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2018 Oat variety guide for Western Australia



WESTERN AUSTRALIA



National
Variety
Trials
A GRDC INITIATIVE

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Company and industry abbreviations:

- CBH – Co-operative Bulk Handling
- CBB – Centre for Bioinformatics and Biometrics
- DAFWA – Department of Agriculture and Food, Western Australia
- DPIRD – Department of Primary Industries and Regional Development (formerly DAFWA)
- 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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2018

Oat variety guide for Western Australia

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Introduction

This guide is designed to help you determine which milling oat or export hay variety to grow in your region. The guide provides variety characteristics, disease ratings, and agronomic information for 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 (Table 1).

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.

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.

In the 2016/17 season, four oat varieties, Williams, Wandering, Bannister and Carrolup (in decreasing popularity) occupied just over 80% of the area sown to oats (based on grower estimates as provided to CBH for 2016). Following Bannister’s strong performance in 2015 and 2016, it was expected that Bannister would increase in 2017/18, replacing lower quality variety Williams in environments where hectolitre weight limits growers’ ability to meet Oat1 specifications.



Variety eligibility for delivery

Table 1 Oat varieties and their suitability for grain (Oat1, Oat2, OWAN) and export hay.

Variety	Oat1	Oat2	OWAN	Export Hay
Bannister ^(b)	✓	✓		✓
Brusher ^(b)				✓
Carrolup	✓	✓		✓
Coomallo	✓	✓		
Durack ^(b) (not yet approved)				✓
Forester ^(b)				✓
Hotham	✓	✓		
Kojonup ^(b)	✓	✓		✓
Kowari ^(b) (not yet approved)				
Mitika ^(b)	✓	✓		
Mortlock	✓	✓		
Mulgara ^(b)				✓
Pallinup ^(b)	✓	✓		
Tammar ^(b)				✓
Tungoo ^(b)				✓
Wandering ^(b)		✓**	✓	
Williams ^(b)	✓	✓		✓
Winjardie				✓
Wintaroo ^(b)				✓
Vasse ^(b)				✓
Yallara ^(b)	✓	✓		✓

** Indicates variety may be subject to future review by the GIWA Oat Council. (source: GIWA Oat Variety and Grade Update December 2014). Note: Varieties Kowari and Durack are undergoing milling evaluation during 2017/18.

What's new?

One new oat grain variety - Kowari (tested as 03198-18) is available for sowing in 2018. Kowari will undergo commercial milling evaluation following harvest 2017/18. If approved as a milling variety Kowari will be added to the list of accepted varieties for delivery in 2018/19.

Kowari is a cross between Mitika and a WA breeding line. It has been included in oat agronomy trials in 2017, with results on performance available early in 2018. Kowari is similar in yield, maturity (mid) and height (dwarf gene) to Mitika, with lower screenings, higher protein and beta-glucan. Kowari has low hull lignin, similar to Mitika.

Seed is available through Heritage Seeds; PBR and EPR of \$2.50/tonne (ex GST) applies.

Dual purpose varieties

Dual purpose varieties include Bannister, Carrolup, Durack, Kojonup, Williams, and Yallara. Dual purpose indicates that a variety can be grown for both milling grain and export 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 alternate end product. It is important that growers determine their end product prior to sowing to increase profitability..

Hay levy

The fodder levy was first introduced 1 July 2016. Fodder that is produced in Australia and exported with the intention of being used for animal feed will attract a charge of 50 cents per tonne. The Rural Industries Research and Development Corporation, now trading as AgriFutures Australia, is responsible for the expenditure of the fodder charge. Fodder includes but is not limited to hay, including oaten hay, lucerne hay and wheaten hay, and cereal straw. Fodder does not include chaff, extruded fodder products or silage.

What should I grow?

Based on their performance in the NVT and agronomy trials, varieties have been suggested for the high, medium and low rainfall areas.

Grain

In high rainfall areas, high yielding varieties Williams, Kojonup, and Wandering are suggested.

