FORAGE GRASSES & ENDOPHYTES

PERENNIAL RYEGRASS

A perennial species with good acceptability to grazing stock and well suited to New Zealand grazing systems. The newer tetraploid perennial cultivars are generally more palatable to livestock but generally produce less dry matter than diploid cultivars.
Ploidy & Heading Date: Tetraploids have larger seed size requiring higher sowing rates. They also require more careful grazing management to prevent overgrazing, and may also require higher fertility and adequate moisture to perform well. Newer later heading cultivars tend to produce higher late spring quality, and often have greater winter activity than some of the older early heading cultivars. They often have higher tiller densities and sowing rates should be reduced 2-3kg/ha from what is considered normal for tetraploids. Heading date figures have been used as per the Plant Variety Rights Office centralised trial data assessments over multiple years.

Cultivar	Ploidy: d = diploid, t = tetraploid	Endophyte Status: S = Standard, L = low, Nil, AR1, Endo5, NEA2, AR37, U2	Sowing Rate in kg/ha		Minimum Annual Rainfall (mls)	Heading Date (Days to heading rel. to Nui)	Seasonal Growth Peaks	Persistence (years)	Comments
			Alone	Mixture					
DIPLOID PERENNIALS									
24Seven	d	Edge	18-20	8-15	500	+24	Autumn & Spring	5+	A late heading, fine leaved perennial ryegrass containing the Edge endophyte which produces high levels of peramine, low levels of ergovaline and no lolitremB or janthitrem.
Matrix	**d**	**S, L**	**18-20**	**8-15**	**500**	**+23**	**Autumn & Spring**	**5+**	Matrix is a persistent perennial inter-species cross with very high annual yields, strong winter activity and late heading for improved quality. High metabolisable energy values. A very dense, general purpose cultivar with strong persistence and very good overall disease resistance particularly to rusts and net blotch.
Ultra	**d**	**AR1, L**	**18-20**	**8-15**	**500**	**+20**	**Autumn & Spring**	**5+**	Ultra is a highly palatable perennial inter-species cross with very high annual yields. It has strong autumn and winter activity and is late heading for improved spring quality. A very dense, general purpose cultivar with very good overall disease resistance; particularly to rusts and net blotch. Good tolerance to root pulling and good persistence. Suitable for sheep, deer, goats, cattle and dairy grazing systems.
Bronte	d	AR1	18-20	8-15	500	+20	Autumn & Spring	5+	A cultivar with high tiller density and fine leaves, with similar yields to current standard varieties.
Abermagic	d	AR1, Nil	18-20	8-15	500	+19	Autumn & Spring	5+	A UK-bred late heading cultivar. Persistent, fine leaved and densely tillered and suitable for set stocking and continuous hard grazing. Selected for improved sugar levels.
Rohan	d	NEA2, Nil	18-20	8-15	500	+18	Autumn & Spring	5+	A medium to late heading perennial ryegrass. A persistent, fine densely tillered, spreading cultivar suitable for sheep beef systems.
Abergreen	d	AR1, Nil	18-20	8-15	500	+17	Autumn & Spring	5+	A UK-bred medium to late heading cultivar. High feed quality suitable for grazing and silage systems. Selected for improved sugar levels.
Barrier	**d**	**U2**	**25-30**	**25**	**500**	**+16**	**Autumn & Spring**	**5+**	Barrier with GrubOUT® U2 endophyte is a highly palatable, persistent, animal-safe and insect tolerant perennial pasture. Has improved tolerance of a wide range of insect species including grass grub larvae, porina, black beetle larvae and adults, field cricket, pasture cockchafer larvae, Argentine stem weevil larvae and adults. Should be shallow sown (< 2 cms) when soil temperatures are above 12 degrees for best establishment.
Aberdart	d	AR1, Nil	18-20	8-15	500	+16	Autumn & Spring	5+	A British bred intermediate heading cultivar, with good early spring and late summer growth, but low winter growth. High sugar content and moderate resistance to crown rust.
Ceres One50	d	AR1, AR37, L	18-20	8-15	500	+16	Autumn & Spring	5+	A high yielding, medium leaf size cultivar with good summer yields and good rust resistance. Good tolerance to root pulling. Bred using New Zealand and North-West Spanish germplasm.
Expo	d	AR1, Nil	18-20	8-15	500	+15	Autumn & Spring	5+	A densely tillered cultivar with good cool season growth and low aftermath heading. Improved water soluble carbohydrate levels. Suitable for all classes of livestock.
Ansa	d	AR1	18-20	8-15	600	+15	Autumn & Spring	5+	A high yielding intermediate heading cultivar showing good winter yields in Canterbury.
