

FORAGE GRASSES

PERENNIAL RYEGRASS

Perennial ryegrass is the main component of the majority of pasture mixes sown throughout New Zealand (commonly mixed with white and red clovers). It is well suited to different stock types and grazing systems and will generally persist for 5+ years depending on climate and management conditions. Some perennial ryegrass cultivars come with different endophyte options, which are usually selected based on insect profile and pressure in regions. Different ryegrass/endophyte pairings can affect the production and persistence of a cultivar.

Ploidy: Diploids generally have higher tiller densities, are more tolerant of overgrazing, and generally harder and more persistent than tetraploids. Tetraploid cultivars tend to be more palatable and higher in ME compared with diploids. Tetraploids have larger seed size requiring higher sowing rates, require careful grazing management to prevent overgrazing, and may also require higher fertility and adequate moisture (> 500 ml rainfall / year for diploids, and > 650 ml rainfall / year for tetraploids) to perform well.

Heading date: Newer later heading cultivars tend to produce larger amounts of quality pasture in late spring and often have greater winter activity than some of the older, early heading cultivars.

Heading date classification: Early = -8 days and earlier, Mid-Season = -7 days to +7 days, Late = +8 days to +21 days, Very late = +22 days & greater

Cultivar	Endophyte Status: S = Standard, L = Low, Nil, AR1, AR37, NEA, NEA2, NEA4	Sowing Rate in kg/ha		Heading Date	Comments
		Alone	Mixture		
DIPLOID PERENNIALS:					
MATRIX®	S, L	20-25	8-15	Late	This very dense, general-purpose cultivar offers strong persistence and very good overall disease resistance particularly to rusts and net blotch. Matrix® is an inter-species cross of perennial ryegrass & meadow fescue, bringing high annual yields and metabolisable energy values.
RAIDER	NEA2, L	20-25	8-15	Late	A semi-erect persistent cultivar offering high yields throughout the year and good tolerance to diseases. Well suited to dairy, sheep and beef systems as a grazed or silaged pasture.
SEQUEL	S	20-25	8-15	Late	A densely tillered, high year-round performer offering great metabolisable energy content. This persistent cultivar offers great insect tolerance and disease resistance.
ULTRA	AR1, L	20-25	8-15	Late	A highly palatable inter-species cross of perennial ryegrass and meadow fescue producing great annual yields. This very dense, general purpose cultivar has strong autumn and winter activity offering very good overall disease resistance; particularly to rusts and net blotch. Suitable for all livestock types.
AberGreen	AR1, Nil	20-25	8-15	Late	A UK-bred cultivar with vigorous ground cover suitable for both grazing & silage systems. Selected for improved sugar levels.
AberMagic	AR1, Nil	20-25	8-15	Late	A UK-bred cultivar with fine leaves and good tiller density, suitable for both silage and grazing. Selected for improved sugar levels.
Array	NEA2	20-25	8-15	Very late	A newly released persistent cultivar that offers good cool season growth.
Excess	AR1, AR37	20-25	8-15	Mid-Season	A medium leaved, persistent cultivar bred for high yields and cool season growth; suited to dairy, sheep or beef systems.
Expo	AR1, AR37, L	20-25	8-15	Late	A densely tillered grass with low aftermath heading that offers strong year-round production and cool season growth.
Governor	AR1, AR37, L	20-25	8-15	Late	A Bronsyn and Tolosa cross bred for persistence, higher yields and palatability. This fine leaved & densely tillered cultivar offers low aftermath heading.
Grasslands Legion	AR1, AR37	20-25	8-15	Late	Bred from perennial ryegrass plants that were individually screened for persistence, rust tolerance and vigour in Canterbury, Manawatu, Waikato and Northland.