In medium rainfall areas in the southern half of Agzone 2, varieties Kojonup, Wandering and Williams are suggested, while in the northern half of Agzone 2, varieties Bannister, Durack (subject to commercial milling accreditation), Mitika and Wandering are suggested.

In lower rainfall areas variety choices are limited, with yield and quality of Bannister hard to beat. Other options include Wandering, and Durack (subject to commercial milling accreditation).

Hay

High yielding, high quality hay varieties Brusher, Forester (southern high yield area) Mulgara and Wintaroo are suggested for medium to high yield areas. For those growers wanting a dual purpose (milling oat and export hay eligible) variety, Carrolup, Williams and Yallara are suggested.

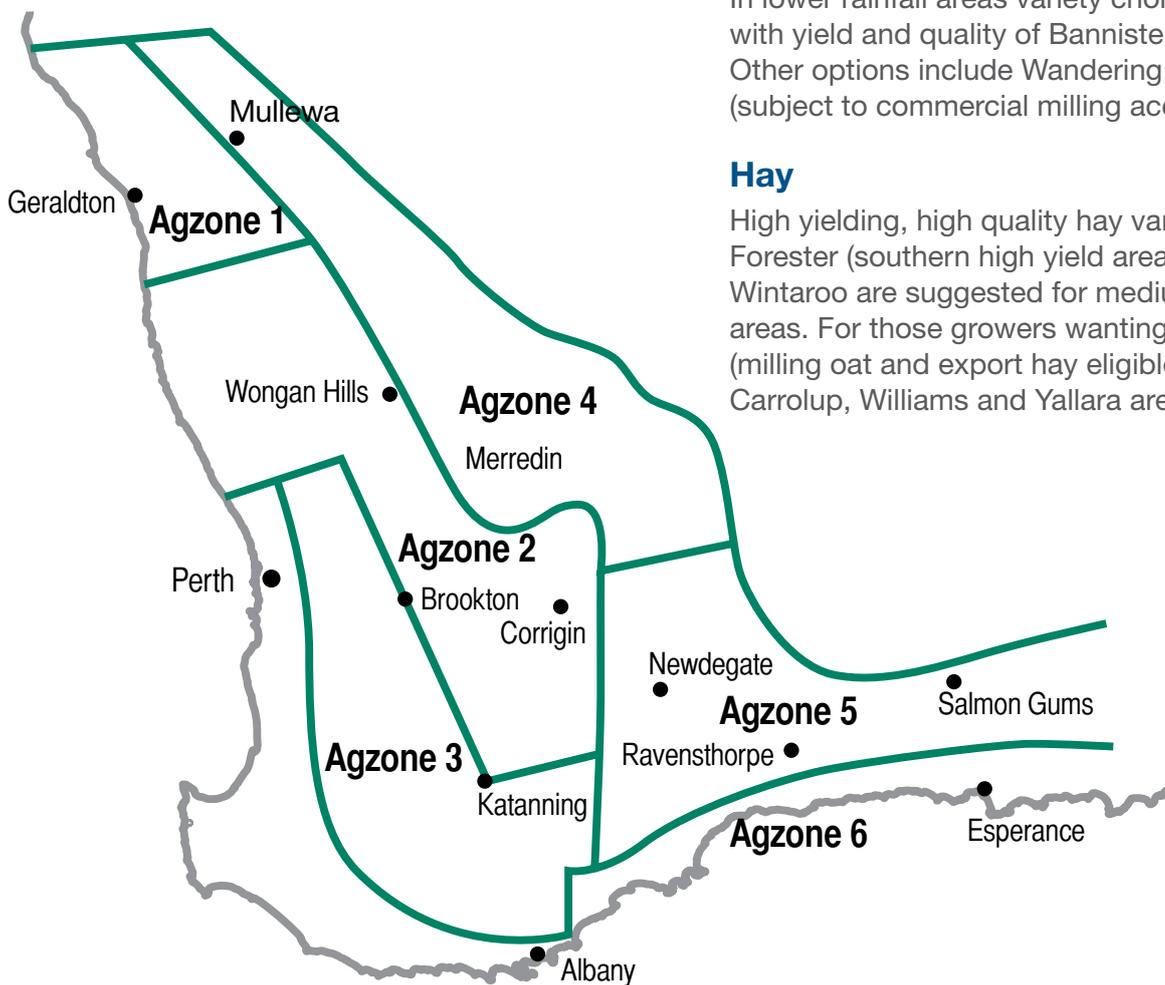


Figure 1 Agzone map of the south west corner of WA. Agzones have been developed through statistical analysis of long term crop variety trials and group together environmental regions that give similar crop performance. There are six cereal Agzones in WA. Agzone 1 includes the medium and high rainfall areas around Geraldton. Agzone 2 includes the high rainfall areas around Moora and the medium rainfall areas from Carnamah to Corrigin to Pingrup. Agzone 3 includes the high rainfall areas from Bolgart to Mt Barker and the medium rainfall areas around Gnowangerup. Agzone 4 includes the low rainfall areas from Mullewa to Merredin and Southern Cross. Agzone 5 includes the medium rainfall areas from Newdegate to Scaddan and the low rainfall areas from Hyden to Salmon Gums. Agzone 6 includes the high rainfall areas from Wellstead to Condingup

Grain yield and quality comparisons

Grain yield

Variety trials are conducted across Australia, and are funded and overseen by the GRDC through the National Variety Trial program (NVT). 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 2012 to 2016. 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 and breeding lines expected to be released within the next 2 years are included here (Table 2).. 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 five 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 nine oat varieties and three breeding lines, 2012 to 2016. (source: data courtesy National Oat Breeding Program, and NVT Program. Analysis by Jess Meza, CBB)

