Quality Grass and Crop Seed Mixtures 2022

DLF
SEEDS & SCIENCE

MORE MILK & MEAT

FORAGEMAX
by DLF

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Outstanding grass for every farmer
Improving forage production from your fields depends on several factors.

- **Better feeding quality**
  More digestible grasses and increased content of protein, sugar and constituents.
- **Higher and more reliable yields**
  Increased and more reliable yields for an era of climate change.
- **Less vulnerable crops**
  Increased tolerance to a range of diseases helps you maintain yield and quality.
- **More sustainable crops**
  Plants with improved persistency and a more efficient root system make better use of vital nutrients.
  Our portfolio includes clover and Alfalfa, which make better use of vital resources and are a more sustainable source of protein.

Leading through research
You have science on your side when you sow seed from DLF. We've become the world's leading supplier of grass and clover by putting research and development at the core of our business.

We start by understanding what the market needs, then work to develop new and better performing products that solve agricultural problems now and in the future.
Our understanding of the market is your guarantee that you will always have the best products to work with. It doesn't matter where you are in the world, you'll always be within reach of our products through our international network of producers and distributers.

Looking towards the next generation of products
Our R&D pipeline produces a constant flow of top-performing new products – alfalfa, grasses and clover.
With improved breeding techniques it has become easier to develop products that fit the needs of the market or fulfil a specific agricultural purpose.

At DLF our research and development team are committed to developing grass and forage solutions to maximise the sustainability of Irish dairy, beef and sheep production. For any of our varieties or mixtures to be truly sustainable it must tick each of the three pillars of sustainability:

- ✓ **Economic**
- ✓ **Environmental**
- ✓ **Social**

Real sustainability is good for the environment, good for your pocket and enhances our communities and society in many different ways.

Through our current research trials at Faithlegg in Co. Waterford and with our Grass Partners around the country, we are seeing how improved grass utilisation, white clover, multi-species swards and home-produced feeds like maize, lucerne and fodder beet can improve the sustainability of Irish farming.

Sustainability will be high priority in all aspects of life going forward and the DLF team are already looking to the future. Our breeders are investigating additional traits to maximise sustainability like root mass for drought tolerance and carbon sequestration in grasses, enhanced biological N fixation in white clover and red clover varieties more tolerant of grazing. These traits, combined with dry matter yield production and quality will go a long way towards making DLF varieties and mixtures the most sustainable on the market.

Pastures are naturally green

- Grass absorbs more CO^2 than any other agricultural crop.
- Roots store carbon, reduce N^2O emissions and prevent nitrogen leaching into ground water.
- Grass-clover pastures can fix 300 to 500 kgN/ha, with a lasting beneficial effect on the following crop.
- Pastures for grazing or silage have little need for herbicides, fungicides or insecticides.

DLF now providing our grass mixtures in a 14kg bag

*more convenient 14kg bag = 1 acre
*16% less packaging and waste

#welistenedtoyou
#DLFbiggerbag

			PASTURE PROFIT INDEX VALUES €/ HA/ YEAR							*Teagasc Grazing Utilisation Trait	Spring (t DM/ha)	Summer (t DM/ha)	Autumn (t DM/ha)	Total Yield (t DM/ha)	Mean DMD (g/kg)	1st Cut Silage (t DM/ha)	2nd Cut Silage (t DM/ha)	Ground Cover (Score)
			Total	Sub-Indices														
Variety Name	Ploidy	Heading date	PPI	Spring growth	Summer growth	Autumn growth	Quality	Silage	Persist	Rating 1-5	1.17	7.54	2.44	11.2	843.6	4.55	4.38	5.8
INTERMEDIATES																		
Moira	D	26 May	209	108	39	57	-32	36	0	***	1.65	7.08	2.43	11.17	826.8	4.89	4.16	6.1
Astonconqueror	D	27 May	206	75	52	48	-10	42	0	****	1.46	7.39	2.34	11.19	835.7	5.21	3.93	6.2
Abermagic	D	28 May	215	31	64	78	18	24	0	***	1.19	7.69	2.62	11.51	844.9	4.64	4.09	6.2
Nifty	**D**	**28 May**	**145**	**38**	**61**	**57**	**-37**	**26**	**0**	****	**1.23**	**7.62**	**2.43**	**11.30**	**831.2**	**4.65**	**4.14**	**6.3**
Aberwolf	D	30 May	209	54	54	48	11	43	0	**	1.33	7.45	2.35	11.12	840.9	4.85	4.45	6.7
Abergreen	D	31 May	193	38	69	70	5	11	0	*	1.23	7.82	2.55	11.60	842.2	4.31	4.13	6.5
Gusto	D	31 May	176	50	51	64	2	9	0	****	1.30	7.37	2.50	11.18	838.9	4.32	4.04	5.8
Barwave	T	22 May	244	93	61	59	-20	50	0	-	1.56	7.62	2.45	11.64	836.0	4.98	4.51	4.9
Fintona	T	24 May	190	49	52	49	-5	45	0	*****	1.30	7.40	2.35	11.05	839.1	5.22	4.01	5.4
Aberclyde	T	25 May	253	51	66	46	44	46	0	****	1.31	7.74	2.32	11.38	852.0	5.23	4.04	5.6
Elysium	**T**	**27 May**	**170**	**43**	**52**	**32**	**12**	**32**	**0**	**-**	**1.26**	**7.39**	**2.20**	**10.86**	**844.4**	**4.74**	**4.25**	**6.0**
Dunluce	T	29 May	184	23	58	52	24	34	-6	****	1.14	7.54	2.38	11.05	845.6	4.52	4.62	5.4
LATES																		
Oakpark	D	2 Jun	149	32	52	52	-12	25	0	*	1.19	7.40	2.38	10.98	833.3	4.33	4.55	6.5
Ballyvoy	D	3 Jun	186	65	46	47	19	10	0	*	1.39	7.24	2.34	10.97	843.1	4.14	4.32	6.2
Callan	D	3 Jun	126	71	39	35	-35	16	0	****	1.43	7.08	2.23	10.74	830.1	4.55	3.96	6.2
Drumbo	D	5 Jun	146	23	44	42	24	13	0	*	1.14	7.19	2.29	10.62	842.6	4.19	4.36	6.2
Astonking	D	5 Jun	141	61	50	36	-25	18	0	***	1.37	7.34	2.24	10.95	828.3	4.36	4.29	5.8
Aberbann	D	10 Jun	190	5	81	75	-25	54	0	***	1.03	8.11	2.59	11.74	832.2	4.46	5.36	5.9
Aberchoice	D	11 Jun	190	15	65	58	22	30	0	***	1.09	7.73	2.44	11.26	844.8	4.18	4.93	6.0
Bowie	**D**	**16 Jun**	**170**	**19**	**53**	**54**	**28**	**16**	**0**	**-**	**1.11**	**7.43**	**2.40**	**10.94**	**838.7**	**3.63**	**5.22**	**6.4**
Aberbite	T	1 Jun	175	-2	56	53	32	36	0	*****	0.99	7.49	2.39	10.87	849.5	4.55	4.62	5.8
Astonenergy	T	1 Jun	151	5	47	43	49	6	0	*****	1.03	7.27	2.30	10.60	854.1	4.33	3.95	5.5
Triwarwic	**T**	**2 Jun**	**141**	**20**	**53**	**30**	**7**	**32**	**0**	**-**	**1.12**	**7.42**	**2.18**	**10.72**	**842.5**	**4.63**	**4.39**	**5.8**
Nashota	**T**	**3 Jun**	**214**	**53**	**57**	**39**	**28**	**38**	**0**	**-**	**1.32**	**7.51**	**2.26**	**11.09**	**845.7**	**4.68**	**4.54**	**6.0**
Glenfield	T	3 Jun	207	59	63	40	3	41	0	-	1.36	7.68	2.28	11.31	841.1	4.74	4.55	5.7
Meiduno	T	3 Jun	195	45	56	46	27	21	0	****	1.27	7.50	2.33	11.10	848.8	4.41	4.31	5.2
Briant	T	3 Jun	156	10	58	46	13	29	0	***	1.06	7.54	2.33	10.93	841.2	4.51	4.47	5.5
Aspect	**T**	**3 Jun**	**136**	**11**	**50**	**30**	**27**	**23**	**-6**	*****	**1.07**	**7.36**	**2.19**	**10.61**	**848.5**	**4.13**	**4.77**	**6.0**
Abergain	T	4 Jun	241	34	61	50	47	49	0	****	1.20	7.63	2.37	11.20	852.0	4.91	4.56	5.6
Gracehill	T	4 Jun	241	46	60	58	10	67	0	**	1.28	7.60	2.44	11.31	840.9	5.35	4.56	5.6
Ballintoy	T	4 Jun	195	36	60	43	23	32	0	****	1.22	7.59	2.30	11.11	846.6	4.59	4.44	5.4
Xenon	**T**	**7 Jun**	**143**	**12**	**49**	**35**	**29**	**17**	**0**	*****	**1.08**	**7.33**	**2.23**	**10.64**	**846.1**	**3.98**	**4.77**	**6.2**
Aberplentiful	T	8 Jun	204	59	63	50	11	26	-6	**	1.36	7.67	2.37	11.40	842.1	4.27	4.69	5.5
Solas	**T**	**10 Jun**	**153**	**10**	**48**	**55**	**1**	**39**	**0**	***	**1.06**	**7.29**	**2.41**	**10.76**	**837.8**	**4.31**	**5.07**	**5.8**

D = Diploid T = Tetraploid *Teagasc Grazing Utilisation Trait is a provisional trait

Variety Name	Total Yield	Leaf Size*	Clover %	Year 1st Listed	Breeder
[1]Control Mean (t DM/ha): 9.6t DM/Ha					
Barblanca	104.7	Large (0.76)	49.3	2009	Barenbrug
Violin	**101.2**	**Large (0.75)**	**45.9**	**2020**	**DLF**
Alice	100.0	Large (0.73)	49.0	1995	Barenbrug
Dublin	**101.8**	**Large (0.73)**	**49.0**	**2018**	**Teagasc**
Chieftain	97.2	Medium (0.68)	44.7	2005	Teagasc
Aberswan	94.3	Medium (0.65)	49.1	2022	IBERS
Buddy	**98.4**	**Medium (0.58)**	**46.1**	**2015**	**Teagasc**
Iona	**95.4**	**Medium (0.56)**	**43.3**	**2014**	**Teagasc**
Crusader	96.4	Medium (0.56)	44.1	2009	Barenbrug
Aberherald	97.7	Medium (0.56)	44.8	2003	IBERS
Coolfin	**103.8**	**Small (0.51)**	**46.3**	**2017**	**Teagasc**
Aberpearl	99.6	Small (0.51)	44.7	2022	IBERS
Galway	**95.4**	**Small (0.36)**	**37.2**	**2017**	**Teagasc**
Aberace	95.1	Small (0.26)	32.8	2016	IBERS

RECOMMENDED WHITE CLOVER VARIETIES 2022

1 Controls in 2018 Trial were Barblanca, Alice, Chieftain and Crusader.

* Values in brackets indicate leaf size compared to the variety 'Aran' (i.e. Aran = 1.00), based on data from UK D.U.S. tests. Data in square brackets [ ] provisional.