Grasslands Nui	S, L	20-25	8-15	Early	An older public bred cultivar, used as standard in industry trials. Susceptible to crown and stem rust leading to reduced animal palatability.
Grasslands Prospect	AR1, AR37	20-25	8-15	Late	A dense fine leaved cultivar offering reliable all year-round production. Certified as Lolium boucheanum due to tip awns but performs as a Lolium perenne.
Grasslands Request	AR1, AR37	20-25	8-15	Early	Good spring and autumn growth particularly in cool climates.
Grasslands Samson	AR1, AR37, S, L	20-25	8-15	Mid-Season	An older, medium tillered semi-erect cultivar with excellent resistance to crown rust. Good summer and autumn production proving productive under sheep and beef management.
Maxsyn	NEA4	20-25	8-15	Late	A densely tillered cultivar for all farm systems with strong summer and autumn growth.
Onesō	AR1, AR37, L	20-25	8-15	Late	An older cultivar offering good summer, autumn and winter yields.
Platform	AR37, AR1	20-25	8-15	Late	Bred using New Zealand and north-west Spanish germplasm. Production from this densely tillered cultivar is best achieved under rotational grazing.
Reason	AR37	20-25	8-15	Mid-Season	A mid heading diploid cultivar suited for sheep, beef and dairy systems.
Rely	AR1, AR37, L	20-25	8-15	Mid-Season	A fine leaved, densely tillered cultivar suited to dairy, sheep and beef systems. Can tolerate lower fertility and set stocking.
Rohan	NEA2, L	20-25	8-15	Late	A persistent spreading cultivar well suitable to sheep and beef systems with its fine leaves & dense habit.
SF Hustle	AR1, L	20-25	8-15	Late	Performs well in a range of environments with great cool season performance. The upright growth habit ensures compatibility with other species in the sward.
SF Moxie	AR1, L	20-25	8-15	Mid-Season	Semi-upright growth and high tiller density. Fits well into systems requiring a highly productive perennial ryegrass.
Three6o	AR37	20-25	8-15	Late	High dry matter producing cultivar with good spring quality. Is tolerant to crown rust
Tyson	NEA4, L	20-25	8-15	Early	Early heading cultivar with early spring growth. Fit for sheep and beef operations.
TETRAPLOID PERENNIALS					
AVATAR	NEA, L	25-35	15-20	Very Late	A consistently high yielding year-round cultivar, with strong winter activity bred for improved animal safety and persistence against insect pests. Performing best under rotational grazing.
4Front	NEA2	25-35	15-20	Late	A new late heading more densely tillered and high yielding tetraploid cultivar.
AberGain	AR1, Nil	25-35	15-20	Very Late	A densely tillered cultivar which offers improved spring growth. Selected for improved palatability and high sugar levels
Base	AR1, AR37, L	25-35	15-20	Very Late	A densely tillered cultivar with strong cool season growth and late spring quality. Best suited to rotational grazing. Has low aftermath heading.
Grasslands Halo	AR1, AR37	25-35	15-20	Very Late	High quality summer feed offering good winter and summer growth. Bred using mainly north-west Spanish germplasm.
Vast	AR37	25-35	15-20	Very Late	Extremely late heading with high tiller density. Good rust resistance.
Viscount	NEA4, L	25-35	15-20	Late	An upright cultivar offering good early spring growth with good palatability.

COCKSFOOT

A productive, drought tolerant perennial grass species which has very strong summer growth. Cocksfoot is best used in drier, moderate fertility and free draining soils. Cocksfoot is slower establishing and is best sown when soil temperatures are warm. Once established, cocksfoot resists pasture pest attack due to its strong, dense root system. Its forage quality is not as good as perennial ryegrass and requires grazing to prevent excessive seed head development during spring. More recently bred cocksfoot cultivars have finer leaves and are more compatible in mixes with ryegrass compared with older cultivars which have a more prostrate growth habit.

