

2021 VICTORIAN CROP SOWING GUIDE



GRDC

GRAINS RESEARCH
& DEVELOPMENT
CORPORATION

VICTORIA
OCTOBER 2020



GRDC
NATIONAL
VARIETY
TRIALS™

AGRICULTURE VICTORIA

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

grdc.com.au



Title: 2021 Victorian Crop Sowing Guide

This publication summarises information on current varieties of the major winter crops grown in Victoria. Local advisers are also a key resource for information relevant to individual localities. This publication aims to prompt growers to ask, 'Am I growing the best variety for my situation?' Use it as a guide for discussion with consultants, advisers and marketing agents.

Author:

Sarah Brown (Agriculture Victoria)

Acknowledgements:

We would like to thank all those who provided information and assistance with the development of the 2021 Victorian Crop Sowing Guide, including Pippa Auld, Luise Fanning and all the reviewers for their contributions.

ISSN: 1835-5978 (print)
1839-8804 (online)

Published: October 2020

Copyright:

© Department of Jobs, Precincts and Regions and Grains Research and Development Corporation.

This book is copyright. Except as permitted under the *Australian Copyright Act 1968* (Commonwealth) and subsequent amendments, no part of this publication may be reproduced, stored or transmitted in any form or by any means, electronic or otherwise, without the specific written permission of the copyright owner.

GRDC contact details:

Ms Maureen Cribb
Integrated Publications Manager
PO Box 5367
KINGSTON ACT 2604

Email: maureen.cribb@grdc.com.au

Design and production:

Coretext, www.coretext.com.au

COVER: Field pea crop, Nhill, Victoria.

PHOTO: Joshua Fanning (Agriculture Victoria)

ACCESSIBILITY: If you would like to receive this publication in an alternative format, please telephone the Customer Service Centre on 13 61 86 or contact the National Relay Service on 133 677, www.relayservice.com.au. This document is also available on the internet at <https://grdc.com.au/resources-and-publications/all-publications/crop-variety-guides>.

CAUTION: RESEARCH ON UNREGISTERED AGRICULTURAL CHEMICAL USE

Any research with unregistered agricultural chemicals or of unregistered products reported in this document does not constitute a recommendation for that particular use by the authors or the authors' organisations. All pesticide applications must accord with the currently registered label for that particular pesticide, crop, pest and region.

DISCLAIMER: This publication has been prepared in good faith on the basis of information available at the date of publication without any independent verification. The State of Victoria represented by the Department of Jobs, Precincts and Regions and the Grains Research and Development Corporation does not guarantee or warrant the accuracy, reliability, completeness or currency of the information in this publication nor its usefulness in achieving any purpose.

Readers are responsible for assessing the relevance and accuracy of the content of this publication. The State of Victoria represented by the Department of Jobs, Precincts and Regions and the Grains Research and Development Corporation will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information in this publication.

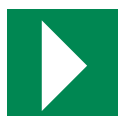
Products may be identified by proprietary or trade names to help readers identify particular types of products but this is not, and is not intended to be, an endorsement or recommendation of any product or manufacturer referred to. Other products may perform as well or better than those specifically referred to.

This work is licensed under a Creative Commons Attribution 3.0 Australia licence. You are free to reuse the work under that licence, on the condition that you credit the State of Victoria as author. The licence does not apply to any images, photographs or branding, including the Victorian Coat of Arms, the Victorian Government logo, the Department of Jobs, Precincts and Regions logo and the Agriculture Victoria logo.

To view a copy of this licence, visit <http://creativecommons.org/licenses/by/3.0/au/deed.en>



TABLE OF CONTENTS



This guide can be downloaded to your computer or tablet at:
www.grdc.com.au/NVT-Victorian-Winter-Crop-Summary
Remember to update it each November.

INTRODUCTION	5
WHEAT	7
BARLEY	25
OAT	37
TRITICALE	43
CANOLA	47
FIELD PEA	61
LENTIL	67
FABA BEAN	73
LUPIN	79
CHICKPEA	85
VETCH	91
NOTES	96

THE VICTORIAN CROP SOWING GUIDE

The *Victorian Crop Sowing Guide* outlines information on current varieties of the major winter crops grown in Victoria. The publication aims to prompt growers to ask, 'Am I growing the best variety for my situation?'

The *Victorian Crop Sowing Guide* is compiled by Agriculture Victoria, with sources of additional information listed in each chapter. Local advisers are also a key resource for information relevant to individual localities. Growers are encouraged to use this publication as a guide for discussion with consultants, advisers and marketing agents.

The sowing guide is published every spring, a timely release to assist growers in making variety choices for the next season. It will be important for growers and advisors to review disease resistance ratings in March 2021 in the cereal and pulse disease guides to ensure they know the current resistance ratings of varieties. The latest 2020 National Variety Trials (NVT) data will also be available early in 2021 via the NVT website, the Long Term Yield Reporting tool and in the NVT Harvest reports.

The *Victorian Crop Sowing Guide* is a joint investment between the Grains Research and Development Corporation (GRDC) and Agriculture Victoria. Thank you to GRDC and all contributors for making this publication available to Victoria.

INTERPRETING CEREAL RESISTANCE CLASSIFICATIONS

Below is an explanation of the resistance ratings used in this guide for foliar diseases and how they should be interpreted.

- R** Resistant: the disease will not multiply or cause any damage on this variety.
- MR** Moderately resistant: the disease may be visible and will multiply slightly, but will not cause significant loss.
- MS** Moderately susceptible: the disease may cause losses up to 15 per cent or more in very severe cases.
- S** Susceptible: the disease can be severe on this variety and losses of 15 to 50 per cent can occur.
- VS** Very susceptible: this variety should not be grown in areas where a disease is likely to be a problem. Losses greater than 50 per cent are possible and the build-up of inoculum will create problems for other growers.

INTERPRETING PULSE RESISTANCE CLASSIFICATIONS

These classifications are only a guide and yield losses will depend on the environment and seasonal conditions. No pulse crops or varieties are immune to disease and fungicide application may be required under severe disease pressure. Below is an explanation of the resistance ratings used in this guide for foliar diseases and how they should be interpreted.

- R** Resistant: no symptoms visible. No fungicides are required.
- RMR** Resistant to moderately resistant: the disease may be visible but will not cause significant plant damage or loss. However, under extreme disease pressure or in environmental conditions highly favourable to disease, fungicide applications may be required, for example, to prevent seed staining.
- MR** Moderately resistant: the disease may be visible but will not cause significant plant damage or loss. However, under high disease pressure or in environmental conditions highly favourable to disease, fungicide applications may be required, for example, to prevent seed staining.
- MRMS** Moderately resistant to moderately susceptible: the disease symptoms are moderate and may cause some yield and/or seed quality losses in conducive conditions. Fungicide applications, if applicable, may be required to prevent yield loss and seed staining.
- MS** Moderately susceptible: disease symptoms are moderate to severe and will cause significant yield and seed quality loss in the absence of fungicides in conducive seasons, but not complete crop loss.
- S** Susceptible: the disease is severe and will cause significant yield and seed quality loss, including complete crop loss in the absence of fungicides, in conducive conditions.
- VS** Very susceptible: growing this variety in areas where a disease is likely to be present is very high risk. Significant yield and seed quality losses, including complete crop loss, can be expected without control and the increase in inoculum may create problems for other growers.

NEMATODE RESISTANCE RATINGS

Below is an explanation of the resistance ratings used in this guide for nematodes for both cereals and pulses and how they should be interpreted.

- R** Resistant: nematode numbers will decrease when this variety is grown.
- MR** Moderately resistant: nematode numbers will slightly decrease when this variety is grown.
- MS** Moderately susceptible: nematode numbers will slightly increase when this variety is grown.
- S** Susceptible: nematode numbers will increase greatly in the presence of this variety.
- VS** Very susceptible: a large increase in nematode numbers can occur when this variety is grown, and this will cause problems to a following intolerant crop.

These classifications are only a guide and yield losses will depend on the environment and seasonal conditions.

DISEASE RATING COLOUR RANGE

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

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.

INTRODUCTION

NATIONAL VARIETY TRIALS (NVT)

The variety trials presented in this book are sourced from the NVT program. In Victoria, trials are fully funded by GRDC. In 2020, field trial management was contracted to three service providers: Kalyx, Birchip Cropping Group and Southern Farming Systems.

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

Conducted to a set of predetermined protocols, 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.

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.

NVT HARVEST REPORTS

The NVT harvest reports are a valuable extension to the *Victorian Crop Sowing Guide* and will include the latest 2020 yield reports and disease reactions. The NVT harvest reports will be released soon after results are released in February 2021 and will be available on [the GRDC website](#).

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* and that any breaching of PBR law is punishable by a maximum \$50,000 fine for each offence'.

END POINT ROYALTIES (EPRs)

EPRs payable for 2020-21 are quoted from www.varietycentral.com.au and are quoted 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 2021-22 harvest will become available early in 2021 on the Variety Central website.

SELECTION CRITERIA

When selecting a variety, growers need to make their selection based on the available information, including yield, crop quality attributes, disease and pest resistance, individual farm and paddock situation, the access and availability of target markets, and storage and handling facilities.

COMPROMISED TRIALS

It is important to note that trials in the NVT are sometimes subject to seasonal or management issues. Trials that do not meet the quality requirement for publication through the NVT reporting tools are published within the NVT quarantine trial reports. Quarantine reports include trials that have been compromised and should not be used to make variety selection decisions. These trials may have been affected by frost, drought, animals or spray drift. The purpose of the NVT is to allow growers to make informed variety selections and compromised trials can be misleading and result in poor variety selection. Long-term yield tables in each chapter will clearly state whether data is missing as a result of compromised trials.

NEW PULSE DISEASE RATING SYSTEM

A new pulse disease rating system has been implemented in 2020. Disease rating definitions were revised and standardised nationally. Some disease ratings have changed to reflect these definitions. Always consult a current disease guide for the latest ratings and definitions to plan disease management.

INTERPRETING LONG-TERM YIELD DATA

The long-term yield data presented in this sowing guide is an output of NVT Long Term Multi Environment Trial (MET) analysis. Trials run in all cropping regions of Victoria (for example Wimmera, Mallee, South West, North East and North Central) and other states across Australia, and use a five-year rolling dataset in the MET analysis.

A mixed model approach is used in the MET analysis using expertise from the GRDC-supported Statistics for the Australian Grains Industry (SAGI) program. This approach generates long-term MET predictions for varieties at an individual trial level. A prediction is generated for every variety in every trial in the entire dataset, regardless of whether the variety was actually tested at every location. Using a factor analytic (FA) model, NVT can provide a yield prediction for every situation. For instance, if the yields of five varieties were ranked in a similar order at multiple trials (sites A, B, C and D), but variety X was not grown at site D, the relative ranking of X against the other varieties can be used to predict the yield of variety X at site D.

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

Readers can further interrogate the data online to better understand the performance of varieties under a range of situations using the NVT Long-Term Yield Reporter tool. The FA method is a very powerful and accurate predictor of performance, and the yield predictions are best viewed at the individual trial/environment level. However, these detailed datasets are too large for printed sowing guides or quick reference summaries, such as the *Victorian Crop Sowing Guide*.

The NVT program has developed a system for viewing the complex dataset based on individual user preferences. Users can choose to view data in year or yield-based groupings and can tailor site or region selections to their own needs, for instance by viewing METs only for sites where varieties were present in the trials (default option). In this sowing guide, we present results in year groupings 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 <https://app.nvtonline.com.au>.

COLOUR GRADIENT LEGEND: MEAN VARIETY YIELD PERFORMANCE



LOW

HIGH

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

WHEAT

Wheat variety selection is based on several considerations including grain yield and quality, disease resistance, maturity, adaptation (rainfall, elevation, temperature, soil type) and, in some cases, grazing suitability. This chapter aims to provide information regarding these attributes to assist with variety selection.

NEW VARIETIES

The new wheat varieties added this year are bread wheats BASF Ascot[®], Ballista[®], Coota[®], Denison[®], Hammer CL Plus[®], Sunblade CL Plus[®] and Sunflex[®], specialty wheats LRPB Oryx[®] and LRPB Parakeet[®], and feed wheat Anapurna.

QUALITY CHANGES

Grain Trade Australia (GTA) made no major changes to wheat quality standards for the 2020-21 season.

At the time of publication, LRPB Oryx[®] and LRPB Parakeet[®] were waiting confirmation of Wheat Quality Australia (WQA) classification in the southern zone, with a decision expected in October 2020.

INDUSTRY UPDATE

Australian Crop Breeders Ltd (ACB) has developed new guidelines for wheat maturity classifications in 2020. Cereal maturity classifications and terminology in this guide have been assigned using the industry guidelines provided by ACB and will be different to previous editions.

KEY DISEASE CONSIDERATIONS

Variety selection plays a critical part in the effective management of disease. Where possible, using the disease ratings provided in Table 5, efforts can be made to avoid varieties that are highly susceptible to locally important diseases. If it is not possible to avoid highly susceptible cultivars, then the ratings can be used to inform paddock selection and chemical disease control. Table 1 provides some minimum disease targets for varieties in the low, medium and high rainfall zones.

MORE INFORMATION

nvtonline.com.au

- Detailed NVT results and links to variety information.

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reporter app

grdc.com.au

- [GrowNotes™ Wheat Southern region](#)
- [GRDC Southern region NVT harvest reports](#)

agriculture.vic.gov.au

- [Agriculture Victoria Cereal disease guide](#)
- [Growing wheat in Victoria](#)

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

[striperustWM app](#)

- New app to support decision-making for management of Stripe rust in wheat. Available for iPad and Android tablet users on the App Store and Google Play.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

VARIETY DESCRIPTIONS

Information about each variety is presented as overview statements, then as comparison tables of yield, crop growth and disease reaction characteristics. Wheat quality is for the Southern Zone.

Abbreviations used are:

Ⓛ	Denotes that Plant Breeder's Rights apply
CCN	cereal cyst nematode
BYDV	Barley yellow dwarf virus
RLN	root lesion nematode
APH	Australian Prime Hard (min protein 13%)
AH	Australian Hard (min protein 11.5%)
APW	Australian Premium White (min protein 10%)
ASW	Australian Standard White
ADR	Australian Premium Durum
AWN	Australian Standard White Noodle (protein 9.5–11.5%)
APWN	Australian Premium White Noodle (protein 10–11.5%)
ASFT	Australian Soft (protein 9.5%)
FEED	Australian Feed
*	Denotes default classification

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

BREAD WHEAT

NEW – BASF ASCOT[Ⓛ]

APW quality. Mid maturing. BASF Ascot[Ⓛ] is the first wheat variety to be launched by BASF. Suited to medium to high-rainfall zones for Victoria. Released 2020 (tested as BSWDH10-215). Bred by BASF, seed available and marketed by Seednet. EPR \$3.50.

AXE[Ⓛ]

AH quality. Semi-dwarf awned wheat, very quick maturing and suitable for late sowing. Released 2007. Bred by Australian Grain Technologies (AGT) and eligible for AGT Seed Sharing™. EPR \$2.50.

NEW – BALLISTA[Ⓛ]

AH quality. Quick-mid maturing variety, slightly quicker than Mace[Ⓛ]. High and stable yield across a range of environmental conditions, with CCN resistance suited to tight rotations. Released 2020 (tested as RAC2598). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.50.

BECKOM[Ⓛ]

AH quality. Mid maturing, suited to sowing in early May. Beckom has a short stature and moderate straw strength and performs well across all rainfall zones. Released 2015. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.25.

BOLAC[Ⓛ]

AH quality. Slow maturing, suited to May sowing in high-rainfall zones. Can be prone to screenings. Released 2006. Bred by AGT and marketed by Seednet. EPR \$2.10.

CATAPULT[Ⓛ]

AH quality. Mid-slow maturing, suitable for late April to mid-May sowing. Suitable across a range of conditions and environments. Closely related to Scepter[Ⓛ] with similar grain quality, high test weight and low screenings. Suitable for tight cereal rotations with CCN and Yellow leaf spot resistance. Released 2019 (tested as RAC2484). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.25.

CHIEF CL PLUS[Ⓛ]

APW quality. A mid maturing variety with good pre-anthesis vigour. Clearfield Plus[®] wheat registered for label rates of Intervix[®] herbicide. Released 2016. Marketed by InterGrain and available through Seedclub members. Not eligible for grower-to-grower trade. EPR \$4.25.

LG COBALT[Ⓛ]

APW quality. A mid maturing variety suited across a wide range of environments. Released 2018. Marketed by Elders. EPR \$3.00.

COOLAH[Ⓛ]

AH quality. Mid-slow maturing, suited to end of April to early May sowing. Moderate height and lodging tolerance; produces high test weight and low screenings with a strong rust-resistance package. Released 2016. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.50.

NEW – COOTA[Ⓛ]

AH quality. Mid-slow maturing, suited to end of April to beginning of May sowing. Broad adaptation across low to high-rainfall zones demonstrating low screenings and high test weights. Good lodging resistance coupled with short plant height lead to strong performance in high-rainfall zones or under irrigation. Released 2020 (tested as V10100-064). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.60.

CORACK[Ⓛ]

APW quality. A quick maturing, short-stature variety with good CCN and Yellow leaf spot resistance. This coupled with low screenings and high test weights makes it a good option for tight cereal rotations. Released 2011. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.00.

COSMICK[Ⓛ]

AH quality. Fully awned, mid maturing. Released 2015. Marketed by InterGrain and available through Seedclub members. Free to trade. EPR \$3.85.

CUTLASS[Ⓛ]

APW quality. Mid-slow maturing variety with a flexible sowing window like Yitpi. Released 2015. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.00.

NEW – DENISON[Ⓛ]

APW quality. Slow maturing variety suited to mid-April sowing. Short stature, good lodging resistance, low screenings and high test weights. Released 2020 (tested as WAGT734). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.40.

DS BENNETT[Ⓛ]

ASW quality. Tall, awnless, mid maturing winter wheat suited to medium to high-rainfall zones. Released 2018. Bred by Dow Seeds and marketed by Seednet. EPR \$4.25.

DS DARWIN[Ⓛ]

AH quality. Mid maturing and suited to low to medium-rainfall zones. Released 2015. Bred by Dow Seeds and marketed by Seednet. EPR \$4.25.

DS PASCAL[Ⓛ]

APW quality. Slow maturing, suited to medium to high-rainfall zones and irrigation. Released 2015. Bred by Dow Seeds and marketed by Seednet. EPR \$4.25.

EGA GREGORY[Ⓛ]

APW* quality. Mid-slow maturing variety suited to north-eastern Victoria. Good overall rust resistance but susceptible to Yellow leaf spot and CCN. Released 2004. Marketed by Pacific Seeds. Free to trade. EPR \$2.10.

EGA WEDGETAIL[Ⓛ]

APW* quality. A mid maturing, dual-purpose winter wheat. Developed for early sowing, suited to medium to high-rainfall areas. Tolerant of acid soils and suitable for early winter grazing. Registered 2002. Marketed by Seednet. EPR \$1.45.

EG TITANIUM

AH quality. A mid-slow maturing variety targeted for early planting in medium to high-rainfall zones. Good disease package including good foliar disease resistance. Released 2018. Marketed by Elders. EPR \$3.00.

ELMORE CL PLUS[Ⓛ]

AH quality. Two-gene tolerance to label rates of Intervix® herbicide. Mid maturing variety best suited to moderate to high-yielding areas. Released 2011. Bred and marketed by AGT; not eligible for AGT Seed Sharing™. EPR \$3.55.

EMU ROCK[Ⓛ]

AH quality. An awned, semi-dwarf, very quick-quick maturing variety, best suited to low to medium-rainfall environments. Released 2011. Bred and marketed by InterGrain. Free to trade. EPR \$3.50.

GRENADE CL PLUS[Ⓛ]

AH quality. Two-gene tolerance to label rates of Intervix® herbicide. Quick-mid season variety. Released 2012. Bred and marketed by AGT; not eligible for AGT Seed Sharing™. EPR \$3.80.

NEW – HAMMER CL PLUS[Ⓛ]

AH quality. Two-gene tolerance to label rates of Intervix® herbicide. Closely related to Mace[Ⓛ] with similar maturity and adaptability. Suitable for tight cereal rotations with CCN and Yellow leaf spot resistance. Released 2020 (tested as OAGT0016). Bred and marketed by AGT; not eligible for AGT Seed Sharing™. EPR \$4.25.

ILLABO[Ⓛ]

AH quality. A quick maturing, dual-purpose winter wheat, two to three days quicker to heading than EGA Wedgetail[Ⓛ]. Developed for early sowing and winter grazing. Good lodging and Black point resistance. Released 2018. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.50.

KIORA[Ⓛ]

AH quality. Mid-slow maturing, best suited to medium to high-rainfall areas and irrigation. Released 2014. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.25.

KORD CL PLUS[Ⓛ]

AH quality. Two-gene tolerance to label rates of Intervix® herbicide. Mid maturing. Released 2011. Bred and marketed by AGT; not eligible for AGT Seed Sharing™. EPR \$3.55.

LRPB COBRA[Ⓛ]

AH quality. Short semi-dwarf, quick-mid spring variety suited to environments with medium to high-yield potential. Suitable on both acid and alkaline soils. Good Stem and Leaf rust resistance, but moderately susceptible to Stripe rust. Released 2011. Marketed by Pacific Seeds. Free to trade. EPR \$3.50.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

LRPB HELLFIRE[Ⓛ]

AH quality. Mid spring variety with high protein accumulation and good early vigour. Good Stem and Stripe rust resistance, but susceptible to Leaf rust. Released 2019. Bred by LongReach Plant Breeders Management (LRPB) (tested as LPB14-3634) and marketed by Pacific Seeds. EPR \$4.25.

LRPB KITTYHAWK[Ⓛ]

AH quality. Mid maturing winter wheat, similar to EGA Wedgetail[Ⓛ]. Developed for early sowing, suited to medium to high-rainfall areas. Good rust resistance but susceptible to CCN. Dual-purpose wheat suitable for early winter grazing. Released 2017. Marketed by Pacific Seeds. Free to trade. EPR \$4.25.

LRPB LANCER[Ⓛ]

AH quality. Mid-slow spring variety for early planting. Short semi-dwarf with awns, suited to medium to high-rainfall areas. Good overall rust resistance but susceptible to CCN. Released 2013. Marketed by Pacific Seeds. Free to trade. EPR \$4.25.

LRPB NIGHTHAWK[Ⓛ]

APW quality. Very slow spring wheat with unique characteristics, allowing it to be planted earlier in systems that do not traditionally suit winter wheat types. Demonstrated good yields throughout the April sowing window. Good Stem and Stripe rust resistance but moderately susceptible to Leaf rust. Released 2019 (tested as LPB14-0392). Bred by LRPB and marketed by Pacific Seeds. EPR \$4.25.

LRPB SCOUT[Ⓛ]

AH quality. Mid spring variety with wide adaptation. Good Stem rust, Powdery mildew and excellent CCN resistance. Adapted to alkaline soils. Released 2009. Marketed by Pacific Seeds. Free to trade. EPR \$2.80.

LRPB TROJAN[Ⓛ]

APW quality. Mid-slow spring variety suited to medium to high-rainfall areas. Useful Stem and Leaf rust resistance, moderately susceptible to Stripe rust. Released 2013. Marketed by Pacific Seeds. Free to trade. EPR \$4.00.

MACE[Ⓛ]

AH quality. Quick-mid maturing, of medium height. A comprehensive fungicide strategy is required to control Stripe rust. Released 2008. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.00.

RAZOR CL PLUS[Ⓛ]

ASW quality. Two-gene tolerance to label rates of Intervix® herbicide. Quick-mid maturing variety derived from Mace[Ⓛ]. Released 2018. Bred and marketed by AGT; not eligible for AGT Seed Sharing™. EPR \$3.30.

ROCKSTAR[Ⓛ]

AH quality. Mid-slow maturing variety. Good grain size, moderate plant height, similar to Mace[Ⓛ]. Released 2019 (tested as IGW4341). Bred and marketed by InterGrain and available through Seedclub members. Free to trade. EPR \$3.50.

SCEPTER[Ⓛ]

AH quality. Mid maturing variety of medium height. Intended to replace Mace[Ⓛ], flowering two days later. Released 2015. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.25.

SHERIFF CL PLUS[Ⓛ]

APW quality. Clearfield® Plus wheat with good yield stability. Mid-slow maturing variety registered for label rates of Intervix® herbicide. Released 2018. Bred and marketed by InterGrain and available through InterGrain Seedclub members. Not eligible for grower-to-grower trade. EPR \$4.25.

SHIELD[Ⓛ]

AH quality. Quick-mid season maturing. Short to medium plant height with a low-risk disease package. Moderate tolerance to acid soils. Released 2012. Bred by AGT and eligible for AGT Seed Sharing™. EPR \$3.25.

NEW – SUNBLADE CL PLUS[Ⓛ]

AH quality. Two-gene tolerance to label rates of Intervix® herbicide. Mid maturing variety suited to mid-May sowing across all environments. Medium plant height. Released 2020 (tested as SUN968G). Bred and marketed by AGT and not eligible for AGT Seed Sharing™. EPR \$4.35.

NEW – SUNFLEX[Ⓛ]

AH quality. Slow maturing variety suited to sowing from mid to late April in medium to high-rainfall zones. Short plant height with low screenings and high test weights. Released 2020 (tested as SUN862I). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.60.

SUNLAMB[Ⓛ]

ASW quality. Awnless, white-grained, very slow maturing spring variety suited for grain and fodder applications. It is best sown early to mid-April. Released 2015. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$2.75.

SUNTOP[Ⓛ]

AH quality. Mid maturing, moderate to tall height, suited to North Central and North East Victoria. High test weight, moderate susceptibility to screenings. Released 2012. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.25.

VIXEN[Ⓛ]

AH quality. Quick maturing wheat suited to mid-May onwards sowing with moderate plant height. Released 2018. Bred and marketed by InterGrain. Free to trade. EPR \$3.50.

WALLUP[Ⓛ]

AH quality. Quick-mid maturing, short stature with good lodging resistance suited to medium-rainfall areas. Released 2011. Bred by AGT and eligible for AGT Seed Sharing™. EPR \$3.00.

YITPI[Ⓛ]

AH quality. Mid-slow maturing, white, fully awned semi-dwarf suited to low to medium-rainfall areas. Boron tolerant. Released 2000. Marketed by Seednet. EPR \$1.00.

SPECIALTY WHEAT**LRPB IMPALA[Ⓛ]**

ASFT quality. Mid spring soft wheat variety suited to medium-rainfall zones in Victoria. Released 2011. Marketed by Pacific Seeds. EPR \$3.50.

NEW – LRPB ORYX[Ⓛ]

Quality TBC (ASFT in south-eastern zone). Mid spring soft wheat variety suited to medium-rainfall zones in Victoria. Good rust resistance. Moderately susceptible to Yellow leaf spot, but susceptible to Septoria and CCN. Released 2020 (tested as LPB12-0152). Marketed by Pacific Seeds. EPR \$3.75.

NEW – LRPB PARAKEET[Ⓛ]

Quality TBC (ANW in south-eastern zone). Mid spring noodle wheat variety suited to medium-rainfall zones in Victoria. Good overall rust resistance. Moderately susceptible to Yellow leaf spot and CCN, and susceptible to Septoria. Released 2020 (tested as LPB12-0168). Marketed by Pacific Seeds. EPR \$3.75.

DURUM WHEAT**BITALLI[Ⓛ]**

ADR quality. A quick-mid maturing variety. Produces low screenings and high test weight. Released 2019 (tested as AGTD088). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.50.

DBA-AURORA[Ⓛ]

ADR quality. A mid maturing variety with good early vigour and weed competitiveness. Released 2014. Bred by Durum Breeding Australia and marketed by SADGA. EPR \$3.00.

DBA SPES[Ⓛ]

ADR quality. A mid maturing variety. Screenings comparable to or slightly better than DBA-Aurora[Ⓛ] with good grain size. Released 2018 (tested as UAD1154192). Bred by Durum Breeding Australia and marketed by SADGA. EPR \$3.00.

DBA VITTAROI[Ⓛ]

ADR quality. A quick-mid maturing variety suited to irrigation zones and dryland cultivation. Released 2017. Bred by Durum Breeding Australia and marketed by Seednet. EPR \$3.30.

WESTCOURT[Ⓛ]

ADR quality. A mid maturing variety with a robust grain package of low screenings and high test weight. Released 2019 (tested as AGTD090). Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.50.

WID802[Ⓛ]

ADR quality. A mid maturing variety likely to produce high screenings in short finishes. WID802 may have low protein if nitrogen is limiting. Released 2012. Marketed by SADGA. EPR \$3.00.

FEED**LRPB BEAUFORT[Ⓛ]**

FEED quality. An awnless, red-grained, slow-very slow spring variety suited to high-rainfall zones and certain medium-rainfall zones. Good Stripe rust and Yellow leaf spot resistance. Moderately susceptible to Leaf rust, but highly susceptible to Stem rust. Released 2008. Marketed by GrainSearch. EPR \$3.00.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

LONGSWORD[Ⓛ]

FEED* quality. A quick maturing, dual-purpose winter wheat suited to low to medium-rainfall areas. Suits April sowing and offers grazing potential. Released 2017. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$2.75.

FEED/DUAL PURPOSE**NEW – ANAPURNA**

FEED quality. An awned, red-grained winter wheat. Mid-slow maturing, similar to RGT Accroc. Dual-purpose variety suitable for graze and grain production when sown early in high-rainfall zones or under irrigation. Released 2020. Bred and marketed by AGT and eligible for AGT Seed Sharing™. EPR \$3.20.

MANNING[Ⓛ]

FEED quality. Slow maturing, dual-purpose white-grained winter wheat suited to longer growing season zones and irrigation. Released 2014. Bred by CSIRO and GRDC and marketed by GrainSearch. EPR \$3.50.

RGT ACCROC

FEED quality. An awned, red-grained winter wheat. Mid-slow maturing variety for high-rainfall zones and irrigation. Suitable for dual-purpose applications when early sowing is possible. Released 2017. Bred by RGT Semences and marketed by Seed Force. EPR \$4.00.

RGT CALABRO

FEED quality. An awned, slow maturing red-grained winter wheat suited to the high-rainfall zone. Released 2017. Bred by RGT Semences and marketed by Seed Force. EPR \$4.00.

RGT ZANZIBAR

FEED quality. Fully awned, very slow maturing spring variety suited to North Central, North East and South West. A comprehensive fungicide strategy is required to control Stem rust. Released 2017. Bred by RGT Semences and marketed by Seed Force. EPR \$4.00.

SF ADAGIO

FEED quality. An awned, red-grained winter wheat. Slow maturity variety for higher rainfall zones and irrigation, suitable for dual-purpose applications when early sowing is possible. Released 2014. Bred by RGT Semences and marketed by AGF Seeds. EPR \$3.60.

SQP REVENUE[Ⓛ]

FEED quality. A red-grained, slow maturing, awnless winter wheat suited to longer growing season zones and irrigation. Released 2010. Bred by AusGrainz and CSIRO and marketed by GrainSearch. EPR \$3.50.

TENFOUR[Ⓛ]

FEED quality. TenFour[Ⓛ] is a very quick-quick maturing wheat for the South West, North East and irrigation zones. Released 2015. Marketed by Elders. EPR \$3.00.

Table 1: Suggested minimum levels of wheat disease resistance for the southern region.

Annual rainfall	Rust			Yellow leaf spot	<i>Septoria tritici</i>
	Stem	Stripe	Leaf		
Low <350mm	MSS	MS	MS	MSS	S
Medium 300 to 500mm	MS	MRMS	MS	MSS	MS
High >550mm*	MRMS	MRMS	MRMS	MSS	MRMS

*unless a suitable program of disease control by fungicide applications can be planned and carried out.

Source: [Agriculture Victoria disease ratings \(2020\)](#)

Table 2: Wheat time of sowing guide based on phenology speed.

This table is a guide only and has been compiled from research from the National Phenology Initiative (ULA1806-004) and the following GRDC projects: CSP00111, CSP00178, and ULA1703-004.

These projects undertook time of sowing x cultivar experiments across Victoria to determine optimal sowing times for different cultivars in different environments.

They also simulated optimal flowering periods in different environments and quantified cultivar development speed relative to each other.

MALLEE			March	April	May	June
Type	Speed	Example Cultivar				
Winter	Mid	DS Bennett ^{db}				
Winter	Quick	Illabo ^{db}				
Spring	Mid-slow	LRPB Trojan ^{db}				
Spring	Mid	Scepter ^{db}				
Spring	Quick-mid	Mace ^{db}				
Spring	Quick	Vixen ^{db}				
Spring	Very quick	Hatchet CL Plus ^{db}				
WIMMERA			March	April	May	June
Winter	Mid	DS Bennett ^{db}				
Winter	Quick	Illabo ^{db}				
Spring	Slow-very slow	LRPB Beaufort ^{db}				
Spring	Mid-slow	LRPB Trojan ^{db}				
Spring	Mid	Scepter ^{db}				
Spring	Quick-mid	Mace ^{db}				
Spring	Quick	Vixen ^{db}				
Spring	Very quick	Hatchet CL Plus ^{db}				
NORTH CENTRAL			March	April	May	June
Winter	Mid	DS Bennett ^{db}				
Winter	Quick	Illabo ^{db}				
Spring	Slow-very slow	LRPB Beaufort ^{db}				
Spring	Mid-slow	LRPB Trojan ^{db}				
Spring	Mid	Scepter ^{db}				
Spring	Quick-mid	Mace ^{db}				
Spring	Quick	Vixen ^{db}				
Spring	Very quick	Hatchet CL Plus ^{db}				
NORTH EAST			March	April	May	June
Winter	Mid	DS Bennett ^{db}				
Winter	Quick	Illabo ^{db}				
Spring	Slow-very slow	LRPB Beaufort ^{db}				
Spring	Mid-slow	LRPB Trojan ^{db}				
Spring	Mid	Scepter ^{db}				
Spring	Quick-mid	Grenade CL Plus ^{db}				
Spring	Quick	Vixen ^{db}				
Spring	Very quick	Hatchet CL Plus ^{db}				
SOUTH WEST			March	April	May	June
Winter	Slow	RGT Accroc				
Winter	Mid	DS Bennett ^{db}				
Spring	Slow-very slow	LRPB Beaufort ^{db}				
Spring	Mid-slow	LRPB Trojan ^{db}				
Spring	Mid	Beckom ^{db}				

Yellow = earlier than optimum.

Green = optimum sowing time.

Red = later than optimum.

Blue = dual purpose.

Table 3: Wheat variety agronomic guide.

The agronomic characteristics in this table are provided as a guide only and have been compiled from observations of the breeders, National Variety Trials, GRDC research projects and seed companies. Maximum quality for the southern zone has been sourced from Grain Trade Australia, Wheat Trading Standards (2020).