DLF Partner Farm Grazing Trial Update

In 2021 our on-farm perennial ryegrass variety evaluation took a significant step forward with the beginning of the DLF Partner Farm Grazing Trials. We sowed 21 varieties in 3 × 7m plots on 4 farms across the country. The aim of the trial is to assess how the latest DLF varieties perform under real-life grazing conditions and throughout the 2021 grazing season we measured varieties on their yield, quality and grazing efficiency. Although there will be another year of data collection in 2022, the data collected in year 1 has thrown up some interesting trends on the efficiency of perennial ryegrass varieties under grazing.

The first finding is quite practical and is to do with the effect of autumn sowing date on spring growth in the following year. Each of the 4 sets of plots were 'autumn' sown with two farms sowing their trial plots in August and two in September 2020. When spring growth rates and yields were calculated for each farm it was found that by the following April the two August-sown trials had grown over 1 ton DM/ha more than the trials sown in September (Table 1). This extra ton of grass is significant at a time when cows are coming into lactation and feed demand is high - Teagasc estimates it could be worth in the region of €250/ha.

Getting autumn reseeds sown before the end of August will give the new grass a chance to establish and give the farmer time to carry out maintenance such as post emergence herbicide application and grazing to encourage tillering. Having these jobs done before the end of the growing season will ensure a vigorous, healthy sward from the very start of the following growing season and help maximise grass utilisation.

Table 1: Autumn sowing date and spring yield. Spring yield is total grass DM up to April 15th.

FARM	AUTUMN SOWING DATE	SPRING YIELD (KG DM/HA)
1	11th August	3224
2	31st August	2996
3	14th September	1890
4	18th September	1913

We encourage you to get involved in the initiative by following the **DLF Grass Partner Farm** progress through our **social media channels** or emailing **info@dlfseeds.ie** to join our mailing list.

Kevin O'Hanlon, Farm Manager

Co. Wexford

Michael O'Sullivan, Farmer

Co. Kerry

David Thomas, Farmer

Co. Offaly

David Hunter, Farmer

Co. Tyrone

Frank Crinion Farmer

Co. Meath

Eamonn Kent, Farmer

Co. Waterford

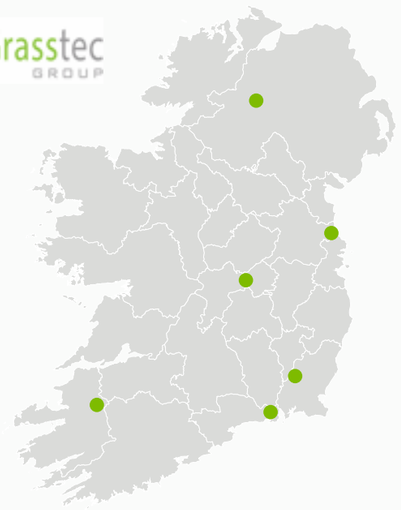
Secondly, there was considerable difference between diploid and tetraploid varieties in terms of the amount of forage grown throughout the year and the amount consumed by the cow, or utilised.

When expressed as a proportion of grass grown, tetraploid varieties had an average utilisation figure of 75% compared to 70% for diploids across the 4 farms. This difference in utilisation between tetraploids and diploids is not a surprise and there are many other Irish studies that support the superior grazing efficiency of tetraploid perennial ryegrass varieties compared to diploids.

Increasing the amount of grazed grass utilised on-farm is a key tool to increasing the sustainability of Irish grass-based production systems. The benefits are both economic and environmental with each extra ton DM of grazed grass utilised worth €181/ha and a reduction in GHG emissions intensity of 4%. The data from our grazing trial reinforces the fact that an all-tetraploid mixture like DLF's 4N Grazer is the best choice for increasing grass utilisation on farm.

DLF Ireland Grass Partner Programme
With Independent Analysis Partner

Grasstec GROUP



New Trait – Grazing utilisation

Grazing utilisation is a measure of a varieties ability to be grazed. The 2022 PPI includes a star rating for varieties that have been trialed in Teagasc Moorepark. Higher star rating represents better grazing efficiency leading to increased utilization and greater farm productivity.

Below displays the corresponding range in utilisation values for each star rating.

UTILISATION STAR RATINGS	
STAR RATING	GRAZING UTILISATION RANGE
★★★★★ ★★★★ ★★★ ★★ ★	Excellent ↓ Moderate

DLF XENON ★★★★★

5 Star Grazing Variety

A DLF NxGen variety Xenon is a true grazing variety ensuring low residuals and high quality grass throughout the seasons

DLF ASPECT ★★★★★

5 Star Grazing Variety

Aspect has a very high leaf to stem ratio ensuring quality in the leaf through out the grazing season.

What is a NxGen Tetraploid variety?

NxGen varieties have a slender leaf and dense growth habit not associated with traditional tetraploids, combining the grazing ability and quality associated with tetraploids, with the dense slender leaf associated with diploids.

DLF NASHOTA

A DLF NxGen tetraploid variety

The perfect complement to Xenon in a grazing mix providing early spring growth and high quality.

DLF BOWIE

Ultra late heading diploid

(16th June) extending grass quality in to season

Highest quality Diploid on the PPI

DLF GRAZER

CUT & GRAZE

FEATURES

- Xenon is the best performing variety on the Teagasc grazing trials
- Bowie is an ultra-late variety with excellent quality
- Nashota has an excellent PPI value of €214
- All varieties head by May/June giving a prolonged window of high quality

40%	Bowie	Late Perennial Ryegrass
35%	Nashota	Late Perennial Ryegrass
10%	Aspect	Late Perennial Ryegrass
10%	Xenon	(T) Late Perennial Ryegrass
5%	Dual purpose Clover	White clover blend

A specialist grazing mixture based on our latest genetics.

Bowie is a brand new, ultra-late heading variety giving prolonged quality well into June.

DLF Grazer contains a mixture of Diploid and Tetraploid varieties ensuring high yield, quality and excellent grazability.

NEW 14KG BAGS = 1 ACRE

DLF 4N GRAZER

CUT & GRAZE

FEATURES

- Mixture based on DLF's NxGen Tetraploids
- Xenon and Nashota, in particular, carry the density of diploids
- Xenon and Aspect are the top two varieties in Teagasc grazing trials
- All varieties are late heading for extended sward quality

55%	Nashota	(T) Late Perennial Ryegrass
20%	Aspect	(T) Late Perennial Ryegrass
20%	Xenon	(T) Late Perennial Ryegrass
5%	Dual purpose Clover	White clover blend

DLF's 4N Grazer includes Aspect and Xenon which both have the yield and quality of Tetraploids combined with the density of most Diploids.

A unique all-Tetraploid mixture for excellent quality and graze-out.

4N Grazer provides high grazing yields, low grazing residuals and excellent persistence.

NEW 14KG BAGS = 1 ACRE

More Milk and Meat with DLF

Less worries, convenient solutions and more time for important activities and decisions is what you get with our More Milk and Meat concept covering all our products.

DLF PERFORMANCE

CUT & GRAZE

FEATURES

- Includes Bowie, the latest heading variety on the PPI
- High spring growth from Nashota for early turnout
- Triwarwic and Dunluce ensure maximum yield

10%	Dunluce	(T) Intermediate Perennial Ryegrass
40%	Bowie	Late Perennial Ryegrass
30%	Nashota	(T) Late Perennial Ryegrass
15%	Triwarwic	(T) Late Perennial Ryegrass
5%	Dual purpose	White clover blend

A highly versatile mixture with an excellent combination of high yields, quality and persistence.

Designed for mixed grazing and silage systems delivering early spring growth with Nashota.

Includes DLF's top PPI variety Nashota, and the late heading Bowie to ensure quality long into the grazing season.

NEW 14KG BAGS = 1 ACRE

DLF PERSISTENCE

CUT & GRAZE

FEATURES

- Contains top performing varieties Nashota and Bowie
- Broad range of heading dates gives flexibility in both cutting and grazing
- Only varieties with excellent persistence scores are used in this mixture

20%	Agaska	Intermediate Perennial Ryegrass
15%	Nifty	Intermediate Perennial Ryegrass
15%	Toddington	Late Perennial Ryegrass
10%	Bowie	Late Perennial Ryegrass
10%	Pensel	(T) Intermediate Perennial Ryegrass
25%	Nashota	(T) Late Perennial Ryegrass
5%	Dual purpose	White clover blend

DLF Persistence is a dual-purpose mixture designed to produce a dense sward that supports early turnout and an exceptionally high first-cut silage yield.

Over 50% of this mixture is Diploid varieties making it one of our densest and most persistent mixtures.

No clover option available.

NEW 14KG BAGS = 1 ACRE

DLF ALL STOCK

CUT & GRAZE

FEATURES

- Good spring production for early turnout
- Very high first-cut silage yields
- Broad range of heading dates to allow flexibility in cutting date

20%	Boyne	Intermediate Perennial Ryegrass
20%	Triwarwic	(T) Late Perennial Ryegrass
14%	Toddington	Late Perennial Ryegrass
14%	Cancan	Late Perennial Ryegrass
20%	Nashota	(T) Late Perennial Ryegrass
7%	Dolina	Timothy
5%	Dual purpose	White clover blend

A versatile mixture to cut or graze.

Suitable for all classes of stock.

Varieties selected from both the Irish and Scottish recommended lists.

Timothy is included for additional spring growth, palatability and winter hardiness.

NEW 14KG BAGS = 1 ACRE

DLF HEAVY SOILS

CUT & GRAZE

FEATURES

- High proportion of Diploid ryegrass gives excellent ground cover
- Tetraploid Nashota adds density and palatability
- Very early growth provided by timothy and meadow fescue
- Variety of grass species will ensure excellent growth across a range of soil types

15%	Abergreen	Intermediate Perennial Ryegrass
15%	Bowie	Late Perennial Ryegrass
18%	Drumbo	Late Perennial Ryegrass
20%	Nashota	(T) Late Perennial Ryegrass
10%	Triwarwic	(T) Late Perennial Ryegrass
5%	Meadow fescue	
5%	Creeping red fescue	
7%	Comtal Timothy	
5%	Dual purpose clover	White clover blend

Specially formulated as a permanent pasture on heavy land or where the maintenance of pure ryegrass swards is difficult.

