Aber®
High Sugar Grasses & Clovers

Germinal

Contents

Your guide to Aber® grasses and clovers

Welcome

Higher levels of digestibility, persistency and nitrogen use efficiency

If you are looking for improved pasture persistence, nutritional quality and environmental benefits, then look no further than Germinal New Zealand, and the Aber range of high sugar grasses and clovers.

Germinal is a company that is moving forward, leading the way, innovating for the future and developing the best products. We invest time and resources in consistently improving our knowledge of seed development and our ability to project and plan for the future.

One of our key effective relationships is with the Institute of Biological Environmental and Rural Science (IBERS), in Wales. This gives Germinal its business edge and differentiation. We are not just a supplier, but a researcher with vital knowledge in seed development.

Aber High Sugar Grasses (HSG) represent a significant advance in the nutritional benefits derived from ryegrass pasture. Bred for increased content of water soluble carbohydrate (WSC), or sugar, Aber HSG varieties offer more readily available energy and are more digestible for dairy cows, beef cattle, sheep and deer than standard ryegrass.

The Aber range of high quality perennial ryegrasses and clovers have been tested across diverse farm systems and growing conditions throughout New Zealand. AberDart was introduced in 2000 as the world's first high sugar grass and since then, successive varieties of Aber HSG and clovers have continued to demonstrate superior pasture quality, digestibility and persistence.

Farmers have observed livestock showing a clear grazing preference for Aber HSG pasture over other ryegrasses and seen increases in dairy milk production, and the liveweight gains of sheep, beef cattle and deer.

With a focus on developing new varieties for New Zealand, in New Zealand, Germinal can ensure future varieties will continue to offer the superior benefits to New Zealand farmers.

Welcome to the New Zealand range of Aber High Sugar Grass and white clover varieties – the brand offering farmers enduring persistence, more efficient nitrogen use and greater nutritional quality.

Kind Regards

Sarah Gard
Trials and Product Development Manager
Germinal New Zealand

Benefits of Aber® High Sugar Grass

Your stock will thrive on it

All farmers want their stock to thrive. Fundamental to that is palatable and nutritious pasture that can recover strongly between grazings, persist well, tolerate heavy traffic when wet underfoot and lift animal production.

Aber grasses have been developed to consistently offer:

- Improved Digestibility
- Better Nutrition
- Greater Animal Productivity
- Enduring Persistence
- Environmental Benefits

Improved Digestibility

Aber HSG varieties are more digestible because they contain lower levels of fibre and more water soluble carbohydrates[1].

Digestibility is a measure of how much of the feed eaten can be used by the animal for metabolic functions including maintenance, growth, milk production and reproduction. Digestibility is measured in the laboratory using synthetic enzymes which simulate the digestion process that occurs within an animal. The results are used to estimate the Digestible Organic Matter in the Drymatter % (DOMD) which is commonly referred to as digestibility. Higher digestibility values are beneficial because they drive higher feed energy values and higher intakes.

Metabolisable Energy (ME) is the amount of energy an animal can derive from a feed. It is measured in megajoules of energy per kilogram of forage drymatter (MJ/kgDM). There is a direct relationship between digestibility and metabolisable energy. One percentage increase in digestibility (DOMD) equates to an additional 0.15 MJ/kgDM of ME[2].

The perennial diploids AberMagic and AberGreen have been shown to have a digestibility of 5.0% and 5.5% respectively higher than another commercially available perennial ryegrass[3]. This difference is calculated to produce an extra 1.4 - 1.5 litres of milk per day from a dairy cow[4].

[1] Cosgrove, G. P.; Koolaard, J.; Luo, D.; Burke, J. L.; Pacheco, D. 2009. The composition of high sugar ryegrasses. Proceedings of the New Zealand Grassland Association, 71: 187-193.

[2] Van der Honing, Y, Alderman, G. 1998. Ruminants. In: Livestock Production Science 19:217-278.

[3] Plant Research (NZ) Ltd, 2014. Unpublished. Mean digestibility values were measured across five harvests at Ashburton from Oct 2013 to Mar 2014.