	Maximum quality southern zone	Rainfall			Screenings	Maturity	Height	Coleoptile length	Lodging	Sprouting	Head type		Soil tolerance	
		Low <350mm	Med 350 to 550mm	High >550mm							Colour	Awning	Boron	Acid
BREAD WHEAT														
Axe ^{db}	AH	✓			MR	VQ	MS	S	MR	SVS	W	A	I	I
NEW – Ballista ^{db}	AH	✓	✓		MR	Q-M	S	M	MR	-	W	A	-	-
NEW – BASF Ascot ^{db}	APW		✓	✓	MR	M	M	ML	RMR	-	W	A	-	-
Beckom ^{db}	AH	✓	✓	✓	MRMS	M	S	M	MRMS	MSS	W	A	MT	MT-T
Bolac ^{db}	AH		✓	✓	S	S	M	M	MR	S	W	A	I	I
Catapult ^{db}	AH	✓	✓	✓	MR	M-S	M	M	MRMS	MSS	W	A	MT	MT-T
Chief CL Plus ^{db}	APW	✓	✓	✓	MR	M	M	M	MR	S	W	A	-	-
Coolah ^{db}	AH		✓	✓	MR	M-S	M	M	MRMS	S	W	A	I	MT
NEW – Coota ^{db}	AH	✓	✓	✓	R	M-S	S	M	MR	-	W	A	-	-
Corack ^{db}	APW	✓	✓		R	Q	S	m	MR	S	W	A	I	MT-T
Cosmick ^{db}	AH	✓	✓		MS	M	M	L	MRMS	S-SVSp	W	A	-	-
Cutlass ^{db}	APW	✓	✓		MRMS	M-S	MT	ML	MRMS	S	W	A	MT	MT-T
NEW – Denison ^{db}	APW		✓	✓	MR	S	S	M	MR	-	W	A	-	-
DS Bennett ^{db}	ASW		✓	✓	-	M (+W)	T	-	-	-	W	AL	-	-
DS Darwin ^{db}	AH	✓	✓		MR	M	M	S	MR	SVSp	W	A	-	-
DS Pascal ^{db}	APW		✓	✓	MR	S	M	S	MR	MRp	W	A	-	-
EGA Gregory ^{db}	APW*		✓	✓	MR	M-S	T	M	MS	S	W	A	-	MT
EGA Wedgetail ^{db}	APW*		✓	✓	MR	M (+W)	M	MS	MR	S	W	A	I	MT-T
EG Titanium	AH		✓	✓	R	M-S	S	M	R	MR	W	A	-	MT-T
Elmore CL Plus ^{db}	AH		✓		MS	M	M	M	MRMS	S	W	A	I	I
Emu Rock ^{db}	AH	✓	✓		R	VQ-Q	S	M	R	S	W	A	-	-
Grenade CL Plus ^{db}	AH		✓		MR	Q-M	M	ML	MR	S	W	A	MT	MT-T
NEW – Hammer CL Plus ^{db}	AH	✓	✓		MR	Q-M	S	M	MRMS	-	W	A	-	-
Illabo ^{db}	AH	✓	✓	✓	MRp	Q (+W)	S	S	MRp	Sp	W	A	Ip	MTp
Kiora ^{db}	AH		✓	✓	MS	M-S	M	M	MR	S	W	A	MI	MI
Kord CL Plus ^{db}	AH	✓	✓		MR	M	M	S	-	SVS	W	A	MT	MT
LG Cobalt ^{db}	APW	✓	✓	✓	MR	M	M	M	MR	MR	W	A	-	MT
LRPB Cobra ^{db}	AH	✓	✓	✓	MRMS	Q-M	S	M	MR	SVS	W	A	I	MT
LRPB Hellfire ^{db}	AH	✓	✓		MR	M	M	M	MR	MS	W	A	MI	MT-MI
LRPB Kittyhawk ^{db}	AH		✓	✓	MR	M (+W)	M	MS	MR	S	W	A	I	MT-MI
LRPB Lancer ^{db}	AH		✓	✓	MR	M-S	S	M	MR	S	W	A	I	MI-I
LRPB Nighthawk ^{db}	APW	✓	✓		MRMS	VS	M	M	MR	S	W	A	I	MI
LRPB Scout ^{db}	AH	✓	✓	✓	MR	M	M	ML	MRMS	MS	W	A	MI	MT-T
LRPB Trojan ^{db}	APW		✓	✓	MR	M-S	M	M	MR	MSS	W	A	MI	MT-MI
Mace ^{db}	AH	✓	✓		MR	Q-M	M	M	MR	MSS	W	A	MT	MT-T
Razor CL Plus ^{db}	ASW	✓	✓		MR	Q-M	M	-	MR	MSSp	W	A	MT	MT-T
RockStar ^{db}	AH	✓	✓	✓	MR	M-S	M	M	MR	-	W	A	-	-
Scepter ^{db}	AH	✓	✓		MR	M	M	MS	MR	MSS	W	A	MT	MT-T
Sheriff CL Plus ^{db}	APW		✓	✓	MR	M-S	M	M	MR	-	W	A	-	-
Shield ^{db}	AH	✓	✓		MR	Q-M	SM	S	-	S	W	A	I	MT-T
NEW – Sunblade CL Plus ^{db}	AH	✓	✓	✓	MS	M	M	MS	MR	-	W	A	-	-
NEW – Sunflex ^{db}	AH		✓	✓	MR	S	S	MS	MR	-	W	A	-	-
Sunlamb ^{db}	ASW		✓	✓	MR	VS	M	M	MR	MSp	W	AL	I	MI
Suntop ^{db}	AH	✓	✓	✓	MS	M	MT	M	MR	SVS	W	A	I	MT
Vixen ^{db}	AH	✓	✓	✓	MR	Q	M	M	MR	-	W	A	-	-
Wallup ^{db}	AH		✓		MR	Q-M	S	MS	MR	S	W	A	I	I
Yitpi ^{db}	AH	✓	✓		MR	M-S	T	ML	MS	MS	W	A	MT	MT-T

Table 3, cont. next page

(Continued) Table 3: Wheat variety agronomic guide.

	Maximum quality southern zone	Rainfall			Screenings	Maturity	Height	Coleoptile length	Lodging	Sprouting	Head type		Soil tolerance	
		Low <350mm	Med 350 to 550mm	High >550mm							Colour	Awn	Boron	Acid
SPECIALTY WHEAT														
LRPB Impala ^{db}	ASFT		✓		MR	M	MT	MS	MS	MSS	W	A	I	MT
NEW – LRPB Oryx ^{db}	TBC		✓		MR	M	M	MS	MR	MSS	W	A	I	MI
NEW – LRPB Parakeet ^{db}	TBC		✓		MR	M	MT	M	MRMS	MSS	W	A	I	MI
DURUM WHEAT														
Bitalli ^{db}	ADR	✓	✓	✓	MR	Q-M	M	M	-	-	W	A	-	-
DBA-Aurora ^{db}	ADR		✓	✓	R	M	M	ML	MR	MR	W	A	MT	-
DBA Spes ^{db}	ADR		✓	✓	R	M	-	-	-	-	W	A	-	-
DBA Vittaroi ^{db}	ADR	✓	✓	✓	R	Q-M	S	-	-	-	W	A	-	-
Westcourt ^{db}	ADR	✓	✓	✓	MR	M	T	ML	-	-	W	A	-	-
WID802 ^{db}	ADR				MS	M	-	ML	-	MR	-	-	-	-
FEED WHEAT														
NEW – Anapurna	Feed			✓	-	M-S (+W)	S	M	R	R	R	A	-	-
LRPB Beaufort ^{db}	Feed		✓	✓	-	S-VS	M	-	MRMS	MR	R	AL	-	MT
Longsword ^{db}	Feed*	✓	✓	✓	MR	Q (+W)	M	M	MR	-	W	A	MT _p	MT _p
Manning ^{db}	Feed			✓	-	S (+W)	-	-	-	MSS _p	W	AL	-	-
RGT Accroc	Feed			✓	-	M-S (+W)	-	-	-	-	R	A	-	-
RGT Calabro	Feed			✓	-	S (+W)	-	-	-	-	R	A	-	-
RGT Zanzibar	Feed	✓	✓	✓	-	VS	MT	-	-	-	R	A	-	-
SF Adagio	Feed		✓	✓	-	S (+W)	-	-	-	R _p	R	A	-	-
SQP Revenue ^{db}	Feed			✓	-	S (+W)	S	-	-	R _p	R	AL	-	-
TenFour ^{db}	Feed		✓	✓	MR	VQ-Q	M	M	R	S _p	W	A	-	MT

Maturity: VQ = very quick, Q = quick, M = mid, S = slow, VS = very slow, (+W) = winter wheat.

Height: S = short, M = medium, T = tall.

Coleoptile length: S = short, M = medium, L = long.

Soil tolerance: I = intolerant, T = tolerant.

Head colour: W = white, B = black, R = red.

Head type: A = awned, AL = awnless.

Screening, lodging and sprouting resistance = see key used in Table 5.

* denotes default classification

Table 4: Southern Zone wheat varieties – Domestic Flour Millers Assessment.

HARD WHEAT	Max class grade	End product category		Comment	
		Plant bakery	Artisan breads		
Axe ^{db}	AH	1	1	Very poor water absorption, strong dough characteristics and long mix time.	
NEW – Ballista ^{db}	AH	2	2	Acceptable domestic AH. High dough resistance and good stability. May suit specialist application.	
NEW – BASF Ascot ^{db}	APW	2	1	Acceptable APW. Good milling extraction. Acceptable/variable bake performance.	
Beckom ^{db}	AH	2	2	Some interest. Marginal long mix time and tough dough.	
Bolac ^{db}	AH	2	2	Marginal AH – strong dough characteristics.	
Catapult ^{db}	AH	2	2	Suits domestic mills. Good balanced dough. Acceptable bakery water absorption and performance.	
Chief CL Plus ^{db}	APW	2	1	Acceptable APW. Low water absorption, short mix time. Acceptable rapid bake performance.	
Coolah ^{db}	AH	2	2	Acceptable for domestic mills. Acceptable water absorption, marginal long mix requirement and strong dough resistance, acceptable bake performance.	
NEW – Coota ^{db}	AH	3	2	Acceptable domestic AH. Reduced mix time and acceptable bake results.	
Corack ^{db}	APW	2	1	Acceptable APW quality. Suits domestic mills.	
Cosmick ^{db}	AH	3	2	Acceptable AH for domestic market.	
Cutlass ^{db}	APW	3	1	Suits domestic application. Good water absorption and acceptable bake.	
NEW – Denison ^{db}	APW	3	1	Acceptable domestic APW. Good milling extraction.	
DS Bennett ^{db}	ASW	2	1	Acceptable ASW. Low water absorption and dough strength, acceptable mix time and marginal bake performance.	
DS Darwin ^{db}	AH	2	1	Limited data available. High water absorption may suit domestic mills as blend.	
DS Pascal ^{db}	APW	2	1	Limited data available. Potentially limited domestic interest.	
EGA Gregory ^{db}	APW*	2	1	Limited data but indicate suitable for domestic APW.	
EGA Wedgetail ^{db}	APW*	1	2	Over strong APW. Long mix requirement. Appears to suit specialist segregation.	
EG Titanium	AH	2	2	Suit domestic mills. Marginal long mix requirement. Acceptable water absorption.	
Elmore CL Plus ^{db}	AH	3	1	Good water absorption and acceptable bake performance. Acceptable AH quality.	
Emu Rock ^{db}	AH	3	2	Acceptable AH. Marginal long mix requirement.	
Forrest ^{db}	APW	2	1	Acceptable APW quality for domestic market.	
Grenade CL Plus ^{db}	AH	2	2	Marginal strong. Limited domestic interest.	
NEW – Hammer CL Plus ^{db}	AH	2	2	Acceptable domestic AH. Good bake results.	
Illabo ^{db}	AH	1	2	Strong dough characteristics. Long mix requirement in bakery. Suit specialist bakery application only.	
Kiora ^{db}	AH	2	2	Marginally strong dough. Some interest from domestic market.	
Kord CL Plus ^{db}	AH	3	1	Appears suitable for domestic mills.	
LRPB Cobra ^{db}	AH	3	1	Appears acceptable. Some concerns over low viscosity and high yellow pigment.	
LRPB Hellfire ^{db}	AH	1	2	Some domestic interest. Acceptable water absorption but long mix requirement. Strong dough. Acceptable bake performance.	
LRPB Kittyhawk ^{db}	AH	2	2	Acceptable for domestic mills. Good water absorption and strong doughs. Acceptable bake performance.	
LRPB Lancer ^{db}	AH	2	1	Acceptable APW. Good water absorption and bake volume, but marginal long mix time.	
LRPB Nighthawk ^{db}	APW	3	1	Suit domestic mills. Good water absorption, short mix requirement. Acceptable bake performance.	
LRPB Scout ^{db}	AH	2	1	Suitable AH. Marginal long mix time.	
LRPB Trojan ^{db}	APW	2	1	Some interest from domestic mills. Marginal water absorption, long mix time but good bake volume.	
Mace ^{db}	AH	3	1	Suitable as domestic AH.	
Razor CL Plus ^{db}	ASW	2	1	Acceptable ASW. Good water absorption, short mix time, short dough extensibility and low dough strength.	
RockStar ^{db}	AH	2	2	Suit domestic mills. Marginal bakery water absorption but acceptable bakery performance.	
Scepter ^{db}	AH	2	1	Suit domestic application. Acceptable AH quality.	
Sheriff CL Plus ^{db}	APW	1	1	Suit domestic mills. Acceptable APW. Marginal water absorption and extraction. Short mix time, marginal extensibility and acceptable bake performance.	
Shield ^{db}	AH	3	1	Marginal strong. Expect some domestic interest.	
NEW – Sunblade CL Plus ^{db}	AH	3	1	Acceptable domestic AH. Good milling extraction and rapid bake performance.	
NEW – Sunflex ^{db}	AH	2	1	Acceptable domestic AH. Good water absorption and balanced dough. Acceptable bake performance.	
Sunlamb ^{db}	ASW	2	1	Limited interest. Poor extraction but acceptable rapid bake.	
Suntop ^{db}	AH	2	2	Strong AH. Good water absorption, but marginally long mix time.	
Vixen ^{db}	AH	3	2	Suit domestic mills. Acceptable AH. Good extraction, good water absorption and balanced dough. Acceptable bake performance.	
Wallup ^{db}	AH	1	2	Long mix requirement. Appears to suit specialist segregation. Limited interest from domestic millers.	
Yitpi ^{db}	AH	3	2	Acceptable AH quality.	
SOFT OR NOODLE WHEAT	Max class grade	End product category			Comment
		Biscuit	Cake	Hot plate goods	
LRPB Impala ^{db}	SF1	3	2	1	Acceptable biscuit quality.
NEW – LRPB Oryx ^{db}	SF1	3	2	1	Acceptable biscuit quality.
NEW – LRPB Parakeet ^{db}	ANW	2	2	3	Acceptable domestic noodle applications.

On the quality scale, a rating of 3 is preferred for a particular varietal end-use; 3 preferred, 2 suitable, 1 not suitable.

Source: Interpretation provided by David Hogan, quality operations manager for Laucke Flour Mills (2020).

Table 5: Wheat variety disease rating guide.

	Rust			Yellow leaf spot	Septoria tritici	Powdery mildew	CCN res	Root lesion nematode		Crown rot	Common root rot	Black tip (Black point)	Flag smut
	Stem	Stripe	Leaf					P. neglectus	P. thornei				
BREAD WHEAT													
Ballista ^{db}	RMR _p	Sp	Sp	MSS _p	Sp	-	MRMS	-	-	-	-	-	-
BASF Ascot ^{db}	MRMS	MSS	RMR	MRMS	S	-	MR	-	S	S	MS	MS	MSS
Beckom ^{db}	MRMS	MRMS	MSS	MSS	S	S	R	S	MSS	S	MSS	MRMS	MRMS
Catapult ^{db}	MR	MRMS	S	MRMS	MSS	S	R	S	MS	Sp	MS	MSS	MS
Chief CL Plus ^{db}	MR	S	MR	MRMS	MSS	SVS	MS	MRMS	MSS	MSS	MS	MS	SVS
Coolah ^{db}	MR	RMR	RMR	MSS	MSS	-	S	-	MS	MSS	S	S	RMR
Coota ^{db}	RMR _p	MRMS _p	MSP	MSS _p	MSS _p	-	-	-	-	-	-	-	-
Corack ^{db}	MR	MS	SVS	MRMS	S	VS	RMR	MSS	MSS	S	MS	S	S
Cosmick ^{db}	MS	MSS	SVS	MRMS	S	S	S	S	MSS	S	MSS	MRMS	SVS
Cutlass ^{db}	R	MS	R	MSS	MSS	MSS	MR	MSS	MSS	S	MS	MS	MSS
Denison ^{db}	MR# _p	MSP	Sp	MRMS _p	MSP	-	MSS	-	-	-	-	-	-
DS Bennett ^{db}	MRMS	S	SVS	MRMS	MSS	R	S	S	S	VS	S	MSS	SVS
DS Darwin ^{db}	MRMS	MRMS	MSS	S	S	-	MSS	-	S	S	MSS	MS	MR
DS Pascal ^{db}	MSS	RMR	MS	MRMS	MSS	R	S	S	S	S	MS	MS	S
Elmore CL Plus ^{db}	MR	MRMS	RMR	S	MSS	MS	S	S	S	S	S	MS	MSS
Emu Rock ^{db}	MS	MSS	SVS	MRMS	SVS	MSS	S	MSS	S	MSS	MS	MSS	MS#
Grenade CL Plus ^{db}	MR	MRMS	S	S	S	MSS	R	MSS	S	S	MS	MSS	MR
Hammer CL Plus ^{db}	MR _p	MRMS _p	MSS _p	MRMS _p	MSS _p	-	MRMS	-	-	-	-	-	-
Illabo ^{db}	MRMS	MR _p	S	MS	MSS	MR	MRMS	S	S	Sp	MSS	MRMS	R
Kiora ^{db}	MR	RMR	MSS	MSS	MSS	MS	MS	S	MRMS	S	MS	MSS	MRMS
Kord CL Plus ^{db}	MR	MRMS	MS	MSS	MSS	MSS	MR	MSS	MSS	S	MRMS	MRMS	MR
LG Cobalt ^{db}	S	RMR	S	S	MSS	-	MSS	-	S	S	MSS	MRMS	RMR
LRPB Cobra ^{db}	MR	MSS	MR#	MRMS	MSS	MSS	MS	MSS	MSS	S	MS	MSS	S
LRPB Hellfire ^{db}	MR	MR	MSS	MS	S	-	MRMS	-	MSS	MSS _p	MSS	MS	MS
LRPB Kittyhawk ^{db}	MRMS	RMR	MS	MRMS	MRMS	MS	S	S	S	S	S	MS	RMR
LRPB Lancer ^{db}	R	MR	RMR#	MRMS	MS	MRMS	S	S	MS	MSS	S	MRMS	MSS
LRPB Nighthawk ^{db}	RMR	RMR	MSS	MS	MSS	S	MS	S	MS	MSS _p	MSS	MS	MSS
LRPB Scout ^{db}	MRMS	MS	MS	SVS	S	MRMS	R	S	MSS	MSS	S	S	MR
LRPB Trojan ^{db}	MRMS	MSS	MR#	MSS	MS	S	MS	MSS	MSS	MS	MS	MS	SVS
Mace ^{db}	MRMS	SVS	MSS	MRMS	S	MSS	MRMS	MS	MS	S	MS	MRMS	S
Razor CL Plus ^{db}	MRMS	MS	S	MSS	SVS	MSS	MR	S	MRMS	S	MSS	MS	RMR
RockStar ^{db}	MR	MRMS	S	MRMS	MSS	S	MSS	MRMS	MRMS	Sp	MS	MS	VS
Scepter ^{db}	MRMS	MSS	MSS	MRMS	S	SVS	MRMS	S	MSS	MSS	MS	MS	MSS
Sheriff CL Plus ^{db}	MS	MSS	SVS	MRMS	S	SVS	MS	MRMS	MRMS	S	MS	MS	S
Sunblade CL Plus ^{db}	MSP	MR _p	MRMS _p	MSS _p	Sp	-	-	-	-	-	-	-	-
Sunflex ^{db}	MR	RMR	MR#	MS	MSS	-	-	-	-	-	-	-	-
Sunlamb ^{db}	RMR	MRMS	MS	MRMS	MR	-	MR	-	MSS	S	MS	MS	S
Suntop ^{db}	MRMS	MRMS	MR	MSS	MSS	-	S	-	MRMS	MSS	MS	MSS	R
Vixen ^{db}	MRMS	MRMS	SVS	MRMS	S	S	MSS	MRMS	MS	S	MS	MSS	SVS
Wallup ^{db}	MRMS	MRMS	S	MSS	S	MR	MR	MS	MRMS	S	MS	MSS	SVS
Yitpi ^{db}	S	MRMS	S	SVS	MSS	MS	MR	MSS	S	S	MS	MS	MR
SPECIALTY WHEAT													
LRPB Impala ^{db}	MR	MR	SVS	MSS	SVS	MR	MSS	SVS	S	MSS	MSS	MS	S
LRPB Oryx ^{db}	MR	MR	RMR	MSS	SVS	-	S	-	MSS	MSS	MSS	MS	VS
LRPB Parakeet ^{db}	MR	RMR	R	MSS	S	-	MS	-	S	MSS	MS	MS	MSS
DURUM WHEAT													
Bitalli ^{db}	MR	MS	MR	MRMS	MRMS	-	S	-	RMR	SVSp	MS	MS	R
DBA Aurora ^{db}	RMR	MRMS	R	MRMS	MR	-	MSS	-	RMR	VS	MSS	MS	-
DBA Spes ^{db}	R	MS	R	MRMS	MRMS	-	MS	-	RMR	VS	MS	MS	R
DBA Vittaroi ^{db}	MR	MS	MR	MRMS	MS	-	S	-	MR	SVS	MSS	MSS	R
Westcourt ^{db}	RMR	MR	RMR	MRMS	MS	-	MSS	-	MR	SVSp	MS	MS	R

Table 5, cont. next page

(Continued) Table 5: Wheat variety disease rating guide.

	Rust			Yellow leaf spot	<i>Septoria tritici</i>	Powdery mildew	CCN res	Root lesion nematode		Crown rot	Common root rot	Black tip (Black point)	Flag smut
	Stem	Stripe	Leaf					<i>P. neglectus</i>	<i>P. thornei</i>				
FEED WHEAT													
Anapurna	MSS ^p	R ^p	MS ^p	MRMS ^p	MRMS ^p	-	-	-	-	-	-	-	-
LRPB Beaufort ^{db}	SVS	RMR	MS	MRMS	MSS	-	-	-	MSS	-	-	-	-
Longsword ^{db}	MR	MR	MSS	MRMS	MSS	-	MRMS	-	MR	MSS	MS	MS	MRMS
Manning ^{db}	MR	RMR	MSS	MR	MRMS	MSS	S	MSS	S	VS	SVS	S	R
RGT Accroc	MS	R	SVS	MR	MRMS	MRMS	S	S	MSS	SVS	S	MRMS	SVS
RGT Calabro	MS	RMR	MSS	MR	MRMS	MR	S	S	MS ^p	SVS	MSS	MS	RMR
RGT Zanzibar	VS	R	SVS	MS	S	MRMS	MSS	S	MS ^p	S	S	MRMS	SVS
SF Adagio	SVS	RMR	S	MR	MRMS	-	S	-	MSS	SVS	MSS	MRMS	MS
SQP Revenue ^{db}	RMR	R	VS	MRMS	MSS	R	S	S	S	S	SVS	MS	S
TenFour ^{db}	SVS	SVS	MSS	MRMS	S	-	MS	-	S	MSS	MS	MRMS	MR

Source: Agriculture Victoria Cereal disease guide (2020), National Variety Trials disease ratings (2020).

Varieties marked may be more susceptible if more virulent strains are present. ^p = These ratings are provisional – treat with caution.

Resistance: 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.

Table 6: Wheat diseases.

Disease	Organism	Symptoms	Occurrence	Inoculum source	Control
FOLIAR					
Leaf rust	<i>Puccinia triticina</i>	Small orange-brown powdery pustules on leaf.	Develops in spring. Favoured by mild (15°C to 22°C) moist weather.	Airborne spores from living wheat plants.	Resistant varieties, control volunteer summer-autumn wheat. Seed dressings and foliar fungicides.
Stem rust	<i>Puccinia graminis</i> f. sp. <i>tritici</i>	Red-brown, powdery, oblong pustules with tattered torn edges on leaf and stem.	Can develop from mid-spring into summer. Favoured by warm (15°C to 30°C) humid conditions.	Airborne spores from living plants (wheat, barley, durum and triticale).	Resistant varieties, control volunteer summer-autumn wheat and barley. Foliar fungicides.
Stripe rust	<i>Puccinia striiformis</i> f. sp. <i>tritici</i>	Yellow powdery pustules often in stripes on leaves.	Can develop throughout the growing season. Favoured by cool (8°C to 15°C), moist weather.	Airborne spores from living wheat and barley grass plants.	Resistant varieties, fungicides (seed, fertiliser and foliar), control volunteer summer-autumn wheat.
Septoria tritici blotch	<i>Zymoseptoria tritici</i>	Leaf lesions with minute black spots, leaf death.	More common in early sown crops and in wet springs.	Initially airborne spores released from stubble and then spread by rain splashed spores within crop.	Resistant varieties, foliar fungicides, seed treatments, stubble removal.
Yellow leaf spot	<i>Pyrenophora tritici-repentis</i>	Leaf lesions often with yellow border, leaf death.	More severe in close rotations, when wheat is sown into wheat stubble.	Ascospores from stubble infect plants. Then secondary spread is by airborne spores in spring.	Stubble removal, crop rotation, foliar fungicides, resistant varieties.
Barley yellow dwarf virus (BYDV)	<i>Barley yellow dwarf virus</i>	Yellowing, dwarfing of infected plants, interveinal chlorosis, reduced seed set.	Most common in perennial grass pastures and in early sown crops.	A virus transmitted by aphids from infected grasses and cereals.	Resistant varieties, seed treatments and/or insecticide treatments to control aphids.
GRAIN					
Bunt	<i>Tilletia laevis</i> , <i>T. tritici</i>	Seed contains a black, foul smelling mass of spores. Affected grain is not accepted at silos.	Potentially region wide.	Spores on seed coat infect seedling before it emerges.	Seed-applied fungicide.
Flag smut	<i>Urocystis agropyri</i>	Stunted plants with black, powdery streaks in leaves.	Most likely in crops sown early in warm soils.	Soil and seed-borne spores.	Resistant varieties, seed-applied fungicide.
Loose smut	<i>Ustilago tritici</i>	Black powdery heads on diseased plants.	Region wide.	Infected seed is the predominant source.	Seed-applied fungicide.
ROOT/CROWN					
Common root rot	<i>Bipolaris sorokiniana</i>	Browning of the roots, sub-crown internode and the stem base. Brown spots on leaves. White heads and pinched grain.	Scattered through crop.	Soil-borne on grass and cereal residues. Also as spores in the soil.	Crop rotation, 1 year free from hosts.
Crown rot	<i>Fusarium pseudograminearum</i> , <i>F. culmorum</i>	Browning of stem bases, crown and sometimes roots. White heads and pinched grain.	More severe following a wet winter and dry spring, especially on heavy soils that are poorly drained.	Soil-borne on grass and cereal residues.	Crop rotation. Avoid highly susceptible varieties, especially durum wheat.
Cereal cyst nematode (CCN)	<i>Heterodera avenae</i>	Yellow, stunted plants with knotted roots, often in patches.	Light soils and well-structured clays where cereals are common.	Present in most soils in the southern region of Australia.	Resistant varieties, 2-year break from susceptible cereals and grasses, in particular wild oats.
Rhizoctonia bare patch	<i>Rhizoctonia solani</i> AG 8	Patches of stunted plants with yellow-red, erect leaves. Spear-tipped roots.	Associated with reduced tillage and poor weed control in autumn. Discouraged by soils with high organic matter.	Fungus carries over in organic matter in the soil. Wide host range.	Pre-cropping weed control, chemical fallow, cultivation, modified sowing equipment. Group B herbicides may increase severity on some soil types. Read the label.
Root lesion nematode	<i>Pratylenchus thornei</i> , <i>P. neglectus</i>	Reduced tillering, ill thrift; a lack of root branching and lesions on roots.	Favoured by wheat in rotation with chickpeas, medic and vetch.	Survive as dormant nematodes in the soil.	Crop rotation using resistant crops and resistant varieties.
Take-all	<i>Gaeumannomyces graminis</i> var. <i>tritici</i>	Blackening of roots, stem bases and crown. Plant stunting with white heads and pinched grain.	Favoured by a wet spring with a dry finish.	Soil-borne on grass hosts and cereal residues.	Crop rotation, at least 1 year free of hosts (cereals and grasses, especially barley grass). Fungicide applied to seed or fertiliser.

Sources: This table has been developed from information in the publications Wallwork H (2000) (Ed) Cereal root and crown diseases (Grains Research and Development Corporation, SARDI) and Wallwork H (2000) (Ed) Cereal leaf and stem diseases (Grains Research and Development Corporation, SARDI). Reviewed by Grant Hollaway, Agriculture Victoria (2020).

Table 7: Mallee and Wimmera wheat (main season). NVT long-term predicted yield expressed as a percentage of mean yield.

		MALLEE						WIMMERA					
Year			2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)			1.59	4.06	3.21	1.01	3.32		1.31	6.76	4.82	1.84	4.31
	Quality	No. trials	6	6	7	4	5	No. trials	3	5	5	2	4
BREAD WHEAT													
Axe ^{db}	AH	23	101	87	93	103	-	15	108	90	94	98	-
Ballista ^{db}	AH	5	-	-	-	-	117	4	-	-	-	-	114
BASF Ascot ^{db}	APW	9	-	-	-	99	104	6	-	-	-	103	99
Beckom ^{db}	AH	28	109	109	106	105	108	19	111	108	105	106	105
Catapult ^{db}	AH	9	-	-	-	109	109	6	-	-	-	106	110
Chief CL Plus ^{db}	APW	15	-	91	-	100	96	16	-	95	105	91	104
Coolah ^{db}	AH	0	-	-	-	-	-	6	-	-	-	106	92
Coota ^{db}	AH	0	-	-	-	-	-	4	-	-	-	-	98
Corack ^{db}	APW	28	104	91	105	104	104	19	114	99	107	91	104
Correll ^{db}	AH	6	-	100	-	-	-	8	92	95	-	-	-
Cosmick ^{db}	AH	28	105	108	101	103	104	15	105	104	100	106	-
Cutlass ^{db}	APW	28	99	105	103	96	95	19	91	101	101	101	101
Derrimut ^{db}	AH	12	97	103	-	-	-	19	93	98	95	104	97
DS Darwin ^{db}	AH	22	-	95	95	92	93	19	81	97	95	94	93
Elmore CL Plus ^{db}	AH	28	96	102	93	94	93	19	84	96	91	104	93
Emu Rock ^{db}	AH	28	106	99	97	105	107	19	111	100	98	104	98
Estoc ^{db}	APW	23	99	101	100	99	-	15	98	98	99	101	-
Gladius ^{db}	AH	23	97	97	95	100	-	15	100	96	96	102	-
Grenade CL Plus ^{db}	AH	28	98	95	94	99	97	19	97	95	95	101	95
Hammer CL Plus ^{db}	AH	5	-	-	-	-	104	0	-	-	-	-	-
Harper ^{db}	APW	12	100	105	-	-	-	8	96	98	-	-	-
Hatchet CL Plus ^{db}	AH	19	96	94	91	-	-	13	104	93	93	-	-
Justica CL Plus ^{db}	APW	12	95	101	-	-	-	8	89	97	-	-	-
Kord CL Plus ^{db}	AH	28	97	92	96	98	93	19	98	92	95	98	97
LG Cobalt ^{db}	APW	9	-	-	-	109	101	2	-	-	-	102	-
LRPB Arrow ^{db}	AH	28	103	101	104	103	105	19	108	104	105	99	104
LRPB Cobra ^{db}	AH	23	93	104	98	90	-	19	72	107	97	96	93
LRPB Flanker ^{db}	AH	0	-	-	-	-	-	8	76	88	-	-	-
LRPB Havoc ^{db}	AH	22	-	90	103	101	104	16	-	100	105	89	101
LRPB Hellfire ^{db}	AH	0	-	-	-	-	-	4	-	-	-	-	97
LRPB Lincoln ^{db}	AH	0	-	-	-	-	-	15	72	94	92	94	-
LRPB Phantom ^{db}	AH	28	95	104	96	93	93	19	82	98	94	102	95
LRPB Scout ^{db}	AH	28	103	110	97	101	105	19	99	105	97	109	98
LRPB Trojan ^{db}	APW	28	100	108	105	97	101	19	92	107	104	101	103
LRPB Viking ^{db}	AH	0	-	-	-	-	-	8	73	94	-	-	-
Mace ^{db}	AH	28	105	95	105	107	105	19	120	100	107	97	106
Razor CL Plus ^{db}	ASW	16	-	-	104	109	111	11	-	-	105	103	105
RockStar ^{db}	AH	5	-	-	-	-	114	4	-	-	-	-	112
Scepter ^{db}	AH	28	114	105	111	114	113	19	136	106	113	104	114
Sheriff CL Plus ^{db}	APW	15	-	103	-	105	106	11	-	104	-	101	106
Shield ^{db}	AH	28	107	102	97	106	102	19	112	97	97	108	99
Sunblade CL Plus ^{db}	AH	5	-	-	-	-	109	4	-	-	-	-	102
Sunprime ^{db}	AH	5	-	-	-	-	94	0	-	-	-	-	-
Vixen ^{db}	AH	22	-	112	109	118	122	16	-	112	111	110	111
Wallup ^{db}	AH	9	-	-	-	93	92	19	84	94	95	92	94
Wyalkatchem ^{db}	APW	11	101	96	-	-	-	8	107	99	-	-	-
Yitpi ^{db}	AH	28	96	100	97	94	90	19	86	95	95	100	96
SPECIALTY WHEAT													
Barham	ASFT	0	-	-	-	-	-	8	94	92	-	-	-
LRPB Impala ^{db}	ASFT	0	-	-	-	-	-	19	97	95	94	105	96
LRPB Oryx ^{db}	TBC	0	-	-	-	-	-	9	-	-	95	-	95
LRPB Parakeet ^{db}	TBC	0	-	-	-	-	-	9	-	-	92	-	94
FEED WHEAT													
LRPB Mustang ^{db}	FEED	0	-	-	-	-	-	16	-	93	95	92	94
RGT Zanzibar	FEED	0	-	-	-	-	-	10	-	105	93	-	-
TenFour ^{db}	FEED	9	-	-	-	98	108	19	94	110	106	94	101

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

Table 8: North Central and North East wheat (main season). NVT long-term predicted yield expressed as a percentage of mean yield.

Year	NORTH CENTRAL						NORTH EAST				
			2015	2016	2017	2019		2015	2016	2017	2019
Mean yield (t/ha)			1.45	7.35	3.49	3.04		3.74	6.80	4.82	4.10
	Quality	No. trials	2	2	2	3	No. trials	4	4	4	4
BREAD WHEAT											
Axe ^{db}	AH	6	108	86	97	-	11	92	83	98	-
Ballista ^{db}	AH	3	-	-	-	120	4	-	-	-	114
BASF Ascot ^{db}	APW	3	-	-	-	104	4	-	-	-	107
Beckom ^{db}	AH	9	104	107	110	111	16	110	107	111	110
Catapult ^{db}	AH	3	-	-	-	117	4	-	-	-	109
Chief CL Plus ^{db}	APW	3	-	-	-	107	4	-	-	-	105
Condo ^{db}	AH	8	106	98	100	96	16	100	97	101	96
Coolah ^{db}	AH	7	-	100	105	89	13	97	106	100	96
Coota ^{db}	AH	3	-	-	-	104	4	-	-	-	104
Corack ^{db}	APW	9	110	99	105	107	16	104	97	107	105
Correll ^{db}	AH	4	101	97	-	-	7	98	95	-	-
Cosmick ^{db}	AH	8	101	105	103	102	13	103	105	103	99
Cutlass ^{db}	APW	9	93	105	104	95	16	104	107	104	97
Derrimut ^{db}	AH	9	95	98	96	97	16	99	98	98	98
DS Bennett ^{db}	ASW	4	-	-	97	81	12	-	114	94	87
DS Darwin ^{db}	AH	9	98	97	96	97	16	100	97	98	100
DS Pascal ^{db}	APW	6	-	101	85	90	16	97	101	88	91
EG Jet ^{db}	APW	4	92	-	94	-	7	99	-	93	-
EGA Gregory ^{db}	APW*	8	85	95	99	78	16	90	100	95	85
Elmore CL Plus ^{db}	AH	9	90	98	97	88	16	95	100	95	92
Emu Rock ^{db}	AH	5	111	98	-	109	7	99	96	-	-
Estoc ^{db}	APW	6	102	101	101	-	11	102	100	102	-
Gladius ^{db}	AH	6	102	96	96	-	11	99	94	97	-
Grenade CL Plus ^{db}	AH	9	105	96	97	103	15	94	94	95	100
Harper ^{db}	APW	4	100	101	-	-	7	101	99	-	-
Hatchet CL Plus ^{db}	AH	6	115	94	92	-	0	-	-	-	-
Justica CL Plus ^{db}	APW	4	93	95	-	-	7	94	95	-	-
Kord CL Plus ^{db}	AH	9	106	95	98	103	14	95	93	98	100
LG Cobalt ^{db}	APW	8	99	107	107	101	13	108	109	107	101
LRPB Arrow ^{db}	AH	9	107	101	102	109	16	104	98	104	106
LRPB Cobra ^{db}	AH	9	94	105	101	100	16	107	106	102	104
LRPB Flanker ^{db}	AH	6	87	100	100	-	10	94	106	97	-
LRPB Gauntlet ^{db}	APW	4	86	91	-	-	8	92	95	-	-
LRPB Havoc ^{db}	AH	7	-	98	103	113	11	-	94	106	110
LRPB Hellfire ^{db}	AH	3	-	-	-	96	4	-	-	-	96
LRPB Kittyhawk ^{db}	AH	0	-	-	-	-	2	-	92	85	-
LRPB Lancer ^{db}	AH	0	-	-	-	-	11	90	96	93	-
LRPB Lincoln ^{db}	AH	6	98	98	91	-	11	97	96	94	-
LRPB Merlin ^{db}	AH	4	103	93	-	-	7	94	92	-	-
LRPB Phantom ^{db}	AH	9	93	103	99	94	13	100	105	100	95
LRPB Scout ^{db}	AH	9	103	105	101	105	16	103	105	101	101
LRPB Spitfire ^{db}	AH	6	94	92	95	-	11	94	92	95	-
LRPB Trojan ^{db}	APW	9	97	105	104	101	16	106	106	105	102
LRPB Viking ^{db}	AH	4	90	101	-	-	8	97	103	-	-
Mace ^{db}	AH	9	113	99	104	115	16	105	96	106	112
Magenta ^{db}	APW	4	94	100	-	-	7	98	101	-	-
QAL2000	AGP*	4	92	103	-	-	9	97	106	-	94
Razor CL Plus ^{db}	ASW	5	-	-	105	114	8	-	-	106	110
RockStar ^{db}	AH	3	-	-	-	121	4	-	-	-	114
Scepter ^{db}	AH	9	117	108	113	123	16	111	106	112	116
Sheriff CL Plus ^{db}	APW	3	-	-	-	115	4	-	-	-	111
Shield ^{db}	AH	1	-	-	-	95	0	-	-	-	-
Sunblade CL Plus ^{db}	AH	3	-	-	-	108	4	-	-	-	109
Sunmate ^{db}	AH	2	99	-	-	-	5	99	-	96	-
Sunprime ^{db}	AH	2	-	-	-	100	1	-	-	-	99
Suntop ^{db}	AH	8	95	96	106	96	16	98	98	101	103
Vixen ^{db}	AH	5	-	-	110	123	8	-	-	114	113
Wallup ^{db}	AH	9	99	97	96	98	16	101	96	99	99
Yitpi ^{db}	AH	9	98	96	95	94	15	94	96	98	91

Table 8, cont. next page

(Continued) Table 8: North Central and North East wheat (main season). NVT long-term predicted yield expressed as a percentage of mean yield.

