





ROHAN SPR

# PURPOSE BRED FOR SHEEP AND BEEF

*Rohan* spreading perennial ryegrass *(SPR)* was purpose bred to give sheep and beef farmers persistent, easy-care pasture.

Its unique spreading habit can help *Rohan SPR* fill bare areas in pasture, and recover faster after adverse climatic events.

*Rohan SPR* is palatable, late flowering and comes with *NEA2* endophyte for great animal health.

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Rohan SPR has a unique spreading habit which helps it spread horizontally through pastures. This has some key advantages.

First, it helps *Rohan* fill bare areas in a pasture, areas that may otherwise be occupied by weeds. This means *Rohan* 

can compete more aggressively against weed ingression.

Second, *Rohan's* spreading habit helps pastures recover from adverse climatic events, particularly extended dry periods, spreading to fill space where ryegrass tillers may have died.

*Rohan SPR* is not indestructible – like all ryegrasses it will perform best under reasonable management and soil fertility. But its spreading habit does improve its persistence compared with other ryegrass cultivars.



Different perennial ryegrasses have different growth habbits. Here a spreading plant (left) versus a more normal type under the same management.



Rohan SPR spreads through a pasture in two ways. First, plants slowly spread laterally across the ground. This is most clearly seen when Rohan is sown in drill rows, because the rows simply get wider over time. Rohan also has the ability to extend runners from the main plant, similar to clover, as shown in the picture above. These runners root down and can become new plants. This most commonly happens in autumn under good growth conditions.

A key part of success with any pasture is matching the right cultivar to the situation and its requirements. So where does *Rohan SPR* fit?

Sheep and beef farmers look for different pasture types across their properties. These can be loosely divided into four groups, based on relative persistence.



Rohan SPR was trialled at a range of tough sites, here at Mt Possession, inland Canterbury. Also see picture page 7.



*Rohan SPR's* features make it a tough, resilient ryegrass, well suited to sheep and beef farm systems.

*Rohan* does not have the same DM yield as *Trojan*. Its potential DM production is about 10-15% lower. But on the type of country which *Rohan SPR* suits best, yield is less of a requirement, persistence is key.



## EASY CARE PASTURE

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Under many semi-intensive to semi-extensive farm systems it is not easy to maintain pasture quality in late spring.

Late heading cultivars help, but *Rohan SPR* is more than just a late heading ryegrass, it stays leafier and greener than most other cultivars.

Several features underpin *Rohan SPR's* 'easy care' claim including persistence, palatability, late and reduced heading, and *NEA2* endophyte.

#### Persistent

Greater persistence means less re-sowing, and lower costs.

#### Palatable

A continual comment from farmers growing *Rohan SPR* in our trialling system is that it "always looks good".

It is always short and very leafy, and is often preferentially grazed by stock.

#### Late & reduced heading

Rohan SPR is late heading (+18 days) and produces fewer seedheads, so it stays leafier, greener and better grazed than many other cultivars. This is shown in the photo below.

#### NEA2 for animal health

Rohan SPR comes with NEA2, the same mix of two endophytes that is in *Trojan* NEA2, which provides pasture for sheep and cattle with very little risk of staggers. Caution is recommended when sowing NEA2 for deer (see page 22 for more).



Rohan SPR is leafy and well grazed in trial at Middlemarch at the end of November, when feed quality differences start to show.





Suggested below is a base seed mix for *Rohan SPR*. Mixes will vary between situations, for example sub clover is a common addition.

#### Sheep, Beef, Deer

Mix	kg/ha
Rohan perennial ryegrass	16-20
Weka white clover	1.5
Apex white clover	1.5
Safin cocksfoot	2-3
Total	21 – 26







## PERSISTENCE TRIALS

12

*Rohan SPR* has consistently shown good persistence in trials to date, across all trials in the testing programme.

*Rohan SPR* has been tested in a range of on-farm trials. Each site was selected in an area with ryegrass persistence issues, and on a farm with known persistence problems.

#### Rohan SPR trials 2005-13



Replicated plot trials were sown within a farmer's ryegrass paddock, and were given no special management, apart from occasional mowing in spring to ensure reseeding did not occur, and true ryegrass plant persistence was assessed.

> Trial sites were chosen for their summer dry climate and soil type, to best test persistence.

