Milling oat variety guide for Western Australia 2017

Supporting your success
Acknowledgements

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Company and industry abbreviations:

- CBH – Co-operative Bulk Handling
- DAFWA – Department of Agriculture and Food, Western Australia
- GIWA – Grain Industry Association of Western Australia
- GRDC – Grains Research and Development Corporation
- NVT – National Variety Trials
- SAGI – Statistics for the Australian Grains Industry

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Milling oat variety guide for Western Australia 2017

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Contents

Introduction .................................................................................................................................................. 4
Variety options ........................................................................................................................................... 5
Variety descriptions ................................................................................................................................ 6
  Bannister .................................................................................................................................................. 6
  Carrolup .................................................................................................................................................. 6
  Durack (tested as WA02Q302-9) .............................................................................................................. 6
  Kojonup .................................................................................................................................................... 7
  Mitika ....................................................................................................................................................... 7
  Wandering ............................................................................................................................................... 7
  Williams ................................................................................................................................................... 8
  Yallara ..................................................................................................................................................... 8
Grain yield comparisons ........................................................................................................................... 9
Grain quality comparison .......................................................................................................................... 10
Disease characteristics .............................................................................................................................. 11
Seed Oat Licensees and distributors .......................................................................................................... 11
Introduction

This guide is designed to help you determine which milling oat variety to grow in your region. The guide provides variety characteristics, disease ratings, and agronomic information for milling oat varieties that offer growers the best opportunity to meet market requirements. This guide should be read in conjunction with industry information provided in the Grains Industry of Western Australia “Oat variety and grade update” (available at www.giwa.org.au/oat-council).

There are several oat grain varieties available for delivery into the CBH system. CBH delivery grades are; Oat1; Oat2; and OWAN which is an exclusive segregation for Wandering oats.

The purpose of the Oat1 and Oat2 grades are to provide food grade grain for milling and processing. Oat1 is a premium segregation for varieties specified in Table 1 that have a minimum hectolitre weight of 51kg/hL and a maximum screenings (%<2.0mm) of 10% at delivery. Oat2 deliveries have a minimum hectolitre weight of 49kg/hL, with no limit on screenings and includes the variety Wandering. The OWAN grade provides premium export grade grain of Wandering oats for the racehorse industry. Varieties accepted into these delivery grades for harvest 2017/18 are indicated in Table 1 below.

** Indicates variety may be subject to future review by the GIWA Oat Council. (source: GIWA Oat Variety and Grade Update December 2014)

The decision whether to grow milling oats depends on three main factors:

1. the profitability of Oat1 and Oat2 grain production.

2. the likelihood that grain will meet Oat1 or Oat2 receival specifications.

3. the location of receival segregations for Oat1 and Oat2 varieties.

Table 1. Oat varieties eligible for delivery in the bulk handling system 2017/18.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Oat 1</th>
<th>Oat 2</th>
<th>OWAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bannister</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Carrollup</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coomallo</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durack†</td>
<td>Provisional</td>
<td>Provisional</td>
<td></td>
</tr>
<tr>
<td>Hotham</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kojonup</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Mitika‡</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Mortlock</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pallinup</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Wandering</td>
<td>✔</td>
<td>✔**</td>
<td>✔</td>
</tr>
<tr>
<td>Williams</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Yallara‡</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>
Variety options – choose more than one

Each variety has their own strengths and weaknesses and their characteristics will determine their suitability for your area. No one oat variety is likely to provide optimum agronomic traits, disease resistance, yield and quality in any one year, therefore most successful oat growers choose to grow more than one variety.

The strengths and weaknesses of each oat variety are detailed in the variety description section of this sowing guide.

Variety suggestions

Based on their performance in the NVT and agronomy trials, varieties have been suggested for the high, medium and low rainfall areas; 1) In high rainfall areas high yielding varieties Williams, Kojonup and Wandering are suggested. 2) In medium rainfall areas in the southern half of Agzone 2, varieties Kojonup and Wandering are suggested, while in the northern half of Agzone 2, varieties Bannister, Durack (subject to commercial milling accreditation), Mitika and Wandering are suggested. 3) In the lower rainfall areas Bannister, Wandering and Durack (subject to commercial milling accreditation), are suggested.

Dual purpose varieties

Some milling oat varieties can be also be grown for hay when the appropriate agronomy is applied. A crop which is grown to produce high quality milling grain is unlikely to also meet high quality export hay requirements as the plant density and nutrition applied during the growing season will adversely affect the outcome of the other end product. It is important that growers determine their end product prior to sowing to increase profitability.