Trojan	d	NEA2	18-20	8-15	500	+14	Autumn & Spring	5+	A diploid medium to late heading (*Lolium boucheanum*) ryegrass with high annual and seasonal yields. Low aftermath heading providing improved feed quality in late spring and summer.
Alto	d	AR1, AR37, L	18-20	8-15	600	+13	Autumn & Spring	5+	A high yielding, fine leaved, densely tillered and persistent cultivar with good resistance to rust and plant pulling. Good late spring summer yields. High quality with reduced aftermath heading.
Grasslands Prospect	d	AR1, AR37	18-20	8-15	500	+13	Autumn & Spring	5+	A dense fine leaved, high yielding cultivar. Is essentially a perennial ryegrass in type with some tip awned character.
SF Stellar Dip Q	d	AR1, L	18-20	8-15	500	+8	Autumn & Spring	5+	A densely tillered, fine leaved cultivar with low aftermath heading. Suitable for high production farming systems.
Excess	d	AR37, AR1	18-20	8-15	500	+7	Autumn & Spring	5+	A medium leafed, persistent mid-season heading perennial ryegrass bred for high yields and cool season growth and suited for all intensive dairy, sheep or beef systems.
Arrow	d	AR1, L	18-20	8-15	500	+7	Autumn & Spring	5+	An early heading cultivar with improved winter early spring growth, and can be used for early calving or early lambing finishing systems. Good rust resistance.
Extreme	d	AR1, Nil	18-20	8-15	500	+3	Autumn & Spring	5+	A medium-broad leaved densely tillered perennial ryegrass bred for high dry matter production, cool season activity and with very low aftermath heading. Can suffer plant pulling on problem soils.
Grasslands Request	d	AR37, AR1	18-20	8-15	550	+3	Autumn & Spring	5+	An early to medium heading perennial ryegrass. Very good spring, autumn and winter growth for its heading class. Low aftermath heading.
Grasslands Pacific	d	S, Nil	18-20	8-15	450	+1	Autumn & Spring	5+	A fine densely tillered ryegrass with good autumn & winter production. Good summer persistence and medium disease resistance. Well suited to dry harder grazed areas of medium to low fertility. An older cultivar.
Grasslands Samson	d	AR1, AR37,L	18-20	8-15	550	+1	Autumn & Spring	5+	A medium leaf sized semi-erect cultivar with excellent resistance to crown rust. Good summer autumn production. A good general purpose cultivar.
Rely	d	AR37, AR1	18-20	8-15	450	+1	Autumn & Spring	5+	A fine leafed, densely tillered diploid perennial ryegrass, suited to dairy, sheep and beef systems. Can tolerate lower fertility and set stocking.
Grasslands Nui	d	S, L	18-20	8-15	600	0	Autumn & Spring	5+	A large tillered ryegrass available with variable endophyte levels. Best used in summer moist or irrigated areas. Susceptible to crown and stem rust leading to animal unacceptability.
Grasslands Kamo	d	AR37, Nil	18-20	8-15	450	-2	Autumn & Spring	5+	Use in lower fertility situations. Performs well under hard grazing. Good summer and autumn production.
TETRAPLOID PERENNIALS									
Bealey	t	NEA2, L	25-35	15-20	650	+25	Autumn & Spring	5+	A late heading tetraploid with high tiller density and good persistence. It contains the NEA2 novel endophyte which produces ergovaline (heat stress factor in grazing animals) but no lolitrem B. Has good clover compatibility. Good resistance to rust and root pulling.
Grasslands Halo	t	AR1, AR37	25-35	15-20	650	+25	Autumn & Spring	5+	A late heading tetraploid with good heat tolerance and good winter and summer growth. Bred using mainly north-west Spanish germplasm. Good resistance to rust.
Quartet II	t	Endo5	25-35	15-20	650	+25	Autumn & Spring	5+	A very late heading semi-erect tetraploid perennial with improved tiller density, good summer growth and low aftermath heading. Has high palatability and high per animal and per hectare growth rates. Will tolerate short periods of set stocking
Abergain	t	L	25-35	15-20	650	+24	Autumn & Spring	5+	A late to very late heading tetraploid ryegrass suitable for grazing and conservation systems. Selected for improved sugar levels.
Tanker	t	Nil	25-35	15-20	650	+23	Autumn & Spring	5+	A cultivar with high tiller density and good overall production in summer and winter.
Kai	**t**	**L**	**25-35**	**15-20**	**650**	**+20**	**Autumn & Spring**	**5+**	A tetraploid perennial ryegrass that is highly palatable, densely tillered, is high yielding with strong winter growth and early spring and summer yields. High pasture quality and good disease resistance. Good water use efficiency.
Base	t	AR1, AR37	25-35	15-20	650	+20	Autumn & Spring	5+	A densely tillered, high yielding cultivar with strong winter growth and early spring and summer yields. High pasture quality with low aftermath heading.