## 2009-13 OKATO PERSISTENCE TRIAL

This was run under dryland dairy grazing on a free draining light coastal sand, only two paddocks back from the sea. Although annual rainfall is 1400mm the soil type means it is prone to drying out in summer.

This site suffered significant black beetle damage. Persistence of the LE (low endophyte) cultivars and most cultivars with *AR1* endophyte has been affected.

After four years, *Rohan SPR* is in the top ('a') significance group.

In 2009 *Rohan SPR* was sown with *NEA* endophyte, which is one of the endophytes that makes up the *NEA2* mix. Performance of *Rohan NEA2* and *NEA* would likely be very similar, but this is not definitive.

\*Trial sown 31 March 2009. Ryegrass assessment scored visually on 1-9 basis, where 9=90%+ ryegrass cover. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.

#### 2009-13 Okato persistence trial\*

Entry	Ryegrass density after 4 years (4 Jul 13)*	
Alto AR37	6.8 a	
Commando AR37	6.7 a	Top ('a')
Rohan NEA	6.6 a	statistical
Alto SE	6.5 a	group
Alto ARI	5.8 ab	
One50 AR1	5.3 bc	
Extreme AR37	5.2 bc	
Ultra ARI	4.4 c	
Commando ARI	3.2 d	
Alto LE	3.0 d	
Nui	1.6 e	
Trial Mean	5.7	
LSD (5%)	1.2	



## 2010-14 TAIHAPE PERSISTENCE TRIAL

This trial is run under dryland sheep and cattle grazing with a 950 mm rainfall on a Kiwitea silt loam soil at Ohingaiti, close to Taihape.

Clear differences in persistence have shown up, with *Rohan SPR* is the top ('a') significance group after three and a half years.



#### 2010-14 Taihape persistence trial\*

Entry	Ryegrass density after 3.5 years (16 May 14)*	
Trojan NEA2	60 a	
Expo AR1	60 a	
Rohan NEA2	60 a	
Alto LE	55 ab	Top ('a') statistical
Alto AR1	52 ac	group
Alto AR37	52 ad	
Alto SE	51 ad	
Kingston SE	49 ad	
Kamo AR37	48 be	
Stellar AR1	47 be	
Abermagic AR1	47 be	
Samson AR37	45 be	
One50 AR1	45 be	
Ultra ARI	44 be	
One50 AR37	43 ce	
Pacific SE	41 de	
Nui WE	38 ef	
Extreme AR37	38 ef	
Samson AR1	37 ef	
Hillary AR1	28 f	
Trial Mean	48	
LSD (5%)	11.2	

\*Trial sown 2 November 2010. Ryegrass assessment taken at end of trial by point analysis. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.

## 2010-13 MASTERTON PERSISTENCE TRIAL

This was run under dryland sheep and cattle grazing with a 1300 mm rainfall on drought-prone ex river shingle (Kohinui loam) at the front of Massey University's Riverside Farm.

Large differences in persistence have shown up, with *Rohan SPR* in the top ('a') significance group after three years.

# 2010-13 Masterton persistence trial\*

Entry	Ryegrass density after 3 years (5 Apr 13)*	
Commando AR37	6.6 a	
Pacific SE	6.3 ab	
Nui	5.4 ac	
Kamo AR37	5.3 ac	Top ('a') statistical
Rohan NEA2	5.0 ac	group
Samson AR37	4.7 ad	
Alto AR37	4.7 ad	
Trojan NEA2	4.6 ad	
Kingston SE	4.4 bd	
One50 AR1	4.3 bd	
Alto ARI	4.3 bd	
Aberdart AR1	3.7 cd	
Ultra ARI	3.7 cd	
Expo ARI	3.6 cd	
Hillary ARI	3.3 cd	
Extreme AR37	2.7 d	
Trial Mean	4.5	
LSD (5%)	2.2	

\*Trial sown 23 March 2010. Ryegrass assessment taken by visual score of ryegrass density after 3 years. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.

## 2009-14 SCARGILL PERSISTENCE TRIAL

This is run under dryland sheep and cattle grazing with a 650 mm rainfall on drought-prone Domett silt loam soil.

The trial is within a *Bareno* pasture brome paddock(which is well suited to this environment) and has been often grazed very short.

