

# 2019 QUEENSLAND WINTER CROP VARIETY SOWING GUIDE



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**ARE YOU GROWING THE BEST WHEAT, BARLEY  
AND CHICKPEA VARIETY FOR YOUR SITUATION?**

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# 2019 Queensland winter crop variety sowing guide

## Introduction

Welcome to the first sowing guide for Queensland that combines wheat, barley and chickpea varieties. This guide draws on the input of numerous individuals in the cropping industry with the aim of providing growers with relevant information which will allow them to make informed choices when deciding on what winter crop variety to sow in their paddocks. National Variety Trials (NVT) seek to collect the most relevant varieties for each region and test them alongside the elite lines from breeding programs. For all the information on the released wheat, barley and chickpea varieties in the Queensland NVT program, visit the website [www.nvtonline.com.au](http://www.nvtonline.com.au).

Only varieties deemed suitable for conditions experienced in Queensland have been included in this guide. If a variety is not mentioned, there is either no commercial seed available or there is concern that it may not carry robust resistances to diseases prevalent in the region and as such could compromise the industry. However, if seed of varieties not mentioned in this guide is obtained, please ensure that you are provided with current and reliable information by the vendor.

## Diseases

Cereal diseases pose a significant threat to the Australian grains industry. Growers should monitor all crops, and any suspicious lesions should be collected.

To arrange cereal and pulse disease sample testing contact:

Lisa Kelly,  
Department of Agriculture and Fisheries,  
Queensland.

Please call Lisa on 0477 747 040 or email [lisa.kelly@daf.qld.gov.au](mailto:lisa.kelly@daf.qld.gov.au) for sample despatch details.

For cereal rust samples contact:

Matthew Williams,  
University of Sydney Plant Breeding Institute.

Please call Matthew on 02 93518808 or email [matthew.williams@sydney.edu.au](mailto:matthew.williams@sydney.edu.au) for sample despatch details.

## End Point Royalties

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

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

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

More information:

GRDC 'End Point Royalties' Fact Sheet,  
[www.grdc.com.au/GRDC-FS-EndPointRoyalty](http://www.grdc.com.au/GRDC-FS-EndPointRoyalty)

## Timing is essential for success

Growers face numerous decisions before sowing, so getting each decision correct is important and will ultimately affect final grain yield and farm profitability. Put simply: know your paddock, know your varieties and get your timing right.

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

The timing of each element associated with grain production is critical and can be the difference between success and failure. Concentrate on the aspects of your farming operation that you can control and try not to worry about the rest.

Crucial elements include: (1) selecting a crop and then a variety that will fit in with your paddock rotation plan; (2) knowing as much as possible about each individual paddock (including the overall nutritional status, different disease inoculum loads and weeds, both current and possibly in the seed bank); (3) resolving to maintain a farm rotation plan in the face of varying commodity prices; and (4) not second guessing any aspect; if in doubt get the relevant tests done. Variety selection is part of the overall plan and decisions need to be made not just for the current season but for the long term. Soil tests should be taken well before sowing to estimate nutrient levels. They are extremely beneficial when used in conjunction with existing records of grain production and grain protein to determine a nutritional program for the crop.

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

Another important consideration for growers is to ensure that the variety selected has the correct maturity to correspond with sowing time, to minimise the risk of crop damage from both frost and heat. Utilising the information provided in Tables 1, 5 and 9 can assist with variety sowing times.

Be mindful of a variety's coleoptile length. A variety's coleoptile length is more likely to be shorter in central Queensland due to the higher soil temperatures experienced at sowing time. There is no significant difference between current varieties of wheat, but there can be larger differences between barley varieties (tall versus semi-dwarf types). Chickpeas can tolerate a greater sowing depth if chasing moisture.

Getting each element of sowing correct will help growers capitalise on their planting moisture, correctly target agronomic management and maximise their yield potential.

## PREDICTA® B testing service

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

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# 2019 QUEENSLAND WHEAT VARIETIES

## KEY POINTS

### Stripe rust

- A new stripe rust pathotype detected in Victoria

### New varieties available for sowing

- Sunprime<sup>†</sup>, a quick-maturing Australian Prime Hard (APH) variety from Australian Grain Technologies (AGT)
- LongReach Kittyhawk<sup>†</sup>, a slow-maturing winter-type wheat APH variety from LongReach Plant Breeders (LRPB)
- LongReach Oryx<sup>†</sup>, a SOFT1 variety from LRPB

### Classification changes for 2019

Refer to [www.wheatquality.com.au](http://www.wheatquality.com.au) Master List.

- Kennedy changed to Feed
- Strzelecki<sup>†</sup> changed to Australian Hard (AH)

### Planned for removal in 2020

Refer to [www.wheatquality.com.au](http://www.wheatquality.com.au).

- LRPB Dakota<sup>†</sup>, EGA Bounty<sup>†</sup>, EGA Eaglehawk, EGA Wills, Merinda<sup>†</sup>

pathotype along the east coast, though pathotypes 134 E16 A+ 17+ 27+ and 134 E16 A+ J+ are still detected in Queensland. A new pathotype, 239 E237 A-17+ 33+, was detected in Victoria in 2017.

### Leaf rust and stem rust

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

### Root lesion nematodes

These nematodes are widespread in the northern grain region and can significantly reduce wheat yields. Root lesion nematodes (RLN) are also hosted by many non-cereal crops, so the absence of a winter cereal crop in recent seasons does not mean that there are low levels of nematodes in the soil. A soil test should be considered prior to planting if you do not know which species are on your farm or their density. If wheat is to be sown in nematode-infested soil, the tolerant varieties (listed as T, TMT or MT and highlighted in green in Tables 2A and 2B) should be considered for best yield. Also, choose a variety that has a higher resistance rating to maximise yield and leave fewer nematodes in the soil to attack the next crop to be planted. A wheat variety may react differently to the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*, prevalent in the region. This should be checked in Tables 2A and 2B.

### Bunt

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

### Planting categories

#### E – Early

Early planted crops face the risk of frost damage from pre-flowering to grain-fill. Therefore, plant early in areas of low frost risk, such as higher slopes, and reduce the risk of frost damage by planting more than one variety and by varying planting times.

In central Queensland, warm weather encourages rapid early plant development. Where possible, plant shallow into moisture and use press wheels to aid establishment. Increase the plant population for all varieties to compensate for reduced tillering in warm growing conditions. Maturity groupings may differ from district to district, particularly from central to southern Queensland.

#### C – Conventional

Varieties sown at their most appropriate planting times flower after the main frost period, although late frosts may still cause damage.

#### L – Late

The reliability of yield can be low following a very late planting due to high temperatures during flowering and grain filling.

Varieties in Table 1 are presented in maturity groups within individual districts.

<sup>†</sup> Plant wheat varieties two weeks earlier in the West Moreton district.

## Disease characteristics

### Yellow spot

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

### False black chaff

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

### Crown rot

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

### Stripe rust

Historically, the spread of stripe rust occurs in spring. With night-time temperatures increasing above 20°C, the epidemic usually slows down from late October to early November in Queensland. Since 2010, pathotype 134 E16 A+ 17+ has been the common

**TABLE 1 Wheat – sowing time suggestions.**

| District  | Varieties in order of maturity (slow to quick) within each broad maturity group   | Planting times by weeks |   |   |   |     |   |   |   |      |   |   |   |      |   |   |   |
|---|---|-------------------------|---|---|---|-----|---|---|---|------|---|---|---|------|---|---|---|
|   |   | April                   |   |   |   | May |   |   |   | June |   |   |   | July |   |   |   |
|   |   | 1                       | 2 | 3 | 4 | 1   | 2 | 3 | 4 | 1    | 2 | 3 | 4 | 1    | 2 | 3 | 4 |
| <b>Central Highlands</b><br>Dawson Callide<br>Low frost risk (higher slopes or more northern areas)   | Strzelecki <sup>Ⓛ</sup> , Suntime <sup>Ⓛ</sup> , EGA Gregory <sup>Ⓛ</sup> , LongReach Flanker <sup>Ⓛ</sup> , LongReach Lancer <sup>Ⓛ</sup> , Coolah <sup>Ⓛ</sup> , EGA Bellaroi <sup>Ⓛ</sup> , DS Faraday <sup>Ⓛ</sup>  | E                       | E | C | C | C   | C | C | L |      |   |   |   |      |   |   |   |
|   | EGA Bounty <sup>Ⓛ</sup> , EGA Burke <sup>Ⓛ</sup>  | E                       | E | E | C | C   | C | C | C | L    | L |   |   |      |   |   |   |
|   | Sunguard <sup>Ⓛ</sup> , Baxter <sup>Ⓛ</sup> , Sunvale <sup>Ⓛ</sup> , Caparoi <sup>Ⓛ</sup>   | E                       | E | E | E | C   | C | C | C | L    | L |   |   |      |   |   |   |
|   | LongReach Gauntlet <sup>Ⓛ</sup> , Mitch <sup>Ⓛ</sup> , LongReach Reliant <sup>Ⓛ</sup> , Lang <sup>Ⓛ</sup> , Kennedy, EGA Kidman <sup>Ⓛ</sup> , Elmore CL Plus <sup>Ⓛ</sup> , Hyperno <sup>Ⓛ</sup> , GBA Hunter, DBA-Aurora <sup>Ⓛ</sup>   | E                       | E | E | E | C   | C | C | C | C    | C | L | L |      |   |   |   |
| Hartog, DBA Lillaro <sup>Ⓛ</sup> , LongReach Crusader <sup>Ⓛ</sup> , SEA Condamine, Suntop <sup>Ⓛ</sup> , DBA Bindaroi <sup>Ⓛ</sup> , DBA Vittaroi <sup>Ⓛ</sup> , LongReach Spitfire <sup>Ⓛ</sup> , Sunprime <sup>Ⓛ</sup> , Wallup <sup>Ⓛ</sup> , Livingston <sup>Ⓛ</sup> , LongReach Mustang <sup>Ⓛ</sup> , EGA Stampede, Jandaroi <sup>Ⓛ</sup> , Sunmate <sup>Ⓛ</sup> , LongReach Dart <sup>Ⓛ</sup>   |   | E                       | E | E | E | C   | C | C | C | C    | L | L |   |      |   |   |   |
| <b>Central Highlands</b><br>Dawson Callide<br>High frost risk (river flats or areas known to be more frost-prone)   | Strzelecki <sup>Ⓛ</sup> , Suntime <sup>Ⓛ</sup> , EGA Gregory <sup>Ⓛ</sup> , LongReach Flanker <sup>Ⓛ</sup> , LongReach Lancer <sup>Ⓛ</sup> , Coolah <sup>Ⓛ</sup> , EGA Bellaroi <sup>Ⓛ</sup> , DS Faraday <sup>Ⓛ</sup>  |                         |   | E | E | C   | C | C | L |      |   |   |   |      |   |   |   |
|   | EGA Bounty <sup>Ⓛ</sup> , EGA Burke <sup>Ⓛ</sup>  |                         |   |   | E | E   | C | C | C | C    | L |   |   |      |   |   |   |
|   | Sunguard <sup>Ⓛ</sup> , Baxter <sup>Ⓛ</sup> , Sunvale <sup>Ⓛ</sup> , Caparoi <sup>Ⓛ</sup>   |                         |   |   |   | E   | E | C | C | C    | C | L | L |      |   |   |   |
|   | LongReach Gauntlet <sup>Ⓛ</sup> , Mitch <sup>Ⓛ</sup> , LongReach Reliant <sup>Ⓛ</sup> , Lang <sup>Ⓛ</sup> , Kennedy, EGA Kidman <sup>Ⓛ</sup> , Elmore CL Plus <sup>Ⓛ</sup> , Hyperno <sup>Ⓛ</sup> , GBA Hunter, DBA-Aurora <sup>Ⓛ</sup>   |                         |   |   |   | E   | E | C | C | C    | C | L | L |      |   |   |   |
| Hartog, DBA Lillaro <sup>Ⓛ</sup> , LongReach Crusader <sup>Ⓛ</sup> , SEA Condamine, Suntop <sup>Ⓛ</sup> , DBA Bindaroi <sup>Ⓛ</sup> , DBA Vittaroi <sup>Ⓛ</sup> , LongReach Spitfire <sup>Ⓛ</sup> , Sunprime <sup>Ⓛ</sup> , Wallup <sup>Ⓛ</sup> , Livingston <sup>Ⓛ</sup> , LongReach Mustang <sup>Ⓛ</sup> , EGA Stampede, Jandaroi <sup>Ⓛ</sup> , Sunmate <sup>Ⓛ</sup> , LongReach Dart <sup>Ⓛ</sup>   |   |                         |   |   | E | E   | C | C | C | C    | C | L | L |      |   |   |   |
| <b>Maranoa, Balonne</b><br>Western Downs – South West   | EGA Eaglehawk, Sunmax <sup>Ⓛ</sup> , Sunzell <sup>Ⓛ</sup>   |                         | E | C | C | L   |   |   |   |      |   |   |   |      |   |   |   |
|   | Strzelecki <sup>Ⓛ</sup> , Suntime <sup>Ⓛ</sup>  |                         |   | E | C | C   | C | L |   |      |   |   |   |      |   |   |   |
|   | LongReach Lancer <sup>Ⓛ</sup> , Coolah <sup>Ⓛ</sup> , EGA Gregory <sup>Ⓛ</sup> , LongReach Flanker <sup>Ⓛ</sup> , Sunvale <sup>Ⓛ</sup> , EGA Bounty <sup>Ⓛ</sup> , LongReach Gauntlet <sup>Ⓛ</sup> , EGA Burke <sup>Ⓛ</sup> , Baxter <sup>Ⓛ</sup> , DS Faraday <sup>Ⓛ</sup>   |                         |   |   | E | E   | C | C | C | C    | C | L |   |      |   |   |   |
|   | EGA Kidman <sup>Ⓛ</sup> , Sunguard <sup>Ⓛ</sup> , Mitch <sup>Ⓛ</sup> , LongReach Reliant <sup>Ⓛ</sup> , Elmore CL Plus <sup>Ⓛ</sup> , Lang <sup>Ⓛ</sup> , EGA Bellaroi <sup>Ⓛ</sup> , Hyperno <sup>Ⓛ</sup> , GBA Hunter, DBA-Aurora <sup>Ⓛ</sup>  |                         |   |   |   | E   | C | C | C | C    | C | C | L | L    |   |   |   |
| Kennedy, Suntop <sup>Ⓛ</sup> , LongReach Impala <sup>Ⓛ</sup> , LongReach Oryx <sup>Ⓛ</sup> , DBA Bindaroi <sup>Ⓛ</sup> , DBA Vittaroi <sup>Ⓛ</sup> , Jandaroi <sup>Ⓛ</sup> , Hartog, DBA Lillaro <sup>Ⓛ</sup> , Wallup <sup>Ⓛ</sup> , Caparoi <sup>Ⓛ</sup> , SEA Condamine, EGA Stampede, LongReach Spitfire <sup>Ⓛ</sup> , Sunprime <sup>Ⓛ</sup> , LongReach Crusader <sup>Ⓛ</sup> , Livingston <sup>Ⓛ</sup> , LongReach Mustang <sup>Ⓛ</sup> , Sunmate <sup>Ⓛ</sup> , LongReach Dart <sup>Ⓛ</sup>               |   |                         |   |   |   | E   | C | C | C | C    | C | L | L |      |   |   |   |
| <b>Darling Downs</b><br>(Northern, Uplands)   | EGA Eaglehawk, Sunmax <sup>Ⓛ</sup> , Sunzell <sup>Ⓛ</sup>   |                         |   | E | C | C   | C | L |   |      |   |   |   |      |   |   |   |
|   | Strzelecki <sup>Ⓛ</sup> , Suntime <sup>Ⓛ</sup> , LongReach Lancer <sup>Ⓛ</sup> , Coolah <sup>Ⓛ</sup> , EGA Gregory <sup>Ⓛ</sup> , LongReach Flanker <sup>Ⓛ</sup> , Sunvale <sup>Ⓛ</sup> , DS Faraday <sup>Ⓛ</sup>   |                         |   |   |   | E   | C | C | L |      |   |   |   |      |   |   |   |
|   | EGA Bellaroi <sup>Ⓛ</sup> , Hyperno <sup>Ⓛ</sup> , LongReach Gazelle <sup>Ⓛ</sup> , EGA Bounty <sup>Ⓛ</sup> , LongReach Gauntlet <sup>Ⓛ</sup> , EGA Burke <sup>Ⓛ</sup> , Baxter <sup>Ⓛ</sup>  |                         |   |   |   | E   | E | C | C | C    | C | L |   |      |   |   |   |
|   | Lang <sup>Ⓛ</sup> , Sunguard <sup>Ⓛ</sup> , Mitch <sup>Ⓛ</sup> , LongReach Reliant <sup>Ⓛ</sup> , Elmore CL Plus <sup>Ⓛ</sup> , EGA Kidman <sup>Ⓛ</sup> , GBA Hunter, DBA-Aurora <sup>Ⓛ</sup>   |                         |   |   |   |     | E | E | C | C    | C | C | C | L    | L |   |   |
| Kennedy <sup>Ⓛ</sup> , Suntop <sup>Ⓛ</sup> , LongReach Impala <sup>Ⓛ</sup> , LongReach Oryx <sup>Ⓛ</sup> , DBA Bindaroi <sup>Ⓛ</sup> , DBA Vittaroi <sup>Ⓛ</sup> , Jandaroi <sup>Ⓛ</sup> , Hartog, DBA Lillaro <sup>Ⓛ</sup> , Wallup <sup>Ⓛ</sup> , Caparoi <sup>Ⓛ</sup> , SEA Condamine, EGA Stampede, LongReach Spitfire <sup>Ⓛ</sup> , Sunprime <sup>Ⓛ</sup> , LongReach Crusader <sup>Ⓛ</sup> , Livingston <sup>Ⓛ</sup> , LongReach Mustang <sup>Ⓛ</sup> , Sunmate <sup>Ⓛ</sup> , LongReach Dart <sup>Ⓛ</sup> |   |                         |   |   |   |     | E | E | C | C    | C | C | L | L    |   |   |   |
| <b>Darling Downs</b><br>High frost risk (Central, Southern)   | EGA Eaglehawk, Sunmax <sup>Ⓛ</sup> , Sunzell <sup>Ⓛ</sup>   |                         |   |   |   | E   | C | C | L |      |   |   |   |      |   |   |   |
|   | Strzelecki <sup>Ⓛ</sup> , Suntime <sup>Ⓛ</sup> , LongReach Lancer <sup>Ⓛ</sup> , Coolah <sup>Ⓛ</sup> , EGA Gregory <sup>Ⓛ</sup> , LongReach Flanker <sup>Ⓛ</sup> , Sunvale <sup>Ⓛ</sup> , DS Faraday <sup>Ⓛ</sup>   |                         |   |   |   |     | E | C | C | L    |   |   |   |      |   |   |   |
|   | EGA Bellaroi <sup>Ⓛ</sup> , Hyperno <sup>Ⓛ</sup> , LongReach Gazelle <sup>Ⓛ</sup> , EGA Bounty <sup>Ⓛ</sup> , LongReach Gauntlet <sup>Ⓛ</sup> , EGA Burke <sup>Ⓛ</sup> , Baxter <sup>Ⓛ</sup>  |                         |   |   |   |     | E | C | C | C    | L |   |   |      |   |   |   |
|   | Lang <sup>Ⓛ</sup> , Sunguard <sup>Ⓛ</sup> , Mitch <sup>Ⓛ</sup> , LongReach Reliant <sup>Ⓛ</sup> , Elmore CL Plus <sup>Ⓛ</sup> , EGA Kidman <sup>Ⓛ</sup> , GBA Hunter, DBA-Aurora <sup>Ⓛ</sup>   |                         |   |   |   |     | E | E | C | C    | C | C | L | L    |   |   |   |
| Kennedy, Suntop <sup>Ⓛ</sup> , LongReach Impala <sup>Ⓛ</sup> , LongReach Oryx <sup>Ⓛ</sup> , DBA Bindaroi <sup>Ⓛ</sup> , DBA Vittaroi <sup>Ⓛ</sup> , Jandaroi <sup>Ⓛ</sup> , Hartog, DBA Lillaro <sup>Ⓛ</sup> , Wallup <sup>Ⓛ</sup> , Caparoi <sup>Ⓛ</sup> , SEA Condamine, GA Stampede <sup>Ⓛ</sup> , LongReach Spitfire <sup>Ⓛ</sup> , Sunprime <sup>Ⓛ</sup> , LongReach Crusader <sup>Ⓛ</sup> , Livingston <sup>Ⓛ</sup> , LongReach Mustang <sup>Ⓛ</sup> , Sunmate <sup>Ⓛ</sup> , LongReach Dart <sup>Ⓛ</sup>  |   |                         |   |   |   |     | E | C | C | C    | C | L | L |      |   |   |   |
| <b>Central Burnett</b><br>South Burnett & West Moreton*   | EGA Eaglehawk, Sunmax <sup>Ⓛ</sup> , Sunzell <sup>Ⓛ</sup> , Strzelecki <sup>Ⓛ</sup> , Suntime <sup>Ⓛ</sup> , LongReach Lancer <sup>Ⓛ</sup> , Coolah <sup>Ⓛ</sup> , EGA Gregory <sup>Ⓛ</sup> , LongReach Flanker <sup>Ⓛ</sup> , DS Faraday <sup>Ⓛ</sup>  |                         |   |   |   | E   | E | C | C | L    |   |   |   |      |   |   |   |
|   | Sunvale <sup>Ⓛ</sup> , LongReach Gazelle <sup>Ⓛ</sup> , EGA Bounty <sup>Ⓛ</sup> , LongReach Gauntlet <sup>Ⓛ</sup> , EGA Burke <sup>Ⓛ</sup> , Baxter <sup>Ⓛ</sup> , EGA Kidman <sup>Ⓛ</sup> , Sunguard <sup>Ⓛ</sup> , Mitch <sup>Ⓛ</sup> , LongReach Reliant <sup>Ⓛ</sup> , Elmore CL Plus <sup>Ⓛ</sup> , Lang <sup>Ⓛ</sup> , EGA Bellaroi <sup>Ⓛ</sup> , Hyperno <sup>Ⓛ</sup> , GBA Hunter, DBA-Aurora <sup>Ⓛ</sup>   |                         |   |   |   |     | E | E | C | C    | C | L | L |      |   |   |   |
|   | Kennedy, Suntop <sup>Ⓛ</sup> , LongReach Impala <sup>Ⓛ</sup> , LongReach Oryx <sup>Ⓛ</sup> , DBA Bindaroi <sup>Ⓛ</sup> , DBA Vittaroi <sup>Ⓛ</sup> , Jandaroi <sup>Ⓛ</sup> , Hartog, DBA Lillaro <sup>Ⓛ</sup> , Wallup <sup>Ⓛ</sup> , Caparoi <sup>Ⓛ</sup> , SEA Condamine, EGA Stampede, LongReach Spitfire <sup>Ⓛ</sup> , Sunprime <sup>Ⓛ</sup> , LongReach Crusader <sup>Ⓛ</sup> , Livingston <sup>Ⓛ</sup> , LongReach Mustang <sup>Ⓛ</sup> , Sunmate <sup>Ⓛ</sup> , LongReach Dart <sup>Ⓛ</sup> |                         |   |   |   |     |   | E | C | C    | C | L | L |      |   |   |   |