Cultivar	Sowing Rate in kg/ha		Minimum Annual Rainfall (mls)	Persistence in Years	Comments
	Alone	Mixture			
KAINUI	5-7	1-2	400	5+	A NZ bred cocksfoot cultivar that produces high yields, has good compatibility within pasture mixes and strong root development for summer dry conditions. Kainui has high tiller density, and soft 'ryegrass-like' leaves, with very good disease resistance. It is well suited to both rotational grazing and set stocking.
GRASSLANDS VISION	5-7	1-2	400	5+	A high yielding general purpose cultivar with semi-erect to erect growth habit, good winter activity and mid-season flowering. Vision has good compatibility with other grasses and clovers. Improved disease resistance. Well suited to rotational grazing or set stocking.
Aurus	5-7	1-2	400	5+	An upright winter-active and later heading cocksfoot with good winter growth and strong disease resistance.
Grasslands Savvy	5-7	1-2	400	5+	A very leafy, densely tillered, softer leaved cultivar. Good resistance to leaf diseases. Will tolerate hard sheep grazing.
Redifine	5-7	1-2	400	5+	A newly released, very fine leaved cocksfoot. It tolerates summer dry conditions and complements other forages in mixes well.
SF Greenly II	5-7	1-2	400	5+	Bred in south-west France. A finer leaved cultivar with a more upright growth habit. Late heading. A non-clumping form.
Safin	5-7	1-2	400	5+	A very fine leaved cultivar with high leaf/stem ratio in summer. Has improved early spring production. Less aggressive type with good compatibility with ryegrass.

BROME

Brome grasses in New Zealand are represented by at least five diverse species which all offer drought tolerance but differ with their seasonal dry matter production. All of these species have strong seed awns so use de-awned seed for easier drilling. Brome grasses are best suited to free draining soils with moderate to high fertility. They will not persist on poorly drained soils. Brome grasses are generally very palatable and have high quality. Sow when soil temperature exceeds 12°C.

Cultivar	Sowing Rate in kg/ha		Minimum Annual Rainfall Approx (mls)	Soil Fertility	Seasonal Growth Peaks	Persistence in Years	Comments
	Alone	Mixture					
Bareno Pasture brome (B. willdenovianus)	25-30	5-10	500	High	Spring - Summer	3+	A medium tillered, drought tolerant, low winter growth cultivar with high summer activity. Heads 19 days later than Gala. Resistant to head smut. Tolerates higher rainfall than other brome grass species. May be set stocked or rotationally grazed.
Ceres Atom Prairie grass (B. willdenovii)	25-30	5-10	600	High - Very High	Winter - Autumn	2-4	A more densely tillered, erect, winter active, drought tolerant prairie grass cultivar. Seed needs treatment with fungicide for head smut disease. Rotational graze.
Exceltas Coloured Brome (B. coloratus)	20-25	5-10	500	Medium - High	Winter and Summer	3+	A long lived, summer-active, grass grub tolerant, highly palatable and productive perennial. Endophyte free (no staggers), low tendency to form dags. Best suited to high input rotational grazing.
Grasslands Gala Grazing brome (B. stamineous)	20-25	5-10	500	Medium - High	Winter and Summer	3+	A finer tillered, finer leaved, winter active, drought tolerant, prostrate grass which tolerates close grazing. Persists on free-draining lighter soils but will not tolerate pugging and water-logged conditions. Susceptible to Hessian fly so unsuitable for more Northern areas.
Grasslands Matua (B. willdenovii)	25-35	6-12	500	Medium - High	Winter and Summer	3+	Earlier improved brome grass. Matua is drought tolerant, with an erect growth pattern. Is suitable for rotational grazing.
SF Jeronimo Prairie Grass (B. willdenovii)	20-30	5-10	500	High	Winter and Summer	3+	A New Zealand bred Prairie grass suited to rotational grazing, high winter production and good heat tolerance. Similar early maturity to Matua.

TALL FESCUE

A slower establishing, deep rooted, drought tolerant perennial grass species which best suits high fertility and heavy or wetter soils. Tall fescue grows throughout New Zealand but its advantages over ryegrass are greatest in environments with warm-hot summers, soils that often dry out and where insect damage is a problem for ryegrass. Tall fescue tolerates acid, alkaline, and saline soils and poor drainage. Tall Fescue cultivars can be classified according to growth pattern as "Mediterranean", "Oceanic", or "Continental". Mediterranean types are generally summer dormant and winter active. Oceanic types grow year round, whilst Continental types are summer active and winter dormant.

