



BARENBRUG
agriseeds

PASTURES FOR THE FUTURE

Next generation seed mixes

COMMITTED TO INNOVATION. COMMITTED TO FARMING.

At Barenbrug Agriseeds, we're proud of our history of innovation. More importantly, however, we're continuing to innovate for the future.

Because even though it's not clear exactly what the farm systems of 2030 will look like, we do know pasture-based agriculture has a bright, positive future.

And it's our job to make sure you have the pastures and forages you need to farm sustainably and profitably in the years ahead.

Read on to find out more about our latest research, and for innovative pasture mixes you can sow to improve your farm business in 2019.

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THE STORY SO FAR

Our track record includes *Trojan*, *Shogun*, *Rohan SPR*, and *NEA* endophytes. All were breakthrough products when released, and each remains in a class of its own today.



Trojan with *NEA2* endophyte, now covering a quarter of a million ha nationwide.

Trojan provides high yield, seasonal growth, persistence, resistance to black beetle, and great animal health. It offers a standard of performance few others can match. *Trojan* remains in the top rating of diploid ryegrass cultivars in the DairyNZ Forage Value Index (FVI) across the country.



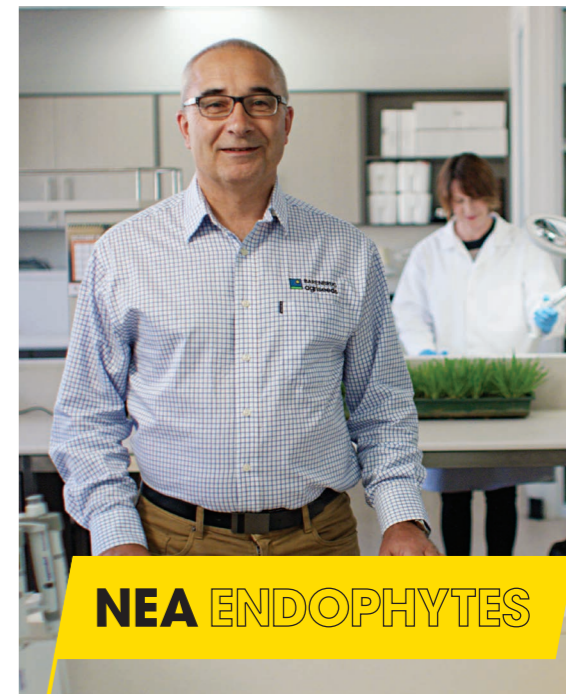
Shogun, the world-record-holding hybrid that's revolutionising farming systems.

It grows in winter like an Italian ryegrass, then in summer grows like a perennial. And it's a world record holder. No wonder *Shogun* tetraploid hybrid ryegrass with *NEA* endophyte has literally changed the game for dairy and red meat farmers alike. It's still in a class of its own.



Rohan, the spreading perennial, purpose bred for hill country sheep and beef farms.

On tougher country, you need a tougher pasture. That's why we created *Rohan* with *NEA2* endophyte, NZ's only spreading perennial ryegrass, bred for persistence. It's extending its long stolons nationwide, not only on red meat farms but also dairy farms which need dense, palatable, easy care pasture.



We believe *NEA* endophytes provide the best balance of animal health and insect control you can buy.

30 years ago, we set out to find the ultimate endophyte, and the result is *NEA* endophytes. Suited to all areas of New Zealand, and unlike some other endophytes, *NEA* endophytes look after your stock. This makes them the obvious choice for farmers who value animal welfare.

LATEST PRODUCTS

Our most recent cultivars reflect the new and emerging systems farmers are using to adapt to changing social, climatic and environmental expectations. Legumes will be particularly important in these systems.



CAPTAIN
PLANTAIN

Captain CSP (cool season plantain) has been bred for when feed is most needed, and most N is lost.

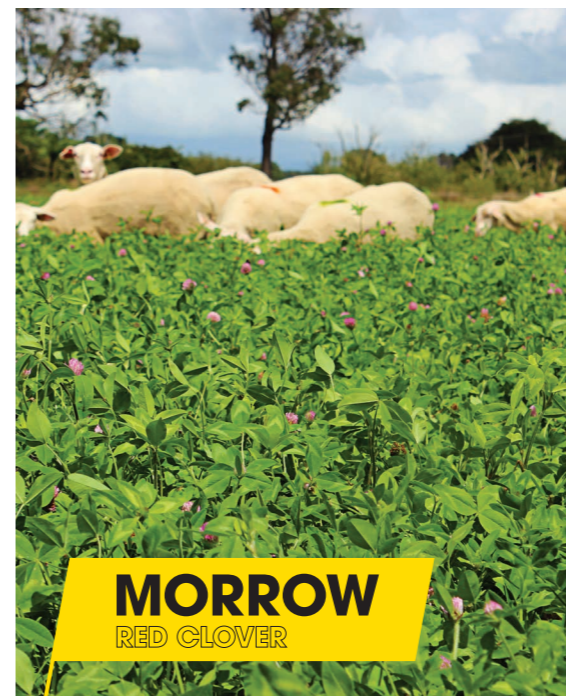
Captain CSP has been bred for high cool season growth, providing more kg DM/ha when feed is needed most, and utilising soil N in winter, the highest risk time for N leaching. Deep rooting with good yield and ME through summer, *Captain* suits both red meat and dairy farms.