**TABLE 2A Bread and noodle wheats – disease and agronomy ratings.**

| Variety<br>(in maturity order,<br>slow to quick) | Wheat Quality<br>Australia (WQA)<br>maximum quality<br>classification <sup>1</sup> | Disease ratings (www.nvtonline.com.au) |           |                    |                                 |                                   |                                  |           |           |             |              | Agronomy  |            |                         |                                     |         |
|--|--|--|-----------|--------------------|---------------------------------|-----------------------------------|----------------------------------|-----------|-----------|-------------|--------------|-----------|------------|-------------------------|-------------------------------------|---------|
|  |  | Yellow spot                            | Crown rot | Common<br>root rot | Root lesion nematodes           |                                   |                                  | Stem rust | Leaf rust | Stripe rust | Black point# | Lodging\$ | Shattering | Sprouting<br>resistance |                                     |         |
|  |  |  |           |                    | <i>P. thornei</i><br>tolerance* | <i>P. thornei</i><br>resistance % | <i>P. neglectus</i><br>tolerance |           |           |             |              |           |            |                         | <i>P. neglectus</i><br>resistance % |         |
| LongReach Kittyhawk <sup>db</sup>                | APH  | -                                      | SVS       | S                  | (p)                             | S(p)                              | MTMI (p)                         | MTMI (p)  | MSS (p)   | MRMR (S)    | MS           | RMR       | -          | -                       | -                                   | -       |
| EGA Eaglehawk                                    | AH   | MSS                                    | MSS       | MSS                | MT                              | MS                                | MI                               | MS        | RMR       | MRMS        | -            | MRMS      | MRMS (p)   | MSS                     | -                                   | MSS (p) |
| Summax <sup>db</sup>                             | APH  | MS                                     | MSS       | MSS                | MTMI (p)                        | MS (p)                            | TMT (p)                          | S (p)     | RMR       | RMR         | MSS          | RMR       | -          | -                       | -                                   | -       |
| Sunzell <sup>db</sup>                            | AH   | MSS                                    | MSS       | SVS                | MT                              | MS                                | MI                               | MS        | MR        | MR          | MS           | MS        | S          | MRMS                    | -                                   | -       |
| Srizelecki <sup>db</sup>                         | AH   | MS                                     | S         | MRMS               | I                               | SVS                               | MTMI                             | S         | MRMS      | MRMS        | -            | MR        | MS         | MS                      | RMR                                 | S       |
| Suntime <sup>db</sup>                            | APH  | S                                      | MSS       | S                  | MT                              | MRMS                              | MTMI                             | S         | MRMS      | MRMS        | MS           | RMR       | MS         | MS(p)                   | -                                   | -       |
| LongReach Lancer <sup>db</sup>                   | APH  | MS                                     | MSS       | S                  | TMT                             | MSS                               | MTMI (p)                         | S         | R         | R           | RMR          | MR        | MRMS (p)   | MRMS                    | -                                   | S       |
| Coolah <sup>db</sup>                             | APH  | MSS                                    | MSS (p)   | S                  | TMT (p)                         | MRMS (p)                          | TMT (p)                          | MSS       | MR        | MR          | MR           | RMR       | -          | -                       | -                                   | -       |
| EGA Gregory <sup>db</sup>                        | APH  | S                                      | S         | MSS                | TMT                             | MSS                               | MT                               | S         | MR        | MR          | MR           | MR        | MS         | MS                      | RMR                                 | S       |
| DS Faraday <sup>db</sup>                         | APH  | MSS                                    | S (p)     | S                  | MT (p)                          | S (p)                             | MTMI (p)                         | SVS (p)   | MR        | MR          | MR           | RMR       | MSS        | -                       | -                                   | -       |
| LongReach Flanker <sup>db</sup>                  | APH  | MSS                                    | MSS       | MSS                | TMT (p)                         | MS (p)                            | MT (p)                           | SVS (p)   | MR        | MR          | MR           | RMR       | -          | -                       | -                                   | -       |
| Sunvale <sup>db</sup>                            | APH  | MSS                                    | MSS       | MS                 | MTMI                            | MSS                               | MI                               | S         | RMR       | RMR         | S            | MR        | RMR        | S                       | RMR                                 | S       |
| EGA Bounty <sup>db</sup>                         | AH   | MS                                     | S         | S                  | MT                              | MSS                               | MTMI                             | S         | MR        | MR          | MS           | MR        | MSS        | MSS                     | -                                   | S       |
| LongReach Gauntlet <sup>db</sup>                 | APH  | MS                                     | MSS       | MSS                | MT                              | MRMS                              | MTMI                             | S         | RMR       | RMR         | MRMS         | MRMS      | MRMS       | MRMS                    | MR                                  | S       |
| EGA Burke <sup>db</sup>                          | APH  | MSS                                    | S         | MSS                | MT                              | MS                                | MTMI                             | MSS       | MR        | MR          | MS           | MSS       | RMR        | S                       | MRMS                                | S       |
| EGA Kidman <sup>db</sup>                         | APH  | MSS                                    | MSS       | MS                 | MTMI                            | MS                                | MI                               | SVS       | RMR       | RMR         | -            | MRMS      | MSS        | MRMS                    | -                                   | S       |
| Sunguard <sup>db</sup>                           | AH   | MSS                                    | MS        | MSS                | MT                              | S                                 | MTMI                             | SVS       | R         | MR          | MR           | MR        | MR         | MRMS                    | MR                                  | S       |
| Mitch <sup>db</sup>                              | AH   | MS                                     | MS        | MS                 | MT                              | S                                 | T (p)                            | S         | MS        | MS          | SVS          | MR        | -          | MR                      | -                                   | -       |
| LongReach Reliant <sup>db</sup>                  | APH  | S                                      | MSS       | MSS                | TMT                             | MSS (p)                           | MTMI (p)                         | VS        | R         | R           | MR           | MRMS      | MS         | MSS                     | MRMS                                | S       |
| Elmore CL Plus <sup>db</sup>                     | AH   | S                                      | S         | S                  | MI                              | MSS                               | TMT (p)                          | S         | MR        | MR          | RMR          | MRMS      | MS         | MRMS                    | RMR                                 | S       |
| Baxter <sup>db</sup>                             | APH  | S                                      | MS        | MSS                | MT                              | MSS                               | MI                               | MSS       | MRMS      | MRMS        | S            | MSS       | MS         | MSS                     | MR                                  | S       |
| Lang <sup>db</sup>                               | APH  | MSS                                    | MSS       | MRMS               | MI                              | MSS                               | MI                               | S         | R         | R           | MS           | MS        | RMR        | MRMS                    | RMR                                 | S       |
| Kennedy  | FEED   | MSS                                    | S         | MS                 | MTMI                            | S                                 | MTMI                             | S         | MR        | MR          | MR           | MSS       | R          | MRMS                    | RMR                                 | S       |
| Suntop <sup>db</sup>                             | APH  | MSS                                    | MSS       | MS                 | TMT                             | MRMS                              | MT                               | S         | MRMS      | MRMS        | MR           | MRMS      | MR         | MR                      | RMR                                 | SVS     |
| Harrog   | APH  | MS                                     | S         | MS                 | MTMI                            | MS                                | MTMI                             | S         | MR        | MR          | -            | MS        | MRMS       | MS                      | RMR                                 | S       |
| Wallup <sup>db</sup>                             | APH  | MSS                                    | S         | MSS                | MT                              | MRMS                              | MT                               | MRMS      | MRMS      | MRMS        | SVS          | MRMS      | MRMS       | MR                      | RMR                                 | S       |
| LongReach Spitfire <sup>db</sup>                 | APH  | S                                      | MS        | MSS                | MTMI                            | MSS                               | MTMI                             | S         | MR        | MR          | MSS          | MR        | S          | MRMS                    | MR                                  | S       |
| Sunprime <sup>db</sup>                           | APH  | MSS(p)                                 | -         | -                  | MT                              | -                                 | -                                | -         | MRMS      | MRMS        | MR           | MR        | MR(p)      | MRMS                    | -                                   | -       |
| LongReach Crusader <sup>db</sup>                 | APH  | MS                                     | S         | MS                 | MI                              | S                                 | MI                               | SVS       | RMR       | RMR         | MS           | MS        | RMR        | MR                      | MR (p)                              | S       |
| Livingston <sup>db</sup>                         | AH   | MSS                                    | S         | S                  | MT                              | MS                                | MI                               | VS        | MRMS      | MRMS        | MSS          | MRMS      | MRMS (p)   | MR                      | -                                   | S       |
| LongReach Mustang <sup>db</sup>                  | APH  | MSS                                    | MSS (p)   | MS                 | MI (p)                          | MSS (p)                           | MI (p)                           | MSS (p)   | MRMS      | MRMS        | MSS          | RMR       | MRMS       | MR (p)                  | MR (p)                              | -       |
| Summate <sup>db</sup>                            | APH  | MSS                                    | MSS       | MS                 | TMT                             | MRMS                              | MTMI (p)                         | S         | MRMS      | MRMS        | MS           | MRMS      | -          | MS (p)                  | -                                   | -       |
| LongReach Darrt <sup>db</sup>                    | APH  | MS                                     | MSS       | MS                 | MI                              | MSS                               | MI (p)                           | MSS       | MR        | MR          | S            | MR        | MRMS (p)   | RMR                     | MR (p)                              | S       |