Timothy and meadow fescue will grow at lower soil temperatures being exceptionally winter hardy.

The density of meadow fescue ensures a closed sward resistant to weed invasion.

NEW 14KG BAGS = 1 ACRE

DLF TOP TIP
available with 30% Red clover

DLF TOP TIP
Also available with Clover for derogation

NEW

DLF N SAVER SILAGE

CUTTING /5 YEARS

FEATURES

- 40% clover content to supply N
- Mixture designed to produce high protein silage with excellent digestibility

25%	Tetragraze	(T) Hybrid Ryegrass
35%	Triwarwic	(T) Late Perennial Ryegrass
10%	Red clover	
20%	Red clover	
10%	White Clover	

High clover content to reduce requirement for N fertiliser

Tetragraze and Triwarwic produce high yields of quality forage

Includes white clover

NEW 14KG BAGS = 1 ACRE

DLF HYBRID SILAGE

CUTTING / 4-5 YEARS

FEATURES

- Medium term silage mixture
- Festulolium Hybrid Ryegrasses are bred by DLF specifically for intensive cutting systems
- Hybrid Ryegrass ensures excellent fermentation

30%	Lofa	Advance Hybrid Ryegrass
10%	Perseus	Advance Hybrid Ryegrass
60%	Tetragraze	(T) Hybrid Ryegrass

DLF Hybrid Silage is the most intensive medium term silage mixture available.

Inclusion of Hybrid Ryegrass varieties ensures exceptionally high yields of quality forage.

Tetraploids mean high quality and high sugar content for making silage.

NEW 14KG BAGS = 1 ACRE

DLF ZERO GRAZE

CUTTING / 5 YEARS

FEATURES

- Contains Nifty for early spring growth and high annual yields
- Tetragraze Hybrid Ryegrass is bred specifically for intensive cutting systems
- Tetraploid variety Nashota ensures quality

25%	Tetragraze	(T) Hybrid Ryegrass
25%	Nifty	Intermediate Perennial Ryegrass
25%	Dunluce	(T) Intermediate Perennial Ryegrass
20%	Nashota	(T) Late Perennial Ryegrass
5%	Dual purpose clover	White clover blend

This is a unique dual-purpose grazing/ zerograze mixture.

Inclusion of Tetraploids means excellent quality and rapid regrowth.

Produces high yields for May silage cut.

NEW 14KG BAGS = 1 ACRE

GENERALISED RELATIONSHIP BETWEEN FORAGE YIELD AND FORAGE QUALITY AS AFFECTED BY STAGE OF MATURITY

DLF PERENNIAL SILAGE

CUTTING / 8 YEARS

FEATURES

- Excellent silage mixture with early spring growth from Nifty and Nashota
- Produces high yields of both 1st and 2nd silage
- Ideal for May 1st cut silage

35%	Abergreen	Intermediate Perennial Ryegrass
20%	Nifty	Intermediate Perennial Ryegrass
25%	Dunluce	(T) Late Perennial Ryegrass
15%	Nashota	(T) Late Perennial Ryegrass
5%	White clover blend	Cutting

An excellent 2-3 cut system silage mixture, that is in use on our partner farms, delivering high yields of quality silage.

Includes large leaf white clover to increase protein.

NEW 14KG BAGS = 1 ACRE

Forage Grass

ProNitro® for successful overseeding

ProNitro® is a nitrogen seed-coating that increases seed size for better seed-to-soil contact. The coating feeds the seed not the weed, and improves establishment by up to 30%.

> ProNitro® is a cost-effective way to maintain grass production

> ProNitro® is an environmentally sound way to maintain grass production

ProNitro® READY TO GROW

NITROGEN COATINGS QUALITY GRASS SEED Hydroactive water management Technology by DLF

DLF ProNitro®

OVERSEEDING

FEATURES

- Unique ProNitro seed coating delivers stronger establishment with up to 34% more plants and a 30% increase in root length
- ProNitro leads to a healthier sward with less weeds
- ProNitro treated seeds contain 15% N made of both fast and slow-release nitrogen to feed seedlings throughout the establishment phase
- This leads to over 30% more vigorous growth with stronger roots and shoots

60%	Nashota	(T) Late Perennial Ryegrass
35%	Triwarwic	(T) Late Perennial Ryegrass
5%	Dual purpose clover	White clover blend

ProNitro is a unique seed coating that focuses on improving nutrient utilisation during the early stages of plant growth.

ProNitro mixtures contain the highest quality seed – only cultivars with superior performance and high vigour are selected for coating.

ProNitro is applied directly onto the seed to give the developing plant a targeted and consistent supply of N.

NEW 14KG BAGS = 1 ACRE

Stronger roots mean:

> Better growth during and after droughts

> Reliable forage production and enhanced self-sufficiency

> Optimal use of input resources (e.g. fertiliser) for improved feed quality

> Future-proof swards to buffer against environmental and climatic extremes

> Sustainable forage production and improved soil structure

Successful overseeding
ProNitro® takes the risk out of overseeding. During establishment, the nitrogen coating feeds the seed, not the surrounding plants. You get speedier and greater establishment than you would get from untreated seeds. ProNitro® reduces the risk of overseeding failure.

Cost savings and farm efficiency
Overseeding is a relatively cheap farm operation compared to a full reseeding. A programme of regular overseeding maintains sward production, extends the life of the sward and can be done for a fraction of the cost of a full reseeding. ProNitro® is a cost-effective way of maintaining grass production.

Environmentally sound
Ploughing and other invasive cultivation methods release carbon into the atmosphere. Research suggests that this can be as much as 27 tonnes of CO^2 per hectare. Since overseeding prevents carbon loss N^2O to the atmosphere, ProNitro® is an environmentally sound way of maintaining grass production.

DLF TOP TIP
To rejunvenate paddocks, oversow at 10kg/ac

DLF LOW INPUT PASTURE

CUT & GRAZE

FEATURES

- Mixture containing a range of hardy grass species
- Higher mineral content than ryegrass-only mixtures
- Produces excellent hay
- Extremely drought resistant mixture

15%	Cocksfoot
5%	Creeping red fescue
15%	Meadow Fescue
5%	Rough stalked meadow grass
15%	Smooth stalked meadowgrass
20%	Timothy
15%	Tall Fescue
10%	White clover

Formulated to thrive on very low N input.

Different grass species tap into different nutrient reserves in the soil.

This mixture can produce quality hay.

Deep-rooting species like cocksfoot provide drought tolerance.

NEW 14KG BAGS = 1 ACRE

DLF ORGANIC LONGTERM

90% ORGANIC

FEATURES

- Contains 90% organic seed
- Mixture of grass and legume species can produce high yields without inorganic fertilisers
- Varieties selected for persistence, yield and quality

20%	Organic Nifty	Intermediate Perennial Ryegrass
20%	Organic Diwan	(T)Late Perennial Ryegrass
20%	Organic Toddington	Late Perennial Ryegrass
20%	Organic Nashota	(T)Late Perennial Ryegrass
10%	Organic	Timothy
5%	Coolfin	White Clover
5%	Iona	White Clover

A dual-purpose mixture for organic systems.

A mixture of grass and clover species leads to the production benefits of a multi-species sward.

Capable of producing high yields without inorganic fertilisers.

Extremely palatable, protein-rich mixture.

NEW 14KG BAGS = 1 ACRE

DLF HORSE PADDOCK

EQUINE

FEATURES

- Produces a hard-wearing, dense sward
- Low sugar grasses to prevent laminitis
- Capable of producing a crop of hay
- An extremely versatile equine mixture

30%	Boyne	Intermediate Perennial Ryegrass
23%	Nifty	Intermediate Perennial Ryegrass
20%	Toddington	Late Perennial Ryegrass
10%	Creeping red fescue	
10%	Smooth stalked meadowgrass	
7%	Timothy	

Specially formulated low-sugar grass mixture for equine use.

Creeping Red Fescue helps to form a dense, hard-wearing sward.

The inclusion of Timothy helps to improve the quality of hay.

NEW 14KG BAGS = 1 ACRE

Home-grown protein is good business

Why not save money by growing on-farm legume species such as clovers and alfalfa? Home-grown legumes are a cheap, reliable and independent source of protein.

Growing-your-own has several advantages:

- **Legumes are natural nitrogen-fixers.** Their ability to supply neighbouring grasses with nitrogen cuts your need for artificial fertiliser by 150 to 250kg N/ha per year, depending on local growing conditions.
- **Red and white clover are more digestible.** Compared to grasses, clovers tend to be more digestible. Since faster digestion improves the dry-matter intake, your livestock benefit from a greater liveweight gain and a higher milk yield.
- **Alfalfa is highly drought-tolerant**. Deep-rooted alfalfa is exceptionally drought-resistant. When grasses stop growing through lack of rain, alfalfa continues to supply you with quality forage.
- **Legumes have a smaller carbon footprint.** Since legumes are a more efficient contributor to animal production, their contribution to indirect greenhouse gas emissions is lower. Their use also eliminates the direct emissions associated with the production and transport of bought-in protein and fertiliser.

Legumes are good for cost-effective farming

- Higher feed intake
- Reduced expenditure on imported concentrates
- Reduced need for artificial fertiliser
- Residual effect on subsequent crops

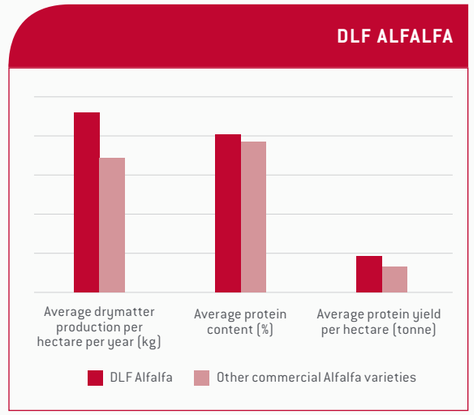
DLF Alfalfa – start your return today

DLF Alfalfa or Lucerne as it is also known, is an increasingly popular crop among farmers looking to produce more home-grown protein.

With a protein content that can be up to 30% of the total dry matter, DLF Alfalfa is a great way to gain more control over farm costs and shelter the farm from fluctuations in global commodity prices.