		NORTH CENTRAL					NORTH EAST				
Year			2015	2016	2017	2019		2015	2016	2017	2019
Mean yield (t/ha)			1.45	7.35	3.49	3.04		3.74	6.80	4.82	4.10
	Quality	No. trials	2	2	2	3	No. trials	4	4	4	4
SPECIALTY WHEAT											
Barham	ASFT	4	98	99	-	-	7	91	99	-	-
LRPB Impala [Ⓛ]	ASFT	9	104	102	101	99	14	96	103	97	95
LRPB Oryx [Ⓛ]	TBC	7	106	-	98	102	9	102	-	99	98
LRPB Parakeet [Ⓛ]	TBC	5	-	-	96	99	8	-	-	94	97
FEED WHEAT											
DS Faraday [Ⓛ]	FEED	4	-	-	99	80	11	-	99	96	86
DS Tull [Ⓛ]	FEED	4	-	-	96	97	11	-	102	95	96
LRPB Beaufort [Ⓛ]	FEED	2	-	-	101	-	4	104	-	99	-
LRPB Mustang [Ⓛ]	FEED	7	-	98	101	98	12	-	98	101	98
LRPB Reliant [Ⓛ]	FEED	6	102	93	100	-	9	91	94	98	-
RGT Calabro	FEED	0	-	-	-	-	4	100	106	93	86
RGT Zanzibar	FEED	6	-	110	102	87	12	-	116	100	96
SEA Condamine	FEED	2	-	-	99	-	4	-	-	99	-
Steel	FEED	4	97	88	-	-	8	96	85	-	-
TenFour [Ⓛ]	FEED	9	108	104	106	107	4	-	-	-	107

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: [National Variety Trials \(2015–19\)](#)

Note: 2018 North Central and North East data not published as a result of compromised trials.

Table 9: North East and South West wheat (early season). NVT long-term predicted yield expressed as a percentage of mean yield.

Year	Quality	No. trials	NORTH EAST				No. trials	SOUTH WEST				
			2015	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)			6.20	5.78	2.71	5.89		4.29	7.23	6.95	5.05	6.54
			1	1	1	1		3	3	1	2	2
BREAD WHEAT												
Beckom ^{db}	AH	4	107	109	120	112	11	114	105	114	110	111
Bolac ^{db}	AH	3	99	96	96	-	9	98	98	97	98	-
Catapult ^{db}	AH	2	-	-	125	119	4	-	-	-	108	107
Chara ^{db}	AH	3	97	101	105	-	9	100	96	100	97	-
Coolah ^{db}	AH	4	102	104	107	105	11	104	102	105	103	103
Coota ^{db}	AH	1	-	-	-	118	2	-	-	-	-	108
Cutlass ^{db}	APW	4	98	110	105	111	11	102	103	103	99	97
DS Bennett ^{db}	ASW	3	-	107	89	106	8	-	113	101	106	107
DS Darwin ^{db}	AH	4	96	95	105	97	0	-	-	-	-	-
DS Pascal ^{db}	APW	4	109	97	104	97	11	108	102	103	105	110
Denison ^{db}	APW	1	-	-	-	117	2	-	-	-	-	104
EG Jet ^{db}	APW	3	-	98	105	98	5	-	-	106	110	116
EGA Gregory ^{db}	APW*	4	86	99	96	98	0	-	-	-	-	-
EGA Wedgetail ^{db}	APW*	4	98	97	90	95	11	95	99	93	95	96
Elmore CL Plus ^{db}	AH	4	96	100	98	99	11	96	96	96	94	93
Forrest ^{db}	APW	4	98	94	85	92	11	92	99	91	94	95
Illabo ^{db}	AH	3	-	99	101	98	8	-	106	104	107	111
Kiora ^{db}	AH	3	101	99	97	-	11	100	100	99	100	100
LRPB Flanker ^{db}	AH	3	89	105	100	-	0	-	-	-	-	-
LRPB Kittyhawk ^{db}	AH	3	100	93	91	-	9	95	98	94	97	-
LRPB Lancer ^{db}	AH	4	104	93	108	94	0	-	-	-	-	-
LRPB Nighthawk ^{db}	AH	2	-	-	92	96	4	-	-	-	103	105
LRPB Phantom ^{db}	AH	4	98	107	108	107	11	102	98	101	96	95
LRPB Scout ^{db}	AH	0	-	-	-	-	7	105	99	104	-	-
LRPB Trojan ^{db}	APW	4	107	107	116	110	11	112	106	113	112	112
LRPB Viking ^{db}	AH	0	-	-	-	-	6	97	94	-	-	-
QAL2000	AGP*	1	103	-	-	-	6	107	99	-	-	-
RockStar ^{db}	AH	1	-	-	-	119	2	-	-	-	-	119
Scepter ^{db}	AH	2	-	-	121	117	4	-	-	-	107	106
Sheriff CL Plus ^{db}	APW	1	-	-	-	109	2	-	-	-	-	107
Sunflex ^{db}	AH	2	-	-	112	110	4	-	-	-	113	118
Sunlamb ^{db}	ASW	4	94	92	81	90	0	-	-	-	-	-
Suntop ^{db}	AH	3	99	100	-	102	0	-	-	-	-	-
SPECIALTY WHEAT												
LRPB Gazelle ^{db}	ASFT	1	101	-	-	-	6	102	97	-	-	-
FEED WHEAT												
DS Faraday	FEED	2	-	97	97	-	0	-	-	-	-	-
DS Tull ^{db}	FEED	2	-	101	111	-	0	-	-	-	-	-
Longsword ^{db}	FEED*	3	-	102	102	102	8	-	100	101	100	99
LRPB Beaufort ^{db}	FEED	3	-	113	101	114	11	109	118	111	115	116
Manning ^{db}	FEED	2	100	90	-	-	11	82	114	90	106	108
Craw 128	FEED	1	105	-	-	-	6	103	104	-	-	-
RGT Accroc	FEED	4	115	105	84	104	11	106	122	104	115	120
RGT Calabro	FEED	4	110	99	72	99	11	96	122	102	117	120
RGT Zanzibar	FEED	3	-	112	107	112	8	-	115	110	112	117
SF Adagio	FEED	4	112	97	82	97	11	102	116	102	113	118
SF Scenario	FEED	1	101	-	-	-	6	86	104	-	-	-
SQP Revenue ^{db}	FEED	1	106	-	-	-	11	90	115	95	110	113

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Note: North East 2016 data not published as a result of compromised trials.

Source: National Variety Trials (2015–19)

Table 10: South West wheat (long season). NVT long-term predicted yield expressed as a percentage of mean yield.

		SOUTH WEST					
Year			2015	2016	2017	2018	2019
Mean yield (t/ha)			3.81	7.46	5.05	5.28	5.95
	Quality	No. trials	2	2	1	2	1
BREAD WHEAT							
Cutlass ^{db}	APW	1	-	-	105	-	-
DS Bennett ^{db}	ASW	6	-	122	110	110	118
DS Pascal ^{db}	APW	8	117	104	95	99	105
EGA Wedgetail ^{db}	APW*	7	97	91	102	95	95
Forrest ^{db}	APW	8	101	90	98	95	96
Illabo ^{db}	AH	6	-	101	101	97	106
LRPB Kittyhawk ^{db}	AH	7	101	94	97	96	-
LRPB Nighthawk ^{db}	APW	3	-	-	-	98	102
LRPB Trojan ^{db}	APW	8	126	106	101	98	110
Sunlamb ^{db}	ASW	7	85	90	101	96	-
Sunzell	AH	4	75	70	-	-	-
Wylah	APW*	4	99	86	-	-	-
FEED WHEAT							
Anapurna	FEED	1	-	-	-	-	112
Brennan	FEED	8	84	96	93	100	93
Einstein	FEED	8	79	108	94	107	97
Longsword ^{db}	FEED*	6	-	89	94	89	97
LRPB Beaufort ^{db}	FEED	8	117	124	108	111	118
Mackellar	FEED	4	98	107	-	-	-
Manning ^{db}	FEED	8	97	118	112	113	110
Naparoo ^{db}	FEED	8	53	63	99	88	71
RGT Accroc	FEED	8	116	126	126	115	123
RGT Calabro	FEED	8	103	124	110	114	115
RGT Zanzibar	FEED	6	-	117	111	105	119
Rudd	FEED	4	95	103	-	-	-
SF Adagio	FEED	8	112	116	113	109	113
SF Ovalo	FEED	5	85	112	98	-	-
SF Scenario	FEED	4	90	105	-	-	-
SQP Revenue ^{db}	FEED	8	107	122	104	113	114
Steel	FEED	4	76	47	-	-	-
Sunmax ^{db}	FEED	5	89	85	100	-	-
Tennant	FEED	4	72	95	-	-	-

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

Table 11: Wimmera wheat (durum). NVT long-term predicted yield expressed as a percentage of mean yield.

		WIMMERA				
Year			2016	2017	2018	2019
Mean yield (t/ha)			6.90	5.73	4.16	4.33
	Quality	No. trials	1	1	1	1
Bitalli ^{db}	ADR	3	-	106	104	106
Caparoi ^{db}	ADR	4	70	97	95	98
DBA Artemis ^{db}	ADR	4	108	100	101	99
DBA-Aurora ^{db}	ADR	4	111	102	102	102
DBA Bindaroi ^{db}	ADR	2	-	-	98	99
DBA Spes ^{db}	ADR	4	105	100	101	100
DBA Vittaroi ^{db}	ADR	2	-	-	98	104
EGA Bellaroi ^{db}	ADR	4	97	91	97	88
Hyperno ^{db}	ADR	4	97	98	99	98
Saintly ^{db}	ADR	4	90	101	99	104
Tjilkuri ^{db}	ADR	4	88	99	98	98
Westcourt ^{db}	ADR	2	-	-	107	98
WID802 ^{db}	ADR	4	115	103	103	103

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis

Source: National Variety Trials (2016–19)

ACKNOWLEDGEMENTS

Grant Hollaway	Agriculture Victoria, Horsham
Jason Abel	University of Adelaide
Colin Edmundson	Advanta Seeds
David Leah	Seed Force
Ash Brooks	InterGrain
David Hogan	Laucke Flour Mills
James Hunt	La Trobe University, Melbourne
Russell Eastwood	Australian Grain Technologies
James Whiteley	Australian Grain Technologies

BARLEY

Barley growers in Victoria have access to several different barley varieties. Identifying the variety that is best suited to a region and will give the greatest return requires consideration of several factors, including relative yield, disease resistance, marketing options, and the probability of achieving particular quality grades. The decision whether to grow a malting or non-malting variety may depend on one or more factors, including the difference in payments between malting and non-malting grades related to yield differences, the probability of producing a malting-grade barley, the availability of malting storage segregations in storage facilities, and disease resistance and agronomic considerations. It is important that growers contact grain marketers to discuss market demand. Malting barley is grown, stored and sold on a variety-specific basis and it is important to ascertain if the variety chosen can be stored and marketed in your area.

NEW VARIETIES

Beast[®] (tested as AGTB0113) is the first barley variety released by Australian Grain Technologies (AGT). Beast[®] is being released as a high-yielding feed variety while undergoing malt accreditation with Barley Australia. With similar plant type and grain size characteristics to Compass[®], and slightly quicker maturity, Beast[®] is well suited to medium to low-rainfall environments.

Laperouse[®] (tested as WI4952) is the first variety to be released in Australia by French plant breeding company SECOBRA Recherches, in collaboration with the University of Adelaide. Laperouse[®] has undergone preliminary trial work that indicates its phenology could be better suited to early sowing times than other spring varieties and shows improvements in resistance to net blotches. Laperouse[®] has very good lodging resistance and standability, with a low risk to head loss. Laperouse[®] is undergoing stage 1 malt accreditation with Barley Australia.

Maximus CL[®] (tested as IGB1705T) is a new potential malting barley variety, bred and marketed by InterGrain. Maximus CL[®] is an imidazolinone (IMI)-tolerant barley and is registered for use with an appropriate IMI herbicide. The variety is comparable to Spartacus CL[®], with good lodging tolerance and a low-medium head loss risk, but has overall improved disease resistance compared with Spartacus CL[®]. Maximus CL[®] is undergoing stage 2 malt evaluation with Barley Australia.

Kiwi[®] is a new barley variety bred by Malteurop in New Zealand, which has been bulked up in Australia in the past two years. Suited to the high-rainfall zones, as is Fairview[®] (from the same program), Kiwi[®] exhibits very good malting and brewing qualities while providing competitive agronomic performance. Kiwi[®] is undergoing stage 1 malt evaluation with Barley Australia.

QUALITY CHANGES

Grain Trade Australia (GTA) has made no major changes to the quality standards regarding barley for the 2020-21 season.

INDUSTRY UPDATE

Australian Crop Breeders Ltd (ACB) has developed new guidelines for wheat maturity classifications in 2020. Cereal maturity classifications and terminology in this guide have been assigned using the industry guidelines provided by Australian Crop Breeders Ltd. Barley has been classified into the same maturity groups as wheat based on data from the GRDC Phenology Initiative. As maturity descriptions have been applied to wheat, barley and oats using the same system, the maturity descriptions for individual barley varieties will be different to previous editions.

IMI-tolerant barley (Spartacus CL[®] or Scope CL[®]) may incur market access restrictions in some important export destinations, including Japan. This potential restriction is due to the existing maximum

residue limits (MRLs) in those destination markets being below the residues allowed in Australia for IMI chemicals. South Korea adopted an MRL for imazapyr of 0.7mg/kg at the end of 2019. All grain exported must meet the importing country's regulatory requirements, including MRLs for individual chemicals that may be listed under the IMI category.

Growers are encouraged to speak with their relevant bulk handling companies and grain buyers to keep updated with their plans for handling IMI-tolerant barley treated with herbicides registered for use on these varieties (for example, Intervix®, Intercept® and Sentry®). Growers are also encouraged to speak to their agronomists or advisers. Information will be updated regularly at barleyaustralia.com.au/ba-industry-updates.

MALT EVALUATION

In 2020 no varieties received Barley Australia malt accreditation. Banks[Ⓛ] was not granted malting accreditation, but will still be available as a non-malting variety through InterGrain, with grain available from Seedclub members and resellers. At the time of publication, varieties Biere[Ⓛ], Traveler and LG Maltstar[Ⓛ] were withdrawn from malting evaluation.

Leabrook[Ⓛ] passed stage 1 evaluation; however, due to grain being unsuitable for evaluation in 2019, stage 2 evaluation was delayed until 2020, with a decision not expected to be made before 2021. New variety Maximus CL[Ⓛ] passed stage 1 in 2019 and has moved onto stage 2 evaluation in 2020, with the earliest possible decision expected in 2021. LG Alestar[Ⓛ] had insufficient grain available to complete stage 2 evaluation in 2019 and has been carried over into 2020, with the earliest possible decision expected in 2021.

Buff[Ⓛ] passed stage 1 in 2019 but had insufficient grain quantity available to complete stage 2 evaluation in 2020. As a result, stage 2 evaluation for this variety will be carried over to 2021, with the earliest possible decision expected in 2022. Bottler[Ⓛ] and Kiwi[Ⓛ] both had insufficient grain available to complete stage 1 evaluation in 2019, and the evaluation has been carried over into 2020, with the earliest expected accreditation result available in 2022.

Laperouse[Ⓛ] and new variety AGTB0043 are undergoing stage 1 evaluation in 2020 and expect a decision in 2022. New variety Beast[Ⓛ] was accepted into malt evaluation in 2020. The outcome of malt evaluation of these varieties will be updated on barleyaustralia.com.au in March 2021.

Barley Australia lists malting varieties that are preferred by its member marketing companies. These varieties are highlighted in the variety listings as 'Malting barley (preferred variety)'. The level of demand for domestic and export markets in Victoria is shown in Table 2.

KEY DISEASE AND PEST CONSIDERATIONS

Diseases have the potential to cause significant issues during favourable seasons, so avoid sowing susceptible varieties into infected stubble, control the green bridge and apply fungicides and insecticides proactively to maximise production.

Stubble-borne diseases, Spot form net blotch (SFNB), Net form net blotch (NFNB), and Scald are most common in paddocks where barley residue is present from previous seasons. Ensure good coverage of effective seed treatments to provide effective control of Bunt and Smut diseases. Some products can also provide suppression of foliar diseases, so check the label and choose the appropriate product for your situation.

MORE INFORMATION

nvtonline.com.au

- Detailed NVT results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reporter app

grdc.com.au

- [GRDC GrowNotes™ Barley Southern region](#)
- [GRDC Southern region NVT harvest reports](#)

agriculture.vic.gov.au

- [Agriculture Victoria Cereal Disease Guide](#)
- [Growing barley in Victoria](#)

barleyaustralia.com.au

Information includes:

- [List of preferred malting barley varieties](#)
- [Update status of malting barley evaluation](#)

extensions.com.au/FieldCropDiseasesVic

- Expert support on crop diseases in Victoria at your fingertips

VARIETY DESCRIPTIONS

Varieties have been listed according to quality classification grade and in alphabetical order and not in order of preference. The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects or seed companies.

Abbreviations used are:

Ⓛ Denotes that Plant Breeder's Rights apply

CCN Cereal cyst nematode

BYDV Barley yellow dwarf virus

RLN Root lesion nematode

NFNB Net form of net blotch

SFNB Spot form of net blotch

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

MALTING BARLEY

COMMANDER[Ⓛ]

A quick-mid maturing variety best suited to 375 to 500mm rainfall districts, particularly the Wimmera Mallee. It is broadly adapted and is high yielding under favourable spring conditions. Commander[Ⓛ] is inherently lower in grain protein content like Scope CL[Ⓛ]. It has moderately weak straw and can lodge under high-yield environments or if unfavourable conditions occur between grain fill and harvest. Grain size is generally excellent compared with other varieties, but it is prone to low test weights in some seasons. Commander[Ⓛ] is suitable for domestic, Chinese and South-East Asian brewing markets. Growers should consult their grain marketers regarding markets and availability of segregation. Released 2008. Marketed by Seednet. EPR \$3.80.

COMPASS[Ⓛ]

Compass[Ⓛ] is a very quick maturing variety. It is closely related to Commander[Ⓛ] but is significantly higher yielding and earlier flowering with typical May sowing. Compass[Ⓛ] has relatively weak straw strength and is prone to lodging in high-yielding environments. Compass[Ⓛ] has excellent physical grain quality with high retention, low screenings and moderate test weight. Bred by University of Adelaide. Released 2013. Seed available from Seednet. EPR \$3.80.

FAIRVIEW[Ⓛ]

A quick-mid maturing variety best suited to 400 to 600mm rainfall districts. Yields are similar to Westminster[Ⓛ] in these districts. The grain plumpness of Fairview[Ⓛ] is superior to Gairdner. Fairview[Ⓛ] was accredited in 2011 and has an export and domestic malt quality profile. Limited seed is available from Malteurop for the open market. Released 2008. EPR \$3.00.

GAIRDNER

A quick-mid maturing variety best suited to 400 to 600mm rainfall districts. In lower rainfall districts Gairdner can yield well in seasons with favourable spring finishes, but not necessarily within malting specifications. Gairdner is known for high screenings in a dry spring, with levels of grain plumpness generally being inferior to all other malting varieties. Gairdner has now been outclassed; however, some domestic and export brewing market demand remains. Released 1998. Free to trade. No EPR.

LA TROBE[Ⓛ]

Very quick maturing variety for low to medium-rainfall environments. A semi-dwarf plant type providing medium lodging resistance and a medium head loss risk. The variety has a short coleoptile, and sowing depth should be considered. Good sprouting tolerance, excellent test weights and moderately good grain plumpness. It is classed as a 'preferred' malting variety for Graincorp in the Graincorp areas of the North East, Central, Swan Hill, southern Mallee and Wimmera in Victoria. Developed by InterGrain. Released 2013. Free to trade. EPR \$4.00.

RGT PLANET[Ⓛ]

RGT Planet[Ⓛ] is a quick maturing variety. It has elastic maturity, making it suited from low to high-rainfall regions. RGT Planet[Ⓛ] is quick to establish and produces high early biomass for excellent weed competition. Good straw strength and head retention, and generally good test weight and low screenings. Suitable for both domestic and export markets. Released 2016. Bred by RAGT Semences. Seed available from Seed Force Commercial Partners. EPR \$4.00.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

SCOPE CL[Ⓛ]

A moderately tall, quick maturing barley suitable across a range of medium-rainfall environments. Scope CL[Ⓛ] can be prone to head loss and lodging under certain environmental conditions. Scope CL[Ⓛ] has moderate grain size and inherently low grain protein. It is registered for the use of appropriate IMI herbicides. Accredited as malting barley in 2013. Growers are advised to consult with their grain marketer about segregation and pricing. Scope CL[Ⓛ] is accepted into those markets previously accepting Buloke[Ⓛ]. Released 2010. Marketed by Seednet. EPR \$3.50.

SPARTACUS CL[Ⓛ]

Spartacus CL[Ⓛ] is a very quick maturing, CCN-resistant, Clearfield[®] barley. It is a semi-dwarf and is ideally suited to the low to medium-rainfall regions. It is agronomically similar to La Trobe[Ⓛ] but has slightly improved lodging tolerance with a low head loss risk and has a short rachilla hair length, reducing itchiness. Spartacus CL[Ⓛ] is registered for the use of appropriate imidazolinone herbicides. Accredited as a malting barley in 2018, demand for domestic and export markets is high. Growers are advised to consult with their grain marketer about segregation and pricing. Seed available from InterGrain Seedclub members. EPR \$4.25.

WESTMINSTER[Ⓛ]

A quick-mid maturing variety with medium to tall stiff straw and good head retention. This variety continues to have good market demand in Victoria and is an ideal fit into the higher rainfall areas in southern Victoria. Accredited as malting barley in 2013, domestic and export demand remains high. Bred by Nickerson International Research SNC. Released 2009. EPR \$3.00.

FOOD-GRADE BARLEY**HINDMARSH[Ⓛ]**

A very quick maturing semi-dwarf variety recommended for the 325 to 450mm rainfall regions. Hindmarsh[Ⓛ] has a relatively short coleoptile and deep sowing should be avoided to maximise crop establishment and yield potential. Hindmarsh[Ⓛ] is free threshing with good resistance to head loss and high test weight among non-malting varieties. Released 2006. Marketed by Seednet. EPR \$1.50.

NON-MALTING BARLEY**BANKS[Ⓛ]**

Banks[Ⓛ] is a quick-mid maturing variety appropriate for medium to high-rainfall environments. Banks[Ⓛ] is suited to late April to early May sowings. Released 2018. Bred and marketed by InterGrain with limited availability from Seedclub members and resellers. EPR \$4.00.

FATHOM[Ⓛ]

A quick maturing variety with broad adaptation. It has low screenings, similar to Maritime[Ⓛ]. Fathom[Ⓛ] has a long coleoptile and excellent early vigour, giving weed competitiveness and tolerance to deep planting, especially on sandy soils. Fathom[Ⓛ] is well suited to wider row spacings and is an alternative to Hindmarsh[Ⓛ], particularly where more reliable establishment and improved early vigour are sought. Fathom[Ⓛ] is moderately tall, possesses good head loss tolerance but is prone to lodging in high-yielding environments. Developed by University of Adelaide. Released 2011. Seed available from Seednet. EPR \$2.00.

ROSALIND[Ⓛ]

A very broadly adapted, very quick maturing semi-dwarf feed variety with good yield stability. Maturity is typically slightly later than La Trobe[Ⓛ], but earlier than Scope CL[Ⓛ]. It is ideally suited to May sowings. Rosalind[Ⓛ] has strong lodging tolerance and low head loss risk. Bred by InterGrain. Released 2015. Free to trade and available from InterGrain Seedclub members. EPR \$3.50.

VARIETIES UNDERGOING MALT EVALUATION**NEW – BEAST[Ⓛ]**

Beast[Ⓛ] is a quick maturing variety suited to medium to low-rainfall environments and performs well in stressed growing conditions. Similar plant type to Compass[Ⓛ] offering useful levels of early vigour and weed competitiveness, but care should be taken in lodging susceptible conditions. Released 2020 (tested as AGTB0113) and marketed by Australian Grain Technologies. Seed available through AGT Affiliates and is eligible for AGT Seed Sharing™. EPR \$4.00

LG ALESTAR[Ⓛ]

LG Alestar[Ⓛ] is a quick maturing variety, with maturity similar to Commander[Ⓛ], suited to the medium to high-rainfall regions. Undergoing Barley Australia malt accreditation. Insufficient grain quantity was available to complete assessment in 2019, with a decision expected in 2021. Elders suggests good straw strength, head retention and test weight. Bred by Elders. Released 2017. Seed available from Elders. EPR \$3.00.

BOTTLER[Ⓛ]

A quick maturing variety suited to medium to high-rainfall environments. Bottler[Ⓛ] is an export malt type grain. It is undergoing Barley Australia malt accreditation, with insufficient grain available to complete stage 1 evaluation in 2019 it has been carried over into 2020. The earliest possible decision expected in 2022. Bred by Sejet. Released 2018. Seed available from rural merchant stores via selected GrainSearch Affiliates. EPR \$4.00.

BUFF[Ⓛ]

Very quick maturing variety suited to acid soils, with good early vigour and an erect plant type. Buff[Ⓛ] is undergoing Barley Australia malt accreditation, passing stage 1 evaluation in 2019. Insufficient grain was available to continue evaluation in 2020, with the earliest possible accreditation decision expected in 2022. Available in 2021 as a feed variety. Released 2018 (tested as IGB 1506). Bred and marketed by InterGrain. For more information on availability contact InterGrain. EPR \$3.50.

NEW – KIWI[Ⓛ]

Kiwi[Ⓛ] is a quick-mid maturing variety best suited to high-rainfall zone districts. Average yields are stronger than Fairview[Ⓛ] and Westminster[Ⓛ] in these districts. Grain plumpness is comparable to RGT Planet[Ⓛ]. Kiwi[Ⓛ] is undergoing Barley Australia malt accreditation with a decision expected in 2022. It has an export and domestic malt quality profile. Released 2020 (tested as 02035-160). Limited seed is available from Malteurop for the open market. EPR \$3.00.

NEW – LAPEROUSE[Ⓛ]

A quick maturing variety, comparable with Commander[Ⓛ], with a medium plant height. Very good straw strength and standability and good head loss resistance. Accepted into Barley Australia malt accreditation in 2019, with an earliest possible decision expected in 2022. Released 2020 (tested as WI4952). Bred by University of Adelaide and SECOBRA Recherchers, marketed by Seednet. EPR \$3.80.

LEABROOK[Ⓛ]

Leabrook[Ⓛ] is a very quick maturing, medium-tall barley variety, with similar plant type and disease resistance to Compass[Ⓛ] with higher plump grain percentage and lower screenings. Released as a feed variety in 2020, it is undergoing Barley Australia malt accreditation with a decision expected in 2021. Released 2020 (tested as WI4896). Bred by University of Adelaide. Seed available and marketed by Seednet. EPR \$3.80.

NEW – MAXIMUS CL[Ⓛ]

Maximus CL[Ⓛ] is a very quick maturing, IMI-tolerant barley. It has an effective disease-resistance package and very good grain size. It has a short coleoptile length and it is recommended that sowing depth be considered carefully. Maximus CL[Ⓛ] is undergoing Barley Australia malt accreditation with a decision expected in 2021. Released 2020 (tested as IGB1705T). Bred and marketed by InterGrain. EPR \$4.25

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

Table 1: Barley time of sowing guide based on phenology speed.

This table is a guide only and has been compiled from the National Phenology Initiative, with GRDC investment (Research project ULA1703-004).

MALLEE		April				May				June			
Speed	Example cultivar												
Quick-mid	Commander ^{db}				Yellow	Green	Red						
Quick	RGT Planet ^{db}				Yellow	Green	Green	Red					
Very quick	Spartacus CL ^{db}					Yellow	Green	Green	Red				
WIMMERA		April				May				June			
Quick-mid	Commander ^{db}					Yellow	Green	Red					
Quick	RGT Planet ^{db}					Yellow	Green	Green	Red				
Very quick	Spartacus CL ^{db}						Yellow	Green	Green	Red			
NORTH CENTRAL		April				May				June			
Quick-mid	Commander ^{db}					Yellow	Green	Red					
Quick	RGT Planet ^{db}					Yellow	Green	Green	Red				
Very quick	Spartacus CL ^{db}						Yellow	Green	Green	Red			
NORTH EAST		April				May				June			
Quick-mid	Commander ^{db}					Yellow	Green	Red					
Quick	RGT Planet ^{db}					Yellow	Green	Green	Red				
Very quick	Spartacus CL ^{db}						Yellow	Green	Green	Red			
SOUTH WEST		April				May				June			
Quick-mid	Westminster ^{db}					Yellow	Green	Green	Red				
Quick	RGT Planet ^{db}						Yellow	Green	Green	Red			
Very quick	Rosalind ^{db}							Yellow	Green	Green	Red		

Yellow = earlier than optimum
 Green = optimum sowing time
 Red = later than optimum

Table 2: Barley variety demand¹ for preferred malting varieties and agronomic guide.

The agronomic characteristics in this table are provided as a guide only and have been compiled from observations of the breeders and seed companies. Domestic and export market demand has been sourced from Barley Australia (2020).

Variety	Domestic brewing industries ²	Export brewing industries	Height	Maturity	Head loss	Plump grain rating	Lodging
MALTING BARLEY							
Commander ^{db}	medium	low	M	Q-M	M	8	M
Compass ^{db}	low	low	MT	VQ	M	9	S
Fairview ^{db}	-	-	MS	Q-M	MR	-	R
Gairdner	-	-	M	Q-M	MR	5	R
La Trobe ^{db}	-	high	S-MS	VQ	MR	6	R-MR
RGT Planet ^{db}	medium	medium	M	Q	R	7	R
Scope CL ^{db}	-	-	MT	Q	MS	6	M
Spartacus CL ^{db}	high	high	MS	VQ	R	6-7	R
Westminster ^{db}	high	high	MT	Q-M	R	-	R
NON-MALTING BARLEY							
Banks ^{db}	-	-	MS	Q-M	-	6-7	-
Fathom ^{db}	-	-	MT	Q	MR	9	MR
Hindmarsh ^{db}	-	-	S-MS	VQ	MR	6	R-MR
Rosalind ^{db}	-	-	MS	VQ	R	6-7	R
BARLEY UNDER MALT EVALUATION							
Variety	Target accreditation date	Height	Maturity	Head loss	Plump grain rating	Lodging	
Beast ^{db}	2023	MT	Q	-	9	M	
Bottler ^{db}	2022	M	Q	-	-	-	
Buff ^{db}	2022	M	VQ	-	-	S	
Kiwi ^{db}	2022	MT	Q-M	-	-	-	
Laperouse ^{db}	2022	M	Q	R	8-9	R	
Leabrook ^{db}	2021	MT	VQ	M	9	M	
LG Alestar ^{db}	2021	M	Q	R	8	R	
Maximus CL ^{db}	2021	MS	VQ	-	-	R	

Note: New maturity classifications have been assigned based on the Industry Guide for Wheat Variety Maturity Description by Australian Crop Breeders Ltd to achieve consistent maturity descriptions across all cereals. ¹ Demand in Victoria is determined by marketing companies who are members of Barley Australia. ² Domestic demand by Australian malting companies: malt produced may be used by the domestic brewing industry or exported.

Height: T = tall, MT = moderately tall, M = medium, MS = moderately short, S = short Maturity: VQ = very quick, Q = quick, M = mid
Head loss and lodging: see Table 3 for key. Plump grain relative scale: 1 = small or unreliable grain size; 9 = large or reliable grain size

Table 3: Barley variety disease reactions.

Variety	Leaf scald	Spot form net blotch	Net form net blotch	Powdery mildew	Leaf rust	CCN resistance	Root lesion nematode	
							<i>P. neglectus</i> resistance	<i>P. thornei</i> resistance
MALTING BARLEY								
Commander [Ⓛ]	SVS	MSS	MS#	MRMS	S	R	MRMS	MRMS
Compass [Ⓛ]	SVS	MS	MSS	MRMS	SVS	R	MRMS	MR
Fairview [Ⓛ]	SVS	S	SVS	R	S	-	MRMS	MR
Gairdner	SVS	S	MRMS#	SVS	S	S	MRMS	MSS
La Trobe [Ⓛ]	SVS	S	MS	MS#	S	R	MRMS	MRMS
RGT Planet [Ⓛ]	SVS	S	SVS	R	MS	R _p	MRMS	MR
Scope CL [Ⓛ]	S	MSS	MR#	RMR	S	S	MRMS	MRMS
Spartacus CL [Ⓛ]	SVS	SVS	MSS	SVS	S	R	MRMS	MRMS
Westminster [Ⓛ]	MRMS	S	MR#	R	MRMS	-	MRMS	MS
NON-MALTING BARLEY								
Banks [Ⓛ]	SVS	S	MRMS	MRMS	S	S	MRMS	MR
Fathom [Ⓛ]	S	RMR	MRMS#	MRMS	S	R	MRMS	MR
Hindmarsh ^{ⓁF}	SVS	SVS	MS	SVS	S	R	MRMS	MRMS
Rosalind [Ⓛ]	S	S	MR	SVS	MR	R	MRMS	MR
BARLEY UNDER MALT EVALUATION								
Beast [Ⓛ]	SVS	MSS	MS	MSS _p	S	-	-	-
Bottler [Ⓛ]	SVS	S	MS	R	MS	-	MS	RMR
Buff [Ⓛ]	SVS	S	MS	S	SVS	-	MRMS	MRMS
Kiwi [Ⓛ]	SVS	S	MRMS	RMR	MS	S	MRMS	RMR
Laperouse [Ⓛ]	VS	MS	MR _p	MRMS	SVS	S	-	RMR
Leabrook [Ⓛ]	SVS	MS	MRMS	MRMS	SVS	MRMS	MR	RMR
LG Alestar [Ⓛ]	S	S	S	RMR	MS	R	MR	MR
Maximus CL [Ⓛ]	MRMS	MS	MRMS	S	S	R	MRMS	MRMS

Varieties marked may be more susceptible if alternative strains are present.

Sources: [Agriculture Victoria Cereal disease guide \(2020\)](#), National Variety Trials disease ratings (2020)

^F = Food grade barley _p = provisional ratings – treat with caution.

Resistance: 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.

Table 4: Barley diseases.

Disease	Organism	Symptoms	Occurrence	Inoculum source	Control
FOLIAR					
Scald	<i>Rhynchosporium commune</i>	Water-soaked areas on leaves. Lesions appear grey/green then bleached with brown margins.	Years with frequent rain, and early sown crops.	Residues of barley and barley grass. Can be seed-borne. Spores spread by rain splash.	Resistant varieties, clean seed, manage barley and barley grass debris. Seed and foliar fungicides.
Net blotch spot form	<i>Pyrenophora teres f. maculata</i>	Dark brown spots to 10mm with yellow margins.	Infection from stubble especially in wet autumn conditions.	Barley and barley grass stubble, also airborne spores from infected crops.	Control barley grass and manage barley stubble. Avoid very susceptible varieties. Foliar fungicides.
Net blotch net form	<i>Pyrenophora teres f. teres</i>	Small brown spots that develop into dark brown streaks on leaf blades that have net-like appearance.	Spores can be produced for more than 2 years on stubble. Moist conditions, temperatures in the 15°C to 25°C range.	Survives on infected barley and barley grass residues. Windborne spores.	Resistant varieties, crop rotation and stubble management.
Powdery mildew	<i>Blumeria graminis f. sp. hordei</i>	White powdery spores on upper leaf surfaces, underside of leaves turn yellow to brown.	Favoured by high humidity and temperature of 15°C to 22°C. Worse in high-fertility paddocks and early sown crops.	Volunteer barley, barley grass and crop residue. Airborne spores.	Resistant varieties. Seed and foliar fungicides.
Leaf rust	<i>Puccinia hordei</i>	Small circular orange pustules on upper leaf surface.	Moist conditions with temperatures in the range 15°C to 22°C.	Living plant hosts including barley, barley grass and Star of Bethlehem.	Use resistant varieties and control volunteer barley and barley grass over summer/autumn.
Stem rust	<i>Puccinia graminis</i>	Large red-brown pustules. Rupture of leaf and stem surface.	Infection requires temperatures in the 15°C to 30°C range and moist conditions.	Living plant hosts including volunteer cereals (wheat, barley, triticale and rye).	Use resistant varieties and control volunteer wheat, triticale and barley over summer/autumn.
Barley grass stripe rust (BGSR)	<i>Puccinia striiformis</i>	Yellow powdery pustules in stripes on the leaves	Can develop throughout the growing season.	Barley grass and susceptible barley varieties.	Avoid susceptible varieties.
Barley yellow dwarf virus (BYDV)	<i>Barley yellow dwarf virus</i>	Yellow stripes between leaf veins, some leaves red. Sterile heads and dwarfing plants.	Virus is transmitted by aphids.	Hosts include all cereals and many grasses.	Resistant varieties. Chemical control of aphids may be suitable for high-value crops.
GRAIN					
Covered smut	<i>Ustilago segetum var. hordei</i>	Dark, compacted heads, grain replaced by smut balls.	Spores germinate in infected grain when temperatures are between 14°C and 25°C.	Infected seed.	Use disease-free seed, resistant varieties, seed treatments.
Loose smut	<i>Ustilago tritici</i>	Dark brown powdery spores replace grain.	Moist conditions at flowering and when temperatures are between 16°C and 22°C.	Infected seed	Use disease-free seed and seed treatments. Avoid susceptible varieties.
ROOT/CROWN					
Crown rot	<i>Fusarium pseudo-graminearum</i> , <i>F. culmorum</i>	'Whiteheads' or deadheads most obvious after flowering, pink discolouration under leaf sheaths.	Most common on heavy or poorly drained soils. Favoured by moist, humid conditions with temperatures between 15°C and 30°C.	Survives in infected stubble residue for up to 2 years. Hosts include wheat, barley, triticale and some grasses.	Crop rotation, stubble removal, cultivation.
Pythium root rot (damping off)	<i>Pythium</i> spp.	Stunted seedlings, reduced tillering, pale stunted or stubby roots with light brown tips.	Favoured by wet conditions. Increased risk where high rainfall occurs after sowing.	Spores survive in soil or plant debris for up to 5 years.	Avoid deep sowing into cold wet soils, especially when direct drilling. Ensure good nutrient levels.
Common root rot	<i>Bipolaris sorokiniana</i>	Brown discolouration of roots, sub-crown internode and crown. Plant stunting, brown spots on leaves and reduced tillers.	Scattered through crop.	Wheat, barley, triticale and rye.	Crop rotation.
Cereal cyst nematode (CCN)	<i>Heterodera avenae</i>	Yellow, stunted plants. Knotted roots.	Light soils and well-structured clays where cereals are commonly grown.	Present in most soils in the southern region.	Resistant varieties, break from susceptible cereals and grasses, particularly wild oat.
Root lesion nematode	<i>Pratylenchus thornei</i> , <i>P. neglectus</i>	Reduced tillering, ill thrift; lesions on roots, lack of branching of root system.	Favoured by cereals in rotation with chickpeas, medic and vetch.	Survives as dormant nematodes in the soil.	Crop rotation using resistant crops and resistant varieties.
Take-all	<i>Gaeumannomyces graminis var. tritici</i> (Ggt)	Stunted or yellowing plants, 'whiteheads' at heading.	Fungus thrives under warm, damp conditions.	Fungus survives over summer in crowns and roots of wheat, barley and grass plants.	Crop rotations, at least 1 year free of hosts (cereals and grasses, especially barley grass). Fungicide applied to seed or fertiliser.

