

# Forage Value Index for farmers

[www.dairynz.co.nz/fvi](http://www.dairynz.co.nz/fvi)

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## Forage Value team



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## Need to show value of pasture renovation to get more farmers selecting cultivars

- Why?
  - Pastures deteriorate over time
  - New pasture can increase dry matter production
  - Allows you to control seasonality of production
  - Higher ME concentration
  - Access to new endophytes
  - Associated effects on animal performance and profitability

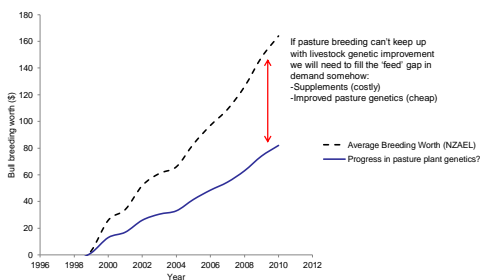
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## Pasture Cycle



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## Why improve pasture plant genetics?



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## DairyNZ Forage Value Index

**Identify  
forages that  
maximise  
farm profit**



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# FVI Background

- Provides a ranking of cultivars based on:
  - Performance value
    - How well a cultivar performs in a specific environment compared to genetic base (cultivars from pre 1996)
  - Economic values
    - Change in farm operating profit for a change in the trait
    - Use FarmaxPro
  - Using seasonal DM
  - Looking to include nutritive value and pasture persistence in the future



# Source of data

- Strict protocols-for small, replicated plot trials administered by NZ Plant Breeding and Research Association (NZPBRA)
- Primarily pure swards and in well managed conditions
- Lack of persistence challenge (only measured for 3 years)
- Perennial cultivars require data from:
  - >3 NFVT experiments including 1 trial in the Upper North Island
- DairyNZ independently analyses data for FVI

	Nov1	Nov2	Nov3	Nov4
PRC01	13.2	13.8	13.0	12.8
PRC2	13.5	14.0	13.5	13.0
PRC3	14.5	14.5	15.0	16.0
PRC4	13.6	13.7	13.4	13.5



# Region specific FVI

# What you see (web/smartphone)



Using the Forage Value Index (FVI), this tool allows you to objectively select the most suitable ryegrass cultivar for your farm. Select the relevant filters to find the cultivars that best fit your criteria.

Filter by: Region, Forage Type, Endophytes, Ploidy, Heading Dates. Includes a 'Filter by' dropdown menu and a 'Reset' button.



[www.dairyNZ.co.nz/fvi](http://www.dairyNZ.co.nz/fvi)



# What you see (web/smartphone)

CULTIVAR	FVI STAR RATING	PERFORMANCE VALUES						ENDOPHYTE	PLOIDY	HEADING DATE	MARKETER
		CONFIDENCE	WINTER	EARLY SPRING	LATE SPRING	SUMMER	AUTUMN				
ARROW AR1	★★★★★	10	2	5	4	5	4	AR1	Diploid	Mid	AgriSeeds
ONE50 AR37	★★★★★	10	5	3	2	5	5	AR37	Diploid	Late	AgriCom
ALTO AR37	★★★★★	8.6	5	3	4	4	4	AR37	Diploid	Late	AgriSeeds
BASE AR37	★★★★★	6.0	4	3	4	5	5	AR37	Tetraploid	Very Late	PGG Wrightson Seeds
TROJAN NEA2	★★★★★	5.7	5	4	4	5	4	NEA2	Diploid	Late	AgriSeeds
PROSPECT AR37	★★★★★	5.0	5	3	2	5	4	AR37	Diploid	Late	AgriCom
REQUEST AR37	★★★★★	3.3	5	5	3	2	4	AR37	Diploid	Mid	AgriCom
ULTRA AR1	★★★★★	10	3	4	3	4	4	AR1	Diploid	Late	Common Seeds
MATRIX SE	★★★★★	9.7	3	4	2	4	4	SE	Diploid	Very Late	Common Seeds



# What you see (FVI lists/handbook)

## Perennial Ryegrass Forage Value List

Cultivars are sorted by star rating, and then by confidence level.