Figure 1. Agzone map of the 2010 to 2015 oat NVT trial site locations in WA.
Variety descriptions

**Bannister**

Bannister (released in 2012) is a mid-season maturity tall-dwarf milling variety with a high grain yield (15% higher than Carrolup). It is 15cm shorter than Carrolup and heads about 4 days later than Carrolup, Williams and Yallara. Bannister has similar hectolitre weight to Yallara.

Bannister is susceptible to septoria, thus it is more suited to the lower rainfall regions where septoria disease pressure is reduced and the occurrence of pre-harvest rain which may result in stained grain is lower. Staining of grain occurred in crops which had fungicide applied during the growing season to manage the disease, and the occurrence of stained grain in the lower rainfall region has not been identified to date. Its suitability for the lower rainfall regions is supported by robust hectolitre weight and moderate screenings.

Bannister is resistant to leaf rust, and moderately resistant to resistant to bacterial blight. It is moderately susceptible to barley yellow dwarf virus (BYDV). It is very susceptible to cereal cyst nematode (CCN).

Seed is available through Seednet and Bannister is also eligible for farmer to farmer trading in Western Australia; PBR and EPR of $2.30/tonne (ex GST) applies.

**Herbicide tolerance**


Bannister may be sensitive to label rate applications of Tigrex® (diflufenican + MCPA) sprayed at Z13-Z14, and 2,4-D Amine 625 sprayed at Z15-16 and later.

**Hay suitability**

Bannister has been observed to reach watery ripe (Z71) while it is still in the booting stage. This occurs when the growing season is cut short, and the trait adversely affects curing time, which may cause issues at baling, and during the storage of hay.

**Carrolup**

Carrolup is a widely sown dual purpose variety, which was released in 1993. Carrolup is a tall variety with lower yields than new milling varieties Williams and Bannister.

Carrolup is susceptible to leaf rust and moderately resistant to susceptible to bacterial blight. It is susceptible to very susceptible to septoria.

No PBR or EPR applies to Carrolup. Carrolup is free to trade.

**Herbicide tolerance**

Carrolup may be sensitive to label rate applications of Diuron 500 + Dual® 720 (diuron + metolachlor) when incorporated by seeding, and Bromini® M + Eclipse® (bromoxynil + MCPA + metosulam), and Glean® (chlorsulfuron) sprayed at Z12-Z13, and Conclude® (florasulam + MCPA), and Flight® EC (picolinafen + bromoxynil + MCPA) sprayed at Z13-Z14, 2,4-D Amine 625 sprayed at Z15-16 and later, and Tordon® 75D (2,4-D + picloram) sprayed at Z22.

**Hay suitability**

Carrolup is suitable as an export hay variety.

**Durack**

Durack which was released in 2016 is the earliest maturing oat variety of any current milling or hay variety. Trials indicate that Durack is about 8 days earlier to head than Carrolup, Williams and Yallara. Whilst earlier flowering helps to produce large grains it may also increase the risk of frost during flowering. Durack is a moderately tall potential milling variety – similar in height to Carrolup and Yallara.

Grain yield of Durack is similar to the tall varieties Carrolup and Yallara, and lower than high yielding Williams and Bannister. Durack has an improved hectolitre weight compared to all grain varieties, with hectolitre weight approx. 3kg/hL higher than Carrolup. Screenings are low due to its plump grain shape compared to Williams and Carrolup.

Durack has improved stem (MRMS) and leaf (R-S) rust resistance compared to Carrolup and Wandering, although it is not as resistant.
Variety descriptions

as Williams. It is susceptible to very susceptible to septoria, and moderately susceptible to susceptible to BYDV. It is resistant to CCN.

Seed is available through Heritage Seeds; PBR and EPR of $2.30/tonne (ex GST) applies.

*Note: Durack will undergo commercial milling evaluation following harvest 2016/17. If approved as a milling variety Durack will be added to the list of accepted varieties for delivery in 2017/18.*

**Herbicide tolerance**

Significant yield reduction is known to occur at label rates of Glean (chlorsulfuron) applied at Z12-Z13.

Durack may be sensitive to label rates of Diuron + Dual (metolachlor) applied before seeding and incorporated by sowing, Broadside (bromoxynil + MCPA + dicamba), Conclude (florasulam + MCPA) + uptake oil and Precept (pyrasulfotole + MCPA) applied at Z13-Z14, and Amicide Advance 700 (2,4-D amine) applied at Z15-Z16.