KOTUKU
WHITE CLOVER

Kotuku is a very high yielding large leaved clover, with superior summer growth.

Kotuku is a high performance, large leaved white clover for dairy, beef and finishing systems. It is very high yielding, with superior summer growth and good persistence. White clover is critical for nutritive value and N fixation in pastures, and is an important source of protein and ME, particularly in summer.



MORROW
RED CLOVER

A key to breeding Morrow was finding a great old pasture with long-lasting red clover plants.

Morrow multi-stemmed red clover comes from a family of North Island plants that stood out after surviving repeated dry summers and intensive grazing. We selected the best of these for yield, persistence and flowering to create a game-changing, multi-stemmed red clover for improved production and grazing tolerance.



ANNUAL CLOVERS

Winter active clovers provide new pasture mix options for great cool season animal performance.

Zulu II, Vista and Laser annual clovers are winter-active, to complement summer-active legumes in our pastures of the future. They have exceptional nutritive value, and are well adapted to summer dry regions. These cultivars suit both winter feed, and specialist finishing mixes, and have an ideal fit with the emerging shift towards more winter-based systems.

FUTURE PROOFING

What will the New Zealand farm systems of 2030 look like?

'Our role is to carry on making the most efficient, sustainable pastures that we can. We're already seeing the importance of species with cool season growth to soak up N in the winter, and minimise N losses through the soil. Phosphate use efficiency is going to be very important in the future, as is water use efficiency. The more we can make pastures do, the more choices farmers will have.'



The reason we're looking ahead is the same reason farmers and industry are looking ahead – because pasture-based agriculture is our business, and we're backing it 100%. We believe real milk and real meat have a real future, and right now we're working on plants with:

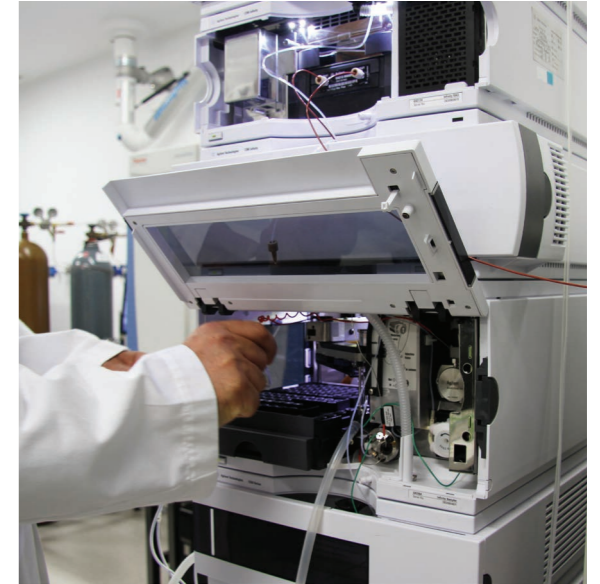
- Better nutrient use efficiency
- Improved climatic tolerance
- Higher nutritional value
- Stronger pest resistance
- Faster genetic gain

That's what our scientists and breeders have been asking as they develop pastures and forages that will be the engine room of those future systems.

'More and more we're looking at systems, and the use of different species together. Plantain for example; a range of different clovers; chicory and other herbs, various grasses that are happy together, and complement each other. In future, we will need to find a balance between maximising yield, and reducing impact on the environment.'



Our latest research includes deep-rooted experimental hybrid clovers bred for dry conditions and low P requirements; and the first perennial ryegrasses created with F1 hybrid breeding techniques similar to those which first catapulted maize yields skywards in the 1950s.



We're also testing recent advances in sensor technology and DNA-based plant selection, to make plant breeding and development more efficient. Instead of 12 years, for example, which is how long it currently takes to breed, test and commercialise a new perennial ryegrass, soon it might only take 6-8 years.