[4] Walters, R. J. K. 1984. D-value: the significance of small differences on animal performance, In: The grass ley today. Proceedings 18th NIAB. Crop Conference, Cambridge, UK. pg 60-68.

Benefits of Aber® High Sugar Grass over Standard Ryegrass

5.0%[3]

Gain in digestibility

1.4 litres[4]

Extra litres of milk per day

100 grams[4]

Extra grams of liveweight per lamb per day

200 grams[4]

Extra grams of liveweight per cow per day

Better Nutrition

Aber® High Sugar Grasses (HSG) are bred to produce more water soluble carbohydrate (WSC) or sugar energy – delivering up to 17% more WSC than a standard diploid perennial ryegrass[5].

As well as more sugar energy the research shows AberMagic has lower levels of fibre than control diploid and tetraploid ryegrasses and less crude protein than a tetraploid ryegrass. AberMagic's lipid (wax, oil and fat) content, another source of energy, is 15% higher than a standard diploid ryegrass[5].

[5]Jonker, A.; Molano, G.; Sandoval, E.; Taylor, P.; Antwi, C.; Cosgrove, G.P. 2014. Methane emissions by sheep offered high-sugar or conventional perennial ryegrass at two allowances. Proceedings of the New Zealand Society of Animal Production 74: 145-147.

[6]Cosgrove, G. P.; Burke, J.L.; Death, A.F.; Hickey, M.J.; Pacheco, D.; Lane, G.A. 2007. Ryegrasses with increased water soluble carbohydrate: evaluating the potential for grazing dairy cows in New Zealand. Proceedings of the New Zealand Grassland Association 69: 179–185.

[7]British Seed Houses. 2012. Aber High Sugar Grasses trial work was conducted at the Institute of Biological, Environmental and Rural Sciences (IBERS) and on commercial farms.

Greater Animal Productivity

Farmers have seen Aber HSG pasture grazed 'like a mower', the lambs stay clean, the bulls more content and the deer reluctant to walk out of Aber for another paddock of conventional ryegrass.

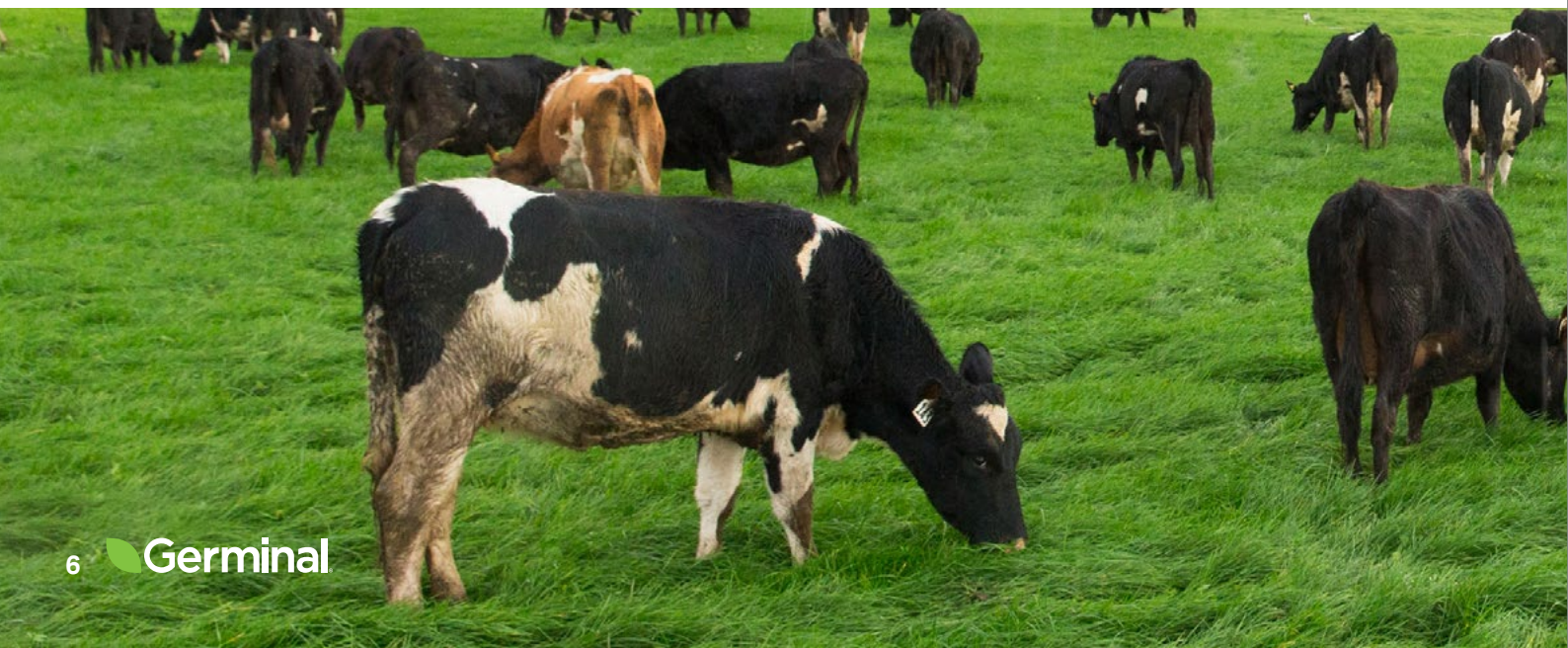
An AgResearch trial showed cows fed Aber HSG produced 10% more autumn milksolids than cows fed a standard ryegrass[6]. Overseas trials have shown 6% more milk per cow and a 20% higher daily liveweight gain for lambs and beef cattle when fed or grazed on Aber HSG[7].

