Northern Victoria Forage Value Index
Perennial ryegrass

2024 Update

The Forage Value Index (FVI) is a tool that helps Australian dairy farmers and their advisors to make more informed decisions when selecting ryegrass cultivars.

It provides an accurate, reliable and independent assessment of the potential economic value of ryegrass cultivars across three different species (Perennial, Annual and Italian ryegrass) in a number of dairy-producing regions across Australia. The FVI is calculated by multiplying the Performance Value of each cultivar (i.e. total kilograms dry matter produced per hectare per season) by its Economic Value (i.e. the estimated value of this extra production per season). Performance Values for each variety are determined by industry assessed trial data. To be included in the FVI database, each cultivar must have data from at least three trials that have been conducted using strict industry approved protocols. For Perennial ryegrass, trials must be three years in length, while Annual and Italian ryegrass trials must be a minimum of one full growing season.

Reference varieties

Across the three different species of ryegrass, the Performance Value is expressed as the percentage change in yield relative to a selected reference cultivar that effectively acts as the genetic base for that species in the FVI.

Figure 1 Map of trial locations across South-eastern Australia that contributed to the FVI.

DELIVERING for DAIRY

The reference cultivar is a well-known variety for each ryegrass species, where farmers and advisors are more likely to have a good understanding and knowledge of its performance over many years across various environments. The reference cultivars for each species are as follows:

- Perennial ryegrass: **Victorian Ryegrass (Vic Rye)**
- Annual ryegrass: **Tetila (from a certified source to ensure consistency across trials)**
- Italian ryegrass: **Crusader.**

Coloured bars

The FVI for each cultivar is expressed as a numerical value and is also assigned within a coloured bar. The FVI value is a prediction of extra operating profit per hectare over and above the reference cultivar in each species, which always has an FVI value of 0. Cultivars within the same-coloured bar are not significantly different to each other at the 95 per cent confidence interval.

The FVI information allows users to rank cultivars according to their region and user nominated attributes (e.g. seasonal yields, ploidy, heading date, endophyte). The number of trials in which the cultivar has been tested is also included in the table.

Seasonal yield tables

The accompanying tables of cultivar performance during the various FVI seasons are of particular importance to dairy farmers, depending upon their farming system and calving pattern. For example, dairy farmers that calve in the autumn might favour those cultivars that have a higher performance value for autumn and winter as they would likely value greater winter growth in their pastures. The vast majority of trial data comes from the Pasture Trial Network (PTN), and users can now check out the details of individual trials on the PTN in addition to the FVI rankings. They can be accessed at **etools.mla.com.au/ptn** or by scanning the QR code.

Autumn seasonal values for Annual and Italian ryegrass FVIs

In 2023, performance values for autumn in the Annual and Italian ryegrass FVIs were removed from the index. The first harvest was not taken from the majority of these trials until after 31 May and this meant that data for autumn (March-May), which reflects very early establishment in these varieties was too limited for us to fully be confident it accurately reflected differences in the varieties at this time of the year. The solution is to generate more yield data before 31 May by sowing these trials earlier in the growing season. However, most trials are dryland and therefore the timing of the autumn break is a big factor in establishing trials successfully. Recent autumn breaks in many regions particularly in Victoria have been very variable. This change only applies to Annual and Italian ryegrass FVIs. Perennial trials run for three years and so sufficient data is collected in autumn in these trials.

Forage Quality

A new feature of the 2024 Forage Value Index is the introduction of Forage Quality estimates at a varietal level for Perennial ryegrass. Metabolisable energy (ME) was the measure chosen to provide an indication of seasonal forage quality for each cultivar. Pasture samples were collected at an individual plot level and ME concentration was measured using near infrared (NIR) spectroscopy analysis across all five FVI seasons. A total of eight Perennial ryegrass trials were sampled for Forage Quality, across several locations in Victoria and Tasmania. Metabolisable energy is presented in the FVI tables below as megajoules of ME per kg of dry matter. Performance values for ME were calculated using the same statistical methodology used to create seasonal and total annual dry matter yield values for each cultivar.

Currently the Forage Quality trait has not been incorporated into the overall FVI ranking for each cultivar in each region. It is planned to add the Forage Quality value for each cultivar to the FVI for the 2025 update. However, farmers can still look at the mean yearly and seasonal forage quality value for each cultivar, as well as the number of trials it was collected in, to get an initial idea of the variation in ME between the different cultivars. Forage Quality data on Annual and Italian ryegrass cultivars was also collected in 2023 and will be included in the 2025 FVI for those two species.