'It's a really exciting time to be a plant breeder. We're evaluating these new techniques and equipment here in the field - genomic selection, F1 hybrids, LiDAR, real-time pasture growth sensors. It won't be one single thing that makes a difference to our process, but probably a combination of all of them.'

NEXT GENERATION SEED MIXES

What should future pastures look like?

Here's how you might change from a standard seed mix to an innovative seed mix, and reasons why.

STANDARD

Perennial ryegrass - General purpose

Standard mix

Cultivars	kg/ha
Governor perennial ryegrass	18-22
Weka white clover	2
Apex white clover	2
Total	22-26

- Suits all stock classes
- Densely tillered, persistent, all-round mix
- Very good early spring quality and quantity

Perennial ryegrass - High performance dairy

Standard mix

Cultivars	kg/ha
Trojan perennial ryegrass	20-22
Kotuku white clover	2
Weka white clover	2
Total	24-26

- Trojan for high seasonal & total DM yield
- Robust pasture for high MS production
- NEA2 or Low endophyte ryegrass to maximise animal performance

Perennial ryegrass - Breeding ewes

Standard mix

Cultivars	kg/ha
Tyson perennial ryegrass	18-22
Weka white clover	2
Apex white clover	2
Safin cocksfoot	2
Total	24-28

- Tyson for exceptional early spring growth & feed for lactating ewes
- Dense, fine sheep and beef ryegrass
- AR1 or Low endophyte ryegrass to maximise animal performance

Perennial ryegrass - Finishing

Standard mix

Cultivars	kg/ha
Viscount perennial ryegrass	30
Weka white clover	2
Apex white clover	2
Total	34

- Fantastic quality from tetraploid Viscount & clovers
- NEA4 or Low endophyte ryegrass to maximise animal performance

NEXT GENERATION

Next generation mix

Cultivars	kg/ha
Governor perennial ryegrass	18-20
Weka white clover	2
Apex white clover	2
Captain CSP plantain	2
Total	24-26

- Reduced N leaching with Captain plantain
- Increased mineral content for animal health benefits
- Higher summer quality

Next generation mix

Cultivars	kg/ha
Trojan perennial ryegrass	10
Viscount perennial ryegrass	15
Kotuku white clover	2
Weka white clover	2
Captain CSP plantain	2
Total	31

- Viscount improves palatability, for easier grazing
- Diploid: tetraploid ryegrass combination gives robustness (over pure tetraploid pasture)
- Captain reduces N leaching & increases mineral content

Next generation mix

Cultivars	kg/ha
Tyson perennial ryegrass	16-20
Weka white clover	2
Apex white clover	2
Morrow red clover (coated)	6
Captain CSP plantain	2
Total	28-32

- Morrow and Captain add high late spring & summer quality
- Morrow provides extra N fixation
- Captain reduces N leaching & increases mineral content

Next generation mix

Cultivars	kg/ha
Viscount perennial ryegrass	16
Shogun hybrid ryegrass	10
Weka white clover	2
Apex white clover	2
Morrow red clover (coated)	6
Captain CSP plantain	2
Total	38

- Shogun extends shoulder season growth
- Morrow and Captain provide very high summer quality
- Captain reduces N leaching & increases mineral content

NEXT GENERATION SEED MIXES

STANDARD

Perennial ryegrass - Hill country

Standard mix

Cultivars	kg/ha
<i>Rohan SPR</i> perennial ryegrass	18-22
<i>Weka</i> white clover	2
<i>Apex</i> white clover	2
<i>Safin</i> cocksfoot	2
Total	24-28

- *Rohan SPR* has unique spreading ability, increasing ground cover & reducing space for weed germination
- Persistent easy care pasture
- *NEA2* or *Low* endophyte ryegrass to maximise animal performance

Pasture brome - Dry free-draining soils

Standard mix

Cultivars	kg/ha
<i>Bareno</i> pasture brome	28
<i>Weka</i> white clover	2
<i>Apex</i> white clover	2
Sub clover	8
Total	40

- *Bareno* is very persistent on free-draining low-moderate aluminium soils
- Remains palatable when seeding giving it an advantage over cocksfoot & tall fescue
- As an annual, sub must be allowed to set seed in spring

What should future pastures look like?

Here's how you might change from a standard seed mix to an innovative seed mix, and reasons why.