Why the increase in production?

- Aber HSG's improved digestibility increases the supply of readily available energy to assist in building more microbial protein in the rumen.
- Aber HSG's enhanced palatability encourages increased intake of drymatter.

Scientists calculate a digestibility gain of 1% enables a dairy cow to produce an extra 0.28 litres per day, a beef animal to produce an extra 40 grams of meat per day and a lamb to gain an extra 20 grams of meat per day[8].

AberMagic and AberGreen, being 5.0% and 5.5% respectively higher in digestibility when compared to a standard ryegrass[9], offer the potential for dairy cows, beef cattle and lambs to significantly increase milk or meat production.



Enduring Persistence

Pasture persistence is absolutely essential but is the easiest trait to lose when plant breeders strive to improve a plant's forage value.

Aber® HSG plant breeders are well aware of this and make strong and dense root and tiller growth a priority.

A trial near Ashburton conducted by Plant Research (NZ) Ltd, showed AberMagic and AberGreen out-performed a popular standard variety for yield in that trial's third and final year when yields commonly start to diminish[9].

Aber HSG pastures sown in 2004 are still persisting and performing on farms throughout New Zealand, providing good ground cover and quicker recovery after grazing and dry spells.

[8]Walters, R. J. K. 1984. D-value: the significance of small differences on animal performance, In: The grass ley today. Proceedings 18th NIAB. Crop Conference, Cambridge, UK. Pg 60-68.

[9]Plant Research (NZ) Ltd, 2014. Unpublished. Mean digestibility values were measured across five harvests at Ashburton from Oct 2013 to Mar 2014.

[10]Tavendale, M.H.; Pacheco, D.; Lane, G.A.; Fraser, K.; Death, A.F.; Burke, J.L.; Hickey, M.J.; Cosgrove, G.P. 2006. The effects of ryegrass varieties differing in soluble sugar content on the rumen fermentation of amino acids and consequences for milk flavour chemistry. Proceedings of the New Zealand Grassland Association 68: 261-265.

Environmental Benefits

Cattle, sheep and deer are poor converters of herbage protein, using only 20% for production with the rest wasted in faeces and urine.

The high level of water soluble carbohydrate (WSC) in Aber HSG grass provides a more readily fermentable energy. Research at IBERS (Institute of Biological, Environmental and Rural Sciences) shows this increases the capture of rumen degradable protein into microbial protein and reduces the amount of N lost in urine[7].

New Zealand research shows rumen ammonia to be significantly lower in cows grazing Aber HSG[10]. The improved use of ruminal protein suggested by this data may provide environmental advantages in reducing nitrogen excretion[10].