COCKSFOOT

A slower establishing, productive, drought tolerant perennial grass species which grows strongly in summer. Cocksfoot is best used in drier, moderate fertility and free draining soils. Cocksfoot once established resists pasture pest attack. Its forage quality is not as good as perennial ryegrass and the species requires grazing to prevent excessive seed head development during spring. Best sown when soil temperatures are warm. Upright forms of Cocksfoot may be mixed with perennial ryegrass and phalaris. Lower seeding rates of the prostrate forms should be considered if used in mixes.

Cultivar	Sowing Rate (kg/ha)		Minimum Annual Rainfall Approx mm	Soil Fertility	Seasonal Growth Peaks	Persistence in Years	Comments
	Alone	Mixture					
Kainui	**4-8**	**1-2**	**400**	**Low-High**	**Mid-Spring** to Summer	**5+**	Kainui is a new cocksfoot cultivar bred for high yields, good compatibility within pasture mixes and strong root development for summer dry tolerance. Kainui has high tiller density, and soft ryegrass-like leaves, with very good disease resistance. It is well suited for inclusion in pasture mixes or as a specialist pasture in summer-dry areas. Well suited to rotational grazing or set stocking. Clover friendly with good grazing management, to be used in summer or winter dry areas for sheep or dairy.
Grasslands Vision	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	A high yielding general purpose cultivar with semi-erect to erect growth habit, good winter activity and mid-season flowering. Vision has a finer stem and leaf form than Kara but is not excessively dense allowing good compatibility with other grasses and clovers. Improved disease resistance. Well suited to rotational grazing or set stocking.
Grasslands Kara	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	A winter active, erect, mid-season flowering, non aggressive cultivar well suited to cattle rotational grazing. Kara is not excessively dense allowing good compatibility with other grasses and clovers.
Grasslands Savvy	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	A very leafy, densely tillered, softer leaved type with good growth in all seasons. Good resistance to leaf diseases. Will tolerate hard sheep grazing.
Grasslands Tekapo	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	An early flowering, prostrate growth habit, fine-leaved cultivar. Susceptible to stripe rust and leaf streak. A sheep grazing set stocking system is recommended.
SF Greenly	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	Bred in south west France. A finer leaved type with a more upright growth habit. Late heading. A non clumping form.
Athos	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	A Danish bred mid maturity cultivar with good cool season growth and a softer, palatable leaf.
Safin	4-8	1-2	400	Low-High	Mid-Spring to Summer	5+	A new very fine leaved cultivar (finer than Ella) with high leaf/stem ratio in summer. Has improved early spring production and very good annual yields. Less aggressive type with good compatibility with ryegrass.