Sources: This table has been developed from information in the publications Wallwork H (2000) (Ed) Cereal root and crown diseases (Grains Research and Development Corporation, SARDI) and Wallwork H (2000) (Ed) Cereal leaf and stem diseases (Grains Research and Development Corporation, SARDI). Reviewed by Hari Dadu, Agriculture Victoria (2020).

Table 5: Mallee and Wimmera barley (main season). NVT Long term predicted yield expressed as a percentage of mean yield.

Year	MALLEE						WIMMERA					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		2.02	4.74	4	1.92	3.36		1.7	6.87	5.11	3.91	5.56
	No. trials	7	6	3	6	5	No. Trials	3	3	4	3	4
MALTING BARLEY												
Bass ^{db}	27	99	95	97	99	101	16	102	106	97	100	98
Baudin ^{db}	0	-	-	-	-	-	13	92	107	96	96	-
Buloke ^{db}	13	105	96	-	-	-	6	111	98	-	-	-
Commander ^{db}	27	94	100	100	101	98	17	101	95	100	102	99
Compass ^{db}	27	124	94	102	117	111	17	147	87	101	104	99
Fairview ^{db}	0	-	-	-	-	-	12	62	106	98	-	98
Flinders ^{db}	13	100	95	-	-	-	17	92	96	97	101	95
Gairdner	27	91	89	88	94	89	17	92	90	87	91	89
Granger ^{db}	21	93	100	97	-	93	17	81	97	100	97	99
La Trobe ^{db}	27	119	97	103	111	107	17	137	92	99	97	101
Navigator	0	-	-	-	-	-	6	56	98	-	-	-
RGT Planet ^{db}	20	-	118	114	105	110	14	-	117	113	113	111
Schooner	16	99	85	88	-	-	3	115	-	-	-	-
Scope CL ^{db}	27	102	95	96	101	97	17	106	92	95	97	95
Spartacus CL ^{db}	27	120	93	101	110	108	17	143	92	98	94	100
Westminster ^{db}	0	-	-	-	-	-	10	59	97	-	-	94
NON-MALTING BARLEY												
Banks ^{db}	27	112	102	105	109	109	17	116	101	104	107	103
Biere ^{db}	27	105	80	86	93	91	14	121	86	86	-	90
Charger	0	-	-	-	-	-	13	110	95	99	100	-
Explorer ^{db}	0	-	-	-	-	-	14	-	102	104	97	105
Fathom ^{db}	27	117	102	107	117	115	17	137	104	102	107	104
Fleet Australia ^{db}	16	101	101	102	-	-	10	120	97	98	-	-
Hindmarsh ^{db}	27	121	95	102	112	108	17	141	90	99	97	101
Keel	12	110	-	-	-	105	0	-	-	-	-	-
LG Maltstar ^{db}	11	-	-	-	96	100	17	78	113	102	104	102
Nitro	0	-	-	-	-	-	10	89	110	-	-	105
Oxford	16	76	106	97	-	-	13	49	107	103	103	-
Rosalind ^{db}	27	125	105	110	113	114	17	133	103	108	105	108
SY Rattler	13	95	95	-	-	-	6	84	85	-	-	-
Topstart	7	79	-	-	-	-	13	55	112	101	98	-
BARLEY UNDER MALT EVALUATION												
Beast ^{db}	5	-	-	-	-	115	4	-	-	-	-	101
Bottler ^{db}	0	-	-	-	-	-	14	-	108	103	103	103
Buff ^{db}	11	-	-	-	113	105	7	-	-	-	108	102
Kiwi ^{db}	0	-	-	-	-	-	15	74	106	100	98	99
Laperouse ^{db}	14	-	-	104	111	106	12	-	83	106	107	101
Leabrook ^{db}	27	120	100	106	115	113	17	137	96	105	108	103
LG Alestar ^{db}	0	-	-	-	-	-	17	79	102	100	97	100
Maximus CL ^{db}	11	-	-	-	111	108	7	-	-	-	96	100

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

Table 6: North Central and North East barley (main season). NVT long-term predicted yield expressed as a percentage of mean yield.

Year	No. trials	NORTH CENTRAL					NORTH EAST				
		2015	2016	2017	2018	2019	2015	2016	2018	2019	
Mean yield (t/ha)		2.47	6.07	4.61	2.9	3.88	2.43	7.28	4.44	5.47	
	No. trials	1	2	2	2	1	No. trials	1	1	1	1
MALTING BARLEY											
Bass ^{db}	8	95	102	99	102	97	4	98	99	102	98
Baudin ^{db}	7	95	95	94	96	-	3	87	97	101	-
Buloke ^{db}	3	100	96	-	-	-	2	105	99	-	-
Commander ^{db}	8	104	101	96	101	100	4	89	97	97	97
Compass ^{db}	8	109	111	102	122	106	4	124	98	102	100
Fairview ^{db}	0	-	-	-	-	-	3	75	98	-	95
Flinders ^{db}	8	93	102	99	103	93	4	104	101	97	96
Gairdner	8	90	88	86	100	90	4	90	94	95	89
Granger ^{db}	2	95	-	-	-	96	4	96	101	94	97
La Trobe ^{db}	8	108	100	101	111	107	4	119	98	103	102
Navigator	3	97	95	-	-	-	2	77	102	-	-
RGT Planet ^{db}	7	-	105	117	101	107	3	-	114	109	116
Scope CL ^{db}	8	98	95	94	105	97	4	102	98	99	96
Spartacus CL ^{db}	8	106	102	101	110	107	4	120	96	102	100
Westminster ^{db}	3	89	92	-	-	-	3	84	101	-	94
NON-MALTING BARLEY											
Banks ^{db}	8	105	107	106	111	104	4	114	103	105	105
Biere ^{db}	5	89	90	90	-	-	3	107	90	-	88
Charger	7	106	94	100	107	-	3	113	103	103	-
Explorer ^{db}	6	-	94	103	85	-	2	-	102	97	-
Fathom ^{db}	8	111	106	102	119	109	4	114	100	110	106
Hindmarsh ^{db}	8	108	102	101	113	107	4	122	98	102	102
LG Maltstar ^{db}	8	97	100	102	94	98	4	89	103	103	103
Nitro	4	99	97	-	-	102	3	101	104	-	106
Oxford	7	90	99	101	82	-	3	78	103	94	-
Rosalind ^{db}	8	110	109	113	111	111	4	130	105	107	111
SY Rattler	3	93	91	-	-	-	2	100	98	-	-
Topstart	7	86	99	102	80	-	3	83	102	95	-
BARLEY UNDER MALT EVALUATION											
Beast ^{db}	1	-	-	-	-	110	1	-	-	-	102
Bottler ^{db}	7	-	100	105	98	101	3	-	105	103	105
Buff ^{db}	7	-	103	105	114	107	3	-	105	100	105
Kiwi ^{db}	0	-	-	-	-	-	4	90	101	97	98
Laperouse ^{db}	6	-	112	107	113	105	3	-	101	96	100
Leabrook ^{db}	8	110	114	107	118	108	4	120	101	104	104
LG Alestar ^{db}	8	94	96	101	89	96	4	95	102	97	99
Maximus CL ^{db}	3	-	-	-	112	106	2	-	-	101	101

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.
 Note: 2017 North East data was not published as a result of compromised trials.

Source: National Variety Trials (2015–19)

Table 7: South West barley (long season). NVT long-term predicted yield expressed as a percentage of mean yield.

SOUTH WEST						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		5.37	7.25	5.24	4.62	5.66
	No. trials	3	3	2	2	3
MALTING BARLEY						
Bass ^{db}	16	105	95	92	99	97
Commander ^{db}	16	100	94	100	93	91
Compass ^{db}	16	97	85	100	104	95
Fairview ^{db}	16	104	100	98	102	102
Flinders ^{db}	16	101	93	93	104	99
Gairdner	16	91	83	92	87	81
Granger ^{db}	16	99	95	102	99	97
Navigator	13	96	95	92	94	-
RGT Planet ^{db}	10	-	114	111	108	114
Spartacus CL ^{db}	13	108	93	101	107	103
Westminster ^{db}	16	88	96	91	97	95
Wimmera	6	93	-	-	-	-
NON-MALTING BARLEY						
Banks ^{db}	13	99	98	97	106	103
Capstan	16	102	105	101	98	101
Charger	13	96	94	103	94	-
Explorer ^{db}	16	103	101	99	87	91
LG Maltstar ^{db}	16	102	105	103	98	101
Nitro	9	101	108	-	-	110
Oxford	16	100	109	102	102	106
Rosalind ^{db}	16	109	104	111	103	105
SY Rattler	9	86	89	-	-	-
Topstart	16	101	110	107	100	105
Urambie ^{db}	16	100	94	91	96	94
BARLEY UNDER MALT EVALUATION						
Beast ^{db}	3	-	-	-	-	100
Bottler ^{db}	10	-	107	106	100	103
Kiwi ^{db}	13	103	100	98	96	97
Laperouse ^{db}	7	-	-	101	106	104
Leabrook ^{db}	13	105	92	106	103	98
LG Alestar ^{db}	16	104	101	100	104	103
Maximus CL ^{db}	3	-	-	-	-	107

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

ACKNOWLEDGEMENTS

Mark McLean	Agriculture Victoria, Horsham
Hari Dadu	Agriculture Victoria, Horsham
Kenton Porker	South Australian Research and Development Institute
Amanda Box	SECOBRA Recherches/Seednet
Megan Sheehy	Barley Australia
Ash Brooks	InterGrain
Simon Crane	Seednet

OAT

Oats are an important crop for grain, hay and fodder, and demand is increasing domestically and internationally.

NEW VARIETIES

At the time of publication, there will be one new oat variety available for sowing in 2021.

In spring 2019 InterGrain announced a world-first imidazolinone (IMI)–tolerant oat variety, Kingbale[®]. It is a mid maturing, single-gene IMI-tolerant oaten hay variety with improved tolerance to soil-residual IMI herbicides. This makes it an ideal variety for use where there are concerns of IMI residue from previous crops. Sentry[®], pending successful registration, will be the ONLY IMI herbicide registered for use on Kingbale[®].

Preliminary data shows Kingbale[®] to have a similar agronomic profile to Wintaroo[®]. Yield data on Kingbale[®] is limited. Seed will be available for planting in 2021 – pending a Sentry[®] registration – through InterGrain Seedclub members. Note that delays may occur and Kingbale[®] may not be released if a Sentry[®] registration is not received. It is important to keep this information in mind when making variety decisions for 2021.

QUALITY

Variety selection should be based on agronomic traits, potential grain quality and marketing or end-use options. Grain quality traits for the milling industry include high groat per cent, high beta-glucan, low screenings and high hectolitre weight. Growers should contact their buyer to ascertain which varieties will be accepted for milling quality prior to planting. Grain quality traits for improved animal feed include low hull lignin, high groat percentage, high protein and high oil content, resulting in high grain digestibility. Important hay quality traits are high digestibility, high water-soluble carbohydrates, low fibre and high protein.

The option of oats for hay is increasing in popularity where growers have identified them as profitable and as a tool to manage herbicide resistance and to spread risk. Variety performance for hay yield and quality is available in the Oat Newsletter at aexco.com.au released in November.

INDUSTRY UPDATE

Australian Crop Breeders Ltd (ACB) has developed new guidelines for wheat maturity classifications in 2020. Cereal maturity classifications and terminology in this guide have been assigned using the industry guidelines provided by ACB. Oats have been classified into the same maturity groups as wheat based on data from the GRDC Phenology Initiative and SAGIT Project S319 (Improving productivity of oats) and AgriFutures Project PRJ-011029 (National Hay Agronomy). As maturity descriptions have been applied to wheat, barley and oats using the same system, the maturity descriptions for individual oat varieties will be different to previous editions.

KEY DISEASE CONSIDERATIONS

Red leather leaf and Bacterial blight are common foliar diseases of oats in Victoria. Red leather leaf is most severe in medium and high-rainfall zones, while Bacterial blight can be found in all oat-growing regions. To reduce risk of loss from these stubble-borne diseases, growers should avoid sowing into oat stubble and choose resistant varieties where possible. Where Red leather leaf infection develops, foliar fungicide application at tillering and stem elongation has been found to provide effective suppression. Currently, there are no foliar treatment options for Bacterial blight.

ROYALTIES

Where applicable, growers selling oat seed or export hay will pay an end point royalty (EPR). An EPR of \$2/tonne (ex GST) applies on all oat varieties bred by the National Oat Breeding Program for hay production. Refer to aexco.com.au for further information on hay, grain and seed royalties.

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reports app

grdc.com.au

- GRDC GrowNotes™ Oats Southern region
- GRDC Southern region NVT harvest reports

agriculture.vic.gov.au

- [Growing oats in Victoria](#)
- [Agriculture Victoria Cereal disease guide](#)

aexco.com.au

- [Producing quality oat hay booklet](#)
- [SARDI Oat Breeding Newsletter](#)

extensionAUS.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

VARIETY DESCRIPTIONS

Varieties have been listed according to quality classification grade and in alphabetical order and not in order of preference. The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

(b) Denotes that Plant Breeder's Rights apply

The end point royalty (EPR) for grain and hay and seed for the 2020-21 season is quoted at \$/tonne ex GST.

MILLING OAT

BANNISTER^(b)

A quick maturing dwarf milling variety with wide adaptation. Compared with Mitika^(b), Bannister^(b) is about 13cm taller and flowers 3 to 4 days later. Similar to Mitika^(b) for groat percentage. Not suited to areas where CCN is a problem. Released 2013. Bred by the National Oat Breeding Program and marketed by Seednet. EPR \$2.30.

BILBY^(b)

A dwarf, quick maturing potential milling oat. Grain yield similar to Williams^(b) and Bannister^(b), with improved grain quality, low screenings, high groat percentage and improved beta-glucan content. Released 2019. Bred by the National Oat Breeding Program (tested as 06204-16) and marketed by Barenbrug. EPR \$2.50.

DURACK^(b)

Very quick maturing, moderately tall variety widely adaptable to low to medium-rainfall zones and late planting in high-rainfall regions. Good early vigour and good lodging resistance with low screenings. Released 2016. Bred by SARDI and marketed by Barenbrug. EPR \$2.30.

KOWARI^(b)

A quick maturing, dwarf potential milling variety, slightly taller than Mitika^(b) and suited to medium to high-rainfall zones. It has good grain quality, improved beta-glucan content and low screenings. Not suited to areas where CCN is a problem. Released 2017. Bred by the National Oat Breeding Program and marketed by Barenbrug. EPR \$2.50.

MITIKA^(b)

A quick maturing dwarf variety suited to high-rainfall areas. It has around 73 per cent groat yield and provides excellent feed value. It is not suited to areas where CCN is a problem. Released 2005. Marketed by Barenbrug. EPR \$2.00.

WILLIAMS^(b)

A quick maturing, short-tall milling oat suited to medium to high-rainfall zones. It is 15cm taller than Mitika^(b), 5cm taller than Bannister^(b) and 15cm shorter than Yallara^(b). A similar variety to Bannister^(b) but with slightly inferior grain quality. Produces high screenings when grown in low-rainfall areas. Released 2013. Bred by the National Oat Breeding Program and marketed by Barenbrug. EPR \$2.30.

YALLARA[Ⓛ]

Medium to tall, quick maturing variety. Suited to drier areas. Released 2009. Bred by SARDI and marketed by Seednet. EPR \$2.00.

DUAL-PURPOSE OAT**Hay/grazing/feed – BRUSHER[Ⓛ]**

Quick maturing tall oat, well suited to low and medium-rainfall areas. Released 2003. Bred by SARDI and marketed by AEXCO. EPR \$2.00.

Hay/feed – MULGARA[Ⓛ]

Quick maturing tall oat. Excellent hay colour and quality similar to Wintaroo[Ⓛ] with good grain yield. Released 2009. Bred by SARDI and marketed by AEXCO. EPR \$2.00.

Hay/grazing/feed – WINTAROO[Ⓛ]

Tall, mid maturity variety for all rainfall zones. Released 2003. Bred by SARDI and marketed by AEXCO. EPR \$2.00.

HAY OAT**FORESTER[Ⓛ]**

A medium height, very slow hay variety adapted to high-rainfall and irrigated cropping regions. It has excellent lodging and shattering resistance and good early vigour. Released 2012. Bred by SARDI and marketed by AEXCO. EPR \$2.00.

NEW – KINGBALE[Ⓛ]

Kingbale[Ⓛ] is a world-first, single-gene IMI-tolerant oaten hay variety. It is a mid-slow maturing, tall variety with improved tolerance to soil residual IMI herbicides. Sentry[®], pending successful registration, will be the only IMI herbicide registered for use on Kingbale[Ⓛ]. Yield data is currently limited. Released 2019. Bred and marketed by InterGrain, seed will be available for planting in 2021 pending a Sentry[®] registration. Note, delays may occur and Kingbale[Ⓛ] may not be released if a Sentry[®] registration is not received in March 2021. EPR TBC.

KOORABUP[Ⓛ]

Mid-tall potential hay oat with mid-quick maturity. Similar height, grain yield and stem diameter to Yallara[Ⓛ], but has a later maturity of 2 to 4 days. Hay quality is similar to Wintaroo[Ⓛ]. Released 2019 (tested as 05096-32). Bred by National Oat Breeders and marketed by AEXCO. EPR \$2.00.

TUNGOO[Ⓛ]

A medium to tall, mid-slow maturing variety. Hay yield similar to Kangaroo but grain yield poor. Released 2012. Bred by SARDI and marketed by AEXCO. EPR \$2.00.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

Table 1: Oat time of sowing based on phenology speed.

This table is a guide only and has been compiled from data provided by SAGIT Project S319 (Improving productivity of oats) and AgriFutures Project PRJ-011029 (National Hay Agronomy).

MALLEE		April			May			June		
Speed	Example cultivar									
Very slow	Forester ^{db}	Yellow	Green	Red						
Mid-slow	Kingbale ^{db}			Yellow	Green	Red				
Mid	Wintaroo ^{db}				Yellow	Green	Red			
Quick	Yallara ^{db}					Yellow	Green	Red		
Very quick	Durack ^{db}						Yellow	Green	Red	
WIMMERA		April			May			June		
Very slow	Forester ^{db}		Yellow	Green	Red					
Mid-slow	Kingbale ^{db}				Yellow	Green	Red			
Mid	Wintaroo ^{db}					Yellow	Green	Red		
Quick	Yallara ^{db}						Yellow	Green	Red	
Very quick	Durack ^{db}							Yellow	Green	Red
NORTH CENTRAL		April			May			June		
Very slow	Forester ^{db}		Yellow	Green	Red					
Mid-slow	Kingbale ^{db}				Yellow	Green	Red			
Mid	Wintaroo ^{db}					Yellow	Green	Red		
Quick	Yallara ^{db}						Yellow	Green	Red	
Very quick	Durack ^{db}							Yellow	Green	Red
NORTH EAST		April			May			June		
Very slow	Forester ^{db}		Yellow	Green	Red					
Mid-slow	Kingbale ^{db}				Yellow	Green	Red			
Mid	Wintaroo ^{db}					Yellow	Green	Red		
Quick	Yallara ^{db}						Yellow	Green	Red	
Very quick	Durack ^{db}							Yellow	Green	Red
SOUTH WEST		April			May			June		
Very slow	Forester ^{db}		Yellow	Green	Red					
Mid-slow	Kingbale ^{db}				Yellow	Green	Red			
Mid	Wintaroo ^{db}					Yellow	Green	Red		
Quick	Yallara ^{db}						Yellow	Green	Red	
Very quick	Durack ^{db}							Yellow	Green	Red

Yellow = earlier than optimum
 Green = optimum sowing time
 Red = later than optimum

Table 2: Oat variety agronomic guide and disease reactions.

The agronomic characteristics in this table are provided as a guide only and have been compiled from observations of the breeder, National Oat Breeding Program and seed companies. Disease reactions have been sourced from Agriculture Victoria Cereal disease guide (2020) and National Variety Trials disease ratings (2020).

	End use	Height	Maturity	Hectolitre weight	Stem rust	Leaf rust	CCN		BYDV	Septoria avenae	Bacterial blight	Red leather leaf
							Res	Tol				
MILLING OATS												
Bannister ^{db}	M	TD	Q	H	S	R	VS	I	MRMS	MSS	S	MSS
Bilby ^{db}	M	D	Q	H	S	MR	S	-	MRMS _p	SVS	S	MS
Durack ^{db}	M	MT	VQ	H	S	S	R	MI	MSS	S	S	S
Kowari ^{db}	M	D	Q	H	S	R	VS	-	MSS	S	MSS	MS
Mitika ^{db}	M	D	Q	H	S	S	VS	I	S	SVS	MSS _p	S
Williams ^{db}	M	ST	Q	H	S	R	S	I	MRMS	MS	MSS	MS
Yallara ^{db}	M	MT	Q	H	S	MS	R	I	MSS	Sp	MSS	SVS
HAY/GRAZING/FEED OATS												
Brusher ^{db}	H/G/F	T	Q	M	S	S	R	MI	MS	MS	MS	MS
Forester ^{db}	H	MT	VS	L	S	MS	MS	MI	S	MR	S	MRMS
NEW - Kingbale ^{db}	H	T	M-S	-	-	-	R _p *	-	-	-	-	-
Koorabup ^{db}	H	MT	M-Q	VH	S	MSS	S	-	MSS _p	SVS _p	MSS	SVS
Mulgara ^{db}	H/F	T	Q	M	MS	MS	R	MT	MS	MS	MR	S
Tungoo ^{db}	H	MT	M-S	L	S	MS	R	MT	MS	MR	MR	MS
Wintaroo ^{db}	H/G	T	M	M	S	S	R	MT	MS	MS	MS	S

Source: Agriculture Victoria disease ratings (February 2020), NVT Disease ratings (2020)

Note: new maturity classifications have been assigned based on the Industry Guide for Wheat Variety Maturity Description by Australian Crop Breeders Ltd to achieve consistent maturity descriptions across all cereals. End-use: M = milling, F = feed grain, G = grazing, H = hay. Hectolitre weight: VH = very heavy, H = heavy, M = medium, L = light. Plant height: D = dwarf, TD = tall dwarf, T = tall, ST = short tall, MT = moderate tall. Maturity: VQ = very quick, Q = quick, M = mid, M-S = mid-slow, VS = very slow. Resistance: R = resistant, RMR = resistant to moderately resistant, MR = moderately resistant, MRMS = moderately resistant to moderately susceptible, MS = moderately susceptible to susceptible, S = susceptible, SVS = susceptible to very susceptible, VS = very susceptible. _p = provisional ratings – treat with caution. * disease ratings from breeder used



Table 3: Oat diseases.

Disease	Organism	Symptoms	Occurrence	Inoculum source	Control
FOLIAR					
Leaf rust	<i>Puccinia coronata</i> f.sp. <i>avenae</i>	Small circular orange pustules on upper leaf surface.	More severe during moist conditions with temperatures between 15°C and 22°C.	Volunteer oats and wild oats.	Resistant varieties. Control volunteer and wild oats over the summer.
Stem rust	<i>Puccinia graminis</i> f.sp. <i>avenae</i>	Large red-brown pustules, rupture in leaf surface.	Infection requires warm (15°C to 30°C) moist conditions.	Volunteer oats and wild oats.	Resistant varieties. Control volunteer and wild oats over summer.
Septoria blotch	<i>Phaeosphaeria avenaria</i>	Dark brown purple spots on leaves, sheaths and stems. Head and grain may become infected.	Prefers cool, rainy weather, especially coastal districts.	Spores spread in autumn by raindrop splash from oat residues.	Resistant varieties. Crop rotation, bury or graze infected stubble. Avoid early sowing in high-rainfall areas.
Barley yellow dwarf virus (BYDV)	<i>Barley yellow dwarf virus</i>	Leaf tip and margins turn red with interveinal chlorosis, mottling and stunting.	Transmitted by aphids.	Hosts include all cereals and grasses, including pastures.	Resistant varieties. Chemical control of insects may be suitable for high-value crops.
Halo blight	<i>Pseudomonas syringae</i> pv. <i>coronafaciens</i>	Light green, yellow or brown halo spot on leaves and sheaths. Leaves may wither and die.	Moist weather provides ideal conditions.	Bacteria on seed and crop debris are spread by rain splash, direct leaf contact, or aphids.	Avoid susceptible varieties, use clean seed in clean paddocks. Destroy infected oat stubble.
Stripe blight	<i>Pseudomonas syringae</i> pv. <i>striaefaciens</i>	Spots on leaves lengthen to form brown stripes on leaves and sheaths. Leaves may wither and die.	Moist weather provides ideal conditions.	Bacteria on seed and crop debris are spread by rain splash, direct leaf contact, or aphids.	Avoid susceptible varieties, use clean seed in clean paddocks, and destroy infected oat stubble.
Powdery mildew	<i>Blumeria graminis</i> f.sp. <i>avenae</i>	White powdery spores on upper leaf surfaces. Underside of leaves turn yellow to brown.	Favoured by high humidity and temperatures between 15°C and 22°C.	Volunteer oats, oat stubble, windborne spores.	Avoid very susceptible varieties.
Red leather leaf	<i>Spermospora avenae</i>	Long reddish lesions with buff centres. Leaves may look and feel leathery.	High rainfall provides ideal conditions.	Stubble and rain splash.	Avoid susceptible varieties and rotate crops. Remove infected oat stubble.
GRAIN					
Smut	<i>Ustilage segetum</i> var. <i>hordei</i> , <i>U. avenae</i>	Grain replaced with dark brown-black powdery spores.	Moist conditions at flowering and temperatures between 15°C and 25°C.	Airborne spores lodge in hulls, glumes or seed coats.	Clean seed and use seed treatment. Avoid susceptible varieties.
ROOT/CROWN					
Cereal cyst nematode (CCN)	<i>Heterodera avenae</i>	Yellow or pale green patches in crop. Stunted, weak plants with knotted root systems.	Can survive in soil between susceptible cereal crops for up to 2 years.	Cereals and some grasses, especially wild oats.	Resistant or tolerant varieties, crop rotation, weed control.
Stem nematode	<i>Ditylenchus dipsaci</i>	Swollen base of plant, stunted and numerous tillers.	Encouraged by moist conditions and can reproduce 4 to 5 times per season.	Wide host range including peas, beans, wild oats and many weeds. Nematodes spread in infected hay.	Crop rotation and weed control. Avoid susceptible varieties.
Root lesion nematode	<i>Pratylenchus thornei</i> , <i>P. neglectus</i>	Reduced tillering, ill thrift; lack of branching of root system, lesions on roots.	Favoured by wheat in rotation with wheat, chickpeas, medic and vetch.	Survives as dormant nematodes in the soil.	Crop rotation using resistant crops.

Sources: This table has been developed from information in the publications Wallwork H (2000) (Ed) Cereal root and crown diseases (Grains Research and Development Corporation, SARDI) and Wallwork H (2000) (Ed) Cereal leaf and stem diseases (Grains Research and Development Corporation, SARDI). Reviewed by Hari Dadu, Agriculture Victoria (2020).

Table 4: North Central oat variety trial results. NVT long-term predicted yield expressed as a percentage of mean yield.

NORTH CENTRAL						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.75	5.91	3.76	0.62	2.05
	No. trials	2	2	2	2	2
Bannister ^{db}	10	104	126	110	118	110
Bilby ^{db}	10	120	111	104	127	114
Dunnart ^{db}	4	101	111	-	-	-
Durack ^{db}	10	102	77	95	112	96
Echidna	10	68	116	97	99	105
Koorabup ^{db}	10	72	76	95	103	99
Kowari ^{db}	10	111	98	97	121	106
Mitika ^{db}	10	98	92	92	110	97
Possum	10	103	97	96	105	100
Potoroo	4	106	111	-	-	-
Williams ^{db}	10	100	116	114	111	97
Wombat	6	86	115	101	-	-
Yallara ^{db}	10	96	82	100	100	103

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis

Source: National Variety Trials (2015–19)

Table 5: North East oat variety trial results. NVT long-term predicted yield expressed as a percentage of mean yield.

NORTH EAST						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		2.37	6.34	4.05	1.89	3.00
	No. trials	2	1	1	1	1
Bilby ^{db}	6	107	113	109	107	112
Bannister ^{db}	6	97	125	108	115	98
Potoroo	3	90	118	-	-	-
Williams ^{db}	6	98	116	110	118	91
Kowari ^{db}	6	111	99	104	98	112
Dunnart ^{db}	3	88	115	-	-	-
Possum	6	108	97	100	95	105
Mitika ^{db}	6	113	91	99	91	107
Wombat	4	94	109	95	-	-
Echidna	6	87	112	94	102	88
Durack ^{db}	6	109	81	102	98	106
Yallara ^{db}	6	88	89	100	107	97
Koorabup ^{db}	6	85	82	97	106	90

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis

Source: National Variety Trials (2015–19)

Table 6: South West oat variety trial results. NVT long-term predicted yield expressed as a percentage of mean yield.

SOUTH WEST						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		3.41	6.16	3.11	3.85	4.91
	No. trials	2	2	2	1	2
Bannister ^{db}	9	108	132	115	100	124
Bilby ^{db}	9	104	118	116	97	109
Dunnart ^{db}	4	98	122	-	-	-
Durack ^{db}	9	90	78	105	91	82
Echidna	9	95	122	113	106	115
Koorabup ^{db}	9	82	81	103	95	84
Kowari ^{db}	9	97	103	114	96	98
Mitika ^{db}	9	94	94	111	97	94
Possum	9	98	98	105	99	97
Potoroo	4	94	131	-	-	-
Williams ^{db}	9	107	115	109	95	118
Wombat	6	105	112	95	-	-
Yallara ^{db}	9	92	85	93	97	86

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis

Source: National Variety Trials (2015–19)

ACKNOWLEDGEMENTS

Mark McLean
Hari Dadu
Sue Hoppo

Agriculture Victoria, Horsham
Agriculture Victoria, Horsham
South Australian Research and
Development Institute

James Hunt
Ash Brooks
Courtney Peirce

La Trobe University
InterGrain
South Australian Research and
Development Institute

TRITICALE

Triticale is no longer evaluated as part of the GRDC National Variety Trials (NVT) program. Variety descriptions, agronomic information and disease reactions will continue to be presented in this publication.

Triticale, a cross between wheat and cereal rye, has a niche on farms across Victoria due to several attributes. It has a reputation for tolerance to harsh soil conditions such as acid and alkaline soils and soils of low trace element availability. It is a tall crop bred for greater straw strength, which can be useful in rocky paddocks or circumstances where crops have been known to lodge.

NEW VARIETIES

Kokoda[®] is a new dual-purpose triticale line bred by the University of Sydney. Kokoda[®] has better forage and grain yield than Cartwheel[®] and can also be used for hay production. Kokoda[®] has superior grain yield to other dual-purpose triticales and winter wheats in NSW trials. Marketed by Waratah Seeds.

Joey is a new reduced-awn, shorter season variety, bred by Cooper & Elleway. The variety is suitable for forage and grain production. Seed available to sow for 2021 is likely to be limited.

KEY DISEASE CONSIDERATIONS

In general, triticales have useful levels of resistance to diseases and will require less disease protection than other cereal crops. It is still important to consult a current cereal variety disease guide for disease ratings against disease strains.

MORE INFORMATION

nvtonline.com.au

■ Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

■ Crop Disease Au app
■ NVT Long Term Yield Reports app

grdc.com.au

■ [GrowNotes™ Triticale Southern region](#)

agriculture.vic.gov.au

■ [Growing triticale in Victoria](#)
■ [Agriculture Victoria Cereal disease guide](#)

extensionaus.com.au/FieldCropDiseasesVic

■ Expert support on field crop diseases in Victoria at your fingertips

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

(b) Denotes that Plant Breeder's Rights apply
End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

ASTUTE[Ⓛ]

A mid season, fully awned variety suited to medium to high-yielding environments. An alternative to Hawkeye[Ⓛ]. Released 2015. Bred and marketed by Australian Grain Technologies (AGT), available through AGT Seed Sharing™ and through AGT Affiliates. EPR \$2.75.

BISON[Ⓛ]

An early-mid season reduced-awn variety best suited to low to medium-yielding environments. Released 2015. Bred and marketed by AGT, available through AGT Seed Sharing™ and through AGT Affiliates. EPR \$2.75.

CARTWHEEL[Ⓛ]

A long-season, dual-purpose triticale suitable for grazing and grain. Recovery from grazing is excellent in the colder winter months. Grain yield is equivalent to Tobruk[Ⓛ] in southern NSW dual-purpose mixed-cereal trials. Released 2017. Bred by University of Sydney. Marketed by Waratah Seeds. Area point royalty of \$7/ha.

FUSION[Ⓛ]

A mid season, fully awned, grain-only triticale variety. A moderately tall variety that yields well in dry or sudden finishes. Released 2012. Bred and marketed by AGT, available through AGT Seed Sharing™. EPR \$3.00.

GOANNA

An early-mid season, fully awned, grain-only triticale. Released in 2011 by Cooper & Elleway.

NEW – JOEY

An early-mid season tall, reduced-awn variety suitable for forage and grain production. Joey has good early vigour and fast winter forage production. High test weight. Bred by Cooper & Elleway. Released 2020 with first seed due 2021, limited seed available.

NEW – KOKODA[Ⓛ]

A long-season, dual-purpose line that can be sown early March (some off-types may occur when sown early). Good first dry matter production equivalent to Endeavour[Ⓛ] and excellent recovery in winter for second dry matter production. In NSW trials, first and second dry matter production often yielded better than winter wheats. Useful for hay production as it is semi-awnless. Released for 2021 season. Released in 2019. Bred by University of Sydney. Marketed by Waratah Seeds. Area point royalty of \$7/ha.

KM10

A fast-growing, very early to early maturing variety with good early production of forage. Tends to smaller grain and is ideally suited to short-season environments. Released 2015 by Cooper & Elleway.

WONAMBI

A later maturing spring or facultative type variety suitable for grazing, forage conservation and grain production. Released 2018 by Cooper & Elleway and marketed by Naracoorte Seeds.

Table 1: Triticale time of sowing guide.

This table is a guide only and has been compiled from observations of agronomists.

MALLEE	April				May				June				July			
Late				Yellow	Green	Green	Green	Red								
Mid-late				Yellow	Green	Green	Green	Red								
Mid					Yellow	Green	Green	Green	Red							
Early-mid						Yellow	Green	Green	Green	Red						
WIMMERA	April				May				June				July			
Late				Yellow	Green	Green	Green	Red								
Mid-late				Yellow	Green	Green	Green	Red								
Mid						Yellow	Green	Green	Green	Red						
Early-mid							Yellow	Green	Green	Green	Red					
NORTH CENTRAL	April				May				June				July			
Late				Yellow	Green	Green	Green	Red								
Mid-late				Yellow	Green	Green	Green	Red								
Mid						Yellow	Green	Green	Green	Red						
Early-mid							Yellow	Green	Green	Green	Red					
NORTH EAST	April				May				June				July			
Late			Yellow	Green	Green	Green	Green	Red								
Mid-late				Yellow	Green	Green	Green	Red								
Mid						Yellow	Green	Green	Green	Red						
Early-mid							Yellow	Green	Green	Green	Red					
SOUTH WEST	April				May				June				July			
Late						Yellow	Green	Green	Green	Red						
Mid-late							Yellow	Green	Green	Green	Red					
Mid								Yellow	Green	Green	Green	Red				
Early-mid									Yellow	Green	Green	Green	Red			

Yellow = earlier than ideal.
 Green = optimum sowing time.
 Red = later than ideal.

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

Table 2: Triticale variety agronomic guide and disease reaction.

The agronomic characteristics in this table are provided as a guide only and have been compiled from observations of the breeder. Disease reactions have been sourced from [Agriculture Victoria Cereal disease guide \(2020\)](#).

