S               | S                                  | VS                | S                                | RMR (P)                                     | MRMS                        |
| PBA Marne <sup>Ⓓ</sup>    | Medium-short | Early       | Early-mid | MR                 | MS (P)            | MS (P)          | S                                  | MRMS              | MR                               | MR  | MS                          |
| PBA Rana <sup>Ⓓ</sup>     | Medium-tall  | Mid         | Mid       | MR                 | MRMS              | MS              | S                                  | VS                | MR                               | MR  | MS                          |
| PBA Samira <sup>Ⓓ</sup>   | Medium       | Mid         | Early-mid | MR                 | MR (P)            | MS              | S                                  | S                 | S                                | MR  | MRMS                        |
| PBA Zahra <sup>Ⓓ</sup>    | Medium-tall  | Mid         | Mid       | MR                 | MRMS              | MS              | S                                  | S                 | S                                | MR  | MRMS                        |
| <b>BROAD BEAN</b>         |              |             |           |                    |                   |                 |                                    |                   |                                  |   |                             |
| Aquadulce                 | Tall         | Mid         | Late      | MS                 | MS <sup>i</sup>   | MS <sup>i</sup> | S <sup>i</sup>                     | MS <sup>i</sup>   | S                                | —   | —                           |
| PBA Kareema <sup>Ⓓ</sup>  | Tall         | Mid         | Late      | MS                 | MR <sup>i</sup>   | MS <sup>i</sup> | S <sup>i</sup>                     | MRMS <sup>i</sup> | S                                | —   | —                           |

Source: Pulse Breeding Australia trials program 2012–17 and NVT Online ([nvt.grdc.com.au](http://nvt.grdc.com.au))

R = resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, S = susceptible, VS = very susceptible.

(P) = provisional rating and subject to change when additional data becomes available.

<sup>i</sup> = Not tested since 2019 or earlier. <sup>ii</sup> = Faba bean ratings last reviewed in 2020.

+ = Herbicide-tolerant variety.

— denotes no data available.

\* Ascochyta blight ratings: ratings have previously been separated based on the older pathotype 1 and newer pathotype 2 strains. However, as pathotype 2 is now the predominant and widespread strain present in the southern region, ratings now reflect resistance to this strain as determined through the National Variety Trials ([nvt.grdc.com.au](http://nvt.grdc.com.au)).

## FARAH<sup>®</sup>

Farah<sup>®</sup> was selected directly from Fiesta VF and is identical in many respects, with more uniform seed size and colour. Long-term Farah<sup>®</sup> yields are similar to Fiesta VF but are generally lower than more recent varieties in most regions of southern Australia. Farah<sup>®</sup> is licensed to Barenbrug. EPR \$3.00 ex-GST.

## PBA MARNE<sup>®</sup>

PBA Marne<sup>®</sup> is the result of a complex cross between four parents of diverse origins. It is an early flowering faba bean variety that is well suited to lower-rainfall or short-season environments of southern Australia. It is the earliest flowering variety, with maturity similar to PBA Samira<sup>®</sup>. It is medium-short in height. PBA Marne<sup>®</sup> produces medium-sized seeds that are comparable in size with PBA Samira<sup>®</sup>. The overall colour of seed is similar to other major bean varieties. PBA Marne<sup>®</sup> seed can be co-mingled with PBA Samira<sup>®</sup> for the Middle East market. PBA Marne<sup>®</sup> is licensed to Seednet. EPR \$3.50 ex-GST.

## NURA<sup>®</sup>

Nura<sup>®</sup> is a medium-sized faba bean. It is generally shorter than Fiesta VF and Farah<sup>®</sup>, meaning it is less likely to lodge. However, since its bottom pods are closer to the ground, harvest can be more difficult in lower-rainfall districts or when sown late. Nura<sup>®</sup> has good seed appearance, a light buff colour, with minimal seed staining and discolouration. Flowering time is generally around seven days later than Farah<sup>®</sup>, although it has similar maturity. Nura<sup>®</sup> is licensed to Seednet. EPR \$3.00 ex-GST.

## PBA RANA<sup>®</sup>

PBA Rana<sup>®</sup> is a mid flowering (similar to Nura<sup>®</sup>) and mid maturity (later than Nura<sup>®</sup> and Farah<sup>®</sup>) variety with good vigour and stem strength. PBA Rana<sup>®</sup> is well adapted to high-rainfall areas with longer growing seasons. It produces large, plump, light brown seeds and is suited to the Egyptian market requirements for that grade. PBA Rana<sup>®</sup> is licensed to Seednet. EPR \$3.50 ex-GST.

## PBA SAMIRA<sup>®</sup>

PBA Samira<sup>®</sup> is a high-yielding faba bean variety for southern Australia. It is widely adapted and responsive to high-yielding situations. It is mid-flowering, five to 10 days later than Fiesta VF and Farah<sup>®</sup>, but matures at the same time as these varieties. Seeds of PBA Samira<sup>®</sup> are slightly larger than Fiesta VF, Farah<sup>®</sup> and Nura<sup>®</sup>, but the overall seed colour is similar for all varieties. PBA Samira<sup>®</sup> can be co-mingled with these other varieties for the Middle East market. PBA Samira<sup>®</sup> is licensed to Seednet. EPR \$3.50 ex-GST.

## PBA ZAHRA<sup>®</sup>

This variety is a cross between Farah<sup>®</sup> and an accession 920/3, which originated from Morocco. It has shown wide adaptation throughout southern Australia and is responsive to high-yielding situations. PBA Zahra<sup>®</sup> seed is uniform large size and colour. It should be suitable to co-mingle with PBA Rana<sup>®</sup> for a medium-large faba bean category for the Egyptian market. PBA Zahra<sup>®</sup> is mid flowering, similar to Nura<sup>®</sup>, PBA Rana<sup>®</sup> and PBA Samira<sup>®</sup> and with mid maturity similar to PBA Rana<sup>®</sup>. It is a medium-tall plant similar to PBA Rana<sup>®</sup> and taller than other varieties. PBA Zahra<sup>®</sup> is licensed to Seednet. EPR \$3.50 ex-GST.

## BROAD BEAN VARIETY NOTES

### AQUADULCE

Aquadulce is a tall broad bean variety with late flowering and maturity, suited to areas with at least 500mm average annual rainfall. The large seed size means it is considered a specialty and commands a price premium over faba beans, dependent on grading and seed size.

### PBA KAREEMA<sup>®</sup>

Selected from Aquadulce, PBA Kareema<sup>®</sup> has similar plant type and adaptation but larger and more uniform seed and fewer 'evergreens'. It is well adapted to the very-high-rainfall broad bean districts in the lower south-east of SA. The large seed size means it is considered a specialty and commands a price premium over faba beans, dependent on grading and seed size.

## FURTHER INFORMATION

Variety management packages for all named varieties (except Aquadulce) are available on the Pulse Australia website: [pulseaus.com.au/growing-pulses/bmp/faba-and-broad-bean](http://pulseaus.com.au/growing-pulses/bmp/faba-and-broad-bean)

**Table 2: Lower Eyre Peninsula faba bean yield performance. NVT data 2018–22. Data for 2018 and 2019 not available.**

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

| Variety                   | Year              | 2018               | 2019               | 2020 | 2021 | 2022 |
|---------------------------|-------------------|--------------------|--------------------|------|------|------|
|                           | Mean yield (t/ha) | 0.00               | 0.00               | 3.75 | 4.22 | 4.56 |
|                           | No. trials        | 0                  | 0                  | 1    | 1    | 1    |
| Farah <sup>Ⓛ</sup>        | 3                 | Data not available | Data not available | 101  | 98   | 95   |
| Fiesta VF                 | 3                 |                    |                    | 98   | 95   | 96   |
| Nura <sup>Ⓛ</sup>         | 3                 |                    |                    | 107  | 99   | 86   |
| PBA Amberley <sup>Ⓛ</sup> | 3                 |                    |                    | 99   | 97   | 101  |
| PBA Bendoc <sup>Ⓛ</sup>   | 3                 |                    |                    | 109  | 108  | 89   |
| PBA Marne <sup>Ⓛ</sup>    | 3                 |                    |                    | 85   | 100  | 103  |
| PBA Rana <sup>Ⓛ</sup>     | 2                 |                    |                    | –    | 87   | 86   |
| PBA Samira <sup>Ⓛ</sup>   | 3                 |                    |                    | 101  | 99   | 101  |
| PBA Zahra <sup>Ⓛ</sup>    | 3                 |                    |                    | 101  | 109  | 100  |

– denotes no data available.

**Table 3: Yorke Peninsula faba bean yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 3.03 | 2.88 | 5.30 | 5.08 | 4.69 |
|                           | No. trials        | 2    | 2    | 1    | 1    | 1    |
| Farah <sup>Ⓛ</sup>        | 7                 | 97   | 97   | 100  | 98   | 95   |
| Fiesta VF                 | 7                 | 96   | 96   | 100  | 97   | 96   |
| Nura <sup>Ⓛ</sup>         | 7                 | 96   | 96   | 97   | 95   | 92   |
| PBA Amberley <sup>Ⓛ</sup> | 7                 | 99   | 98   | 103  | 100  | 98   |
| PBA Bendoc <sup>Ⓛ</sup>   | 7                 | 98   | 99   | 96   | 101  | 95   |
| PBA Marne <sup>Ⓛ</sup>    | 7                 | 93   | 101  | 92   | 95   | 102  |
| PBA Rana <sup>Ⓛ</sup>     | 6                 | 95   | 88   | –    | 95   | 85   |
| PBA Samira <sup>Ⓛ</sup>   | 7                 | 100  | 98   | 104  | 102  | 99   |
| PBA Zahra <sup>Ⓛ</sup>    | 7                 | 98   | 98   | 101  | 107  | 98   |

– denotes no data available.

**Table 4: Mid North faba bean yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 1.83 | 1.95 | 4.72 | 4.28 | 6.88 |
|                           | No. trials        | 2    | 2    | 2    | 2    | 2    |
| Farah <sup>Ⓛ</sup>        | 10                | 96   | 96   | 99   | 96   | 95   |
| Fiesta VF                 | 10                | 96   | 94   | 100  | 96   | 96   |
| Nura <sup>Ⓛ</sup>         | 10                | 94   | 96   | 95   | 95   | 90   |
| PBA Amberley <sup>Ⓛ</sup> | 10                | 98   | 96   | 104  | 98   | 100  |
| PBA Bendoc <sup>Ⓛ</sup>   | 10                | 97   | 102  | 92   | 99   | 94   |
| PBA Marne <sup>Ⓛ</sup>    | 10                | 102  | 101  | 87   | 99   | 99   |
| PBA Rana <sup>Ⓛ</sup>     | 8                 | 86   | 83   | –    | 88   | 88   |
| PBA Samira <sup>Ⓛ</sup>   | 10                | 98   | 97   | 105  | 99   | 101  |
| PBA Zahra <sup>Ⓛ</sup>    | 10                | 96   | 101  | 100  | 101  | 102  |

– denotes no data available.

**Table 5: Murray Mallee faba bean yield performance. NVT data 2018–22. Data for 2018, 2020 and 2021 not available.**

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

| Variety                   | Year              | 2018               | 2019 | 2020               | 2021               | 2022 |
|---------------------------|-------------------|--------------------|------|--------------------|--------------------|------|
|                           | Mean yield (t/ha) | 0.00               | 0.95 | 0.00               | 0.00               | 4.75 |
|                           | No. trials        | 0                  | 1    | 0                  | 0                  | 1    |
| Farah <sup>Ⓛ</sup>        | 2                 | Data not available | 92   | Data not available | Data not available | 96   |
| Fiesta VF                 | 2                 |                    | 89   |                    |                    | 95   |
| Nura <sup>Ⓛ</sup>         | 2                 |                    | 93   |                    |                    | 92   |
| PBA Amberley <sup>Ⓛ</sup> | 2                 |                    | 96   |                    |                    | 100  |
| PBA Bendoc <sup>Ⓛ</sup>   | 2                 |                    | 101  |                    |                    | 100  |
| PBA Marne <sup>Ⓛ</sup>    | 2                 |                    | 81   |                    |                    | 95   |
| PBA Rana <sup>Ⓛ</sup>     | 2                 |                    | 84   |                    |                    | 91   |
| PBA Samira <sup>Ⓛ</sup>   | 2                 |                    | 99   |                    |                    | 103  |
| PBA Zahra <sup>Ⓛ</sup>    | 2                 |                    | 97   |                    |                    | 111  |

– denotes no data available.



**Table 6: South East faba bean yield performance. NVT data 2018–22.**

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

| Variety                    | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|-------------------|------|------|------|------|------|
|                            | Mean yield (t/ha) | 3.16 | 2.98 | 4.30 | 4.37 | 4.63 |
|                            | No. trials        | 2    | 2    | 2    | 2    | 1    |
| Farah <sup>db</sup>        | 9                 | 96   | 95   | 102  | 97   | 93   |
| Fiesta VF                  | 9                 | 95   | 94   | 103  | 96   | 94   |
| Nura <sup>db</sup>         | 9                 | 96   | 91   | 101  | 96   | 81   |
| PBA Amberley <sup>db</sup> | 9                 | 98   | 98   | 104  | 99   | 101  |
| PBA Bendoc <sup>db</sup>   | 9                 | 101  | 100  | 92   | 101  | 89   |
| PBA Marne <sup>db</sup>    | 9                 | 94   | 100  | 89   | 94   | 99   |
| PBA Rana <sup>db</sup>     | 7                 | 90   | 83   | –    | 93   | 83   |
| PBA Samira <sup>db</sup>   | 9                 | 99   | 100  | 103  | 101  | 104  |
| PBA Zahra <sup>db</sup>    | 9                 | 99   | 106  | 91   | 103  | 107  |

– denotes no data available.





## RESEARCH SUMMARY

### AS219

#### FAST FACTS

##### PROBLEM

Phosphorous nutrition can be a challenge for grain growers on calcareous soils with high P buffering capacities.

##### PROJECT

This project improved understanding of P requirements for pulse rotations, and the flow-on potential from improved N fixation.

##### PARTICIPANTS

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Ag Consulting and  
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SARDI: Dr Liz Farquharson

##### DATES

Start: 1 July 2019

Finish: 30 June 2022

## OPTIMISING P NUTRITION IN PULSES TO MAXIMISE N FIXATION AND YIELD

Calcareous soils in South Australia can have high phosphorous fertiliser fixation potential, making P nutrition challenging for growers.

Optimising P nutrition for the pulse phase of a cropping rotation can increase pulse production, nodulation and N fixation that benefits following cereals.

This project demonstrated that standard MAP application rates (40 to 50 kilograms per hectare) can meet pulse P requirements and deliver benefits to the subsequent crop phases, but higher fertiliser rates applied with pulse seed can negatively impact emergence in calcareous soils.