Northern Victoria: Forage Value Index 2024 – PERENNIAL RYEGRASS

Perennial cultivars	Nthn Vic FVI	Total trials	Autumn	Winter	Early spring	Late spring	Summer	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Metab-olisable energy	No. of trials measured
Array NEA2	369	3	129	137	104	100	125	NEA2	Diploid	Very Late	Barenbrug Australia	0	11.05	3
4front NEA2	367	6	127	131	102	103	130	NEA2	Tetraploid	Late	Barenbrug Australia	0	11.36	3
Maxsyn NEA4	363	6	132	135	101	97	130	NEA4	Diploid	Mid	Barenbrug Australia	0	11.05	3
Base AR37	362	22	125	136	103	101	129	AR37	Tetraploid	Late	DLF Seeds	5	11.20	8
Legion AR37	296	8	125	136	102	94	123	AR37	Diploid	Mid	DLF Seeds	0	11.13	4
Viscount NEA4	293	10	118	122	105	102	127	NEA4	Tetraploid	Late	Barenbrug Australia	1	11.17	6
Bealey NEA2	287	13	120	125	102	100	127	NEA2	Tetraploid	Very Late	Barenbrug Australia	6	11.28	4
Kidman AR1	277	9	118	123	107	99	123	AR1	Diploid	Early	Barenbrug Australia	2	10.99	4
Reward Endo5	275	18	120	126	97	100	129	Endo5	Tetraploid	Very late	DLF Seeds	1	11.34	8
One50 SE	267	7	116	128	103	96	128	SE	Diploid	Late	DLF Seeds	0	11.11	3
Platform AR37	250	10	116	131	99	100	120	AR37	Diploid	Late	DLF Seeds	0	11.23	4
BanquetII Endo5	235	9	114	123	100	99	124	Endo5	Tetraploid	Late	DLF Seeds	5	NA	
Impact2 NEA2	233	16	113	121	103	100	121	NEA2	Diploid	Late	Barenbrug Australia	5	11.11	4
Hustle AR1	226	14	115	120	102	99	123	AR1	Diploid	Mid	RAGT	2	11.05	5
Expo AR37	219	11	115	125	97	98	124	AR37	Diploid	Late	DLF Seeds	1	11.17	4
Excess AR37	218	13	117	129	97	96	121	AR37	Diploid	Mid	DLF Seeds	1	11.04	4
Prospect AR37	217	13	113	126	101	96	122	AR37	Diploid	Late	DLF Seeds	2	10.98	4
Jackal AR1	196	8	115	116	101	99	119	AR1	Diploid	Mid	AGF seeds	2	11.00	4
Platinum	192	7	114	126	96	98	118	Low	Diploid	Late	Valley Seeds	2	10.98	4
One50 AR1	182	11	110	121	101	96	122	AR1	Diploid	Late	DLF Seeds	6	11.04	4
One50 AR37	175	18	112	122	99	96	120	AR37	Diploid	Late	DLF Seeds	3	11.03	7
Matrix SE	174	11	112	119	99	95	122	Nil	Diploid	Late	Cropmark Seeds	2	11.09	5
AusVic	155	5	110	106	102	103	117	Low	Diploid	Mid	Various	1	10.91	2
Avalon AR1	68	13	104	109	95	102	108	AR1	Diploid	Mid	Various	2	10.92	3
Wintas II	47	4	101	107	93	105	105	Nil	Diploid	Mid	Tasglobal Seeds	0	11.06	1
Victorian SE	**0**	**22**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**5**	**10.93**	**8**

Hybrid cultivars	Nthn Vic FVI	Total trials	Autumn	Winter	Early spring	Late spring	Summer	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Metab-olisable energy	No. of trials measured
Samurye NEA12	656	3	128	149	126	104	154	NEA12	Tetraploid	Late	Barenbrug Australia	N/A	NA	
Shogun NEA2	334	6	108	132	114	98	133	NEA2	Tetraploid	Late	Barenbrug Australia	3	11.11	4
Victorian SE	**0**	**22**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**5**	**10.93**	**8**

* A separate hybrid cultivar list has been created for varieties that have Perennial x Italian ryegrass parentage. See the Hybrid v Perennial section of the text below for further details.

- Metabolisable energy (ME) is presented for each cultivar as megajoules of ME per Kg of dry matter. These values currently do not contribute to the overall FVI ranking for each cultivar, but will do from from 2025 onwards. Values are provided this year to give an indication to farmers of the variation in forage quality between cultivars. The two cultivars with NA were not present in any of the trials sampled for forage quality.
- Use the Total Trials column as an indicator of the reliability of each cultivars position in the FVI. The minimum number of trial to be listed is three, varieties with high number of trials are more proven and users can have greater confidence in their position in the rankings. Most newer cultivars with just 3 or 4 trials of data will have more trial information filtering through to the FVI over the next year or two to improve their reliability and confidence in their position on the list.