Variety	Maturity	Height	Stem rust	Stripe rust	Leaf rust	Yellow leaf spot	<i>Septoria tritici</i>	CCN resistance
Astute [Ⓛ]	M	M-T	RMR	RMR	RMR	MRMS	RMR	R
Bison [Ⓛ]	E-M	T	RMR	R	RMR	MR	RMR	R
Cartwheel [Ⓛ]	L	-	R	R	R	MR	RMR	R _p
Fusion [Ⓛ]	M	M-T	R	RMR	R	MRMS	MRMS	R
Goanna	E-M	T	R	RMR	RMR	MR	MR	R
NEW - Joey	E-M	T	S _p	MR _p	MR _p	-	-	MRMS _p
NEW - Kokoda [Ⓛ]	M-L	-	R _p	R _p	R _p	MR	RMR	-
KM10	VE-E	-	R	RMR	MR	MRMS	MR	S
Wonambi	S	T	RMR	MRMS#	R	MR	RMR	MS

Maturity: VE = very early, E = early, M = mid, L = late; Height: M = medium, T = tall

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.

_p = provisional ratings – treat with caution.

Varieties marked may be more susceptible if alternative strains are present.

ACKNOWLEDGEMENTS

Grant Hollaway Agriculture Victoria, Horsham
 Kath Cooper Cooper & Elleway
 Jeremy Roake University of Sydney
 Britt Kalmeier Australian Grain Technologies

CANOLA

Vivid yellow flowers in spring make canola the most distinctive of Victoria's winter crops. Canola is grown for its seed, which is crushed for the oil used in margarine, cooking oils, salad oils and edible oil blends. After the oil is extracted, the by-product is a protein-rich meal used by the intensive livestock industries.

NEW VARIETIES

Several new canola varieties have been released, and marketing companies have indicated there will be seed commercially available for sowing in 2021. It is important to note for both new and older varieties where seed remains available that not all varieties have been tested in recent years. Hence NVT-tested years are provided in the variety descriptions.

The new listings for 2021 are:

- Clearfield®-tolerant hybrid – Pioneer® 44Y94 CL;
- Triazine-tolerant hybrids – Hyola® Blazer TT, HyTTec® Trifecta, InVigor® T 6010, SF Dynatron TT;
- Triazine-tolerant specialty varieties – Monola® H421TT, Monola® 420TT;
- Dual-herbicide-tolerant variety – Hyola® Enforcer CT;
- TruFlex® canola varieties – Xseed™ Condor, InVigor® R 4520P; and
- TruFlex® dual-herbicide variety – Hyola® Garrison XC.

Varieties removed this year are:

- Conventional specialty hybrid – VICTORY® V3002;
- Roundup Ready® varieties – Nuseed GT-42, Hyola® 506RR, Pioneer® 45Y25 RR;
- Roundup Ready® specialty variety – Monola® G11;
- Clearfield®-tolerant variety – Hyola® 575CL;
- Triazine-tolerant varieties – ATR-Flathead, Hyola® 550TT, Hyola® 650TT; and
- Triazine-tolerant specialty variety – Monola® 515TT.

DUAL-PURPOSE CANOLA

Research trials have shown that long-season, dual-purpose winter hybrid canola for grazing and/or grain production have performed well in the high-rainfall zone. In autumn, established plants were more able to weather attacks from slugs and waterlogging. In a dry spring, the more robust root system was better able to access subsoil moisture. These dual-purpose hybrid varieties are sown in late spring or early to mid-summer and grazed until autumn; or sown in autumn or early winter. Winter type canola varieties are currently not evaluated through the NVT program. Consult the GRDC publication *Spring-sown winter canola*.

SPECIALTY CANOLA (HOLL)

Specialty canola hybrids have a particular trait that produces a high-stability oil profile (high oleic, low linoleic or 'HOLL'), which offers customers extended frying life and improved shelf stability. Specialty canola may be grown under closed-loop contracts with a premium paid to growers when the grain meets specifications. Specialty canola typically requires additional attention to quality, but agronomically it is grown similarly to commodity canola.

TRUFLEX® CANOLA

TruFlex® canola, developed by Bayer, offers growers greater flexibility through an extended glyphosate application window up to first flower and an opportunity to apply Roundup Ready® herbicides at higher rates for enhanced weed control. TruFlex® canola was launched in the 2019 season. Further information on TruFlex® canola can be found at truflex.com.au.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

KEY DISEASE CONSIDERATIONS

Varietal resistance to Blackleg is reported each year in the BlacklegCM app and the Blackleg management guide. It is crucial to use the latest guide as some cultivars may have reduced resistance status due to the Blackleg fungus overcoming resistance. These guides also report the Blackleg group for each variety. If your current canola variety has reduced resistance over time, it may be prudent to change to a variety which is from a different resistance group.

The BlacklegCM app has all varietal Blackleg ratings and resistance groups. The app will predict yield losses and let you explore different management and fungicide options to protect your crop.

There is no known varietal resistance to Sclerotinia stem rot in Australia. Sclerotinia will be determined by region, seasonal conditions and bloom stage when conducive conditions occur. The SclerotiniaCM app will predict yield losses and provide probable returns from fungicide applications.

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reporter app

grdc.com.au

- [GrowNotes™ Canola Southern region](#)
- [Blackleg management guide](#) updated in March and September
- [GrowNotes™ Tips & tactics: better mouse management](#)
- [Ten tips to early-sown canola](#)
- [20 tips for profitable canola – Victoria](#)
- [GRDC Southern region NVT harvest reports](#)

agriculture.vic.gov.au

- [Growing canola in Victoria](#)
- [Blackleg of canola](#)
- [Canola diseases](#)

BlacklegCM app

- Decision-support tool for profitable management of Blackleg. Best used on tablet. Not available on iPhone

SclerotiniaCM app

- A forecasting model to assist canola growers with fungicide application decisions. Best used on tablet. Not available on iPhone

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

canolaflowering.com.au

- Canola flowering calculator. A simple phenology model that uses 60 years of local weather data to calculate a range of possible flowering dates for a specific environment. Developed by CSIRO.

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

OP = Open pollinated

Blackleg ratings:

R = resistant

MR = moderately resistant

S = susceptible

Resistance order from highest to lowest:

R > R-MR > MR > MR-MS > MS > MS-S > S

p = provisional ratings – treat with caution.

(*l*) Denotes that Plant Breeder's Rights apply

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

CONVENTIONAL VARIETIES

OP – AV-GARNET^(l)

Mid maturing variety of medium height. Blackleg rating MS. NVT tested 2006–19. Bred by Agriculture Victoria. Marketed by Nuseed.

Hybrid – NUSEED DIAMOND

Early maturing hybrid of medium height suited to medium-rainfall zones. Blackleg rating MR. NVT tested 2012–20. Marketed by Nuseed.

Hybrid – NUSEED QUARTZ

Mid maturing hybrid variety of medium height bred to replace AV-Garnet^(l). Suited to medium to high-rainfall zones. Blackleg rating R. NVT tested 2016–20. Released 2017. Marketed by Nuseed.

CLEARFIELD® HYBRID VARIETIES

Hybrid – BANKER CL

Mid maturing hybrid suited to medium-rainfall areas or later sowing in high-rainfall zones. Blackleg rating MR. NVT tested 2014–18. Marketed by Barenbrug.

Hybrid – HYOLA® 970CL

Late maturing, winter, dual-purpose hybrid with very high biomass dry matter and tall plant height. Adapted to medium-high to very high rainfall zones. Blackleg rating R. Blackleg Group H. Not tested in NVT trials. Marketed by Advanta Seeds.

Hybrid – PHOENIX CL

Late maturing, dual-purpose winter variety, slightly quicker to flower than other winter varieties. Not tested in NVT trials. Independent trial results demonstrate good grain yield and oil content. Blackleg rating R. Released 2019; most recent release from DSV breeding program. Marketed by AGF Seeds.

Hybrid – PIONEER® 43Y92 CL

Early maturing hybrid variety suited to low to medium-rainfall zones. Blackleg rating R. NVT tested 2016–20. Released 2017. Marketed by Pioneer Seeds.

Hybrid – PIONEER® 44Y90 CL

Mid-early maturing hybrid. Suited to low to medium-rainfall zones. Blackleg rating R. NVT tested 2015–20. Marketed by Pioneer Seeds.

Hybrid – PIONEER® 45Y91 CL

Mid maturing hybrid variety. Suited to medium to high-rainfall zones. Unique phenology allows for early planting and grazing potential. Blackleg rating R-MR. NVT tested 2014–20. Marketed by Pioneer Seeds.

Hybrid – PIONEER® 45Y93 CL

Mid maturing hybrid variety. Suited to medium to high-rainfall and irrigation zones. Medium-tall height. Blackleg rating R. NVT tested 2017–20. Released 2018. Marketed by Pioneer Seeds.

NEW – Hybrid – PIONEER® 44Y94 CL

Mid-early maturing Clearfield® hybrid variety. Mid-tall height. Suited to a range of growing zones including dryland and irrigation. Blackleg rating R. NVT tested 2019–20. Released 2020. Marketed by Pioneer Seeds.

Hybrid – SAINTLY CL

Mid to mid-early maturing hybrid. Medium plant height. Blackleg rating MR. NVT tested 2016–19. Released 2017. Marketed by Barenbrug Seeds.

Hybrid – SF EDIMAX CL

Late maturing, dual-purpose winter graze and grain hybrid. Suited to early sowing and spring sowing in high-rainfall areas. Blackleg rating R-MR. Not tested in NVT trials. Marketed by Seed Force.

CLEARFIELD® SPECIALTY HYBRID**VICTORY® Specialty Hybrid – VICTORY® V7001CL**

Late maturing specialty (high oleic, low linoleic oil) hybrid. Medium to tall height. Blackleg rating R-MR. Bred by Cargill. Marketed by AWB under contract.

VICTORY® Specialty Hybrid – VICTORY® V7002CL

Early-mid maturing specialty (high oleic, low linoleic oil) hybrid. Short to medium height. Blackleg rating R-MR. NVT tested 2017–20. Bred by Cargill. Marketed by AWB under contract.

VICTORY® Specialty Hybrid – V75-03CL

Mid maturing specialty (high oleic, low linoleic oil) hybrid. Medium plant height. Blackleg rating R-MR. NVT tested 2018–20 as 16MH6004. Released 2019. Marketed by AWB under contract.

TRIAZINE-TOLERANT VARIETIES**OP – ATR-BONITO[Ⓛ]**

Early-mid maturing variety for low to medium-rainfall zones. Short to medium height. Alternative to ATR-Stingray[Ⓛ] or ATR-Gem[Ⓛ]. Blackleg rating MS. NVT tested 2012–20. Bred and marketed by Nuseed. EPR \$5.00.

OP – ATR MAKO[Ⓛ]

Early-mid maturing variety for low to medium-rainfall zones. Comparable yield to ATR Bonito[Ⓛ]. Blackleg rating MR. NVT tested 2014–18. Bred and marketed by Nuseed. EPR \$5.00.

OP – ATR-STINGRAY[Ⓛ]

Early maturing variety. Short to medium height. Blackleg rating MR. NVT tested 2010–20. Bred by AgSeed Research and Agriculture Victoria. Marketed by Nuseed.

OP – ATR WAHOO[Ⓛ]

Mid maturing variety for medium to high-rainfall zones and irrigation. Medium height. Blackleg rating MS. NVT tested 2013–20. Bred and marketed by Nuseed. EPR \$5.00.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

Hybrid – DG 670TT

Mid-late maturing hybrid variety suited to medium to high-rainfall zones. Medium to tall height. Blackleg rating MR. NVT tested 2015–20. Marketed by Nutrien Ag Solutions.

Hybrid – HYOLA® 350TT

Early maturing hybrid variety suited to low to high-rainfall zones. Short to medium plant height. Blackleg rating R. NVT tested 2016–20. Released 2017. Bred and marketed by Advanta Seeds.

Hybrid – HYOLA® 559TT

Early-mid maturing hybrid. Suited to low to high-rainfall zones including irrigation. Blackleg rating R. NVT tested 2011–19. Bred and marketed by Advanta Seeds.

NEW – Hybrid – HYOLA® BLAZER TT

Mid-early maturing hybrid. Suited to medium-high to very high rainfall zones including irrigation. Blackleg rating R. NVT tested 2019-20. Released 2020. Bred and marketed by Advanta Seeds.

Hybrid – HYTTEC® TRIDENT

Early maturing hybrid canola. Medium-tall plant height. Suitable for low to medium-rainfall zones. Blackleg rating R. NVT tested 2017–20. Released 2019. Bred and marketed by Nuseed. EPR \$10.00.

NEW – Hybrid – HYTTEC® TRIFECTA

Mid maturing hybrid variety. Medium-tall plant height. Suitable for medium to high-rainfall zones. Blackleg rating R. NVT tested 2018–20. Released 2020. Marketed by Nuseed. EPR \$10.00.

Hybrid – HYTTEC® TROPHY

Early-mid maturing hybrid variety. Medium-tall plant height. Blackleg rating R. NVT tested 2017–20. Released 2017. Marketed by Nuseed. EPR \$10.00.

Hybrid – INVIGOR® T 3510

Early-mid maturing hybrid. Particularly suited to early season areas. Blackleg rating MR-MS. NVT tested 2017–19. Marketed by BASF.

Hybrid – INVIGOR® T 4510

Early-mid maturing hybrid variety. Medium-tall plant height. Suited to low to medium-rainfall zones. Blackleg rating MR. NVT tested 2016–20. Marketed by BASF.

NEW – Hybrid – INVIGOR® T 6010

Mid-late maturing hybrid variety. Suited to medium to high-rainfall zones. Medium plant height. InVigor® T 6010 is a replacement for InVigor® T 4510 in higher rainfall areas. Blackleg rating MS. NVT tested 2019-20. Released 2020. Marketed by BASF.

Hybrid – PIONEER® 44T02 TT

Early-mid maturing hybrid suited to low to medium-rainfall areas. Blackleg rating R. NVT tested 2015–20. Marketed by Pioneer Seeds.

Hybrid – PIONEER® 45T03 TT

Mid maturing hybrid variety. Suited to high-rainfall and irrigation zones. Medium-tall height. Blackleg rating R. NVT tested 2018–20. Released 2018. Marketed by Pioneer Seeds.

Hybrid – SF IGNITE TT

Mid maturing hybrid. Suited to medium to high-rainfall zones. Medium plant height. Blackleg rating MR. NVT tested 2016–20. Marketed by Seed Force.

Hybrid – SF SPARK TT

Early maturing hybrid. Suited to low to medium-rainfall areas. Medium plant height. Blackleg rating R. NVT tested 2018–20. Released 2018. Marketed by Seed Force.

Hybrid – SF TURBINE TT

Early-mid maturing hybrid. Excellent early vigour with a moderate height. Moderate oil content. Suited to medium-rainfall areas. Blackleg rating MR-MS. NVT tested 2015–20. Marketed by Seed Force.

NEW – Hybrid – SF DYNATRON TT

Mid maturing hybrid canola. Medium-tall height with a high oil content. Blackleg rating MR-MS. NVT tested 2019-20 as CHYB3688TT. Released 2020. Marketed by Seed Force. EPR \$10.00.

TRIAZINE-TOLERANT SPECIALTY VARIETIES**OP specialty oil – MONOLA® 416TT**

Early-mid maturing for low to medium-rainfall zones. Blackleg rating R-MR. NVT tested 2014–19. Marketed under closed-loop contract through Nuseed.

NEW – Hybrid specialty oil – MONOLA® H421TT

Early maturing hybrid variety. Medium height. Suitable for low to medium-rainfall zones or late sowing option. Blackleg rating R. Tested in NVT 2019-20 (NMH18T446). Marketed under closed-loop contract through Nuseed.

NEW – OP specialty oil – Monola® 420TT

Early-mid maturing, open pollinated variety. Short height. Suitable alternative to Monola® 416TT. Blackleg rating R. Tested in NVT 2019-20 (NL1015). Marketed under closed-loop contract through Nuseed.

**ROUNDUP READY®
HYBRID VARIETIES****Hybrid – DG 408RR**

Early-mid maturing hybrid variety suited to low to medium-rainfall zones. Medium plant height with good adaptability. Blackleg rating MR-MS. NVT tested 2016–19. Marketed by Nutrien Ag Solutions.

Hybrid – HYOLA® 404RR

Early-mid season hybrid. Suited to medium to high-rainfall zones including irrigation. Medium to tall height. Blackleg rating R-MR. NVT tested 2010–19. Bred and marketed by Advanta Seeds.

Hybrid – INVIGOR® R 3520

Early maturing hybrid variety. Suited to early season areas or later planting. Medium plant height. Blackleg rating R-MR. NVT tested 2016–20. Released 2017. Bred and marketed by BASF.

Hybrid – INVIGOR® R 5520P

Mid maturing hybrid variety suited to medium to high-rainfall areas. PodGuard® technology makes it suitable for flexible windrow timing or direct heading with reduced harvest losses. Blackleg rating MR. NVT tested 2015–20. Bred and marketed by BASF.

Hybrid – NUSEED GT-53

Mid maturing hybrid variety. Medium-tall height. Blackleg rating R. NVT tested 2014–20. Marketed by Nuseed.

Hybrid – PIONEER® 43Y23 RR

Early maturing hybrid best suited to Mallee and Wimmera districts. Blackleg rating R-MR. NVT tested 2011–18. Bred and marketed by Pioneer Seeds.

Hybrid – PIONEER® 43Y29 RR

Early-mid maturing hybrid variety. Suited to low to medium-rainfall zones. Medium height. Blackleg rating of R-MR. NVT tested 2017–20. Released 2018. Marketed by Pioneer Seeds.

Hybrid – PIONEER® 44Y27 RR

Early-mid maturing hybrid variety. Ideally suited to low to medium-rainfall zones. Blackleg rating R-MR. NVT tested 2016–20. Marketed by Pioneer Seeds.

Hybrid – PIONEER® 45Y28 RR

Mid maturing hybrid variety. Medium-tall height. NVT tested 2017–20. Released 2018. Marketed by Pioneer Seeds.

**ROUNDUP READY®
HIGH-STABILITY VARIETIES****Hybrid specialty oil – VICTORY® V5003RR**

Mid maturing specialty (high oleic, low linoleic oil) hybrid. Medium plant height. Blackleg rating R-MR. NVT tested 2018–20 as 16MH6004. Released 2020. Marketed by AWB under contract.

**DUAL HERBICIDE-TOLERANT
VARIETIES****Hybrid Roundup Ready®/triazine-tolerant –
BASF 3000 TR**

Early maturing hybrid suited to low to medium-rainfall zones. Blackleg rating MS-S. NVT tested 2015–19. Marketed by BASF.

**Hybrid Clearfield®/triazine-tolerant –
HYOLA® 580CT**

Mid-early maturing hybrid variety suited to medium to high-rainfall zones. Medium height. High tolerance to imidazolinone (IMI) soil carryover situations. Blackleg rating R. NVT tested 2017–20. Released 2018. Bred and marketed by Advanta Seeds.

**NEW – Hybrid Clearfield®/triazine-tolerant –
HYOLA® Enforcer CT**

Mid-early maturing hybrid variety. Suited to medium-low to high-rainfall zones. Medium height. High tolerance to IMI soil carryover situations. Blackleg rating R. NVT tested 2019-20. Released 2020. Bred and marketed by Advanta Seeds.

TRUFLEX® CANOLA VARIETIES**Hybrid – HYOLA® 410XX**

Early-mid maturing TruFlex® hybrid variety suited to low to high-rainfall zones including irrigation. Blackleg rating R-MR. NVT tested 2019-20 as Hyola® 410XX. Bred and marketed by Advanta Seeds.

Hybrid – INVIGOR® R 4022P

Early-mid maturing TruFlex® hybrid, with PodGuard®. Suited to low to medium-rainfall zones. Blackleg rating MR. NVT tested 2019-20 as InVigor R 4022P. Bred and marketed by BASF.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

NEW – Hybrid – INVIGOR® R 4520P

Early-mid season TruFlex® hybrid. Good seedling vigour, good oil and medium height. InVigor® R 4520P is a companion for InVigor® R 4022P and suitable in mid and longer season areas. Blackleg rating MR. NVT tested 2019-20 as InVigor® R 4520P. Bred and marketed by BASF.

NEW – Hybrid – XSEED™ CONDOR

Mid maturing TruFlex® hybrid. Tall height. Blackleg rating R. Tested in Bayer group regulated trials 2018-19 as Xseed™ Condor; NVT tested 2020. Marketed by Nuseed.

Hybrid – XSEED™ RAPTOR

Early-mid maturing TruFlex® hybrid. Short to medium height. Blackleg rating of R. Tested in Bayer group regulated trials 2018-19 as Xseed™ Raptor, NVT tested 2020. Marketed by Nuseed.

TRUFLEX® DUAL HERBICIDE VARIETIES**Hybrid – HYOLA® 530XT**

Mid maturing TruFlex® and triazine-tolerant hybrid variety. Medium plant height. Blackleg rating of MR. NVT tested 2018-19 as Hyola® 530XT. Bred and marketed by Advanta Seeds.

Hybrid – HYOLA® 540XC

Mid-early maturing, TruFlex® + Clearfield® tolerant hybrid variety of medium-high height. High tolerance to IMI soil carryover situations. Blackleg rating R. NVT tested 2019-20 as Hyola® 540XC. Bred and marketed by Advanta Seeds.

NEW – Hybrid – HYOLA® GARRISON XC

Mid-early maturing TruFlex® + Clearfield®-tolerant hybrid variety of medium-high height. Suited to low to high-rainfall zones. High tolerance to IMI soil carryover situations. Blackleg rating R. NVT tested 2019-20. Bred and marketed by Advanta Seeds.

Table 1: Canola phenology time of sowing guide.

Recommended sowing dates for key Victorian locations for three phenology types. Following these sowing guidelines will ensure varieties flower within their ideal optimal start of flowering (OSF) window.

This table is a guide only and has been taken from the GRDC publication *20 tips for profitable canola* (December 2019).

NORTH EAST	March				April				May			
Slow			Yellow	Yellow	Green	Green	Red					
Mid					Yellow	Green	Green	Green	Red			
Fast							Yellow	Green	Green	Red		
MALLEE	March				April				May			
Slow			Yellow	Yellow	Green	Green	Red					
Mid					Yellow	Green	Green	Red				
Fast						Yellow	Green	Green	Red			
WIMMERA	March				April				May			
Slow			Yellow	Yellow	Green	Green	Red					
Mid					Yellow	Green	Green	Green	Red			
Fast						Yellow	Green	Green	Green	Red		
SOUTH WEST	March				April				May			
Slow			Yellow	Yellow	Green	Green	Green	Green	Red	Red		
Mid					Yellow	Green	Green	Green	Green	Red	Red	
Fast							Yellow	Green	Green	Green	Red	

Yellow = risk of frost, disease infection and lower yield potential.

Green = on time.

Red = risk of drought and high temperature stress.

Table 2: Canola diseases.

Disease	Organism	Symptoms	Occurrence	Inoculum source	Control
Blackleg	<i>Leptosphaeria maculans</i>	Leaf lesions, which may develop into canker on stem at or near ground level, plant death. Lesions on flowers, pods and branches in the upper canopy.	Spores from canola stubble are released in autumn and after subsequent rainfall events. Spores infect leaves of the new crop and the upper canopy later in the season.	Canola stubble.	Resistant cultivars. Avoid sowing next to last year's canola stubble. Fungicides can be used. See BlacklegCM app and Blackleg management guide.
Sclerotinia stem rot	<i>Sclerotinia</i> spp.	White fluffy growth on the stem, causing plant parts above this point to die. Affected area greyish-white, sclerotia form on and inside the stems.	Favoured by wet spring weather during flowering.	Survives as Sclerotia in the soil.	Sow clean seed and isolate from last year's infected paddocks. Fungicides applied during early bloom. See SclerotiniaCM app.
Damping off	<i>Rhizoctonia</i> spp., <i>Pythium</i> spp. and <i>Fusarium</i> spp.	Pre-emergence rot and seedlings fail to emerge. Post-emergent plants collapse at ground level with leaves turning orange/purple. Surviving plants stunted.	In soils that have not been cultivated post opening rains. During cold/wet periods.	Hyphal growth in the soil.	Seed dressings. Cultivation after the break of the season.
Alternaria leaf spot and black spot	<i>Alternaria brassicae</i>	Dark target-like round spots that initially appear on leaves. Can spread to stems and pods and cause pod shattering.	Infection spreads with wet humid weather throughout season. Severe pod infection possible if wet during spring.	Canola stubble.	No current control known.

Source: Marcroft Grains Pathology (2020)

Table 3: Canola variety Blackleg ratings (spring). Ratings will be updated in autumn 2021.

Variety	Maturity	Phenology (response to early sowing)#	Year of release	Blackleg resistance rating bare seed	Blackleg resistance rating + Jockey®	Blackleg resistance rating + ILeVo®	Blackleg resistance rating + Saltro®	Blackleg resistance group	Open pollinated or hybrid
CONVENTIONAL CANOLA									
AV-Garnet [®]	mid	-	2007	MS	-	-	-	A	open
Nuseed Diamond	early	fast	2013	MR	R	R	R	ABF	hybrid
Nuseed Quartz	mid	mid	2017	R	-	-	-	ABD	hybrid
CLEARFIELD®-TOLERANT CANOLA									
Banker CL	mid	mid-fast	2015	MR	R	-	R	A	hybrid
Hyola® 970CL	late	winter	2014	R	R	R	R	H	hybrid
Phoenix CL	late	winter	2019	R	-	-	-	B	hybrid
Pioneer® 43Y92 CL	early	mid-fast	2017	R	-	R	-	B	hybrid
Pioneer® 44Y90 CL	mid-early	mid-fast	2016	R	R	R	R	B	hybrid
Pioneer® 45Y91 CL	mid	mid-slow	2016	R-MR	R	R	R	B	hybrid
Pioneer® 45Y93 CL	mid	mid-slow*	2018	R	-	R	R	BC	hybrid
NEW - Pioneer® 44Y94 CL	mid-early	mid-fast ^a	2020	R	-	R	R	BC	hybrid
Saintly CL	mid-early	mid-fast	2017	MR	R	-	R	B	hybrid
SF Edimax CL	late	winter	2014	R-MR	-	-	-	C	hybrid
CLEARFIELD® SPECIALTY HYBRID CANOLA									
VICTORY® V7001CL	late	slow	2016	R-MR	R	R	R	ABF	hybrid
VICTORY® V7002CL	early-mid	-	2017	R-MR	R	R	R	ABF	hybrid
VICTORY® V75-03CL	mid	mid-slow*	2019	R-MR	R	R	R	AB	hybrid
TRIAZINE-TOLERANT CANOLA									
ATR Bonito [®]	early-mid	mid-fast	2013	MS	R-MR	R	R	A	open
ATR Mako [®]	early-mid	mid-fast	2015	MR	R-MR	R	R	A	open
ATR-Stingray [®]	early	fast	2011	MR	R	R	R	C	open
ATR Wahoo [®]	mid	mid-slow	2013	MS	-	-	-	A	open
DG 670TT	mid-late	mid	2017	MR	-	R	R	BF	hybrid
Hyola® 350TT	early	fast	2017	R	R	R	R	ABDF	hybrid
Hyola® 559TT	early-mid	-	2012	R	-	-	R	ABD	hybrid
NEW - Hyola® Blazer TT	mid-early	-	2020	R	-	-	-	tbd	hybrid
HyITec® Trident	early	mid-fast	2019	R	-	-	-	AD	hybrid
NEW - HyITec® Trifecta	mid	-	2020	R	-	-	-	ABD	hybrid
HyITec® Trophy	early-mid	mid	2017	R	-	-	-	AD	hybrid
InVigor T 3510	early	mid-fast*	2019	MR-MS	MR	R	-	BF	hybrid
InVigor T 4510	early-mid	mid-fast	2016	MR	R	R	R	BF	hybrid
NEW - InVigor® T 6010	mid-late	-	2020	MS	-	-	-	BC	hybrid
Pioneer® 44T02 TT	early-mid	mid-fast	2016	R	-	R	-	ABD	hybrid
Pioneer® 45T03 TT	mid	mid	2018	R	-	R	-	ABD	hybrid
SF Ignite TT	mid	mid-slow	2016	MR	R	R	R	BF	hybrid
SF Spark TT	early	fast*	2018	R	R	R	R	ABDS	hybrid
SF Turbine TT	early-mid	-	2015	MR-MS	R	R	R	BF	hybrid
NEW - SF Dynatron TT	mid	-	2020	MR-MS	-	-	-	BC	hybrid

Table 3, cont. next page

(Continued) Table 3: Canola variety Blackleg ratings (spring). Ratings will be updated in autumn 2021.

Variety	Maturity	Phenology (response to early sowing)#	Year of release	Blackleg resistance rating bare seed	Blackleg resistance rating + Jockey®	Blackleg resistance rating + ILeVo®	Blackleg resistance rating + Saltra®	Blackleg resistance group	Open pollinated or hybrid
TRIAZINE-TOLERANT SPECIALTY CANOLA									
Monola® 416TT	early-mid	-	2015	R-MR	-	-	-	B	open
NEW - Monola® H421TT	early	-	2020	R	-	-	-	BC	hybrid
NEW - Monola® 420TT	early-mid	-	2020	R	-	-	-	AD	open
ROUNDUP READY® CANOLA									
DG 408RR	early-mid	-	2017	MR-MS	-	R	R	AC	hybrid
Hyola® 404RR	early-mid	-	2010	R-MR	-	-	R	ABD	hybrid
InVigor R 3520	early	-	2017	R-MR	R	R	-	unknown	hybrid
InVigor R 5520P	mid	mid-slow	2016	MR	R	R	-	ABC	hybrid
Nuseed GT-53	mid	mid	2016	R	-	-	-	ABDF	hybrid
Pioneer® 43Y23 RR	early	-	2012	R-MR	-	-	-	B	hybrid
Pioneer® 43Y29 RR	early-mid	mid-fast*	2018	R-MR	-	R	R	BC	hybrid
Pioneer® 44Y27 RR	early-mid	mid-fast	2017	R-MR	-	R	-	B	hybrid
Pioneer® 45Y28 RR	mid	-	2018	-	-	-	-	BC	hybrid
ROUNDUP READY® SPECIALTY CANOLA									
VICTORY® V5003RR	mid	-	2015	R-MR	R	R	R	AB	hybrid
DUAL HERBICIDE-TOLERANT CANOLA									
BASF 3000 TR	early	-	2015	MS-S	MR	R	R	B	hybrid
Hyola® 580CT	mid-early	-	2018	R	R	R	R	BC	hybrid
NEW - Hyola® Enforcer CT	mid-early	-	2020	R	-	-	-	tbd	hybrid
TRUFLEX® CANOLA									
Hyola® 410XX R	early-mid	mid-fast*	2019	R-MR	-	-	R	ABD	hybrid
InVigor® R 4022P	early-mid	mid-fast*	2019	MR	-	R	-	ABC	hybrid
NEW - InVigor R® 4520P	early-mid	-	2020	MR	-	R	-	B	hybrid
NEW - Xseed™ Condor	mid	-	2020	R	-	-	-	ABD	hybrid
Xseed™ Raptor	early-mid	mid-fast*	2019	R	-	-	-	AD	hybrid
TRUFLEX® DUAL-HERBICIDE CANOLA									
Hyola® 530XT	mid	mid-fast*	2019	MR	-	-	-	ABD	hybrid
Hyola® 540XC	mid-early	-	2019	R	-	-	-	tbd	hybrid
NEW - Hyola® Garrison XC	mid-early	-	2020	R	-	-	-	tbd	hybrid

Sources: Blackleg management guide, Spring (2020) GRDC fact sheet, 20 tips for profitable canola – Victoria (2019)

*One year (2019) experimental data only. # Phenology response to early sowing. Rankings may vary for later sowing dates. * Indicates breeding company data
Resistance order from highest to lowest: R > RMR > MR > MRMS > MS > MSS > S Resistance: R = resistant, M = moderately, S = susceptible.
p = provisional ratings – treat with caution. est = estimate by marketing company (yet to be rated). tbd = to be determined (yet to undergo resistance gene screening).

Table 4: Mallee canola (early season). NVT long-term predicted yield expressed as a percentage of mean yield.

These trials were not structured to allow comparisons between different chemistry types.

IMIDAZOLINONE-TOLERANT CANOLA						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.44	2.72	1.48	1.19	1.52
	No. trials	1	3	3	2	3
Banker CL	7	130	118	109	-	-
Hyola® 474CL	3	92	96	-	-	-
Hyola® 575CL	12	84	91	93	80	87
Pioneer® 43Y92 CL	11	-	106	106	104	96
Pioneer® 44Y89 CL	4	96	98	-	-	-
Pioneer® 44Y90 CL	12	114	108	107	109	102
Saintly CL	7	118	-	107	-	101
VICTORY® V7002CL	8	-	-	93	90	86
TRIAZINE-TOLERANT CANOLA						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.44	2.84	1.44	1.67	1.52
	No. trials	1	1	3	1	3
ATR Bonito ^{db}	9	94	98	97	94	91
ATR-Flathead	2	-	-	-	-	85
ATR-Stingray ^{db}	9	94	99	95	93	95
BASF 3000 TR	9	85	92	96	98	97
Hyola® 350TT	7	-	-	105	108	103
Hyola® 450TT	2	90	95	-	-	-
Hyola® 525RT	2	91	97	-	-	-
Hyola® 550TT	3	-	-	-	-	97
Hyola® 559TT	3	114	105	-	109	-
Hyola® Blazer TT	1	-	-	-	-	104
Hyola® Enforcer CT	2	-	-	-	-	92
HyTTec® Trident	4	-	-	-	110	97
HyTTec® Trophy	7	-	-	109	111	108
InVigor® T 3510	4	-	-	-	110	108
InVigor® T 4510	8	-	109	111	112	109
Pioneer® 44T02 TT	9	107	101	105	107	105
SF Dynatron TT	3	-	-	-	-	108
SF Spark TT	4	-	-	-	102	100
SF Turbine TT	4	-	107	106	-	-
ROUNDUP READY® CANOLA						
Year		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.44	2.72	1.44	1.67	1.52
	No. trials	1	3	3	1	3
DG 408RR	10	-	100	103	104	99
Hyola® 404RR	11	84	90	95	94	90
Hyola® 410XX	3	-	-	-	-	90
Hyola® 506RR	1	-	-	-	99	-
Hyola® Garrison XC	3	-	-	-	-	97
IH30 RR	4	82	88	-	-	-
InVigor® R 3520	10	-	98	101	105	107
InVigor® R 4020P	1	-	-	-	105	-
InVigor® R 4022P	3	-	-	-	-	116
Nuseed GT-42	5	92	96	96	-	-
Pioneer® 43Y23 RR	8	91	94	99	101	-
Pioneer® 43Y29 RR	5	-	-	112	-	115
Pioneer® 44Y24 RR	4	108	104	-	-	-
Pioneer® 44Y27 RR	10	-	108	108	110	108

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: [National Variety Trials \(2015–19\)](#)

Table 5: North Central and North East canola (mid-season). NVT long-term predicted yield expressed as a percentage of mean yield.

These trials were not structured to allow comparisons between different chemistry types.

CONVENTIONAL CANOLA												
Year	NORTH CENTRAL						NORTH EAST					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.7	3.67	2.22	0.82	1.11		1.19	3.07	1.97		0.96
	No. trials	1	1	1	1	1	No. trials	1	1	1		1
AV-Garnet ^{db}	5	79	96	90	87	93	4	83	96	91	-	84
Nuseed Diamond	4	121	97	-	109	107	3	122	97	-	-	123
Nuseed Quartz	4	-	108	106	113	105	3	-	108	107	-	107
IMIDAZOLINONE-TOLERANT CANOLA												
Year	NORTH CENTRAL						NORTH EAST					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.7	3.75	2.63	0.82	1.72		1.71	3.12	1.75	1.4	1.27
	No. trials	1	2	2	1	2	No. trials	2	2	2	1	2
Banker CL	6	100	111	106	104	-	6	107	109	108	106	-
Hyola® 474CL	2	87	97	-	-	-	3	93	95	-	-	-
Hyola® 575CL	8	89	94	95	90	93	9	92	92	94	92	91
Hyola® 577CL	1	77	-	-	-	-	3	91	101	-	-	-
Pioneer® 43Y92 CL	7	-	103	107	114	108	4	-	104	112	-	-
Pioneer® 44Y89 CL	3	114	93	-	-	-	2	104	-	-	-	-
Pioneer® 44Y90 CL	8	111	109	107	110	110	7	110	-	109	110	118
Pioneer® 44Y94 CL	0	-	-	-	-	-	2	-	-	-	-	117
Pioneer® 45Y88 CL	3	88	105	-	-	-	4	97	103	-	-	-
Pioneer® 45Y91 CL	5	-	107	104	102	-	7	-	106	104	103	109
Pioneer® 45Y93 CL	4	-	-	108	-	113	5	-	-	109	107	117
Saintly CL	7	121	105	107	112	109	9	114	104	112	115	127
VICTORY® V7002CL	5	-	-	97	94	97	5	-	-	97	95	95
VICTORY® V75-03CL	1	-	-	-	95	-	3	-	-	-	94	90
TRIAZINE-TOLERANT CANOLA												
Year	NORTH CENTRAL						NORTH EAST					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.7	3.75	2.65	0.82	1.73		1.73	3.12	1.75	1.4	1.27
	No. trials	1	2	2	1	2	No. trials	2	2	2	1	2
ATR Bonito ^{db}	8	92	99	98	94	98	7	97	97	98	96	-
ATR-Flathead	2	-	-	-	-	83	2	-	-	-	-	80
ATR-Gem ^{db}	3	86	98	-	-	-	4	93	96	-	-	-
ATR Mako ^{db}	5	95	96	97	95	-	7	96	95	97	96	-
ATR-Stingray ^{db}	6	89	98	98	91	-	0	-	-	-	-	-
ATR Wahoo ^{db}	1	77	-	-	-	-	7	91	102	95	89	-
BASF 3000 TR	6	-	90	97	102	94	0	-	-	-	-	-
DG 560TT	6	108	97	100	103	-	7	102	98	100	103	-
DG 670TT	3	-	113	-	106	-	6	-	112	108	106	115
Hyola® 350TT	5	-	-	105	112	106	6	-	104	108	112	116
Hyola® 450TT	3	102	93	-	-	-	0	-	-	-	-	-
Hyola® 525RT	3	104	91	-	-	-	4	96	93	-	-	-
Hyola® 550TT	3	-	-	-	113	104	3	-	-	-	112	110
Hyola® 559TT	6	116	98	101	109	-	7	104	102	101	106	-
Hyola® 580CT	1	-	-	99	-	-	3	-	-	97	96	-
Hyola® 650TT	1	98	-	-	-	-	6	98	107	98	98	-
Hyola® 725RT	0	-	-	-	-	-	4	93	98	-	-	-
Hyola® Enforcer CT	2	-	-	-	-	105	2	-	-	-	-	115
HyITec® Trident	4	-	-	109	125	111	2	-	-	-	-	110
HyITec® Trifecta	1	-	-	-	123	-	2	-	-	-	120	128
HyITec® Trophy	5	-	-	110	119	114	5	-	-	112	115	117
InVigor® T 4510	7	-	112	110	117	114	7	-	113	113	116	124

Table 5, cont. next page

(Continued) Table 5: North Central and North East canola (mid-season). NVT long-term predicted yield expressed as a percentage of mean yield.