#### BACKGROUND

Pulses are an important and valuable break crop for South Australian grain growers. Pulse rotations generate harvest income, support integrated pest and disease management, and fix atmospheric nitrogen into the soil for the benefit of subsequent crop rotations.

P nutrition in the pulse phase is critical for pulse growth, nodulation and yield. However, there has been limited knowledge of pulse P requirements on P responsive soil types in SA.

#### RESEARCH AIMS

This core objectives of the project were to:

- Provide SA pulse growers with clear guidelines for optimising P fertiliser forms and rates for pulse crops on P-responsive soils.
- Determine the economic benefits of improved P nutrition through measured biomass, N fixation and yield.

#### IN THE FIELD

Using a traditional rotation program, field trials of pulses were established on P responsive soils to assess the optimal rate of mono-ammonium phosphate (MAP) application in year 1 of the trials and potential N benefits to the following cereal or canola crops in years 2 and 3.

Trial sites at Urania (2019) and Port Broughton (2020) were sown to chickpea, faba bean, lentil and wheat. The Urania site was sown to canola for 2020 and wheat for 2021. Pt. Broughton was sown to wheat for 2021.

Additional field trials of lentil at each site were used to determine the optimal form and rate of P applications. P was applied as MAP with and without N balancing, Pasture King, and Phosphoric Acid at rates of 0, 5, 10, 20 and 40 kg P/ha. Pulse crops were assessed for nodulation, N fixation and yield.

## RESULTS

This project has outlined the main benefit of identifying P responsive soil types and increasing P rates accordingly to maximise yields and gross margins. For all trial sites pulse yields were generally less than a third of the yield obtained for wheat. In season assessments of nodulation, NDVI at peak biomass revealed small positive trends with increasing applied P.

The greatest response to applied P was observed in wheat at both sites, with yield increases of 0.85 tonnes per hectare observed at Urania (max yield 4.45t/ha) and 0.7t/ha at Port Broughton (max yield 1.3t/ha). Optimal P rates at both sites was approximately 30kg P/ha.

The highest cumulative yields at Urania were obtained from a Wheat-Canola-Wheat rotation at 30 kg P/ha, which returned the highest calculated partial gross margin (returns from grain yields minus fertiliser costs). Faba Bean-Canola-Wheat (20 kg P/ha) returned the next-best partial gross margin. At Port Broughton the Wheat-Wheat phase returned the greatest yields but the Lentil-Wheat phase (10-20 kg P/ha) provided the highest partial gross margins. Emergence of pulses was affected by fertiliser toxicity at Port Broughton due to the dry conditions and higher inherent soil salinity.

Applied P (>10 kg/ha) increased nodulation for faba bean and lentils. Importantly applications of MAP at commonly applied levels in pulses (50-60 kg/ha) did not reduce crop nodulation. Generally higher P levels improved N fixation above that of 0 P. Where agronomic conditions are suited to the pulse variety, N fixation levels can be high. For example, faba bean at Urania (20 kg P/ha) fixed over 100 kg/ha, which was reflected in the partial gross margins.

### Key findings:

- Optimising P nutrition in the pulse phase of a crop rotation can increase pulse nodulation and N fixation, providing carry-over N for the cereal crops.
- Standard rates (40 to 50kg/ha) of MAP are sufficient to meet pulse P requirements.
- High fertiliser rates applied with seed can negatively impact pulse emergence, particularly on calcareous soils with high salt loads. Fertiliser should be offset where possible.
- Lentil response with different forms of P fertiliser was similar.

## VALUE FOR GROWERS

This study led to new knowledge and guidelines to help SA grain growers optimise P nutrition on calcareous soils in the pulse phase and improve gross margins in subsequent cereal phases. The impacts of fertiliser application and potential risks to seedling emergence in more saline soils was highlighted.

### MORE INFORMATION:

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Faba Beans at Urania in 2019, under different phosphorus treatments. The plots are (L to R) 60 kg P/ha, 10 kg P/ha, 0 kg P/ha.

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# LENTIL

By Sarah Day and Sara Blake, SARDI

No new lentil varieties will be available to growers in 2024.

Four lentil varieties – GIA Lightning<sup>®</sup>, GIA Thunder<sup>®</sup>, GIA Metro<sup>®</sup> and GIA Sire<sup>®</sup> – developed by Grains Innovation Australia (GIA) were released for the 2023 season, with seed licensed to PBSeeds.

## DISEASE MANAGEMENT

There are two pathotypes of Ascochyta blight in the southern region, but pathotype 2, which is virulent on PBA Hurricane XT<sup>®</sup>, is predominant in South Australia. PBA Metro<sup>®</sup> has excellent Ascochyta blight resistance to pathotype 2 and is rated resistant to moderately resistant (RMR), whilst PBA HighlandXT<sup>®</sup> and GIA Leader<sup>®</sup> have very good resistance and are rated moderately resistant (MR). PBA Hurricane XT<sup>®</sup>, PBA Hallmark XT<sup>®</sup>, PBA Kelpie XT<sup>®</sup> and GIA Lightning<sup>®</sup> are rated moderately resistant to moderately susceptible (MRMS) to pathotype 2 for Ascochyta blight. GIA Sire<sup>®</sup> has a provisional MRMS rating to pathotype 2 of Ascochyta blight.

Note that fungicide sprays are not required if no disease is visible and if rain is not forecast. However, growers are urged to monitor crops regularly for disease, and podding sprays ahead of a rain front may be required if disease is present during the growing season for PBA Hurricane XT<sup>®</sup>, PBA Hallmark XT<sup>®</sup>, PBA Kelpie XT<sup>®</sup>, GIA Thunder<sup>®</sup>, GIA Sire<sup>®</sup> and GIA Lightning<sup>®</sup> to protect the developing grain. It is important to diversify variety selections within a year and across rotations, alongside agronomic and disease-management practices. This will help to protect resistance present in current cultivars, reduce the risk of fungicide resistance developing and reduce the risk of crop failures.

Botrytis grey mould (BGM) continues to be a major disease limitation to SA lentil production. A foliar fungicide spray before canopy closure in all varieties is recommended in conducive seasons

and disease-prone areas. This is particularly important in varieties with low levels of resistance such as PBA Bolt<sup>®</sup> (rate susceptible, S), and varieties with a moderately susceptible (MS) rating to BGM such as PBA Hurricane XT<sup>®</sup>, PBA HighlandXT<sup>®</sup>, PBA Kelpie XT<sup>®</sup> (provisional rating), GIA Sire<sup>®</sup> and GIA Lightning<sup>®</sup>. A foliar fungicide spray at canopy closure is also recommended for varieties with an MRMS rating, such as GIA Leader<sup>®</sup> and PBA Hallmark XT<sup>®</sup> (both provisional ratings) and GIA Metro<sup>®</sup> and GIA Thunder<sup>®</sup>. PBA Jumbo2<sup>®</sup> was provisionally downgraded to MR in March 2023 and a canopy closure spray is recommended, although follow-up sprays may not be needed. Early sowing is not recommended for varieties rated S or MS to BGM in disease-prone areas.

## SELECTION CRITERIA

Information on the most important selection criteria – grain yield, disease resistance, maturity, lodging resistance, shattering and seed type – for each variety can be found in Tables 1 and 2. When selecting a variety, growers also need to consider their individual farm and paddock situation and the access and availability of likely target markets, and make their selection on all the available information. NVT yield data is summarised in Tables 3 to 9.

Price differences can occur between varieties across seasons; however, growers need to produce high-quality seed in all varieties to secure markets and achieve the highest prices. On-farm storage can assist in attaining the highest price for grain in some seasons and allow lentils with poor quality issues or contaminants to be stored until appropriate cleaning and marketing can occur. Timely harvesting is recommended to minimise seed discolouration and weather damage, and also to reduce the risk of yield loss from shattering.

Table 1: Disease characteristics of lentil varieties.

| Variety                       | Botrytis grey mould | Ascochyta blight (foliage)                         |  | Pratylenchus neglectus resistance | Pratylenchus thornei resistance |
|-------------------------------|---------------------|--|--|-----------------------------------|---------------------------------|
|                               |                     | Foliage pathotype 1 (Nipper <sup>Ⓛ</sup> virulent) | Foliage pathotype 2 (PBA Hurricane XT <sup>Ⓛ</sup> virulent) |                                   |                                 |
| CONVENTIONAL                  |                     |  |  |                                   |                                 |
| PBA Ace <sup>Ⓛ</sup>          | MS                  | R  | MR   | MR                                | MRMS                            |
| PBA Bolt <sup>Ⓛ</sup>         | S                   | MR   | MRMS   | MR                                | MR                              |
| PBA Jumbo2 <sup>Ⓛ</sup>       | MR (P)              | R  | RMR (P)  | MR                                | MRMS                            |
| IMIDAZOLINONE TOLERANT        |                     |  |  |                                   |                                 |
| GIA Leader <sup>Ⓛ</sup>       | MRMS (P)            | MR   | MR   | R                                 | MR                              |
| GIA Lightning <sup>Ⓛ</sup>    | MS                  | R  | MRMS   | R                                 | MR                              |
| GIA Thunder <sup>Ⓛ</sup>      | MRMS                | R  | MRMS   | MR                                | R                               |
| PBA Hallmark XT <sup>Ⓛ</sup>  | MRMS (P)            | RMR  | MRMS   | MR                                | MRMS                            |
| PBA HighlandXT <sup>Ⓛ</sup>   | MS                  | MR   | MR   | MR                                | MRMS                            |
| PBA Hurricane XT <sup>Ⓛ</sup> | MS                  | RMR  | MRMS   | MRMS                              | MRMS                            |
| PBA Kelpie XT <sup>Ⓛ</sup>    | MS (P)              | MRMS   | MRMS   | MRMS                              | MRMS                            |
| DUAL-HERBICIDE TOLERANT       |                     |  |  |                                   |                                 |
| GIA Metro <sup>Ⓛ</sup>        | MRMS                | MR   | RMR  | MR                                | MRMS                            |
| GIA Sire <sup>Ⓛ</sup>         | MS                  | R  | MRMS (P)   | MR                                | MR                              |

Source: NVT Online

R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, S = susceptible.  
(P) = provisional rating and subject to change when additional data becomes available.

Table 2: Agronomic characteristics of lentil varieties.

| Variety                        | Seed coat colour | Cotyledon colour | Market category | Vigour   | Plant height | Flowering time | Maturity time | Lodging resistance | Pod drop | Shattering |
|--------------------------------|------------------|------------------|-----------------|----------|--------------|----------------|---------------|--------------------|----------|------------|
| <b>CONVENTIONAL</b>            |                  |                  |                 |          |              |                |               |                    |          |            |
| PBA Ace <sup>db</sup>          | Grey             | Red              | MRS             | Good     | Medium       | Mid            | Mid           | MRMS               | R        | MRMS       |
| PBA Bolt <sup>db</sup>         | Grey             | Red              | MRS             | Mod/good | Medium       | Early/mid      | Early/mid     | R                  | R        | R          |
| PBA Jumbo2 <sup>db</sup>       | Grey             | Red              | LRS             | Mod/good | Med/tall     | Mid            | Mid           | MRMS               | MR       | R          |
| <b>IMIDAZOLINONE TOLERANT</b>  |                  |                  |                 |          |              |                |               |                    |          |            |
| GIA Leader <sup>db</sup>       | Grey             | Red              | MRS             | Moderate | Medium       | Mid/late       | Mid/late      | MR                 | MR       | MR         |
| GIA Lightning <sup>db</sup>    | Grey             | Red              | SRP             | Moderate | Medium       | Mid/late       | Mid           | MR                 | MR       | RMR        |
| GIA Thunder <sup>db</sup>      | Grey             | Red              | SRP             | Moderate | Medium       | Mid            | Mid           | MRMS               | MR       | RMR        |
| PBA Hallmark XT <sup>db</sup>  | Grey             | Red              | MRS             | Mod/good | Medium       | Mid            | Mid           | MR                 | MR       | R          |
| PBA HighlandXT <sup>db</sup>   | Grey             | Red              | MRS             | Mod/good | Medium       | Early          | Early/mid     | MR                 | MR       | MR         |
| PBA Hurricane XT <sup>db</sup> | Grey             | Red              | SRP             | Moderate | Medium       | Mid            | Mid           | MR                 | MR       | R          |
| PBA Kelpie XT <sup>db</sup>    | Grey             | Red              | LRS             | Mod/good | Medium       | Early/mid      | Early/mid     | MRMS               | MR       | R          |
| <b>DUAL-HERBICIDE TOLERANT</b> |                  |                  |                 |          |              |                |               |                    |          |            |
| GIA Metro <sup>db</sup>        | Grey             | Red              | LRS             | Mod/poor | Short/med    | Late           | Mid/late      | MR                 | MR       | RMR        |
| GIA Sire <sup>db</sup>         | Grey             | Red              | SRP             | Poor     | Short        | Mid/late       | Mid           | MR                 | MR       | RMR        |

Source: Pulse Breeding Australia trials program 2012–17 and NVT Online

R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, S = susceptible.

**Market category:** MRS = medium red split, SRP = small red premium round (football), SR = small red round (football), LRS = large red split, LG = large green.

## LENTIL VARIETY NOTES

### CONVENTIONAL LENTIL

#### PBA ACE<sup>®</sup>

PBA Ace<sup>®</sup> is a medium seed size, vigorous-growing, mid flowering and mid maturing variety. PBA Ace<sup>®</sup> can be prone to lodging under conditions of high biomass production, often making BGM difficult to control. When grown in favourable environments, particularly when sown early, a small reduction in seeding rate may be beneficial in this variety to reduce biomass and lodging. PBA Ace<sup>®</sup> has a grey seed coat colour and is licensed to PBSeeds. EPR \$5.00 ex-GST.

#### PBA BOLT<sup>®</sup>

PBA Bolt<sup>®</sup> is an early-mid flowering and maturing, medium seed-sized lentil with excellent lodging and shattering resistance at maturity. It has improved tolerance to boron and salt over most other varieties, except PBA Hallmark XT<sup>®</sup>. It has a grey seed coat colour and is licensed to PBSeeds. EPR \$5.00 ex-GST.

#### PBA JUMBO2<sup>®</sup>

PBA Jumbo2<sup>®</sup> is a high-yielding, conventional, non-herbicide-tolerant red lentil available for South Australia. It has a large seed size with good early vigour, lodging and pod drop resistance, mid-flowering and mid-maturity. As with other large-seeded varieties, PBA Jumbo2<sup>®</sup> is well suited to the post-harvest removal of small broadleaf weed seeds. PBA Jumbo2<sup>®</sup> has a large seed size with a grey seed coat and is licensed to PBSeeds. EPR \$5.00 ex-GST.

### IMIDAZOLINONE-TOLERANT LENTIL

For herbicide-tolerant varieties it is important to adhere to all product labels, plant-back periods and directions for use, as any off-label usage can result in crop damage.