Why Grow DLF Alfalfa:

- High-protein forage
- Deep rooting and drought-tolerant
- 3-to-5-year potential
- Nitrogen for the following crop



Order DLF Alfalfa from your local merchant

White Clover

White clover is the most commonly sown legume in Ireland and is primarily used for grazing in mixtures with grass. As a forage, white clover is highly digestible with crude protein content averaging over 20%. But the most significant benefit of white clover is it's ability to fix N from the atmosphere for use by neighbouring grasses in the sward. The use of white clover in grass mixtures has the potential to offset up to 150kg N/ha per year in inorganic N fertiliser. With fertiliser prices expected to be well over €800/ton for 2022, the incorporation of white clover into grass swards has the potential to greatly reduce the reliance on inorganic N fertiliser and increase the financial and environmental sustainability of Irish farms.

Establishing and Managing White Clover in the Sward

Establishing white clover takes time and some specific management. DLF recommends targeting up to 30% of the farm at a time in which to establish white clover. Achieving good white clover content across the farm should be a medium-term goal and should be carried out over a number of years.

A full reseed is the most reliable method of establishing white clover. However, as the options for post-emergence treatment become more limited, many farmers are choosing to over-sow white clover into existing swards.

For maximum benefit a sward white clover content of 20-30% is required

Benefits of White Clover in the Sward @ 20-30%
✓ +800kg DM/ha
✓ Opportunity to reduce N fertiliser
✓ Dry matter intake +1.5kg/cow per day
✓ Milk solids +30kg MS/cow per year

No matter what sowing method used the **4 key principles** of successful establishment and management of white clover should always be considered.

Soil
o Ensure adequate soil P, K and pH status
o Sow seed no more than 1cm deep
o Roll to ensure soil-seed contact
Timing
o Sow when soil is warm (+10°C), and there is some moisture – ideally April to May
Seed
o Over-sow at a rate of 2 – 2.5kg/acre
o Use small and medium-leaf varieties for grazing and large-leaf for cutting. See mixtures opposite
Light
o Over-sow after a tight grazing or silage cut so light can stimulate seedling growth
o After sowing, graze at 1,100kg DM/ha for the following 3 rotations to establish adequate white clover content
o Once established, graze white clover swards at low covers (max 1,600kg DM/ha) down to 4cm to avoid competition from grass and allow light reach the clover plants

8 Steps to Successfully Over-sow White Clover

1. Select a paddock with good soil fertility and an open sward to allow soil-seed contact
2. Broadcast or direct-drill seed at a rate of 2 – 2.5kg/acre after tight grazing or a silage cut
   a. If broadcasting, sow 'twice' – half rate down, half rate across the paddock
   b. Sow seed no more than 1cm deep if drilling
3. Over-sowing should take place between April and June, ideally
4. Roll after sowing to ensure seed soil contact. This will improve germination rates
5. Allow light down to establishing seedlings and reduce grass competition by grazing 10 days after sowing. Watery slurry may be applied at this stage
6. Continue to graze at low covers (1,100kg DM/ha) for the following 3 rotations using half rates of N after each grazing
7. Once white clover is established, continue to graze maximum 1,600kg DM/ha covers down to 4cm applying N tactically (see Figure 1)
8. Where white clover content is >20% N fertiliser can be significantly reduced from May onwards. The fertiliser planner below published by Teagasc is a helpful guide to N application for high clover swards.

	NITROGEN FERTILISER APPLICATION STRATEGY	
ROTATION DATE	GRASS 250kg	GRASS CLOVER 150kg
Mid-late January	28	28
Mid March	28	28
April (2nd rotation)	33	33
May (3rd rotation)	40	9
May (4th rotation)	30	9
June (5th rotation)	17	9
July (6th rotation)	17	9
July (7th rotation)	17	9
August (8th rotation)	17	9
Mid September	33	12

FIGURE 1: Nitrogen fertiliser application strategy. Source: Teagasc

DLF CLOVER BLEND

GRAZING/CUT & GRAZE

FEATURES

- Mixture of small- and medium-leaf varieties
- Versatile mix for grazing and cutting
- Ideal for over-sowing into existing pasture

60%	Coolfin	
20%	Galway	
20%	Iona	

DLF CLOVER BLEND

CUTTING

FEATURES

- Specialist clover blend for silage swards
- Will boost silage protein content and fix N

50%	Violin	
50%	Iona	

Tips to Avoid Bloat

- Introduce animals to high-clover swards slowly
- Make sure animals are full entering high-clover sward
- Do not graze clover with a heavy dew
- The use of bloat oil in water troughs will reduce the risk of bloat

For a comprehensive guide on Clovers see our agronomy guide

Multi-species Swards

Multi-species swards are a sustainable source of high-quality forage. As well as producing high yields of quality forage, sowing a multi-species can lead to significantly reduced N fertiliser requirement, increased animal performance and health.

A multi-species sward is a mixture of three or more species whose growth characteristics complement each other resulting in improved productivity compared to when each species is grown on their own. The species used typically come from three plant groups i.e. grasses, legumes and herbs, with each species bringing different benefits to the sward. Grasses such as perennial ryegrass and timothy provide strong early-season growth and quality while legumes like white and red clover feed the sward with nitrogen fixed from the atmosphere and boost protein. As well as providing excellent quality, mineral-rich forage in the summer months, deep-rooting herbs like ribwort plantain and chicory are extremely drought tolerant, which is an increasing concern for many Irish farmers.

The benefits of multi-species swards

- Multi-species swards can produce similar DM yields to perennial ryegrass swards at significantly lower rates of inorganic N fertiliser (Figure 1).
- Multi-species swards are a source of highly digestible, high protein forage and can maintain their high quality throughout the growing season.
- The inclusion of warm-season species like chicory and red clover means multi-species swards have strong summer production compared to a grass sward.
- These deep-rooting species make the sward much more tolerant of drought than a grass sward.
- The inclusion of mineral-rich herbs provides a more balanced diet than grass alone, with species like chicory also providing some anthelminthic benefits to grazing livestock.
- The use of multi-species swards compared to grass-only swards in agriculture can also provide a wide range of environmental benefits including:
    - Reduced N^2O emissions and nitrate leaching associated with reduced fertiliser use.
    - Higher rates of carbon sequestration due to deeper root-depths
    - Enhanced biodiversity, particularly pollinators feeding on the variety of flowering plants in multi-species swards.

Incorporating multi-species swards into your grazing platform

Many farmers are using multi-species swards as a tool to greatly reduce their N fertiliser bill. This is very effective as apart from a couple of small fertiliser applications in spring, multi-species swards are almost totally N self-sufficient. In addition, as feed for grazing livestock, multi-species swards produce large quantities of highly digestible forage rich in minerals and high in protein.

Since the peak growth rates of multi-species swards occur in summer, they complement grass swards on the grazing platform perfectly. Having a mixture of grass and multi-species swards on the grazing platform will ensure a steady supply of the highest quality forage through spring, summer and autumn as well as buffering against drought and reducing the cost of forage production.

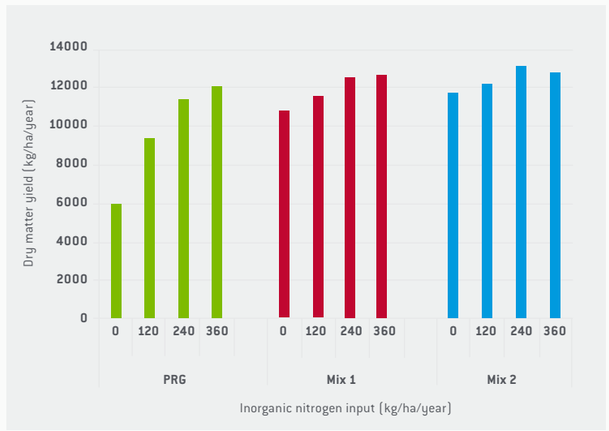


Figure 1: Taken from Moloney et al (2021), Yield of binary- and multi-species swards relative to single-species swards in intensive silage systems.

For a comprehensive guide on multi-species swards, see our agronomy guide

Herb Focus

Ribwort plantain and chicory are commonly used herb species in a multi-species sward. Below are some of the advantages these herbs can bring to a sward.

Ribwort plantain

- High-yielding throughout the year
- Excellent source of copper, calcium and selenium
- Thrives in a range of soil-types
- Drought tolerant

Chicory

- Highly digestible, highly palatable forage
- Excellent summer growth
- Has anthelmintic properties
- Drought tolerant

Ecotain ENVIRONMENTAL PLANTAIN

New to Ireland

This year we have added Ecotain plantain to our 6 Species Herbal Ley.

Research from New Zealand has shown mixtures that include Ecotain can reduce nitrate losses by over 80%. This happens via 4 mechanisms:

- Delay: slows nitrate release from ammonium to allow greater plant uptake
- Restrict: restricts nitrification rate in soil
- Dilute: diuretic effect of Ecotain increases the volume of urine produced, thus reducing urine N concentration
- Reduce: Reduces total N concentration of urine
- Ecotain retains all the benefits of plantain being highly productive on a range of soils and an excellent source of copper, calcium and selenium.

DLF MULTIPSECIES OVERSOWING BLEND

24%	Choice	Chicory
24%	Tonic	Plantain
32%	Iona	White Clover
20%	Pastour	Grazing Red Clover

AVAILABLE IN 5KG PACKS

DLF 6 SPECIES HERBAL LEY

GRAZING

FEATURES

- A versatile multi-species mixture Inclusion of red and white clover supply free N to the sward
- Increased minerals and vitamins from the inclusion of plantain and chicory
- Highly productive in summer and drought conditions due to deep-rooting legumes and herbs

15%	Nifty	Intermediate Perennial Ryegrass
10%	Dunluce	(T) Intermediate Perennial Ryegrass
15%	Triwarwic	(T) Late Perennial Ryegrass
15%	Drumbo	Late Perennial Ryegrass
10%	Comtal	Timothy
7%	Coolfin	White clover
8%	Pastour	Grazing Red clover
10%	Ecotain	Ribwort Plantain
10%	Choice	Chicory

A versatile multi-species mixture that will perform on a range of soil types.

Capable of producing high yields of excellent quality forage throughout the year with little or no N fertiliser.

Clovers and herbs are extremely palatable with excellent quality leading to increased animal performance.

Excellent production in summer when grass growth can be slow.