	Western Australia				
Variety	Agzone 2	Agzone 3	Agzone 4	Agzone 5	Agzone 6
Bannister ^(d)	4.3	4.1	2.5	3.4	4.4
Carrolup	3.6	3.6	2.2	2.8	3.3
Durack ^(d)	3.5	3.5	2.1	2.8	3.3
Kojonup ^(d)	3.7	3.6	2.3	2.9	4.0
Kowari ^(d) (03198-18)	3.8	3.7	2.3	3.0	4.0
Mitika ^(d)	3.8	3.8	2.3	3.0	3.9
Wandering ^(d)	4.3	4.0	2.7	3.5	3.8
Williams ^(d)	4.2	4.2	2.3	3.3	4.1
Yallara ^(d)	3.7	3.8	2.1	2.9	2.9
03216-35	3.7	3.7	2.2	2.9	3.3
05096-32	3.6	3.7	2.1	2.8	2.9
06204-16	4.1	4.0	2.4	3.2	4.2
No. trials	24	15	3	4	5

Grain quality

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, screenings and 1000 grain weight of the nine oat varieties suggested for WA are in Table 3.

Table 3 Average hectolitre weight, (kg/hL), one thousand grain weight (g), and screenings percent (% < 2.0 mm) for nine oat varieties and three breeding lines from trials in WA, SA and NSW. (source: National Oat Breeding Program)

Variety	Hectolitre weight (kg/hl)	1000 grain weight (g)	Screenings (% < 2.0 mm)
Bannister ^(D)	48.9	35.2	6.9
Carrolup	50.5	35.0	8.4
Durack ^(D)	51.5	35.6	5.8
Kojonup ^(D)	47.9	35.5	6.3
Kowari ^(D) (03198-18)	48.7	37.0	5.0
Mitika ^(D)	49.7	37.6	4.3
Wandering ^(D)	47.6	35.8	6.7
Williams ^(D)	48.0	33.1	9.3
Yallara ^(D)	49.9	34.9	4.9
03216-35	50.5	35.4	5.5
05096-32	50.9	35.2	4.5
06204-16	48.9	37.3	7.3
No. trials	50	37	49



Grain varieties

Bannister[Ⓛ]

Bannister is a mid-season maturity, tall-dwarf variety with a high grain yield (~15% higher than Carrolup) and good grain quality. It heads about 4 days later than Carrolup, Williams and 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. 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 stem rust. It is moderately resistant to susceptible 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, Bannister is also eligible for farmer to farmer trading in Western Australia; PBR and an EPR of \$2.30/tonne (ex GST) applies.