In 2009 *Rohan SPR* was sown with *NEA* endophyte, which is one of the endophytes that makes up the *NEA2* mix. Performance of *Rohan NEA2* and *NEA* would likely be very similar, but this is not definitive.

Differences in persistence have shown up, with *Rohan SPR* in the top ('a') significance group after fiveyears.



Argentine stem weevil has been a significant pest at this site, with damage showing up worst in plots of Nui (pictured), March 2013.

2009-14 Scargill	persistence	trial
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Entry	Ryegrass density after 5 years (4 May 14)*	
Rohan NEA	66 a	Top ('a')
Rohan SE	64 ab	statistical
Kamo AR37	61 ac	group
One50 AR1	57 bd	
Alto AR1	57 bd	
Ultra ARI	56 bd	
Kingston SE	56 bd	
Samson AR37	55 cd	
Alto AR37	53 cd	
Pacific SE	50 de	
Hillary ARI	49 de	
Samson AR1	48 de	
Extreme AR37	43 ef	
Alto LE	35 f	
Nui	19 g	
Frial Mean	52	
LSD (5%)	9.0	

\*Trial sown 9 March 2009. Ryegrass assessment taken by point analysis. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.



Trial in summer, well grazed within the Bareno pasture.

## 2009-12 AND 2010-12 SWANNANOA PERSISTENCE TRIALS

These trials were run under dryland sheep and deer grazing in North Canterbury with a 650 mm rainfall on drought-prone Lismore stony silt loam soil.

The trials were located within a *Bareno* pasture brome pasture (which is well suited to this environment) and were

#### 2009-12 Swannanoa persistence trial\*

Entry	Ryegrass density after 3 years (16 May 12)*	
Kamo AR37	50 a	
Ultra ARI	48 ab	
Rohan NEA	47 ac	Top ('a')
Alto AR37	45 ad	group
Trojan NEA2	45 ad	
Samson AR37	44 ad	
One50 AR1	42 bd	
Alto ARI	42 bd	
Pacific SE	41 cd	
Hillary ARI	40 d	
Samson AR1	39 d	
Extreme AR37	39 d	
Alto LE	29 e	
Nui	28 e	
Trial Mean	41.8	
LSD (5%)	6.8	

\*Trial sown 16 March 2009. Ryegrass assessment taken at end of trial by point analysis. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different. often set-stocked and grazed very short.

Some differences in persistence showed up in the trials with *Rohan SPR* in the top ('a') significance group after three years and two years, in the 2009-12 and 2010-12 trials respectively. The trial site has now been converted to dairying.

#### 2010-12 Swannanoa persistence trial\*

Entry	Ryegrass density after 2 years (24 May 12)*	
Rohan NEA2	47 a	Top ('a') statistical group
Samson AR1	40 bc	
Hillary ARI	39 bc	
Trojan NEA2	38 bc	
Rohan LE	36 c	
Trojan LE	25 d	
Trial Mean	39.1	
LSD (5%)	6.3	

\*Trial sown 10 March 2010. Ryegrass assessment taken at end of trial by point analysis. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.



2009 sown trial, in first summer, March 2010.

## 2005-12 MT POSSESSION PERSISTENCE TRIAL

This was run under summer dry sheep and cattle grazing with a 550 mm rainfall and moderate soil fertility on silt loam soil.

When the trial was sown in 2005 we only had *Rohan SPR* with standard endophyte (SE), not with *NEA2* as we now sell it. However several other cultivars were sown with SE to compare it to.

Large differences in persistence have shown up, with *Rohan SPR* in the top ('a') significance group six and a half years after sowing.



Mt Possession trial in January 2012.

## 2005-12 Mt Possession persistence trial\*

Ryegrass density after 6.5 years (15 May 12)*	
67 a	Top ('a') statistical group
53 b	
45 bc	
42 bc	
41 c	
41 c	
34 cd	
24 de	
17 e	
38.8	
11.3	
	Ryegrass   6.5 years   6.5 years   6.7 a   67 a   63 b   45 bc   42 bc   41 c   34 cd   24 de   17 e   38.8   11.3

\*Trial sown 31 October 2005. Ryegrass assessment taken at end of trial by point analysis. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.



Persistence can be clearly seen here as a lack of browntop in the Rohan SE plot (front right), due to Rohan's persistence and spreading habit. (Key to cultivars given in right hand image; unnamed plots are breeding lines.)