Legend

Heading	Description
Cultivar	A plant variety that has been produced by selective breeding. Cultivars are as listed as on the Australian Seed Federation Pasture Seed Database.
Colour bars	Cultivars with the same colour are not significantly different from each other.
FVI	The rating is based on the outcome of economic and performance values for each cultivar.
Total trials	To be included in the Italian ryegrass Forage Value Index database, each cultivar must have data from at least three, one-year trials.
Seasonal performance	A performance value is based on the difference in dry matter production between a cultivar's seasonal performance and that of Crusader Italian ryegrass. This is a percentage ranking – percent better or worse than Crusader ryegrass. *For example, Crusader is always 100 for each FVI season. A cultivar that is 110 means that it produced 110 per cent of the dry matter produced by Crusader in that particular FVI season. A cultivar that is 97 means it produced 97 per cent of the dry matter produced by Crusader in that particular FVI season.*
Autumn	March/April/May
Winter	June/July
Early spring	August/September
Late spring	October/November
Summer	December/January/February
Endophyte	A fungus which protects plants from a range of insect pests. Different types of endophytes affect persistence, dry matter production, insect pest species and nutritive value in different ways.
Ploidy	The number of chromosomes per cell in the plant. A diploid ryegrass has two, while a tetraploid has four.
Heading date	The date when 50 per cent of the plants of a variety have emerged seed heads in a typical year. Heading dates are listed on the Australian Seed Federation Pasture Seed Database.
Marketer	The company marketing the cultivar.
Metabolisable energy	A measure of the Forage Quality of each cultivar, measures as megajoules of ME/kg of dry matter. Cultivars with higher ME values are likely to have greater milk production potential for the same level of dry matter intake.
No. of trials measured	The total number of trials in which forage quality samples were collected for that cultivar across all regions.

Separate hybrid ryegrass FVI sub-list

Hybrid ryegrasses, positioned between Italian and perennial varieties, excel in both growth and persistence. Hybrids will generally have superior winter and early spring production compared to perennial ryegrass due to their Italian ryegrass parentage. Therefore they provide an option to maximise production over a shorter time period of around 2-4 years. Developed by crossing Italian with perennial ryegrass, their longevity or persistence will generally be less than perennial ryegrass, but more than Italian ryegrass.

Care must be taken in selecting the hybrid ryegrass for your system as there are use patterns ranging from shorter-term (2-3 years), to medium (3-4 years), to longer-term where hybrids essentially perform like a perennial ryegrass. This depends on the level of Italian vs perennial parentage in the hybrid variety. Generally the more perennial in nature the parentage is, the less winter and early spring production it will exhibit, but there are exceptions to the rule. The agronomic characteristics depend on the genetic background and breeding objectives. As hybrids are common in intensive production, where farmers are looking to maximise annual forage production, optimal pasture management is crucial for maximising performance and longevity.

Given the fit of hybrids into a perennial dairying system, and the relatively short 3-year PTN trial & evaluation program that feeds into the FVI, hybrids have been listed in the Dairy Australia FVI to assist farmers in understanding their fit and benefit relative to perennial ryegrass over that timeframe. However, they are listed in a separate sub-list to the true perennial varieties in recognition of the fact that they are not the same. In an ideal scenario, longer perennial ryegrass trials of 5 years or more would reflect both the yield and persistence of yield over a longer period for each variety but logistical and resourcing constraints within the PTN mean that for now, perennial ryegrass varieties are evaluated over a 3-year timeframe. This is under review at present within the PTN to see if longer perennial trials are feasible.

Give all data in the perennial & hybrid ryegrass FVI reflects yield performance over 3 years, care must be taken in understanding the positioning and value of hybrids listed in the FVI tables, their benefit to your system in respect to seasonal growth patterns, and the expected longevity before sowing a hybrid variety. It is highly recommended to consult with your agronomist when deciding between a perennial or hybrid variety.

Economic values

The economic values are a key aspect of the overall Forage Value Index. While the performance values are the same across all regions in the FVI at present, the seasonal value of the extra pasture is different across the regions. Hence, localised regional tables are provided to more accurately reflect the marginal value of a kilogram of ryegrass in the different parts of the country. The way the economic values are calculated for the FVI changed for the 2022 release.