Note: Perennial ryegrass FVI is currently a combination of seasonal dry matter performance values and economic values.

\*Cultivars with SE are not recommended as they can cause ryegrass staggers in summer and may reduce milk solids production of the lactating cow.

\*\*Cultivars with AR1 endophyte are not recommended as they provide limited protection against black beetle.

Cultivar	FVI* (Star rating)	FVI Star Band (\$/ha)	Conf*	Performance Values** (1-5 Rating)					Endo*	Ploidy*	HD†	Marketer
				Winter	Early Spring	Late Spring	Summer	Autumn				
One50 AR37	★★★★★	\$621 to \$705	10+	5	4	3	5	5	AR37	D	L	AgriCom
Prospect AR37	★★★★★		10	5	4	4	5	4	AR37	D	L	AgriCom
Trojan NEA2	★★★★★		8	5	5	5	5	4	NEA2	D	L	AgriSeeds
Base AR37	★★★★★		5	4	4	4	5	5	AR37	T	VL	PGG Wrightson Seeds
Mix AR37	★★★★★		10+	5	4	4	4	4	AR37	D	L	AgriSeeds
Ultra AR1**	★★★★★	\$487 to \$620	8	3	3	3	4	4	AR1	D	L	AgriSeeds
Request AR37	★★★★★		7	5	4	5	3	4	AR37	D	M	AgriCom
Matrix SE*	★★★★★		5	3	4	4	5	4	SE	D	VL	AgriCom
Beasley NEA2	★★★★★		10+	4	3	1	4	3	NEA2	T	VL	AgriSeeds
Mix AR1**	★★★★★		10+	3	3	3	3	3	AR1	D	L	AgriSeeds
Mix AR37	★★★★★		10+	4	3	1	4	4	AR37	T	VL	AgriCom
One50 AR1**	★★★★★	\$303 to \$486	8	3	3	1	4	4	AR1	D	L	AgriCom
Stanwell Endo5	★★★★★		6	3	3	2	4	3	Endo5	T	L	PGG Wrightson Seeds
Arner AR1**	★★★★★		5	2	4	3	3	3	AR1	D	M	AgriSeeds
Expo AR1**	★★★★★		5	3	4	3	3	3	AR1	D	L	PGG Wrightson Seeds
Expo AR37	★★★★★		4	5	3	3	3	3	AR37	D	L	PGG Wrightson Seeds
Stamson SE*	★★★★★		8	2	3	4	3	2	SE	D	M	AgriCom
Stamson AR37	★★★★★	\$219 to \$302	4	4	2	1	1	2	AR37	D	M	AgriCom
Northgate AR1**	★★★★★		4	2	1	3	3	3	AR1	D	L	AgriCom
Mix SE*	★★★★★		10+	1	3	2	1	1	SE	D	M	Common
Chas AR37	★★★★★		6	4	3	4	1	1	AR37	T	L	AgriCom
Pauline SE*	★★★★★	\$85 to \$218	5	1	3	5	1	1	SE	D	M	PGG Wrightson Seeds

\*5 = top rank, 1 = bottom rank. † Confidence (number of trials). \*\* Winter = Winter dry matter production (May-June), Early Spring = Early spring dry matter production (July-Aug), Late Spring = Late spring dry matter production (Sept-Oct), Summer = Summer dry matter production (Nov-Jan), Autumn = Autumn dry matter production (Feb-Apr), Endophyte. † Ploidy (D=Diploid, T=Tetraploid). ‡ Heading date (M=Mid, L=Late, VL=Very late). For more information visit [www.dairyNZ.co.nz/fvi](http://www.dairyNZ.co.nz/fvi)