AVAILABLE IN 12KG PACKS

DLF 14 SPECIES HERBAL LEY

GRAZING

FEATURES

- Enhanced root structure gives even better nutrient use efficiency
- Mixture suitable for a range of conditions from heavy soils to drought conditions
- Boosted mineral and trace element content from herbs like yarrow, burnet and parsley
- Compounds in sainfoin and birdsfoot trefoil can reduce the risk of bloat and are natural wormers

13 %	Nifty	Perennial ryegrass
13%	Triwarwic	Perennial ryegrass (T)
7%	Comtal	Timothy
7%	Laura	Meadow fescue
5%	Iona	White clover
10%	Pasteur	Red clover
2%		Lucerne
3%	Leo	Birdsfoot trefoil
9%		Sainfoin
10%	Choice	Chicory
10%	Ecotain	Ribwort plantain
2%		Yarrow
2%		Burnet
5%		Alsike clover
2%		Sheeps parsley

NEW 14KG BAGS = 1 ACRE

DLF HERBAL LEY DAFM SPEC

GRAZING

15%	Abergreen	Intermediate Perennial Ryegrass
15%	Elysium	(T) Intermediate Perennial Ryegrass
25%	Triwarwic	(T) Late Perennial Ryegrass
6%	Comtal	Timothy
12.50%	Coolfin	White clover
12.50%	Pastour	Grazing Red clover
8.30%	Tonic	Ribwort Plantain
5.90%	Choice	Chicory

AVAILABLE IN 12KG PACKS

Produce the highest quality silage with DLF Fiber Energy Varieties

Grass silage is the primary source of winter feed on Irish farms and can account for 20-30% of the total annual feed consumed by a cow depending on the specific production system. Silage production represents a significant cost on Irish farms thus the aim of silage-making is to maximise the yield of the crop while achieving excellent quality to ensure efficient production. For example, cows fed high quality silage (75%+ DMD) require 3-4kg less concentrate to achieve similar milk solids output than cows fed average quality (69% DMD) silage. The same principle applies to growing stock like weanlings and finishing cattle. The focus must be on producing adequate yields of excellent quality silage.

Unfortunately, due to plant biology, as grass yield increases quality tends to decrease. As the plant matures it becomes more fibrous and it is this increase in fibre that reduces quality and digestibility. DLF Fiber Energy varieties can help farmers harvest higher yields while maintaining quality. The graph on the right shows how the feed quality of DLF Fiber Energy varieties remain high much further into the plant's life cycle. As the plant matures, the yield increases yet the quality remains high.

The quality of DLF Fiber Energy varieties is greater than regular varieties because the plant fibres are more digestible which means more of the plant's energy is available to the animal. With DLF Fiber Energy varieties animal intake increases creating up to 8% more energy compared to regular varieties. The result is greater animal performance.

Fertiliser

FERTILISER TABLE

	MAIZE (Kg/ha)			FODDER BEET (Kg/ha)			HYBRID RYE (Kg/ha)			TRITICALE (Kg/ha)			FORAGE RAPE (Kg/ha)			SWEDES/STUBBLE TURNIPS (Kg/ha)			FORAGE KALE (Kg/ha)		
	N	P	K	N	P	K	N	P	K	N	P	K	N	P	K	N	P	K	N	P	K
0	180	70	250	175	70	320	210	54	120	210	54	120	150	60	220	90	70	120	150	60	220
1	140	50	225	145	55	240	180	44	105	180	44	105	130	50	210	70	60	100	130	50	210
2	110	40	190	105	40	160	120	34	90	120	34	90	100	30	170	40	40	60	100	30	170
3	75	20	120	70	20	80	80	0	0	80	0	0	70	0	0	20	40	60	70	0	0

Source: Teagasc Johnstown Castle
Note: to convert kg/ha to units/acre multiply by 0.8

AVAILABLE NUTRIENT CONTENT OF ORGANIC FERTILISERS
(KG/M3 & UNITS/1,000GLNS)

	NITROGEN (N)		PHOSPHORUS (P)		POTASSIUM (K)	
	kg/m3	units/1,000glns	kg/m3	units/1,000glns	kg/m3	units/1,000glns
Cattle Slurry	0.7	6.5	0.6	5	3.3	30
Pig Slurry	2.1	19	0.8	7	1.9	20
Soil Water	0.4	84	0.08	7	0.6	5
Farm Yard Manure	1.35	2.7	1.2	2.4	6	12
Broiler Litter	5.5	11	6	12	12	24
Turkey Litter	14	28	13.8	27.6	12	24

Source: Teagasc Johnstown Castle

Forage Crops

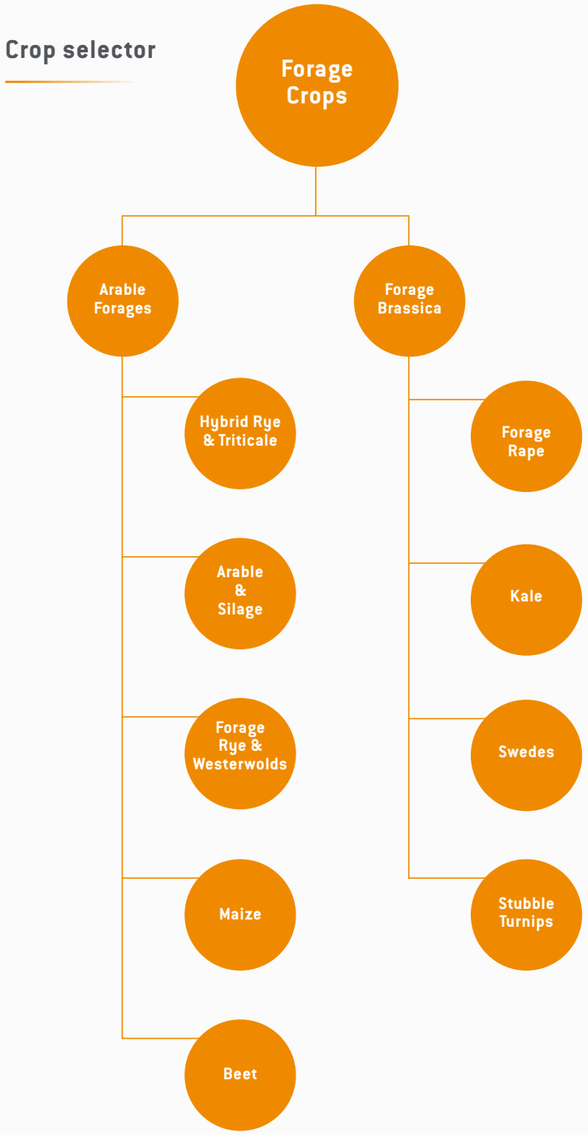
DLF SEEDS & SCIENCE

Forage Crops

Choosing the right Forage Crop

Unfortunately, we cannot control the price paid for farm produce, but we can control some of the cost of animal feed used. Home grown forage whatever the crop will always be cheaper than buying in compound feed.

DLF offers a full range of forage crops from high yielding harvested crops like Fodder Beet, Maize and Wholecrop to in-situ grazed brassicas. To determine which option suits best, we have to consider the window for growing the crop, rotation, site and intended use. A forage crop programme takes a planned approach and beginning with identifying the feed demands by month is the start of the decision process.



Use this guide to select the forage crop which best suits your system and feed objectives. The chart below details forage crops essential information from sowing times and rates to growing costs, yield and feed quality data.

FORAGE CROP SELECTION

Crop	Pack size	Average Sowing Rate kg /ha		Sowing date	Utilisation period	Average row Depth cm	Average row Width cm	Days Sowing to Grazing	No of possible Grazing	Dry Matter (%)	Digestibility (DMD)	CP (% DM)	ME (MJ/ kg DM)
		Broad cast	Direct Drill										
Fodder Beet	50,000 seeds		Precision drill 100,000/ha	Mar- May	Oct - Mar	2.5 - 3	50 - 60	-	-	13 - 23%	80	9%	11
Maize	50,000 Seeds		94 -120,000 Seeds	Late March - Early May	Sept - Early Nov	3 - 6	15 - 20	-	-	30 - 35%	80	9 - 10%	11.5
Forage Rape	5kg & 25kg	8	6	May- mid of Sept	Jul - Dec	1 - 2.5	n/a	90 - 110	2	12 - 13%	65	19 - 20%	11
kale	5kg	7.5	5	Apr - Jul	Sept - Mar	1 - 2	n/a	150 – 220	1	13 - 15%	68	16 - 17%	11
Stubble Turnip	10kg & 25kg	7.5	5	April – Mid Sept	Jun - Jan	1 - 2	n/a	60 - 100	1	8 - 10%	75 - 80	18%	11
Swede	500g & 1kg	2.5- 5	Direct Drill 3 Precision drill 370 – 865 kg/ha grade H	Apr - June	Aug - Mar	1 - 2	20	170 - 250	1	10 - 12%	80	10 - 11%	12.5

FEEDING GUIDELINES

“Let’s stop for a moment to realise the power of rotation”

Crop Rotations

Forage crops provide a fantastic break crop and entry back into grass – they allow you to control any serious weed problems and will add vital animal manures back into your soil. Using the chart below, you can easily introduce forage crops into your rotation. Just look at the options in the column marked “What do you want to achieve?”

FORAGE CROP ROTATION

What do you want to achieve?	Year 1 Crop Suggestions		Year 2 Crop Suggestions	
	SPRING	AUTUMN/WINTER	SPRING	AUTUMN/WINTER
Cereal to Grass	Spring Barley	Stubble Turnips/Forage rape	Spring Grass Reseed	
High Energy	Fodder Beet		Forage Maize	Feed/Wholecrop W wheat
Profitable Sheep	Swede		Arable Silage	Forage Rape
Protein Boost	Arable Silage + Peas	Lucerne (sow no later than July)		
New Grass	Worn Out Grass Ley (after 1st cut silage)	Kale	Spring Sown Grass Ley	
Milk Yield	Maize	Forage Rye/Westerwolds	Maize	
Outwintering	Fodder Beet		Kale	
Grass Revival	Low Yielding Ley	Stitch In Grass/Clover	Revitalised Grass	
Triple Cereal	Spring Barley	Forage Rye	Forage Maize	

If you have any questions, our seed specialists are here to help, see page 2 for contact details.