Herbicide tolerance

Significant yield reduction is known to occur at label rate applications of Diuron + MCPA sprayed at Z13-Z16, and Flight[®] EC (picolinafen + bromoxynil + MCPA) sprayed at Z13-Z14, and Precept[®] (pyrasulfotole + MCPA) + Hasten[™] sprayed at Z13-Z14.

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 may cause issues at baling, and during storage of hay.

Carrolup

Carrolup is a mid-season maturity, mid-tall variety. Carrolup has lower yields than new milling varieties Williams and Bannister. Carrolup is similar in height and maturity to Yallara.

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 Brominil[®] 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 is a short season maturity, mid-tall variety. It is similar in height and yield to Carrolup and Yallara. Durack is the earliest maturing oat variety of any current milling or hay variety. Trials indicate that Durack is about 8 days earlier than Carrolup, Williams and Yallara. Whilst earlier flowering helps to produce large grains it may also increase the risk of frost during flowering, so growers in frost prone areas are encouraged to sow between May and mid-June.

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 rust resistance (moderately resistant to moderately susceptible) and leaf rust resistance (resistant to susceptible) compared to Carrolup and Wandering, although not as resistant as Williams.

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 2017/8. If approved as a milling variety Durack will be added to the list of accepted varieties for delivery in 2018/9. The delay in the milling evaluation for Durack was a result of the severe/multiple frost events of 2016.

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 2,4-D Amine 700 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. Hay yield averaged over low, medium, and high rainfall sites is lower than other longer season varieties and care will need to be taken to cut this very early maturing variety at the correct growth stage (watery ripe Z71).

Kojonup[Ⓛ]

Kojonup is a mid-long season maturity, dwarf variety. Grain yield is similar to Wandering, but lower than Bannister and Williams. It has good grain quality, large seed size, and hectolitre weight, and low screenings. Kojonup is not suitable for lower rainfall regions (e.g. less than 200mm growing season rainfall).

Seed of Kojonup is free to trade in WA. An 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 a preferred export hay variety.

Mitika[Ⓛ]

Mitika is a dwarf milling oat released in 2003. Yield of Mitika is an improvement on Carrolup, but lower than 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, but has susceptibility to barley yellow dwarf virus (BYDV) and septoria. It is very susceptible and intolerant to (CCN) and moderately intolerant of stem nematode (SN) and is not recommended in areas where either of these nematodes are a problem.

Heritage Seeds is the commercial partner/distributor for Mitika; PBR and an 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

Not suitable.

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 CBH sites since 2005.

Wandering will be received as an Oat2 variety for the 2016/17 harvest but this is subject to future review. Wandering is susceptible to leaf and stem rust.

Wandering was released in 1999 by DAFWA. No EPR applies to Wandering.

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

Other higher yielding, higher quality varieties are suggested.

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 yield is similar to Bannister, but higher than Carrolup. Grain quality is slightly lower than Mitika. Williams has higher screenings than Mitika, Yallara, and Bannister, especially in the 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 depending on the stem rust pathotype present can range from moderately resistant to susceptible. Williams is resistant to bacterial blight and moderately resistant to moderately susceptible for BYDV. It is susceptible to CCN.

Heritage Seeds is the commercial partner/distributor for Williams; PBR and an 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. May be sensitive to Diuron + MCPA (amine), Igran[®] + MCPA (terbutryn + MCPA amine) and Precept[®] + Hasten[™] (pyrasulfotole + MCPA) sprayed at Z13-Z15. May be sensitive to 2,4-D Amine 625, and 2,4-D Amine 700 sprayed at Z15-Z16 and later.

Hay suitability

Williams is suitable for export hay. Williams averages slightly lower hay yield compared to other hay varieties. Hay quality is similar to Wintaroo with slightly lower water soluble carbohydrates and slightly higher crude protein. Due to its good disease resistance, it is increasing in popularity as a hay variety.