**Hay suitability**

Durack has not yet been evaluated by hay exporters; however observations suggest that Durack is likely to be suitable as an export hay variety.

**Kojonup**

Slightly shorter in height than Wandering, Kojonup is less competitive than Bannister and Williams for grain yield. Its grain yield is similar to dwarf feed variety Wandering and up to 20% higher than non-dwarf variety Carrolup. It has good grain quality, large seed size, high groat percent and hectolitre weight, and low screenings. Kojonup is not suitable for lower rainfall regions (e.g. less than 200mm growing season rainfall).

Released in 2005 by DAFWA, seed of Kojonup is eligible for farmer to farmer trading in Western Australia; PBR and EPR of $2.25/tonne (ex GST) applies.

**Herbicide tolerance**

Kojonup may be sensitive to label rate applications of Glean® (chlorsulfuron) sprayed at Z12-Z13, and 2, 4-D Amine 625 sprayed at Z15-16 and later.

**Hay suitability**

Kojonup is not suitable as an export hay variety.

**Mitika**

Mitika is a dwarf milling oat released in 2003. Yield of Mitika is an improvement on Carrolup, but does not match the yields of Williams and Bannister. Mitika has high hectolitre weight, low screenings, and high groat percent. It also has higher levels of β-glucan than current varieties. Mitika also has improved feed quality with low husk lignin and high grain digestibility.

Mitika is resistant to leaf rust, and moderately resistant to susceptible to stem rust. It is susceptible to BYDV and susceptible to very susceptible to septoria. It is very susceptible to (CCN) and is not recommended in areas where CCN is an issue.

Seed is available through Heritage Seeds and Mitika is also eligible for farmer to farmer trading; PBR and EPR of $2.00/tonne (ex GST) applies.

**Herbicide tolerance**

Mitika may be sensitive to label rate application of Paragon® (picolinafen + MCPA) sprayed at Z15-16 and later.

**Hay suitability**

Mitika is not suitable as an export hay variety.

**Wandering**

Wandering is a dwarf feed variety that has received recognition by the export horse feed market. A special segregation (OWAN) has been in place at selected sites since 2005.

Wandering is also currently received as an Oat2 variety, subject to future review.

Wandering is moderately susceptible to stem rust, and very susceptible to leaf rust. It is moderately resistant to moderately susceptible to BYDV, and susceptible to very susceptible to septoria. It is very susceptible to CCN.

Wandering is eligible for farmer to farmer trading. No EPR applies to Wandering.
Variety descriptions

Herbicide tolerance
Wandering may be sensitive to label rate applications of Diuron + MCPA (amine), and Affinity + MCPA (carfentrazone-ethyl + MCPA) sprayed at Z13-Z15, and to MCPA Amine 500 (MCPA), and Kamba® 500 (dicamba) sprayed at Z15-Z16 and later.

Hay suitability
Wandering is not suitable as an export hay variety.

Williams
Williams is a high yielding, mid-tall milling variety released in 2013. Williams is an early to mid-season variety similar in maturity to Carrolup and Yallara, but three to seven days later than Mitika. Williams is 5cm taller than Bannister.

Williams is the highest yielding milling oat variety available, producing yields similar to Bannister, but higher than Carrolup. Williams has higher screenings than Mitika, Yallara, and Bannister, especially in low rainfall regions. Experience illustrates that Williams is less suitable than Bannister for the lower rainfall regions due to its tendency to have lower hectolitre weight. Williams may lodge in high yielding environments.

Although classified as moderately susceptible for septoria, Williams has the highest level of septoria resistance compared to all other current oat varieties. It is resistant to leaf rust and moderately resistant to stem rust. Williams is resistant to bacterial blight and moderately resistant to moderately susceptible for BYDV. It is susceptible to CCN.

Seed is available through Heritage Seeds and Williams is also eligible for farmer to farmer trading; PBR and EPR of $2.30/tonne (ex GST) applies.

Herbicide tolerance
Significant yield reduction is known to occur at label rate applications of Barrel®/Broadside® (bromoxynil + MCPA + dicamba), and Flight® EC (picolinafen + bromoxynil + MCPA) sprayed at Z13-Z15.

Williams may be sensitive to label rate applications of Diuron 500 + Dual® 720 (diuron + metolachlor) sprayed as a pre-emergent and incorporated by sowing, Glean® (chlorsulfuron) and Conclude® (florasulam + MCPA) sprayed at Z12-Z13. Williams may be sensitive to Diuron + MCPA (amine), Igran® + MCPA (terbutryn + MCPA amine) and Precept® 300 (pyrasulfotole + MCPA) + Hasten™ sprayed at Z13-Z15. Williams may be sensitive to Amicide® 625 (2,4-D amine), and Amicide® Advance 700 (2,4-D amine) sprayed at Z15-Z16 and later.