**TABLE 2B Speciality wheats – disease and agronomy ratings.**

| Variety<br>(in maturity order,<br>slow to quick) | Wheat Quality<br>Australia (WQA)<br>maximum quality<br>classification <sup>1</sup> | Disease ratings (www.nvtonline.com.au) |           |                    |   |                                   |   | Agronomy  |           |             |                          |                       |            |                         |                                     |
|--|--|--|-----------|--------------------|---|-----------------------------------|---|-----------|-----------|-------------|--------------------------|-----------------------|------------|-------------------------|-------------------------------------|
|  |  | Yellow spot                            | Crown rot | Common<br>root rot | Root lesion nematodes                       |                                   |   | Stem rust | Leaf rust | Stripe rust | Black point <sup>#</sup> | Lodging <sup>\$</sup> | Shattering | Sprouting<br>resistance |                                     |
|  |  |  |           |                    | <i>P. thornei</i><br>tolerance <sup>*</sup> | <i>P. thornei</i><br>resistance % | <i>P. neglectus</i><br>tolerance <sup>*</sup> |           |           |             |                          |                       |            |                         | <i>P. neglectus</i><br>resistance % |
| <b>DURUM WHEATS</b>                              |  |  |           |                    |   |                                   |   |           |           |             |                          |                       |            |                         |                                     |
| EGA Bellaroi <sup>Ⓛ</sup>                        | ADR  | MR                                     | VS        | MR                 | MTMI  | MR                                | MI  | MS        | MR        | MRMS        | MR                       | RMR                   | MRMS       | R                       | MS                                  |
| Hyperio <sup>Ⓛ</sup>                             | ADR  | MRMS                                   | SVS       | MRMS               | TMT   | RMR                               | MT  | MR        | RMR       | R           | MR                       | MRMS (p)              | S          | -                       | MRMS                                |
| DBA-Aurora <sup>Ⓛ</sup>                          | ADR  | MRMS                                   | VS        | MSS                | MT  | MR                                | IVI (p)                                       | MRMS      | RMR       | R           | RMR                      | MSS                   | MS         | -                       | -                                   |
| Caparoi <sup>Ⓛ</sup>                             | ADR  | MR                                     | VS        | MRMS               | TMT   | MR                                | MI  | MS        | RMR       | RMR         | MR                       | -                     | MRMS       | -                       | -                                   |
| DBA Bindaroi <sup>Ⓛ</sup>                        | ADR  | MRMS                                   | SVS (p)   | MS                 | MT  | MR (p)                            | MI (p)  | MRMS (p)  | MRMS      | MR          | RMR                      | -                     | -          | -                       | -                                   |
| DBA Vittaroi <sup>Ⓛ</sup>                        | ADR  | MRMS                                   | SVS       | MSS                | MI  | MRMS                              | MI  | MS        | MR        | MR          | MR                       | -                     | -          | -                       | -                                   |
| Jandaroi <sup>Ⓛ</sup>                            | ADR  | MRMS                                   | VS        | MR                 | MTMI  | MRMS                              | MI  | MRMS      | MR        | MR          | MR                       | RMR                   | MSS        | MR                      | RMR                                 |
| DBA Lillaroi <sup>Ⓛ</sup>                        | ADR  | MRMS                                   | SVS       | S                  | MT  | MR                                | MI  | MRMS      | RMR       | R           | RMR                      | -                     | MS         | -                       | -                                   |
| <b>SOFT WHEATS</b>                               |  |  |           |                    |   |                                   |   |           |           |             |                          |                       |            |                         |                                     |
| LongReach Gazelle <sup>Ⓛ</sup>                   | ASFT   | MSS                                    | S         | MSS                | MI  | S                                 | MT  | S         | MR        | MR          | MR                       | MS (p)                | MRMS       | MR(p)                   | S                                   |
| LongReach Impala <sup>Ⓛ</sup>                    | ASFT   | MSS                                    | MSS       | MSS                | MI  | SVS                               | MTMI  | SVS       | MR        | SVS         | MR                       | MRMS                  | MRMS       | MR(p)                   | MS(p)                               |
| LongReach Oryx <sup>Ⓛ</sup>                      | ASFT   | MSS                                    | -         | -                  | IVI   | MSS                               | (p)   | S         | MR        | R           | RMR                      | MSS                   | -          | -                       | -                                   |
| <b>FEED WHEATS</b>                               |  |  |           |                    |   |                                   |   |           |           |             |                          |                       |            |                         |                                     |
| GBA Hunter                                       | FEED   | MR                                     | MSS       | MS                 | MT  | S                                 | MT  | S         | RMR       | -           | MRMS                     | MS (p)                | RMR        | RMR                     | S (p)                               |
| EGA Stampede                                     | FEED   | MSS                                    | SVS       | MS                 | IVI   | S                                 | MT  | MSS       | RMR       | MRMS        | MR                       | MRMS                  | MRMS       | -                       | MSS                                 |
| SEA Condamine                                    | FEED   | MSS                                    | -         | -                  | TMT (p)                                     | MS (p)                            | TMT (p)                                       | S (p)     | MRMS      | MRMS        | MR                       | -                     | -          | -                       | -                                   |
| <b>FORAGE WHEATS</b>                             |  |  |           |                    |   |                                   |   |           |           |             |                          |                       |            |                         |                                     |
| Brennan <sup>Ⓛ</sup>                             | FEED   | MRMS                                   | -         | -                  | -   | SVS                               | -   | S         | MS        | -           | RMR                      | MR                    | -          | -                       | -                                   |
| Manning <sup>Ⓛ</sup>                             | FEED   | MRMS                                   | VS        | SVS                | -   | S                                 | -   | MSS       | RMR       | MS          | RMR                      | -                     | -          | -                       | -                                   |
| SOP Revenue <sup>Ⓛ</sup>                         | FEED   | MS                                     | S         | SVS                | -   | S                                 | -   | S         | RMR       | VS          | R                        | S                     | -          | -                       | -                                   |
| Petrel   | ASW  | MS                                     | S         | MRMS               | -   | S                                 | -   | S         | MRMS      | MSS         | MS                       | -                     | -          | -                       | -                                   |

**Legend (Tables 2A and 2B)**

An alpha scale is used to indicate levels of resistance to diseases and other conditions.

R (Resistant) = 9

RMR (Resistant – Moderately Resistant) = 8

MR (Moderately Resistant) = 7

MRMS (Moderately Resistant – Moderately Susceptible) = 6

MS (Moderately Susceptible) = 5

MSS (Moderately Susceptible – Susceptible) = 4

S (Susceptible) = 3

SVS (Susceptible – Very Susceptible) = 2

VS (Very Susceptible) = 1

- indicates that a rating is not available.

■ – High Risk  
■ – Medium Risk  
■ – Low Risk

T (Tolerant) = 9

TMT (Tolerant – Moderately Tolerant) = 8

† WQA maximum classifications describe suitability for export markets and do not always reflect the varietal preference of domestic millers. (Note: APH = Australian Prime Hard, AH = Australian Hard). Please refer to Grain Trade Australia 2017/2018 Wheat Statement of Standards for more information.

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

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

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

\$ Lodging ratings are primarily based on data from the GRDC-funded 'Better Irrigated Wheat Agronomy' research project. These ratings may not accurately reflect performance in dryland environments, as lodging is unlikely to occur when yields are below 5 tonnes per hectare (t/ha).

(p) RLN data relating to these varieties is based on less than four years of testing and is to be considered provisional information.

**TABLE 3A Bread and noodle wheats — varietal details.**

| Variety                          | Varietal information   |                              |                     |                |                          |                              |                 | Comments (as supplied by breeding companies)  |
|----------------------------------|--|------------------------------|---------------------|----------------|--------------------------|------------------------------|-----------------|---|
|                                  | Pedigree   | Plant Breeder's Rights (PBR) | End Point Royalties | Licensee       | Released by <sup>∞</sup> | EPR rate \$/tonne (GST excl) | Year of release |   |
| LongReach Kittyhawk <sup>Ⓓ</sup> | LongReach Impala <sup>Ⓓ</sup> derivative                               | Ⓓ                            | ✓                   | Advanta Seeds  | LRPB                     | \$4.25                       | 2017            | A long-season APH wheat suited to early sowing (late April). Not suitable for Central Queensland.   |
| EGA Eaglehawk                    | Sunbrook*4/VPM   |                              | ✓                   | Heritage Seeds | EGA                      | \$2.50                       | 2007            | Sunbrook replacement for early planting with good subsoil moisture. Moderately tolerant to <i>P. thornei</i> .  |
| Sunmax <sup>Ⓓ</sup>              | CRW142.16/2*Sunzell <sup>Ⓓ</sup>                                       | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.50                       | 2016            | With an APH classification and slow maturity, Sunmax <sup>Ⓓ</sup> is one of the best planting options for the northern zone when there is an early break in the season.   |
| Sunzell <sup>Ⓓ</sup>             | Sunbrook*3/Sunstate  | Ⓓ                            | ✓                   | AGT            | AGT                      | \$2.00                       | 2007            | Slower variety similar in maturity to Sunbri. Best suited to Darling Downs and Goondiwindi regions.   |
| Strzelecki <sup>Ⓓ</sup>          | Vicam/4*Batavia  | Ⓓ                            | ✓                   | Heritage Seeds | DPI&F                    | \$1.00                       | 2000            | Moderately resistant to common root rot but not suitable for <i>P. thornei</i> -infested soil.  |
| Suntime <sup>Ⓓ</sup>             | SUN457A/SUN405B  | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.50                       | 2015            | An APH disease-resistant variety for Anzac Day planting.  |
| LongReach Lancer <sup>Ⓓ</sup>    | VII84/Chara <sup>Ⓓ</sup> //Chara <sup>Ⓓ</sup> /3/Lang <sup>Ⓓ</sup>     | Ⓓ                            | ✓                   | Advanta Seeds  | LRPB                     | \$4.25                       | 2013            | Slower maturing APH spring wheat with a compact canopy, solid grain quality and rust packages. Similar maturity to Strzelecki <sup>Ⓓ</sup> and a few days longer than EGA Gregory <sup>Ⓓ</sup> .                                |
| Coolah <sup>Ⓓ</sup>              | EGA Gregory <sup>Ⓓ</sup> /VQ2791//EGA Gregory <sup>Ⓓ</sup>             | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.50                       | 2016            | APH variety adapted to Queensland and NSW, similar to EGA Gregory <sup>Ⓓ</sup> in disease package, physical grain quality and maturity, but with improved grain yield and lodging tolerance.                                    |
| EGA Gregory <sup>Ⓓ</sup>         | Pelsart/2*Batavia DH   | Ⓓ                            | ✓                   | Advanta Seeds  | EGA                      | \$2.10                       | 2004            | A good early-season variety for paddocks with a history of root lesion nematodes.   |
| DS Faraday <sup>Ⓓ</sup>          | EGA Gregory <sup>Ⓓ</sup> /UQ01484//EGA Gregory <sup>Ⓓ</sup>            | Ⓓ                            | ✓                   | Seednet        | Dow Seeds                | \$4.25                       | 2017            | A good early-season APH wheat with enhanced pre-harvest sprouting tolerance and a solid rust package. Similar maturity to EGA Gregory <sup>Ⓓ</sup> .  |
| LongReach Flanker <sup>Ⓓ</sup>   | EGA Gregory <sup>Ⓓ</sup> //EGA Gregory <sup>Ⓓ</sup> /Lang <sup>Ⓓ</sup> | Ⓓ                            | ✓                   | Advanta Seeds  | LRPB                     | \$4.25                       | 2015            | APH variety well suited to Queensland with sound disease resistance. Similar grain package, agronomic performance and maturity to EGA Gregory <sup>Ⓓ</sup> with improved yield.   |
| Sunvale <sup>Ⓓ</sup>             | Cook*2/NPM1//3*Cook  | Ⓓ                            |                     | AGT            | SU                       | Nil                          | 1993            | A variety suitable for early planting with good resistance to black point and RLN.  |
| EGA Bounty <sup>Ⓓ</sup>          | Batavia/2*Leichhardt   | Ⓓ                            | ✓                   | Nuseed         | EGA                      | \$3.00                       | 2008            | A high-yielding wheat adapted to Queensland and NSW with a good rust-resistance package. Susceptible to common root rot.  |
| LongReach Gauntlet <sup>Ⓓ</sup>  | Kukri <sup>Ⓓ</sup> /Sunvale <sup>Ⓓ</sup>                               | Ⓓ                            | ✓                   | Seednet        | LRPB                     | \$3.00                       | 2012            | Early to main-season APH variety similar in maturity to Sunvale <sup>Ⓓ</sup> . Has good yellow spot and RLN ( <i>P. thornei</i> ) resistance and a solid grain-receivals package.   |
| EGA Burke <sup>Ⓓ</sup>           | Sunco/2*Hartog   | Ⓓ                            | ✓                   | Advanta Seeds  | EGA                      | \$2.10                       | 2006            | A slow variety with excellent yield potential. Disease resistance is provided via a different genetic background to other slow varieties, thereby reducing genetic risks.   |
| EGA Kidman <sup>Ⓓ</sup>          | Pelsart/2*Batavia DH   | Ⓓ                            | ✓                   | Austgrains     | EGA                      | Closed Loop                  | 2008            | APH variety that has quality attributes suited to the sponge and dough markets in Asia.   |
| Sunguard <sup>Ⓓ</sup>            | SUN289E/Sr2Janz  | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.00                       | 2011            | An AH variety with an excellent disease-resistance package. Sunguard <sup>Ⓓ</sup> is R or MR to all current pathotypes of the three rusts and has a level of tolerance to crown rot and RLN similar to EGA Wylie <sup>Ⓓ</sup> . |
| Mitch <sup>Ⓓ</sup>               | QT10422/Giles  | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.25                       | 2014            | A very high yielding AH variety for early to mid-May planting with high relative levels of yellow leaf spot and crown rot tolerance.  |
| LongReach Reliant <sup>Ⓓ</sup>   | LRPB Crusader/EGA Gregory  | Ⓓ                            | ✓                   | Advanta Seeds  | LRPB                     | \$4.25                       | 2016            | A very high yielding APH variety with excellent early vigour and robust grain package, well suited to main-season planting windows throughout the Queensland cropping zone.   |
| Elmore CL Plus <sup>Ⓓ</sup>      | Janz*2//Wilg4/11A///Annuello   | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.55                       | 2012            | Tolerant to Clearfield <sup>®</sup> herbicides, Janz type with improved disease resistance and yield.   |
| Baxter <sup>Ⓓ</sup>              | QT2327/Cook//QT2804  | Ⓓ                            | ✓                   | Heritage Seeds | DPI&F                    | \$1.45                       | 1998            | A well-adapted variety as its maturity can vary according to location and environmental conditions. Baxter <sup>Ⓓ</sup> is similar to Sunvale <sup>Ⓓ</sup> in terms of tolerance to root lesion nematodes.                      |
| Lang <sup>Ⓓ</sup>                | QT3765/Sunco   | Ⓓ                            | ✓                   | Seednet        | DPI&F                    | \$1.00                       | 2000            | Similar to Sunco but generally achieves higher yields and has stronger straw. Lang <sup>Ⓓ</sup> is considered to have superior quality attributes for APH yellow alkaline noodle market.  |
| Kennedy                          | Hartog/Veery#5   |                              | ✓                   | Heritage Seeds | DPI&F                    | \$1.45                       | 1998            | Widely grown, quick-maturing variety. The short coleoptile length, compared to other varieties, does not adversely affect establishment in average conditions.  |
| Suntop <sup>Ⓓ</sup>              | Sunco/2*Pastor//SUN436E  | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.25                       | 2012            | A consistently high-yielding variety across many seasons due to a solid disease-resistance package including an elevated level of tolerance to crown rot infection.   |
| Hartog                           | Pavon 'S'  |                              |                     |                | DPI&F                    |                              | 1982            | Older established variety.  |
| Wallup <sup>Ⓓ</sup>              | Chara <sup>Ⓓ</sup> /Wyalkatchem <sup>Ⓓ</sup>                           | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.00                       | 2011            | High and stable yield, quick maturing variety with good physical grain quality and solid disease resistance.  |
| LongReach Spitfire <sup>Ⓓ</sup>  | Drysdale <sup>Ⓓ</sup> /Kukri <sup>Ⓓ</sup>                              | Ⓓ                            | ✓                   | Advanta Seeds  | LRPB                     | \$3.50                       | 2011            | APH variety well suited to Queensland which is slightly quicker than Baxter <sup>Ⓓ</sup> . Provides a good grain package and solid disease resistance.  |
| Sunprime <sup>Ⓓ</sup>            | SUN445/EGA Gregory <sup>Ⓓ</sup>  | Ⓓ                            | ✓                   | AGT            | AGT                      | \$3.50                       | 2018            | A quicker maturing APH variety with higher, stable grain yield and good <i>P.thornei</i> tolerance  |
| LongReach Crusader <sup>Ⓓ</sup>  | Sunbrook/H45   | Ⓓ                            | ✓                   | Advanta Seeds  | LRPB                     | \$2.70                       | 2008            | Quick APH variety with similar maturity to Kennedy.   |

**TABLE 3A continued Bread and noodle wheats – varietal details.**

| Variety                          | Varietal information                |                              |                     |               |                          |                              |                 | Comments (as supplied by breeding companies)   |
|----------------------------------|-------------------------------------|------------------------------|---------------------|---------------|--------------------------|------------------------------|-----------------|--|
|                                  | Pedigree                            | Plant Breeder's Rights (PBR) | End Point Royalties | Licensee      | Released by <sup>∞</sup> | EPR rate \$/tonne (GST excl) | Year of release |  |
| Livingston <sup>(D)</sup>        | SUN129A/Sunvale <sup>(D)</sup>      | (D)                          | ✓                   | AGT           | AGT                      | \$2.50                       | 2008            | Quick variety with similar maturity to Ventura <sup>(D)</sup> . Has a good stripe rust-resistance package.   |
| LongReach Mustang <sup>(D)</sup> | EGA Gregory <sup>(D)</sup> /LPB1117 | (D)                          | ✓                   | Advanta Seeds | LRPB                     | \$4.25                       | 2017            | Quick-maturing APH variety with compact canopy and reliable grain package. Good foliar and soil disease package with highly competitive yield.                             |
| Sunmate <sup>(D)</sup>           | Sunco/2*Pastor//SUN436E             | (D)                          | ✓                   | AGT           | AGT                      | \$3.50                       | 2014            | Quick APH variety with similar maturity to LongReach Spitfire <sup>(D)</sup> but higher long-term yield. It has moderate resistance to RLN ( <i>P. thomei</i> ).           |
| LongReach Dart <sup>(D)</sup>    | Sunbrook/Janz//Kukri <sup>(D)</sup> | (D)                          | ✓                   | Advanta Seeds | LRPB                     | \$4.00                       | 2012            | Very quick maturing variety with low tiller numbers suited to both later plantings and dryer seasons with good adult protection from diseases such as YLS and stripe rust. |