FEEDING GUIDELINES

Many of the forages that appear in this booklet are grazed and utilised in the field (grazed in situ). To get the best from your crops, a few simple steps can make all the difference in maximising animal performance and profitability.
The following are some of the key management tools you may consider:

- Recommended inclusion rates should be between 35 - 50% of total dry matter intake
- Access to straw or hay as well as the forage brassica is important
- Ensure a good water supply
- Occasionally, over-feeding can cause Goitre, and blood anaemia, but access to straw and hay can help reduce risks of this problem

STRIP GRAZING

- Using an electric fence will help reduce wastage in the field
- Long narrow strips are best to allow full animal access
- Introduce the animals to the crop slowly
- Move the electric fence daily if possible
- Providing a dry run back will keep the animals clean

The chart below will allow you to calculate how many grazing days each forage crop will provide:

HOW MUCH SHOULD I GROW?

SPECIES	AVERAGE FRESH YIELD	LESS WASTAGE FACTOR	UTILISABLE YIELD	GRAZING DAYS PER HECTARE		
				Sheep Ration		Dairy or Beed Ration
	Tonnes per hectare	Grazing wastage %	Tonnes per hectare	7.5kg per day	10kg per day	22kg/ 2-3 hour grazing period
Kale	60	25	45	6,000	4,500	2,045
Stubble Turnip	40	25	30	4,000	3,000	1,364
Forage Rape	35	25	26.25	3,500	2,625	1,193
Swede	80	25	60	8,000	6,000	2,727
Forage Rye	20	15	17	2,266	1,700	772

FEEDING SAFETY

Potential health issues when feeding Forage Brassicas

Always speak to your vet about the risks of using brassicas and how to incorporate risk prevention techniques into the farm health plan.

PHOTO-SENSITISATION
Cause: Compounds within the brassica cause the skin to be sensitive to sunlight, which can result in skin damage. This usually occurs when crops are grazed too early when they are still growing and is more common with rape and kale.

NITRATE POISONING
Cause: Nitrates accumulating in the leaves of brassica crops, usually occurs when fast growing crops are grown in soil with high nitrate levels after rain, which has followed a dry spell. Cool, overcast conditions and high N fertiliser use will also increase the risk.

GOITRE
Cause: Brassicas, especially root crops, contain glucosinolates, which block the uptake of iodine from the diet. Brassicas are also low in iodine, which may increase the risk of iodine deficiency, affecting the thyroid gland and the hormones it produces.

KALE ANAEMIA (REDWATER)
Cause: Excess levels of amino acid compound S-methyl cysteine sulfoxide (SMCO) in the plants, can cause anaemia and appetite loss. The levels of SMCO are worse when soil phosphate levels are low, and nitrogen and sulphur levels are high. SMCO levels also increase when crops are flowering.

BLOAT
Consider the risk of bloat, as brassicas can be rapidly degraded in the rumen. It is essential to feed fibre alongside the crops and introduce non-hungry stock gradually.

FEEDING FLOWERING BRASSICAS
Cause: Some species of brassica are biennials and therefore will flower in the following spring season if they are sown in the summer or autumn period and left ungrazed. Early sown brassica can also vernalise and flower in a short period of time (10-12 weeks). The plant is most toxic when in flower. It contains sulphur-based heterosides (thiocosides): gluconapine and progoitrin, which when hydrolysed will yield isothiocyanates (mustard oil) and goitrin. These toxic compounds are irritant, haemolytic, goitrogenic and can cause malnutrition.

EXPERT ADVICE

- Always feed with a fibrous forage like straw or hay
- Ensure a good water supply
- Introduce stock to the crop gradually
- Produce a grass 'run back' area
- Strip graze using an electric fence to maximise crop use

WHAT DOES HYBRID RYE OFFER FARMERS?

Hybrid Rye offers the farm a range of rotational and management benefits. Grown in Ireland as wholecrop silage for cattle and Anaerobic Digestion (AD) in NI.

A fast-establishing winter cereal crop with a wide sowing window spanning from mid- September to early November means it can be sown when conditions and time allow. Harvesting for wholecrop is typically early July leaving plenty of time for a grass reseed.

An added benefit is Cranefly larvae (leatherjackets) will not lay eggs in hybrid rye and any subsequent reseed has low risk of attack. A late summer reseed after a cereal tends to be largely "weed free" compared with grass into grass.

YIELD & FEED QUALITY

Average Dry Matter Yield 13-16t/ha	**Crude Protein** 10%
Average Fresh Yield 30-40t/ha Dry Matter	**Digestibility Value** 65%
Dry Matter 35-40%	**Energy (ME)** 11 MJ/kg

KWS SERAFINO

Excellent stem stiffness and brown rust resistance.

Multi-purpose hybrid (AD or grain; feed flour and distilling).

No. 1 harvest index (grains/ear) to drive grain yield .

KWS TAYO

Offers robust stem stiffness compared to older hybrids.

New generation PollenPlus® hybrid with excellent stem stiffness.

Multi-purpose hybrid (AD or grain; feed, flour and distilling).

WHY SOW SPRING TRITICALE?

Triticale can be grown as wholecrop on a wide range of soils requiring fewer inputs than traditional cereals.

The cereal of choice where rabbit damage occurs, it establishes rapidly, and rabbits find it less palatable.
It is a cross between wheat and rye which can be under sown with grass.

YIELD & FEED QUALITY

Average Dry Matter Yield 8-10t/ha	**Crude Protein** 10%
Average Fresh Yield 25-30t/ha Dry Matter	**Digestibility Value** 65%
Dry Matter 30-35%	**Energy (ME)** 10.5 MJ/kg

SPRING

Triticale has the potential to give higher grain yields than winter wheat, often with a reduced requirement for fungicides.

riticale can be used as a source of whole-crop forage, or for crimping of immature grain, which avoids

issues with pre-harvest sprouting.

ARABLE SILAGE

Arable Silage mixtures offer an alternative or additional feed to grass or maize silage and are particularly suitable for farmers wishing to increase their levels of home-produced protein and reduce their reliance on purchased feed and fertiliser.

They produce a cost-effective, high quality forage of consistent quality and palatability, with high yields of dry matter even in dry seasons and cold weather. They can be self-fed from the silage-face or as bales, and their early harvest allows for earlier drilling of other autumn combinable crops or reseeding of grass. The crop can also be undersown with grass in the spring.

YIELD & FEED QUALITY

Average Dry Matter Yield 9t/ha	**Crude Protein** 12%
Average Fresh Yield 30-35t/ha Dry Matter	**Digestibility Value** 75-80% DMD
Dry Matter 30%	**Energy (ME)** 12 MJ/kg

AS1 (60% BARLEY, 40% PEAS)

Arable Silage Mixtures offer an alternative or additional feed to grass or maize silage and are particularly suitable for farmers wishing to increase their levels of home-produced protein and reduce their reliance on purchased feed and fertiliser.

FORAGE RYE

YIELD & FEED QUALITY

Average Dry Matter Yield 5.5t/ha	**Crude Protein** 10-11%
Average Fresh Yield 25t/ha Dry Matter	**Digestibility Value** 65% DMD
Dry Matter 18-23%	**Energy (ME)** 10 MJ/kg

Use for sheep or cattle, Forage Rye offers excellent early spring growth and proven to be very winter hardy.

When sowing in rotation it works well after cereals or maize. Strip graze to avoid wastage whilst filling the hungry gap period. Forage Rye has few and infrequent diseases.

WESTERWOLDS RYEGRASS

YIELD & FEED QUALITY

Average Dry Matter Yield 16-20t/ha (autumn sowing)	**Digestibility Value** 68-75% DMD
Average Fresh Yield 90-100t/ha	**Energy (ME)** 10-11 MJ/kg

Westerwolds have massive yield potential for grazing, zero grazing and silage. A valuable and economical option for farmers in securing a quick high-volume forage.

Westerwolds are very vigorous and establish rapidly and are ideal sown after maize or cereals.

Spring sown crops can be ready for grazing in 6-8 weeks, cutting in just 10-12 weeks after sowing and can produce 3-4 cuts.

Maize for forage and anaerobic digestion

WHY GROW MAIZE?

- A high starch (energy), high dry matter home- grown feed
- When included in diets will increase intakes and have a positive effect on overall yields and milk solids in the dairy herd but equally increased intakes improve daily liveweight gain, kill out percentage and fat score in a beef production system
- Ideal all year-round feed
- Can be used in spring post calving where cows have a high demand for energy, but equally as a buffer feed where there is a feed deficit situation (drought etc.)
- A more consistent, cost effective solution to a 2 or 3 cut grass silage system
- An excellent break crop in a continuous tillage situation while offering an opportunity for farm to farm sale of a valuable crop
- Requires no specialised feeding equipment
- Makes use of high fertility land as well as capable of using high levels of home-produced organic matter (slurry and FYM) to increase the organic matter content on the arable farm
- Maize is one of the best forage options for anaerobic digestion offering much higher DM yields than other commercially grown crops (grass etc.)

OPEN V COVERED SOWING

The open sown market is increasing year on year and this is demonstrated by the department of Agriculture conducting open sown trials. With the marked shift away from plastic for environmental and sustainability reasons and along with the significant improvements in open sown varieties, farmers have a very real choice in considering open sown maize. At DLF we are trialing new varieties every year, searching for the most consistent open sown varieties with all the key characteristics the grower needs.

There is very little required of the grower in terms of crop husbandry between open and covered sowing other than using a film at sowing. Fertiliser and chemical rates are very similar, but timings may differ slightly.

SOWING

On a suitable site, open sown maize is proven to deliver on fresh weight/ dry matter yield and starch. Site selection is important when open sown is being considered as site aspect, elevation and soil type will potentially have a bigger effect on crop performance if an unfavorable growing year occurs.

For open sown maize it is prudent to wait for a soil temperature of 10°C for optimum establishment.

MANAGING MAIZE STUBBLES

Getting the Most from your Rotation

Growing a crop of maize typically means sowing in April/May and harvesting in September/October. This can leave a period of up to six months where there's an opportunity to use a second crop to gain extra production. If your maize crop forms part of an arable rotation and an early maturing variety has been chosen, winter crops such as cereals may be sown after harvest. However in many situations, maize stubbles are left bare over the winter. This is not only a missed opportunity to produce more forage, but also can lead to soil related problems such as surface water run-off, soil erosion and loss of valuable soil nutrients.

STUBBLE MANAGEMENT AND CROPPING OPTIONS

For both production and environmental reasons, it makes sense that no maize stubbles should be left bare or uncultivated over the winter. Chisel ploughing across the field to remove surface capping can help prevent surface run-off and erosion. However crops such as Humbolt forage rye or Westerwolds ryegrass offer more benefits.