Hay suitability
Observations suggest that Williams has higher stem diameter than Carrolup, and when this is managed by increasing seed rate Williams is suitable as an export hay variety.

Yallara
Released in 2009 Yallara is a medium tall early to mid-season variety similar in maturity and yield to Carrolup. It has good hectolitre weight, low screenings, and high groat percent.

Yallara is resistant leaf rust and moderately resistant to moderately susceptible to stem rust, but intolerant to CCN. It is moderately resistant to moderately susceptible to BYDV, and moderately susceptible to susceptible to septoria.

Seed is available through Seednet; PBR and EPR of $2.00/tonne (ex GST) applies.

Herbicide tolerance
Yallara may be sensitive to label rate applications of Glean® (chlorsulfuron) sprayed at Z12-Z13, Diuron + MCPA (amine) sprayed at Z13-Z15, and 2,4-D Amine 700 sprayed at Z15-Z16 and later.

Hay suitability
Yallara is suitable as an export hay variety.
Grain yield comparisons

Grain yield data has been provided by the National Variety Trial program (NVT) and is presented in Table 2. Each year the National Variety Trial (NVT) program coordinates approximately 31 oat variety trials, of which 10 are located in Western Australia.

Data presented in this guide is based on trials from 2010 to 2015. While many varieties are included in the NVT trial series (NVT includes current and older varieties, new experimental varieties and some specialty varieties), only current deliverable milling oat varieties are included here. To find the latest NVT data (both long term and seasonal) visit nvtonline.com.au or download the NVT yield app.

Grain yield data is presented by grouping the trials into six Agzones. These Agzones have been developed to group together environmental regions that give similar crop performance in WA.

Table 2. Average grain yield (t/ha) by Agzone for eight oat varieties, 2010 to 2015. (source: data courtesy National Oat Breeding Program, and NVT Program. Analysis by Chris Lisle, SAGI)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Agzone 2</th>
<th>Agzone 3</th>
<th>Agzone 4</th>
<th>Agzone 5</th>
<th>Agzone 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bannister</td>
<td>4.0</td>
<td>3.9</td>
<td>2.0</td>
<td>3.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Carrolup</td>
<td>3.4</td>
<td>3.2</td>
<td>1.8</td>
<td>2.8</td>
<td>3.7</td>
</tr>
<tr>
<td>Durack</td>
<td>3.4</td>
<td>3.3</td>
<td>1.6</td>
<td>2.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Kojonup</td>
<td>3.7</td>
<td>3.6</td>
<td>1.8</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Mitika</td>
<td>3.7</td>
<td>3.4</td>
<td>1.8</td>
<td>3.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Wandering</td>
<td>4.0</td>
<td>3.5</td>
<td>2.2</td>
<td>3.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Williams</td>
<td>4.1</td>
<td>4.1</td>
<td>1.9</td>
<td>3.2</td>
<td>4.6</td>
</tr>
<tr>
<td>Yallara</td>
<td>3.5</td>
<td>3.4</td>
<td>1.7</td>
<td>2.9</td>
<td>3.4</td>
</tr>
<tr>
<td>No. trials</td>
<td>22</td>
<td>16</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>
Grain quality comparison

Grain quality characteristics of a variety are important to consider when selecting an oat variety.

Currently in Western Australia delivery of oat grain into the segregations of Oat1 and Oat2 is limited mainly by two key grain quality specifications; hectolitre weight and screenings. Hectolitre weight of the eight oat varieties suggested for WA are in Table 3.

During 2014 and 2015 high yielding oat variety Williams was observed to produce lower hectolitre weight and higher screenings than other varieties tested. In addition, Williams had greater sensitivity to increasing applied nitrogen in changing hectolitre weight and screenings percent than the other varieties tested (Figure 2).