Yallara[Ⓛ]

Yallara is a medium tall early to mid-season variety similar in maturity to Carrolup released in 2009. Yallara has similar grain quality to Carrolup but not as susceptible to stem & leaf rust. It has bright, plump grain suitable for the milling industry and specialised feed end-uses. It has good hectolitre weight, low screenings, and high groat percent. The grain is plump and bright and could suit niche markets like the horse racing industry in addition to human consumption.

It is resistant but intolerant to CCN. It is moderately susceptible to BYDV, bacterial blight, and septoria. Yallara is susceptible to stem nematode and susceptible to red leather leaf.

Seednet is the commercial partner/distributor for Yallara; PBR and an 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, and is increasing in popularity in the northern half of Agzone 2, where previously Winjardie dominated hay production.

Hay yield and quality comparisons

Hay yield and quality comparisons are provided by the National Oat Breeding Program, led by Pamela Zwer at the South Australian Research and Development Institute. Trials conducted in Western Australia, are delivered by the DPIRD staff based at Northam. The focus of the National Oat Breeding Program is to improve productivity and quality in new oat varieties developed for hay and grain end users. Average hay yield comparisons for varieties eligible for export hay, and two new breeders lines — expected to be released within the next 2 years are listed in Table 4

The quality of hay is determined by the variety grown, agronomy applied to the crop, the crop growth stage at which the hay is cut and the conditions during the period between cutting and baling. Table 5 describes the suggested quality specifications growers need to achieve to meet export hay requirements.

Table 4 Average hay yield (t/ha) for eleven oat varieties and two breeder's lines in Western Australia during the period 2007 to 2016. (source: Data courtesy National Oat Breeding Program. Analysis by Jess Meza, CBB.)

Variety	Hay yield (t/ha)
Bannister ^(b)	8.6
Brusher ^(b)	8.8
Carrolup	8.3
Durack ^(b)	7.6
Mulgara ^(b)	8.6
Swan	9.0
Wandering ^(b)	8.5
Williams ^(b)	8.1
Winjardie	8.7
Wintaroo ^(b)	9.3
Yallara ^(b)	8.6
03216-35	7.9
05096-32	8.0
No. sites	24

Table 5 Quality standards to meet export hay requirements in Western Australia.

Parameter	Grade 1	Grade 2	Grade 3	Grade 4
Crude protein (% CP)	4-10	<4	<4	<4
Water soluble carbohydrates (% WSC)	>22	>18	>14	>14
Estimated metabolisable energy (est. ME MU/kg DM)	>9.5	<9.5	<9.5	<9.5
Acid detergent fibre (% ADF)	<30	>32	>36	>37-40
Neutral detergent fibre (% NDF)	<55	<55-59	<64	>64
In vitro digestibility (% DMD)	>60	>58	>56	>53
Stem thickness (mm)	<6	<8	<9	>9-12