Original individual case study farm approach

When the FVI was first introduced, economic values were developed using a case study farm approach in each of the four regions where Perennial ryegrass is dominant (South-west Victoria, Northern Victoria, Gippsland and Tasmania). A typical dairy system based on a real farm business in each region was modelled, with the base monthly estimated metabolisable energy requirements of the herd, the feed consumed, and the pasture consumption per hectare defined. For each of the five FVI seasons, the economic value of the additional pasture to the case study farm system was estimated according to the market value of feeds that the additional pasture replaced (on an equivalent energy basis), or as the net market value of hay or silage produced if the additional pasture was surplus to the case study farm requirements. Farming systems, even within regions in Australia, are quite diverse by comparison to other pasture based dairy industries elsewhere in the world. The case study farm approach to determine economic values provided a good indication of the general value of additional pasture yield in each region, but was limited by how representative the case study farm is for each region.

New market value approach

The new approach for calculating economic values simplifies the way extra seasonal pasture production is valued. Seasons when grazed pasture is typically in deficit and in surplus are defined for each FVI region. For example, in Gippsland, pasture was assumed to be in deficit during summer, autumn and winter, and in surplus during early and late spring. Extra pasture produced in a period when it is typically in deficit is valued more than in periods when it is typically in surplus. In seasons of deficit, extra pasture is valued as its maximum replacement cost; as purchased supplementary feed, and in seasons of surplus it is valued at its minimum salvage value; as standing hay to be conserved. Market prices (2011-2018 average price) of feeds delivered to each region were used to establish these maximum and minimum economic values on an equivalent nutritive value basis.

How the new approach for calculating economic values affects the ranking of cultivars in the FVI

A previous release of the FVI was used to compare the two methods of calculating the economic values, to assess whether it made a difference to the FVI rankings. The FVI of 19 Perennial ryegrass cultivars was calculated using the economic values from the original case study farm method and the market value approach, across the three Victorian regions. The 19 cultivars were compared to a common reference cultivar (Victorian), which was assigned a value of zero. Using the economic values calculated by the original case study farm method, the 19 cultivars were calculated to be worth an extra $0-$180 per ha more than Victorian ryegrass, the reference cultivar. Using the economic values calculated by the market value approach, the same 19 cultivars were calculated to be worth an extra $24-$200/ha more than the same reference cultivar. Hence, it is clear that there is good agreement between the two methods for calculating the economic values.

Advantages of the market value approach

There are several advantages to using the market value approach. First, the economic values are applicable to all producers who buy and sell substitutes for grazed pasture, and who experience similar timings of pasture surpluses and deficits. This removes the limitations of having a single representative farm for each region. Second, the simplified approach makes it easier to communicate how the economic values have been calculated. This enables farmers to more easily consider how the FVI rankings relate to their individual circumstances. Lastly, regional differences can be accounted for in seasonality of pasture supply, and feed types and prices, and the economic values are relatively straightforward to update once established.

New economic values updated for 2022 onwards

The 2022 update of the FVI used newly updated economic values for all three ryegrass species and the same EVs are again in use for this update in 2024. In South-west Victoria, Northern Victoria, Gippsland and Tasmania, grazed pasture was assumed to be in deficit during autumn, winter and summer, and surplus during early spring and late spring. In the two new regions of South-coast NSW and North-coast NSW, grazed pasture was assumed to be in deficit during autumn and winter and surplus during early spring, late spring, and summer.

Separate economic values for dry matter yield have now been calculated for Perennial ryegrass cultivars and for Annual/Italian ryegrass cultivars for the Victorian and Tasmanian regions. This aims to better reflect differences in the seasonal nutritive value of Perennial versus Annual/Italian ryegrasses when calculating the economic values.

Perennial ryegrass economic values for the Forage Value Index ($/kg DM)

Region	Autumn	Winter	Early spring	Late spring	Summer
South-west Victoria	0.36	0.37	0.31	0.29	0.32
Northern Victoria	0.36	0.37	0.30	0.28	0.32
Gippsland	0.41	0.42	0.35	0.33	0.37
Tasmania	0.39	0.41	0.31	0.30	0.36

Annual and Italian ryegrass economic values for the Forage Value Index ($/kg DM)

Region	Autumn	Winter	Early spring	Late spring	Summer
South-west Victoria	0.37	0.37	0.29	0.29	0.35
Northern Victoria	0.38	0.38	0.30	0.30	0.36
Gippsland	0.42	0.42	0.35	0.35	0.40
Tasmania	0.41	0.42	0.31	0.31	0.38
South-coast NSW	0.44	0.44	0.37	0.37	0.36
Mid-north coast NSW	0.47	0.48	0.38	0.38	0.38