**TABLE 3B Specialty wheats – varietal details.**

| Variety                     | Varietal information                             |                              |                     |          |                          |                              |                 | Comments (as supplied by breeding companies)  |
|-----------------------------|--|------------------------------|---------------------|----------|--------------------------|------------------------------|-----------------|---|
|                             | Pedigree   | Plant Breeder's Rights (PBR) | End Point Royalties | Licensee | Released by <sup>∞</sup> | EPR rate \$/tonne (GST excl) | Year of release |   |
| <b>DURUM WHEATS</b>         |  |                              |                     |          |                          |                              |                 |   |
| EGA Bellaroi <sup>(D)</sup> | 920405/920274                                    | (D)                          | ✓                   | Seednet  | EGA                      | \$2.50                       | 2002            | Outclassed due to lower yield potential. Very good grain and semolina quality but poor dough strength. Performs very well under irrigation.   |
| Hyperno <sup>(D)</sup>      | Kalka sister line/Tamaroi                        | (D)                          | ✓                   | AGT      | AGT                      | \$3.00                       | 2009            | A high yielding durum variety in Queensland with similar maturity to EGA Bellaroi <sup>(D)</sup> . Good semolina colour and colour stability.   |
| DBA-Aurora <sup>(D)</sup>   | Tamaroi*2/Kalka//RH920318/Kalka//Kalka*2/Tamaroi | (D)                          | ✓                   | SADGA    | UA                       | \$3.00                       | 2014            | Exceptionally high yielding variety, particularly in the SE Queensland zone. Similar maturity to Hyperno <sup>(D)</sup> , with good semolina and colour stability attributes. To achieve high protein (>13%), nitrogen inputs need to be carefully managed. Performs very well under irrigation, but this will increase the chances of lodging due to very high yield potential.  |
| Caparoi <sup>(D)</sup>      | LY2.6.3/930054                                   | (D)                          | ✓                   | Seednet  | NSW DPI                  | \$2.60                       | 2009            | Main season variety, around 1 to 2 weeks slower than Jandaroi <sup>(D)</sup> . Well suited to drier areas and performs well under irrigation.   |
| DBA Bindaroi <sup>(D)</sup> | Caparoi/261102                                   | (D)                          | ✓                   | Seednet  | NSW DPI                  | \$3.50                       | 2017            | Recommended for dryland cropping. Higher yielding and better grain quality than Caparoi <sup>(D)</sup> . Best crown rot resistance rating compared with all released durum varieties in 2015 and 2016 NVT. Best performance compared with all released durum varieties in DBA yield loss trials.  |
| DBA Vittaroi <sup>(D)</sup> | 200856/980990                                    | (D)                          | ✓                   | Seednet  | NSW DPI                  | \$3.30                       | 2017            | Recommended for irrigated cropping. Short stature and high tolerance to lodging. High yield combined with excellent grain protein achievement and grain and semolina quality under irrigated conditions relative to EGA Bellaroi <sup>(D)</sup> .   |
| Jandaroi <sup>(D)</sup>     | 920777/111566                                    | (D)                          | ✓                   | Seednet  | NSW DPI                  | \$2.50                       | 2006            | Known for high grain quality, low screenings and tolerance to weathering. Exceptional dough strength. Quick variety with good semolina colour and yield over Wollaroi <sup>(D)</sup> and EGA Bellaroi <sup>(D)</sup> . Performs well in drier areas.  |
| DBA Lillaroi <sup>(D)</sup> |  | (D)                          | ✓                   | Seednet  | NSW DPI                  | \$3.30                       | 2015            | This variety is preferred by millers and has the highest semolina yield, highest yellow pigment, highest 1000 grain weight and lowest screenings compared with other released varieties. Medium early variety, around 2 to 3 days later than Jandaroi <sup>(D)</sup> . Higher yielding than Jandaroi <sup>(D)</sup> and suited to dry seasons. Performs better than Jandaroi <sup>(D)</sup> in double cropping, e.g. after a cotton crop. |

**TABLE 3B continued Specialty wheats — varietal details.**

| Variety                          | Varietal information                   |                              |                     |                         |                          |                              |                 | Comments (as supplied by breeding companies)   |
|----------------------------------|--|------------------------------|---------------------|-------------------------|--------------------------|------------------------------|-----------------|--|
|                                  | Pedigree                               | Plant Breeder's Rights (PBR) | End Point Royalties | Licensee                | Released by <sup>∞</sup> | EPR rate \$/tonne (GST excl) | Year of release |  |
| <b>SOFT WHEATS</b>               |  |                              |                     |                         |                          |                              |                 |  |
| LongReach Gazelle <sup>(b)</sup> | 24K1056/VPM/3*Vasco                    | (b)                          | ✓                   | Pacific Seeds           | LRPB                     | \$4.00                       | 2012            | Longer season soft (biscuit) wheat with low protein accumulation and good standability. Well suited to high production systems and early planting.   |
| LongReach Impala <sup>(b)</sup>  | TEAL/C93.8//9908                       | (b)                          | ✓                   | Pacific Seeds           | LRPB                     | \$3.50                       | 2012            | A high-yielding, quick-maturing, awned, soft (biscuit) wheat. Has improved disease resistance compared to other soft varieties.  |
| LongReach Oryx <sup>(b)</sup>    | C41001/LongReach Impala <sup>(b)</sup> | (b)                          | ✓                   | Pacific Seeds           | LRPB                     | \$3.75                       | 2018            | A high yielding soft (biscuit) wheat, mid-season maturity. Well adapted to the northern dryland cropping region with a shorter canopy, possessing good resistance to all three major rusts.  |
| <b>FEED WHEATS</b>               |  |                              |                     |                         |                          |                              |                 |  |
| GBA Hunter                       | Attila//Altar84/Aos/3/Attila           | (b)                          | ✓                   | Viterra                 | GBA                      | \$2.00                       | 2005            | Prolific tillering awned variety. High yield potential.  |
| EGA Stampede                     | -                                      | (b)                          | ✓                   | Nuseed                  | DPI&F                    | \$3.00                       | 2008            | Very high yielding stockfeed wheat with good rust-resistance package.  |
| SEA Condamine                    | UQ01800                                |                              |                     | Seed Exchange Australia | UQ                       | \$3.00                       | 2018            | A very high yielding mid-season variety, with large kernel size, low screenings, stiff straw and excellent standability. Initially this variety is being released without a milling classification (FEED), with preliminary classification expected during 2018. |
| <b>FORAGE WHEATS</b>             |  |                              |                     |                         |                          |                              |                 |  |
| Brennan <sup>(b)</sup>           | Hartog/2*Mercia                        | (b)                          | ✓                   | Seednet                 | CSIRO                    | \$1.00                       | 1998            | A white-grained, awnless, winter wheat suitable for grazing and grain production. May not come to head in Central Queensland conditions.   |
| Manning <sup>(b)</sup>           |  | (b)                          | ✓                   | GrainSearch             | Ausgrainz                | \$3.50                       | 2013            | A white-grained, awnless, long-season winter wheat with BYDV resistance. It is suitable for grazing and grain production in high-rainfall and irrigation zones. Tillers strongly and can produce high-quality fodder.  |
| SQP Revenue <sup>(b)</sup>       |  | (b)                          | ✓                   | GrainSearch             | CSIRO                    | \$3.50                       | 2010            | A red-grained, awnless, winter wheat suitable for grazing and grain production in the high-rainfall and irrigation zones of eastern Australia. Can produce high-quality fodder.  |
| Petrel                           | M2293/Ford                             |                              |                     |                         | NSW DPI                  | Nil                          | 1996            | An awnless hay wheat with dry matter yields similar to Ford but has stronger straw and is later maturing.  |

<sup>∞</sup> AGT – Australian Grain Technologies, CSIRO – Commonwealth Scientific and Industrial Research Organisation, DPI&F – Department of Primary Industries & Fisheries, Queensland, EGA – Enterprise Grains Australia, GBA – Grain Biotech Australia, LRPB – LongReach Plant Breeders, NSW DPI – New South Wales Department of Primary Industries, SU – University of Sydney Plant Breeding Institute, UA – The University of Adelaide, UQ – University of Queensland.

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

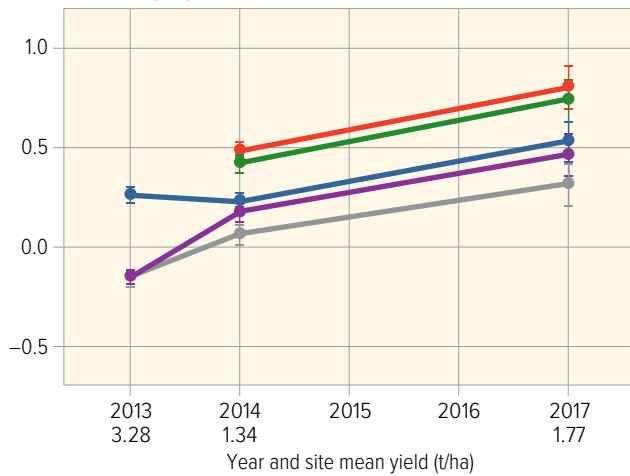
## Locality-based yield graphs for NVT wheat trials 2013–17

The mean grain yield of a variety in a region is formed by averaging a variety's performance across trial locations within each region. Averaging over locations within a region masks variety by environment interaction; that is, the ability of a variety to yield differently between locations or across seasons (years). The production value (PV) shown in the graphs below unlocks the variability in grain yield performance of each variety observed over different locations and seasons in the NVT program. The production value is the varietal yield advantage (t/ha) of a variety at an environment. The PVs are shown as positive or negative differences relative to a baseline,

which reflects the expected average yield of all the varieties tested in each environment. Varieties may be viewed as having expected yields that are equal to the baseline (PV=0) or above (PV>0) or below (PV<0) average for each particular environment. The possible range of variation around the expected yield of each variety in each environment is displayed in the graphs using small vertical (error) bars. The graphs are given for a standard set of varieties in all locations where, if possible, more than four years of testing has been performed. Further information can be obtained upon request from Clayton Forknall (clayton.forknall@daf.qld.gov.au).

### Early season – Capella

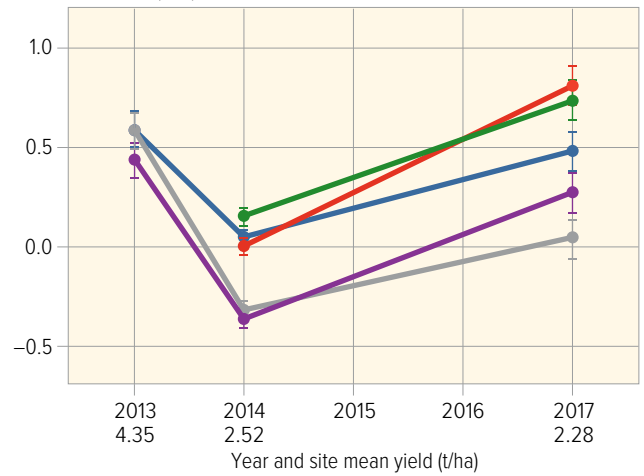
Production value (t/ha)



Legend: Coolah<sup>Ⓛ</sup>, EGA Gregory<sup>Ⓛ</sup>, LongReach Flanker<sup>Ⓛ</sup>, LongReach Gauntlet<sup>Ⓛ</sup>, LongReach Lancer<sup>Ⓛ</sup>  
 Note: There was not a trial at Capella in 2015 or 2016.

### Early season – Springsure

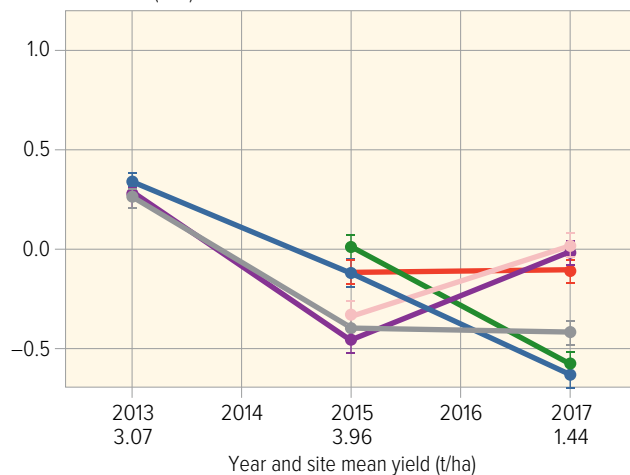
Production value (t/ha)



Legend: Coolah<sup>Ⓛ</sup>, EGA Gregory<sup>Ⓛ</sup>, LongReach Flanker<sup>Ⓛ</sup>, LongReach Gauntlet<sup>Ⓛ</sup>, LongReach Lancer<sup>Ⓛ</sup>  
 Note: There was not a trial at Springsure in 2015 or 2016.

### Early season – Duaringa

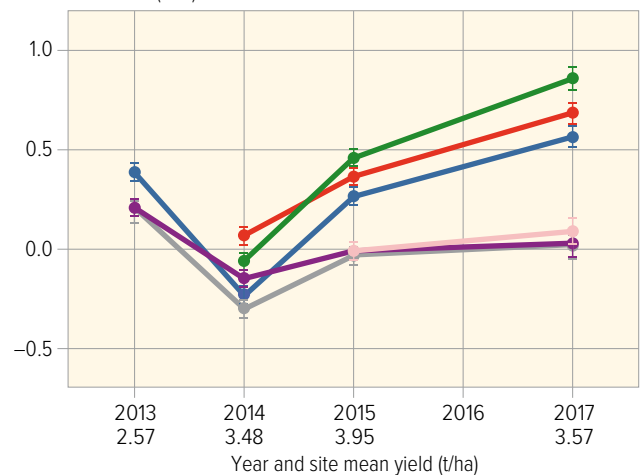
Production value (t/ha)



Legend: Coolah<sup>Ⓛ</sup>, EGA Gregory<sup>Ⓛ</sup>, LongReach Flanker<sup>Ⓛ</sup>, LongReach Gauntlet<sup>Ⓛ</sup>, LongReach Lancer<sup>Ⓛ</sup>, Suntime<sup>Ⓛ</sup>  
 Note: There was not a trial at Duaringa in 2014 or 2016.

### Early season – Jambin

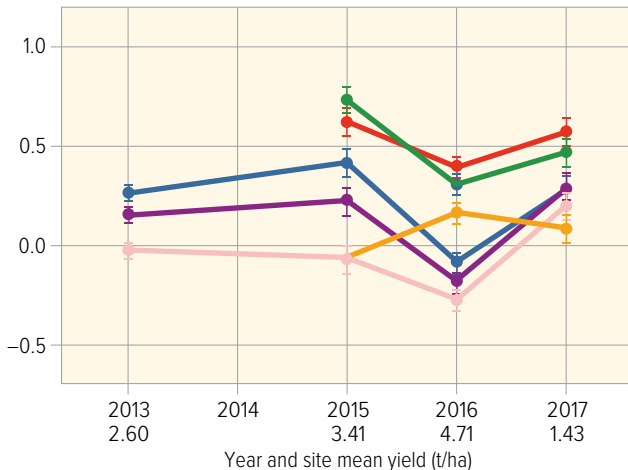
Production value (t/ha)



Legend: Coolah<sup>Ⓛ</sup>, EGA Gregory<sup>Ⓛ</sup>, LongReach Flanker<sup>Ⓛ</sup>, LongReach Gauntlet<sup>Ⓛ</sup>, LongReach Lancer<sup>Ⓛ</sup>, Suntime<sup>Ⓛ</sup>  
 Note: 2013 results correspond to trial at Biloela; there was not a trial at Jambin in 2016.

### Early season – Bungunya

Production value (t/ha)

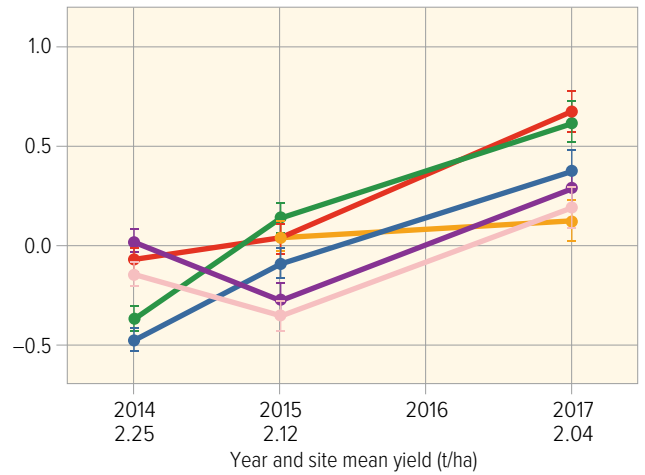


— Coolah<sup>db</sup> — EGA Gregory<sup>db</sup> — LongReach Flanker<sup>db</sup>  
 — LongReach Lancer<sup>db</sup> — Sunmax<sup>db</sup> — Suntime<sup>db</sup>

Note: There was not a trial at Bungunya in 2014.

### Early season – Dulacca

Production value (t/ha)

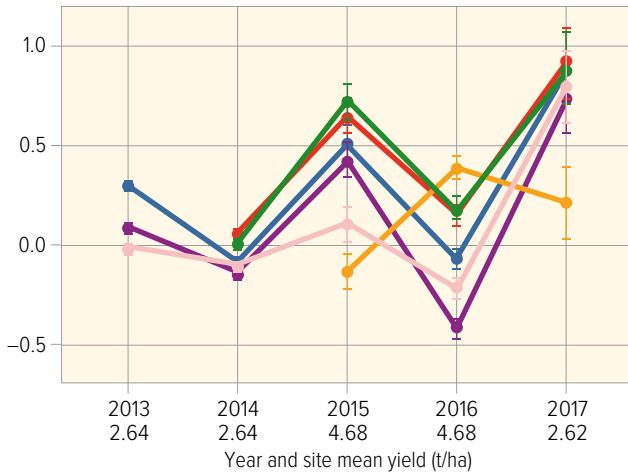


— Coolah<sup>db</sup> — LongReach Flanker<sup>db</sup> — Sunmax<sup>db</sup>  
 — EGA Gregory<sup>db</sup> — LongReach Lancer<sup>db</sup> — Suntime<sup>db</sup>

Note: There was not a trial at Dulacca in 2013 or 2016.