The release of methane gas from sheep and cattle amounts to almost one-third of New Zealand's greenhouse gas emissions, and it is the largest contributor. Methane also accounts for over 40% of all emissions in terms of global warming potential.

The extra water soluble sugars in Aber HSG can change rumen fermentation patterns reducing methane emissions. An AgResearch trial showed 9% lower methane emissions from sheep fed AberMagic when compared to a conventional diploid variety[5].

Cows enjoying high energy Aber High Sugar Grass

Aber High Sugar Grass

Lift animal production with Aber HSG

Extra sugar provides more energy and improved digestibility

Aber High Sugar Grasses represent a significant advance in the nutritional benefits derived from ryegrass pasture. Bred for increased content of water soluble carbohydrate (WSC), or sugar, Aber HSG varieties offer more readily available energy and are more digestible for dairy cows, beef cattle, sheep and deer than standard ryegrass.

Aber HSG offers farmers real potential to lift animal production on pasture. Another key benefit of Aber grasses is their enduring persistence.

Farmers report that their dense tiller (leaf stem) growth and deep root mass enable Aber HSG pastures to better withstand grazing pressure and pugging, not be pulled out of the ground by grazing cattle and more efficiently tap into available soil moisture during dry spells.

Aber Magic

High digestibility
Deep roots for persistence

The first of a new generation of Aber HSG cultivars bred for even higher sugar levels.

AberMagic has a late flowering date and offers exceptional quality under both grazing and silage management.

- High digestibility under both grazing and silage management.
- Very good rust resistance.
- Deep roots for persistence.
- Superior late spring yields.

	Perennial Ryegrass
Ploidy	**Diploid**
Sowing Rate	**16 – 18 kg/ha**
Heading date	**Late +19**
Endophyte	**Nil and AR1**

Paul O'Rorke, Taranaki

Dairy farm, 60 ha Aber HSG, AberDart and AberMagic first sown 2008

"This is a hard area with thin top soil and it's stony underneath so this country provides a good trial for any grass. We've been very happy with the grasses used here so far and there's no reason to stop. We have a large proportion of the farm in Aber and we will just keep going until we have got the whole farm in it."

"The cows like the sugar grass. They graze it hard so they are eating more and seem happy and content. You don't think there's a lot in the paddock but the cows come out very satisfied."

AberGreen

Excellent ground cover
Optimum energy-to-protein balance

Strengths include vigorous ground cover and high digestibility.

The first ryegrass variety to offer close to an optimum balance of energy-to-protein.

- Excellent digestibility under both grazing and silage management.
- Deep rooting with dense and fine tillers.
- Superior late spring yields.
- Bred for enduring persistence.

	Perennial Ryegrass
Ploidy	**Diploid**
Sowing Rate	**16 – 18 kg/ha**
Heading date	**Late +17**
Endophyte	**Nil**

Andrew Young, Tapanui, West Otago

Sheep and beef farm, 180 ha Aber HSG, AberGreen sown 2013, Aber HSG first sown 2002

"The AberGreen, which is into its fourth year, was quick to establish. It's hardy and dense and there's been no problem with porina (larvae). It grows all year and ticks away in winter but is exceptional in spring. In summer I didn't have to take stock off during that dry period so it saved my bacon, to be honest.

My lambs on the Aber average 400 grams a day when everything is going well and they look healthy, stay cleaner and were 2.5 kg heavier at tailing. The AberGreen is very palatable and is a very good grass."

AberGain

Industry-leading digestibility
Late heading tetraploid

One of the latest ryegrasses developed from the long-term breeding programme at IBERS (Institute of Biological, Environmental and Rural Sciences).

- Densely tillered for improved recovery from pugging.
- Extremely high digestibility and palatability.

	Perennial Ryegrass
Ploidy	**Tetraploid**
Sowing Rate	**25 – 30 kg/ha**
Heading date	**Late +24**
Endophyte	**Nil and AR1**

John Stewart, Ashburton

Cropping and dairy farms, AberGain sown 2014

"We were impressed with the AberGain. It performed better than anything else for colour and quantity.

The rows behind the mower were heavy and looked more bulky once it was raked up.