Northern Victoria autumn seasonal performance – PERENNIAL RYEGRASS

Perennial cultivars	Nthn Vic FVI	Autumn	Winter	Early spring	Late spring	Summer	Endophyte	Ploidy	Heading date	Marketer	Total trials	Autumn metab-olisable energy
Maxsyn NEA4	363	132	135	101	97	130	NEA4	Diploid	Mid	Barenbrug Australia	6	11.0
Array NEA2	369	129	137	104	100	125	NEA2	Diploid	Very Late	Barenbrug Australia	3	10.6
4front NEA2	367	127	131	102	103	130	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.1
Base AR37	362	125	136	103	101	129	AR37	Tetraploid	Late	DLF Seeds	22	10.9
Legion AR37	296	125	136	102	94	123	AR37	Diploid	Mid	DLF Seeds	8	10.9
Bealey NEA2	287	120	125	102	100	127	NEA2	Tetraploid	Very Late	Barenbrug Australia	13	11.0
Reward Endo5	275	120	126	97	100	129	Endo5	Tetraploid	Very late	DLF Seeds	18	11.0
Viscount NEA4	293	118	122	105	102	127	NEA4	Tetraploid	Late	Barenbrug Australia	10	10.9
Kidman AR1	277	118	123	107	99	123	AR1	Diploid	Early	Barenbrug Australia	9	10.7
Excess AR37	218	117	129	97	96	121	AR37	Diploid	Mid	DLF Seeds	13	10.7
Platform AR37	250	116	131	99	100	120	AR37	Diploid	Late	DLF Seeds	10	10.8
One50 SE	267	116	128	103	96	128	SE	Diploid	Late	DLF Seeds	7	10.8
Expo AR37	219	115	125	97	98	124	AR37	Diploid	Late	DLF Seeds	11	10.9
Jackal AR1	196	115	116	101	99	119	AR1	Diploid	Mid	AGF seeds	8	10.7
Hustle AR1	226	115	120	102	99	123	AR1	Diploid	Mid	RAGT	14	10.8
BanquetII Endo5	235	114	123	100	99	124	Endo5	Tetraploid	Late	DLF Seeds	9	NA
Platinum	192	114	126	96	98	118	Low	Diploid	Late	Valley Seeds	7	10.6
Prospect AR37	217	113	126	101	96	122	AR37	Diploid	Late	DLF Seeds	13	10.7
Impact2 NEA2	233	113	121	103	100	121	NEA2	Diploid	Late	Barenbrug Australia	16	10.8
Matrix SE	174	112	119	99	95	122	SE	Diploid	Late	Cropmark Seeds	11	10.7
One50 AR37	175	112	122	99	96	120	AR37	Diploid	Late	DLF Seeds	18	10.7
AusVic	155	110	106	102	103	117	Low	Diploid	Mid	Various	5	10.7
One50 AR1	182	110	121	101	96	122	AR1	Diploid	Late	DLF Seeds	11	10.7
Avalon AR1	68	104	109	95	102	108	AR1	Diploid	Mid	Various	13	10.7
Wintas II	47	101	107	93	105	105	Nil	Diploid	Mid	Tasglobal Seeds	4	10.8
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**10.7**

Hybrid cultivars	Nthn Vic FVI	Autumn	Winter	Early spring	Late spring	Summer	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Autumn metab-olisable energy
Samurye NEA12	656	128	149	126	104	154	NEA12	Tetraploid	Late	Barenbrug Australia	3	NA
Shogun NEA2	334	108	132	114	98	133	NEA2	Tetraploid	Late	Barenbrug Australia	6	10.8
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**10.7**