#### GIA LEADER<sup>®</sup>

GIA Leader<sup>®</sup> is an imidazolinone-tolerant red lentil variety well suited to reliable lentil-growing areas in medium to higher-rainfall zones. This variety has similar imidazolinone and soil residue sulfonylurea herbicide tolerance to existing XT varieties. GIA Leader<sup>®</sup> has mid to late flowering and maturity, similar to Nugget, making it well suited to early sowing. It has a spreading plant type that can assist protection of pods at maturity. Uniform grey seed coat and the grain is well suited to the medium sized 'Nugget'-type market. GIA Leader<sup>®</sup> is licensed to PBSeeds. EPR \$5.40 ex-GST.

#### GIA LIGHTNING<sup>®</sup>

GIA Lightning<sup>®</sup> is an imidazolinone-tolerant, high-yielding small round red lentil with superior adaptation to light textured sandy soils than other lentil varieties, making it suitable for growing in Mallee regions. GIA Lightning<sup>®</sup> has an upright plant type, which aids harvestability. This variety has similar imidazolinone and soil residue sulfonylurea herbicide tolerance to existing XT varieties. GIA Lightning<sup>®</sup> is mid to late flowering with mid-maturity. It has moderate resistance to pod drop and lodging and resistant/moderately resistant to shattering at maturity. GIA Lightning<sup>®</sup> is licensed to PBSeeds. EPR \$5.40 ex-GST.

#### GIA THUNDER<sup>®</sup>

GIA Thunder<sup>®</sup> is a broadly adapted imidazolinone-tolerant, small round red lentil, offering growers high and stable yields across all lentil growing regions. GIA Thunder<sup>®</sup> is a mid flowering and mid maturing variety. GIA Thunder<sup>®</sup> has similar imidazolinone and soil residue sulfonylurea herbicide tolerance to existing XT varieties. The grain is well suited to the small premium round grain market with a uniform grey seed coat with seed size similar to PBA Hurricane XT<sup>®</sup>. GIA Thunder<sup>®</sup> is licensed to PBSeeds. EPR \$5.40 ex-GST.

#### PBA HALLMARK XT<sup>®</sup>

PBA Hallmark XT<sup>®</sup> is a high-yielding imidazolinone-tolerant, medium red lentil with mid flowering and mid maturity characteristics. PBA Hallmark XT<sup>®</sup> has moderate to good early crop vigour, a branching plant type and a good level of resistance to shattering and lodging at maturity. PBA Hallmark XT<sup>®</sup> is commercialised by PBSeeds. EPR \$5.40 ex-GST.

#### PBA HighlandXT<sup>®</sup>

PBA HighlandXT<sup>®</sup> is an imidazolinone-tolerant, medium red lentil with a medium seed size, high early vigour, upright plant type, early flowering and early to mid-maturity. PBA HighlandXT<sup>®</sup> is licensed to PBSeeds. EPR \$5.40 ex-GST.

#### PBA Hurricane XT<sup>®</sup>

PBA Hurricane XT<sup>®</sup> is a mid-flowering, mid-maturing variety with small red seed and a grey seed coat. PBA Hurricane XT<sup>®</sup> is commercialised by PBSeeds. EPR \$5.00 ex-GST.



## PBA KELPIE XT

PBA Kelpie XT<sup>®</sup> is an imidazolinone-tolerant, large seed-sized red lentil. This variety provides growers with further market opportunities by combining herbicide tolerance in the large seed market class, complementing previous small and medium red lentil releases. PBA Kelpie XT<sup>®</sup> is an early to mid-flowering and maturing variety. It has moderate to good early vigour, is moderately resistant to pod drop and resistant to seed shattering. PBA Kelpie XT<sup>®</sup> is licensed to Seednet. EPR \$5.40 ex-GST.

## DUAL-HERBICIDE-TOLERANT LENTIL

For herbicide-tolerant varieties it is important to adhere to all product labels, plant-back periods and directions for use, as any off-label usage can result in crop damage.

### GIA METRO<sup>®</sup>

GIA Metro<sup>®</sup> is the first lentil to combine imidazolinone and metribuzin herbicide tolerances. This unique combination of herbicide tolerance will expand weed control options in lentil, particularly in light-textured soils prone to damage from the application of Group 5 (previously Group C)

herbicide Metribuzin. Grain yield is significantly lower than existing lentil varieties in the absence of weed pressure, or where weeds are controlled effectively without crop damage from Group 5 herbicide metribuzin. GIA Metro<sup>®</sup> is a large, lens-shaped red lentil with a grey seed coat. GIA Metro<sup>®</sup> was bred by GIA using a metribuzin trait from projects supported by GRDC (DAS00113) and SARDI. Seed is available from PBSeeds. EPR \$7.50 ex-GST.

### GIA SIRE<sup>®</sup>

GIA Sire<sup>®</sup> is the first lentil with improved tolerance to clopyralid soil residues from a prior crop applied according to production label directions. GIA Sire<sup>®</sup> is a premium, small, round red lentil with a grey seed coat. Its tolerance to imidazolinone and soil residue sulfonylurea is similar to existing XT varieties. GIA Sire<sup>®</sup> is slow growing with smaller plant parts, increased basal branching and shorter plant height compared to other lentil varieties. It is best suited to agronomic practices such as early sowing and lentil growing environments that maximise growth, harvest height and grain yield. Avoid growing this variety in low fertility sandy soils or low rainfall frost-prone environments. Seed of GIA Sire<sup>®</sup> is available only under small scale-controlled release. EPR TBC.

**Table 3: Lower Eyre Peninsula lentil yield performance. NVT data 2018–22. Data for 2019 not available.**

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

| Variety                       | Year              | 2018 | 2019               | 2020 | 2021 | 2022 |
|-------------------------------|-------------------|------|--------------------|------|------|------|
|                               | Mean yield (t/ha) | 3.14 | 0.00               | 1.80 | 3.17 | 1.78 |
|                               | No. trials        | 1    | 0                  | 1    | 1    | 1    |
| CONVENTIONAL                  |                   |      |                    |      |      |      |
| PBA Ace <sup>Ⓢ</sup>          | 3                 | –    | Data not available | 83   | 92   | 70   |
| PBA Bolt <sup>Ⓢ</sup>         | 4                 | 87   |                    | 83   | 91   | 76   |
| PBA Jumbo2 <sup>Ⓢ</sup>       | 4                 | 99   |                    | 84   | 95   | 106  |
| IMIDAZOLINONE TOLERANT        |                   |      |                    |      |      |      |
| GIA Leader <sup>Ⓢ</sup>       | 3                 | –    | Data not available | 110  | 105  | 93   |
| GIA Lightning <sup>Ⓢ</sup>    | 3                 | –    |                    | 120  | 115  | 104  |
| GIA Thunder <sup>Ⓢ</sup>      | 3                 | –    |                    | 133  | 123  | 138  |
| PBA Hallmark XT <sup>Ⓢ</sup>  | 4                 | 99   |                    | 114  | 107  | 96   |
| PBA HighlandXT <sup>Ⓢ</sup>   | 4                 | 101  |                    | 107  | 106  | 105  |
| PBA Hurricane XT <sup>Ⓢ</sup> | 4                 | 100  |                    | 112  | 106  | 100  |
| PBA Kelpie XT <sup>Ⓢ</sup>    | 4                 | 114  |                    | 104  | 103  | 124  |
| DUAL-HERBICIDE TOLERANT       |                   |      |                    |      |      |      |
| GIA Metro <sup>Ⓢ</sup>        | 2                 | –    | Data not available | –    | 63   | 48   |
| GIA Sire <sup>Ⓢ</sup>         | 2                 | –    |                    | –    | 92   | 71   |

– denotes no data available.

**Table 4: Yorke Peninsula lentil yield performance. NVT data 2018–22.**

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

| Variety                        | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------------|-------------------|------|------|------|------|------|
|                                | Mean yield (t/ha) | 2.16 | 1.89 | 2.49 | 3.47 | 3.00 |
|                                | No. trials        | 3    | 2    | 2    | 1    | 2    |
| <b>CONVENTIONAL</b>            |                   |      |      |      |      |      |
| PBA Ace <sup>db</sup>          | 7                 | –    | 100  | 105  | 100  | 87   |
| PBA Bolt <sup>db</sup>         | 10                | 101  | 99   | 97   | 101  | 86   |
| PBA Jumbo2 <sup>db</sup>       | 10                | 108  | 110  | 102  | 100  | 108  |
| <b>IMIDAZOLINONE TOLERANT</b>  |                   |      |      |      |      |      |
| GIA Leader <sup>db</sup>       | 7                 | –    | 97   | 106  | 100  | 97   |
| GIA Lightning <sup>db</sup>    | 5                 | –    | –    | 106  | 111  | 98   |
| GIA Thunder <sup>db</sup>      | 5                 | –    | –    | 107  | 110  | 119  |
| PBA Hallmark XT <sup>db</sup>  | 10                | 96   | 95   | 104  | 101  | 97   |
| PBA HighlandXT <sup>db</sup>   | 10                | 103  | 102  | 100  | 106  | 99   |
| PBA Hurricane XT <sup>db</sup> | 10                | 98   | 98   | 104  | 102  | 99   |
| PBA Kelpie XT <sup>db</sup>    | 10                | 102  | 103  | 92   | 102  | 110  |
| <b>DUAL-HERBICIDE TOLERANT</b> |                   |      |      |      |      |      |
| GIA Metro <sup>db</sup>        | 3                 | –    | –    | –    | 76   | 76   |
| GIA Sire <sup>db</sup>         | 3                 | –    | –    | –    | 96   | 78   |

– denotes no data available.

**Table 5: Mid North lentil yield performance. NVT data 2018–22.**

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

| Variety                        | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------------|-------------------|------|------|------|------|------|
|                                | Mean yield (t/ha) | 2.15 | 1.96 | 2.79 | 4.03 | 4.30 |
|                                | No. trials        | 2    | 2    | 2    | 1    | 2    |
| <b>CONVENTIONAL</b>            |                   |      |      |      |      |      |
| PBA Ace <sup>db</sup>          | 7                 | –    | 94   | 101  | 101  | 77   |
| PBA Bolt <sup>db</sup>         | 9                 | 101  | 103  | 96   | 100  | 64   |
| PBA Jumbo2 <sup>db</sup>       | 9                 | 111  | 110  | 110  | 111  | 115  |
| <b>IMIDAZOLINONE TOLERANT</b>  |                   |      |      |      |      |      |
| GIA Leader <sup>db</sup>       | 7                 | –    | 88   | 100  | 95   | 104  |
| GIA Lightning <sup>db</sup>    | 5                 | –    | –    | 105  | 102  | 87   |
| GIA Thunder <sup>db</sup>      | 5                 | –    | –    | 113  | 107  | 133  |
| PBA Hallmark XT <sup>db</sup>  | 9                 | 100  | 89   | 98   | 94   | 101  |
| PBA HighlandXT <sup>db</sup>   | 9                 | 99   | 106  | 102  | 103  | 89   |
| PBA Hurricane XT <sup>db</sup> | 9                 | 101  | 94   | 100  | 97   | 101  |
| PBA Kelpie XT <sup>db</sup>    | 9                 | 90   | 114  | 100  | 104  | 106  |
| <b>DUAL-HERBICIDE TOLERANT</b> |                   |      |      |      |      |      |
| GIA Metro <sup>db</sup>        | 3                 | –    | –    | –    | 82   | 72   |
| GIA Sire <sup>db</sup>         | 3                 | –    | –    | –    | 87   | 52   |

– denotes no data available.



**Table 6: Murray Mallee lentil yield performance. NVT data 2018–22. Data for 2020 and 2021 not available.**

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

| Variety                       | Year              | 2018 | 2019 | 2020               | 2021               | 2022 |
|-------------------------------|-------------------|------|------|--------------------|--------------------|------|
|                               | Mean yield (t/ha) | 0.80 | 0.37 | 0.00               | 0.00               | 3.29 |
|                               | No. trials        | 1    | 1    | 0                  | 0                  | 1    |
| CONVENTIONAL                  |                   |      |      |                    |                    |      |
| PBA Ace <sup>Ⓛ</sup>          | 2                 | –    | 98   | Data not available | Data not available | 86   |
| PBA Bolt <sup>Ⓛ</sup>         | 3                 | 104  | 90   |                    |                    | 75   |
| PBA Jumbo2 <sup>Ⓛ</sup>       | 3                 | 88   | 84   |                    |                    | 105  |
| IMIDAZOLINONE TOLERANT        |                   |      |      |                    |                    |      |
| GIA Leader <sup>Ⓛ</sup>       | 2                 | –    | 114  | Data not available | Data not available | 107  |
| GIA Lightning <sup>Ⓛ</sup>    | 1                 | –    | –    |                    |                    | 95   |
| GIA Thunder <sup>Ⓛ</sup>      | 1                 | –    | –    |                    |                    | 124  |
| PBA Hallmark XT <sup>Ⓛ</sup>  | 3                 | 116  | 115  |                    |                    | 106  |
| PBA HighlandXT <sup>Ⓛ</sup>   | 3                 | 109  | 91   |                    |                    | 93   |
| PBA Hurricane XT <sup>Ⓛ</sup> | 3                 | 114  | 108  |                    |                    | 104  |
| PBA Kelpie XT <sup>Ⓛ</sup>    | 3                 | 82   | 87   |                    |                    | 100  |
| DUAL-HERBICIDE TOLERANT       |                   |      |      |                    |                    |      |
| GIA Metro <sup>Ⓛ</sup>        | 1                 | –    | –    | Data not available | Data not available | 80   |
| GIA Sire <sup>Ⓛ</sup>         | 1                 | –    | –    |                    |                    | 71   |

– denotes no data available.

**Table 7: South East lentil yield performance. NVT data 2018–22. Data for 2021 not available.**

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

| Variety                       | Year              | 2018 | 2019 | 2020 | 2021               | 2022 |
|-------------------------------|-------------------|------|------|------|--------------------|------|
|                               | Mean yield (t/ha) | 2.15 | 2.28 | 2.64 | 0.00               | 2.86 |
|                               | No. trials        | 1    | 1    | 1    | 0                  | 1    |
| CONVENTIONAL                  |                   |      |      |      |                    |      |
| PBA Ace <sup>Ⓛ</sup>          | 3                 | –    | 98   | 101  | Data not available | 94   |
| PBA Bolt <sup>Ⓛ</sup>         | 4                 | 104  | 90   | 98   |                    | 82   |
| PBA Jumbo2 <sup>Ⓛ</sup>       | 4                 | 113  | 109  | 114  |                    | 116  |
| IMIDAZOLINONE TOLERANT        |                   |      |      |      |                    |      |
| GIA Leader <sup>Ⓛ</sup>       | 3                 | –    | 102  | 96   | Data not available | 102  |
| GIA Lightning <sup>Ⓛ</sup>    | 2                 | –    | –    | 102  |                    | 99   |
| GIA Thunder <sup>Ⓛ</sup>      | 2                 | –    | –    | 110  |                    | 123  |
| PBA Hallmark XT <sup>Ⓛ</sup>  | 4                 | 96   | 100  | 94   |                    | 99   |
| PBA HighlandXT <sup>Ⓛ</sup>   | 4                 | 107  | 96   | 102  |                    | 96   |
| PBA Hurricane XT <sup>Ⓛ</sup> | 4                 | 99   | 100  | 97   |                    | 100  |
| PBA Kelpie XT <sup>Ⓛ</sup>    | 4                 | 98   | 98   | 103  |                    | 100  |
| DUAL-HERBICIDE TOLERANT       |                   |      |      |      |                    |      |
| GIA Metro <sup>Ⓛ</sup>        | 1                 | –    | –    | –    | Data not available | 67   |
| GIA Sire <sup>Ⓛ</sup>         | 1                 | –    | –    | –    |                    | 64   |

– denotes no data available.