After winter grazing it will be shut up for four good silage cuts before that area is ploughed in autumn."

Germinal

Aber® White Clover Range

Aber clovers are the unsung heroes

High yields, quality and persistency

Agricultural sustainability has become a mainstream priority. Clover has therefore become an even more essential natural resource that can reduce the monetary and environmental impact of nitrogen fertiliser applied to boost pasture production.

Aber white clover varieties offer a significant dual role in maximising soil fertility by fixing nitrogen and maximising pasture feed value by providing a significant home-grown protein source.

The new Aber clover varieties accomplish this dual purpose by offering high yields, feed quality and persistency. They are bred for greater tolerance to environmental stresses such as low temperatures and drought conditions.

Aber clovers consistently achieve an overall target of 30 - 35% of total sward drymatter across a wide range of grazing conditions and pasture management systems. Aber white clovers represent a new generation of clovers and are fully compatible with, and complementary to Aber High Sugar Grass.

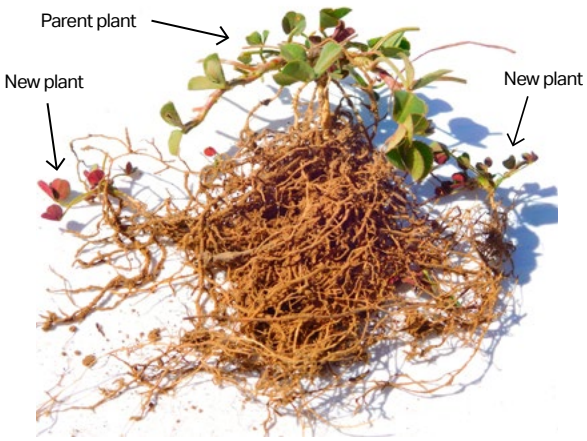
AberLasting

Caucasian White Clover X

The first Super Clover is here

AberLasting is the first ever super clover, developed to incorporate the benefits of Caucasian clover with white clover, giving farmers the best of both.

- Stoloniferous (surface and underground runners) and rhizomatous (larger and deeper underground stem) root system.
- Increased persistence from rhizomatous root system.
- Faster establishment than Caucasian clover.
- More drought tolerant than white clover – maintained leaf water content for one week longer than white clover when without water[11].
- Excellent cold tolerance.
- Can withstand heavy grazing and recovers quicker than white clover.
- Nitrogen fixation comparable with white clover.
- Aber production paddocks have seen tolerance to Clover Root Weevil over second and third years under pressure.



Omarama demonstration site in Otago: six month old AberLasting (left) planted in October 2015 into an unfertile, dry and bony site. The plant is expressing itself similar to a Caucasian clover below ground, with new plants growing off the parent plant rhizomes. These new plants are then establishing tap roots measured down to at least 200 mm.

[11]Marshall, A.H., Rascle, C., Abberton, M.T., Michaelson-Yeates, T.P.T. & Rhodes, I. 2001 Introgression as a route to improved drough tolerance in white clover (Trifolium repens L.). Journal of Agronomy and Crop Science Zeitschrift Fur Acker UndPflanzenbau, 187:11-18

AberDance

Medium Leaf

AberDance is bred from winter hardy material to provide flexibility in response to various grazing managements. It offers high yields and shows good survival in systems ranging from continuous sheep grazing through to rotational sheep and cattle grazing.

- Flexible - suitable for hard grazing and cutting.
- High-yielding and persistent in a range of grazing systems.
- Showed excellent persistence over eight years in a UK trial[12].

[12]British Seed Houses. Aber Clover Management Guide.

AberNormous

Large Leaf

A new generation, high yielding white clover. AberNormous has dense stolon growth for greater persistency and offers the versatility of being suitable for rotational dairy and cattle grazing and high production silage pastures.

- Versatile - suitable for rotational grazing and cutting.
- Retains high digestibility throughout the season.
- Bred for greater persistency and forms dense stolon growth.
- Good stress and grazing tolerance; pest and disease resistant.
- Produces an ideal clover balance for dairy and cattle systems when mixed with AberDance.

We're here to help
Please call us on...

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germinal.com/nz