These trials were not structured to allow comparisons between different chemistry types.

TRIAZINE-TOLERANT CANOLA												
Year	NORTH CENTRAL						NORTH EAST					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.7	3.75	2.65	0.82	1.73		1.73	3.12	1.75	1.4	1.27
	No. trials	1	2	2	1	2	No. trials	2	2	2	1	2
InVigor® T 6010	0	-	-	-	-	-	2	-	-	-	-	122
Monola® 416TT	6	82	99	97	88	-	9	93	95	96	92	98
Monola® 420TT	3	-	-	-	94	86	3	-	-	-	95	86
Monola® H421TT	1	-	-	-	-	96	2	-	-	-	-	102
Monola® 515TT	3	70	88	-	-	-	6	81	85	85	80	-
Pioneer® 44T02 TT	8	120	97	102	111	100	4	106	-	103	-	-
Pioneer® 45T01TT	2	104	99	-	-	-	4	100	100	-	-	-
Pioneer® 45T03 TT	1	-	-	-	99	-	3	-	-	-	101	106
SF Dynatron TT	2	-	-	-	-	118	2	-	-	-	-	124
SF Ignite TT	5	-	116	107	104	-	7	-	115	105	102	109
SF Spark TT	3	-	-	-	104	102	2	-	-	-	-	105
SF Turbine TT	8	111	105	104	108	106	9	107	106	106	108	110
ROUNDUP READY® CANOLA												
Year	NORTH CENTRAL						NORTH EAST					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.7	3.75	2.63	0.82	1.72		1.71	3.12	1.75	1.4	1.27
	No. trials	1	2	2	1	2	No. trials	2	2	2	1	2
DG 408RR	7	-	100	101	105	101	4	-	-	102	104	101
DG 460RR	5	90	101	99	95	-	7	96	99	97	95	-
Hyola® 404RR	6	106	89	96	98	-	7	98	90	97	99	-
Hyola® 410XX	2	-	-	-	-	99	2	-	-	-	-	97
Hyola® 506RR	1	-	-	-	103	-	6	-	99	101	103	100
Hyola® 540XC	2	-	-	-	-	94	2	-	-	-	-	83
Hyola® 600RR	0	-	-	-	-	-	3	91	99	-	-	-
Hyola® Garrison XC	2	-	-	-	-	104	2	-	-	-	-	104
IH30 RR	3	109	83	-	-	-	2	96	85	-	-	-
IH51 RR	5	98	92	96	-	-	6	97	90	97	-	-
IH52 RR	3	87	98	-	-	-	4	92	98	-	-	-
InVigor® R 3520	5	-	88	-	106	94	2	-	90	-	-	-
InVigor® R 4020P	1	-	-	-	112	-	1	-	-	-	113	-
InVigor® R 4022P	2	-	-	-	-	115	2	-	-	-	-	138
InVigor® R 4520P	2	-	-	-	-	121	2	-	-	-	-	143
InVigor® R 5520P	7	-	104	103	102	105	9	105	102	106	105	115
Monola® G11	4	116	82	94	100	-	7	99	84	97	102	-
Nuseed GT-42	5	98	96	97	98	-	5	-	97	96	96	-
Nuseed GT-50	3	105	104	-	-	-	4	104	104	-	-	-
Nuseed GT-53	8	105	104	102	106	102	9	101	107	100	102	93
Pioneer® 43Y23 RR	4	-	98	102	104	-	0	-	-	-	-	-
Pioneer® 43Y29 RR	4	-	-	107	-	111	4	-	-	111	-	122
Pioneer® 44Y24 RR	3	105	104	-	-	-	4	106	103	-	-	-
Pioneer® 44Y27 RR	7	-	104	105	111	106	6	-	105	107	110	112
Pioneer® 45Y25 RR	6	90	111	103	100	-	9	100	110	101	98	100
Pioneer® 45Y28 RR	3	-	-	106	108	-	3	-	-	106	106	-
VICTORY® V5003RR	8	83	96	95	89	93	9	90	95	91	89	83
Xseed™ Condor	2	-	-	-	-	113	2	-	-	-	-	118
Xseed™ Raptor	2	-	-	-	-	104	2	-	-	-	-	101

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

Note: 2018 North East conventional canola data not published as a result of compromised trials.

Table 6: South West and Wimmera canola (mid-season). NVT long-term predicted yield expressed as a percentage of mean yield.

These trials were not structured to allow comparisons between different chemistry types.

CONVENTIONAL CANOLA												
Year	SOUTH WEST						WIMMERA					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)			2.62	2.47	2.5	2.8		0.66	4.38	3.67		1.88
	No. trials		1	1	1	1	No. trials	1	1	1		1
AV-Garnet ^{db}	4	-	93	94	94	98	4	72	94	95	-	92
Nuseed Diamond	3	-	96	-	100	94	3	131	104	-	-	109
Nuseed Quartz	4	-	112	104	110	107	3	-	107	108	-	106
IMIDAZOLINONE-TOLERANT CANOLA												
Year	SOUTH WEST						WIMMERA					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		1.52	2.76	2.83	2.54	3.07		0.66	3.57	3.07	1.91	1.91
	No. trials	2	3	3	3	3	No. trials	1	2	2	1	2
Banker CL	8	114	119	111	-	-	4	101	114	-	103	-
Hyola® 474CL	2	85	-	-	-	-	3	83	95	-	-	-
Hyola® 575CL	14	82	90	93	92	94	8	86	93	94	93	94
Hyola® 577CL	5	85	104	-	-	-	1	70	-	-	-	-
Pioneer® 43Y92 CL	3	-	109	-	-	-	7	-	112	105	102	109
Pioneer® 44Y89 CL	0	-	-	-	-	-	3	120	98	-	-	-
Pioneer® 44Y90 CL	8	121	-	111	111	-	8	114	113	108	106	110
Pioneer® 44Y94 CL	2	-	-	-	-	113	2	-	-	-	-	112
Pioneer® 45Y88 CL	5	96	107	-	-	-	3	84	103	-	-	-
Pioneer® 45Y91 CL	12	-	112	107	107	107	7	-	108	105	102	106
Pioneer® 45Y93 CL	6	-	-	114	-	114	5	-	-	111	107	112
Saintly CL	14	123	111	110	108	103	7	129	114	105	101	110
VICTORY® V7002CL	0	-	-	-	-	-	5	-	-	97	96	97
VICTORY® V75-03CL	5	-	-	-	97	99	3	-	-	-	99	96
TRIAZINE-TOLERANT CANOLA												
Year	SOUTH WEST						WIMMERA					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)			2.77	2.84	2.54	3.08		0.66	3.57	3.08	1.91	1.91
	No. trials		3	3	3	3	No. trials	1	2	2	1	2
ATR Bonito ^{db}	3	-	98	-	-	-	6	90	99	98	96	-
ATR-Gem ^{db}	3	-	97	-	-	-	3	82	97	-	-	-
ATR Mako ^{db}	4	-	94	96	-	-	5	94	96	97	96	-
ATR-Stingray ^{db}	0	-	-	-	-	-	6	88	102	97	91	-
ATR Wahoo ^{db}	12	-	106	100	101	106	0	-	-	-	-	-
BASF 3000 TR	0	-	-	-	-	-	5	116	93	94	96	-
DG 560TT	6	-	95	98	-	-	6	110	97	98	101	-
DG 670TT	12	-	122	112	113	113	6	-	114	109	106	110
Hyola® 350TT	4	-	106	-	106	-	5	-	-	104	104	106
Hyola® 450TT	0	-	-	-	-	-	3	102	92	-	-	-
Hyola® 525RT	3	-	85	-	-	-	3	105	89	-	-	-
Hyola® 530XT	3	-	-	-	-	100	2	-	-	-	-	100
Hyola® 550TT	6	-	-	-	104	100	3	-	-	-	106	104
Hyola® 559TT	9	-	97	99	100	-	6	119	97	101	106	-
Hyola® 580CT	9	-	-	98	100	102	5	-	-	100	102	98
Hyola® 650TT	9	-	104	100	103	-	3	95	97	-	108	-
Hyola® Blazer TT	0	-	-	-	-	-	1	-	-	-	-	112
Hyola® Enforcer CT	1	-	-	-	-	100	2	-	-	-	-	106
HyITec® Trident	1	-	-	110	-	-	3	-	-	-	119	109
HyITec® Trifecta	6	-	-	-	122	119	0	-	-	-	-	-
HyITec® Trophy	9	-	-	113	116	113	5	-	-	112	114	112
InVigor® T 3510	0	-	-	-	-	-	1	-	-	-	103	-

Table 6, cont. next page

(CONTINUED) Table 6: South West and Wimmera canola (mid-season). NVT long-term predicted yield expressed as a percentage of mean yield.

These trials were not structured to allow comparisons between different chemistry types.

TRIAZINE-TOLERANT CANOLA												
Year	SOUTH WEST						WIMMERA					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)			2.77	2.84	2.54	3.08		0.66	3.57	3.08	1.91	1.91
	No. trials		3	3	3	3	No. trials	1	2	2	1	2
InVigor® T 4510	9	-	-	114	115	111	7	-	116	110	109	113
InVigor® T 6010	3	-	-	-	-	119	2	-	-	-	-	115
Monola® 416TT	8	-	98	98	97	-	8	78	100	97	92	98
Monola® 420TT	3	-	-	-	84	84	3	-	-	-	92	89
Monola® H421TT	1	-	-	-	-	93	2	-	-	-	-	98
Monola® 515TT	7	-	79	85	84	-	3	62	84	-	-	-
Pioneer® 44T02 TT	0	-	-	-	-	-	6	125	98	100	105	-
Pioneer® 45T01TT	3	-	98	-	-	-	3	104	98	-	-	-
Pioneer® 45T03 TT	6	-	-	-	103	103	3	-	-	-	99	103
SF Dynatron TT	0	-	-	-	-	-	2	-	-	-	-	116
SF Ignite TT	12	-	124	112	115	116	5	-	113	110	109	-
SF Spark TT	0	-	-	-	-	-	2	-	-	-	-	102
SF Turbine TT	0	-	-	-	-	-	8	115	106	104	105	105
ROUNDUP READY® CANOLA												
Year	SOUTH WEST						WIMMERA					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		2.38	2.76	2.83	2.54	2.78		0.66	3.57	3.07	1.91	1.91
	No. trials	1	3	3	3	2	No. trials	1	2	2	1	2
DG 408RR	0	-	-	-	-	-	6	-	100	101	103	101
DG 460RR	10	96	101	99	99	-	6	87	99	99	98	-
Hyola® 404RR	1	90	-	-	-	-	6	109	91	93	94	-
Hyola® 410XX	2	-	-	-	-	98	2	-	-	-	-	99
Hyola® 506RR	10	-	97	99	99	97	5	-	-	99	101	99
Hyola® 540XC	2	-	-	-	-	97	2	-	-	-	-	93
Hyola® 600RR	4	95	92	-	-	-	1	84	-	-	-	-
Hyola® Garrison XC	2	-	-	-	-	103	2	-	-	-	-	103
IH30 RR	0	-	-	-	-	-	3	113	86	-	-	-
IH51 RR	7	89	89	95	-	-	5	99	96	94	-	-
IH52 RR	4	93	96	-	-	-	3	82	94	-	-	-
InVigor® R 3520	0	-	-	-	-	-	5	-	95	-	95	97
InVigor® R 4020P	0	-	-	-	-	-	1	-	-	-	105	-
InVigor® R 4022P	2	-	-	-	-	110	2	-	-	-	-	115
InVigor® R 4520P	2	-	-	-	-	119	2	-	-	-	-	120
InVigor® R 5520P	12	104	108	106	105	103	7	-	109	103	98	106
Monola® G11	3	-	74	89	-	-	0	-	-	-	-	-
Nuseed GT-42	3	-	92	95	-	-	4	97	93	97	100	-
Nuseed GT-50	4	107	107	-	-	-	3	106	105	-	-	-
Nuseed GT-53	12	109	104	101	104	105	8	104	98	103	109	100
Pioneer® 43Y23 RR	0	-	-	-	-	-	3	115	103	-	-	-
Pioneer® 43Y29 RR	2	-	-	112	-	-	4	-	-	108	-	111
Pioneer® 44Y24 RR	4	106	109	-	-	-	3	107	108	-	-	-
Pioneer® 44Y26 RR	4	100	99	-	-	-	0	-	-	-	-	-
Pioneer® 44Y27 RR	4	-	107	106	-	-	7	-	106	104	105	106
Pioneer® 45Y25 RR	12	108	116	107	109	114	8	85	107	107	106	105
Pioneer® 45Y28 RR	5	-	-	108	110	-	3	-	-	107	108	-
VICTORY® V5003RR	12	89	92	93	93	97	8	77	91	95	96	93
Xseed™ Condor	2	-	-	-	-	114	2	-	-	-	-	112
Xseed™ Raptor	2	-	-	-	-	105	2	-	-	-	-	103

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

Note: 2015 South West and 2018 Wimmera data not published as a result of compromised trials.

ACKNOWLEDGEMENTS

Steve Marcroft	Marcroft Grains Pathology
Elizabeth Sheedy	Marcroft Grains Pathology
Don McCaffery	NSW Department of Primary Industries

FIELD PEA

Kaspa-type varieties are the dominant varieties grown across cropping regions of Victoria. Given current dry conditions in some cropping regions, growers are urged to check plant-back intervals as residual herbicides may persist into 2021. Growers will need to take this into consideration when selecting paddocks and varieties for 2021.

This publication highlights varieties of three of the field pea types grown in Victoria:

- **Australian Dun grain types** – greenish-brown coloured seed with yellow cotyledons and dimpled seed;
- **Kaspa grain types** – Kaspa varieties are all Dun type varieties with spherical seed, named after the variety Kaspa; and
- **White pea grain types** – cream-coloured seed with yellow cotyledons and rounded seed.

NEW VARIETIES

There are two new field pea varieties available for sowing in 2021.

GIA Ourstar[®] and GIA Kastar[®] have been developed by Grains Innovation Australia (GIA) with improved tolerance to soil residual and in-crop imidazolinone (IMI) herbicides. Additionally, GIA Ourstar[®] has improved tolerance to soil residues of commonly used sulfonylurea (SU) herbicides. Limited yield evaluation has occurred to date, with 2020 NVT yield data expected to be released in the NVT harvest reports in early 2021. Both varieties are being commercialised by AG Schilling & Co.

OZP1408 is a new variety of field pea that will be released for the 2022 season and commercialised by Seednet.

INDUSTRY UPDATE

New pulse disease rating system

A new pulse disease rating system was implemented in 2020. Disease rating definitions were revised and standardised nationally. Some disease ratings have changed to reflect these definitions. Always consult a current disease guide for the latest ratings and definitions to plan disease management.

KEY DISEASE AND VIRUS CONSIDERATIONS

New resistance ratings were released during 2020, which saw most field peas having a more susceptible rating to Bacterial blight. This seemed timely with 2020 disease levels being similar to 2019, during which Bacterial blight was common throughout Victoria. With limited to no control options, Bacterial blight poses a consistent threat to field pea grain yields. Growing a less susceptible variety will provide limited protection, but it is avoiding frost-prone areas and crop stress that will provide the greatest benefits.

There was low Blackspot risk across Victoria during 2020, but despite this there are low levels of Blackspot across the state. It is always important to monitor for disease and treat where required to protect seed quality.

Blackspot risk can be predicted based on your growing district, and therefore the appropriate control strategy can be implemented. These predictions are released weekly via SMS or email during the sowing season and can be obtained online in the [Blackspot management guides](#) or by subscribing to the free SMS service. Text 'Blackspot' with your name and nearest weather station or location to 0475 959 932 or email your name, phone number and nearest weather station or location to blackspotmanager@dpird.wa.gov.au.

Viruses such as Turnip yellows virus (TuYV) and Pea seed-borne mosaic virus (PSbMV) are commonly observed in field pea; they are mainly spread by aphids, but PSbMV is also seed-borne. To reduce virus incidence in field peas, it is recommended to use virus-resistant cultivars and virus-free seeds (that is, for PSbMV) when possible, control weeds and self-sown volunteer crops plants, monitor aphids and apply insecticide when aphid numbers are high. Use of a seed-applied insecticide (for example, imidocloprid) can give three to four weeks of protection against aphids.

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reports app

grdc.com.au

- [GRDC GrowNotes™ Field pea Southern region](#)
- [GRDC Southern region NVT harvest reports](#)

agriculture.vic.gov.au

- [Growing field pea in Victoria](#)
- [Agriculture Victoria Pulse disease guide](#)

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

pulseaus.com.au

Pulse Australia information on growing pulses including:

- [Growing pulses – field pea](#)
- [Crop protection permits in pulses](#)

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

([Ⓛ]) Denotes that Plant Breeder's Rights apply

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

DUN GRAIN TYPE

NEW – GIA Ourstar[Ⓛ]

GIA Ourstar[Ⓛ] is the first Dun type pea with improved tolerance to common in-crop and residual Group B herbicides (IMI and SU). Early-mid flowering and early-mid maturing. Similar plant type and growth habit to PBA Oura[Ⓛ]. Medium size, light green to tan-coloured grain, suited to human consumption markets or stockfeed. Released 2019 (tested as GIA2002P). Seed available from AG Schilling & Co. EPR \$3.00.

MORGAN[Ⓛ]

Tall, late-flowering, semi-leafless pea, which produces small grain. Lower yield potential than other varieties but is suitable for the lower rainfall regions of Central and Western NSW as a dual-purpose pea that can be used for forage in drought years. Moderate non-sugar-pod resistance to shattering. Grain size is small and less suitable for human consumption markets. Released 1998. Free to Trade.

PBA OURA[Ⓛ]

Early to mid-flowering and maturing, semi-dwarf, erect growing field pea. Good yield potential and broadly adapted. Fair lodging resistance at maturity and has moderate non-sugar-pod resistance to shattering. Released 2011. Commercialised by Seednet. EPR \$2.60.

PBA PERCY[Ⓛ]

An early flowering and maturing conventional pea. High yield potential and broadly adapted. Moderately tolerant to salinity. Poor lodging resistance and requires specialised pea pickup fronts for harvesting. Released 2011. Commercialised by Seednet. EPR \$2.60.

KASPA GRAIN TYPE

NEW – GIA KASTAR[Ⓛ]

GIA Kastar[Ⓛ] is the first Kaspera-type field pea with improved tolerance to common in-crop and residual IMI herbicides. Mid flowering and early-mid maturing. Erect growth habit with a semi-leafless plant type, resistant to pod shatter at maturity. Uniform red to brown coloured seed coat, medium in size, marketable for human consumption in the Indian/Asian subcontinent. Released 2019 (tested as GIA 2001P). Seed available from AG Schilling & Co. EPR \$3.00.

PBA BUTLER[Ⓛ]

Mid to late flowering semi-dwarf. High yield potential and adapted to medium to high-rainfall regions. Grains are similar to PBA Gunyah[Ⓛ] in colour and size. Released 2017. Seed available from Seednet. EPR \$2.70.

PBA GUNYAH[Ⓛ]

An early to mid-flowering, semi-dwarf field pea. Broadly adapted and better suited to shorter growing season environments. Fair to good lodging resistance at maturity and pods are resistant to shattering. Released 2010. Commercialised by Seednet. EPR \$2.50.

KASPA[Ⓛ]

A late-flowering, semi-dwarf field pea. Kaspera[Ⓛ] is the benchmark for field peas with its broad adaptation and high yield potential. Suited to longer growing season environments. Kaspera[Ⓛ] has fair lodging resistance at maturity and pods are resistant to shattering. Released 2002. Commercialised by Seednet. EPR \$2.00.

PBA TWILIGHT[Ⓛ]

An early flowering and early maturing semi-dwarf field pea, better suited to short growing season environments and low-rainfall zones. PBA Twilight[Ⓛ] has fair lodging resistance at maturity and pods are resistant to shattering. Released 2010. Commercialised by Seednet. EPR \$2.50.

PBA WHARTON[Ⓛ]

An early-mid flowering and early maturity semi-dwarf field pea. Adapted across short to medium growing season environments and is a suitable variety for crop topping when sowing is delayed. PBA Wharton[Ⓛ] has improved tolerance to soil boron and pods are resistant to shattering. Released 2013. Seed available from Seednet. EPR \$2.60.

WHITE PEA TYPE

PBA PEARL[Ⓛ]

An early to mid-flowering, semi-leafless, semi-dwarf field pea. PBA Pearl[Ⓛ] is broadly adapted and produces medium white grain. Good lodging resistance at maturity and has moderate non-sugar-pod resistance to shattering. Marketable for human consumption or for stockfeed. Released 2012. Commercialised by Seednet. EPR \$2.70.

PBA HAYMAN

Very late flowering; a leafy plant with a high number of basal branches with vigorous growth. PBA Hayman produces very long vines that remain semi-erect to maturity. Produces small pods and very small seed, reducing costs of sowing. Due to producing large quantities of dry matter over spring, PBA Hayman is suitable for forage use such as hay or silage production, or for manuring. Dry matter production is significantly greater than regular field pea varieties and comparable to vetch. Suitable for cropping rotations with other broadleaf crops. Developed by PBA. Released 2013. No EPR.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

Table 1: Field pea time of sowing guide.

This table is a guide only and has been compiled from observations of agronomists. Listed by maturity per region.

MALLEE	May				June				July				
Very late	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green	Green	Green
Mid	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green	Green	Green
Early-mid	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green	Green	Green
Early	Green	Yellow	Green	Green	Green	Red	Green	Green	Green	Green	Green	Green	Green
WIMMERA	May				June				July				
Very late	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Mid	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Early-mid	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Early	Green	Green	Green	Yellow	Green	Green	Green	Red	Green	Green	Green	Green	Green
NORTH CENTRAL	May				June				July				
Very late	Green	Yellow	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Mid	Green	Yellow	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Early-mid	Green	Yellow	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Early	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
NORTH EAST	May				June				July				
Very late	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Mid	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Early-mid	Green	Green	Yellow	Green	Green	Green	Green	Red	Green	Green	Green	Green	Green
Early	Green	Green	Green	Yellow	Green	Green	Green	Red	Green	Green	Green	Green	Green
SOUTH WEST	May				June				July				
Very late	Green	Green	Orange	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Green
Mid	Green	Green	Orange	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Green
Early-mid	Green	Green	Orange	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Green
Early	Green	Green	Orange	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Green
SOUTH WEST Spring sowing	July				August				September				
Above varieties for spring sowing	Green	Green	Orange	Green	Green	Green	Green	Orange	Green	Green	Green	Green	Green

Yellow = earlier than optimum

Green = optimum sowing time

Red = later than optimum.

Orange = if conditions allow (e.g. raised beds, dry season, non-waterlogging paddocks)

Table 2: Agronomic characteristics of field pea varieties.

Variety	Plant habit	Plant vigour, early season	Flowering time	Maturity time	Plant lodging resistance at maturity	Pod shattering at maturity	Boron tolerance	Salinity tolerance
DUN GRAIN TYPE								
NEW - GIA Ourstar ^{db}	SD-SL	moderate	early-mid	early-mid	fair-good	MR: NSP	-	-
Morgan ^{db}	Tall-SL	high	late	late	poor-fair	MR: NSP	I	I
PBA Oura ^{db}	SD-SL	moderate	early-mid	early	fair-good	MR: NSP	MI	I
PBA Percy ^{db}	C	high	early	early	poor	MR: NSP	I	MT
KASPA GRAIN TYPE								
NEW - GIA Kastar ^{db}	SD-SL	moderate	mid	early-mid	fair-good	R: SP	-	-
Kaspa ^{db}	SD-SL	moderate	late	mid	fair-good	R: SP	I	I
PBA Butler ^{db}	SD-SL	high	mid-late	mid	good	R: SP	I	I
PBA Gunyah ^{db}	SD-SL	high	early-mid	early	fair-good	R: SP	I	I-MI
PBA Twilight ^{db}	SD-SL	high	early	early	fair-good	R: SP	I	I
PBA Wharton ^{db}	SD-SL	moderate	early-mid	early	fair-good	R: SP	MT	MT
WHITE PEA GRAIN TYPE								
PBA Hayman	multi-branched	moderate	very late	very late	poor	MR: NSP	MI	MI
PBA Pearl ^{db}	SD-SL	moderate	early-mid	early-mid	good	MR: NSP	MI	MI

Source: Southern Pulse Agronomy Wimmera Field Day Guide (2019)

Habit: SD=semi-dwarf, C=conventional, SL= semi-leafless.

Pod shattering: S=susceptible, MS=moderately susceptible, MR=moderately resistant, R=resistant, SP=sugar pod type pod, NSP=non-sugar pod type.

Tolerance: I=intolerant, MT= moderately tolerant, MI= moderately intolerant.

Table 3: Disease resistance characteristics of field pea varieties.

Variety	Blackspot (Ascochyta)	Bacterial blight (field rating)	Downy mildew	Powdery mildew	PSbMV virus#	BLRV (field rating)#	Root lesion nematode	
							<i>Pratylenchus neglectus</i>	<i>Pratylenchus thornei</i>
DUN GRAIN TYPE								
GIA Ourstar ^{db}	MS _p	Sp	Sp	Sp	Sp	-	MRMS _p	MR _p
Morgan ^{db*}	MS	S	S	S	S	S	RMR	MR
PBA Oura ^{db}	MS	MS	S	S	S	R	MR	MRMS
PBA Percy ^{db}	MS	MRMS	S	S	S	S	MR	RMR
KASPA GRAIN TYPE								
GIA Kastar ^{db}	MS _p	Sp	Sp	R _p	R _p	-	MR _p	MS _p
Kaspa ^{db}	MS	S	S	S	S	S	MR	MRMS
PBA Butler ^{db}	MS	MS	S	S	S	S	MR	MRMS
PBA Gunyai ^{db}	MS	S	S	S	S	S	MR	MRMS
PBA Twilight ^{db}	MS	S	S	S	S	-	MR	MRMS
PBA Wharton ^{db}	MS	S	S	R	R	R	MR	MRMS
WHITE GRAIN TYPE								
PBA Hayman*	MS	-	-	R	-	-	-	-
PBA Pearl ^{db}	MS	MS	S	S	S	R	MR	MRMS

Source: Agriculture Victoria Pulse disease guide (2020)

No variety with an R resistance rating is immune to disease, and a fungicide application may be required under severe disease pressure.

PSbMV = Pea seed-borne mosaic virus, BLRV = Bean leafroll virus.

Resistance: 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.

p = provisional ratings – treat with caution. * indicates data from before the new NVT system. In this case, an R resistance rating may require a fungicide application under severe disease pressure to prevent yield loss in relation to seed staining. # breeder data is used for these diseases.

Table 4: Field pea diseases summary.

Disease	Organisms	Symptoms	Occurrence	Hosts	Control
Ascochyta blight (Blackspot)	<i>Didymella pinodes</i> (synonym: <i>Mycosphaerella pinodes</i>) <i>Phoma medicaginis</i> var. <i>pinodella</i> , <i>Phoma koolunga</i> and <i>Didymella pisi</i>	Most obvious on stems and lower leaves. Purplish-black discolouration of lower stem. Dark brown spotting of pods and leaves. Blackening of stem base and upper tap root.	Common in all pea-growing regions; most crops are affected to some extent. Favoured by wet conditions. Most damage in early-sown crops.	Peas and most legumes.	Crop rotation. Later sowing. Fungicidal seed dressings. Disease-free seed.
Bacterial blight	<i>Pseudomonas syringae</i> pv. <i>pisi</i> and <i>P. syringae</i> pv. <i>syringae</i>	Water-soaked spots on leaflets and stipules. Yellowish-brown fan-shaped lesion on stipules.	Sporadic in wetter regions. Most severe in early-sown crops already damaged by frost or heavy rain.	Peas for pv. <i>pisi</i> and alternate hosts for pv. <i>syringae</i> .	Crop rotation. Disease-free seed. Resistant varieties.
Downy mildew	<i>Peronospora viciae</i>	Brown blotches on upper leaf surface. Underside of leaves covered by masses of fluffy 'mouse-grey' spores.	Sporadic in all regions. Damage most severe in wetter districts.	Peas	Resistant varieties. Seed fungicidal treatment.
Powdery mildew	<i>Erysiphe pisi</i>	Leaves covered by a film of powdery white spores. Infected plants have a blue-white colour.	Can occur in most regions towards the end of the season. Most common in late-sown crops.	Peas	Resistant varieties. Avoid late sowing. Apply foliar fungicide application at flowering as an economic option for disease-prone areas.
Septoria leaf blotch	<i>Septoria pisi</i>	Straw-coloured blotches on leaves, stems and tendrils. Pinhead size black spots within lesions.	Present in most pea growing regions. Damage most severe on short, semi-leafless varieties.	Peas	Destroy crop residue. Most varieties are moderately susceptible. Crop rotation.
VIRUS DISEASES					
Pea seed-borne mosaic virus (PSbMV)	Pea seed-borne mosaic virus	Downward curling of leaves, mosaic, stunting.	Present in all pea production areas.	The host range limited to <i>Fabaceae</i> .	This virus is highly seed-borne in peas. Virus-free seed is recommended.
Turnip yellows virus (TuYV) (previously known as Beet western yellows virus (BWYV))	Turnip yellows virus (previously Beet western yellows virus)	Yellowing of whole plant but can be symptomless in some varieties.	Present in all pea production areas.	Wide host range.	Managing aphids and weeds, resistant varieties.
Bean leaf roll virus (BLRV)	Bean leafroll virus	Yellowing, stunting and leaf rolling.	Present in all pea production areas.	Host range limited to <i>Fabaceae</i> .	Managing aphids and weeds, resistant varieties.

Source: Identification and management of field crop diseases in Victoria (2018). Reviewed by Joshua Fanning and Piotr Trębicki, Agriculture Victoria (2020).

Table 5: Mallee and Wimmera NVT long-term predicted field pea yield expressed as a percentage of mean yield.

Year	MALLEE					WIMMERA						
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.50	2.36	1.59	0.84	2.08		0.40	3.03	2.62	2.82	2.07
	No. trials	5	5	5	3	6	No. trials	2	2	3	2	3
Kaspa [Ⓟ]	24	76	85	93	92	96	12	79	96	87	87	86
Morgan [Ⓟ]	1	-	-	-	-	86	1	-	-	-	-	88
Parafield	12	91	78	84	90	79	6	76	77	74	77	-
PBA Butler [Ⓟ]	23	83	117	106	102	107	12	88	111	99	95	103
PBA Gunyah [Ⓟ]	23	95	88	96	96	97	12	95	96	95	94	95
PBA Oura [Ⓟ]	24	136	91	96	100	94	12	119	90	97	93	108
PBA Pearl [Ⓟ]	24	145	109	103	102	103	12	126	103	103	91	121
PBA Percy [Ⓟ]	23	143	99	99	111	89	12	116	81	92	85	114
PBA Twilight [Ⓟ]	12	107	75	91	93	93	6	103	90	94	95	93
PBA Wharton [Ⓟ]	24	115	79	93	95	96	12	115	92	104	109	97
Sturt	5	133	109	-	-	95	1	-	93	-	-	-

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

ACKNOWLEDGEMENTS

Joshua Fanning	Agriculture Victoria, Horsham
Piotr Trębicki	Agriculture Victoria, Horsham
Luise Fanning	Agriculture Victoria, Horsham
Simon Crane	Seednet
Larn McMurray	Grain Innovation Australia
Phil Bowden	Pulse Australia

LENTIL

In 2021, growers are encouraged to continue sowing pulses in the optimal sowing window and avoid delayed sowing unless there is a strategic management advantage related to disease or weed control or they are being sown in a frost-prone region. In the long term, from a Victorian perspective, early sowing has generally proved profitable as heat events and rapidly drying soil, during late spring in the flowering and podding phase, occur almost every year and cause significant yield loss with delayed sowing.

NEW VARIETIES

PBA Kelpie XT (tested as CIPAL1721) is a new imidazolinone (IMI)-tolerant large red lentil that will be available in 2021 to growers. PBA Kelpie XT has been bred by Agriculture Victoria through the National Lentil Initiative. Seed will be available to growers in 2021 from Seednet.

GIA Leader[®] (GIA1701-L) is a new IMI-tolerant, medium red lentil variety developed by Grains Innovation Australia (GIA). GIA Leader[®] is planned for release in early 2021; limited yield evaluation has occurred to date. Seed will be available to growers in 2021 from PB Seeds.

INDUSTRY UPDATE

New pulse disease rating system

A new pulse disease rating system was implemented in 2020. Disease rating definitions were revised and standardised nationally. Some disease ratings have changed to reflect these definitions. Always consult a current disease guide for the latest ratings and definitions to plan disease management.

KEY DISEASE AND VIRUS CONSIDERATIONS

Growers need to consider paddock rotations carefully to minimise the chances of disease. Each disease that affects lentils can carry over in stubble residues of different crops or through tight lentil rotations. To prevent *Ascochyta* blight resistance breaking down, it is recommended to observe at least a three to four-year break between lentils. *Botrytis cinerea* can affect both lentils and vetch, and growers are advised to keep this in mind with their rotations to avoid *Botrytis* grey mould (BGM) in both crops.

In previous years there have been increasing incidences of *Sclerotinia* white mould in pulse crops, including lentil, in several districts throughout Western Victoria. *Sclerotinia* white mould prefers prolonged damp conditions throughout winter. Sclerotia form on infected plants, which enables the fungus to survive into the following seasons. Individual seeds can be contaminated with the fungus and/or sclerotia may be present in the seed sample. Sclerotia can remain viable in the soil for up to eight years. Soil-borne sclerotia are the most important disease source for establishing disease in following crops and seasons. Seeds infected with *Sclerotinia* can be the cause of disease establishment in otherwise *Sclerotinia*-free areas. Long-term management options include using clean seed to reduce the spread of *Sclerotinia* and rotating paddocks into least susceptible hosts.

Cucumber mosaic virus (CMV), Alfalfa mosaic virus (AMV) and Turnip yellows virus (TuYV) (previously known as Beet western yellows virus) are commonly detected in lentil crops, although during the past couple of years high levels of CMV were detected in crops and seed lots. Using virus-free seed is recommended.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reports app

grdc.com.au

- GRDC GrowNotes™ Lentil Southern region
- GRDC Southern region NVT harvest reports

agriculture.vic.gov.au

- Growing lentil in Victoria
- Agriculture Victoria Pulse disease guide

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

pulseaus.com.au

Pulse Australia information on growing pulses including:

- [Growing pulses - lentil](#)
- [Crop protection permits in pulses](#)

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

([Ⓛ]) Denotes that Plant Breeder's Rights apply

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

RED LENTIL

NEW – GIA LEADER[Ⓛ]

GIA Leader[Ⓛ] is a new IMI-tolerant red lentil variety with high disease resistance and it is medium sized with a grey seed coat. Mid-late maturing, similar to Nugget. Spreading plant type which can assist protection of pods at maturity. Suited to early sowing times. Planned release for early 2021 (tested as GIA1701-L). Seed available from PB Seeds. EPR TBC.

PBA ACE[Ⓛ]

Vigorous medium-sized, mid-season red lentil with grey seed. Best suited to longer season areas replacing Nugget and PBA Jumbo[Ⓛ]. Intolerant to salinity and boron. High milling quality. Released 2012. Seed available from PB Seeds. EPR \$5.00.

PBA BLITZ[Ⓛ]

Medium-sized red lentil with a grey seed coat. Early flowering and suited to short growing seasons. Improved early vigour and an erect growth habit, suited to no-till and inter-row sowing. Intolerant of soil boron and salinity. Similar but generally improved milling characteristics compared with Nugget. Released 2010. Seed available from PB Seeds. EPR \$5.00.

PBA BOLT[Ⓛ]

Medium-sized red lentil with grey seed, adapted to the Mallee and northern Wimmera. Similar to PBA Flash[Ⓛ] with early-mid maturing and improved boron and salinity tolerance. Its susceptibility to BGM makes it less suited to medium to high-rainfall areas in wetter years and to early sowing. A good variety for timely crop topping to control weeds. Erect habit and good lodging resistance make it easier to harvest in dry seasons. Released 2012. Seed available from PB Seeds. EPR \$5.00.