TIMOTHY

Timothy is a perennial grass which starts growth in mid spring, flowering much later than most ryegrasses. It remains highly palatable even at the seed head stage and makes high quality hay. It has low drought tolerance and is very susceptible to Argentine stem weevil. A useful addition in the mix to dairy pastures. Slow to establish. Will withstand heavy winter stock treading. Best used in summer wet areas and with heavy soils.

Cultivar	Sowing Rate (kg/ha)		Minimum Annual Rainfall Approx mm	Soil Fertility	Seasonal Growth Peaks	Persistence in Years	Comments
	Alone	Mixture					
Grasslands Charlton	6-8	1-3	800	High	Spring to Summer	3+	Bred to supersede Kahu. Finer leaved, late-heading with good spring production.
Grasslands Kahu	6-8	1-3	800	High	Spring to Summer	3+	A late-flowering Timothy with high palatability. Good persistence and production in cooler wet areas.
Dolina	6-8	1-3	800	High	Spring to early Summer	3+	A Danish bred late heading variety with good winter hardiness. Dolina is a medium leaf width, more densely tillered cultivar. Produces fewer seed heads to improve summer quality.

BROME GRASSES

Brome grasses in New Zealand are represented by at least five diverse species. All of these species have strong seed awns so use de-awned seed for easier drilling. *B. willdenowii* tends to be a more erect species more suited to rotational grazing. 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 soils temperatures exceed 12°C.

Cultivar	Sowing Rate (kg/ha)		Minimum Annual Rainfall Approx mm	Soil Fertility	Seasonal Growth Peaks	Persistence in Years	Comments
	Alone	Mixture					
Ceres Atom Prairie grass (*B. willdenowii*)	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.
Grasslands Gala Grazing brome (*B. stamineous*)	20-25	5-10	500	Medium - High	Winter & Summer	3+	A finer tillered, finer leaved, winter active, drought tolerant, prostrate grass which tolerates close grazing. Resistant to head smut. 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. Performs best under set stocking.
Exceltas Coloured Brome (*B. coloratus*)	20-25	5-10	500	Medium - High	Winter & Summer	3+	Long lived perennial , summer active, grass grub tolerant, highly palatable and productive. Endophyte free (no staggers), low tendency to form dags, best suited to high input rotational grazing.
Bareno Pasture brome (*B. valdivianus*)	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.