FOLLOW ON CROPS

Humbolt Forage Rye

SOWING INFORMATION: Seedbed needs to be firm and well consolidated. Direct drill to a depth of 3-5cms (cross drilling will promote a thicker stand)

SOWING RATE:
Between 160-185kg/ha (65-75kg/acre)

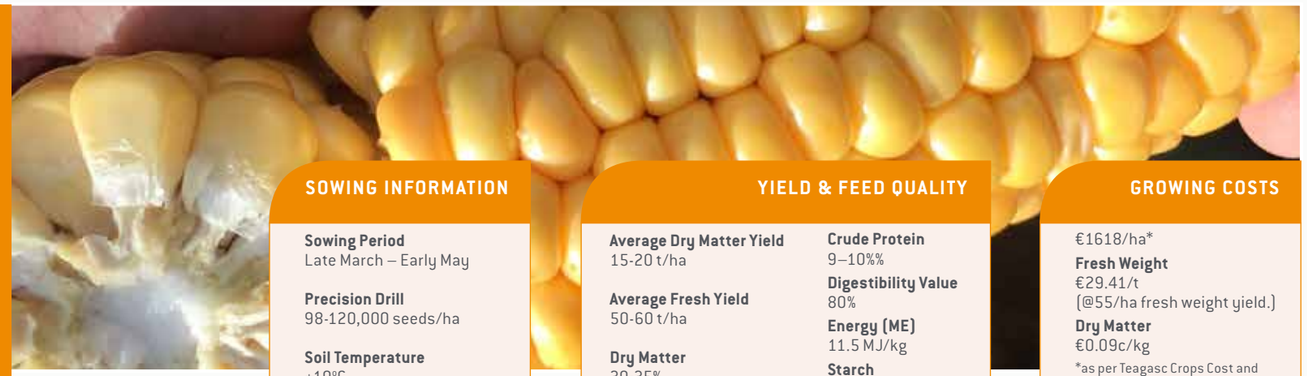
FEEDING:
Crude Protein: 12%
ME: 10 MJ/kg
Humbolt can be grazed, zero grazed or baled

Westerwolds Ryegrass

SOWING INFORMATION: Westerwolds offers the highest yield of any ryegrass and is ideal for sowing after maize. It has good ground cover, enabling an early spring harvest of the subsequent crop.

SOWING RATE: 37kg/ha (15kg/acre)

FEEDING:
Crude Protein: 15%
ME: 10.6 MJ/kg Westerwolds can be grazed, cut or baled



SOWING INFORMATION

Sowing Period
Late March – Early May

Precision Drill
98-120,000 seeds/ha

Soil Temperature
+10°C

YIELD & FEED QUALITY

Average Dry Matter Yield
15-20 t/ha

Average Fresh Yield
50-60 t/ha

Dry Matter
30-35%

Crude Protein
9–10%%

Digestibility Value
80%

Energy (ME)
11.5 MJ/kg

Starch
25–35%

GROWING COSTS

€1618/ha*

Fresh Weight
€29.41/t
(@55/ha fresh weight yield.)

Dry Matter
€0.09c/kg

*as per Teagasc Crops Cost and Returns 2021

RESOLUTE

Open Sowing / Late maturity

New open sown maize which is a top performer in Irish trials.

Resolute has delivered massive yields on farm with the ideal balance between desired starch and dry matter.

Proven with farmers who moved from covered to open maize in 2021.

SEVERUS

Open Sowing / Early Maturity

This is Irelands most popular open sown maize and for good reason!

Excellent early vigour, super starch and high ME.

Consistent performance on farm looking for an early maturing variety.

LG 30.211

Covered Sowing / Late Maturity

LG 30 211 delivers consistency, the biggest risk associated with maize.

For a crop so heavily influenced by weather in Ireland, LG 30 211 represents a stable variety that farmers can rely on.

Proven in animal feeding trials to give 0.5ltr more milk, per cow, per day.

KONFLUENS

Covered Sowing / Medium maturing

New and in Demand! Konfluens is a big yielding high quality hybrid.

Konfluens has a very high yield potential, combined with good starch and dry matter yield.

Konfluens has performed exceptionally well on farm yet again and is fast becoming a farmer favourite.

MAIZE RL OPEN LIST

	YIELD OF DRY MATTER (T/HA)	DRY MATTER CONTENT (%)	STARCH CONTENT (%)
Controls*	15.5t/ha	35.4%	23.3%
SEVERUS (PR-1)	102	104	114
KROFT (R)	92	113	121
ACTIVATE (PR-1)	96	120	117
AMBITION (R)	105	106	113
ATRIUM (R)	101	90	105
BEACON (R)	99	99	108
BEETHOVEN (R)	104	94	88

Source: DAFM 2015 3 year average 2012 to 2014* The Control varieties were Beethoven, Beacon and Destiny in 2013 trials and Beethoven and Beacon in 2014 trials.

RECOMMENDED LIST OF COVERED FORAGE MAIZE 2022

	YIELD OF DRY MATTER (T/HA)	STARCH CONTENT (%)	ME (MJ/KG)
Controls*	19.5t/ha	23.1%	–
AMBITION (R)	87	121	11.3
KONFLUENS (R)	106	100	11.0
LG31235 (R)	100	97	11.2
P8200 (R)	107	99	10.7
P8201 (R)	118	103	11.3
SPYCI CS (R)	94	107	11.1
SY FEEDITOP (R)	93	106	11.0

DAFM trials carried out in the period 2019 to 2021 (3 year average).
* The Control varieties were Award, LG30211 & LG31235 in 2019, LG30211, LG31235, P8200 & Spyci CS in 2020 and LG31235, P8200 & Spyci CS in 2021.

STUBBLE MANAGEMENT AND CROPPING OPTIONS

	Prevent run off	Build organic matter	Retention of soil nutrients	Crop output	Timing
Humbolt forage rye	✓	✓	✓	✓	Sept-Oct
Westerwolds ryegrass	✓	✓	✓	✓	Sept-Oct
Undersowing grass	✓	✓	✓	✓	June-July
Chisel ploughing	✓	✗	✗	✗	Sept-Nov

WHY GROW FODDER BEET?

- Huge yields
- Ideal break crop for cereals
- High energy feed
- Clamp and store over winter
- Improved milk yields
- Palatable and nutritious
- Can be grazed in situ for outwintering systems

Fodder beet is grown as a main root crop, which requires similar husbandry to sugar beet. Beet is a superb home grown forage, that can produce substantial yields of high-quality fodder and is an excellent supplement to grass silage.

The roots are very palatable to stock and have superb feed quality. Specialist harvesting equipment is required to lift the roots and storage is required unless they are strip grazed in situ. Medium dry matter varieties tend to have a higher percentage of root above ground and can be lifted with a top lifter and therefore have a relatively low dirt tare. These highly palatable roots can be fed whole to stock.

SOIL TYPE/SITE SELECTION:

A crop of fodder beet can thrive on a wide range of soils, but a light to medium, free draining field is ideal. A soil pH of 7 is the target and good accessibility is vital for heavy harvesting machinery.

SEEDBED & SOWING METHODS:

Aim for firm, fine tilth with pre-Christmas ploughing. Keep moisture loss to a minimum in the spring. Monogerm seed has eliminated the need for labour intensive singling. However, allow for some field losses if seedbed conditions are poor. As a general guide, soil temperatures need to be at least 5°C before sowing. Early April is a typical drilling date in the south. Sowing earlier in cold conditions can lead to bolting. Delayed drilling leads to yield losses. Ensure that the seed is drilled to a depth of 2.5/3cm - use the deeper depth for dry seedbeds. A precision drill is essential.

FERTILISER:

This is a demanding crop in terms of nutrients. All the compound fertiliser is best applied before sowing. Nitrogen is generally applied in June when the plant is well established and able to use it up quickly. It is advised to use sulphur with your nitrogen application. The use of farmyard manure and slurry can be beneficial, as it can help if your soil indexes need attention. Trace elements (especially boron and manganese) are very important when growing beet.

WEEDS, DISEASES & PEST CONTROL:

Some farmers may be prepared to take on inter-row cultivations, but good herbicide control is possible to control weeds. It is vitally important to control weeds as their presence can severely reduce yields. Weed beets are very undesirable and every effort must be made to eliminate them. An application of fungicide in July can keep the leaves in much better condition to enhance a longer harvest window and can add extra yield by keeping leaves greener for longer. Our seed is treated with fungicide to provide extra potential during establishment. The crop can be attacked by many pests, including slugs, leather jackets and wireworms.

HARVESTING:

Although the crop continues to put on yield into the autumn, this must be balanced against the potential problems associated with a late harvest. Some farmers have their own lifting equipment, while others will use a contractor. Machines can be divided into 'leaf' or 'root lifters' – whichever is used, the tops must be removed down to the base of the leaf petioles. Keep soil contamination to a minimum.

ROOT STORAGE:

A pre-cleaner is recommended to remove soil contamination. Clamps should be checked regularly for signs of any hot spots. The high DM varieties tend to store better on a long-term basis and are less prone to damage.

FEEDING:

Fodder beet may be fed chopped or whole. Chopped beet should provide a better liveweight gain in beef animals. Feeding the roots at ground level can reduce the risk of choking. The roots have a high energy but low protein content and make a good substitute for grain in rations for dairy, beef and sheep. Crops can also be strip-grazed in outwintering systems.

SOWING INFORMATION

Sowing Period
Late March

Precision Drill
100-110,000 seeds/ha

Soil Temperature
+5°C

YIELD & FEED QUALITY

Average Dry Matter Yield
18 t/ha

Average Fresh Yield
91t/ha (ref Rathvilly & Wexford)

Dry Matter
21%

Crude Protein
9%

Digestibility Value
80%

Energy (ME)
11 MJ/kg

GROWING COSTS

€1891/ha*

Fresh Weight
€15.25/t*
(@124t/ha fresh weight yield)

Dry Matter
€0.15c/kg*

*as per Teagasc Crops Cost and Returns 2021

GAHAN

Lift & Pit

This is a next generation sugar beet with high dry matter content and very high yields.

This clean beet has proven very popular countrywide with both contractors & farmers, and it has also proven its ability to drive improvements in animal performance

DELICANTE

Lift & Pit

A new variety that is proving to have the best fresh weight yield for a white fodder beet.

Fitting in well with both growers and buyers, as an early pulling beet with huge yield potential.

This white fodder beet is proving very promising in terms of yield and also has a high dry matter content.

BANGOR

Lift & Pit

Fast becoming one of Ireland's most popular beet varieties, Bangor has developed a strong following over the last three years.

Bangor delivers the best fresh yield without compromising on dry matter yield.

Bangor is 65% above ground, easy to harvest and has a smooth, clean root.