### Early season – Lundavra

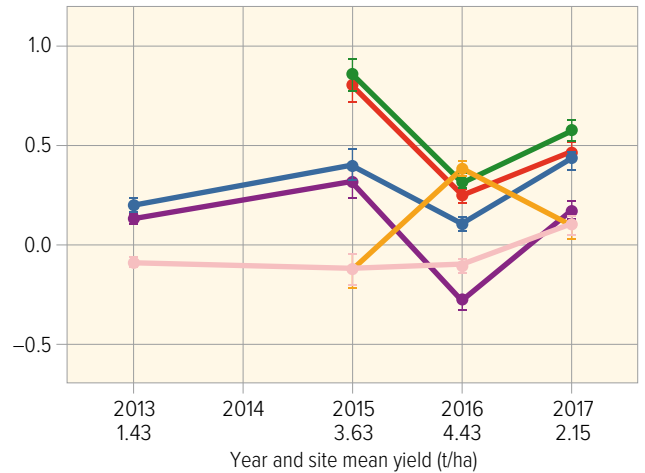
Production value (t/ha)



— Coolah<sup>db</sup> — EGA Gregory<sup>db</sup> — LongReach Flanker<sup>db</sup>  
 — LongReach Lancer<sup>db</sup> — Sunmax<sup>db</sup> — Suntime<sup>db</sup>

### Early season – Meandarra

Production value (t/ha)

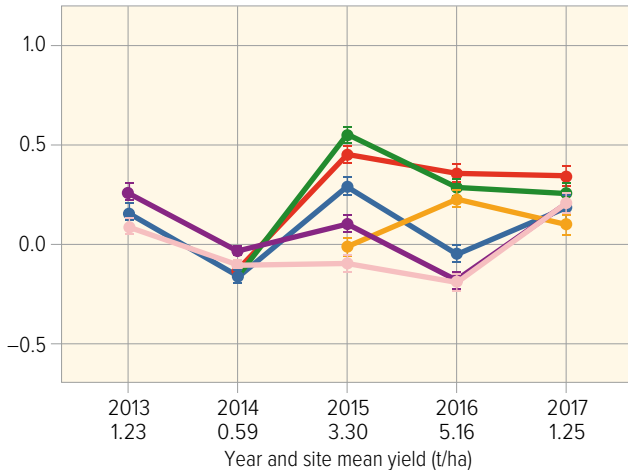


— Coolah<sup>db</sup> — EGA Gregory<sup>db</sup> — LongReach Flanker<sup>db</sup>  
 — LongReach Lancer<sup>db</sup> — Sunmax<sup>db</sup> — Suntime<sup>db</sup>

Note: There was not a trial at Meandarra in 2014.

### Early season – Mungindi

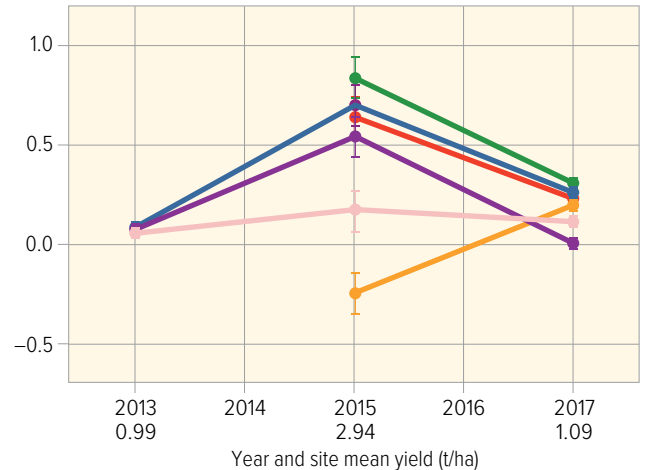
Production value (t/ha)



— Coolah<sup>db</sup> — EGA Gregory<sup>db</sup> — LongReach Flanker<sup>db</sup>  
 — LongReach Lancer<sup>db</sup> — Sunmax<sup>db</sup> — Suntime<sup>db</sup>

### Early season – Nindigully

Production value (t/ha)

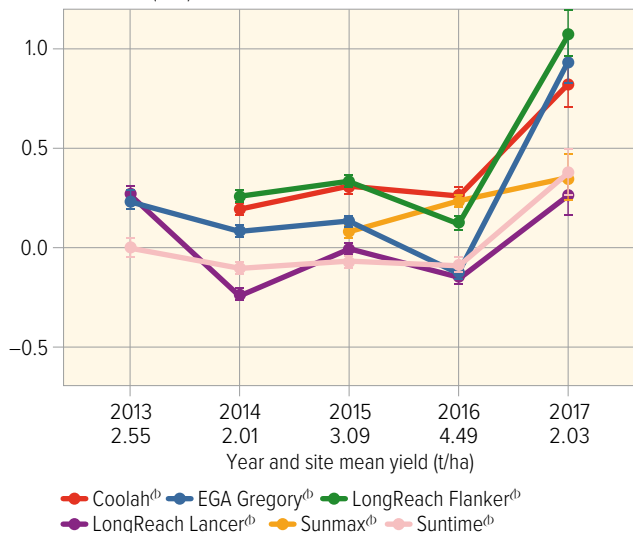


— Coolah<sup>db</sup> — LongReach Flanker<sup>db</sup> — Sunmax<sup>db</sup>  
 — EGA Gregory<sup>db</sup> — LongReach Lancer<sup>db</sup> — Suntime<sup>db</sup>

Note: There was not a trial at Nindigully in 2014 or 2016.

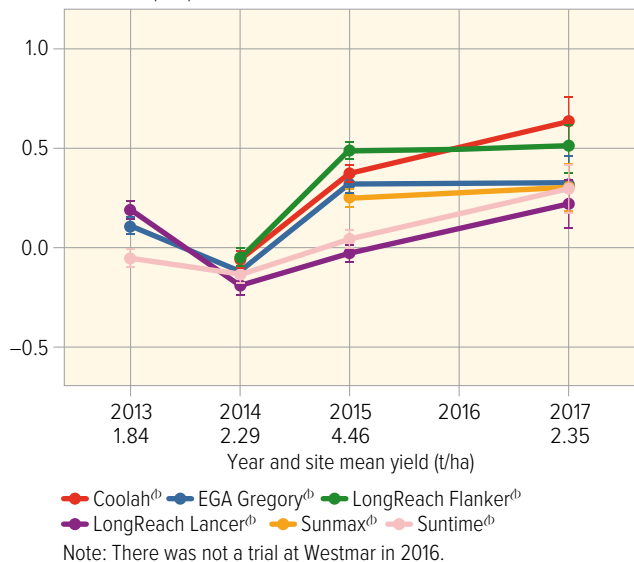
### Early season – Roma

Production value (t/ha)



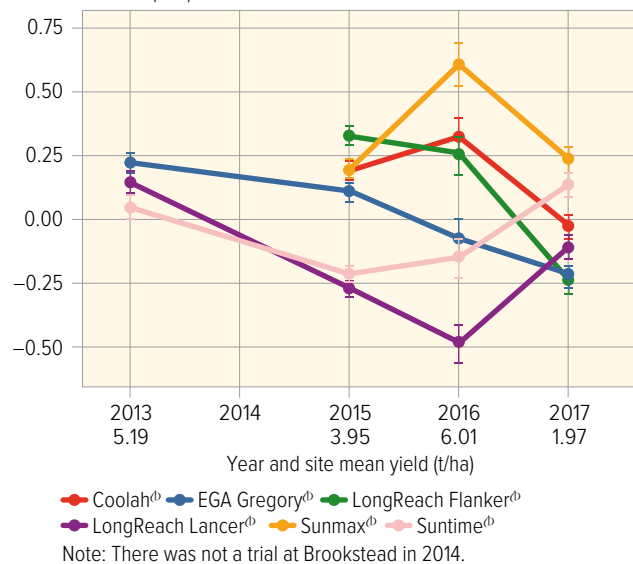
### Early season – Westmar

Production value (t/ha)



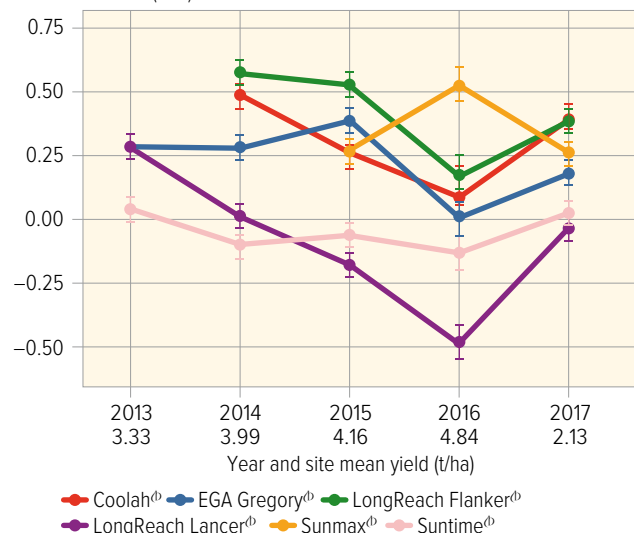
### Early season – Brookstead

Production value (t/ha)



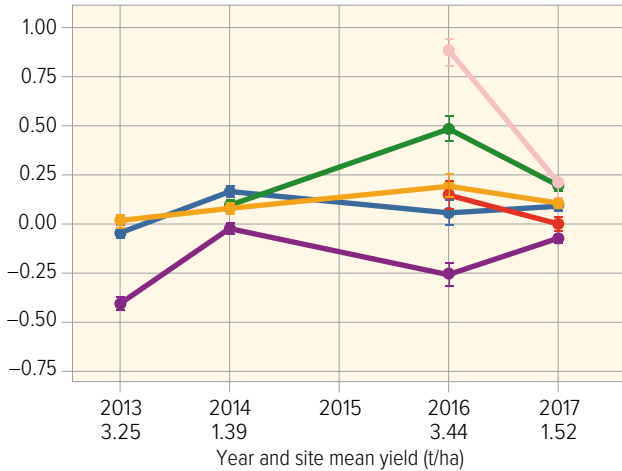
### Early season – Macalister

Production value (t/ha)



### Main season – Capella

Production value (t/ha)

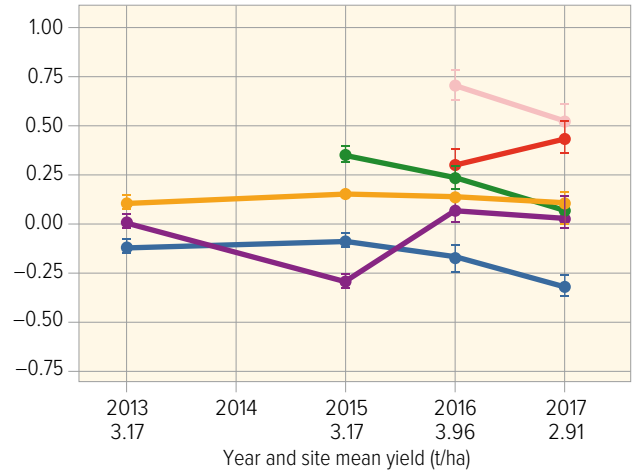


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Capella in 2015.

### Main season – Duaringa

Production value (t/ha)

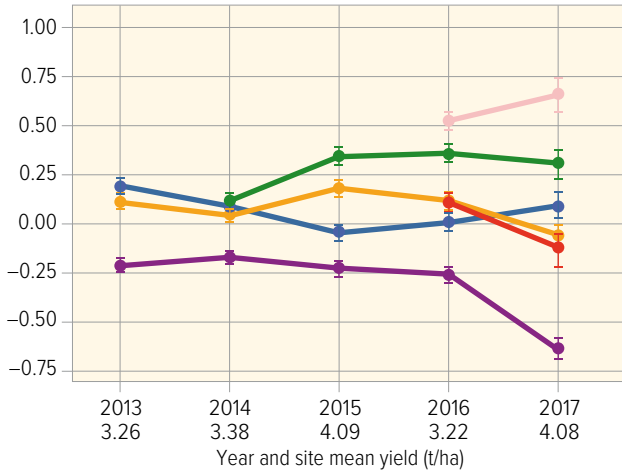


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Duaringa in 2014.

### Main season – Jambin

Production value (t/ha)

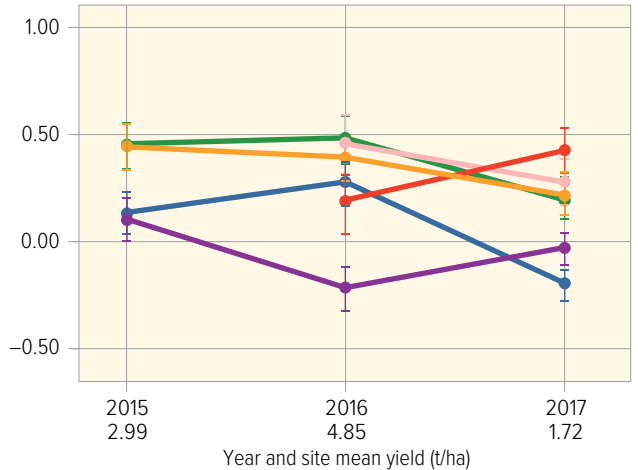


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: 2013 results correspond to Biloela.

### Main season – Bungunya

Production value (t/ha)

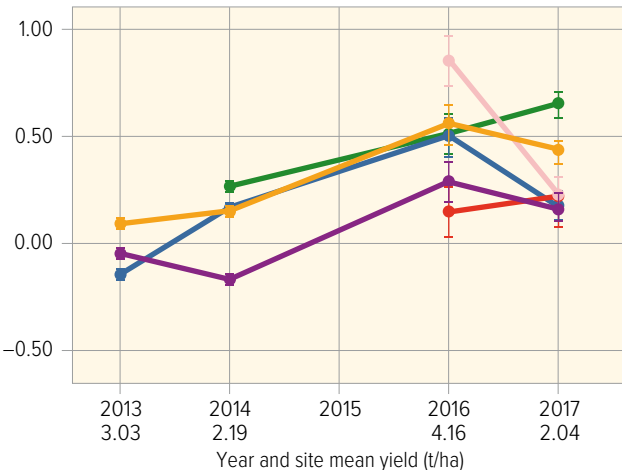


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Bungunya in 2013 or 2014.

### Main season – Dulacca

Production value (t/ha)

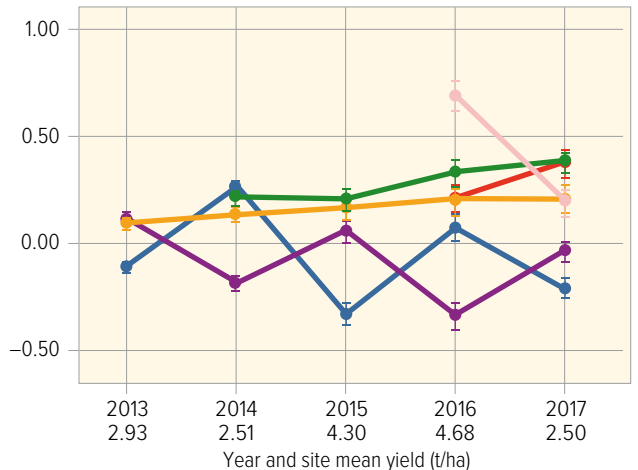


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Dulacca in 2015.

### Main season – Lundavra

Production value (t/ha)

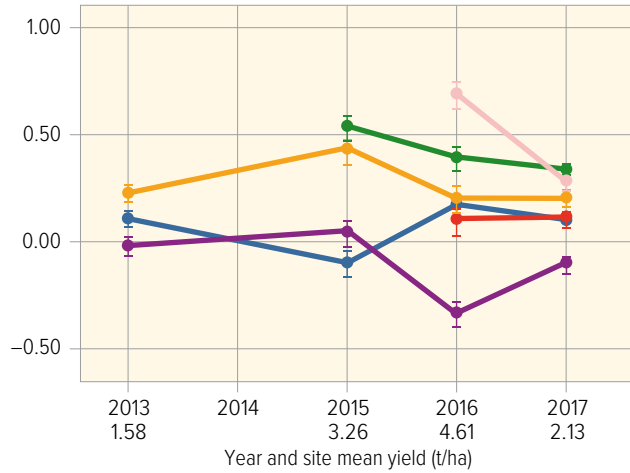


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine



### Main season – Meandarra

Production value (t/ha)

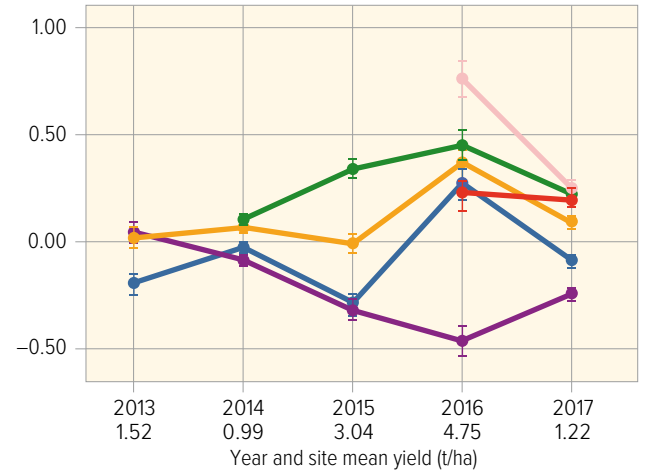


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Meandarra in 2014.