Cultivar	Endophyte Status: L = low, Max P, Protek	Sowing Rate in kg/ha		Minimum Annual Rainfall (mls)	Soil Fertility	Seasonal Growth Peaks	Persistence in Years	Comments
		Alone	Mixture					
Grasslands Hummer	Max P	22-25	12-15	400	Med - High	Spring to Autumn	5+	A soft leaved and fine tillered, early heading cultivar with high yields and strong persistence.
Quantica	Max P	22-25	12-15	400	Med - High	Spring to Autumn	5+	A soft, finely leaved continental tall fescue selected for improved animal palatability and rust resistance. Is a deep rooted, robust, productive cultivar offering more persistence than perennial ryegrass and can tolerate waterlogging, salinity, grass grub, heat and drought.
SF Nouga	L	22-25	12-15	400	Med - High	Spring to Autumn	5+	An Oceanic tall fescue with a smoother production peak through spring. Good establishment speed with strong re-growth and good autumn vigour.
Tower	Protek, L	22-25	12-15	400	Med - High	Spring to Autumn	5+	Bred for a soft leaf and late heading date along with good insect and drought tolerance.

ENDOPHYTES

Grass plants may contain an internally growing fungus called endophyte. Different strains of endophyte are available in many of the grass cultivars. The Standard endophyte strain implies that the cultivar contains a wild-type endophyte which will help resist insect attack (e.g. Argentine stem weevil, Black beetle), and help to prevent over-grazing but may, particularly in dry summer conditions, cause ryegrass staggers and reduce animal growth rates. Low endophyte implies low or nil endophyte infection levels in the seed and its use is best suited to areas of low insect predation generally associated with high summer moisture. Novel strains are now being developed which may or may not cause ryegrass staggers but generally have some level of toxicity to some of the pasture insect species. Insect response to these strains is variable, dependent on the strain of novel endophyte and the reaction of the grass cultivar to it. Endophyte levels in seed generally decline in seed lines stored for more than a year under normal ambient conditions. Endophyte viability can be improved by storing seed under conditions of low humidity and temperature. Seed lines can be tested for current and viable endophyte level.

ENDOPHYTE STRAIN	STOCK SUITABILITY	TOLERANT AGAINST:				POTENTIAL FOR:		ALKALOIDS:					
		Argentine Stem Weevil	Grass Grub	Black Beetle larvae	Black Beetle adults	Grass staggers	Heat stress	Peramine	Lolitre B	Ergovaline	Epoxy Janthirems	Lolines	
AR1	Sheep, Cattle and Deer	✓	✗	✗	✗	✗	✗	High	-	-	-	-	-
AR37 & NEA12	Sheep, Cattle and Deer	✓	✗	✓	✓	✓	✗	-	-	-	High	-	-
NEA/NEA2	Sheep, Cattle and Deer	✓	✗	✗	✓	✗	✓	Low	Very low	Medium	-	-	-
U2	Sheep, Cattle and Deer	✓	✓	✓	✓	✗	✗	-	-	-	-	-	NFL, NAL, NANL
LE	Sheep, Cattle and Deer	✗	✗	✗	✗	✗	✗	Low	Low	Low	-	-	-
SE	Sheep, Cattle and Deer	✓	✗	✗	✓	✓	✓	High	High	High	-	-	-

- = None produced, NAL = (N-acetyl loline), NANL = (N-acetylnoroline), NFL = (N-formyl loline)

CM142 ENDOPHYTE COMING TO THE MARKET SOON!