Northern Victoria winter seasonal performance – PERENNIAL RYEGRASS

Perennial cultivars	Nthn Vic FVI	Winter	Early spring	Late spring	Summer	Autumn	Endophyte	Ploidy	Heading date	Marketer	Total trials	Winter metab-olisable energy
Array NEA2	369	137	104	100	125	129	NEA2	Diploid	Very Late	Barenbrug Australia	3	11.2
Legion AR37	296	136	102	94	123	125	AR37	Diploid	Mid	DLF Seeds	8	11.3
Base AR37	362	136	103	101	129	125	AR37	Tetraploid	Late	DLF Seeds	22	11.6
Maxsyn NEA4	363	135	101	97	130	132	NEA4	Diploid	Mid	Barenbrug Australia	6	11.3
4front NEA2	367	131	102	103	130	127	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.5
Platform AR37	250	131	99	100	120	116	AR37	Diploid	Late	DLF Seeds	10	11.5
Excess AR37	218	129	97	96	121	117	AR37	Diploid	Mid	DLF Seeds	13	11.4
One50 SE	267	128	103	96	128	116	SE	Diploid	Late	DLF Seeds	7	11.2
Reward Endo5	275	126	97	100	129	120	Endo5	Tetraploid	Very late	DLF Seeds	18	11.8
Platinum	192	126	96	98	118	114	Low	Diploid	Late	Valley Seeds	7	11.4
Prospect AR37	217	126	101	96	122	113	AR37	Diploid	Late	DLF Seeds	13	11.4
Expo AR37	219	125	97	98	124	115	AR37	Diploid	Late	DLF Seeds	11	11.5
Bealey NEA2	287	125	102	100	127	120	NEA2	Tetraploid	Very Late	Barenbrug Australia	13	11.7
Kidman AR1	277	123	107	99	123	118	AR1	Diploid	Early	Barenbrug Australia	9	11.4
BanquetII Endo5	235	123	100	99	124	114	Endo5	Tetraploid	Late	DLF Seeds	9	NA
Viscount NEA4	293	122	105	102	127	118	NEA4	Tetraploid	Late	Barenbrug Australia	10	11.6
One50 AR37	175	122	99	96	120	112	AR37	Diploid	Late	DLF Seeds	18	11.4
Impact2 NEA2	233	121	103	100	121	113	NEA2	Diploid	Late	Barenbrug Australia	16	11.5
One50 AR1	182	121	101	96	122	110	AR1	Diploid	Late	DLF Seeds	11	11.4
Hustle AR1	226	120	102	99	123	115	AR1	Diploid	Mid	RAGT	14	11.5
Matrix SE	174	119	99	95	122	112	SE	Diploid	Late	Cropmark Seeds	11	11.4
Jackal AR1	196	116	101	99	119	115	AR1	Diploid	Mid	AGF seeds	8	11.4
Avalon AR1	68	109	95	102	108	104	AR1	Diploid	Mid	Various	13	11.4
Wintas II	47	107	93	105	105	101	Nil	Diploid	Mid	Tasglobal Seeds	4	11.6
AusVic	155	106	102	103	117	110	Low	Diploid	Mid	Various	5	11.5
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**11.5**

Hybrid cultivars	Nthn Vic FVI	Winter	Early spring	Late spring	Summer	Autumn	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Winter metab-olisable energy
Samurye NEA12	656	149	126	104	154	128	NEA12	Tetraploid	Late	Barenbrug Australia	3	NA
Shogun NEA2	334	132	114	98	133	108	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.6
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**11.5**

Northern Victoria early spring seasonal performance – PERENNIAL RYEGRASS

Perennial cultivars	Nthn Vic FVI	Early spring	Late spring	Summer	Autumn	Winter	Endophyte	Ploidy	Heading date	Marketer	Total trials	Early Spring metabolis-able energy
Kidman AR1	277	107	99	123	118	123	AR1	Diploid	Early	Barenbrug Australia	9	11.4
Viscount NEA4	293	105	102	127	118	122	NEA4	Tetraploid	Late	Barenbrug Australia	10	11.6
Array NEA2	369	104	100	125	129	137	NEA2	Diploid	Very Late	Barenbrug Australia	3	11.4
Impact2 NEA2	233	103	100	121	113	121	NEA2	Diploid	Late	Barenbrug Australia	16	11.4
Base AR37	362	103	101	129	125	136	AR37	Tetraploid	Late	DLF Seeds	22	11.6
One50 SE	267	103	96	128	116	128	SE	Diploid	Late	DLF Seeds	7	11.5
4front NEA2	367	102	103	130	127	131	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.8
Legion AR37	296	102	94	123	125	136	AR37	Diploid	Mid	DLF Seeds	8	11.5
AusVic	155	102	103	117	110	106	Low	Diploid	Mid	Various	5	11.3
Bealey NEA2	287	102	100	127	120	125	NEA2	Tetraploid	Very Late	Barenbrug Australia	13	11.7
Hustle AR1	226	102	99	123	115	120	AR1	Diploid	Mid	RAGT	14	11.4
Maxsyn NEA4	363	101	97	130	132	135	NEA4	Diploid	Mid	Barenbrug Australia	6	11.5
Jackal AR1	196	101	99	119	115	116	AR1	Diploid	Mid	AGF seeds	8	11.4
Prospect AR37	217	101	96	122	113	126	AR37	Diploid	Late	DLF Seeds	13	11.4
One50 AR1	182	101	96	122	110	121	AR1	Diploid	Late	DLF Seeds	11	11.5
BanquetII Endo5	235	100	99	124	114	123	Endo5	Tetraploid	Late	DLF Seeds	9	NA
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**11.3**
Matrix SE	174	99	95	122	112	119	SE	Diploid	Late	Cropmark Seeds	11	11.5
One50 AR37	175	99	96	120	112	122	AR37	Diploid	Late	DLF Seeds	18	11.4
Platform AR37	250	99	100	120	116	131	AR37	Diploid	Late	DLF Seeds	10	11.7
Excess AR37	218	97	96	121	117	129	AR37	Diploid	Mid	DLF Seeds	13	11.4
Reward Endo5	275	97	100	129	120	126	Endo5	Tetraploid	Very late	DLF Seeds	18	11.7
Expo AR37	219	97	98	124	115	125	AR37	Diploid	Late	DLF Seeds	11	11.4
Platinum	192	96	98	118	114	126	Low	Diploid	Late	Valley Seeds	7	11.3
Avalon AR1	68	95	102	108	104	109	AR1	Diploid	Mid	Various	13	11.3
Wintas II	47	93	105	105	101	107	Nil	Diploid	Mid	Tasglobal Seeds	4	11.4