## 2011-14 ALBURY PERSISTENCE TRIAL

Run under dryland sheep grazing, under 650mm rainfall on a free draining Templeton silt loam soil.

This trial has not shown large differences in persistence to date. *Rohan SPR* is in the top ('a') significance group after threeyears.

\*Trial sown 10 March 2011. Ryegrass assessment taken by point analysis. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly

different.

#### 2011-14 Albury persistence trial\*

Entry	Ryegrass density after 3 years (16 June 14)*	
Rohan NEA2	8.0 a	
Expo ARI	7.7 ab	
One50 AR37	7.4 ac	
Extreme AR37	7.4 ac	
One50 ARI	7.4 ac	
Trojan NEA2	7.4 ac	Top ('a')
Ultra ARI	7.3 ac	statistical group
Samson AR37	7.3 ac	5 1
Alto ARI	7.3 ac	
Alto NEA6	7.0 ad	
Prospect AR37	7.0 ad	
Alto SE	7.0 ad	
Abermagic AR1	6.7 ad	
Stellar AR1	6.3 be	
Pacific SE	6.0 ce	
Kamo AR37	6.0 ce	
Hillary AR1	6.0 ce	
Alto LE	5.7 de	
Kingston SE	5.6 de	
Nui	5.0 e	
Trial Mean	6.8	
LSD (5%)	1.5	



![](_page_9_Figure_20.jpeg)

## 2009-13 MIDDLEMARCH **PERSISTENCE TRIAL**

This trial is run under dryland sheep and cattle grazing with a 520mm rainfall on silt soil over a fragipan at a 50cm depth that impedes root growth.

Rohan SPR is in the top 'a' statistical category for persistence after five vears.

In 2009 Rohan SPR was sown with the NEA endophyte, which is one of the endophytes that makes up the NEA2 mix. Performance of Rohan NEA2 and NEA would likely be very similar but this is not definitive.

\*Trial sown 4 March 2009. Ryegrass assessment taken by visual score after five years. LSD (5%) lettering is given, and cultivars with same significance letter (e.g. 'a') are not significantly different.

2009-13 Middlemarch persistence trial\*

Entry	Ryegrass density after 5 years (7 June 14)*	
Rohan SE	7.0 a	
Rohan NEA	6.7 ab	
Samson AR37	6.5 ac	Top ('a') statistical
Alto SE	6.5 ac	group
Alto AR37	6.5 ad	
Alto ARI	6.2 ae	
Samson AR1	6.0 be	
Extreme AR37	6.0 be	
Ultra ARI	5.9 be	
Nui	5.7 ce	
Pacific SE	5.7 ce	
Hillary AR1	5.5 de	
Kingston SE	5.5 de	
Kamo AR37	5.5 de	
Alto LE	5.3 e	
Trial Mean	6.2	
LSD (5%)	1.0	

## **ENDOPHYTE**

Rohan SPR comes with either NEA2 endophyte or with *LE* (a low level of endophyte).

NEA2 is a similar mix of endophyte strains as in Trojan NEA2.

NEA2 endophyte has a good balance of insect control, as follows.

#### Summary

These ratings are indicative. If Argentine stem weevil or black beetle are present at sowing, an appropriate seed treatment is recommended, to improve insect resistance during establishment. The ratings in this table are based in part on glasshouse studies where test plants are 100% infected with endophyte, whereas commercial seed must meet minimum standards of 70% of seeds infected. These tables were compiled by AgResearch, Agricom, Agriseeds, Grasslanz and PGG Wrightson Seeds.

#### Endophyte insect control for diploid ryegrasses

Insect	AR1	NEA2	AR37	<i>Standard</i> endophyte	<i>Without</i> endophyte
Black beetle	*	***	***	***	-
Argentine stem weevil	****	***	<b>♦♦♦</b> <sup>1</sup>	****	-
Pasture mealybug	****	(♦♦♦♦)	****	****	-
Root aphid	_2	**	****	**	-
Porina <sup>3</sup>	-	Not tested	***	•	-

<sup>1</sup>AR37 endophyte controls Argentine stem weevil larvae, but not adults. While larvae cause most damage to pastures, adults can damage emerging grass seedlings. In Argentine stem weevil prone areas it is recommended to use treated seed for all cultivars with novel endophyte.<sup>2</sup> AR1 plants are more susceptible to root aphid than plants Without endophyte.<sup>3</sup> Control of porina in pastures only applies to the ryegrass component. Other species that are palatable to porina (such as white clover) will still be damaged.