### Main season – Mungindi

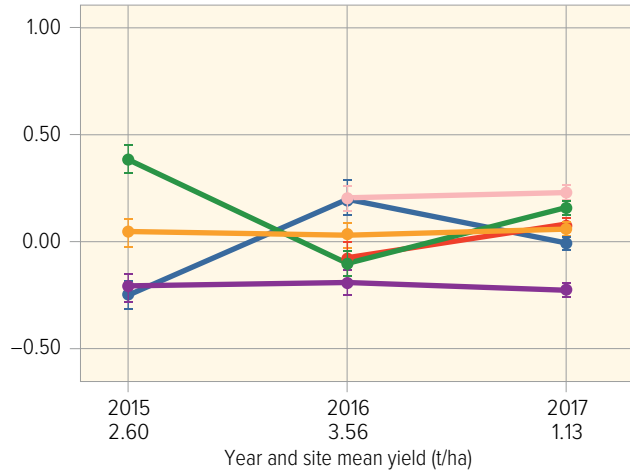
Production value (t/ha)



Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

### Main season – Nindigully

Production value (t/ha)

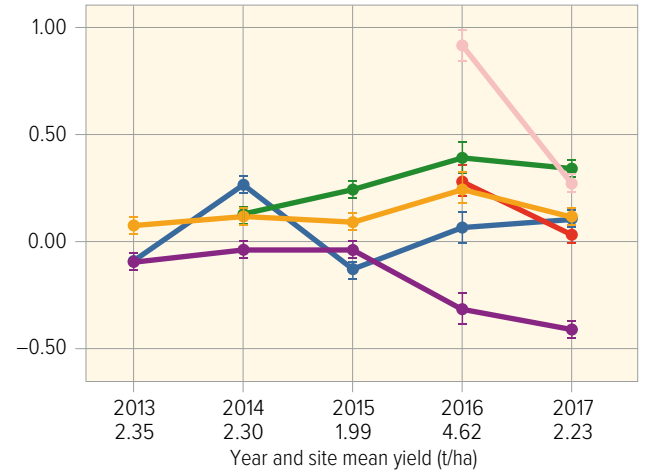


Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Nindigully in 2013 or 2014.

### Main season – Roma

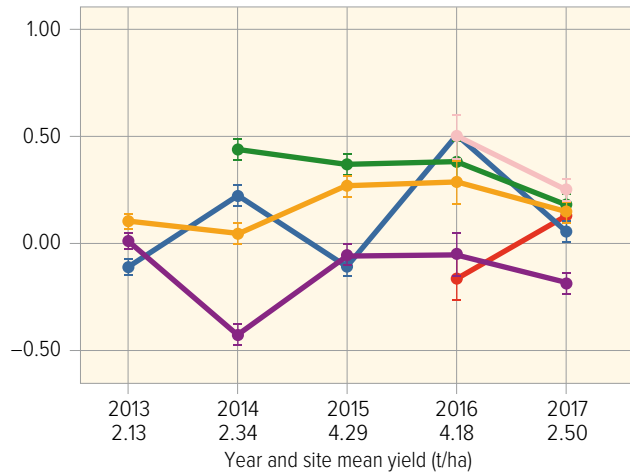
Production value (t/ha)



Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

### Main season – Westmar

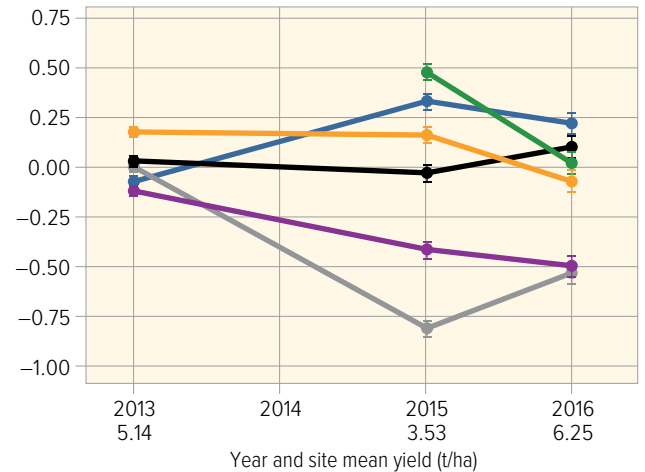
Production value (t/ha)



Legend: EGA Gregory<sup>db</sup>, LongReach Mustang<sup>db</sup>, LongReach Reliant<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

### Main season – Brookstead

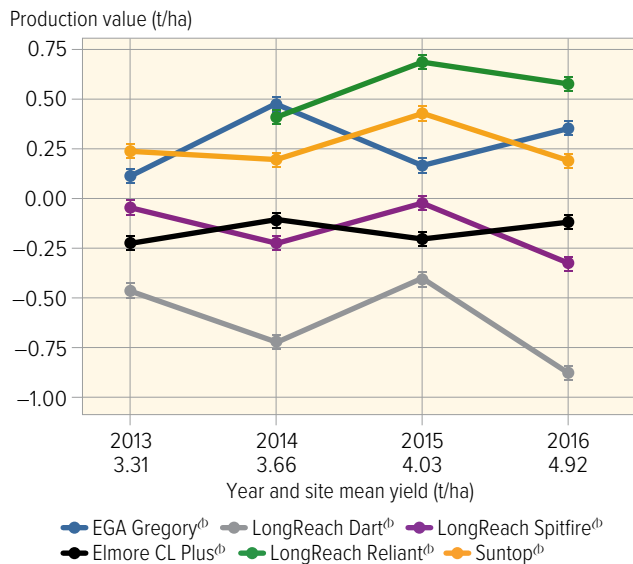
Production value (t/ha)



Legend: EGA Gregory<sup>db</sup>, LongReach Dart<sup>db</sup>, LongReach Spitfire<sup>db</sup>, Elmore CL Plus<sup>db</sup>, LongReach Reliant<sup>db</sup>, Suntop<sup>db</sup>, SEA Condamine

Note: There was not a trial at Brookstead in 2014. Results from the trial in 2017 were omitted due to statistical considerations.

### Main season – Macalister



# NOTES

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# 2019 QUEENSLAND BARLEY VARIETIES

## KEY POINTS

### Varieties under evaluation

- RGT Planet, released in 2016, under evaluation by MBIBTC, target decision date, March, 2019

## Marketing barley

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

## Malting barley

In Queensland, domestic brewing demand is high for Westminster<sup>®</sup>, medium for Commander<sup>®</sup> and currently developing for Compass<sup>®</sup>. RGT Planet<sup>®</sup> is currently under evaluation by Barley Australia with a decision date targeted for March, 2019.

## Food grade and feed varieties

Specifications vary for varieties delivered into these segregations. Check relevant quality standards and grain specifications before deciding on a variety to sow.

## Disease characteristics

### Leaf diseases

#### Powdery mildew

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

#### Leaf rust and stem rust

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

#### Stripe rust

Barley stripe rust ratings have not been included in Table 6 as this disease is not currently present in Australia. However, some barley varieties can be infected by barley grass stripe rust and even wheat stripe rust. Introduction of true barley stripe rust poses a serious threat to the industry. Growers should monitor crops and any suspicious lesions should be collected and sent to the Australian Cereal Rust Survey, PBI, Private Bag 4011, Narellan, NSW 2567.

## Net blotch

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

## Head and root diseases

### Head blight

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

### Loose smut

Barley varieties with Hindmarsh<sup>®</sup> in their pedigree are more susceptible to loose smut. Control is achieved by applying a registered seed dressing at sowing.

### Covered smut

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

### Crown rot

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

### Root lesion nematodes

These nematodes are widespread in the northern grain region and can significantly reduce grain yields. RLN are also hosted by many non-cereal crops, so the absence of a winter cereal crop in recent seasons does not mean that there are low levels of nematodes in the soil. Barley is considered more tolerant than most wheats yet significant yield losses can occur in some varieties. A soil test should be considered prior to planting if you do not know which species are on your farm or their density. If barley is to be sown in nematode-infested soil, the tolerant varieties (listed as T, TMT or MT and highlighted in green in Table 6) should be considered for best yield. Choose a variety that has a higher resistance rating to maximise yield and leave fewer nematodes in the soil to attack the next crop to be planted. The response of a barley variety may differ between the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*, prevalent in the region; refer to Table 6.

## Insects

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

**TABLE 4 Barley – sowing time suggestions.**

| District  | Varieties in order of maturity (slow to quick) within each broad maturity group   | Planting times by weeks |   |   |   |     |   |   |   |      |   |   |   |      |   |   |   |
|---|---|-------------------------|---|---|---|-----|---|---|---|------|---|---|---|------|---|---|---|
|   |   | April                   |   |   |   | May |   |   |   | June |   |   |   | July |   |   |   |
|   |   | 1                       | 2 | 3 | 4 | 1   | 2 | 3 | 4 | 1    | 2 | 3 | 4 | 1    | 2 | 3 | 4 |
| Central Highlands                                 | Granger <sup>Ⓛ</sup> , Westminster <sup>Ⓛ</sup> ,   |                         |   | E | E | C   | C | C | C | C    | L |   |   |      |   |   |   |
|   | Commander <sup>Ⓛ</sup> , RGT Planet <sup>Ⓛ</sup> , Scope CL <sup>Ⓛ</sup>  |                         |   |   | E | E   | C | C | C | C    | L |   |   |      |   |   |   |
|   | Compass <sup>Ⓛ</sup> , Fathom <sup>Ⓛ</sup> , Hindmarsh <sup>Ⓛ</sup> , La Trobe <sup>Ⓛ</sup> , Rosalind <sup>Ⓛ</sup> , Shepherd <sup>Ⓛ</sup> , Spartacus CL <sup>Ⓛ</sup> |                         |   |   |   | E   | E | C | C | C    | C | L |   |      |   |   |   |
| Dawson Callide                                    | Granger <sup>Ⓛ</sup> , Westminster <sup>Ⓛ</sup>   |                         |   |   | E | E   | C | C | C | C    | L |   |   |      |   |   |   |
|   | Commander <sup>Ⓛ</sup> , RGT Planet <sup>Ⓛ</sup> , Scope CL <sup>Ⓛ</sup>  |                         |   |   |   | E   | E | C | C | C    | C | L |   |      |   |   |   |
|   | Compass <sup>Ⓛ</sup> , Fathom <sup>Ⓛ</sup> , Hindmarsh <sup>Ⓛ</sup> , La Trobe <sup>Ⓛ</sup> , Rosalind <sup>Ⓛ</sup> , Shepherd <sup>Ⓛ</sup> , Spartacus CL <sup>Ⓛ</sup> |                         |   |   |   |     | E | C | C | C    | C | L |   |      |   |   |   |
| Maranoa, Balonne                                  | Granger <sup>Ⓛ</sup> , Westminster <sup>Ⓛ</sup>   |                         |   |   | E | E   | C | C | C | C    | C | L |   |      |   |   |   |
|   | Commander <sup>Ⓛ</sup> , RGT Planet <sup>Ⓛ</sup> , Scope CL <sup>Ⓛ</sup>  |                         |   |   |   | E   | E | C | C | C    | C | C | L |      |   |   |   |
|   | Compass <sup>Ⓛ</sup> , Fathom <sup>Ⓛ</sup> , Hindmarsh <sup>Ⓛ</sup> , La Trobe <sup>Ⓛ</sup> , Rosalind <sup>Ⓛ</sup> , Shepherd <sup>Ⓛ</sup> , Spartacus CL <sup>Ⓛ</sup> |                         |   |   |   |     | E | E | C | C    | C | C | C | L    |   |   |   |
| Darling Downs (Northern, Uplands)                 | Granger <sup>Ⓛ</sup> , Westminster <sup>Ⓛ</sup>   |                         |   | E | E | C   | C | C | C | C    | C | L |   |      |   |   |   |
|   | Commander <sup>Ⓛ</sup> , RGT Planet <sup>Ⓛ</sup> , Scope CL <sup>Ⓛ</sup>  |                         |   |   |   | E   | E | C | C | C    | C | C | L |      |   |   |   |
|   | Compass <sup>Ⓛ</sup> , Fathom <sup>Ⓛ</sup> , Hindmarsh <sup>Ⓛ</sup> , La Trobe <sup>Ⓛ</sup> , Rosalind <sup>Ⓛ</sup> , Shepherd <sup>Ⓛ</sup> , Spartacus CL <sup>Ⓛ</sup> |                         |   |   |   |     |   | E | E | C    | C | C | C | C    | L |   |   |
| Darling Downs High frost risk (Central, Southern) | Granger <sup>Ⓛ</sup> , Westminster <sup>Ⓛ</sup>   |                         |   |   |   |     |   | E | E | C    | C | C | C | C    | L |   |   |
|   | Commander <sup>Ⓛ</sup> , RGT Planet <sup>Ⓛ</sup> , Scope CL <sup>Ⓛ</sup>  |                         |   |   |   |     |   |   | E | E    | C | C | C | C    | C | L |   |
|   | Compass <sup>Ⓛ</sup> , Fathom <sup>Ⓛ</sup> , Hindmarsh <sup>Ⓛ</sup> , La Trobe <sup>Ⓛ</sup> , Rosalind <sup>Ⓛ</sup> , Shepherd <sup>Ⓛ</sup> , Spartacus CL <sup>Ⓛ</sup> |                         |   |   |   |     |   |   |   | E    | E | C | C | C    | C | C | L |
| Central Burnett South Burnett & West Moreton*     | Granger <sup>Ⓛ</sup> , Westminster <sup>Ⓛ</sup>   |                         |   |   | E | E   | C | C | C | C    | C | C | L |      |   |   |   |
|   | Commander <sup>Ⓛ</sup> , RGT Planet <sup>Ⓛ</sup> , Scope CL <sup>Ⓛ</sup>  |                         |   |   |   |     | E | E | C | C    | C | C | C | L    |   |   |   |
|   | Compass <sup>Ⓛ</sup> , Fathom <sup>Ⓛ</sup> , Hindmarsh <sup>Ⓛ</sup> , La Trobe <sup>Ⓛ</sup> , Rosalind <sup>Ⓛ</sup> , Shepherd <sup>Ⓛ</sup> , Spartacus CL <sup>Ⓛ</sup> |                         |   |   |   |     |   | E | E | C    | C | C | C | C    | C | L |   |

**■ – Early:** Early-planted crops face the risk of frost damage from pre-flowering to grain fill. Therefore, plant early in areas of low frost risk, such as higher slopes, and reduce the risk of frost damage by planting more than one variety and by varying planting times.

Warm weather encourages rapid early plant development. Where possible, plant shallow into moisture and use press wheels to aid establishment. Increase the plant population for all varieties to compensate for reduced tillering in warm growing conditions. Maturity groupings may differ from district to district, particularly from central to southern Queensland.

**■ – Conventional:** Varieties sown at their most appropriate planting times flower after the main frost period, although late frosts may still cause damage.

**■ – Late:** The reliability of yield can be low following a very late planting due to high temperatures during flowering and grain filling.

\* Plant varieties two weeks earlier in the West Moreton

**TABLE 5 Barley disease ratings.**

| Barley varieties          | Root lesion nematodes          |                               |                                  |                                 | Crown rot | Common root rot | Leaf rust | Leaf scald | Net form <sup>U</sup> net blotch | Spot form net blotch | Powdery mildew |
|---------------------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|-----------|-----------------|-----------|------------|----------------------------------|----------------------|----------------|
|                           | <i>P. thornei</i> resistance % | <i>P. thornei</i> tolerance * | <i>P. neglectus</i> resistance % | <i>P. neglectus</i> tolerance * |           |                 |           |            |                                  |                      |                |
| Compass <sup>Ⓛ</sup>      | MR                             | TMT                           | MRMS                             | TMT                             | S         | MS              | VS        | SVS        | MS                               | MRMS                 | S              |
| Commander <sup>Ⓛ</sup>    | MRMS                           | MT                            | MRMS                             | MTMI                            | S         | MSS             | S         | VS         | S/MS                             | MSS                  | S              |
| Fathom <sup>Ⓛ</sup>       | MR                             | -                             | MRMS                             | -                               | SVS       | MSS             | MRMS      | MS         | S/MRMS                           | RMR                  | S              |
| Granger <sup>Ⓛ</sup>      | MRMS                           | MTMI                          | MRMS                             | MII(p)                          | SVS       | S               | MR        | SVS        | S/MS                             | SVS                  | R              |
| Hindmarsh <sup>Ⓛ</sup>    | MRMS                           | TMT                           | MRMS                             | MTMI                            | S         | S               | MSS       | VS         | MS                               | SVS                  | VS             |
| La Trobe <sup>Ⓛ</sup>     | MRMS                           | MT                            | MRMS                             | MT(p)                           | SVS       | S               | MSS       | SVS        | MS                               | SVS                  | SVS            |
| RGT Planet <sup>Ⓛ</sup>   | RMR(p)                         | -                             | MRMS(p)                          | TMT(p)                          | MSS       | MSS             | MR        | MSS        | S                                | S                    | R              |
| Rosalind <sup>Ⓛ</sup>     | MR                             | T(p)                          | MRMS                             | MT                              | MSS       | S               | MR        | S          | MR                               | MS                   | VS             |
| Scope CL <sup>Ⓛ</sup>     | MRMS                           | MI                            | MRMS                             | MI(p)                           | SVS       | MS              | S         | SVS        | MRMS                             | MSS                  | RMR            |
| Shepherd <sup>Ⓛ</sup>     | MSS                            | MI                            | MRMS                             | MI(p)                           | MSS       | MSS             | MR        | SVS        | SVS/MRMS                         | SVS                  | S              |
| Spartacus CL <sup>Ⓛ</sup> | MRMS                           | MI(p)                         | MRMS                             | -                               | S         | MS              | MSS       | VS         | MS                               | SVS                  | SVS            |
| Westminster <sup>Ⓛ</sup>  | MS                             | I                             | MRMS                             | IVI                             | S         | MSS             | MR        | MS         | S/MRMS                           | S                    | R              |

An alpha scale is used to indicate levels of resistance to diseases and other conditions.