ENDOPHYTE STRAIN

Grass plants may contain an internally growing fungus called endophyte. Different strains of endophyte are available in many of the grass cultivars. The Standard strain implies that the cultivar contains a wild type endophyte which will help resist insect attack (eg 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	Species (the generic name is being changed from *Neotyphodium* to *Epichloë*)	POTENTIAL TOXIN PRODUCTION (Toxins levels can vary between endophyte strain, host grass strain, growing conditions and seasonally.)					COMMENTS
		Lolitrem B	Ergovaline	Janthitrem	Peramine	Loline	
GrubOUT® U2	*Epichloë uncinata (syn N. uncinatum)*	nil	nil	nil	nil	high	Superior above and below ground protection against insect pests, including grass grub larvae, black beetle adults and larvae, porina caterpillar, black field crickets, red headed pasture cockchafer and Argentine stem weevil. No known ill effects on sheep, cattle or deer. Superior live weight gain performance of lambs in trials.
Standard "wild type" Also known as "feral"	*Epichloë festucae var lolii (syn.N. lolii)*	moderate to high	moderate to high	nil	moderate to high	nil	Provides very good control of Argentine stem weevil and pasture mealy bug. Adequate control of black beetle larvae and adults. Low level of control of porina caterpillar. Can cause animal health problems such as ryegrass staggers and heat stress during dry periods when excessive stem relative to leaf is grazed.
AR1	*Epichloë festucae var lolii (syn.N. lolii)*	nil	nil	nil	high	nil	Provides very good control of Argentine stem weevil and pasture mealy bug. Variable control of root aphid. Mild deterrence to black beetle adults. Safe to the grazing animal. Recommended for dairy, sheep and cattle. Currently the only recommended safe endophyte for horses and alpacas.
Edge	*Epichloë festucae var lolii (syn.N. lolii)*	nil	very low	nil	high	nil	Similar to AR1
AR6/Endo5	*Epichloë festucae var lolii (syn.N. lolii)*	nil	low to moderate	nil	moderate	nil	Provides good control of Argentine stem weevil and pasture mealy bug. Provides no control of black beetle larvae but some control of the adult. Do not use where conditions of prolonged set stocking occur. Avoid grazing fresh re-growth during summer and autumn.
NEA2 or NEA	*Epichloë festucae var lolii (syn.N. lolii)*	low to moderate	low to moderate	nil	moderate	nil	NEA2 is a combination of two endophyte strains. Provides moderate control of Argentine Stem Weevil, good control of pasture mealy bug, good control of adult black beetle, moderate control of root aphid, but its effect on porina is unknown. NEA2 has not been assessed for animal production (ref Dairy NZ).
AR37	*Epichloë festucae var lolii (syn.N. lolii)*	nil	nil	high	nil	nil	Provides good control of Argentine Stem weevil larvae but no control of adult weevils. No control of grass grub. Good control of pasture mealy bug and root aphid. Control of porina caterpillar. Provides no control of black beetle larvae but some control of the adult. No control of red headed or black headed pasture cockchafers. Not recommended for deer or horses. Can cause severe grass staggers for short periods.
AR542 Max P Also known as Max Q	*Epichloë coenophiala (syn. N. coenophialum*	nil	nil	nil	moderate	low	Provides low to moderate control of Argentine stem weevil and black beetle. Reduces damage caused by black beetle adults and larvae. Good control of porina caterpillar. Small deterrence effect on grass grub feeding. Provides resistance to pasture mealy bug and has a small effect on root aphid. Safe to the grazing animal.

ANNUAL & SHORT TERM RYEGRASS

Rapidly growing cultivars which have high winter yields and persist from one to four years depending upon summer moisture conditions. Generally sown in the autumn to provide high quality feed in the winter and early spring. Very useful in summer-dry areas as they maximise growth when there is soil moisture available.

ANNUAL RYEGRASSES Westerwolths (or Westerwold) annual ryegrass is used as a temporary cool season feed between crops and will produce seed from a spring sowing, generally persisting for only 6-8 months. Should be autumn sown.

Cultivar	Ploidy d = diploid t = tetraploid	Sowing Rate in kg/ha		Heading Date (rel. to Nui)	Comments
		Alone	Mixture		
Bullet ™	**t**	**25-30**	**10-15**	**+16**	A new tetraploid annual (Westerwolds type) 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. Has low seed dormancy and fits well between crop cycles. Survives longer into summer than traditional Westerwolds types. An ideal winter break crop which makes excellent quality silage.
Hogan	t	25-30	10-15	+16	A new cultivar with very quick establishment, excellent winter and spring yields, and feed high quality over a six to eight month growth period.
Zoom ™	**t**	**25-30**	**10-15**	**+14**	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.
Jivet	t	25-30	10-15	+14	A European bred tetraploid Westerwolds cultivar showing good establishment and winter yields. Is a medium to late heading tetraploid annual ryegrass with superior winter and spring yields, and is suitable for conservation or grazing.
SF Sultan	d	20-25	5-10	+13	A European bred mid flowering diploid Westerwolds cultivar with fast establishment, good cool season growth, palatability and disease tolerance.
Grasslands Tama	t	25-30	10-15	+13	An older public tetraploid Westerwolds cultivar. Tama has very quick establishment and strong winter and early spring growth. Suitable for up to 3-4 grazings before running to seed. Will not tolerate summer dry conditions. Being superseded by newer cultivars for yield.
Winter Star II	t	25-30	10-15	+9	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 is usually erect, large leaved, producing very high yields of high quality forage and requiring a winter period to form seed. If present, the annual ryegrass endophyte strain will confer seedling resistance to Argentine stem weevil, allowing earlier autumn sowings. This strain is not associated with animal health problems. Tetraploid types are larger plants which perform best under high fertility moist conditions. Grazing animals tend to prefer tetraploid plants which can lead to higher feed intake and performance.