## What you see (FVI lists/handbook)

### Perennial Ryegrass Forage Value List



Cultivars are sorted by star rating, and then by confidence level

Note: Perennial ryegrass FVI is currently a combination of seasonal dry matter performance values and economic values

Cultivars with SE are not recommended as they can cause ryegrass staggers in summer and may reduce milk solids production at this time

\*Cultivars with ARI endophyte are not recommended as they provide limited protection against black beetle

- Most of the major seed companies contribute to development of FVI
- But not all cultivars will be included in FVI because of lag period

Marketer
Agricom
Agricom
AgriSeeds
PGG Wrightson Seeds
AgriSeeds
Cropmark Seeds
Agricom
Cropmark Seeds
AgriSeeds
AgriSeeds
Agricom
Agricom
PGG Wrightson Seeds
AgriSeeds
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<sup>1</sup>5 = top rank, 1 = bottom rank. <sup>2</sup> Confidence (number of trials). <sup>3</sup> Winter = Winter dry matter production (May-June), Early Spring = Early spring dry matter production (July-Aug), Late Spring = Late spring dry matter production (Sept-Oct), Summer = Summer dry matter production (Nov-Jan), Autumn = Autumn dry matter production (Feb-Apr), <sup>4</sup> Endophyte, <sup>5</sup> Fleisty (D=Optim, T=Relaxed), <sup>6</sup> Heavily sown (SRMS, L=Low, H=Very high). For more information visit [www.dairyNZ.co.nz/fvi](http://www.dairyNZ.co.nz/fvi)

## 1 Star



-\$104 to \$6 contribution to farm profit (Lower South Island)

## 5 Star



+\$341 to \$452 contribution to farm profit (Lower South Island)



## DairyNZ Forage Value Index

- **Seasonal DM**
- **Quality**
- **Persistence**



Future traits



## DairyNZ Forage Value Index

### • Quality

- Metabolisable energy per kg DM
- Quality trial at Lincoln
  - Energy trait data for two years available
- Soon: Quality trial at Scott Farm (Waikato)
  - Energy trait for upper North Island available - Nov. 2016
- Need to find out if there is a genotype by environment interaction before we add ME trait to FVI



## DairyNZ Forage Value Index

### • Persistence

- What definition?
- How to assess the value?
- Tricky: it takes a long time to measure



## DairyNZ Forage Value Index

### • Persistence

- Still working on method to include in FVI
  - Change in ground score?
- Analysing any long term (3+year) trial data
- What we've seen so far indicates yield in first 3 years is good indicator of yield



## How do we test the FVI?

- Cultivar Proving Scheme for DM production:
- Tests if high star rated cultivars still perform well out on-farm



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## Cultivar Proving Scheme – On farm



- CPS farmers have several cultivars from the FVI in their paddock(s)
- Treat the paddocks as they would the rest of their farm
- They typically do not know the cultivar names
- They send us plate meter data from the cultivar plots within the paddock(s)
- Data (1<sup>st</sup> year) have shown high performing cultivars performing well under commercial farm conditions

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## How do we test the FVI besides the Cultivar Proving Scheme?

- Genetic gain trials in Lincoln and Waikato
  - Cultivars are trialled in farm conditions (lower N inputs and under grazing)
  - Genetic gain trial have more cultivars and more detailed measurements than the Cultivar Proving Scheme
  - Preliminary results from the genetic gain trials support the FVI results

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## How do we test the FVI besides the Cultivar Proving Scheme?