Hybrid cultivars	Nthn Vic FVI	Early spring	Late spring	Summer	Autumn	Winter	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Early Spring metabolisa-ble energy
Samurye NEA12	656	126	104	154	128	149	NEA12	Tetraploid	Late	Barenbrug Australia	3	NA
Shogun NEA2	334	114	98	133	108	132	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.5
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**11.3**

Northern Victoria late spring seasonal performance – PERENNIAL RYEGRASS

Perennial cultivars	Nthn Vic FVI	Late spring	Summer	Autumn	Winter	Early spring	Endophyte	Ploidy	Heading date	Marketer	Total trials	Late Spring Metab-olisable energy
Wintas II	47	105	105	101	107	93	Nil	Diploid	Mid	Tasglobal Seeds	4	11.0
4front NEA2	367	103	130	127	131	102	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.3
AusVic	155	103	117	110	106	102	Low	Diploid	Mid	Various	5	10.8
Viscount NEA4	293	102	127	118	122	105	NEA4	Tetraploid	Late	Barenbrug Australia	10	11.1
Avalon AR1	68	102	108	104	109	95	AR1	Diploid	Mid	Various	13	10.9
Base AR37	362	101	129	125	136	103	AR37	Tetraploid	Late	DLF Seeds	22	11.3
Impact2 NEA2	233	100	121	113	121	103	NEA2	Diploid	Late	Barenbrug Australia	16	11.2
Platform AR37	250	100	120	116	131	99	AR37	Diploid	Late	DLF Seeds	10	11.1
Bealey NEA2	287	100	127	120	125	102	NEA2	Tetraploid	Very Late	Barenbrug Australia	13	11.4
Array NEA2	369	100	125	129	137	104	NEA2	Diploid	Very Late	Barenbrug Australia	3	11.0
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**10.8**
Reward Endo5	275	100	129	120	126	97	Endo5	Tetraploid	Very late	DLF Seeds	18	11.4
Hustle AR1	226	99	123	115	120	102	AR1	Diploid	Mid	RAGT	14	11.1
Kidman AR1	277	99	123	118	123	107	AR1	Diploid	Early	Barenbrug Australia	9	10.9
Jackal AR1	196	99	119	115	116	101	AR1	Diploid	Mid	AGF seeds	8	11.0
BanquetII Endo5	235	99	124	114	123	100	Endo5	Tetraploid	Late	DLF Seeds	9	NA
Platinum	192	98	118	114	126	96	Low	Diploid	Late	Valley Seeds	7	11.0
Expo AR37	219	98	124	115	125	97	AR37	Diploid	Late	DLF Seeds	11	11.2
Maxsyn NEA4	363	97	130	132	135	101	NEA4	Diploid	Mid	Barenbrug Australia	6	10.9
One50 SE	267	96	128	116	128	103	SE	Diploid	Late	DLF Seeds	7	11.4
Excess AR37	218	96	121	117	129	97	AR37	Diploid	Mid	DLF Seeds	13	11.1
One50 AR1	182	96	122	110	121	101	AR1	Diploid	Late	DLF Seeds	11	11.2
Prospect AR37	217	96	122	113	126	101	AR37	Diploid	Late	DLF Seeds	13	11.1
One50 AR37	175	96	120	112	122	99	AR37	Diploid	Late	DLF Seeds	18	11.1
Matrix SE	174	95	122	112	119	99	SE	Diploid	Late	Cropmark Seeds	11	11.2
Legion AR37	296	94	123	125	136	102	AR37	Diploid	Mid	DLF Seeds	8	11.1