# FIELD PEA

By Sarah Day and Sara Blake, SARDI

No new field pea varieties will be available to growers in 2024.

The disease-forecasting model Blackspot Manager predicted a highly variable blackspot risk across South Australia for the 2023 season due to variation in rainfall received across the state. Irrespective of the seasonal blackspot risk, field peas should be grown in paddocks with at least four years' break from field peas and with a history of low blackspot disease infection, and not adjacent to last year's field pea stubble.

Blackspot can be reduced in paddocks where a grain yield of at least 1.5 tonnes per hectare is achievable by using a fungicide strategy including a seed dressing with thiram plus thiabendazole (such as UPL EverShield® seed treatment) combined with two foliar fungicide sprays (from four to nine weeks post-sowing and again at early flowering). Blackspot Manager predictions of disease risk are based on spore release times in each field pea growing district and weekly alerts are available for free via email ([blackspotmanager@dpird.wa.gov.au](mailto:blackspotmanager@dpird.wa.gov.au)) or SMS (0475 959 932). For more information go to [agric.wa.gov.au/field-peas/blackspot-field-peas-disease-forecast](http://agric.wa.gov.au/field-peas/blackspot-field-peas-disease-forecast) or contact Sara Blake ([sara.blake@sa.gov.au](mailto:sara.blake@sa.gov.au)). Note that blackspot disease resistance ratings were last reviewed in 2019 and are no longer assessed within the annual NVT disease ratings review.

## SELECTION CRITERIA

Information on the most important agronomic characteristics of the different varieties is shown in Table 1 and the grain yield for each variety, where available, can be found in Tables 2 to 9. When selecting a variety, growers need to make their decision based on all the available information, including their individual farm and paddock situation, the access and availability of target markets, and storage and handling facilities.

White and blue peas are not accepted in the bulk dun segregation so growers also need to consider the different seed quality types (Table 1) and where they can be delivered before deciding whether to grow them.

## DUN TYPES

Dun peas are segregated from white and blue peas due to the different market quality specifications. Some pea markets in India and Sri Lanka prefer Australian dun peas due to their distinct 'nutty' taste. Kasper seed type grain is also preferred over dimpled dun type seed (such as PBA Percy and PBA Oura<sup>®</sup>) in these markets due to its round shape and lack of dimples, allowing easier seed coat removal and greater split returns. It is important to check segregation plans for local delivery points as some will segregate the Kasper seed type from the dimpled dun type.

## WHITE TYPES

White peas cannot be delivered to bulk export markets with dun peas. Some high-quality specialised white peas may fit into specific premium value markets for split peas. Higher prices may be achieved if supplying specific niche markets, but these markets may be small. Small-seeded white peas are likely to only suit domestic stockfeed markets. Growers are advised to secure markets before deciding to grow these pea types.

## BLUE TYPES (GREEN COTYLEDONS)

Some blue pea varieties are for specific premium value markets, which are usually only small. Quality is paramount in these markets where peas are used predominantly for canning and snack food. Important parameters include damage by insects, bleaching of seed coat and consistency of seed colour.

## FIELD PEA VARIETY NOTES

### KASPA SEED TYPE

#### KASPA

Kaspa is a semi-leafless, late-flowering variety with resistance to shattering, good early season vigour and moderate resistance to lodging. Kaspa seed is distinct from traditional dun types (such as Parafield) as it is red-brown in colour and almost spherical in shape. Kaspa needs to be considered carefully before use as an option in low-rainfall areas or areas prone to early periods of high temperature and drought stress due to its late and condensed flowering period. Kaspa is under contract to Seednet. EPR \$2.00 ex-GST.

#### PBA BUTLER<sup>Ⓛ</sup>

PBA Butler<sup>Ⓛ</sup> is a Kaspa type field pea with high yields. It is mid to late-flowering, early to mid-maturing and offers the same agronomic benefits of lodging and shattering resistance as Kaspa. PBA Butler<sup>Ⓛ</sup> has a medium seed size with a yellow split and a uniform tan seed coat colour that is similar to Kaspa. It has a semi-leafless plant type with vigorous plant growth. PBA Butler<sup>Ⓛ</sup> has wide adaptation across southern Australia and performs particularly well in medium to long-growing seasons in SA. Seed is available from the commercial partner Seednet. EPR \$2.70 ex-GST.

#### PBA GUNYAH<sup>Ⓛ</sup>

PBA Gunyah<sup>Ⓛ</sup> is a Kaspa seed type field pea with early to mid-flowering and early maturity, offering high yield in shorter-season environments and drier seasons (yield potential below 2.25t/ha). It is better suited to delayed sowing than Kaspa for blackspot disease management due to its early flowering characteristic. PBA Gunyah<sup>Ⓛ</sup> is licensed to Seednet. EPR \$2.50 ex-GST.

#### PBA TAYLOR<sup>Ⓛ</sup>

PBA Taylor<sup>Ⓛ</sup> is a Kaspa seed type, semi-leafless field pea with wide adaptation and mid-flowering with early to mid-maturity. PBA Taylor<sup>Ⓛ</sup> outyields other Kaspa seed type varieties including PBA Wharton<sup>Ⓛ</sup> and Kaspa, except in regions with high boron and salinity constraints. PBA Taylor<sup>Ⓛ</sup> is licensed to Seednet. EPR \$2.70 ex-GST.

#### PBA WHARTON<sup>Ⓛ</sup>

PBA Wharton<sup>Ⓛ</sup> is a Kaspa seed type dun pea. It provides the same agronomic benefits as Kaspa (for example, lodging and shattering resistance), has some tolerance to boron toxicity, is moderately tolerant to salinity and will provide a reliable alternative in those areas where powdery mildew and viruses are regular problems. PBA Wharton<sup>Ⓛ</sup> is early to mid-flowering and early maturing, making it well suited to crop-topping and delayed sowing for blackspot management. Seed is licensed to Seednet. EPR \$2.60 ex-GST.

### DIMPLED DUN SEED TYPE

#### PBA OURA<sup>Ⓛ</sup>

PBA Oura<sup>Ⓛ</sup> is an early flowering and maturing, semi-dwarf, dimpled dun type variety. This line has broad adaptation and high yield potential in short growing seasons. It produces non-sugar-type pods and has fair to good lodging resistance at maturity. Seed is licensed to Seednet. EPR \$2.60 ex-GST.

#### PBA PERCY

PBA Percy is an early flowering, conventional, dimpled dun type variety. Its early flowering and early maturity make it well suited to delayed sowing for disease management and the agronomic practice of crop-topping. It is moderately tolerant to salinity and produces non-sugar-type pods similar to PBA Oura<sup>Ⓛ</sup>. PBA Percy generally produces yields similar to PBA Oura<sup>Ⓛ</sup>, but in low-rainfall environments it can be the highest-yielding dun variety in trials. PBA Percy has poor lodging resistance at maturity. Seed is licensed to Seednet. EPR \$2.60 ex-GST.

### HERBICIDE-TOLERANT FIELD PEA

For herbicide-tolerant varieties, it is important to adhere to all product labels, plant-back periods and directions for use, as any off-label usage can result in crop damage.

#### GIA KASTAR<sup>Ⓛ</sup>

GIA Kastar<sup>Ⓛ</sup> is the first Kaspa seed type field pea with tolerance to imidazolinone in-crop and residual herbicides. The response of GIA Kastar<sup>Ⓛ</sup> to residual sulfonylurea and post-emergent flumetsulam is similar to that of PBA Wharton<sup>Ⓛ</sup>. GIA Kastar<sup>Ⓛ</sup> is a mid-flowering variety with early to mid-maturity suitable for crop-topping. It has a semi-leafless plant type, an erect growth habit and is resistant to pod shatter at maturity. GIA Kastar<sup>Ⓛ</sup> was developed by Grains Innovation Australia (GIA) and commercialised by AG Schilling & Co. EPR \$3.30 ex-GST.

## GIA OURSTAR<sup>Ⓓ</sup>

GIA Ourstar<sup>Ⓓ</sup> is the first dimpled dun type field pea variety offering tolerance to imidazolinone herbicides and residual Group 2 herbicides. GIA Ourstar<sup>Ⓓ</sup> is an early to mid-flowering variety with early to mid-maturity suitable for crop-topping. It has a semi-leafless plant type with a semi-erect growth habit and moderate resistance to pod shatter at maturity. GIA Ourstar<sup>Ⓓ</sup> was developed by GIA using conventional breeding techniques and commercialised by AG Schilling & Co. EPR \$3.30 ex-GST.

## BLUE TYPES

### PBA NOOSA<sup>Ⓓ</sup>

PBA Noosa<sup>Ⓓ</sup> is a semi-leafless, semi-dwarf blue field pea with broad adaptation and grain yield exceeding Excell by up to 30 per cent, with similar yield to Kaspera seed type varieties. PBA Noosa<sup>Ⓓ</sup> has shatter-resistant pods. It has early to mid-flowering and maturity. PBA Noosa<sup>Ⓓ</sup> is licensed to PBSeeds. EPR \$6.50 ex-GST.

## WHITE TYPES

### PBA PEARL

PBA Pearl is a semi-leafless, white pea variety that is broadly adapted and the highest-yielding field pea in long-term evaluation trials in all areas of SA. It has an erect growth habit, often with excellent lodging resistance at maturity. It is early to mid-flowering and produces non-sugar-type pods similar to PBA Oura<sup>Ⓓ</sup>. Seed is available through Seednet and growers are advised to secure markets before deciding to grow white peas as they cannot be delivered to bulk dun or Kaspera type export markets. EPR \$2.70 ex-GST.

Table 1: Agronomic and disease characteristics of field pea varieties.

| Variety                   | Seed type | Seed size | Plant habit | Plant height | Early vigour | Flower colour | Flowering time | Maturity time | Pod shattering at maturity | Lodging resistance at maturity | Downy mildew (Kaspera strain) | Blackspot <sup>Ⓐ</sup> | Powdery mildew | Bacterial blight (pv. <i>syringae</i> ) | Pea seed-borne mosaic virus (PSBMV) <sup>Ⓐ</sup> | Bean leafroll virus (BLRV) <sup>Ⓐ</sup> | <i>Pratylenchus neglectus</i> resistance | <i>Pratylenchus thornei</i> resistance |
|---------------------------|-----------|-----------|-------------|--------------|--------------|---------------|----------------|---------------|----------------------------|--------------------------------|-------------------------------|------------------------|----------------|---|--|---|--|--|
| Kaspera                   | Dun (K)   | Me        | SL          | Me-T         | High         | Pi            | L              | M             | R: SP                      | Fair-good                      | S                             | MS                     | S              | S                                       | S  | S                                       | RMR                                      | MRMS                                   |
| PBA Butler <sup>Ⓓ</sup>   | Dun (K)   | Me        | SL          | Me-T         | High         | Pi            | M-L            | E-M           | R: SP                      | Fair-good                      | S                             | MS                     | S              | MS                                      | S  | S                                       | RMR                                      | MRMS                                   |
| PBA Gunyah <sup>Ⓓ</sup>   | Dun (K)   | Me        | SL          | Me-T         | High         | Pi            | E-M            | E             | R: SP                      | Fair-good                      | S                             | MS                     | S              | S                                       | S  | S                                       | RMR                                      | MRMS                                   |
| PBA Taylor <sup>Ⓓ</sup>   | Dun (K)   | Me        | SL          | Me-T         | High         | Pi            | M              | E-M           | R: SP                      | Fair-good                      | S                             | MS                     | S              | S                                       | R  | R                                       | RMR                                      | MRMS                                   |
| PBA Wharton <sup>Ⓓ</sup>  | Dun (K)   | Me        | SL          | Me-T         | High         | Pi            | E-M            | E             | R: SP                      | Fair-good                      | S                             | MS                     | RMR            | S                                       | R  | R                                       | MR                                       | MRMS                                   |
| PBA Oura <sup>Ⓓ</sup>     | Dun       | Me        | SL          | Me-T         | High         | P             | E              | E             | MR: NSP                    | Fair-good                      | S                             | MS                     | S              | MS                                      | S  | R                                       | MR                                       | MRMS                                   |
| PBA Percy                 | Dun       | Me-Lg     | C           | T            | High         | P             | E              | E             | MR: NSP                    | Poor                           | S                             | MS                     | S              | MRMS                                    | S  | S                                       | RMR                                      | RMR                                    |
| PBA Pearl                 | White     | Me-Lg     | SL          | Me-T         | High         | W             | E-M            | E             | MR: NSP                    | Good                           | S                             | MS                     | S              | MS                                      | S  | R                                       | MR                                       | MRMS                                   |
| PBA Noosa <sup>Ⓓ</sup>    | Blue      | Me        | SL          | Me-T         | High         | W             | E-M            | E-M           | R: SP                      | Fair-good                      | MS                            | MS                     | S              | S                                       | S  | R                                       | MR                                       | MRMS                                   |
| <b>HERBICIDE TOLERANT</b> |           |           |             |              |              |               |                |               |                            |                                |                               |                        |                |   |  |   |  |  |
| GIA Kastar <sup>Ⓓ</sup>   | Dun (K)   | Me        | SL          | Me           | Moderate     | Pi            | M              | E-M           | R: SP                      | Fair                           | S                             | MS (P)                 | RMR            | S                                       | R (P)  | **                                      | MR                                       | MS                                     |
| GIA Ourstar <sup>Ⓓ</sup>  | Dun       | Me        | SL          | Me           | Moderate     | P             | E-M            | E-M           | MR: SP                     | Fair                           | S                             | MS (P)                 | S              | S (P)                                   | S (P)  | **                                      | MRMS                                     | MSS                                    |

Source: Pulse Breeding Australia trials program 2012-17 and NVT Online ([nvt.grdc.com.au](http://nvt.grdc.com.au))

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. K = kaspera type, Sm = small, Me = medium, Lg = large, T = tall, Sh = short, C = conventional, SL = semi-leafless, P = purple, Pi = pink, W = white, E = early, M = mid, L = late, SP = sugar pod, NSP = non-sugar pod.