Cocksfoot - Driest country

Standard mix

Cultivars	kg/ha
<i>Safin</i> cocksfoot	8
<i>Weka</i> white clover	2
<i>Apex</i> white clover	2
Sub clover	8
Total	20

- *Safin* superfine cocksfoot for tough, persistent pasture under moderate soil fertility
- White clover & sub clover for extra summer & spring quality feed respectively
- As an annual sub must be allowed to set seed in spring

Plantain - High LWG crop

Standard mix

Cultivars	kg/ha
<i>Captain CSP</i> plantain	10
<i>Kotuku</i> white clover	3
<i>Weka</i> white clover	3
<i>Morrow</i> red clover (coated)	6
Total	22

- High animal performance 2-3 year crop
- *Captain* cool season plantain provides year round growth
- White & red clovers provide late spring-autumn growth & quality

NEXT GENERATION

Next generation mix

Cultivars	kg/ha
<i>Rohan SPR</i> perennial ryegrass	16-20
<i>Weka</i> white clover	2
<i>Apex</i> white clover	2
<i>Safin</i> cocksfoot	4
<i>Zulu II</i> arrowleaf clover	5
Total	29-33

- *Zulu II* adds early spring growth, quality & N fixation
- As an annual *Zulu II* must be allowed to set seed in spring. Has high hard seed content setting up future years production

Next generation mix

Cultivars	kg/ha
<i>Bareno</i> pasture brome	28
<i>Weka</i> white clover	2
<i>Apex</i> white clover	2
Sub clover	6
<i>Zulu II</i> arrowleaf clover	4
Total	42

- *Zulu II* adds early spring growth, quality & N fixation
- As annuals sub and *Zulu II* must be allowed to set seed in spring

Next generation mix

Cultivars	kg/ha
<i>Safin</i> cocksfoot	8
<i>Weka</i> white clover	2
<i>Apex</i> white clover	2
Sub clover	6
<i>Zulu II</i> arrowleaf clover	4
Total	22

- *Zulu II* adds early spring growth, quality & N fixation
- As annuals sub and *Zulu II* must be allowed to set seed in spring

Next generation mix

Cultivars	kg/ha
<i>Captain CSP</i> plantain	10
<i>Kotuku</i> white clover	3
<i>Morrow</i> red clover (coated)	6
<i>Vista</i> balansa clover	3
<i>Laser</i> Persian clover	3
Total	25

- *Vista* & *Laser* annual clovers significantly increase first year yield & quality
- Increased N fixation
- Annual clovers don't reseed in this system

NEXT GENERATION SEED MIXES

What should future pastures look like?

Here's how you might change from a standard seed mix to an innovative seed mix, and reasons why.

Hybrid ryegrass

Standard mix

Cultivars	kg/ha
<i>Shogun</i> hybrid ryegrass	30
<i>Kotuku</i> white clover	2
<i>Weka</i> white clover	2
Total	34

- High performance 3-5 year tetraploid pasture
- Extremely high yield across all seasons
- *NEA* or *Low* endophyte ryegrass to maximise animal performance

Italian ryegrass

Standard mix

Cultivars	kg/ha
<i>Tabu</i> + Italian ryegrass	20
Total	20

- High performance 1-2 year pasture
- *Tabu*+ fast establishing with rapid regrowth

Annual ryegrass

Standard mix

Cultivars	kg/ha
<i>Hogan</i> annual ryegrass	30
Total	30

- High performance, palatable 8 month winter crop

Winter oat crop

Standard mix

Cultivars	kg/ha
<i>Hatrick</i> oats	50
<i>Tabu</i> + Italian ryegrass	20
Total	70

- *Hatrick* provide extra bulk of late winter feed
- *Tabu*+ provides regrowth for spring grazing or silage

Next generation mix

Cultivars	kg/ha
<i>Shogun</i> hybrid ryegrass	30
<i>Kotuku</i> white clover	2
<i>Morrow</i> red clover (coated)	6
<i>Laser</i> Persian clover	4
Total	42

- *Morrow* adds late spring & summer quality
- *Laser* increases quality & yield through first winter & spring
- Extra N fixation

Next generation mix

Cultivars	kg/ha
<i>Tabu</i> + Italian ryegrass	20
<i>Morrow</i> red clover (coated)	6
<i>Laser</i> Persian clover	4
Total	30

- *Morrow* adds late spring & summer quality
- *Laser* increases quality & yield through first winter & spring
- Extra N fixation

Next generation mix

Cultivars	kg/ha
<i>Hogan</i> annual ryegrass	25
<i>Vista</i> balansa clover	4
<i>Laser</i> Persian clover	4
Total	33

- *Laser* & *Vista* increases quality & yield through winter & spring
- Extra N fixation

Next generation mix

Cultivars	kg/ha
<i>Hatrick</i> oats	45
<i>Tabu</i> + Italian ryegrass	20
<i>Vista</i> balansa clover	4
<i>Laser</i> Persian clover	4
Total	73

- *Laser* & *Vista* increases quality through winter & spring
- Extra N fixation