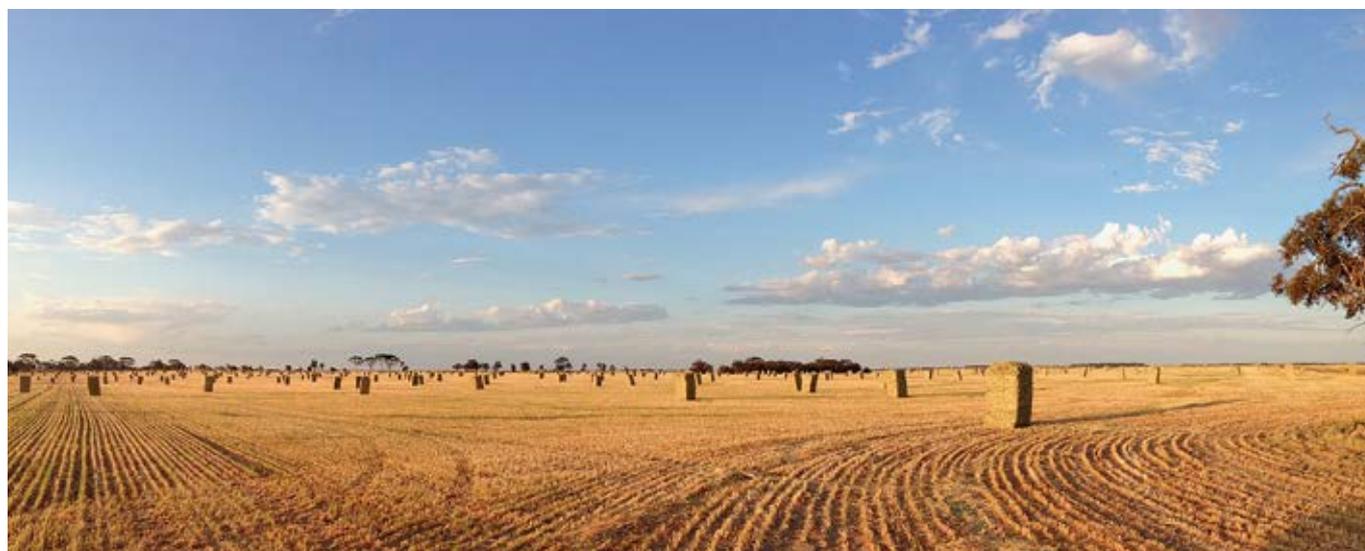


Table 6 Average hay quality for eleven oat varieties and two breeder's lines in Western Australia during the period 2007 to 2016. (source: Data courtesy National Oat Breeding Program. Analysis by Jess Meza, CBB)

Variety	Digestibility (%dm)	¹ WSC (%dm)	² ADF (%dm)	³ NDF (%dm)	Crude Protein (%dm)
Bannister ^(b)	65.0	26.1	29.6	50.7	8.4
Brusher ^(b)	63.6	26.9	30.8	51.0	7.9
Carrolup	61.9	25.8	31.4	51.1	8.0
Durack ^(b)	61.8	25.2	31.8	51.9	8.1
Mulgara ^(b)	63.2	26.5	31.4	51.2	8.0
Swan	62.4	25.8	31.7	52.4	7.6
Wandering ^(b)	64.5	25.1	29.8	50.4	8.5
Williams ^(b)	62.3	23.6	31.2	52.4	8.7
Winjardie	63.4	25.7	31.1	52.4	7.9
Wintaroo ^(b)	62.3	24.4	32.2	52.6	7.7
Yallara ^(b)	63.3	28.3	30.6	49.8	7.8
03216-35	61.5	23.7	32.1	53.1	8.1
05096-32	62.4	23.9	32.0	53.4	8.2
No. sites	61	61	61	62	56

¹WSC=water soluble carbohydrates

²ADF=acid detergent fibre

³NDF=neutral detergent fibre

Hay varieties differ in their quality. All of the varieties listed in Table 6 are deliverable as export hay varieties when grown in the right environment, with the right agronomy, and the right seasonal conditions. Growers are encouraged to discuss with their intended hay buyer which variety they intend to sow, to ensure that it meets current market demands.

Hay only varieties

Brusher is a tall mid-season variety. Brusher has improved quality over Wintaroo. This variety is moderately resistant to leaf rust and moderately susceptible to stem rust and is resistant but moderately intolerant of CCN. Brusher was released by SARDI and commercialised by AEXCO.

An EPR of \$2.00/t is payable on hay produced, and an EPR of \$1.00/t is payable on delivered grain.

Mulgara is a tall mid-season variety. Hay quality is similar to Wintaroo, however hay yield is lower. Mulgara has excellent hay colour and resists brown leaf at hay cutting. Mulgara is recommended to replace Wintaroo in areas with stem nematode due to its higher level of

resistance. It is also recommended to replace Wintaroo where improved lodging resistance, stem rust, or bacterial blight resistance is required.

Mulgara was released by SARDI and commercialised by AEXCO. An EPR of \$2.00/t is payable on hay produced.

Winjardie is a mid-late season variety, grown in the northern half of Agzone 2. Its low disease resistance makes it unsuitable for disease prone locations.

Winjardie was released in 1983 by DAFWA. No EPR applies to Winjardie.