R (Resistant) = 9  
 RMR (Resistant – Moderately Resistant) = 8  
 MR (Moderately Resistant) = 7  
 MRMS (Moderately Resistant – Moderately Susceptible) = 6  
 MS (Moderately Susceptible) = 5  
 MSS (Moderately Susceptible – Susceptible) = 4  
 S (Susceptible) = 3  
 SVS (Susceptible – Very Susceptible) = 2  
 VS (Very Susceptible) = 1  
 - indicates that a rating is not available.

T (Tolerant) = 9  
 TMT (Tolerant – Moderately Tolerant) = 8  
 MT (Moderately Tolerant) = 7  
 MTMI (Moderately Tolerant – Moderately Intolerant) = 6  
 MI (Moderately Intolerant) = 5  
 MII (Moderately Intolerant – Intolerant) = 4  
 I (Intolerant) = 3  
 IVI (Intolerant – Very Intolerant) = 2  
 VI (Very Intolerant) = 1

■ – High Risk    ■ – Medium Risk    ■ – Low Risk

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

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

<sup>U</sup> In this column, ratings separated by ‘/’ denotes different responses to different pathotypes.

(p) RLN data relating to these varieties is based on less than four years of testing and is to be considered provisional information.

**TABLE 6 Barley – varietal details.**

| Variety                     | Varietal information         |                     |                      |                 |                                |                              | Comments (as supplied by breeding companies)  |
|-----------------------------|------------------------------|---------------------|----------------------|-----------------|--------------------------------|------------------------------|---|
|                             | Plant Breeder's Rights (PBR) | End Point Royalties | Variety owner *      | Year of release | Royalty manager, EPR collector | EPR rate \$/tonne (GST excl) |   |
| Commander <sup>(b)</sup>    | (b)                          | ✓                   | Uni of Adelaide      | 2008            | Seednet                        | \$3.80                       | Malt variety suited to domestic and export markets. Can lodge if sown too early and in high-yielding situations. Rated susceptible to net form net blotch.                                |
| Compass <sup>(b)</sup>      | (b)                          | ✓                   | Uni of Adelaide      | 2013            | Seednet                        | \$3.80                       | Malt-accredited variety. Earlier flowering compared to Commander <sup>(b)</sup> with good grain size. Can lodge if sown too early and in high-yielding situations. Rated VS to leaf rust. |
| Fathom <sup>(b)</sup>       | (b)                          | ✓                   | Uni of Adelaide      | 2012            | Seednet                        | \$2.00                       | Feed grade variety, with large grain size and long coleoptile length. Good resistance to spot form net blotch. Rated susceptible to net form net blotch.                                  |
| Granger <sup>(b)</sup>      | (b)                          | ✓                   | Nickersons           | 2013            | Heritage Seeds                 | \$2.95                       | Malt-accredited variety. Medium to late maturity. Susceptible to Shepherd strain of net form of net blotch and SVS to spot form of net blotch.  |
| Hindmarsh <sup>(b)</sup>    | (b)                          | ✓                   | Ag Victoria Services | 2006            | Seednet                        | \$1.50                       | Food grade variety, segregate for marketing. A semi-dwarf variety, avoid deep sowing due to a shorter coleoptile length. Susceptible to spot form of net blotch and powdery mildew.       |
| La Trobe <sup>(b)</sup>     | (b)                          | ✓                   | InterGrain           | 2013            | Syngenta                       | \$4.00                       | Malt-accredited variety, suited to the export trade. A semi-dwarf variety, avoid deep sowing due to shorter coleoptile length. Susceptible to spot form of net blotch and powdery mildew. |
| RGT Planet <sup>(b)</sup>   | (b)                          | ✓                   | RAGT                 | 2017            | Seedforce                      | \$4.00                       | Currently under malt evaluation by Barley Australia. Yielded well in 2016 NVT series. Susceptible to spot and net form of net blotch.   |
| Rosalind <sup>(b)</sup>     | (b)                          | ✓                   | InterGrain           | 2015            | Syngenta                       | \$3.50                       | Feed grade variety. Avoid deep sowing due to shorter coleoptile length. Rated VS to powdery mildew.   |
| Scope CL <sup>(b)</sup>     | (b)                          | ✓                   | Ag Victoria Services | 2010            | Seednet                        | \$3.50                       | Malt-accredited variety. A tall, Clearfield® tolerant variety. Suffers head-loss under some situations.   |
| Shepherd <sup>(b)</sup>     | (b)                          | ✓                   | QDAF                 | 2008            | Seednet                        | \$2.30                       | Feed grade variety. A tall variety with long coleoptile. Susceptible to powdery mildew and SVS to both forms of net blotch.   |
| Spartacus CL <sup>(b)</sup> | (b)                          | ✓                   | InterGrain           | 2016            | Syngenta                       | \$4.25                       | Malt-accredited variety. A semi-dwarf, Clearfield® tolerant variety. Avoid deep sowing due to shorter coleoptile length. Susceptible to spot form of Net blotch and powdery mildew.       |
| Westminster <sup>(b)</sup>  | (b)                          | ✓                   | Nickersons           | 2010            | Grainsearch                    | \$3.00                       | Malt-accredited variety. Medium to late maturity. Susceptible to net and spot form of Net blotch.   |

\* QDAF – Queensland Department of Agriculture and Fisheries

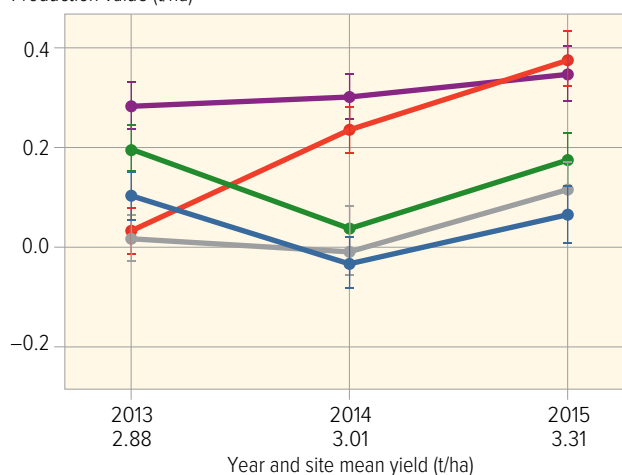
(b) Varieties displaying this symbol are protected under the Plant Breeder's Rights Act. Unauthorised sale of seed of these varieties is an infringement under this Act.

## Locality-based barley grain yield graphs, National Variety Trials, 2013–17

The mean grain yield of a variety in a region is formed by averaging a variety's performance across trial locations within each region. Averaging over locations within a region masks variety by environment interaction, that is, the ability of a variety to yield differently between locations or across seasons (years). The production value shown in the graphs below unlocks the variability in grain yield performance of each variety observed over different locations and seasons in the NVT program. The production value (PV) is the varietal yield advantage (t/ha) of a variety at an environment. The PVs are shown as positive or negative differences relative to a baseline, which reflects the expected average yield of all the varieties tested in each environment. Varieties may be viewed as having expected yields that are equal to the baseline (PV=0) or above (PV>0) or below (PV<0) average for each particular environment. The possible range of variation around the expected yield of each variety in each environment is displayed in the graphs using small vertical (error) bars. The graphs are given for a standard set of varieties in all locations where, if possible, more than four years of testing has been performed. Further information can be obtained upon request from Clayton Forknall (clayton.forknall@daf.qld.gov.au).

### Barley – Jambin

Production value (t/ha)

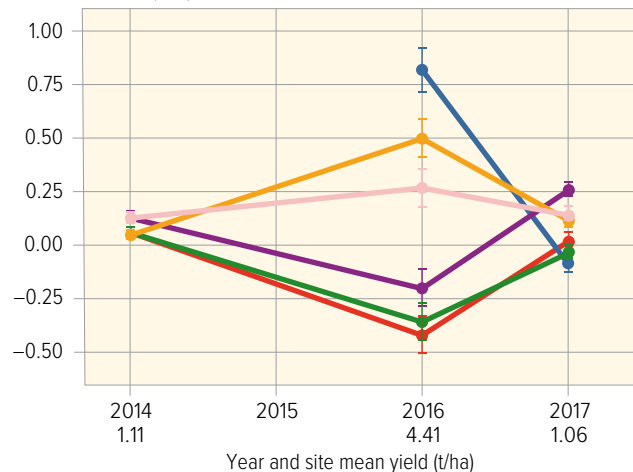


Legend: Commander<sup>(b)</sup> (red), Compass<sup>(b)</sup> (purple), Fathom<sup>(b)</sup> (grey), Granger<sup>(b)</sup> (blue), Shepherd<sup>(b)</sup> (green)

Note: 2013 results correspond to trial at Biloela; there was not a trial at Jambin in 2016.

### Barley – Mungindi

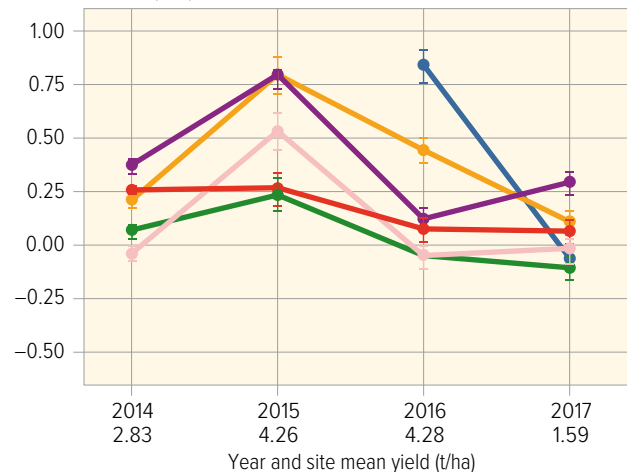
Production value (t/ha)



Note: There was not a trial at Mungindi in 2013 or 2015.

### Barley – Westmar

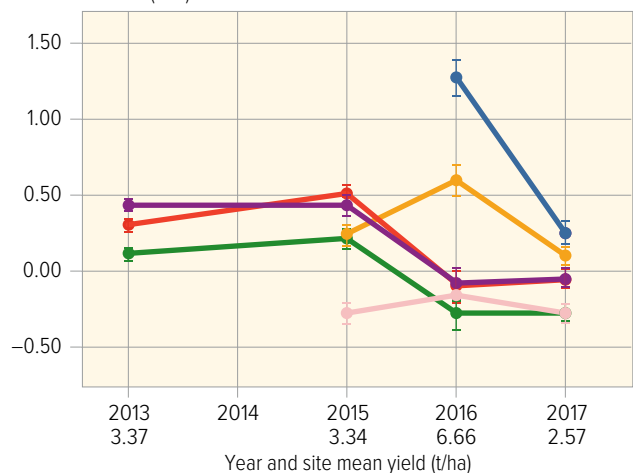
Production value (t/ha)



Note: There was not a trial at Westmar in 2013.

### Barley – Brookstead

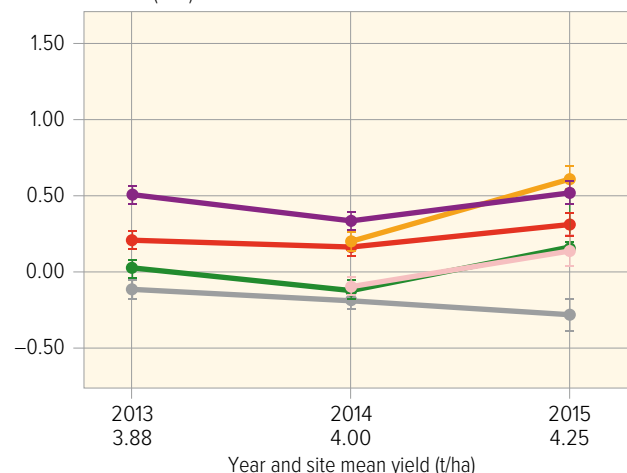
Production value (t/ha)



Note: There was not a trial at Brookstead in 2014.

### Barley – Macalister

Production value (t/ha)



Note: There was not a trial at Macalister in 2016 or 2017.

# 2019 QUEENSLAND CHICKPEA VARIETIES

## KEY POINTS

### New variety available for sowing

- PBA Drummond<sup>®</sup>, an early season, variety for Central Queensland

## Introduction

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

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

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

## Inoculation

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

## Diseases

### Leaf diseases

#### Ascochyta blight

Chickpeas can be infected by ascochyta blight (AB) at several growth stages. Ascochyta inoculum can be found as infected chickpea stubble, internally infected seed, externally infected seed (due to contamination by affected residue) and infected volunteer chickpea plants growing over summer. Variety disease ratings for ascochyta blight which appear in Table 10 are based on northern Australia results.

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

#### Botrytis grey mould

Botrytis grey mould (BGM) is an airborne foliar disease present when temperatures are rising and canopy closure is likely.

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

#### Phytophthora root rot

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

### Root diseases

#### Root lesion nematodes

These nematodes are widespread in the northern grain region and can significantly reduce grain yields. RLN are also hosted by many non-cereal crops so that the absence of a winter cereal crop in recent seasons does not mean that there are low levels of nematodes in the soil. A soil test should be considered prior to planting if you do not know which species are on your farm or their density. Choose a variety that has a higher resistance rating to maximise yield and leave fewer nematodes in the soil to attack the next crop to be planted. A chickpea variety may react differently to the two species of RLN, *Pratylenchus thornei* and *Pratylenchus neglectus*, prevalent in the region; refer to Table 10.



**TABLE 7 Chickpea – sowing time suggestions.**

| District  | Varieties   | Planting times by weeks |     |   |   |   |      |   |   |   |  |
|---|---|-------------------------|-----|---|---|---|------|---|---|---|--|
|   |   | April                   | May |   |   |   | June |   |   |   |  |
|   |   | 4                       | 1   | 2 | 3 | 4 | 1    | 2 | 3 | 4 |  |
| <b>Low rainfall tropical. Central Highlands.</b><br>See Notes 1,2,3       | PBA Drummond <sup>(D)</sup> , PBA Pistol <sup>(D)</sup> , Kyabra <sup>(D)</sup> , Moti <sup>(D)</sup> , PBA Seamer <sup>(D)</sup> , PBA HatTrick <sup>(D)</sup> | E                       | E   | C | C | C | C    | L | L |   |  |
| <b>Low rainfall tropical Dawson Callide (Biloela).</b><br>See Notes 1,2,3 | PBA Drummond <sup>(D)</sup> , PBA Pistol <sup>(D)</sup> , Kyabra <sup>(D)</sup> , Moti <sup>(D)</sup> , PBA Seamer <sup>(D)</sup> , PBA HatTrick <sup>(D)</sup> | E                       | E   | C | C | C | C    | L | L |   |  |
| <b>Low rainfall sub-tropical. Maranoa, Balonne.</b><br>See Notes 1,2,3,4  | Kyabra <sup>(D)</sup> , PBA Seamer <sup>(D)</sup> , PBA HatTrick <sup>(D)</sup> , PBA Boundary <sup>(D)</sup> , Jimbour   |                         | E   | E | C | C | C    | C | L | L |  |
| <b>Medium rainfall sub-tropical. Darling Downs.</b><br>See Notes 1,2,3,4  | PBA Seamer <sup>(D)</sup> , PBA HatTrick <sup>(D)</sup> , PBA Boundary <sup>(D)</sup> , Kyabra <sup>(D)</sup> , Jimbour   |                         | E   | E | C | C | C    | C | L | L |  |

- 1. E – Early:** Early sowings can increase the risk of frost damage and the risk of greater crop biomass, which in turn can increase lodging and botrytis grey mould disease later in the season.
  - 2. L – Late:** Late sowings can increase the risk of heat stress at grain fill, attract greater *Helicoverpa* pressure and increase the risk of reducing plant height, leading to harvest difficulties.
  - 3. E – Early:** Early-flowering varieties have the potential to pose greater frost risk. Refer to relevant Variety Management Package (VMP) brochures available from the GRDC, Pulse Australia or relevant seed supply company for each variety.
  - 4. E – Early:** Early sowings expose the crop to more rain events which can increase the risk of ascochyta blight and Phytophthora root rot diseases.
- C** – Conventional: Varieties sown at their most appropriate planting times flower after the main frost period, although late frosts may still cause damage.

**TABLE 8 Chickpea disease ratings.**

| Chickpea varieties          | Root lesion nematodes          |                               |                                  |                                 | Ascochyta blight | Phytophthora root rot |
|-----------------------------|--------------------------------|-------------------------------|----------------------------------|---------------------------------|------------------|-----------------------|
|                             | <i>P. thornei</i> resistance % | <i>P. thornei</i> tolerance * | <i>P. neglectus</i> resistance % | <i>P. neglectus</i> tolerance * |                  |                       |
| PBA Seamer <sup>(D)</sup>   | MS                             | -                             | MRMS                             | -                               | MR               | MR                    |
| PBA HatTrick <sup>(D)</sup> | MS                             | -                             | MRMS                             | -                               | MS               | MR                    |
| PBA Boundary <sup>(D)</sup> | MS                             | -                             | -                                | -                               | MS               | S                     |
| PBA Drummond <sup>(D)</sup> | -                              | -                             | -                                | -                               | S                | S                     |
| PBA Pistol <sup>(D)</sup>   | MS                             | -                             | -                                | -                               | VS               | S                     |
| Kyabra <sup>(D)</sup>       | VS                             | -                             | MRMS                             | -                               | VS               | MS                    |
| Jimbour                     | S                              | T                             | -                                | -                               | VS               | MRMS                  |
| Moti <sup>(D)</sup>         | MS                             | -                             | -                                | -                               | VS               | S                     |

An alpha scale is used to indicate levels of resistance to diseases and other conditions.