PBA FLASH[Ⓛ]

Early-mid maturing, medium-size green seed, suited to all growing areas but particularly shorter season areas. Improved tolerance to boron and salinity compared with Nugget. A good variety for timely crop topping to control weeds. Improved standing ability at maturity, which may make it more prone to pod drop in windy environments; timely harvest is required. Well suited to medium red lentil grain markets, particularly for splitting. Released 2009. Seed available from PB Seeds. EPR \$5.00.

PBA HALLMARK XT[Ⓛ]

Mid-season maturing with a small-medium seed size and grey seed coat. Greater early vigour and improved ratings to BGM compared with PBA Hurricane XT[Ⓛ]. Improved tolerance to the herbicide flumetsulam plus reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues. It is important to note that growers must adhere to product label rates, plant-back periods and all label directions for use. Provides an alternative market class option to the popular small red lentil PBA Hurricane XT[Ⓛ]. Released 2018. Seed available from PB Seeds. EPR \$5.40.

PBA HIGHLAND XT[Ⓛ]

Herbicide-tolerant, small red lentil variety that will complement other tolerant varieties such as PBA Hallmark XT[Ⓛ] and PBA Hurricane XT[Ⓛ]. Early-mid maturing, a point of difference to other Group B-tolerant lines. Performs well in drier regions such as the Victorian Mallee and South Australia. High early vigour and early flowering traits. It has improved resistance to Ascochyta blight (MR) and maintains this level of resistance against an increasingly prevalent pathogen isolate that is virulent on other Group B-tolerant varieties. A good alternative herbicide-tolerant variety with high-yielding capability in drier seasons. Released 2019 (tested as CIPAL1621). See available from PB Seeds. EPR \$5.40.

PBA HURRICANE XT[Ⓛ]

A small-seeded red lentil with mid-flowering and mid maturing. Tolerant to imazethapyr, improved tolerance to the herbicide flumetsulam plus reduced sensitivity to some sulfonylurea and imidazolinone herbicide residues. It is important to note that growers must adhere to product label rates, plant-back periods and all label directions for use. Highest yielding small red lentil available in Australia. Improved yields over Nipper[Ⓛ] and Nugget, but lower than PBA Ace[Ⓛ] and PBA Bolt[Ⓛ]. Released 2013. Seed available from PB Seeds. EPR \$5.00.

PBA JUMBO[Ⓛ]

Large-seeded red lentil with a grey seed coat. Mid-flowering and mid maturing. Suited to no-till inter-row sowing into standing stubble. Tolerance to soil boron is similar to PBA Flash[Ⓛ]. Suited to medium to high-rainfall regions where it produces uniform larger seed size, suitable for the premium large red split markets. Has now been outclassed by PBA Jumbo2[Ⓛ]. Released 2010. Seed available from PB Seeds. EPR \$5.00.

PBA JUMBO2[Ⓛ]

Highest yielding large-seeded red lentil, approximately 9 to 13 per cent higher than PBA Jumbo[Ⓛ]. A direct replacement for PBA Jumbo[Ⓛ] and Aldinga. Similar seed size to PBA Jumbo[Ⓛ] and Aldinga with a grey seed coat. Mid-flowering with maturity similar to PBA Jumbo[Ⓛ]. Well suited to no-till inter-row sowing into standing stubble. Tolerance to soil boron is similar to PBA Flash[Ⓛ]. Suited to medium to high-rainfall regions where it produces uniform larger seed size, well suited to premium large red split markets. Released 2014. Seed available from PB Seeds. EPR \$5.00.

NEW – PBA KELPIE XT

First large-seeded herbicide-tolerant lentil variety. It is 93 per cent of PBA Jumbo2[Ⓛ] in terms of seed size. PBA Kelpie XT has a grey seed coat and red cotyledon. With moderate to good early vigour, early-mid flowering and maturing, it is widely adapted to lentil-growing regions of Australia. Released 2020 (tested as CIPAL1721). Seed available from Seednet for 2021 growing season. EPR \$5.40.

GREEN LENTIL**PBA GIANT[Ⓛ]**

Largest seeded green lentil in Australia. PBA Giant[Ⓛ] is broadly adapted but best suited to the medium-rainfall growing regions. Similar yield and improved shattering resistance to Boomer, although timely harvest is still required to minimise shattering. Less susceptible to lodging at maturity than Boomer. Released 2014. Seed available from PB Seeds. EPR \$5.00.

PBA GREENFIELD[Ⓛ]

Medium-sized green lentil broadly adapted but best suited to the medium-rainfall growing regions. Highest yielding green lentil variety with yields similar to PBA Ace[Ⓛ]. Improved salinity tolerance and resistance to shattering, although timely harvest is still required. Released 2014. Seed available from PB Seeds. EPR \$5.00.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

Table 1: Lentil time of sowing guide.

This table is a guide only and has been compiled from observations of agronomists.

MALLEE/Northern WIMMERA	April				May				June			
PBA Ace [®] , PBA Bolt [®] , PBA Blitz [®] , PBA Flash [®] , PBA Greenfield [®] , PBA Giant [®] , PBA Highland XT [®] , PBA Hurricane XT [®] , PBA Jumbo [®] , PBA Jumbo2 [®]			Yellow	Green	Green	Green	Green	Red				
WIMMERA	April				May				June			
PBA Ace [®] , PBA Bolt [®] , PBA Blitz [®] , PBA Flash [®] , PBA Greenfield [®] , PBA Giant [®] , PBA Highland XT [®] , PBA Hurricane XT [®] , PBA Jumbo [®] , PBA Jumbo2 [®]					Yellow	Green	Green	Green	Green	Green	Red	
NORTH CENTRAL	April				May				June			
PBA Ace [®] , PBA Bolt [®] , PBA Blitz [®] , PBA Flash [®] , PBA Greenfield [®] , PBA Giant [®] , PBA Highland XT [®] , PBA Hurricane XT [®] , PBA Jumbo [®] , PBA Jumbo2 [®]				Yellow	Green	Green	Green	Green	Red			

Yellow = earlier than optimum.

Green = optimum sowing time.

Red = later than optimum.

Table 2: Lentil variety agronomic guide (may vary with sowing time and location).

Variety	Grain type	Seed coat	Seed size	Flowering time	Maturity	Lodging	Shattering	Salinity	Boron
SMALL RED LENTIL									
PBA Highland XT [®]	red	grey	small	early	early/mid	MR	MR	MI	I
PBA Hurricane XT [®]	red	grey	small	mid	mid	MR	R	I	I
MEDIUM RED LENTIL									
NEW - GIA Leader [®]	red	grey	medium	mid-late	mid-late	MRMS	-	-	-
PBA Ace [®]	red	grey	medium	mid	mid	MRMS	MRMS	I	I
PBA Blitz [®]	red	grey	medium	early	early	MR	MR	I	I
PBA Bolt [®]	red	grey	medium	early/mid	early/mid	R	R	MI	MI
PBA Flash [®]	red	green	medium	early/mid	early/mid	MR	MR	MI	MI
PBA Hallmark XT [®]	red	grey	small/medium	mid	mid	MR	R	MI	I
LARGE RED LENTIL									
NEW - PBA Kelpie XT	red	grey	large	early/mid	early/mid	MRMS	R	MI	I
PBA Jumbo [®]	red	grey	large	mid	mid	MS	MR	I	MI
PBA Jumbo2 [®]	red	grey	large	mid	mid	MRMS	R	I	MI
MEDIUM GREEN LENTIL									
PBA Greenfield [®]	yellow	green	medium	mid	mid/late	MS	MR	MI	I
LARGE GREEN LENTIL									
PBA Giant [®]	yellow	green	large	mid	mid/late	MS	MRMS	I	MI

Source: Southern Pulse Agronomy Wimmera Field Day Guide (2019)

Resistance: 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.
Tolerance: I=intolerant, MT= moderately tolerant, MI= moderately intolerant.

Table 3: Disease ratings for current lentil varieties.

Variety	Ascochyta blight (foliar)	Botrytis grey mould (BGM)	Root lesion nematode (<i>Pratylenchus</i>)	
			<i>P. neglectus</i>	<i>P. thornei</i>
SMALL RED LENTIL				
PBA Highland XT ^d	MR	MRMS	MR _p	MRMS _p
PBA Hurricane XT ^d	MRMS	MRMS	MRMS	MRMS
MEDIUM RED LENTIL				
NEW - GIA Leader ^d	RMR _p	MR _p	-	-
PBA Ace ^d	R	MRMS	MR	MRMS
PBA Blitz ^d	MRMS	MR	MR	MRMS
PBA Bolt ^d	MRMS	S	MR	MR
PBA Flash ^{d*}	MS	MRMS	MR	MRMS
PBA Hallmark XT ^d	MRMS	RMR	MR _p	MRMS _p
LARGE RED LENTIL				
NEW - PBA Kelpie XT	MRMS _p	RMR _p	-	MRMS _p
PBA Jumbo ^{d*}	MRMS	MS	MR	MRMS
PBA Jumbo2 ^d	R	RMR	MR	MRMS
MEDIUM GREEN LENTIL				
PBA Greenfield ^{d*}	MRMS	MR	MR	MR
LARGE GREEN LENTIL				
PBA Giant ^{d*}	MR	MS	MR	MRMS

Source: Agriculture Victoria Pulse disease guide (2020)

No variety with an R resistance rating is immune to disease, and a fungicide application may be required under severe disease pressure.

Resistance: 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. _p = provisional ratings – treat with caution.

* indicates data from before the new NVT system. In this case an R resistance rating may require a fungicide application under severe disease pressure to prevent yield loss in relation to seed staining.

Table 4: Lentil disease guide summary.

Disease	Organism	Symptoms	Occurrence	Hosts	Control
Ascochyta blight	<i>Ascochyta lentis</i>	Leaves: small, round, whitish-grey lesions with brown margins. Lesions contain small black fruiting bodies of the fungus. Lesions can also form on stems causing premature death. Pod infection can ultimately result in dark discolourations on seed.	Common in all lentil-growing regions in southern Australia. Two disease-resistance ratings are provided, one for foliar and one for seed/pod infection. The two ratings may vary between varieties. Damage is most likely in wet seasons.	Lentils – seed, stubble and self-sown plants.	Fungicidal seed dressings. Resistant varieties. Foliar fungicides. Crop rotation. Avoid early sowing.
Botrytis grey mould	<i>Botrytis cinerea</i> , <i>B. fabae</i>	Leaves: white, round lesions/spots without black fruiting bodies as in Ascochyta blight. Stems: pale brown-grey lesions form on stems that are covered with fluffy grey mould. Botrytis grey mould can cause branches to die and cause discoloured and shrivelled seed. In severe cases large brown patches can form in the crop.	Most likely to occur in dense, lodged crops when there is frequent rain late in spring.	Most legumes including chickpeas, faba bean and vetch.	Fungicidal seed dressings. Low plant density. Avoid early sowing. Foliar fungicides. Crop rotation. Resistant varieties.
VIRUS DISEASES					
Alfalfa mosaic virus (AMV)	Alfalfa mosaic virus	Tip necrosis. Young leaves are pale green, small, twisted and distorted. A faint mosaic pattern may appear.	Prevalent in lentil-production regions with high aphid numbers.	Wide host range including most pulses, some horticultural plants and weeds.	Virus-free seed, management of weeds, resistant varieties.
Cucumber mosaic virus (CMV)	Cucumber mosaic virus	Yellowing, stunting. Young leaves are pale green, small, twisted and distorted. A faint mosaic pattern may appear.	Common in all lentil-growing areas with high aphid numbers.	Very wide host range including most pulses, pastures, some horticultural plants and weeds.	Virus-free seed, management of weeds, resistant varieties.
Turnip yellows virus (TuYV) (previously known as Beet western yellows virus (BWYV))	Turnip yellows virus (previously known as Beet western yellows virus)	Yellowing, stunting. Produces the most severe symptoms of all the viruses. Patches of crop resemble root disease or herbicide residue damage.	Present in all lentil-production areas with high aphid numbers.	Very wide host range including most pulses and brassicas, some horticultural plants and many weed species.	Managing weeds and aphids, resistant varieties.

Source: Identification and management of field crop diseases in Victoria (2018). Reviewed by Joshua Fanning and Piotr Trębicki, Agriculture Victoria (2020)

Table 5: Mallee and Wimmera NVT long-term predicted lentil yield expressed as a percentage of mean yield.

Year	MALLEE					WIMMERA						
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.25	2.88	1.47	0.49	1.60		0.28	2.68	2.83	1.52	1.79
	No. trials	5	4	5	4	4	No. trials	2	4	2	3	3
PBA Ace ^{db}	22	101	93	114	103	98	14	95	108	109	111	105
PBA Blitz ^{db}	14	104	99	102	64	94	10	106	116	95	96	91
PBA Bolt ^{db}	22	118	97	103	104	100	14	106	94	100	100	101
PBA Flash ^{db}	20	103	98	106	106	100	12	101	94	101	98	104
PBA Giant ^{db}	4	87	89	-	-	-	4	91	95	-	-	-
PBA Greenfield ^{db}	9	66	102	106	113	102	8	84	108	108	107	106
PBA Hallmark XT ^{db}	22	101	103	97	99	102	14	100	109	102	107	99
PBA Highland XT ^{db}	19	128	109	106	96	104	12	-	109	103	104	101
PBA Hurricane XT ^{db}	22	95	97	92	102	99	14	96	97	98	101	97
PBA Jumbo ^{db}	20	77	90	104	96	95	12	87	98	99	97	100
PBA Jumbo2 ^{db}	22	100	115	113	101	105	14	106	118	109	107	106
NEW – PBA Kelpie XT	15	-	110	100	91	102	10	-	112	101	100	99

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

ACKNOWLEDGEMENTS

Joshua Fanning	Agriculture Victoria, Horsham
Arun Shunmugam	Agriculture Victoria, Horsham
Piotr Trębicki	Agriculture Victoria, Horsham
Luise Fanning	Agriculture Victoria, Horsham
Janine Sounness	PB Seeds
Phil Bowden	Pulse Australia
Larn McMurray	Grain Innovation Australia

FABA BEAN

The southern region grows 70 per cent of Australia's faba bean by area sown. More recently the area planted has increased, with improved varieties with better disease-management packages and better market prices. In addition, growers now recognise the contribution of pulses to managing weeds and diseases in the overall rotation.

NEW VARIETIES

There are no new varieties available for growing in 2021.

INDUSTRY UPDATE

New pulse disease rating system

A new pulse disease rating system was implemented in 2020. Disease rating definitions were revised and standardised nationally. Some disease ratings have changed to reflect these definitions. Always consult a current disease guide for the latest ratings and definitions to plan disease management.

KEY DISEASE CONSIDERATIONS

The two pathotypes of *Ascochyta* blight are now widespread across the southern region. As a result, only one *Ascochyta* blight rating is provided which covers the disease reaction that will be observed in the paddocks (see latest rating tables).

There are still numerous enquiries regarding variety paddock reactions not aligning with pathologist disease ratings, particularly with PBA Samira[®]. Nationally, researchers are investigating a potential third pathotype.

Growers are reminded to plant seed bulk up of new varieties away from existing faba bean crops to prevent outcrossing with current varieties. This will be particularly important with the new variety PBA Amberley[®] to maintain its Chocolate spot resistance in grower-retained seed.

Growers need to monitor faba bean crops closely. If you observe unusual levels of disease on resistant varieties, please send lesioned samples to Agriculture Victoria at:

**Agriculture Victoria – Pulse Pathology
Isolate Collection
Reply Paid 69952
Horsham VIC 3400**

Ph: 03 4344 3111

Email: joshua.fanning@agriculture.vic.gov.au

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reports app

grdc.com.au

- [GRDC GrowNotes™ Faba bean Southern region](#)
- [GRDC Southern region NVT harvest reports](#)

agriculture.vic.gov.au

- [Growing Faba bean in Victoria](#)
- [Agriculture Victoria Pulse disease guide](#)

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

pulseaus.com.au

- [Growing pulses – Faba bean](#)
- [Crop protection permits in pulses](#)

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

([Ⓛ]) Denotes that Plant Breeder's Rights apply

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

BROAD BEAN VARIETIES

AQUADULCE

Tall, late-flowering broad bean with some tolerance to waterlogging as well as iron and manganese deficiencies. Best suited to high-rainfall districts. Released 1982.

PBA KAREEMA

PBA Kareema is a direct replacement for variety Aquadulce. Requires a long growing season like Aquadulce, best suited to high-rainfall districts. Released 2010. EPR \$4.00.

FABA BEAN VARIETIES

PBA AMBERLEY[Ⓛ]

Mid-flowering and mid maturing. Good standing ability and a low level of 'necking'. Grain size similar to PBA Samira[Ⓛ]. High yield advantage over other varieties in high-rainfall regions. The biggest benefit to PBA Amberley[Ⓛ] is that it is the most resistant released faba bean to Chocolate spot with a provisional MR (moderately resistant) rating. However, recent data in Victoria has shown higher levels of disease than expected and the rating will be reviewed prior to the 2021 season. First faba bean variety with moderate resistance to Chocolate spot. Released 2019 (tested as AF11023). Seed available from Seednet. EPR \$3.50.

PBA BENDOC[Ⓛ]

Mid-flowering and early-mid maturing, with medium height. Medium-sized seed suited to the Middle East markets. Improved tolerance to some Group B herbicides; Nufarm's Intercept[®] is now the registered product for use on PBA Bendoc[Ⓛ]. It is important to note that growers must adhere to product label rates, plant-back periods and all label directions for use. Developed by PBA. Released 2018. Seed available from Seednet. EPR \$3.90.

FARAH[Ⓛ]

Farah is an early to mid maturing faba bean with similar agronomic traits but slightly higher yield than Fiesta VF. Farah performs best in medium-rainfall environments. Released 2003. EPR \$3.00.

PBA MARNE[Ⓛ]

An early-mid flowering, high-yielding faba bean with good adaptation to the lower rainfall and short-season areas. Potential to expand faba bean production into areas that are currently considered marginal and improve reliability in established areas during below-average rainfall seasons. Light brown, medium-size seed. Suitable for mixing with current faba bean varieties for export to the major food markets in the Middle East. Developed by PBA. Released 2018. Seed available from Seednet. EPR \$3.50.

NURA[Ⓛ]

Shorter than Fiesta VF and Farah[Ⓛ], and less likely to lodge, however bottom pods are closer to the ground. Needs to be sown early as it flowers about seven days later than Fiesta, but it matures at a similar time. Released 2005. Commercialised by Seednet. EPR \$3.00.

PBA ZAHRA[Ⓛ]

A high-yielding, mid-flowering and mid-late maturing variety. Performs well in longer season environments. Seed is larger than Farah[Ⓛ] and similar to PBA Rana[Ⓛ], suitable to Middle East markets. Developed by PBA. Released 2016. Seed available from Seednet. EPR \$3.50.

PBA RANA[Ⓛ]

Mid-flowering and mid maturing variety suited to higher rainfall, long-season regions. Seed is med-large and is considered high quality by the major Egyptian market. Developed by PBA. Released 2011. Commercialised by Seednet. EPR \$3.50.

PBA SAMIRA[Ⓛ]

A high-yielding variety with wide adaptation. Later flowering allows for advantage of late rainfall in longer season environments. Seed is slightly larger than Farah[Ⓛ] and is suited to Middle East markets. Developed by PBA. Released 2014. Seed available from Seednet. EPR \$3.50.

Table 1: Faba bean time of sowing guide.

This table is a guide only and has been compiled from observations of agronomists.

MALLEE	April			May				June		
Farah [Ⓛ] , Fiesta VF, PBA Marne [Ⓛ] , PBA Samira [Ⓛ]										
WIMMERA	April			May				June		
PBA Amberley [Ⓛ] , Aquadulce, PBA Bendoc [Ⓛ] , Farah [Ⓛ] , Fiesta VF, Nura [Ⓛ] , PBA Marne [Ⓛ] , PBA Samira [Ⓛ] , PBA Zahra [Ⓛ]										
NORTH CENTRAL – 1 WEEK EARLIER FOR IRRIGATION	April			May				June		
PBA Amberley [Ⓛ] , Aquadulce, PBA Bendoc [Ⓛ] , Farah [Ⓛ] , Fiesta VF, Nura [Ⓛ] , PBA Marne [Ⓛ] , PBA Samira [Ⓛ] , PBA Zahra [Ⓛ]										
NORTH EAST	April			May				June		
PBA Amberley [Ⓛ] , Aquadulce, PBA Bendoc [Ⓛ] , Farah [Ⓛ] , Fiesta VF, Nura [Ⓛ] , PBA Marne [Ⓛ] , PBA Samira [Ⓛ] , PBA Zahra [Ⓛ]										
SOUTH WEST	April			May				June		
PBA Amberley [Ⓛ] , Aquadulce, PBA Bendoc [Ⓛ] , PBA Kareema, Farah [Ⓛ] , Fiesta VF, PBA Rana [Ⓛ] , PBA Samira [Ⓛ] , PBA Zahra [Ⓛ]										

Yellow = earlier than optimum.

Green = optimum sowing time.

Red = later than optimum.

Table 2: Agronomic characteristics of faba bean varieties.

Variety	Seed size	Seed colour	Plant height	Flowering time	Maturity	Lodging resistance
BROAD BEAN						
Aquadulce	large	light brown	tall	late	mid-late	MS
PBA Kareema	large	light brown	tall	late	late	MS
FABA BEAN						
Farah ^{db}	medium	light brown/brown	medium	early-mid	early-mid	MS
Nura ^{db}	small-med	light buff	short	mid	early-mid	MR
PBA Amberley ^{db}	med-large	light brown	medium	mid	mid-late	R
PBA Bendoc ^{db}	medium	light brown	medium	mid	early-mid	MS
PBA Marne ^{db}	medium	light brown	medium	early-mid	early-mid	MR
PBA Rana ^{db}	med-large	light brown	med/tall	mid	mid	MR
PBA Samira ^{db}	medium	light brown	medium	mid	mid	MR
PBA Zahra ^{db}	med-large	light brown	med-tall	mid	mid-late	MR

Source: Southern Pulse Agronomy Wimmera Field Day Guide (2019)

Resistance: 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.

Table 3: Diseases resistance characteristics of faba bean varieties.

Variety	Ascochyta blight*	Chocolate spot (botrytis)	Cercospora	Rust	PSbMV seed staining	Root lesion nematode (<i>Pratylenchus</i>)	
						<i>P. thornei</i>	<i>P. neglectus</i>
BROAD BEAN							
Aquadulce	MS	MS	S	MR	S	MS	MR
PBA Kareema	MR	MS	S	MRMS	S	-	-
FABA BEAN							
Farah ^{db}	S	S	S	S	S	MS	MR
Nura ^{db}	RMR	MS	S	MS	MS	MS	MR
PBA Amberley ^{db}	RMR	MR _p	S	S	-	MS _p	MR
PBA Bendoc ^{db}	MR	MS	S	S	S	MRMS _p	MR
PBA Marne ^{db}	MRMS	S	S	MR	MR	MS _p	MR
PBA Rana ^{db}	MRMS	MS	S	MS	MR	MS	MR
PBA Samira ^{db}	RMR	MS	S	MS	S	MRMS	MR
PBA Zahra ^{db}	MRMS	MS	S	MS	S	MS	MR

Sources: Agriculture Victoria Pulse disease guide (2020); Southern Pulse Agronomy Wimmera Field Day Guide (2019)

PSbMV = Pea seed-borne mosaic virus

Resistance: 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.

p = provisional ratings – treat with caution.

No variety with an R resistance rating is immune to disease and a fungicide application may be required under severe disease pressure.

Table 4: Faba bean disease guide summary.

Disease	Organism	Symptoms	Occurrence	Hosts	Control
Ascochyta blight	<i>Ascochyta fabae</i>	Large, light tan to grey lesions on leaves. Small black fruiting bodies develop within spots. Centres of lesions may fall out, leaving holes in leaves. Sunken lesions on stem similar in colour to leaf lesions. Brown-black discolouration of grain.	Common in all faba bean-growing areas in southern Australia. Usually the first disease present in new crops. Most severe in wet seasons.	Faba bean, vetch. Spores spread by wind and rain. Infected seed.	Foliar fungicides. Resistant varieties. Crop rotation. Control volunteer plants. Clean seed.
Chocolate spot	<i>Botrytis fabae</i> , <i>B. cinerea</i>	Passive phase: small chocolate-covered spots scattered over leaves. Aggressive phase: tissue around spots turns dark grey and black. Leaves die and blacken.	Occurs in all areas where faba beans are grown. Disease usually becomes established in late winter and becomes more severe as day temperatures increase during spring. Can destroy unprotected crops in wet seasons.	Faba bean. Spores spread by wind and rain.	Foliar fungicides. Resistant varieties. Crop rotation. Control volunteer plants.
Cercospora leaf spot	<i>Cercospora zonata</i>	Dark irregular lesions with a distinct margin on the leaf. Easily confused with Ascochyta blight or Chocolate spot but distinguished by the concentric pattern within lesions.	Occurs in all areas where beans are grown.	Faba bean, vetch.	Foliar fungicides.
Rust	<i>Uromyces viciae-fabae</i>	Numerous small, orange-brown rust pustules, surrounded by a light-yellow halo on the leaves of infected plants.	Most prevalent in northern Australia. Crops usually affected late in the season.	Faba bean	Foliar fungicides. Crop rotation. Control volunteer plants.
Sclerotinia stem rot	<i>Sclerotinia trifoliorum</i> var. <i>fabae</i>	Infection usually begins close to ground level and slimy wet rot extends into stem and down into the roots. Plants easily pulled from soil and have blackened base covered with cottony, white fungus growth. Usually isolated plants that suddenly wilt and collapse. Sclerotia on surface and within stem turn from white to black.	Rapid development of disease in wet, cool conditions.	Wide host range. Foliar form of disease spread by airborne spores. Fungus survives in the soil for many years.	Crop rotation. Lower sowing rates, wider row spacing and good weed control.
Stem nematode	<i>Ditylenchus dipsaci</i>	Patches of malformed and stunted plants with curling leaves and water-soaked spots. Stem may die back, turning reddish-brown colour.	Most severe in wet seasons.	Faba bean, pea, oats, wild oats. Infected seed straw or soil. Nematodes can survive many years in seed, straw or soil.	Seed test. Crop rotation.
VIRUS DISEASES					
Subterranean clover stunt virus (SCSV)	Subterranean clover stunt virus	Stunting, tip yellowing, small and thick leaves.	Prevalent in all faba bean-growing areas, symptoms appear early on faba bean.	Sub clover, faba bean, lupin, lentil, chickpea, lucerne, soybean.	Managing aphids and weeds.
Bean leaf roll virus (BLRV)	Bean leaf roll virus	Interveinal yellowing, leaf rolling, stunting, leathery leaves.	Occurs in all faba bean-growing areas.	The host range is limited to <i>Fabaceae</i> .	Managing aphids.
Pea seed-borne mosaic virus (PSbMV)	Pea seed-borne mosaic virus	Can be symptomless or systemic dark and light green leaf mottle, leaf margins upright leaf blade reduced in size. Seeds have brown rings or line patterns on surface.	Occurs in all faba bean-growing areas.	Host range is limited to <i>Fabaceae</i> .	Virus-free seed is recommended. Managing aphids.

Source: Identification and management of field crop diseases in Victoria (2018). Reviewed by Joshua Fanning and Piotr Trębicki, Agriculture Victoria (2020)

Table 5: North Central and North East NVT long-term predicted faba bean yield expressed as a percentage of mean yield.

Year	NORTH CENTRAL					NORTH EAST		
		2016	2017	2018		2015	2018	
Mean yield t/ha		6.19	7.39	6.20		1.59	0.75	
	No. trials	1	1	1	No. trials	1	1	
Farah ^{db}	3	90	94	94	2	94	95	
Fiesta VF	2	87	91	-	2	93	97	
Nura ^{db}	2	91	-	97	2	95	85	
PBA Amberley ^{db}	3	105	103	105	2	100	96	
PBA Bendoc ^{db}	2	-	96	100	1	-	103	
PBA Marne ^{db}	3	98	103	102	2	109	96	
PBA Rana ^{db}	0	-	-	-	2	88	78	
PBA Samira ^{db}	3	102	99	100	2	97	102	
PBA Zahra ^{db}	3	94	94	96	2	95	101	

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

Table 6: Wimmera and South West NVT long-term predicted faba bean yield expressed as a percentage of mean yield.

Year	WIMMERA						SOUTH WEST					
		2015	2016	2017	2018	2019		2015	2016	2017	2018	2019
Mean yield t/ha		0.67	3.99	5.52	2.71	2.43		2.95	5.58	4.61	3.36	3.61
	No. trials	2	2	1	4	5	No. trials	1	1	1	2	1
Farah ^{db}	14	100	89	97	98	97	6	101	95	102	97	99
Fiesta VF	11	105	86	95	98	99	2	102	88	-	-	-
Fiord	2	-	100	95	-	-	0	-	-	-	-	-
Nura ^{db}	14	94	91	100	98	97	6	104	99	102	97	104
PBA Amberley ^{db}	13	97	105	105	103	107	6	107	106	106	107	99
PBA Bendoc ^{db}	12	-	96	99	103	106	5	-	89	112	107	90
PBA Marne ^{db}	14	104	101	99	97	93	6	100	90	93	97	109
PBA Rana ^{db}	12	88	84	96	98	91	6	100	104	102	92	107
PBA Samira ^{db}	14	99	101	101	102	104	6	102	103	104	103	96
PBA Zahra ^{db}	14	94	95	104	99	108	6	107	103	101	102	94

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

ACKNOWLEDGEMENTS

Joshua Fanning	Agriculture Victoria, Horsham
Piotr Trębicki	Agriculture Victoria, Horsham
Luise Fanning	Agriculture Victoria, Horsham
Simon Crane	Seednet
Phil Bowden	Pulse Australia

LUPIN

Narrow-leaved lupin (*Lupinus angustifolius*) suits acidic, sandy or low-fertility soils whereas albus lupin (*L. albus*) is best suited to fertile, well-drained and heavier soils. Neither lupin species is suited to high pH soils with free lime (bicarb). Narrow-leaved lupin has major advantages as a rotational break crop in cereal cropping systems, including contributing to nitrogen (N) fixation, offering a quality stock feed product option and having potential for sale into existing high-value export markets.

NEW VARIETIES

There are no new lupin varieties available for sowing in Victoria for 2021.

In 2019 Australian Grain Technologies (AGT) released its first narrow-leaved lupin variety, Coyote[®], with no seed available to Victorian growers at the time of release. Seed will now be available to Victorian growers for the 2021 season. Contact AGT for availability.

INDUSTRY UPDATE

New pulse disease rating system

A new pulse disease rating system was implemented in 2020. Disease rating definitions were revised and standardised nationally. Some disease ratings have changed to reflect these definitions. Always consult a current disease guide for the latest ratings and definitions to plan disease management.

KEY DISEASE AND VIRUS CONSIDERATIONS

Sclerotinia white mould and Pleiochaeta root rot were identified across multiple paddocks during 2020. For Sclerotinia white mould, the sclerotes (survival structures) can last in soil for many years, so fungicides will be required in addition to good paddock rotations. Pleiochaeta root rot requires good paddock rotations and close monitoring to ensure disease levels do not build up.

Agriculture Victoria reminds growers that there are restrictions for Lupin anthracnose host material entering Victoria. This applies to lupin seed, lupin plant, machinery and used packaging in growing, harvesting, processing and transporting of lupin seeds and plants.

For more information contact an Agriculture Victoria plant standards officer by telephoning 13 61 86.

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reports app

grdc.com.au

- [GRDC GrowNotes™ Lupin Southern region](#)
- [GRDC Southern region NVT harvest reports](#)

agriculture.vic.gov.au

- [Growing lupin in Victoria](#)
- [Agriculture Victoria Pulse disease guide](#)

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

pulseaus.com.au

- [Growing pulses – lupin](#)
- [Crop protection permits in pulses](#)

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

Ⓛ Denotes that Plant Breeder's Rights apply

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

NARROW-LEAFED LUPIN VARIETIES

PBA BARLOCK[Ⓛ]

Early variety with slightly later flowering and maturity than Mandelup[Ⓛ], with a greater yield potential, reduced lodging and good resistance to pod shatter. Similar metribuzin tolerance to that of Mandelup[Ⓛ] and better than Wonga. Released 2014. Seed available from Seednet. EPR \$2.50.

PBA BATEMAN[Ⓛ]

Early-flowering lupin variety with improved virus resistance. Well suited to high-rainfall zones. PBA Bateman[Ⓛ] has similar harvest grain loss risk and resistance to pod shatter to PBA Barlock[Ⓛ]. Similar tolerance to metribuzin as PBA Jurien[Ⓛ], PBA Barlock[Ⓛ] and PBA Gunyidi[Ⓛ]. Released 2017. Seed available from Seednet. EPR \$2.60.

COYOTE[Ⓛ]

Coyote[Ⓛ] is the first narrow-leafed lupin variety to be released by AGT. Performs well across a very broad range of soil types, rainfall zones and yield potentials. It is early maturing (similar to Jurien), with metribuzin tolerance similar to Mandelup[Ⓛ]. Coyote[Ⓛ] is moderately susceptible to *Phomopsis*; graze lupin stubbles with care in high-risk environments. Released 2019 (tested as WALAN2546). Bred and marketed by AGT, limited amounts of seed will be available in Victoria for 2021. EPR \$3.00.

JENABILLUP[Ⓛ]

Tall, mid-flowering narrow-leafed lupin with early vigour. Moderately resistant to lodging and suitable for medium to high-rainfall areas. Longer flowering window compared with Mandelup[Ⓛ], making it less suitable for crop topping. Poor tolerance of foliar metribuzin. Released 2007. Commercialised by Seednet. EPR \$2.30.

PBA JURIE[Ⓛ]

Early maturing variety. Early flowering, slightly earlier than PBA Barlock[Ⓛ]. Similar in height to Mandelup[Ⓛ], moderately susceptible to lodging in high-rainfall regions. Medium to large seed, similar to Mandelup[Ⓛ]. Alkaloid content similar to PBA Gunyidi[Ⓛ]. Tolerance to metribuzin is better than Mandelup[Ⓛ]. Developed by PBA. Released 2015. Seed available from Seednet. EPR \$2.50.

MANDELUP[Ⓛ]

A tall, very early flowering and maturing variety suited to low to medium-rainfall zones. Suitable for crop topping. Mandelup[Ⓛ] may lodge in high-rainfall zones. Pod shatter with delayed harvest, and poorer seed germination rate and establishment with rain before harvest may occur. Note that Mandelup[Ⓛ] can produce unacceptable levels of seed *Phomopsis* under high disease pressure. Good tolerance to metribuzin. Released 2004. Seed available from Barenbrug. EPR \$2.30.

ALBUS LUPIN VARIETIES**LUXOR[Ⓛ]**

Luxor[Ⓛ] is earlier flowering than its sister line Rosetta. Resistant to *Pleiochaeta* root rot (the cause of many seedling deaths in older varieties). Released in 2005. Commercialised by Seednet. EPR \$2.80.

MURRINGO[Ⓛ]

Mid-flowering variety suited to medium to high-rainfall zones. Slightly longer maturity time to Luxor[Ⓛ]. Suitable sowing time window of late April to mid-May. Murringo[Ⓛ] should not be grown within one kilometre of other albus lupin varieties to avoid contamination. Released 2017. Seed available from Seednet. EPR \$3.20.

Table 1: Optimal lupin sowing times for rainfall zones and soil types.

Rainfall zone	Optimum sowing time	
	Sands	Shallow sand over clay, sandy loams, loams
Average mm per year		
Below 350mm	mid-April to early May	late April to early May
350–450mm	early to mid-May	mid-May
Above 450mm	mid-May	late May

Table 2: Lupin sowing guide.

This table is a guide only and has been compiled from observations of agronomists.

MALLEE	April				May			
Narrow-leaf: Jenabillup [Ⓛ] , Mandelup [Ⓛ] , PBA Barlock [Ⓛ] , PBA Jurien [Ⓛ]			Yellow	Green	Green	Green	Green	Red
Albus lupin: Murringo [Ⓛ]								
WIMMERA	April				May			
Narrow-leaf: Jenabillup [Ⓛ] , Mandelup [Ⓛ] , PBA Barlock [Ⓛ] , PBA Jurien [Ⓛ] , Wonga			Yellow	Green	Green	Green	Green	Red
Albus lupin: Murringo [Ⓛ]								
NORTH CENTRAL	April				May			
Narrow-leaf: Jenabillup [Ⓛ] , Mandelup [Ⓛ] , PBA Barlock [Ⓛ] , PBA Jurien [Ⓛ] , Wonga			Yellow	Green	Green	Green	Green	Red
Albus lupin: Murringo [Ⓛ]								
NORTH EAST	April				May			
Narrow-leaf: Jenabillup [Ⓛ] , PBA Barlock [Ⓛ] , PBA Jurien [Ⓛ] , Wonga			Yellow	Green	Green	Green	Green	Red
Albus lupin: Murringo [Ⓛ]								
SOUTH WEST	April				May			
Narrow-leaf: Jenabillup [Ⓛ] , PBA Barlock [Ⓛ] , PBA Jurien [Ⓛ] , Wonga			Yellow	Green	Green	Green	Green	Red
Albus lupin: Murringo [Ⓛ]								

Yellow = earlier than optimum.

Green = optimum sowing time.

Red = later than optimum.

Table 3: Agronomic characteristics of lupin varieties.

The agronomic characteristics in this table are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and seed companies.