Wintaroo is a tall, mid-season variety. Wintaroo requires close monitoring to determine the correct cutting date as the foliage tends to stay dark green longer but the stem starts turning white. Wintaroo is resistant and tolerant of CCN and tolerates brown leaf tipping from hot, dry winds. It is moderately resistant to septoria and BYDV but is susceptible to stem rust.

Wintaroo was released by SARDI and commercialised by AEXCO. An EPR of \$2.00/t is payable on hay produced.

Disease resistance ratings

Disease and virus resistance data is presented in Table 7.

Table 7 Disease characteristics of eight oat varieties, 2017 (source: National Oat Breeding Program)

Variety	Stem rust	Leaf rust	BYDV ¹	Septoria	CCN ²	CCN Tolerance	Bacterial blight
Bannister ^(b)	R-MR	R	MS	S	VS	I	MR-S
Brusher ^(b)	MR-S	R-MS	MR-MS	S-VS	R	MI	MR-MS
Carrolup	MS	S	MS	S-VS	S	I	MR-S
Durack ^(b)	MR-MS	R-S	MS-S	S-VS	R	MI/MT	MR-S
Kojonup ^(b)	R-MS	S	MS	S-VS	VS	I	MS-S
Kowari ^(b)	S	R	MS	S	VS	--	MR
Mitika ^(b)	MR-S	R	S	S-VS	VS	I	MR
Mulgara ^(b)	MR-MS	MR	MS-S	MR-S	R	MT	MR
Wandering ^(b)	MS	VS	MR-MS	S-VS	VS	I	MR-S
Williams ^(b)	MR	R	MR-MS	MS	S	I	R
Winjardie	MR-S	S-VS	MS-S	S-VS	S	I	S
Wintaroo ^(b)	MR	S-VS	MR-MS	MS-S	R	MT	MR
Yallara ^(b)	MR-MS	R	MR-S	MS-S	R	I	MR-MS

Note: Stem rust, leaf rust, 1Barley yellow dwarf virus (BYDV) and Septoria reactions are from WA trials. Bacterial and 2 cereal cyst nematode (CCN) 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
- S = susceptible
- MS = moderately susceptible
- MR = moderately resistant
- MI = moderately intolerant
- MT = moderately tolerant
- R = resistant
- T = tolerant
- I = intolerant

Seed oat licensees and distributors

Licensees

AEXCO

Aexco.com.au

Denis McGrath +61 (0)408 688 478

Heritage Seeds

Heritageseeds.com.au

Steve Amery +61 (0)409 000 398

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:

Australian Seed and Grain

Moora +61 (0)8 9651 1069

admin@austseedgrain.com.au

Coorow Seeds

Coorow +61 (0)8 9952 1088

admin@coorowseeds.com.au

EDSCO (Eastern Districts Seed Cleaning Co)

Kellerberrin +61 (0)8 9045 4036

edsco@wn.com.au

Melchiorre Seeds

Narrogin +61 (0)8 9881 1155

melchiorreseeds@westnet.com.au

multiSEED Productions

Esperance +61 (0)8 9071 1053

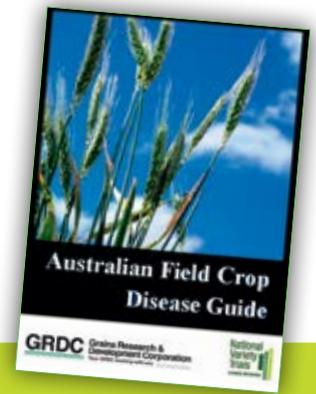
multiseed@westnet.com.au

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.

NVT apps

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The NVT LONG-TERM YIELD REPORTS provide Australian growers and advisers with the best available tool for making variety selection decisions based on crop yield. Information is available for all cropping regions in Australia for 10 crops: wheat, barley, canola, oats, triticale, chickpeas, field peas, faba beans, lentils and lupins.



The CROP DISEASE AU application has been developed by the Australian National Variety Trials program (NVT) and funded by the GRDC. It provides access to up-to-date variety information from the NVT database, as well as current disease-resistance ratings, disease information and an extensive disease image library.