<sup>Ⓐ</sup> = No disease screening since 2018 or earlier and may be a breeder rating. <sup>Ⓑ</sup> = No disease screening since 2019 or earlier. <sup>Ⓒ</sup> = No disease screening since 2020. \*\* = Not tested.

(P) = provisional rating and subject to change when additional data becomes available.

**Table 2: Upper Eyre Peninsula field pea yield performance. NVT data 2018–22. Data for 2018 and 2019 not available.**

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

| Variety                   | Year              | 2018               | 2019               | 2020 | 2021 | 2022 |
|---------------------------|-------------------|--------------------|--------------------|------|------|------|
|                           | Mean yield (t/ha) | 0.00               | 0.00               | 1.29 | 2.12 | 2.64 |
|                           | No. trials        | 0                  | 0                  | 1    | 1    | 1    |
| Kaspa                     | 3                 | Data not available | Data not available | 88   | 108  | 92   |
| PBA Butler <sup>db</sup>  | 2                 |                    |                    | —    | 111  | 109  |
| PBA Gunyah <sup>db</sup>  | 2                 |                    |                    | —    | 101  | 96   |
| PBA Noosa <sup>db</sup>   | 3                 |                    |                    | 106  | 101  | 112  |
| PBA Oura <sup>db</sup>    | 3                 |                    |                    | 102  | 96   | 100  |
| PBA Pearl                 | 3                 |                    |                    | 112  | 106  | 122  |
| PBA Percy                 | 3                 |                    |                    | 101  | 98   | 98   |
| PBA Taylor <sup>db</sup>  | 3                 |                    |                    | 105  | 105  | 109  |
| PBA Wharton <sup>db</sup> | 3                 |                    |                    | 103  | 95   | 100  |
| HERBICIDE TOLERANT        |                   |                    |                    |      |      |      |
| GIA Kastar <sup>db</sup>  | 3                 | Data not available | Data not available | 86   | 86   | 70   |
| GIA Ourstar <sup>rd</sup> | 3                 |                    |                    | 94   | 84   | 82   |

– denotes no data available.

**Table 3: Lower Eyre Peninsula field pea yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 2.23 | 2.16 | 2.34 | 2.89 | 2.88 |
|                           | No. trials        | 2    | 2    | 2    | 2    | 2    |
| Kaspa                     | 10                | 98   | 92   | 101  | 97   | 97   |
| PBA Butler <sup>db</sup>  | 8                 | 105  | 99   | –    | 104  | 110  |
| PBA Gunyah <sup>db</sup>  | 8                 | 98   | 95   | –    | 98   | 96   |
| PBA Noosa <sup>db</sup>   | 10                | 101  | 100  | 99   | 104  | 105  |
| PBA Oura <sup>db</sup>    | 10                | 99   | 103  | 97   | 100  | 100  |
| PBA Pearl                 | 10                | 108  | 108  | 109  | 110  | 121  |
| PBA Percy                 | 10                | 101  | 105  | 100  | 102  | 106  |
| PBA Taylor <sup>db</sup>  | 10                | 104  | 100  | 106  | 102  | 103  |
| PBA Wharton <sup>db</sup> | 10                | 98   | 100  | 97   | 98   | 94   |
| <b>HERBICIDE TOLERANT</b> |                   |      |      |      |      |      |
| GIA Kastar <sup>db</sup>  | 6                 | –    | –    | 83   | 88   | 73   |
| GIA Ourstar <sup>db</sup> | 6                 | –    | –    | 84   | 94   | 87   |

– denotes no data available.

**Table 4: Yorke Peninsula field pea yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 2.14 | 1.88 | 1.34 | 3.26 | 2.87 |
|                           | No. trials        | 2    | 2    | 1    | 2    | 2    |
| Kaspa                     | 9                 | 101  | 102  | 105  | 104  | 96   |
| PBA Butler <sup>db</sup>  | 8                 | 104  | 107  | –    | 111  | 108  |
| PBA Gonyah <sup>db</sup>  | 8                 | 98   | 99   | –    | 101  | 96   |
| PBA Noosa <sup>db</sup>   | 9                 | 96   | 100  | 96   | 108  | 104  |
| PBA Oura <sup>db</sup>    | 9                 | 98   | 98   | 94   | 95   | 98   |
| PBA Pearl                 | 9                 | 101  | 108  | 98   | 107  | 111  |
| PBA Percy                 | 9                 | 100  | 101  | 91   | 88   | 96   |
| PBA Taylor <sup>db</sup>  | 9                 | 104  | 103  | 113  | 113  | 109  |
| PBA Wharton <sup>db</sup> | 9                 | 99   | 96   | 102  | 101  | 101  |
| <b>HERBICIDE TOLERANT</b> |                   |      |      |      |      |      |
| GIA Kastar <sup>db</sup>  | 5                 | –    | –    | 91   | 82   | 81   |
| GIA Ourstar <sup>db</sup> | 5                 | –    | –    | 79   | 77   | 83   |

– denotes no data available.

**Table 5: Mid North field pea yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 2.27 | 1.94 | 3.10 | 3.31 | 4.30 |
|                           | No. trials        | 2    | 2    | 2    | 2    | 2    |
| Kaspa                     | 10                | 94   | 93   | 94   | 99   | 103  |
| PBA Butler <sup>db</sup>  | 8                 | 102  | 98   | –    | 107  | 116  |
| PBA Gonyah <sup>db</sup>  | 8                 | 97   | 95   | –    | 99   | 100  |
| PBA Noosa <sup>db</sup>   | 10                | 104  | 97   | 88   | 104  | 111  |
| PBA Oura <sup>db</sup>    | 10                | 100  | 103  | 95   | 99   | 97   |
| PBA Pearl                 | 10                | 105  | 105  | 103  | 110  | 125  |
| PBA Percy                 | 10                | 96   | 108  | 97   | 99   | 100  |
| PBA Taylor <sup>db</sup>  | 10                | 107  | 97   | 117  | 105  | 106  |
| PBA Wharton <sup>db</sup> | 10                | 104  | 99   | 103  | 98   | 92   |
| <b>HERBICIDE TOLERANT</b> |                   |      |      |      |      |      |
| GIA Kastar <sup>db</sup>  | 6                 | –    | –    | 84   | 84   | 64   |
| GIA Ourstar <sup>db</sup> | 6                 | –    | –    | 74   | 89   | 77   |

– denotes no data available.

**Table 6: Murray Mallee field pea yield performance. NVT data 2018–22. Data for 2020 not available.**

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

| Variety                   | Year              | 2018 | 2019 | 2020               | 2021 | 2022 |
|---------------------------|-------------------|------|------|--------------------|------|------|
|                           | Mean yield (t/ha) | 1.07 | 0.18 | 0.00               | 1.61 | 3.83 |
|                           | No. trials        | 1    | 1    | 0                  | 1    | 1    |
| Kaspa                     | 4                 | 69   | 86   | Data not available | 101  | 102  |
| PBA Butler <sup>db</sup>  | 4                 | 92   | 138  |                    | 104  | 112  |
| PBA Gunyah <sup>db</sup>  | 4                 | 95   | 103  |                    | 100  | 96   |
| PBA Noosa <sup>db</sup>   | 4                 | 134  | 171  |                    | 103  | 98   |
| PBA Oura <sup>db</sup>    | 4                 | 115  | 103  |                    | 98   | 98   |
| PBA Pearl                 | 4                 | 144  | 199  |                    | 104  | 114  |
| PBA Percy                 | 4                 | 114  | 96   |                    | 97   | 105  |
| PBA Taylor <sup>db</sup>  | 4                 | 91   | 116  |                    | 104  | 104  |
| PBA Wharton <sup>db</sup> | 4                 | 100  | 86   |                    | 100  | 93   |
| HERBICIDE TOLERANT        |                   |      |      |                    |      |      |
| GIA Kastar <sup>db</sup>  | 2                 | –    | –    | Data not available | 92   | 78   |
| GIA Ourstar <sup>db</sup> | 2                 | –    | –    |                    | 92   | 84   |

– denotes no data available.

**Table 7: South East field pea yield performance. NVT data 2018–22. Data for 2021 and 2022 not available.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021               | 2022               |
|---------------------------|-------------------|------|------|------|--------------------|--------------------|
|                           | Mean yield (t/ha) | 2.83 | 1.98 | 3.53 | 0.00               | 0.00               |
|                           | No. trials        | 1    | 1    | 1    | 0                  | 0                  |
| Kaspa                     | 3                 | 99   | 103  | 104  | Data not available | Data not available |
| PBA Butler <sup>db</sup>  | 2                 | 105  | 117  | –    |                    |                    |
| PBA Gunyah <sup>db</sup>  | 2                 | 96   | 98   | –    |                    |                    |
| PBA Noosa <sup>db</sup>   | 3                 | 94   | 107  | 109  |                    |                    |
| PBA Oura <sup>db</sup>    | 3                 | 97   | 96   | 97   |                    |                    |
| PBA Pearl                 | 3                 | 98   | 121  | 114  |                    |                    |
| PBA Percy                 | 3                 | 96   | 98   | 95   |                    |                    |
| PBA Taylor <sup>db</sup>  | 3                 | 110  | 110  | 108  |                    |                    |
| PBA Wharton <sup>db</sup> | 3                 | 103  | 95   | 97   |                    |                    |
| HERBICIDE TOLERANT        |                   |      |      |      |                    |                    |
| GIA Kastar <sup>db</sup>  | 1                 | –    | –    | 76   | Data not available | Data not available |
| GIA Ourstar <sup>db</sup> | 1                 | –    | –    | 80   |                    |                    |

– denotes no data available.



# CHICKPEA

By Sarah Day and Sara Blake, SARDI

No new chickpea varieties will be available to growers in 2024.

All varieties are rated as either susceptible (S) or moderately susceptible (MS) to *Ascochyta* blight infection. This follows observations of severe *Ascochyta* blight on previously resistant chickpea varieties across South Australia and Victoria. Chickpea growers need to carefully consider their risk of infection along with the ability to effectively control the disease prior to choosing to grow this crop in South Australia. This will be the case in both high and low-rainfall regions as severe disease outbreaks can still occur in the latter for all variety options during wet seasons such as in 2022.

## Ascochyta blight disease management

It is imperative that all chickpea seed is treated with a thiram-based fungicide to prevent seed transmission of *Ascochyta* blight onto the emerging seedlings. The disease will also survive on stubble and organic matter for several years, so growers must observe a minimum three-year rotation between chickpeas in the same paddock and avoid planting adjacent to last year's chickpea stubble.

All chickpea crops will need to be regularly monitored for infection. Varieties rated:

- MS will require three to four strategic fungicide sprays ahead of rain events, offering two to three weeks of protection, starting at six to eight weeks post-sowing; and
- S will require regular fungicide sprays every two to three weeks throughout the growing season prior to rainfall events.

As the pods of all commercial varieties are susceptible to *Ascochyta* blight, they will also require fungicide sprays ahead of rain fronts during pod setting to protect the pods from seed staining and seed abortion.

## SELECTION CRITERIA

The list of suggested varieties for 2024 is shown in Table 1. A range of chickpea types is now available, offering growers the opportunity to exploit particular management and or market opportunities, providing *Ascochyta* blight can be managed effectively. Information on key selection criteria and yield for each variety can be found in the tables. When selecting a chickpea type and variety to grow, growers need to make their decision based on *Ascochyta* blight resistance, yield, price and marketability. Other agronomic traits such as maturity, cold tolerance, root lesion nematode (*Pratylenchus* spp.) susceptibility and lodging resistance also need to be considered.

## CHICKPEA TYPES

### DESI TYPES

Larger seeds are preferred for desi types, regardless of whether they are used for splitting or whole seed use. There has been an increasing use of large whole-seeded desi types in a range of food preparations in the subcontinent, and a small premium has been available for types fitting this use. Newer desi varieties have improved seed size and colour over older varieties and are suited to whole and splitting markets. They are therefore more likely to achieve the higher prices of the benchmark northern region varieties (such as Jimbour).

### SMALL KABULI TYPES

Bulk markets for the small kabuli Genesis™ 090 have been developed in recent years and generally have attracted a higher price than the desi types. However, growers need to be aware that these bulk markets have previously been oversupplied by several overseas countries and they may be required to hold seed from time to time as

marketing opportunities are not always available or may be limited in terms of size and price. Seed size is small, 6 to 8mm, so will not attract the higher prices of the larger seeded kabuli types (such as PBA Monarch<sup>®</sup> and Genesis™ Kalkee). Further premiums may be obtained by grading and selling the seed on size.

### MEDIUM-LARGE KABULI TYPES

PBA Monarch<sup>®</sup> and Genesis™ Kalkee produce predominantly 8 to 10mm seed for traditionally larger-seeded kabuli markets where larger seed size is imperative to attract premium prices. Uniformity of seed size is also important in these markets and may be difficult to achieve for the large types such as Genesis™ Kalkee due to its relatively poor adaptation to dry finishing conditions. The medium-sized PBA Monarch<sup>®</sup> is likely to produce more uniform-sized seed under these conditions.

**Table 1: Agronomic and disease characteristics of chickpea varieties.**

| Variety                  | Seed size (g/100 seeds) | Kabuli main seed size (mm) | Seed colour  | Market type suitability | Early vigour | Flowering | Maturity | Plant height | Lodging resistance maturity | Ascochyta blight* | <i>Pratylenchus neglectus</i> resistance | <i>Pratylenchus thornei</i> resistance |
|--------------------------|-------------------------|----------------------------|--------------|-------------------------|--------------|-----------|----------|--------------|-----------------------------|-------------------|--|--|
| <b>DESI TYPE</b>         |                         |                            |              |                         |              |           |          |              |                             |                   |  |  |
| CBA Captain <sup>®</sup> | 18–20                   |                            | Yellow-brown | Split and whole         | Moderate     | Mid       | Mid      | Medium-tall  | MR                          | S                 | MR                                       | MS                                     |
| PBA Maiden <sup>®</sup>  | 21–24                   |                            | Yellow-tan   | Premium whole           | Moderate     | Early-mid | Mid      | Short-med    | MS                          | S                 | MRMS                                     | MRMS                                   |
| PBA Slasher <sup>®</sup> | 17–19                   |                            | Light brown  | Split and whole         | Poor/mod     | Mid       | Mid      | Short-med    | MS                          | S                 | MRMS                                     | MRMS                                   |
| PBA Striker <sup>®</sup> | 20–22                   |                            | Light brown  | Split and whole         | Good         | Early     | Early    | Short-med    | MS                          | S                 | MRMS                                     | MRMS                                   |
| <b>KABULI TYPE</b>       |                         |                            |              |                         |              |           |          |              |                             |                   |  |  |
| Genesis™ 090             | 26–35                   | 7–8                        | Cream        | 6–8mm                   | Good         | Mid       | Mid      | Medium       | MR                          | MS                | MRMS                                     | MSS                                    |
| Genesis™ Kalkee          | 40–46                   | 8–9                        | Cream        | 8–10mm                  | Good         | Mid-late  | Late     | Tall         | R                           | S                 | MRMS                                     | MS                                     |
| PBA Magnus <sup>®</sup>  | 42–48                   | 9                          | Cream-beige  | 9–10mm                  | Poor/mod     | Mid       | Mid      | Medium       | MRMS                        | S                 | MR                                       | MSS                                    |
| PBA Monarch <sup>®</sup> | 37–43                   | 8–9                        | Cream        | 8–9mm                   | Poor/mod     | Early     | Early    | Medium       | MS                          | S                 | MRMS                                     | MS                                     |
| PBA Royal <sup>®</sup>   | 39                      | 8                          | Cream-beige  | 8–9mm                   | Moderate     | Early-mid | Mid      | Medium       | MR                          | MS                | MR                                       | MS                                     |

Source: Pulse Breeding Australia trials program 2012–17 and NVT Online ([nvt.grdc.com.au](http://nvt.grdc.com.au))

R = resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible, MSS = moderately susceptible to susceptible, S = susceptible.