Variety	Flowering time	Height	Lodging	Pod shattering	Aphid resistance
NARROW-LEAF					
Coyote ^{db}	E	M	-	-	-
Jenabillup ^{db}	M	T	MR	MS	MR
Mandelup ^{db}	VE	T	MS	MS	R
PBA Barlock ^{db}	E	M	MR	R	R
PBA Bateman ^{db}	E	M	MRMS	MRMS	R
PBA Jurien ^{db}	E	M	MS	MR	-
Wonga	E-M	M	MR	R	MR
ALBUS LUPIN					
Luxor ^{db}	E-M	M-T	R	R	S
Murringo ^{db}	M	M	R	R	S

Source: Southern Pulse Agronomy Field Day Booklet (2019)

Flowering time: VE = very early, E = early, M = mid.
Height: M = medium, T = tall.

Resistance: 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.

No variety with an R resistance rating is immune to disease and a fungicide application may be required under severe disease pressure.

Table 4: Disease characteristics of lupin varieties.

Variety	Brown leaf spot	Pleiochaeta root rot	Cucumber mosaic virus (CMV) (seed transmitted)* ^a	Anthracnose	Phomopsis	
					Stem	Pod/seed
NARROW-LEAF						
Coyote ^{db}	MS _p	MRMS _p	MR _p	MRMS _p	MR _p	MRMS _p
Jenabillup ^{db}	MRMS	MRMS _p	MRMS	MS	MS	MR
Mandelup ^{db}	MS	MRMS _p	MS	MR	RMR	MRMS
PBA Barlock ^{db}	MS	MRMS _p	MR	RMR	MR	MR
PBA Bateman ^{db}	MS	MRMS _p	MR	MRMS	RMR	MS
PBA Jurien ^{db}	MS	MR _p	MS	RMR	RMR	MR
Wonga	MS	MRMS _p	R	RMR	MR	MR
ALBUS LUPIN						
Luxor ^{db}	MR	R	Immune	VS	MR	S
Murringo ^{db}	MR	MR	Immune	VS	MS	S

Source: Agriculture Victoria Pulse Disease Ratings (2020)

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

_p = provisional ratings – treat with caution. ^a = 2019 ratings. *Indicates data from before the new NVT system.

No variety with an R resistance rating is immune to disease and a fungicide application may be required under severe disease pressure.

Table 5: Lupin disease guide summary.

Disease	Organism	Symptoms	Occurrence	Inoculum source	Control
Brown leaf spot	<i>Pleiochaeta setosa</i>	Dark brown spots on cotyledons, leaves and pods, often net-like on leaves, infected leaves drop off, lesions may girdle stem.	Very common but losses usually minor in dry areas, yield loss can be significant in cool damp areas.	Spores in soil and lupin trash, rain-splash and windblown.	Fungicide seed dressings, crop rotations, resistant varieties selection, early sowing.
Pleiochaeta root rot	<i>Pleiochaeta setosa</i>	Browning and rotting of tap and lateral roots, seedling plant death.	Serious reduction in lupin plant density and vigour.	Spores in soil infecting roots usually at seedling stage.	Minimum 4-year rotation between lupins, sowing 4-5cm deep to avoid spore layer, fungicide seed dressings.
Rhizoctonia	<i>Rhizoctonia</i> spp.	Bare patches in crop, spear tipped root ends, hypocotyl rot and stain.	Can be severe in isolated patches, reduces stand density, favoured by minimum tillage, wet soils and mild conditions.	Soil-borne infection with wide host range, survives as fungal fragments in soil and plant debris.	Rotation of crops with other pulses, tillage can help, increased seedling rate.
Anthraxnose	<i>Colletotrichum lupini</i>	Stems/branches bend over, brown lesions with pink/orange spore masses in crook bend, dark lesions with pink/orange spores on flower spike and pods.	Severe infections can result in severing of stems or total pod abortion resulting in complete crop failure.	Seed-borne disease, infected seed produces infected seedlings. Spread in crop by rain-splash and wind.	Clean seed and machinery, destroy infected regrowth, resistant varieties, fungicide seed dressings reduce seedling infection.
Phomopsis stem and pod blight	<i>Diaporthe toxica</i>	Dark purplish lesions that bleach with age and contain black fruiting bodies and can cause plants to lodge. Severe lesions may girdle the stem and kill the plant. Saprophytic growth of fungus in stubble and seed produces mycotoxin that causes lupinosis in grazing animals.	Can infect stems, leaves, pods and seeds of lupins. Prematurely dying plants after pod set can be seen in crops, particularly in parts of the paddock stressed by drought, frost or herbicides.	Fungus can survive on lupin trash and seed, rain-splash and windblown.	Crop rotation and increasing the break between lupin crops, variety selection, seed treatment.
Sclerotinia	<i>Sclerotinia sclerotiorum</i>	White fungal growth containing black sclerotia in upper stem, branches or colonising pods. Stem death above lesion. Sclerotia contaminating harvested seed.	Most common in higher rainfall or wetter regions with dense canopies. More likely with canola in the rotation but can affect several broad leaf crops.	Sclerotia survive in soil and trash for several years. Wide host range in broad leaf crops.	Avoid lupins following broad leaf crops or pasture (particularly canola). No variety resistance.
VIRUS DISEASES					
CMV	Cucumber mosaic virus	All growth after infection is dwarfed, leaflets are yellowed and bunched.	Early widespread infection severely reduces yield. Minor infections prevent use of harvested grain as seed.	Seed-borne infection in narrow-leaf lupin, aphids transmit the disease within a crop. Wide host range.	Sow clean seed, use a seed test, high sowing rates and cereal barriers around crops reduce aphid transmission.
BYMV (Black pod syndrome)	Bean yellow mosaic virus	Brown necrotic streaks as plant dies back from growing point of stem, shepherd crook of stem, pods blackened and flat, leaves yellow, plants wilt and die.	Occurs in all lupin-growing areas. Can be severe in higher rainfall areas.	Seed-borne in albus but not narrow-leafed lupin, aphid spread in crop, many host species.	Sow virus-free seed. High plant density, cereal buffer.

Source: Identification and management of field crop diseases in Victoria (2018). Reviewed by Joshua Fanning and Piotr Trębicki, Agriculture Victoria (2020)

Table 6: NVT long-term predicted narrow-leaved lupin yield expressed as a percentage of mean yield.

Year	MALLEE					
		2015	2016	2017	2018	2019
Mean yield (t/ha)		0.91	1.69	1.06	0.90	1.41
	No. trials	2	1	1	1	2
Coyote ^{db}	5	115	115	123	118	-
Jenabillup ^{db}	7	94	93	99	78	118
Mandelup ^{db}	6	103	99	94	-	101
PBA Barlock ^{db}	6	99	91	77	-	103
PBA Bateman ^{db}	6	109	111	-	102	118
PBA Jurien ^{db}	6	103	95	79	-	107
Wonga	7	91	85	78	92	98

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: [National Variety Trials \(2015–19\)](#)

ACKNOWLEDGEMENTS

Joshua Fanning	Agriculture Victoria, Horsham
Piotr Trębicki	Agriculture Victoria, Horsham
Luise Fanning	Agriculture Victoria, Horsham
Simon Crane	Seednet
Rob Harris	Australian Grain Technologies
Phil Bowden	Pulse Australia

CHICKPEA

Two groups of chickpeas are grown in Australia, desi and kabuli, mainly distinguished by seed size, shape and colour. They also have different growth requirements, markets and end-users. Chickpeas are well suited to well-drained, non-acidic soils of a medium to heavy texture.

Chickpeas often attract a premium price over other pulse species due to demand, driven by human consumption. Chickpeas also contribute to crop rotations by fixing nitrogen (N) and providing a disease and weed break for cereal crops. Currently delivery standards are based on visual appraisal methods, so grain appearance is critical. Even size, shape and colour will influence each buyer's preference, so careful management of diseases, pests and harvester set-up is needed.

NEW VARIETIES

Two new chickpea varieties were released in 2020 for commercial production in 2021.

PBA Magnus[®] is a large-seeded kabuli chickpea variety commercialised by PB Seeds and available in 2021.

CBA Captain[®] is a medium-size-seed desi chickpea variety. At the time of publication, commercialisation for this variety was still being confirmed. For further information regarding seed availability for CBA Captain[®] contact NSW Department of Primary Industries (DPI):
Glenn Lendon,
glenn.lendon@dpi.nsw.vic.gov.au
or 0439 248 504.

INDUSTRY UPDATE

New pulse disease rating system

A new pulse disease rating system was implemented in 2020. Disease rating definitions were revised and standardised nationally. Some disease ratings have changed to reflect these definitions. Always consult a current disease guide for the latest ratings and definitions to plan disease management.

KEY DISEASE CONSIDERATIONS

The 2020 season has highlighted the importance of disease control, particularly where there is a heavy dew or continuous fog throughout the day. Ascochyta blight spread in both of these conditions has been observed. It is important in these paddocks that, if rainfall is forecast during podding, a fungicide is applied to protect the seed quality.

If seed is retained from paddocks infected with Ascochyta blight during 2020, growers are recommended to apply a registered seed treatment to prevent infection from seed during 2021. If pod infection is observed, seed testing is recommended to determine if there may be establishment issues related to Ascochyta blight and to reduce carryover of disease inoculum into 2021.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

MORE INFORMATION

nvtonline.com.au

- Detailed NVT trial results and links to variety information

nvtonline.com.au/apps

- Crop Disease Au app
- NVT Long Term Yield Reports app

grdc.com.au

- GRDC GrowNotes™ Chickpea Southern region
- GRDC Southern region NVT harvest reports

agriculture.vic.gov.au

- [Growing chickpea in Victoria](#)
- [Agriculture Victoria Pulse disease guide](#)

pulseaus.com.au

- [Crop protection permits in pulses](#)
- [Chickpea disease management strategy](#)

extensionaus.com.au/FieldCropDiseasesVic

- Expert support on field crop diseases in Victoria at your fingertips

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

([Ⓛ]) Denotes that Plant Breeder's Rights apply

End point royalty (EPR) 2020-21 quoted \$/tonne ex GST.

DESI-TYPE VARIETIES

PBA MAIDEN[Ⓛ]

Angular seed of med-large size, yellow-tan in colour. Mid-flowering and mid maturing. Growers are advised to investigate delivery and marketing options prior to growing this variety due to its unique and favourable seed characteristics. Suitable for the whole-seed market. Released 2013. Commercialised by Seednet. EPR \$4.00.

PBA SLASHER[Ⓛ]

PBA Slasher[Ⓛ] has mid-flowering and mid-maturity. Seed is medium sized, tan-brown in colour and excellent milling quality. Suitable for both split and whole-seed markets. Released 2009. Commercialised by Seednet. EPR \$4.00.

PBA STRIKER[Ⓛ]

Excellent adaptation to short-season environments due to early flowering and maturity. Medium seed size. Excellent milling quality. Released 2012. Commercialised by Seednet. EPR \$4.00.

NEW – CBA CAPTAIN[Ⓛ]

Medium-size-seed variety with broad adaptation to Victorian desi chickpea-growing areas. Erect plant type with good plant height and height to lowest pod. Mid-flowering and mid maturing in Victorian growing environments. Good grain size similar to PBA HatTrick[Ⓛ] and meets the requirements of a 'Jimbour type', suitable for the subcontinent market. For further information regarding seed availability contact NSW DPI:
Glenn Lendon,
glenn.lendon@dpi.nsw.gov.au
or 0439 248 504.
EPR \$4.50.

KABULI-TYPE VARIETIES

ALMAZ[Ⓛ]

Seed size similar to PBA Monarch[Ⓛ] (8 to 9mm). Yield is lower than PBA Monarch[Ⓛ] and Genesis[™] 090. Best adapted to the traditional kabuli-growing areas. Almaz[Ⓛ] will require at least three fungicide applications to be successfully grown in Victorian growing conditions. Released 2005. Commercialised by Seednet. EPR \$6.50.

NEW – PBA MAGNUS[Ⓛ]

A large-seeded kabuli type with similar plant type to Genesis[™] 090. Mid-flowering and mid maturing. Adapted to current kabuli-growing regions of Victoria and South Australia. An excellent replacement for Genesis[™] Kalkee where an erect plant type is not essential due to its larger seed size. Very good seed size and shape. Released 2020 (tested as CICA1352). Seed available from PB Seeds. EPR \$6.50.

GENESIS[™] 090

Genesis[™] 090 has a small seed (7 to 8mm), smaller than Almaz[Ⓛ] or PBA Monarch[Ⓛ]. Potential to be grown as an alternative to desi chickpeas or higher yielding but potentially lower priced grain alternative to kabuli varieties such as Almaz[Ⓛ], PBA Monarch[Ⓛ] and Genesis[™] Kalkee. Released 2005. Seed available from PB Seeds. EPR \$5.00.

GENESIS[™] KALKEE

Genesis[™] Kalkee has late flowering and maturity with seed size larger than PBA Monarch[Ⓛ] and Almaz[Ⓛ], and an erect plant habit. Released 2012. Seed available from PB Seeds. EPR \$5.00.

PBA MONARCH[Ⓛ]

Suited to shorter season medium-rainfall environments due to improved adaptation through earlier flowering and maturity. Medium seed size, larger than Genesis[™] 090, similar to Almaz[Ⓛ]. Semi-spreading plant similar to PBA Slasher[Ⓛ]. Some susceptibility to lodging, particularly when biomass is high. Released 2013. Seed available from Seednet. EPR \$6.50.

PBA ROYAL[Ⓛ]

A medium-size-seed kabuli with a larger seed size than Genesis[™] 090 and higher yield than Genesis[™] 090 in medium-rainfall Victorian environments. Released 2019 (tested as CICA1156). Seed available from Seednet. EPR \$6.50.

Table 1: Chickpea time of sowing guide.

This table is a guide only and has been compiled from observations of agronomists.

MALLEE	April				May				June				July			
Desi: PBA Maiden [Ⓛ] , PBA Slasher [Ⓛ] , PBA Striker [Ⓛ]																
Kabuli: Genesis [™] 090, PBA Monarch [Ⓛ]																
WIMMERA	April				May				June				July			
Desi: PBA Maiden [Ⓛ] , PBA Slasher [Ⓛ] , PBA Striker [Ⓛ]																
Kabuli: Genesis [™] 090																
Kabuli: Almaz [Ⓛ] , Genesis [™] Kalkee, PBA Monarch [Ⓛ]																
NORTH CENTRAL	April				May				June				July			
Desi: PBA Maiden [Ⓛ] , PBA Slasher [Ⓛ] , PBA Striker [Ⓛ]																
Kabuli: Genesis [™] 090, PBA Monarch [Ⓛ]																

Yellow = earlier than optimum.

Green = optimum sowing time.

Red = later than optimum but acceptable.

Table 2: Chickpea variety agronomic guide.

The agronomic characteristics in this table are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and seed companies.

Variety	Ave 100 seed weight (g)	Seed size group	Seed size (mm)	Vigour	Flowering	Maturity	Height	Lodging resistance
DESI								
NEW - CBA Captain ^{db}	20	medium	-	good	mid	mid	tall	MR
PBA Maiden ^{db}	24	med-large	-	mod	mid	mid	short-mid	MS
PBA Slasher ^{db}	18	medium	-	poor-mod	mid	mid	short-mid	MS
PBA Striker ^{db}	22	medium	-	good	early	early	short-mid	MS
KABULI								
Almaz ^{db}	38	medium	8-9	mod	mid-late	late	mid-tall	MR
NEW - PBA Magnus ^{db}	47	large	8-10	poor-mod	mid	mid	mid	MS
Genesis™ 090	31	small	7-8	good	mid	mid-late	mid	MR
Genesis™ Kalkee	45	large	8-10	good	late	late	tall	R
PBA Monarch ^{db}	40	medium	8-9	poor-mod	early	early	mid	S
PBA Royal ^{db}	36	medium	8	mod	mid	mid	mid	MR

Source: Southern Pulse Agronomy Wimmera Field Day Guide (2019).

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

Table 3: Diseases resistance characteristics of chickpea varieties.

All chickpea varieties are rated as S or MS to foliar Ascochyta blight infection. Chickpea crops will require multiple fungicide applications to control Ascochyta blight in most seasons. Varieties should be sprayed with fungicide prior to rain events to protect new growth as per label directions. Susceptible varieties may need regular fungicide applications throughout the growing season, with application frequency dependent on fungicide active. All varieties are susceptible to pod infection and will require protection during podding to prevent seed staining and abortion.

Variety	Botrytis grey mould	Ascochyta blight		Phytophthora root rot ^a (<i>P. medicaginis</i>)	Root lesion nematode (<i>Pratylenchus</i>)	
		Foliage/Stem	Pod		<i>P. thornei</i>	<i>P. neglectus</i>
DESI						
NEW – CBA Captain ^{db}	MSp	S	S	MRp	MSp	RMRp
PBA Maiden ^{db}	S	S	S	VS	MRMS	MRMS
PBA Slasher ^{db}	S	S	S	VS	MRMS	MRMS
PBA Striker ^{db}	S	S	S	VS	MRMS	MRMS
KABULI						
Almaz ^{db}	S	S	S	VS	S	MRMS
NEW – PBA Magnus ^{db}	Sp	MS	S	VS	MSp	MR
Genesis™ 090	S	MS	S	VS	MS	MRMS
Genesis™ Kalkee	S	MS	S	VS	MS	MRMS
PBA Monarch ^{db}	S	S	S	VS	MS	MRMS
PBA Royal	S	MS	S	VS	MSp	MR

Sources: Agriculture Victoria Pulse disease guide (2020), Southern Pulse Agronomy Wimmera Field Day Guide (2019).

Note: subject to change with additional data. # Breeder data is used for Phytophthora root rot (*P. medicaginis*).

Resistance: 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, VS = very susceptible.

p = provisional ratings – treat with caution.

No variety with an R resistance rating is immune to disease and a fungicide application may be required under severe disease pressure.

Table 4: Chickpea diseases guide summary.

Disease	Organism	Symptoms	Occurrence	Host	Control
FUNGAL DISEASES					
Ascochyta blight	<i>Phoma rabiei</i> (formerly known as <i>Ascochyta rabiei</i>)	Pale brown lesions on leaves, stems and pods. Lesions may have a grey centre containing small black fruiting bodies. Infected stems wither and break.	Occurs in all regions. Affects both kabuli and desi types. Most severe in spring.	Chickpea	Fungicide seed dressing, foliar fungicides, rotation, avoid susceptible varieties, avoid early sowing.
Botrytis grey mould	<i>Botrytis cinerea</i>	Poor emergence and death of young plants. Soft rot at the base of the stem. Grey mould growth on leaves, stems and pods. Lodging of plants in dense crops. Discolouration of seed with grey mould.	Occurs in all regions. Affects both kabuli and desi types. Most severe in wet seasons. Dense crops are more likely to be affected.	Chickpea, most pulses, including lentil and faba bean.	Fungicide seed dressings, lower plant densities, avoid early sowing.
Sclerotinia	<i>Sclerotinia sclerotiorum</i>	Scattered dead plants within a crop. Cottony white fungal growth on the lower stems of dead plants. Soft rot and white mould on stems and pods.	Occurs in all chickpea-growing regions. Most severe in wet seasons where chickpeas are planted in fields recently cropped to chickpeas.	Most pulses, oilseeds and broadleaf weeds.	Crop rotation. (Seed dressings of no benefit.)
Damping-off	<i>Pythium spp.</i>	Poor crop establishment under wet conditions. Seed rotting in the ground. Sudden death of young seedlings.	Problem in all regions, particularly in soils that become very wet just after sowing. More severe on kabuli than desi chickpea.	Chickpea, most pulses.	Fungicide seed dressings, avoid poorly drained soils.
Phytophthora	<i>Phytophthora megasperma</i>	Plants suddenly wither and die, particularly after waterlogging. Dark brown to black discolouration of the tap root.	Most serious disease in northern Australia. May be a problem in poorly drained soils in southern Australia under wet conditions.	Chickpea, lucerne.	Resistant varieties.
Phoma blight	<i>Phoma medicaginis var. pinodella</i>	Blackening of the stem near ground level. Dark, tan-coloured lesions on leaves, stems and pods.	Common in most chickpea-growing regions. Most severe in wet seasons.	Most legumes.	Crop rotation.
Root lesion nematode	<i>Pratylenchus thornei</i> , <i>P. neglectus</i>	Ill-thrift, lack of branching of root system, small dark stripes on roots.	Favoured by wheat in rotation with chickpea, medic and vetch.	Wheat, chickpea, medic, vetch, narbon bean.	Crop rotation (predictive soil test available).
VIRUS DISEASES					
Alfalfa mosaic virus (AMV)	Alfalfa mosaic virus	Tip necrosis. The leaves and stems of desi varieties become red/brown. The leaves and stems of kabuli varieties turn yellow.	Occurs in all chickpea-growing areas. Seasons and districts with major aphid flights.	Wide host range including most pulses, some horticultural plants and weeds.	Virus-free seed. Resistant varieties.
Cucumber mosaic virus (CMV)	Cucumber mosaic virus	Yellowing, stunting, offshoots. The leaves and stems of desi varieties become red/brown. The leaves and stems of kabuli varieties turn yellow.	Prevalent in chickpea-growing regions. Seasons and districts with major aphid flights.	Very wide host range, including most pulses, pastures, horticultural crops and weeds.	Virus-free seed. Resistant varieties.
Turnip yellows virus (TuYV) (previously known as Beet western yellows virus (BWYV))	Turnip yellows virus (previously Beet western yellows virus)	Yellowing, stunting, offshoots. The leaves and stems of desi varieties become red/brown. The leaves and stems of kabuli varieties turn yellow.	Occurs in all chickpea-growing areas. Seasons and districts with major aphid flights.	Very wide host range, including most pulses, brassicas and weeds.	Managing aphids and weeds, resistant varieties.

Source: Identification and management of field crop diseases in Victoria (2018). Reviewed by Joshua Fanning and Piotr Trębicki, Agriculture Victoria (2020).

TABLE 5 Desi chickpea. NVT long-term predicted chickpea yield expressed as a percentage of mean yield.

Year	No. trials	WIMMERA					MALLEE					
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Mean yield (t/ha)		0.56	1.94	1.95	1.65	1.35	0.35	1.51	1.8	0.59	1.47	
	No. trials	1	2	3	3	3	No. trials	2	2	3	3	3
NEW – CBA Captain [Ⓛ]	10	-	111	106	106	102	9	-	-	105	109	101
Genesis™ 090	8	114	116	104	111	103	9	113	110	106	108	101
Naleem [Ⓛ]	12	98	129	110	101	103	13	97	127	102	98	98
PBA Maiden [Ⓛ]	12	93	103	99	95	104	13	96	108	100	93	102
PBA Slasher [Ⓛ]	12	102	118	106	102	105	13	102	111	104	101	101
PBA Striker [Ⓛ]	12	115	84	89	100	102	13	120	118	102	97	105

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

TABLE 6 Kabuli chickpea. NVT long-term predicted chickpea yield expressed as a percentage of mean yield.

Year	No. trials	WIMMERA					MALLEE					
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	
Mean yield (t/ha)		0.56	1.94	1.95	1.66	1.35	0.40	1.51	1.55	0.52	1.43	
	No. trials	1	2	3	3	3	No. trials	1	2	2	2	2
Almaz [Ⓛ]	12	76	111	97	104	95	9	71	111	100	85	97
NEW – PBA Magnus [Ⓛ]	12	102	100	96	104	103	9	108	98	102	104	104
Genesis™ 090	12	114	116	104	111	103	9	115	110	109	109	102
Genesis™ 425	5	93	100	99	92	98	0	-	-	-	-	-
Genesis™ Kalkee	12	87	91	95	105	91	9	82	84	96	96	92
PBA Monarch [Ⓛ]	12	112	77	90	95	99	9	119	112	96	101	103
PBA Royal [Ⓛ]	12	84	129	106	105	103	9	80	111	106	92	101

Mean yield illustrated by colour gradient from lowest to highest, comparable on an annual basis.

Source: National Variety Trials (2015–19)

ACKNOWLEDGEMENTS

Joshua Fanning	Agriculture Victoria, Horsham
Piotr Trębicki	Agriculture Victoria, Horsham
Luise Fanning	Agriculture Victoria, Horsham
Kristy Hobson	NSW Department of Primary Industries
Simon Crane	Seednet
Janine Sounness	PB Seeds
Phil Bowden	Pulse Australia

VETCH

Vetch is a multipurpose crop, grown mostly as a disease-break crop in rotation with cereals in a wide range of soil types. The versatility of common vetch varieties allows cropping for grain or hay production, early grazing as green pasture or for dry grazing, hay production or green manure. Grain vetches are grown in lower to mid-rainfall cereal areas of southern Australia, and their grain yields are similar to pea yields in these areas. Vetch is valued for its benefits to subsequent cereal and oil seed 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 provide better stubble retention in the soil.

Grain from Morava, Volga[®] and Timok[®] can be used without limit to feed all ruminants, and up to 20 per cent in the diet of pigs. These four varieties possess less toxin in grain than Blanchefleur and Languedoc. Forage vetches are used for hay, green manure or mid to late-winter feed for grazing. They are purple vetch or woolly pod vetches. Forage vetches can grow successfully in areas of 400 to 650mm of annual rainfall.

Vetch grain is not used for human consumption, and grain from woolly pod vetch varieties cannot be used to feed livestock.

NEW VARIETIES

One new common vetch variety, Studenica[®], is available for sowing in 2021 from Pasture Genetics/S&W Seed Co.

KEY DISEASE CONSIDERATIONS

Morava, Volga[®] and Timok[®] 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. Where possible disease-resistant varieties should be planted as a preference.

Ascochyta blight occurs in earlier stages of the vetch crop and can reduce grain and dry matter production, but not like a heavy infestation of Botrytis grey mould (BGM) can in cool/wet growing seasons with high amounts of vegetative growth. There is little difference between vetch varieties in their resistance to BGM. Varieties like Morava, which produce greater levels of vegetative growth and denser canopies, will be more prone to this disease in higher rainfall areas.

RM4[®] woolly pod variety is susceptible in early growth stages to redlegged earth mite and lucerne flea, like other woolly pod vetch varieties. RM4[®] 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.

HERBICIDE TOLERANCE

COMMON VETCH

No differences between common vetch varieties to registered herbicides to control broadleaf weeds. No differences between varieties to registered herbicides for grass weed control.

PURPLE VETCH

Flumetsulam herbicides can be used to control some broadleaf weeds in Popany. All herbicides registered for use on crops must be used according to the label.

WOOLLY POD VETCH

As this species is a poor competitor with weeds early in the season, care should be taken with paddock selection and herbicide choices. There is little difference in variety tolerances to registered herbicides.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

MORE INFORMATION

agriculture.vic.gov.au

■ [Agriculture Victoria Pulse disease guide](#)

extensionaus.com.au/FieldCropDiseasesVic

■ Expert support on field crop diseases in Victoria at your fingertips.

grdc.com.au

■ [GRDC GrowNotes™ Vetch Southern region](#)

VARIETY DESCRIPTIONS

The agronomic characteristics in these descriptions are provided as a guide only and have been compiled from observations of the breeder, NVT, agronomic research projects and/or seed companies.

([Ⓛ]) Denotes that Plant Breeder's Rights apply

COMMON VETCH (*VICIA SATIVA*)

LANGUEDOC

Languedoc is an early-flowering and maturing variety recommended for low-rainfall areas (<350mm). Susceptible to lodging, harvest is 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 5 to 10 per cent. Highly susceptible to rust. Languedoc grains possess 1.0 to 1.6 per cent anti-nutritional factor (BCN). Languedoc is an old variety; seed sources may be hard to find and rely on grower-to-grower trading. Where possible newer disease-resistant varieties should be grown. No EPR.

BLANCHEFLEUR

Blanchefleur is a mid maturing variety, with white flowers and reddish-brown/mottled seed with orange cotyledons. Very susceptible to rust. Blanchefleur is well suited to areas with rainfall above 350mm where rust is not a regular problem. Export market opportunities of orange-cotyledon varieties like Blanchefleur are limited to small-birdseed markets in Europe, and seed for grazing and green manure crops only. Blanchefleur grains possess 0.9 to 1.6 per cent anti-nutritional factor (BCN). Blanchefleur is an old variety; seed sources may be hard to find and rely on grower-to-grower trading. Where possible newer disease-resistant varieties should be grown. No EPR.

MORAVA

Morava is a rust-resistant, late-flowering vetch variety with 100 per cent soft seeds. Grain yield is superior to other vetches in the high-rainfall areas (>420mm), and to Blanchefleur and Languedoc in all other areas in the presence of rust. It has large seed and is more resistant to shattering than other vetch varieties. Morava 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. Anti-nutritional factor (BCN) levels of Morava are 0.65 per cent. Seed available from Barenbrug. No EPR.

NEW – STUDENICA[Ⓛ]

Studenica[Ⓛ] is a very early flowering and maturing variety (flowering between 85 and 90 days) with white flowers. It is resistant to rust but susceptible to Ascochyta blight and BGM. Anti-nutritional factor (BCN) levels are similar to Morava. It has the best winter growth and vigour of all common vetch varieties and is more tolerant to frost than other varieties. It is targeted at mixed farmers in low-rainfall areas (<350mm) looking to fill the winter feed gap or late planting for spring fodder and hay. Its strength is its winter growth where it puts on significantly more bulk/dry matter prior to September than other varieties. Grain yields for Studenica[Ⓛ] are comparable to other varieties in most areas with winter growth and ability to produce early fodder/grazing setting it apart. Winter growth and vigour of Studenica[Ⓛ] was assessed in August at two low-rainfall sites in Victoria and South Australia during 2018. Studenica[Ⓛ] produced a minimum of 0.8 of a tonne per hectare of dry matter more than other common vetch varieties. This variety is expected to completely replace Languedoc in rotations. Seed available from Pasture Genetics/S&W Seed. No EPR.

TIMOK[Ⓛ]

Timok[Ⓛ] is a multipurpose vetch variety suitable for grain/seed and hay/silage production in mid to high-rainfall areas (>380mm). It is a high-yielding common vetch variety. Good early establishment and a soft-seeded variety. Resistant to rust, but susceptible to BGM. Timok[Ⓛ] is targeted at mid to high-rainfall regions but will still perform for grain production in low-rainfall environments. Toxin levels in the grain are around 0.57 per cent. Seed available from Pasture Genetics/S&W Seed Co. No EPR.

VOLGA[Ⓛ]

Volga[Ⓛ] is high-yielding grain/seed variety for low and mid-rainfall areas. Particularly suited to shorter season areas. Rust resistant. Earlier flowering and maturing than Blanchefleur, which results in earlier nodule development. Early maturity may limit yield potential relative to longer growing season varieties in high-rainfall areas. Volga[Ⓛ] has high grain and herbage yields. Well suited to situations where the season finishes sharply.

Suitable in many soil types with pH 5.8 – 9.4. Moderately susceptible to Ascochyta blight. Toxin levels are around 0.54 per cent. Volga[Ⓛ] seed size is very similar to Morava seeds. Seed available from Barenbrug. No EPR.

**PURPLE VETCH
(VICIA BENGHALENSIS)****POPANY**

Popany is a late maturing variety. Suitable for mid to high-rainfall areas (>400mm) for hay/silage. Grain yield is significantly lower than yields from common vetch varieties. Seeds are smaller than seeds from common vetch varieties and seeding rates should be lowered accordingly. Grain from this variety can be used as a birdfeed mix with other recommended grains. Susceptible to Ascochyta blight and very susceptible to BGM. Seed coat is black with distinctive white hilum. Popany has the best tolerance of all vetches to waterlogging. No EPR.

**WOOLLY POD VETCHES
(VICIA VILLOSA SUBSP.)****CAPELLO**

Lower in grain yield than common vetches but higher in dry matter production in rainfall areas greater than 450mm. Grain from woolly pod varieties cannot be used to feed livestock. Grazing from 10-node stage to podding only. Not recommended for grazing earlier than this and once plants begin to develop seeds in pods. Not suitable for hay/silage in areas receiving less than 400mm of rainfall annually. Capello is a selected soft-seed variety from Namoi but has been prone to dormant seeds. Seed available from Barenbrug. No EPR.

HAYMAKER PLUS

Lower in grain yield than common vetch varieties but higher in dry matter production in high-rainfall areas. Grain from woolly pod varieties cannot be used to feed livestock. Grazing from 10-node stage to podding only. Soft-seeded variety; however, prone to dormant seeds. Seed available from Barenbrug. No EPR.

RM4[Ⓛ]

A multipurpose variety used for hay/silage, grazing, green/brown manure or seed. Suitable for a range of soil types. RM4[Ⓛ] produces high levels of dry matter with good early establishment. Considered a soft-seed variety although a small percentage may be dormant. Early maturing. Significantly higher in dry matter production in rainfall areas of less than 400mm, but suitable for rainfall areas of 400 to 600mm. Performs better for grain production in sharp finishing seasons than other woolly pod varieties. Seed available from Barenbrug. No EPR.

INTRO

WHEAT

BARLEY

OAT

TRITICALE

CANOLA

FIELD PEA

LENTIL

FABA BEAN

LUPIN

CHICKPEA

VETCH

Table 1: Vetch variety rainfall zone suitability.

Vetch varieties listed by end usage. Table compiled based on data from the South Australian Crop Sowing Guide (2020).

	<350mm	350-400mm	400-450mm	450-600mm	>600mm
GRAIN					
Blanchefleur		✓	✓		
Morava		✓	✓	✓	✓
Studenica [Ⓛ]	✓	✓	✓		
Timok [Ⓛ]	✓	✓	✓	✓	✓
Volga [Ⓛ]	✓	✓	✓		
HAY/SILAGE/GRAZING & GREEN MANURE					
Blanchefleur	✓	✓			
Capello			✓	✓	✓
Haymaker			✓	✓	✓
Morava	✓	✓	✓	✓	✓
Popany		✓	✓	✓	✓
RM4 [Ⓛ]	✓	✓	✓	✓	✓
Studenica [Ⓛ]	✓	✓	✓		
Timok [Ⓛ]	✓	✓	✓	✓	✓
Volga [Ⓛ]	✓	✓	✓		

Source: Stuart Nagel, South Australian Research and Development Institute (2020)

Table 2: Agronomic characteristics and disease ratings of vetch[#] varieties.

Variety	Maturity	Yield potential	Dry matter	Flower colour	% of pod shattering	% of hard seeds	Rust	Ascochyta blight	Botrytis grey mould
COMMON VETCH VARIETIES									
Blanchefleur	mid	high	mod	white	5-10	5-10	VS	MS	S
Morava	late	high	high	purple	0	0	R	S	VS
Studenica [Ⓛ]	very early	high	high	white	0-2	0	R	MS	S
Timok [Ⓛ]	mid	high	very high	purple	0-2	0-2	R	MS	S
Volga [Ⓛ]	early	very high	high	purple	0-2	2-5	R	MS	S
PURPLE VETCH VARIETIES									
Popany	very late	low	high	purple	20-30	5-10	R	S	VS
WOOLLY POD VETCH VARIETIES									
Haymaker Plus	late	low	very high	purple	5-10	20-30	R	S	VS
Capello	late	low	very high	purple	5-10	15-20	R	S	VS
RM4 [Ⓛ]	mid	mod	very high	purple	2-5	2-5	R	MR	VS

Source: Stuart Nagel, South Australian Research and Development Institute (2020)

[#] Vetch is not included in the NVT; all ratings are based on breeder data. *p* = provisional ratings – treat with caution.

Resistance: 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.

No variety with an R resistance rating is immune to disease and a fungicide application may be required under severe disease pressure.

Table 3: Grain and dry matter yield for vetch varieties.

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

Variety	Grain yield (t/ha)	% of Blanchefleur	Dry matter yield (t/ha)	% of Morava	Dry matter (t/ha)	% of Capello
COMMON VETCH						
Blanchefleur ^{db}	1.82	100	-	-	-	-
Morava ^{db}	1.84	102	4.94	100	-	-
Volga ^{db}	2.44	134	5.39	109	-	-
Timok ^{db}	2.18	120	5.20	105	-	-
Mean yield	2.07	-	5.06	-	-	-
WOOLLY POD VETCH						
Capello	-	-	-	-	6.23	100
Haymaker Plus	-	-	-	-	6.26 (2009-12)	100.4
RM4 ^{db}	-	-	-	-	6.71	107.7
Mean yield	-	-	-	-	6.40	-
WOOLLY POD VETCH						
Propany	-	-	-	-	5.28 (2009-12)	84.75

Source: Stuart Nagel, South Australian Research and Development Institute (2020)

Table 4: Hay yields of common vetch varieties from low-rainfall cropping environments.

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

Variety	2014	2015	2016	Three-year average
Studenica ^{db}	2.24	3.09	2.19	2.51
Rasina ^{db}	-	2.86	2.21	2.54
Timok ^{db}	2.13	3.15	2.08	2.45
Volga ^{db}	2.26	3.06	2.45	2.59

Source: Stuart Nagel, South Australian Research and Development Institute (2020)

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

End use	Common vetch varieties		Woolly pod vetch varieties		Purple vetch variety	
	Plant density (plants per sq.m.)	Sowing rate (kg/ha)	Plant density (plants per sq.m.)	Sowing rate (kg/ha)	Plant density (plants per sq.m.)	Sowing rate (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

Source: Stuart Nagel, South Australian Research and Development Institute (2020)

ACKNOWLEDGEMENTS

Stuart Nagel South Australian Research and Development Institute
 Joshua Fanning Agriculture Victoria, Horsham
 Luise Fanning Agriculture Victoria, Horsham



NVT tools

CANOLA | WHEAT | BARLEY | CHICKPEA | FABA BEAN | FIELD PEA | LENTIL | LUPIN | OAT | SORGHUM

Long Term Yield Reporter

New web-based high speed Yield Reporting tool, easy-to-use means of accessing and interpreting the NVT Long Term MET (Multi Environment Trial) results.



Crop Disease Au App



Access to current disease resistance ratings & disease information.

Long Term Yield App



Easy access to the analysed NVT Multi Environment Trial (MET) data.

www.nvtonline.com.au