#### Key to table:

- No control.
- Low level control: Endophyte may provide a measurable effect, but is unlikely to give any practical control.
- Moderate control: Endophyte may provide some practical protection, with low to \*\* moderate reduction in insect population.
- Good control: Endophyte markedly reduces insect damage under low to moderate \*\*\* insect pressure. Damage may still occur when insect pressure is high.
- \*\*\*\* Very good control: Endophyte consistently reduces insect populations and keeps pasture damage to low levels, even under high insect pressure.
- Provisional result: Further results needed to support the rating. Testing is ongoing. ()

![](_page_10_Picture_27.jpeg)

Middlemarch trial in April 2010.

## NEA2 & ANIMAL HEALTH

*Rohan SPR* with *NEA2* endophyte provides pasture for sheep and cattle with a very low risk of staggers.

In the 12 years we have sold this endophyte, no ryegrass staggers have been seen in sheep or cattle on *NEA2* pastures on commerical farms.

#### Sheep & lambs

Insect	AR1	NEA2	AR37	Endo5	<i>Standard</i> endophyte	<i>Without</i> endophyte
Freedom from ryegrass staggers	****	****	<b>♦♦</b> ♦²	****	\$\$1	****
Animal performance	****	****	****	***	<b>♦</b> ♦1	****

Under deer grazing, be cautious if

growth following drought. We have

seen one occasion where some elk

showed a low level of staggers grazing

NEA2 in these circumstances. Elk are

more susceptible to staggers than

These ratings are indicative. Animal

under different management systems

performance and health can vary

and between seasons.

other deer.

Summary

grazing the first pick of green re-

<sup>1</sup> Standard endophyte can cause severe ryegrass staggers, can significantly decrease lamb growth rates in summer and autumn, and significantly increase dags.<sup>2</sup> Ryegrass containing AR37 endophyte can cause severe ryegrass staggers, but the frequency of ryegrass staggers is much lower than for ryegrass with Standard endophyte. One50 AR37 may give rise to higher instances of ryegrass staggers in some situations.<sup>3</sup> Lambs grazing ryegrass containing AR37 endophyte can have reduced LWG during periods of severe staggers.

#### Cattle

Insect	AR I	NEA2	AR37	Endo5	<i>Standard</i> endophyte	<i>Without</i> endophyte
Freedom from ryegrass staggers	****	****	<b>****</b> <sup>2</sup>	****	<b>♦♦</b> <sup>1</sup>	****
Animal performance	****	Not tested	****	Not tested	<b>♦♦</b> <sup>1</sup>	***

<sup>1</sup> Standard endophyte can cause ryegrass staggers, and has been shown to depress milksolids production through summer and autumn.<sup>2</sup> While ryegrass staggers has not been observed on cattle, it could occur on rare occasions.

#### Key to tables:

- Moderate animal performance and health: This endophyte is known to regularly cause significant problems.
- ••• Good animal performance and health: This endophyte can cause problems from time to time.
- **Very good animal performance and health.**

## NEA2 ALKALOIDS

The NEA2 endophyte produces lolitrem B, ergovaline and peramine, all at lower levels than *Standard endophyte (SE)*. Note that alkaloid levels quoted are indicative only, as they vary widely both within and between seasons, and are influenced by climate, environmental and management factors.

#### Lolitrem B

The lolitrem B level produced by *NEA2* is very low, typically 5-10% of the level of *SE*.

#### Ergovaline

The ergovaline level produced by *NEA2* is around 60-70% of the level produced by *SE*. This level of ergovaline has been shown to give good control of black beetle and moderate control of root aphid.

#### Peramine

Tests show the peramine level produced by *NEA2* is typically 20-30% of the level produced by *SE*.

This level of peramine has been shown to give good control of Argentine stem weevil and is believed to give good protection against pasture mealy bug. *Rohan SPR* with *NEA2* has shown very good persistence in trials throughout New Zealand, which would not be possible without good broad-spectrum control of insect pests.

![](_page_11_Picture_25.jpeg)

Lambs grazing at Ashley Dene farm Lincoln University animal safety trials, March 2013.

![](_page_12_Picture_1.jpeg)

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