\* = Foliar Ascochyta blight ratings for southern region only (pathotype 1). (P) = provisional rating and subject to change when additional data becomes available.

## CHICKPEA VARIETY NOTES

### DESI VARIETIES

#### CBA CAPTAIN<sup>®</sup>

CBA Captain<sup>®</sup> is a desi type chickpea with broad adaptation and a medium seed size. It has good grain yields in South Australia. CBA Captain<sup>®</sup> has excellent harvestability with improved plant height and height to the lowest pod compared with all other desi varieties adapted to the southern region. It is a mid-flowering and mid-maturing variety, similar to Genesis™ 090. It has superior grain quality to current southern desi varieties based on seed shape, size and colour. CBA Captain<sup>®</sup> meets the requirement of a Jimbour type suitable for the subcontinent market. Seed can be obtained through Chickpea Breeding Australia (CBA) seed distributors. EPR \$4.50 ex-GST.

#### PBA MAIDEN<sup>®</sup>

PBA Maiden<sup>®</sup> is a large-seeded desi chickpea for the medium to low-rainfall environments of southern Australia. PBA Maiden<sup>®</sup> has a semi-spreading plant type and height similar to PBA Slasher<sup>®</sup>. It has a seed size greater than current southern desi varieties (approximately 30 per cent larger than PBA Slasher<sup>®</sup>) with a yellow-tan seed coat. PBA Maiden<sup>®</sup> is targeted for whole seed markets where its large, angular-shaped and bright yellow-tan seed coat are well suited to specific requirements. Growers are advised to investigate delivery and marketing options for PBA Maiden<sup>®</sup> prior to growing this variety due to its unique and favourable seed characteristics. Larger uniform seed size is more likely in medium-rainfall regions. Seed is licensed to Seednet. EPR \$4.00 ex-GST.

#### PBA SLASHER<sup>®</sup>

PBA Slasher<sup>®</sup> is high yielding in all chickpea-growing areas of SA, providing Ascochyta blight can be managed. It has a semi-spreading plant type with mid-flowering and mid-maturity. PBA Slasher<sup>®</sup> is suitable for the split and whole seed markets. Seed is licensed to Seednet. EPR \$4.00 ex-GST.

#### PBA STRIKER<sup>®</sup>

PBA Striker<sup>®</sup> is a high-yielding desi chickpea with good early vigour. It is an early flowering and maturing variety and will provide a high-yielding alternative to all chickpea varieties in the medium to low-rainfall environments of southern Australia, providing Ascochyta blight can be managed. PBA Striker<sup>®</sup> has a similar plant type to PBA Slasher<sup>®</sup> but with larger seed size than all other southern desi varieties. Seed of PBA Striker<sup>®</sup> is also light in colour and has good milling characteristics. Due to its early maturity and Ascochyta blight susceptibility, PBA Striker<sup>®</sup> is not recommended for high-rainfall and long-growing season districts. Seed is licensed to Seednet. EPR \$4.00 ex-GST.

### KABULI VARIETIES

#### GENESIS™ 090

Genesis™ 090 is a small-seeded kabuli type chickpea. Genesis™ 090 has medium height with erect branches and yields similar to PBA Monarch<sup>®</sup> but lower than PBA Slasher<sup>®</sup> and PBA Striker<sup>®</sup>. For seed distribution contact PBSeeds. EPR \$5.00 ex-GST.

#### GENESIS™ KALKEE

Genesis™ Kalkee is a large-seeded kabuli type, mid to late in flowering and late maturity. For seed distribution contact PBSeeds. EPR \$5.00 ex-GST.

#### PBA MAGNUS<sup>®</sup>

PBA Magnus<sup>®</sup> is a large-seeded kabuli chickpea. It has a significant yield advantage over Genesis™ Kalkee, particularly in short growing environments, due to its slightly earlier flowering and maturity. It is well adapted to the medium-rainfall chickpea growing regions of south-eastern Australia, where the large seed size can be obtained. PBA Magnus<sup>®</sup> has a similar plant type to Genesis™ 090 and similar mid-flowering and mid-maturity. Seed of PBA Magnus<sup>®</sup> is larger than Genesis™ Kalkee, with a cream-beige seed coat and good wrinkling characteristics. It has received favourable feedback on seed quality from domestic and international traders. PBA Magnus<sup>®</sup> is licensed to PBSeeds. EPR \$6.50 ex-GST.

**PBA MONARCH<sup>Ⓛ</sup>**

PBA Monarch<sup>Ⓛ</sup> is a high-yielding, medium-sized kabuli chickpea with adaptation to all kabuli-growing areas of Australia. PBA Monarch<sup>Ⓛ</sup> is particularly well suited to the shorter-seasoned, medium-rainfall environments of south-eastern Australia due to improved adaptation through earlier flowering and maturity compared with Genesis™ 090 and Genesis™ Kalkee. It has similar yields and larger seed size to Genesis™ 090, although it is higher yielding than this variety in low-yielding (<1t/ha) situations. In shorter growing seasons, PBA Monarch<sup>Ⓛ</sup> may have larger and more consistent seed size than other medium-sized varieties due to its earlier pod fill timing. Seed is licensed to Seednet. EPR \$6.50 ex-GST.

**PBA ROYAL<sup>Ⓛ</sup>**

PBA Royal<sup>Ⓛ</sup> is a high-yielding, medium-sized kabuli chickpea. It is particularly well adapted to the medium-rainfall chickpea-growing regions of south-eastern Australia. PBA Royal<sup>Ⓛ</sup> has medium plant height with early to mid-flowering and mid-maturity. Seed is licensed to Seednet. EPR \$6.50 ex-GST.

**Table 2: Yorke Peninsula desi and kabuli chickpea yield performance. NVT data 2018–22. Data for 2020 not available.**

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

|                          | Year              | 2018 | 2019 | 2020               | 2021 | 2022 |
|--------------------------|-------------------|------|------|--------------------|------|------|
| DESI                     |                   |      |      |                    |      |      |
|                          | Mean yield (t/ha) | 1.84 | 0.73 | 0.00               | 0.57 | 2.53 |
| Variety                  | No. trials        | 1    | 1    | 0                  | 1    | 1    |
| CBA Captain <sup>Ⓛ</sup> | 4                 | 105  | 103  | Data not available | 106  | 96   |
| PBA Maiden <sup>Ⓛ</sup>  | 4                 | 112  | 97   |                    | 74   | 102  |
| PBA Slasher <sup>Ⓛ</sup> | 4                 | 107  | 116  |                    | 98   | 103  |
| PBA Striker <sup>Ⓛ</sup> | 4                 | 112  | 115  |                    | 89   | 102  |
| KABULI                   |                   |      |      |                    |      |      |
|                          | Mean yield (t/ha) | 1.88 | 1.30 | 0.00               | 0.51 | 2.45 |
| Variety                  | No. trials        | 1    | 1    | 0                  | 1    | 1    |
| Genesis™ 090             | 4                 | 95   | 109  | Data not available | 117  | 97   |
| Genesis™ Kalkee          | 4                 | 90   | 83   |                    | 79   | 101  |
| PBA Magnus <sup>Ⓛ</sup>  | 4                 | 100  | 86   |                    | 97   | 99   |
| PBA Monarch <sup>Ⓛ</sup> | 4                 | 101  | 98   |                    | 84   | 109  |
| PBA Royal <sup>Ⓛ</sup>   | 4                 | 100  | 100  |                    | 95   | 97   |

NVT are not designed to allow comparisons of varieties between desi and kabuli chickpeas where they are not evaluated in the same trial.

**Table 3: Mid North desi and kabuli chickpea yield performance. NVT data 2016–20. Data for 2020 not available.**

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

|                          | Year              | 2016 | 2017 | 2018 | 2019 | 2020               |
|--------------------------|-------------------|------|------|------|------|--------------------|
| DESI                     |                   |      |      |      |      |                    |
|                          | Mean yield (t/ha) | 2.38 | 0.97 | 0.53 | 0.71 | 0.00               |
| Variety                  | No. trials        | 1    | 1    | 1    | 1    | 0                  |
| CBA Captain <sup>Ⓛ</sup> | 4                 | 113  | 105  | 109  | 100  | Data not available |
| PBA Maiden <sup>Ⓛ</sup>  | 4                 | 99   | 98   | 96   | 102  |                    |
| PBA Slasher <sup>Ⓛ</sup> | 4                 | 106  | 102  | 101  | 102  |                    |
| PBA Striker <sup>Ⓛ</sup> | 4                 | 96   | 103  | 99   | 105  |                    |
| KABULI                   |                   |      |      |      |      |                    |
|                          | Mean yield (t/ha) | 1.53 | 2.90 | 2.69 | 1.78 | 0.00               |
| Variety                  | No. trials        | 1    | 1    | 1    | 1    | 0                  |
| Genesis™ 090             | 4                 | 113  | 105  | 104  | 104  | Data not available |
| Genesis™ Kalkee          | 4                 | 91   | 97   | 89   | 90   |                    |
| PBA Magnus <sup>Ⓛ</sup>  | 4                 | 108  | 95   | 106  | 106  |                    |
| PBA Monarch <sup>Ⓛ</sup> | 4                 | 84   | 94   | 100  | 104  |                    |
| PBA Royal <sup>Ⓛ</sup>   | 4                 | 122  | 103  | 106  | 102  |                    |

NVT are not designed to allow comparisons of varieties between desi and kabuli chickpeas where they are not evaluated in the same trial.  
Chickpeas are no longer tested in NVT in Mid North; historical data shown above.



# LUPIN

By Amanda Pearce, SARDI and Matt Aubert, AGT

No new lupin varieties will be available to South Australian growers in 2024.

Narrow-leaved lupins (*Lupinus angustifolius*) are well suited to acidic and sandy soils. They continue to be grown in suitable areas as a key component of the farming system and cropping rotation.

## DOMESTIC MARKETING

Producers wanting to sell lupin grain into the Victorian and New South Wales markets must satisfy Anthracnose freedom, market access and transporting protocols. Anthracnose grain tests are the most common means of verifying Anthracnose freedom for marketing. Please refer to the most current information for biosecurity requirements in Victoria ([agriculture.vic.gov.au/biosecurity/moving-plants-and-plant-products/plant-quarantine-manual](https://agriculture.vic.gov.au/biosecurity/moving-plants-and-plant-products/plant-quarantine-manual)) and the restrictions that apply to exporting to NSW ([dpi.nsw.gov.au/biosecurity](https://dpi.nsw.gov.au/biosecurity)).

## LUPIN AGRONOMY

A common problem reported by SA growers is the poor emergence and establishment of lupin crops. This affects early vigour, but it also enhances any effects of pre-emergent herbicides. Growers are encouraged to seek germination tests on sowing seed so that seeding rates can be increased to compensate for poor germination rates or alternative seed sourced.

Manganese deficiency has been a problem for growers in recent seasons. Lupin plants have a high demand for manganese during seed development and maturity. Manganese deficiency can have a negative influence on seed development and cause seed to split or shrivel in pods. Deficient plants can be slow to ripen, remaining green for longer and causing difficulty at harvest. Manganese deficiency can be overcome by applying manganese. Timing is important and manganese should be applied at mid-flowering of the first lateral, by which time growth of the first pods on the main stem should be 2 to 2.5cm long.

Table 1: Disease resistance characteristics of lupin varieties.

| Variety                   | Anthracnose resistance | Cucumber mosaic virus resistance | Phomopsis (pod infection) resistance | Phomopsis (stem infection) resistance |
|---------------------------|------------------------|----------------------------------|--------------------------------------|---------------------------------------|
| Coyote <sup>db</sup>      | MRMS                   | MRMS                             | MRMS                                 | S                                     |
| Jenabillup <sup>db</sup>  | MS                     | MRMS                             | MR                                   | MS                                    |
| Lawler <sup>db</sup>      | MR                     | MRMS                             | MS                                   | MR                                    |
| Mandelup <sup>db</sup>    | MRMS                   | MRMS                             | S                                    | RMR                                   |
| PBA Barlock <sup>db</sup> | RMR                    | MR                               | MR                                   | MR                                    |
| PBA Bateman <sup>db</sup> | MRMS                   | MR                               | MS                                   | RMR                                   |
| PBA Gunyidi <sup>db</sup> | MRMS                   | MRMS                             | MRMS                                 | RMR                                   |
| PBA Jurien <sup>db</sup>  | RMR                    | MS                               | MR                                   | RMR                                   |

Source: NVT Disease Ratings, [nvt.grdc.com.au](https://nvt.grdc.com.au)

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



## LUPIN VARIETY NOTES

### PBA BARLOCK<sup>®</sup>

With improved metribuzin tolerance over the older varieties, PBA Barlock<sup>®</sup> allows growers to use this herbicide for weed control. PBA Barlock<sup>®</sup> is moderately resistant to lodging in high-rainfall regions and shows improved pod shatter resistance compared with Mandelup<sup>®</sup>. PBA Barlock<sup>®</sup> is licensed to Seednet. EPR \$2.50 ex-GST.

### PBA BATEMAN<sup>®</sup>

Released in the eastern states in the spring of 2017, it has similar agronomic features to PBA Jurien<sup>®</sup>. PBA Bateman<sup>®</sup> shows similar tolerance to metribuzin as PBA Jurien<sup>®</sup>, PBA Barlock<sup>®</sup> and PBA Gunyidi<sup>®</sup>. Seed is medium in size, similar to Mandelup<sup>®</sup>. PBA Bateman<sup>®</sup> is licensed to Seednet. EPR \$2.60 ex-GST.

### COYOTE<sup>®</sup>

Coyote<sup>®</sup> is the first narrow-leaf lupin variety released by AGT, coming out in WA in the spring of 2019. Coyote<sup>®</sup> has metribuzin tolerance similar to Mandelup<sup>®</sup>. It has similar maturity to PBA Barlock<sup>®</sup>, which is slightly later than PBA Jurien<sup>®</sup>. Coyote<sup>®</sup> is licensed to AGT. EPR \$3.00 ex-GST.