R (Resistant) = 9

RMR (Resistant – Moderately Resistant) = 8

MR (Moderately Resistant) = 7

MRMS (Moderately Resistant – Moderately Susceptible) = 6

MS (Moderately Susceptible) = 5

MSS (Moderately Susceptible – Susceptible) = 4

S (Susceptible) = 3

SVS (Susceptible – Very Susceptible) = 2

VS (Very Susceptible) = 1

- indicates that a rating is not available.

**H** – High Risk    **M** – Medium Risk    **L** – Low Risk

T (Tolerant) = 9

TMT (Tolerant – Moderately Tolerant) = 8

MT (Moderately Tolerant) = 7

MTMI (Moderately Tolerant – Moderately Intolerant) = 6

MI (Moderately Intolerant) = 5

MII (Moderately Intolerant – Intolerant) = 4

I (Intolerant) = 3

IVI (Intolerant – Very Intolerant) = 2

VI (Very Intolerant) = 1

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

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

(p) RLN data relating to these varieties is based on less than four years of testing and is to be considered provisional information.

**TABLE 9 Chickpea – varietal details.**

| Variety                     | Varietal information         |                     |                 |                                |                              |                 | Comments   |
|-----------------------------|------------------------------|---------------------|-----------------|--------------------------------|------------------------------|-----------------|--|
|                             | Plant Breeder's Rights (PBR) | End Point Royalties | Variety owner * | Royalty manager, EPR collector | EPR rate \$/tonne (GST excl) | Year of release |  |
| PBA Drummond <sup>(b)</sup> | (b)                          | ✓                   | PBA             | SeedNet                        | \$4.95                       | 2018            | Tall, erect, high-yielding variety evaluated and released in Central Queensland with limited Ascochyta blight (AB) resistance. Lodging resistant. PBA HatTrick <sup>(b)</sup> /PBA Pistol <sup>(b)</sup> cross.  |
| PBA Seamer <sup>(b)</sup>   | (b)                          | ✓                   | PBA             | SeedNet                        | \$4.00                       | 2016            | Most resistant variety to all three diseases (AB, PRR, BGM). Semi-erect plant type with high yield. Lodging resistant with improved seed quality. PBA HatTrick <sup>(b)</sup> cross, bred for southern Queensland conditions.  |
| PBA Pistol <sup>(b)</sup>   | (b)                          | ✓                   | PBA             | SeedNet                        | \$4.00                       | 2011            | PBA Pistol <sup>(b)</sup> was released as a Moti <sup>(b)</sup> replacement; it is taller, more resistant to lodging offering improved harvestability, high-yielding with large seed size. PBA Pistol <sup>(b)</sup> must not be grown south of Theodore/Rolleston due to its susceptibility to ascochyta blight. Evaluated and released in Central Queensland and susceptible to all three diseases (AB, PRR, BGM). Lodging resistant. Moti <sup>(b)</sup> cross. |
| PBA Boundary <sup>(b)</sup> | (b)                          | ✓                   | PBA             | SeedNet                        | \$4.00                       | 2011            | Moderately susceptible to ascochyta blight but susceptible to Phytophthora root rot. Tall, erect with high yield. Lodging resistant and bred for southern Queensland. Jimbour cross.   |
| PBA HatTrick <sup>(b)</sup> | (b)                          | ✓                   | PBA             | SeedNet                        | \$4.00                       | 2009            | Moderate susceptibility to ascochyta blight and moderate resistance to Phytophthora root rot. High yields in and bred for southern Queensland. Jimbour cross.  |
| Kyabra <sup>(b)</sup>       | (b)                          |                     | QDAF/NSW DPI    | Heritage Seeds                 | Nil                          | 2005            | Tall, erect, high-yielding variety with large seed size and susceptible to all three diseases (AB, PRR, BGM). Lodging resistant, bred for southern Queensland but performs well in Central Queensland as well. Amethyst/Norwin/Barwon cross. Seed royalty applies, no EPR.   |
| Moti <sup>(b)</sup>         | (b)                          | ✓                   | DAWA            | SeedNet                        | \$2.50                       | 2003            | WA-bred line, tall, erect, high-yielding variety evaluated and released in Central Queensland with no disease resistance. Lodging resistant.   |
| Jimbour                     |                              |                     | QDAF/NSW DPI    | None                           | Nil                          | 2001            | Older variety susceptible to all three diseases. Tall, erect, lodging resistant. No EPR.   |

\* DAWA – Department of Agriculture, Western Australia, NSW DPI – New South Wales Department of Primary Industries, PBA – Pulse Breeding Australia, QDAF – Queensland Department of Agriculture and Fisheries.

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

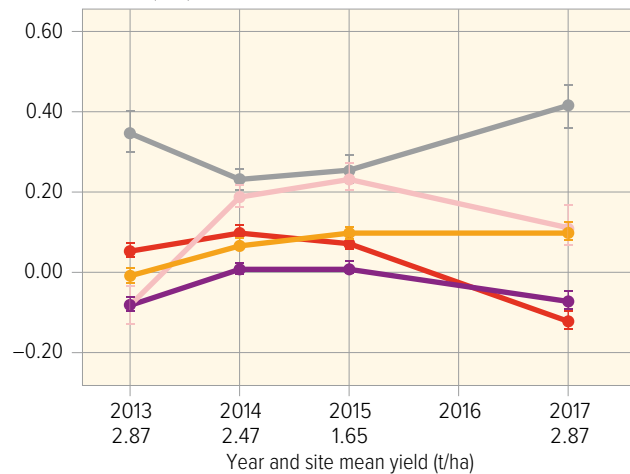
# Locality-based chickpea grain yield graphs, National Variety Trials and Pulse Breeding Australia breeding sites, 2013–17

The mean grain yield of a variety in a region is formed by averaging a variety's performance across trial locations within each region. Averaging over locations within a region masks variety by environment interaction; that is, the ability of a variety to yield differently between locations or across seasons (years). The production value shown in the graphs below unlocks the variability in grain yield performance of each variety observed over different locations and seasons in the NVT program. The production value is the varietal yield advantage (t/ha) of a variety at an environment. The PVs are shown as positive or negative differences relative to a baseline, which reflects the expected

average yield of all the varieties tested in each environment. Varieties may be viewed as having expected yields that are equal to the baseline (PV=0) or above (PV>0) or below (PV<0) average for each particular environment. The possible range of variation around the expected yield of each variety in each environment is displayed in the graphs using small vertical (error) bars. The graphs are given for a standard set of varieties in all locations where, if possible, more than four years of testing has been performed. Further information can be obtained upon request from Clayton Forknall (clayton.forknall@daf.qld.gov.au).

## Chickpea – Emerald

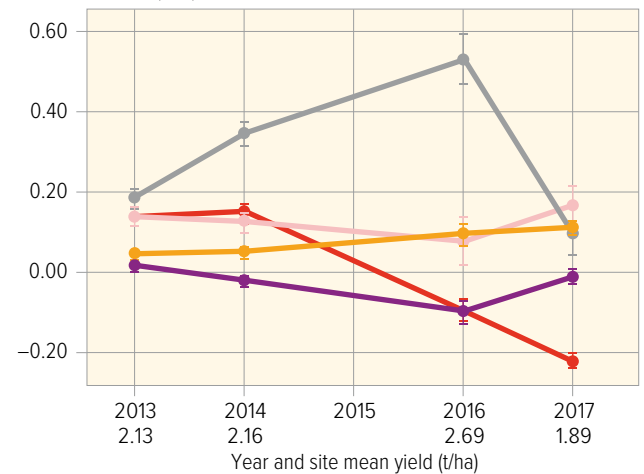
Production value (t/ha)



Note: Results from the trial in 2016 were omitted due to statistical considerations.

## Chickpea – Springsure

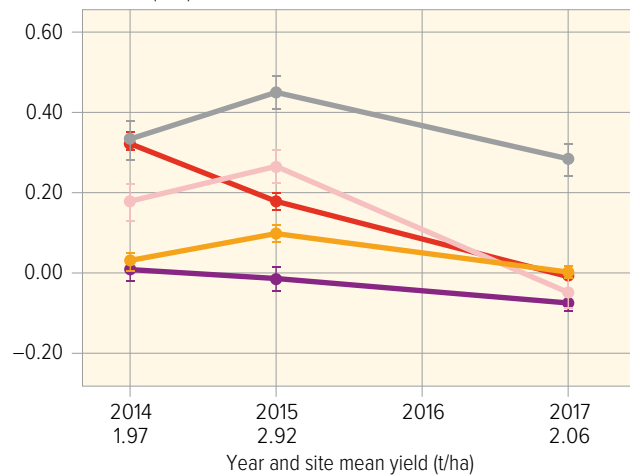
Production value (t/ha)



Note: There was not a trial at Springsure in 2015.

## Chickpea – Banana

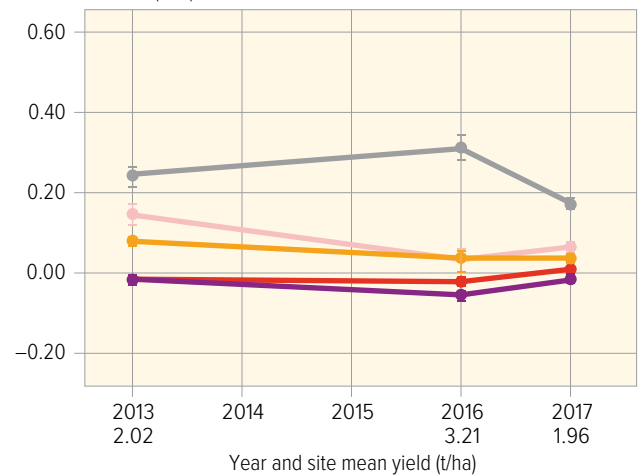
Production value (t/ha)



Note: There was not a trial at Banana or Theodore in 2013 or 2016. 2017 results correspond to trial at Theodore.

## Chickpea – Jambin

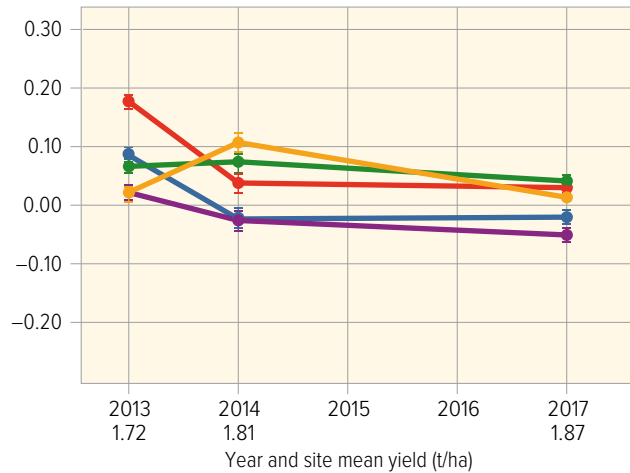
Production value (t/ha)



Note: 2013 results correspond to trial at Biloela; there was not a trial at Jambin in 2014. Results from the 2015 trial were omitted due to statistical considerations.

### Chickpea – Billa Billa

Production value (t/ha)

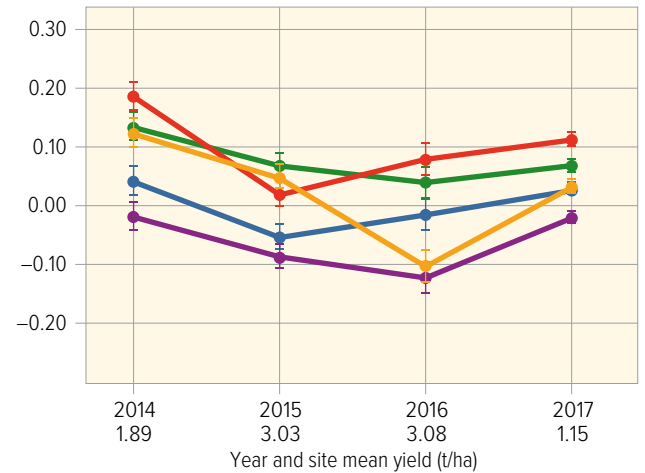


Legend: Jimbour, Kyabra<sup>db</sup>, PBA Boundary<sup>db</sup>, PBA HatTrick<sup>db</sup>, PBA Seamer<sup>db</sup>

Note: There was not a trial harvested at Billa Billa in 2016. Results from the trial in 2015 were omitted due to statistical considerations (and influenced by PRR).

### Chickpea – Roma

Production value (t/ha)

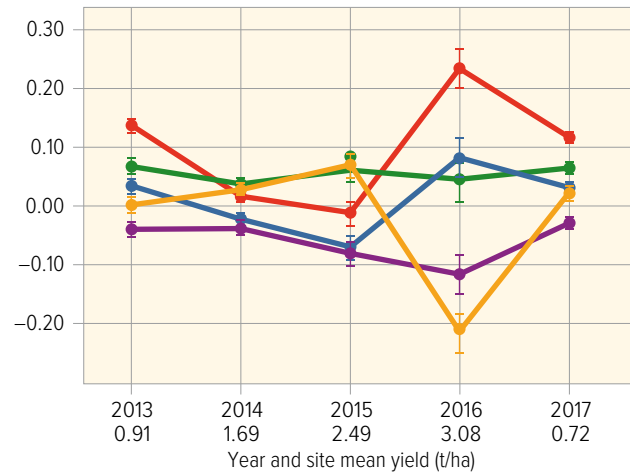


Legend: Jimbour, Kyabra<sup>db</sup>, PBA Boundary<sup>db</sup>, PBA HatTrick<sup>db</sup>, PBA Seamer<sup>db</sup>

Note: Results from the trial in 2013 were omitted due to statistical considerations.

### Chickpea – Westmar

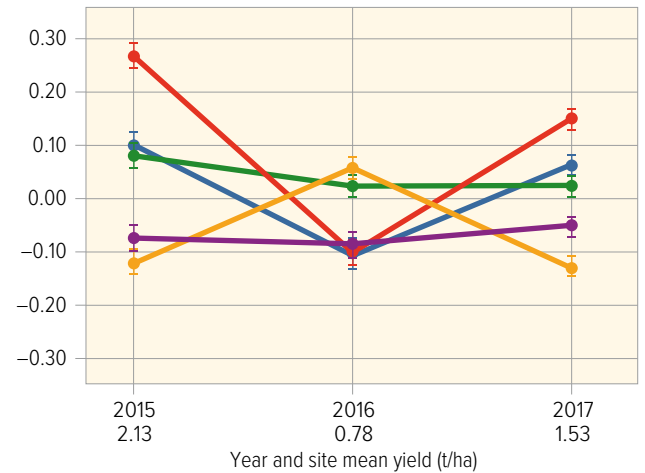
Production value (t/ha)



Legend: Jimbour, Kyabra<sup>db</sup>, PBA Boundary<sup>db</sup>, PBA HatTrick<sup>db</sup>, PBA Seamer<sup>db</sup>

### Chickpea – Brookstead

Production value (t/ha)

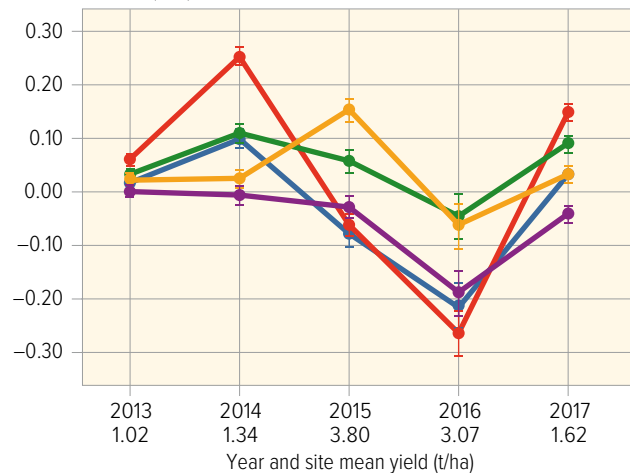


Legend: Jimbour, Kyabra<sup>db</sup>, PBA Boundary<sup>db</sup>, PBA HatTrick<sup>db</sup>, PBA Seamer<sup>db</sup>

Note: There was not a trial at Brookstead in 2013 or 2014.

### Chickpea – Warra

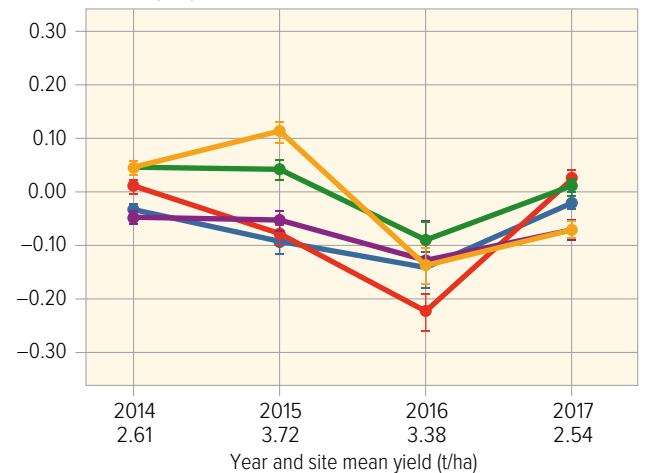
Production value (t/ha)



Legend: Jimbour, Kyabra<sup>db</sup>, PBA Boundary<sup>db</sup>, PBA HatTrick<sup>db</sup>, PBA Seamer<sup>db</sup>

### Chickpea – Warwick

Production value (t/ha)



Legend: Jimbour, Kyabra<sup>db</sup>, PBA Boundary<sup>db</sup>, PBA HatTrick<sup>db</sup>, PBA Seamer<sup>db</sup>

Note: Results from the trial in 2013 were omitted due to statistical considerations.