Cultivar	Ploidy d = diploid t = tetraploid	Sowing Rate in kg/ha		Heading Date (rel. to Nui)	Persistence (years)	Comments
		Alone	Mixture			
DIPLOID ITALIANS						
Blade	**d**	**20-25**	**8-10**	**+24**	**1-2**	A new, very high yielding diploid cultivar which establishes quickly and yields very well across all seasons with particularly strong winter activity. Very good disease resistance. Very palatable. Nearly 2 weeks later heading than some Italian ryegrass cultivars, holding forage quality for longer into spring.
SF Indulgence Dip Q	d	20-25	8-10	+20	1-2	A European bred late densely tillered, fine leafed and palatable diploid cultivar
Jackpot	d	20-25	8-10	+17	1-2	A late maturity diploid cultivar bred for improved summer survival.
Grasslands Asset AR37	d	20-25	8-10	+17	1-3	A more persistent cultivar with higher tiller density and relatively low aftermath heading. It can cause ryegrass staggers and should only be used as an under sowing option.
Sonik	**d**	**20-25**	**8-10**	**+16**	**1-2**	A fine leaved, densely tillered and late heading cultivar which is very fast establishing, has strong growth through all seasons, particularly autumn and winter and has very good persistence. Excellent disease resistance, including exceptional rust resistance. Suitable for all livestock types.
Kano	d	20-25	8-10	+16	1-2	A densely tillered cultivar with rapid establishment and high autumn winter and spring growth. Kano has very good disease resistance and with summer moisture will persist into a second year.
Surge	**d**	**20-25**	**8-10**	**+15**	**1-2**	A medium to late maturity, persistent cultivar with upright growth habit and high tiller density which can produce very well into a second year given suitable conditions. Only sold in Australia.
SF Accelerate	d	20-25	8-10	+15	1-2	A European bred medium to late maturity diploid cultivar with erect growth habit, good winter and spring production. High tiller density, with broad disease tolerance.
Icon	d	20-25	8-10	+15	1-2	A medium to late maturity diploid cultivar with high tiller density. A very aggressive type with very high water soluble carbohydrates and high late season quality.
Cordura	d	20-25	8-10	+12	1-2	A dense, upright, broadleaved cultivar with slightly better persistence in dry summers than Concord.
Perun	d	20-25	8-10	+12	1-2	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.
Tabu	d	20-25	8-10	+11	1-2	Very quick establishment with large upright strong tillers and very leafy. A high yielding cultivar with good yields in autumn- mid summer over many regions. Good disease resistance. Shows good production into the summer period if conditions are favourable.
TETRAPLOID ITALIANS						
Mona	t	25-30	10-15	+28	1-2	A very late heading tetraploid cultivar with improved summer survival and extended quality into late spring.
Lush AR37	t	25-30	10-15	+17	1-2	A more persistent tetraploid cultivar with relatively low aftermath heading. It can cause ryegrass staggers and should only be used as an under sowing option. Good rust tolerance.
Grasslands Moata	t	25-30	10-15	+14	1-2	An older public tetraploid cultivar with strong establishment and good winter activity. Has limited persistence and will not tolerate drier summer conditions.
Jeanne	t	25-30	10-15	+12	1-2	A medium maturity tetraploid cultivar. High feed value, with low aftermath heading.
Feast II	t	25-30	10-15	+10	1-2	A tetraploid Italian ryegrass selection from Concord with a similar heading date. Very high quality and animal acceptability.