Table 3. Average hectolitre weight, (kg/hL), and screenings percent (% < 2.0mm) for eight oat varieties in 2015. (source: DAFWA Oat Agronomy Program with grain supplied by the National Variety Trial Program)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Hectolitre weight (kg/hL)</th>
<th>Screenings (%&lt;2.0mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bannister</td>
<td>54</td>
<td>9</td>
</tr>
<tr>
<td>Carrolup</td>
<td>55</td>
<td>12</td>
</tr>
<tr>
<td>Durack</td>
<td>58</td>
<td>6</td>
</tr>
<tr>
<td>Kojonup</td>
<td>54</td>
<td>7</td>
</tr>
<tr>
<td>Mitika</td>
<td>54</td>
<td>5</td>
</tr>
<tr>
<td>Wandering</td>
<td>54</td>
<td>6</td>
</tr>
<tr>
<td>Williams</td>
<td>52</td>
<td>15</td>
</tr>
<tr>
<td>Yallara</td>
<td>55</td>
<td>8</td>
</tr>
<tr>
<td>No. trials</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Figure 2. Effect on hectolitre weight of varieties as applied nitrogen increases in lower rainfall areas 2014-2015. (source: DAFWA Oat Agronomy Program)
Disease characteristics

Disease and virus resistance data is presented in Table 4.

Table 4. Disease characteristics of eight oat varieties, 2016. (Source: National Oat Breeding Program)

<table>
<thead>
<tr>
<th>Variety</th>
<th>Stem rust</th>
<th>Leaf rust</th>
<th>BYDV¹</th>
<th>Septoria</th>
<th>CCN² Resistance</th>
<th>CCN² Tolerance</th>
<th>Red leather leaf</th>
<th>Bacterial blight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bannister</td>
<td>R-MR</td>
<td>R</td>
<td>MS</td>
<td>S</td>
<td>VS</td>
<td>I</td>
<td>MS</td>
<td>MR-S</td>
</tr>
<tr>
<td>Carrolup</td>
<td>MS</td>
<td>S</td>
<td>MS</td>
<td>S-VS</td>
<td>S</td>
<td>I</td>
<td>S</td>
<td>MR-S</td>
</tr>
<tr>
<td>Durack</td>
<td>MR-MS</td>
<td>R-S</td>
<td>MS-S</td>
<td>S-VS</td>
<td>R</td>
<td>MI/MT</td>
<td>MS</td>
<td>MS-S</td>
</tr>
<tr>
<td>Kojonup</td>
<td>R-MS</td>
<td>S</td>
<td>MS</td>
<td>S-VS</td>
<td>VS</td>
<td>I</td>
<td>MS</td>
<td>MS-S</td>
</tr>
<tr>
<td>Mitka</td>
<td>MR-S</td>
<td>R</td>
<td>S</td>
<td>S-VS</td>
<td>VS</td>
<td>I</td>
<td>S</td>
<td>MR</td>
</tr>
<tr>
<td>Wandering</td>
<td>MS</td>
<td>VS</td>
<td>MR-MS</td>
<td>S-VS</td>
<td>VS</td>
<td>I</td>
<td>MS</td>
<td>MR-S</td>
</tr>
<tr>
<td>Williams</td>
<td>MR</td>
<td>R</td>
<td>MR-MS</td>
<td>MS</td>
<td>S</td>
<td>I</td>
<td>MS</td>
<td>R</td>
</tr>
<tr>
<td>Yallara</td>
<td>MR-MS</td>
<td>R</td>
<td>MR-S</td>
<td>MS-S</td>
<td>R</td>
<td>I</td>
<td>MS</td>
<td>MR-MS</td>
</tr>
</tbody>
</table>

Note: Stem rust, leaf rust, ¹Barley yellow dwarf virus (BYDV) and Septoria reactions are from WA trials. Bacterial blight, ²cereal cyst nematode (CCN) and red leather leaf reactions are from SA trials. Rust and BYDV reactions may vary in different regions and with different seasonal conditions depending on the prevalent pathotype/serotype. Crop monitoring is essential. CCN resistance: a resistant variety retards nematode development, leading to lower nematode levels in the soil for subsequent crops.

Disease resistance abbreviations:

- VS = very susceptible
- MR = moderately resistant
- R = resistant
- S = susceptible
- MI = moderately intolerant
- T = tolerant
- MS = moderately susceptible
- MT = moderately tolerant
- I = intolerant

Seed Oat Licensees and distributors

Licensees

Heritage Seeds
Heritageseeds.com.au
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Seednet
Seednet.com.au
David Clegg +61 (0)408 630 641

Seed distributors

Seed is available for purchase from your local rural reseller, or by contacting one of the seed distributors below:

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Coorow Seeds
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admin@coorowsseeds.com.au

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multiseed@westnet.com.au

Note: when purchasing oat varieties that are listed as free to trade, growers may need to complete a seed sale declaration form. For more information on this please contact the seed licensee/commercial partner.