### PBA GUNYIDI<sup>®</sup>

PBA Gunyidi<sup>®</sup> was released in WA in September 2011 as a potential Mandelup<sup>®</sup> replacement with improved resistance to pod shattering. This feature may enable growers to harvest later without incurring significant losses. It flowers and matures slightly later than Mandelup<sup>®</sup>. PBA Gunyidi<sup>®</sup> is licensed to Seednet. EPR \$2.50 ex-GST.

### JENABILLUP<sup>®</sup>

Extensively evaluated in SA trials, Jenabillup<sup>®</sup> typically has an advantage over Mandelup<sup>®</sup> in regions with a longer growing season. In these regions, its extended flowering window can assist with increased yield. Jenabillup<sup>®</sup> flowers slightly later and for a longer period than Mandelup<sup>®</sup>, making it less suitable to crop-topping. Jenabillup<sup>®</sup> does not have tolerance to metribuzin herbicide. Jenabillup<sup>®</sup> is licensed to Seednet. EPR \$2.30 ex-GST.

### PBA JURIE<sup>®</sup>

Released in WA in the spring of 2015, PBA Jurien<sup>®</sup> is tolerant to metribuzin. It has similar agronomic characteristics to PBA Gunyidi<sup>®</sup>, flowering slightly earlier. It is like Mandelup<sup>®</sup> in height and can be moderately susceptible to lodging in high-rainfall regions. PBA Jurien<sup>®</sup> has medium to large seed, like Mandelup<sup>®</sup>, and the alkaloid content is similar to PBA Gunyidi<sup>®</sup>. PBA Jurien<sup>®</sup> is licensed to Seednet. EPR \$2.50 ex-GST.

### LAWLER<sup>®</sup>

Lawler<sup>®</sup> is an elite yielding alternative to Coyote<sup>®</sup> and PBA Jurien<sup>®</sup>. It is AGT's second narrow-leaf lupin variety, released in the spring of 2023. Lawler<sup>®</sup> has metribuzin tolerance similar to PBA Jurien<sup>®</sup>. It has a similar to slightly quicker maturity to Mandelup<sup>®</sup>. Lawler<sup>®</sup> has reduced risk of seed splitting compared with PBA Jurien<sup>®</sup>. Lawler<sup>®</sup> is licensed to AGT. EPR \$4.00 ex-GST.

### MANDELUP<sup>®</sup>

Mandelup<sup>®</sup> is an established variety widely adapted to SA conditions. It is tall with good early vigour and very early flowering and maturity. This makes it well suited to low to medium-rainfall districts in SA while still yielding well in higher-rainfall areas. Its early maturity makes it suitable for crop-topping, with careful attention to correct timing. It can suffer pod loss/partial pod shattering with delayed harvest, and seed quality can suffer if wet conditions occur during harvest. Mandelup<sup>®</sup> is licensed to Seednet and marketed by Barenbrug. EPR \$2.30 ex-GST.

**Table 2: Lower Eyre Peninsula lupin yield performance. NVT data 2018–22. Data from 2021 not available.**

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

| Variety                  | Year              | 2018 | 2019 | 2020 | 2021               | 2022 |
|--------------------------|-------------------|------|------|------|--------------------|------|
|                          | Mean yield (t/ha) | 3.08 | 1.51 | 2.02 | 0.00               | 3.20 |
|                          | No. trials        | 1    | 1    | 1    | 0                  | 1    |
| Coyote <sup>Ⓛ</sup>      | 3                 | 105  | –    | 97   | Data not available | 106  |
| Jenabillup <sup>Ⓛ</sup>  | 4                 | 95   | 83   | 105  |                    | 99   |
| Jindalee                 | 3                 | –    | 83   | 80   |                    | 79   |
| Lawler <sup>Ⓛ</sup>      | 2                 | –    | –    | 96   |                    | 105  |
| Mandelup <sup>Ⓛ</sup>    | 3                 | –    | 88   | 98   |                    | 104  |
| PBA Barlock <sup>Ⓛ</sup> | 3                 | –    | 72   | 100  |                    | 105  |
| PBA Bateman <sup>Ⓛ</sup> | 4                 | 101  | 91   | 104  |                    | 105  |
| PBA Gunyidi <sup>Ⓛ</sup> | 3                 | –    | 97   | 107  |                    | 100  |
| PBA Jurien <sup>Ⓛ</sup>  | 3                 | –    | 75   | 101  |                    | 110  |
| Wonga                    | 4                 | 84   | 76   | 95   |                    | 92   |

– denotes no data available.

**Table 3: Mid North lupin yield performance. NVT data 2018–22.**

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

| Variety                  | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------|-------------------|------|------|------|------|------|
|                          | Mean yield (t/ha) | 1.35 | 1.52 | 2.12 | 1.38 | 4.74 |
|                          | No. trials        | 1    | 1    | 1    | 1    | 1    |
| Coyote <sup>Ⓛ</sup>      | 4                 | 117  | –    | 91   | 110  | 105  |
| Jenabillup <sup>Ⓛ</sup>  | 5                 | 107  | 102  | 102  | 90   | 101  |
| Jindalee                 | 4                 | –    | 73   | 101  | 98   | 87   |
| Lawler <sup>Ⓛ</sup>      | 3                 | –    | –    | 89   | 110  | 105  |
| Mandelup <sup>Ⓛ</sup>    | 4                 | –    | 98   | 89   | 104  | 106  |
| PBA Barlock <sup>Ⓛ</sup> | 4                 | –    | 98   | 87   | 99   | 109  |
| PBA Bateman <sup>Ⓛ</sup> | 5                 | 118  | 104  | 95   | 99   | 105  |
| PBA Gunyidi <sup>Ⓛ</sup> | 4                 | –    | 105  | 106  | 92   | 99   |
| PBA Jurien <sup>Ⓛ</sup>  | 4                 | –    | 101  | 82   | 104  | 113  |
| Wonga                    | 5                 | 117  | 89   | 99   | 92   | 97   |

– denotes no data available.

**Table 4: Murray Mallee lupin yield performance. NVT data 2018–22. Data for 2018, 2019 and 2021 not available.**

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

| Variety                  | Year              | 2018               | 2019               | 2020 | 2021               | 2022 |
|--------------------------|-------------------|--------------------|--------------------|------|--------------------|------|
|                          | Mean yield (t/ha) | 0.00               | 0.00               | 2.14 | 0.00               | 3.79 |
|                          | No. trials        | 0                  | 0                  | 1    | 0                  | 1    |
| Coyote <sup>Ⓛ</sup>      | 2                 | Data not available | Data not available | 96   | Data not available | 107  |
| Jenabillup <sup>Ⓛ</sup>  | 2                 |                    |                    | 105  |                    | 100  |
| Jindalee                 | 2                 |                    |                    | 93   |                    | 77   |
| Lawler <sup>Ⓛ</sup>      | 2                 |                    |                    | 96   |                    | 106  |
| Mandelup <sup>Ⓛ</sup>    | 2                 |                    |                    | 98   |                    | 106  |
| PBA Barlock <sup>Ⓛ</sup> | 2                 |                    |                    | 100  |                    | 108  |
| PBA Bateman <sup>Ⓛ</sup> | 2                 |                    |                    | 102  |                    | 107  |
| PBA Gunyidi <sup>Ⓛ</sup> | 2                 |                    |                    | 105  |                    | 100  |
| PBA Jurien <sup>Ⓛ</sup>  | 2                 |                    |                    | 99   |                    | 114  |
| Wonga                    | 2                 |                    |                    | 100  |                    | 92   |

**Table 5: South East lupin yield performance. NVT data 2018–22.**

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

| Variety                   | Year              | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------|------|------|------|------|------|
|                           | Mean yield (t/ha) | 1.39 | 2.31 | 2.86 | 1.66 | 2.07 |
|                           | No. trials        | 1    | 2    | 3    | 2    | 3    |
| Coyote <sup>db</sup>      | 9                 | 125  | –    | 101  | 101  | 85   |
| Jenabillup <sup>db</sup>  | 11                | 98   | 101  | 97   | 103  | 132  |
| Jindalee                  | 10                | –    | 88   | 70   | 81   | 85   |
| Lawler <sup>db</sup>      | 8                 | –    | –    | 98   | 100  | 86   |
| Mandelup <sup>db</sup>    | 10                | –    | 91   | 94   | 102  | 105  |
| PBA Barlock <sup>db</sup> | 10                | –    | 89   | 91   | 105  | 128  |
| PBA Bateman <sup>db</sup> | 11                | 119  | 98   | 101  | 105  | 116  |
| PBA Gunyidi <sup>db</sup> | 10                | –    | 106  | 104  | 104  | 120  |
| PBA Jurien <sup>db</sup>  | 10                | –    | 87   | 94   | 107  | 124  |
| Wonga                     | 11                | 95   | 94   | 84   | 95   | 120  |

– denotes no data available.

# VETCH

By Stuart Nagel, Angus Kennedy and Gregg Kirby, SARDI

Vetch is a multipurpose species grown mostly as a disease break crop, in rotation with cereals, in a wide range of soil types from light sands to heavier clay soils. The versatility of common vetch varieties (Languedoc, Blanchefleur, Studenica<sup>®</sup>, Morava, Rasina, Volga<sup>®</sup>, Timok<sup>®</sup> and Cummins) allows cropping for grain or hay, early grazing as green pasture, dry grazing or green manure production.

Grain or multipurpose vetches are grown in the lower to mid-rainfall cereal areas of southern Australia, and their grain yields have been similar to field pea in these areas. Note that common vetch grain is not used for human consumption.

Grain from Morava, Studenica<sup>®</sup>, Rasina, Volga<sup>®</sup> and Timok<sup>®</sup> can be used without limit to feed all ruminants and up to 20 per cent in the diet of pigs. These five varieties possess less toxin in grain (<0.65 per cent) compared with Blanchefleur (0.95 per cent) and Languedoc (1.65 per cent).

Forage vetches are used for hay, green manure or mid to late-winter feed for grazing. There is a purple vetch variety Popany (*Vicia benghalensis*) and woolly pod vetch varieties (*Vicia villosa*) Namoi, Capello, Haymaker and RM4<sup>®</sup>. Forage vetches can grow successfully in areas of 400 to 650mm of annual rainfall. Grain from woolly pod vetch varieties CANNOT be used to feed any livestock.

Vetch is valued for its benefits to subsequent cereal and oilseed crops in the rotation; these benefits are usually greater than from other pulses, particularly in lower-rainfall areas. On sandy soils, vetches provide better soil protection than peas and better stubble retention.

## DISEASE MANAGEMENT

A successful integrated disease management plan will include paddock rotation, good agronomy, selecting more resistant varieties, seed treatments, in-crop monitoring, fungicide applications and rotation of fungicide actives. The other important factor is the end-use of a vetch crop (grain, hay, feed, manure etc.); it is important to factor this in when assessing the cost of disease management strategies.

Morava, Studenica<sup>®</sup>, Rasina, Volga<sup>®</sup> and Timok<sup>®</sup> are resistant to rust and are the preferred varieties for grain in areas prone to rust infections. Disease management is critical when growing a vetch crop – regardless of the end-use – and, where possible, disease-resistant varieties should be planted as a preference. Care must be taken when growing rust-susceptible varieties as grazing or feeding hay/silage from rust-infected plants may induce abortions in pregnant livestock.

While it is usually not economically viable to use fungicides for rust on vetch, it may be necessary where rust-susceptible varieties are to be used as feed.

Ascochyta blight occurs in earlier stages of a vetch crop and can reduce grain and dry matter production. This disease is generally less severe than Botrytis grey mould (BGM), which can develop high levels of infestation in cool/wet growing seasons. In 2020, Agriculture Victoria conducted the first disease screening for Botrytis grey mould and Ascochyta blight in vetch, the first in many years. The vetch resistance ratings were updated based on these screening results. Vetch is not part of the NVT ratings process, but the same approach was used in the vetch ratings as is used for NVT ratings in other pulse crops.

When selecting a vetch variety, growers also need to consider their individual farm and paddock situations and, most importantly, the intended end-use for the crop. Selections should be made using all of the available information.

## VETCH VARIETY NOTES

### COMMON VETCH (*VICIA SATIVA*)

#### STUDENICA<sup>♢</sup>

Studenica<sup>♢</sup> is a new, white-flowering variety of common vetch that became commercially available for sowing in 2021. It has the earliest flowering and maturity of the common vetches, flowering in approximately 85 to 90 days. It is rust resistant but susceptible to Botrytis, like other common vetch varieties. Studenica<sup>♢</sup> has toxin/anti-nutritional (BCN) levels similar to Morava.

The advantage Studenica<sup>♢</sup> has over other varieties is its superior winter growth and vigour combined with good frost tolerance, which enables it to put on more bulk through the cold parts of winter and therefore provide fodder earlier in the season. It is particularly well suited to low-rainfall, marginal cropping/mixed farming systems requiring early feed to fill the winter feed gap or late planting for spring fodder and hay. It offers a more reliable legume option in mixed enterprises in marginal cropping environments.

Studenica<sup>♢</sup> has grain yields comparable with Timok<sup>♢</sup> and Volga<sup>♢</sup> in most environments. Its early growth and vigour set it apart, particularly in cold environments, as demonstrated in Table 7. It is a multipurpose variety – it can be used for grain, hay/silage, grazing or green/brown manure. It can be successfully grown in many Australian soil types, from non-wetting sand to heavy clay loam with pH 5.8 to 9.4, like other common vetch varieties.

Studenica<sup>♢</sup> was bred, developed and trialled by the SARDI National Vetch Breeding Program in conjunction with GRDC and SAGIT and it is available from S&W Seed Company.

#### LANGUEDOC

Languedoc is an early flowering and maturing variety recommended for low-rainfall areas; however, it can lodge severely, making harvest difficult under certain conditions. Languedoc generally exceeds Blanchefleur's grain yield in areas with less than 350mm rainfall. Its hard seed content is generally around five to 10 per cent and it is highly susceptible to rust. Languedoc grains possess one to 1.6 per cent anti-nutritional compound (BCN).

#### BLANCHEFLEUR

Prior to the release of Morava, Blanchefleur was the preferred grain variety in areas above 350mm rainfall in SA. Blanchefleur has mid-maturity, white flowers and reddish brown/mottled seed with orange cotyledons. It is very susceptible to rust.

Blanchefleur is well suited to medium to high-rainfall areas where rust is not a regular problem. Both vetch and lentils are on the prescribed grain list of the Australian Quarantine and Inspection Service due to the vetch–lentil substitution issue. This has meant export markets of orange cotyledon varieties such as Blanchefleur are limited to small bird seed markets in Europe and seed for grazing and green manure crops. Blanchefleur grains possess 0.9 to 1.6 per cent anti-nutritional BCN.

#### CUMMINS

Cummins is an early to mid-maturing, white-flowering variety selected from Languedoc. It is well adapted to medium to low-rainfall areas where it generally yields higher than Blanchefleur. Cummins is susceptible to rust and moderately susceptible to Ascochyta blight. It possesses a similar percentage of BCN to Blanchefleur.