HYBRID RYEGRASS

A cross between perennial ryegrass and Italian or annual ryegrass. Hybrids generally have high annual yields and will persist for 2-4+ years depending on their percentage of perennial ryegrass parentage, climatic conditions, insect pressure and paddock management. Hybrids which contain a greater percentage of Italian ryegrass parentage can grow almost as much winter feed as a straight Italian ryegrass cultivar but with improved persistence. Hybrids with a greater percentage of perennial ryegrass tend to have greater persistence. Endophyte can enhance insect tolerance and improve overall persistence. Tetraploid types are larger plants which perform best under high fertility moist conditions.

Cultivar	Ploidy D = diploid, T = tetraploid	Endophyte Status: Nil, L = low, AR1, AR37, NEA, NEA2, NEA12	Sowing Rate in kg/ha		Heading date	Persistence (Years)	Comments
			Alone	Mixture			
FRENZY	T	NEA2, L	25-30	10-15	Late	1-3	A new tetraploid hybrid with exceptional establishment and winter growth due to a higher percentage of Italian ryegrass parentage. Late heading to provide better quality feed for longer into spring. Improved persistence over other shorter rotation types. An excellent under-sowing option to extend pasture life by 1-3 years. Contains the NEA2 endophyte. Frezzy has attained a 5 star rating in the DairyNZ Forage Value Index for 12 month feed.
Splice	T	L, AR1	25-30	10-15	Late	3-4	A tetraploid hybrid four way inter-species cross containing tall fescue, meadow fescue, Italian ryegrass and perennial ryegrass. Good recovery following dry conditions
Delish	T	AR1, L	25-30	10-15	Late	1-3	A fine leaved and densely tillered tetraploid short rotation ryegrass with low aftermath heading.
Forge	T	NEA	25-30	10-15	Late	2-4	A new high performing tetraploid hybrid ryegrass with good cool season production. Contains the NEA endophyte.
Grasslands Ohau	T	AR1, AR37, L	25-30	10-15	Late	2-4	A long rotation tetraploid with good winter and early spring growth. Moderate resistance to rust. Low aftermath heading.
Grasslands Mohaka	T	AR37, AR1, L	25-30	10-15	Late	2-4	A cultivar bred for improved early growth and cool season activity. Mohaka is a broad leaved, well tillered hybrid suited to 2-4 year pastures.
Grasslands Supreme Plus	D	AR1, L	20-25	8-12	Late	1-3	A late-heading cultivar with high tiller density which provides advantages where heavy grazing and pugging are likely to occur.
Maverick GII	D	Nil	20-25	8-12	Late	1-3	A late heading diploid short rotation ryegrass with good winter and spring yields, improved summer production and summer forage quality, low aftermath heading.
Shogun	T	NEA, L, NEA12	25-30	10-15	Late	1-3	A medium to late heading tetraploid providing good summer and autumn yields. It contains the NEA novel endophyte.

ANNUAL RYEGRASS

Westerwold annual ryegrass is used as a short term, fast establishing, cool season crop for cutting or grazing. Sown in late summer or autumn, it persists for only 6-9 months, producing high volumes of quality feed. Commonly sown between maize crops, annual ryegrass can also be mixed with short term brassicas or cereals to maximise winter dry matter yield.