ITALIAN-TYPE HYBRIDS usually contain a greater percentage of Italian ryegrass parentage than perennial ryegrass and can grow almost as much winter feed as Italian ryegrass cultivars but with improved persistence.

Cultivar	Ploidy d = diploid t = tetraploid	Endophyte Status: N=nil/low, AR1, AR7, NEA, Endo5	Sowing Rate in kg/ha		Heading Date (rel. to Nui)	Persistence (years)	Comments
			Alone	Mixture			
Banquet II	t	Endo5, N	25-35	15-20	+18	3-5	A long rotation tetraploid with improved tiller density. Good overall seasonal yields similar to Bealey. Selected for improved water carbohydrate levels and digestibility.
Maverick GII	d	N	20-25	5-10	+17	1-3	A late heading diploid short rotation ryegrass with very high winter, spring yields, improved summer production and summer forage quality, low aftermath heading, good persistence and disease resistance.
Shogun	t	NEA	25-30	10-15	+13	1-3	A medium to late heading tetraploid with better persistence than other short rotation types and providing good summer and autumn yields. It contains the NEA novel endophyte which produces ergovaline, but no Lolitrem B.
Jeta	t	AR1	25-35	15-20	+10	3-5	A medium heading, long rotation hybrid tetraploid ryegrass with 80% perennial and 20% Italian parentage. May persist for 3-5 years if conditions are favourable. Suitable for grazing, silage and finishing.
Delish	t	AR1, N	25-30	10-15	+9	1-3	A high yielding, fine leaved and densely tillered tetraploid short rotation ryegrass, with low aftermath heading, very good late spring, summer forage quality; and bred for improved disease resistance and persistence.
Grasslands Ohau	t	AR1, AR37, L	25-35	15-20	+8	3-5	A long rotation tetraploid with strong winter and early spring growth. Moderate resistance to rust. Low aftermath heading.

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. The optimum temperature for perennial ryegrass growth is 20°C with production declining above 24°C. The optimum for tall fescue is 26°C, with growth continuing into the mid 30°C. Best used in areas which receive periodic summer moisture. Tall fescue tolerates acid, alkaline soils and poor drainage. Tall fescue responds well to nitrogen. The seed is best sown in warm soils above 12 °C and should not be mixed with ryegrass as it will not ultimately compete and the fescue soon disappears. Can be mixed with less competitive species such as upright cocksfoot cultivars, timothy, phalaris, Yorkshire fog, and brome species. Selected strains of tall fescue endophyte such as Max P offer significant benefits in terms of insect toxicity compared to nil endophyte, but compared to wild endophyte strains have reduced toxicity to livestock. Graze frequently during spring to prevent seed head build up and to thereby maintain quality. 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, while Continental types are summer active and winter dormant.

Cultivar	Endophyte Status: L = low or nil, Max P	Sowing Rate in kg/ha		Minimum Annual Rainfall Approx mm	Soil Fertility	Seasonal Growth Peaks	Persistence in Years	Comments
		Alone	Mixture					
Quantum II	L, Max P	15-30	15-20	400	Med-High	Spring to Summer	5+	A softer leaved tall fescue with good disease resistance. It has good establishment, can tolerate environmental extremes, is very early flowering and has reduced aftermath heading. A continental type.
Grasslands Easton	Max P	15-30	15-20	400	Med-High	Spring & Autumn	5+	A new tall fescue developed from Advance for increased production and persistence. A later heading cultivar with good rust resistance. An Oceanic type.
SF Finesse Q	L	15-30	15-20	400	Med-High	Spring to Autumn	5+	Produces spring to autumn. Has an open growth habit and medium leaf softness. Does not contain endophyte. An Oceanic type.
Tower	L	15-30	15-20	400	Med-High	Spring & Autumn	5+	A European bred later heading cultivar with softer leaves and good resistance to crown and stem rusts and leaf spot. A continental type.

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