Hybrid cultivars	Nthn Vic FVI	Late spring	Summer	Autumn	Winter	Early spring	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Late Spring Metabolisa-ble energy
Samurye NEA12	656	104	154	128	149	126	NEA12	Tetraploid	Late	Barenbrug Australia	3	NA
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**10.8**
Shogun NEA2	334	98	133	108	132	114	NEA2	Tetraploid	Late	Barenbrug Australia	6	11.2

Northern Victoria summer seasonal performance – PERENNIAL RYEGRASS

Perennial cultivars	Nthn Vic FVI	Summer	Autumn	Winter	Early spring	Late spring	Endophyte	Ploidy	Heading date	Marketer	Total trials	Summer Metab-olisable energy
Maxsyn NEA4	363	130	132	135	101	97	NEA4	Diploid	Mid	Barenbrug Australia	6	NA
4front NEA2	367	130	127	131	102	103	NEA2	Tetraploid	Late	Barenbrug Australia	6	10.5
Base AR37	362	129	125	136	103	101	AR37	Tetraploid	Late	DLF Seeds	22	10.6
Reward Endo5	275	129	120	126	97	100	Endo5	Tetraploid	Very late	DLF Seeds	18	11.0
One50 SE	267	128	116	128	103	96	SE	Diploid	Late	DLF Seeds	7	10.6
Bealey NEA2	287	127	120	125	102	100	NEA2	Tetraploid	Very Late	Barenbrug Australia	13	10.8
Viscount NEA4	293	127	118	122	105	102	NEA4	Tetraploid	Late	Barenbrug Australia	10	10.8
Array NEA2	369	125	129	137	104	100	NEA2	Diploid	Very Late	Barenbrug Australia	3	10.7
BanquetII Endo5	235	124	114	123	100	99	Endo5	Tetraploid	Late	DLF Seeds	9	10.6
Expo AR37	219	124	115	125	97	98	AR37	Diploid	Late	DLF Seeds	11	11.1
Kidman AR1	277	123	118	123	107	99	AR1	Diploid	Early	Barenbrug Australia	9	NA
Legion AR37	296	123	125	136	102	94	AR37	Diploid	Mid	DLF Seeds	8	10.7
Hustle AR1	226	123	115	120	102	99	AR1	Diploid	Mid	RAGT	14	10.5
One50 AR1	182	122	110	121	101	96	AR1	Diploid	Late	DLF Seeds	11	11.0
Prospect AR37	217	122	113	126	101	96	AR37	Diploid	Late	DLF Seeds	13	10.4
Matrix SE	174	122	112	119	99	95	SE	Diploid	Late	Cropmark Seeds	11	10.6
Impact2 NEA2	233	121	113	121	103	100	NEA2	Diploid	Late	Barenbrug Australia	16	10.5
Excess AR37	218	121	117	129	97	96	AR37	Diploid	Mid	DLF Seeds	13	10.5
Platform AR37	250	120	116	131	99	100	AR37	Diploid	Late	DLF Seeds	10	11.0
One50 AR37	175	120	112	122	99	96	AR37	Diploid	Late	DLF Seeds	18	10.4
Jackal AR1	196	119	115	116	101	99	AR1	Diploid	Mid	AGF seeds	8	10.5
Platinum	192	118	114	126	96	98	Low	Diploid	Late	Valley Seeds	7	10.5
AusVic	155	117	110	106	102	103	Low	Diploid	Mid	Various	5	10.2
Avalon AR1	68	108	104	109	95	102	AR1	Diploid	Mid	Various	13	10.3
Wintas II	47	105	101	107	93	105	Nil	Diploid	Mid	Tasglobal Seeds	4	10.5
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**10.3**

Hybrid cultivars	Nthn Vic FVI	Summer	Autumn	Winter	Early spring	Late spring	Endophyte	Ploidy	Heading date	Marketer	Nthn Vic trials	Summer metabolisa-ble energy
Samurye NEA12	656	154	128	149	126	104	NEA12	Tetraploid	Late	Barenbrug Australia	3	NA
Shogun NEA2	334	133	108	132	114	98	NEA2	Tetraploid	Late	Barenbrug Australia	6	10.5
Victorian SE	**0**	**100**	**100**	**100**	**100**	**100**	**SE**	**Diploid**	**Early**	**Various**	**22**	**10.3**

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