- Potential FVI farmlot trial
  - Will involve a trial of farmlots to see how profits vary between farmlots with different star rated cultivars
  - Not a genetic gain trial- its testing the FVI!
  - Will include cultivars in a ryegrass/clover mix
  - Highlight ways to improve the FVI
  - Likely have a staggered sowing of different star rated cultivars this year and next year

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## DairyNZ Forage Value Index

1. **FVI Cultivar Selector tool can add value to farmers**  
[www.dairynz.co.nz/fvi](http://www.dairynz.co.nz/fvi)

2. **Supports simple and independent seed recommendations**

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## DairyNZ Forage Value Index

3. **Rankings based on seasonal DM yield**

4. **Still to come:**

- **Energy concentration**
- **Persistence**
- **Environmental traits? (N, P, other?)**
- **Genomics ('Pastoral Genomics Plus', PG+)**
  - To increase biomass and energy content
  - Increase stress tolerance
  - Better use of water and nutrients

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\*\*Cultivars with AR1 endophyte are not recommended as they provide limited protection against black beetle

Cultivar	FVI <sup>1</sup> (Star rating)	FVI Star Band (\$/ha)	Conf <sup>2</sup>	Performance Values <sup>3</sup> (1-5 Rating)					Endo <sup>4</sup>	Ploidy <sup>5</sup>	HD <sup>6</sup>	Marketer
				Winter	Early Spring	Late spring	Summer	Autumn				
One50 AR37	★★★★★	\$621 to \$755	10+	5	4	3	5	5	AR37	D	L	Agricom
Prospect AR37			10	5	4	4	5	4	AR37	D	L	Agricom
Trojan NEA2			9	5	5	5	5	4	NEA2	D	L	Agriseeds
Base AR37			5	4	4	4	5	5	AR37	T	VL	PGG Wrightson Seeds
Alto AR37	★★★★★	\$487 to \$620	10+	5	4	4	4	4	AR37	D	L	Agriseeds
Ultra AR1**			8	3	3	3	4	4	AR1	D	L	Cropmark Seeds
Request AR37			7	5	4	5	3	4	AR37	D	M	Agricom
Matrix SE*			5	3	4	4	5	4	SE	D	VL	Cropmark Seeds
Bealey NEA2	★★★	\$353 to \$486	10+	4	3	1	4	3	NEA2	T	VL	Agriseeds
Alto AR1**			10+	3	3	3	3	3	AR1	D	L	Agriseeds
Halo AR37			10+	4	3	1	4	4	AR37	T	VL	Agricom
One50 AR1**			8	3	3	1	4	4	AR1	D	L	Agricom
Banquet II Endo5			6	3	3	2	4	3	Endo5	T	L	PGG Wrightson Seeds
Arrow AR1**			6	2	4	3	3	3	AR1	D	M	Agriseeds
Expo AR1**			5	3	4	3	3	3	AR1	D	L	PGG Wrightson Seeds
Expo AR37			4	5	3	3	3	3	AR37	D	L	PGG Wrightson Seeds
Samson SE*	★★	\$219 to \$352	8	2	3	4	3	2	SE	D	M	Agricom
Samson AR37			4	4	2	1	1	3	AR37	D	M	Agricom
AberMagic AR1**			4	2	1	3	3	3	AR1	D	L	Germinal
Nui SE*	★	\$85 to \$218	10+	1	3	2	1	1	SE	D	M	Common
Ohau AR37			6	4	3	4	1	1	AR37	T	L	Agricom
Pacific SE*			3	1	3	5	1	1	SE	D	M	PGG Wrightson Seeds

<sup>1</sup> 5 = top rank, 1 = bottom rank, <sup>2</sup> Confidence (number of trials), <sup>3</sup> Winter = Winter dry matter production (May-June), Early Spring = Early spring dry matter production (July-Aug), Late Spring = Late spring dry matter production (Sept-Oct), Summer = Summer dry matter production (Nov-Jan), Autumn = Autumn dry matter production (Feb-Apr), <sup>4</sup> Endophyte, <sup>5</sup> Ploidy (D=Diploid, T=Tetraploid). <sup>6</sup> Heading date (M=Mid, L=Late, VL=Very late). For more information visit [www.dairynz.co.nz/fvi](http://www.dairynz.co.nz/fvi)