#### MORAVA

Morava is a rust-resistant, late-flowering vetch variety with 100 per cent soft seeds, developed in 1998 by the Australian National Vetch Breeding Program (ANVBP) at SARDI. Grain yield is superior to other vetches in the high-rainfall areas, and to Blanchefleur, Languedoc and Cummins in all other areas in the presence of rust. It is larger seeded and more resistant to shattering than other vetch varieties.

Morava's BCN levels are 0.65 per cent, which is 50 per cent lower than Blanchefleur and Languedoc. It produces higher herbage yields than all other common vetch varieties. It is later flowering and maturing than Blanchefleur and grain yield will be reduced in environments with dry finishes. Morava is susceptible to Ascochyta blight and very susceptible to Botrytis because it produces very high biomass in wet/cool zones.

Morava can be sourced from Barenbrug Australia.

## RASINA

Rasina is a soft-seeded vetch developed in 2006 by the ANVBP. Rasina replaces Languedoc, Blanchefleur and Cummins in low to medium-rainfall areas for grain production. Rasina is five to 10 days earlier to flower than Blanchefleur and 10 to 15 days earlier than Morava. Rasina has a significant advantage over Languedoc, Blanchefleur and Cummins in its resistance to rust and it is slightly more tolerant to Ascochyta blight and Botrytis.

Rasina is not expected to replace Morava in higher-rainfall districts or for hay production. The level of anti-nutritional factors in Rasina is between 0.6 per cent and 0.8 per cent compared with 0.9 per cent to 1.6 per cent in Blanchefleur and Languedoc, respectively. Rasina possesses a distinctive, uniform, dark-brown speckled seed coat with dark beige cotyledons.

Rasina can be sourced from Barenbrug Australia.

## VOLGA<sup>®</sup>

Volga<sup>®</sup> was developed in 2012 by the ANVBP at SARDI. It is a high-yielding grain/seed variety for low and mid-rainfall areas. It is particularly suited to shorter-season areas where the growing season finishes sharply; dry periods in September and October are common in many low to mid-rainfall areas.

Volga<sup>®</sup> has good initial establishment, is rust resistant, and is earlier flowering and maturing than Blanchefleur and Rasina. It will improve the reliability and economic production of vetch in crop rotations, especially in low and mid-rainfall areas of 330 to 380mm a year.

Volga<sup>®</sup> has high grain and herbage yields and is well adapted to all areas where vetch is currently grown. Its early flowering and maturity characteristics make it well suited to situations where the season finishes sharply.

Volga<sup>®</sup> can be successfully grown in many Australian soil types, from non-wetting sand to heavy clay loam with pH 5.8 to 9.4, like other common vetch varieties. It is moderately susceptible to Ascochyta blight, whereas Morava is susceptible. The early maturity of Volga<sup>®</sup> may limit yield potential relative to longer growing season varieties, such as Morava, in high-rainfall areas.

Toxin levels in grain are around 0.54 per cent, lower than Morava at 0.65 per cent and Blanchefleur at 0.95 per cent. Seed size is very similar to Morava (100 seed weight, 7.82 grams).

Volga<sup>®</sup> can be sourced from Barenbrug Australia.

## TIMOK<sup>®</sup>

Timok<sup>®</sup> was bred to complement Morava in mid to high-rainfall areas for grain/seed and especially for hay/silage production. Timok<sup>®</sup> yielded more grain than Rasina, Morava and Blanchefleur – by 9 per cent, 18 per cent and 21 per cent, respectively – over five years at five sites in SA (Table 4).

Timok<sup>®</sup> has better initial establishment than Morava and will improve the reliability and economics of vetch production in crop rotations, especially in mid and high-rainfall areas, 350 to 450mm a year. Morava will remain the preferred variety for hay/silage in rainfall areas with greater than 450mm a year.

Timok<sup>®</sup> is high yielding, highly rust resistant and susceptible to Ascochyta blight and Botrytis. It has good early establishment and is soft seeded. Timok<sup>®</sup> matures between Rasina and Morava (approximately 105 days from seeding to full flowering).

Timok<sup>®</sup> is very well adapted for grain production in rainfall areas greater than 380mm a year, and dry matter production is similar to Morava in high-rainfall regions (greater than 400mm a year). In low to medium-rainfall regions (330 to 380mm a year), dry matter production Timok<sup>®</sup> is 19 per cent higher than Morava. Timok<sup>®</sup> is a multipurpose variety – it can be used for grain, hay/silage, grazing or green/brown manure.

Toxin levels in Timok<sup>®</sup> grain are around 0.57 per cent. Seed weight is 6.88g per 100 seeds, similar to Rasina at 6.92g per 100 seeds. Timok<sup>®</sup> was developed in 2012 by the ANVBP at SARDI. It can be sourced from S&W Seed Company.

## HERBICIDE TOLERANCE

There are no differences between common vetch varieties to registered herbicides for control of broadleaf weeds and no differences between varieties to registered herbicides for grass weed control.



## PURPLE VETCH

### POPANY

Popany is a purple vetch (*Vicia benghalensis*) variety. Grain yield is significantly lower than for common vetch. Seeds are smaller than common vetch seed, therefore the seeding rates are lower at approximately 30 to 35 kilograms per hectare.

Grain from this variety can be used as a bird feed in mixtures with other recommended grains. Popany is a late-maturing variety, requiring more than 125 days from seeding to podding. It is a good variety in mid to high-rainfall areas for hay/silage. Popany possesses five to 10 per cent hard seeds. This variety is resistant to rust but susceptible to Ascochyta and chocolate spot. It has a black seed coat with distinctive white hilum.

## WOOLLY POD VETCHES

### CAPELLO AND HAYMAKER

These woolly pod vetches (*Vicia villosa* subsp. *dasycarpa*) are lower in grain yield compared with common vetches but are much higher in dry matter production in rainfall areas greater than 450mm per year. Grain from these varieties CANNOT be used to feed any livestock.

Also, these varieties can only be grazed from the 10-node stage to podding stage. It is not recommended that grazing occur earlier or once plants begin to develop seeds in pods. These two varieties are very good for hay/silage production in areas with higher than 400mm of annual rainfall.

Haymaker and Capello are selected soft-seed varieties from Namoi. In the past few years, these two varieties have become prone to setting hard (dormant) seeds. Both varieties are owned by Barenbrug Australia.

### RM4<sup>®</sup>

RM4<sup>®</sup> (*Vicia villosa* subsp. *eriocarpa*) was selected by ANVBP at SARDI. It is a high producer of dry matter, has very good early establishment, is moderately resistant to Ascochyta blight, and is susceptible to Botrytis. It is soft-seeded (greater than 94 per cent), emerges in 15 to 20 days and is earlier in maturity by 10 to 15 days compared with Haymaker or Capello.

RM4<sup>®</sup> is significantly higher in dry matter production in mid to low-rainfall areas (less than 380mm a year) compared with Haymaker or Capello. RM4<sup>®</sup> is also suitable for higher-rainfall areas (400 to 650mm a year).

RM4<sup>®</sup> is a multipurpose variety that can be used for hay/silage, grazing, green/brown manure or for seed. It can be successfully grown, like other woolly pod varieties, in many Australian soil types. Like other vetches, it is excellent for soil fertility/structure and nitrogen fixation. It can be grazed from 10 nodes up to the end of flowering and can be used for hay/silage production, where cutting in full flowering provides the best balance of feed value. RM4<sup>®</sup> performs better in grain production than other woolly pod varieties when the season finishes sharply.

RM4<sup>®</sup> is not sensitive to any herbicides registered for use in woolly pod vetch varieties. It is susceptible in early growth stages to redlegged earth mite and lucerne flea, like other woolly pod vetch varieties. RM4<sup>®</sup> is also susceptible to blue-green and cowpea aphids from early growth through to pod maturity, as well as to native budworm during pod formation and filling.

Grain from this variety, like other woolly pod vetches, CANNOT be used to feed any livestock. RM4<sup>®</sup> can be sourced from Barenbrug Australia.



**Table 1: Agronomic characteristics and disease ratings of vetch varieties.**

| Variety   | Maturity   | Yield potential |            | Flower colour | % of           |            | Disease reaction  |                        |                       |
|---|------------|-----------------|------------|---------------|----------------|------------|-------------------|------------------------|-----------------------|
|   |            | Grain           | Dry matter |               | Pod shattering | Hard seeds | Rust <sup>1</sup> | Ascochyta <sup>2</sup> | Botrytis <sup>2</sup> |
| COMMON VETCH ( <i>VICIA SATIVA</i> )                                  |            |                 |            |               |                |            |                   |                        |                       |
| Blanchefleur  | Mid        | High            | Mod        | White         | 5–10           | 5–10       | VS                | MS                     | S                     |
| Morava  | Late       | High            | High       | Purple        | 0              | 0          | R                 | MS (P)                 | VS (P)                |
| Rasina  | Early–mid  | High            | Mod        | Purple        | 0–2            | 0          | R                 | S (P)                  | S (P)                 |
| Studenica <sup>Ⓛ</sup>  | Very early | High            | High       | White         | 0–2            | 0          | R                 | MR (P)                 | S (P)                 |
| Timok <sup>Ⓛ</sup>  | Mid        | High            | Very high  | Purple        | 0–2            | 0–2        | R                 | S (P)                  | S (P)                 |
| Volga <sup>Ⓛ</sup>  | Early      | Very high       | High       | Purple        | 0–2            | 2–5        | R                 | MRMS (P)               | S (P)                 |
| PURPLE VETCH ( <i>VICIA BENGHALENSIS</i> SUBSP. <i>BENGHALENSIS</i> ) |            |                 |            |               |                |            |                   |                        |                       |
| Popany  | Very late  | Low             | High       | Purple        | 20–30          | 5–10       | R                 | MR (P)                 | S (P)                 |
| WOOLLY POD VETCH ( <i>VICIA VILLOSA</i> SUBSP.)                       |            |                 |            |               |                |            |                   |                        |                       |
| Capello   | Late       | Low             | Very high  | Purple        | 5–10           | 15–20      | R                 | MR (P)                 | S (P)                 |
| Haymaker  | Late       | Low             | Very high  | Purple        | 5–10           | 20–30      | R                 | S                      | VS                    |
| RM4 <sup>Ⓛ</sup>  | Mid        | Moderate        | Very high  | Purple        | 2–5            | 2–5        | R                 | MR (P)                 | S (P)                 |

Source: Stuart Nagel, SARDI, Agriculture Victoria Pulse Disease Guide (2022)

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

(P) = provisional rating and subject to change when additional data becomes available.

<sup>1</sup> Indicates breeding company data. <sup>2</sup> Vetch is not included in the NVT; Ascochyta and Botrytis grey mould ratings are from Agriculture Victoria in 2020.**Table 2: Grain and dry matter yield for common vetch varieties.**

| Variety                | Grain yield (t/ha) | % of Volga <sup>Ⓛ</sup> | Dry matter yield (t/ha) | % of Morava |
|------------------------|--------------------|-------------------------|-------------------------|-------------|
| Studenica <sup>Ⓛ</sup> | 1.66               | 86                      | 4.73                    | 92          |
| Rasina                 | 1.79               | 92                      | –                       | –           |
| Morava                 | 1.59               | 82                      | 5.14                    | 100         |
| Volga <sup>Ⓛ</sup>     | 1.94               | 100                     | 4.82                    | 94          |
| Timok <sup>Ⓛ</sup>     | 1.93               | 100                     | 4.92                    | 96          |
| <b>Mean yield</b>      | <b>1.78</b>        |                         | <b>4.90</b>             |             |

This table has been compiled from independent trials with a five-year average over five different trial sites in South Australia.

– denotes no data available.

**Table 3: Dry matter yield for woolly pod and purple vetch varieties.**

| Variety                 | Dry matter (t/ha) | % of Capello |
|-------------------------|-------------------|--------------|
| <b>WOOLLY POD VETCH</b> |                   |              |
| Capello                 | 5.7               | 100          |
| RM4 <sup>Ⓛ</sup>        | 5.9               | 104          |
| <b>Mean yield</b>       | <b>5.8</b>        |              |
| <b>PURPLE VETCH</b>     |                   |              |
| Popany                  | 5.28 (2009–12)    | 85           |

**Table 4: Hay yields (t/ha) of common vetch varieties from low-rainfall cropping environments.**

| Variety                | 2014 | 2015 | 2016 | 3-year average |
|------------------------|------|------|------|----------------|
| Studenica <sup>Ⓛ</sup> | 2.24 | 3.09 | 2.19 | 2.51           |
| Rasina <sup>Ⓛ</sup>    | –    | 2.86 | 2.21 | 2.54           |
| Timok <sup>Ⓛ</sup>     | 2.13 | 3.15 | 2.08 | 2.45           |
| Volga <sup>Ⓛ</sup>     | 2.26 | 3.06 | 2.45 | 2.59           |

Data compiled from independent trials over three years at four different sites in South Australia.

– denotes no data available.

**Table 5: Plant density and recommended seeding rates for vetch.**

| End-use      | Common vetch varieties              |                        | Woolly pod vetch varieties          |                        | Purple vetch varieties              |                        |
|--------------|-------------------------------------|------------------------|-------------------------------------|------------------------|-------------------------------------|------------------------|
|              | Plant density<br>(plants per sq.m.) | Sowing rate<br>(kg/ha) | Plant density<br>(plants per sq.m.) | Sowing rate<br>(kg/ha) | Plant density<br>(plants per sq.m.) | Sowing rate<br>(kg/ha) |
| Grain        | 40–60                               | 40–50                  | 40–50                               | 25–40                  | 40–50                               | 25–40                  |
| Hay/silage   | 50–70                               | 50–60                  | 50–60                               | 30–45                  | 50–60                               | 30–45                  |
| Grazing      | 50–70                               | 50–60                  | 50–60                               | 30–45                  | 50–60                               | 30–45                  |
| Green manure | 60–70                               | 55–65                  | 60–70                               | 45–50                  | 50–60                               | 30–45                  |

# NOTES

|  |           |
|--|-----------|
|  | INTRO     |
|  | WHEAT     |
|  | BARLEY    |
|  | OAT       |
|  | CANOLA    |
|  | FABA BEAN |
|  | LENTIL    |
|  | FIELD PEA |
|  | CHICKPEA  |
|  | LUPIN     |
|  | VETCH     |
|  | NOTES     |





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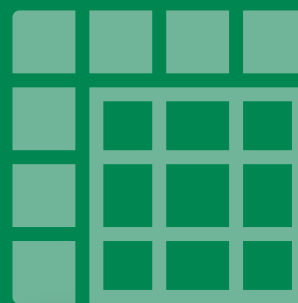
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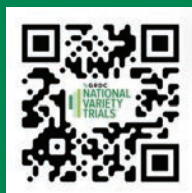
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