Cultivar	Ploidy: D = Diploid T = Tetraploid	Sowing Rate in kg/ha		Heading Date	Comments
		Alone	Mixture		
RAMPAGE	T	25-30	10-15	Late	A new very high performing, densely tillered and late heading tetraploid annual ryegrass with strong cool season growth. Rampage has attained a 5 star rating in the DairyNZ Forage Value Index as a winter feed nationwide.
ZOOM™	T	25-30	10-15	Late	A densely tillered, high yielding, late heading and highly palatable tetraploid Westerwolds annual ryegrass with large, upright, leafy tillers. Zoom has excellent cool season performance, is fast establishing, has improved persistence and good disease resistance. Ideally suited as a winter feed or break crop.
Bullet™	T	25-30	10-15	Late	A tetraploid annual cultivar with very large upright leafy tillers. Bullet displays superior establishment speed, very strong autumn, winter and early spring growth with very high pasture quality and palatability. An ideal winter break crop which makes excellent quality silage.
Dash	T	25-30	10-15	Late	A fast establishing, very palatable and very high yielding tetraploid annual ryegrass with big, bold leaves and high tiller density. Dash has strong winter growth activity and is late heading so maintains forage quality longer in the spring. Excellent disease resistance.
Pronto	T	25-30	10-15	Late	A late heading NZ bred tetraploid cultivar selected for good establishment speed. Pronto is suitable for both winter grazing and silage.
Grasslands Tama	T	25-30	10-15	Late	An old public tetraploid Westerwolds cultivar. Will not tolerate summer dry conditions. Superseded by newer cultivars for yield.
Hogan	T	25-30	10-15	Late	A cultivar with quick establishment, good winter and spring yields and high feed quality over a six to eight month growth period.
Jivet	T	25-30	10-15	Late	A European bred tetraploid Westerwolds cultivar showing good establishment and winter yields.
SF Sultan	D	20-25	8-12	Late	A European bred mid flowering diploid Westerwolds cultivar with fast establishment, good cool season growth, palatability and disease tolerance.
Winter Star II	T	25-30	10-15	Late	A tetraploid annual ryegrass selected under northern Australian growing conditions at Gatton QLD. Improved rust resistance and recommended for quick winter to early spring feed.

ITALIAN RYEGRASS

Usually persists for 1-2 years and can be either spring or autumn sown. Italians are widely used for under-sowing into existing pastures to boost production, or established as a specialist short term pasture producing very high yields of high quality forage. Modern cultivars have been selected for later heading dates to improve quality without sacrificing winter yield.

Cultivar	Ploidy: D = Diploid, T = Tetraploid	Endophyte Status: Nil, AR37	Sowing Rate in kg/ha		Heading date	Comments
			Alone	Mixture		
APPEAL	D	Nil	20-25	8-12	Late	A very persistent and very high yielding diploid Italian ryegrass with fast establishment, high winter early spring production and an ability to hold on well over the summer, even under moderate insect pressure. Appeal produces high quality forage, of high nutritive value, high digestibility and high palatability. In addition, it has strong disease resistance including rust, resulting in improved animal acceptance.
VIBE	D	Nil	20 - 25	8-12	Late	Vibe is a very persistent and very high yielding, densely tillered diploid Italian ryegrass, which handles hard grazings very well and without the animal health issues caused by some novel endophyte-containing Italian ryegrass cultivars.
Presto	D	Nil	20-25	8-12	Late	A NZ bred late heading densely tillered cultivar with improved winter and shoulder season growth.
Feast II	T	Nil	25-30	10-15	Late	A tetraploid Italian ryegrass selection from Concord with a similar heading date. High quality and animal acceptability.
Grasslands Asset AR37	D	AR37, Nil	20-25	8-12	Late	A more persistent cultivar with higher tiller density and relatively low aftermath heading. It can cause ryegrass staggers and generally used as an under sowing option.
Grasslands Moata	T	Nil	25-30	10-15	Late	An older public tetraploid cultivar with good winter activity. Has limited persistence and will not tolerate drier summer conditions.
Lush AR37	T	AR37	25-30	10-15	Late	A more persistent tetraploid cultivar with relatively low aftermath heading. It can cause ryegrass staggers. It is generally used as an under-sowing option. Good rust tolerance.
Manta	D	LE	25-30	8-12	Late	An upright, broad leaved Italian ryegrass with medium tiller density and good annual yields.
Perun	T	Nil	25-30	10-15	Late	An inter-species cross between Italian ryegrass and meadow fescue bred in Europe under conservation management systems. Good cold tolerance, lower winter activity but strong spring growth.
SF Indulgence	D	Nil	20-25	8-12	Late	A European bred, densely tillered, fine leaved and palatable diploid cultivar.
Supercruise	D	Nil	20-25	8-12	Late	A good option to sow into run-out pastures
Tabu +	D	Nil	20-25	8-12	Late	Large leafy upright tillers with good yields in autumn to mid summer over many regions.

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