BLAZE

Graze / Lift & Pit

This red beet offers colossel fresh ton yields to farmers.

it is a very clean variety as it sits 60% above ground and is suitable for grazing in situ.

Blaze also works well for lifting & pitting.

TRIAL DATA

VARIETY	YEARS IN TRIAL	TYPE	COLOUR	MEAN FRESH YIELD/HA	REL. FRESH YIELD	MEAN DM %	REL. DM YIELD	DIRT SCORE	% ABOVE GROUND
Gahan	4	Sugar Beet	White	88.55	95%	24.20%	123%	5	25%
Yoda	4	Sugar Beet	White	85.83	92%	22.84%	116%	6	25%
Acker	5	Sugar Beet	White	84.2	91%	22.00%	112%	6	25%
Bangor	6	High DM Fodder Beet	Yellow	101.1	109%	18.06%	92%	2	65%
Delicante (New for 2022)	3	High DM Fodder Beet	White	99.3	107%	17.66%	90%	4	60%
Magnum ©	6	High DM Fodder Beet	White	95.5	103%	19.82%	101%	4	50%
Enermax ©	6	High DM Fodder Beet	White	90.4	97%	19.41%	99%	5	45%
Brick	3	High DM Fodder Beet	White	83.8	90%	22.57%	115%	5	30%
Blizzerd	5	High DM Fodder Beet	White	87.4	94%	20.56%	105%	6	35%
Blaze	4	Low DM Fodder Beet	Red	110	118%	16.95%	86%	3	60%
Feldherr	4	Low DM Fodder Beet	Orange	105.7	114%	14.33%	73%	2	70%

Source: Beet trials conducted in Carlow from 2016 – 2019 & Wexford 2020 & 2021
*Control is an average of Magnum and Enermax. The results are an average of the last 3 year trials.

WHY GROW FORAGE RAPE?

- Fast growing, leafy catch crop
- High protein content
- Longer lasting than stubble turnips
- Winter hardy hybrids available
- Flexible sowing period
- Finishing lambs
- Sheep, dairy or beef production

Forage Rape has the advantage of being a very fast-growing crop suitable for grazing by sheep or cattle. It is an ideal catch crop for boosting midsummer forage production for livestock farmers when planted in the spring, it is also suitable for fattening lambs and overwintering cattle in the autumn/winter.

WHY GROW FORAGE RAPE?

Forage rape extends the grazing season in the autumn and is superb for growing livestock. It is better to strip graze to avoid excessive wastage. Forage Rape can be mixed with stubble turnips and kale to combine the many benefits of these crops.

FEEDING:

Forage rape crops can be ready to utilise between 12-14 weeks from sowing. They are ideally used for finishing lambs or used to feed in-lamb ewes and can be grazed by cattle. As with any brassica crop, feeding should be introduced gradually over a 2-week period. Ideally there should be an area of grassland to allow stock to 'run back' onto, along with access to hay or straw and water. Forage rape is also the ideal companion to stubble turnips. The two sown together can be fed successfully with the forage rape, adding extra crude protein content and winter hardiness.

AS A COMPANION CROP:

Many farmers have successfully mixed approximately 250-500g of forage rape seed into their grass seed mixtures, allowing them to be grazed whilst the young grass seedlings continue to establish underneath. Forage rape can also be mixed with Italian ryegrass to create a cleaner autumn keep.

TRIAL DATA

VARIETY	FRESH YIELD t/ha	RELATIVE FRESH YIELD %	DM CONTENT %	DISEASE RESISTANCE 9 = BEST MILDEW	ALTEMARIA
INTERVAL	38.69	125	12.3	9	8
HOBSON	31.41	101	13.9	8	8
RAMPART	32.30	104	12.7	8	8
EMERALD ©	30.98	100	13.2	6	8
REDSTART	29.48	95	13.1	7	7
HUNGRYGAP	24.75	80	13.6	9	8

Data Source: Limagrain UK trials 1993-2021© Control * Emerald
Note: Not all varieties trialled every year, not all scores taken every year

SOWING INFORMATION

Sowing Period
May to August

Direct Drill
6kg/ha

Broadcast
8kg/ha

YIELD & FEED QUALITY

Average Dry Matter Yield
3.5-4.5t/ha

Average Fresh Yield
25-35t/ha

Dry Matter
12-13%

Crude Protein
19-20%

Digestibility Value
65%DMD

Energy (ME)
11 MJ/kg

GROWING COSTS

€673/ha*

Fresh Weight
€11.26/t
(@42t/ha fresh weight yield)

Dry Matter
€0.14c/kg

*as per Teagasc "Crops cost and returns 2021"

INTERVAL

When it comes to filling the gap in your winter feed programme, Interval rape/kale hybrid can really boost your profits.

Interval's exceptional yield potential, disease resistance and palatability, is ideal for finishing lambs or dairy cows.

Interval is very fast to establish with some crops ready to utilise within 10-12 weeks of sowing.

HOBSON

Hobson is the variety for finishing lambs. It has excellent resistance to powdery mildew.

It can be sown in either spring, early summer or after cereals. This offers excellent potential for extra tonnes of valuable dry matter, when required in these critical periods.

Hobson is very platable and digestible.

RAMPART

A new generation of forage rape, Rampart has been bred with feed quality enhancements.

This along with its high yield potential and winter hardiness will enable growers to find extra flexibility when feeding the crop.

Rampart is suitable for both dairy and sheep production and is ready to feed 12-14 weeks after sowing

WHY GROW KALE?

- Higher yields than rape/kale hybrids
- Outwintering systems
- Excellent crude protein content
- High yields and economical to grow
- Flexible utilisation period

Kale is a brassica traditionally grown for grazing by cattle in the autumn and winter and is very useful to extend the grazing season.

It can also be cut and fed to stock 'in house' or as an alternative can be ensiled as big bale kaleage. This crop is best strip grazed to avoid excessive wastage and ensure both leaf and stem are eaten. It is very adaptable and can grow on most sites throughout Ireland. Kale can also be used as game cover.

FEEDING:
The traditional method is to utilise the crop fresh, either by strip or zero grazing. Strip graze behind an electric fence which is best moved once or twice a day. Allow a space of 3 meters per cow and an area of grass for the animals to run-back on. Zero grazing – cutting the crop with a forage harvester will help secure the maximum use of this excellent green feed with minimal waste. The kale can then be fed from a forage box or from behind a barrier. Experts suggest that kale should provide no more than 30-35% of the daily dry matter intake for dairy cows. Kale has been used very successfully in outwintering systems.

SOWING INFORMATION

Sowing Period
April to June

Direct Drill
5kg/ha

Broadcast
7.5kg/ha

Soil Temperature
+10^{0}C

YIELD & FEED QUALITY

Average Dry Matter Yield
8-10t/ha

Average Fresh Yield
70-80t/ha

Dry Matter
14-16%

Crude Protein
10-11%

Digestibility Value
80%DMD

Energy (ME)
12.5 MJ/kg

GROWING COSTS

€668/ha*

Fresh Weight
€9.54/t
(@70t**/ha fresh weight yield)

Dry Matter
€0.11c/kg

*as per Teagasc "Crops cost and returns 2021"
**as per Limagrain UK trials 1993 – 2017

BOMBARDIER (NEW)

Clubroot Tolerant

New high yielding clubroot tolerant variety suitable for dairy and beef cattle.

Bombardier has enhanced quality and high DM yields

COLEOR

Short Grazer

Coleor boasts the highest leaf to stem ratio in the last set of DAFM trials.

Combining high yields, disease resistance and being a short grazer, makes Coleor a great option for dairy and beef cattle or sheep.

It is very distinct with its purple pigmentation.

CALEDONIAN

Clubroot tolerant

The first Kale bred for club root tolerance.

Caledonian is recognised for its excellent germination and vigour.

Known for its good utilisation for both beef and dairy cattle. As a tall kale it is also very suitable for game crops.

TRIAL DATA

VARIETY	TYPE	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	DM CONTENT %	LEAF: STEM RATIO HIGH = LEAFY	HEIGHT CM	DIGESTIBILITY VALUE %	WINTER HARDINESS 9 = BEST
100% - Tonnes/Ha		9.7	70.2					
CALEDONIAN CR	Marrow Stem	122	123	13.8	0.6	105	71.2	5
BOMBARDIER CR New	Marrow Stem	118	121	13.5	0.5	102	72.2	5
GRAMPIAN CR	Marrow Stem	115	113	14.1	0.6	101	73.7	4
PINFOLD ©	Intermediate	112	100	15.6	1.0	101	71.1	6
BITTERN	Intermediate	112	101	15.5	0.8	94	74.0	*
VOLTAGE	Intermediate	104	93	15.7	0.9	97	70.6	5
KEEPER	Short	104	92	15.7	1.2	85	74.2	5
MARIS KESTREL	Short	100	100	13.9	1.1	74	75.6	3
THOUSAND HEAD	Old standard	100	83	16.6	1.2	99	70.1	*

Data Source: Limagrain UK trials 1993-2017 © Control* No data available Winter Hardiness Scored January 2011 only **Note: Not all varieties trialled every year, not all scores taken every year**

WHY GROW SWEDE?

- Excellent high energy winter feed
- Low production costs
- Finishing lambs or winter maintenance
- High dry matter yields
- Cost effective (even where yields are only moderate)

Swedes are a full season root crop which are mainly fed in situ but can also be lifted and stored in a clamp. They are an excellent high energy winter feed.

FEEDING:
Most fodder swede crops are grazed in situ. However, it is important to remember to select a variety (or varieties) to cover the period you wish to graze. It is advisable to use an electric fence to reduce wastage. Forage swedes can be lifted, and the roots stored in a clamp. The roots need to be clean and free from soil. Try not to store any damaged roots as this will encourage fungal diseases.

SOWING INFORMATION

Sowing Period
April to June

Direct Drill
3kg/ha

Broadcast
5kg/ha

Soil Temperature
+10^{0}C

YIELD & FEED QUALITY

Average Dry Matter Yield
8-10t/ha

Average Fresh Yield
70-80t/ha

Dry Matter
10-12%

Crude Protein
10-11%

Digestibility Value
80%DMD

Energy (ME)
12.5 MJ/kg

GROWING COSTS

€688/ha*

Fresh Weight
€9.30/t
(@74t/ha fresh weight yield)

Dry Matter
€0.14c/kg

*as per Teagasc "Crops cost and returns 2018"

LOMOND

High, fresh and dry yields make this variety ideal for finishing lambs post-Christmas.

Lomond has both powdery mildew and clubroot resistance and trials show it suffers less from rots and splits in its root.

INVITATION

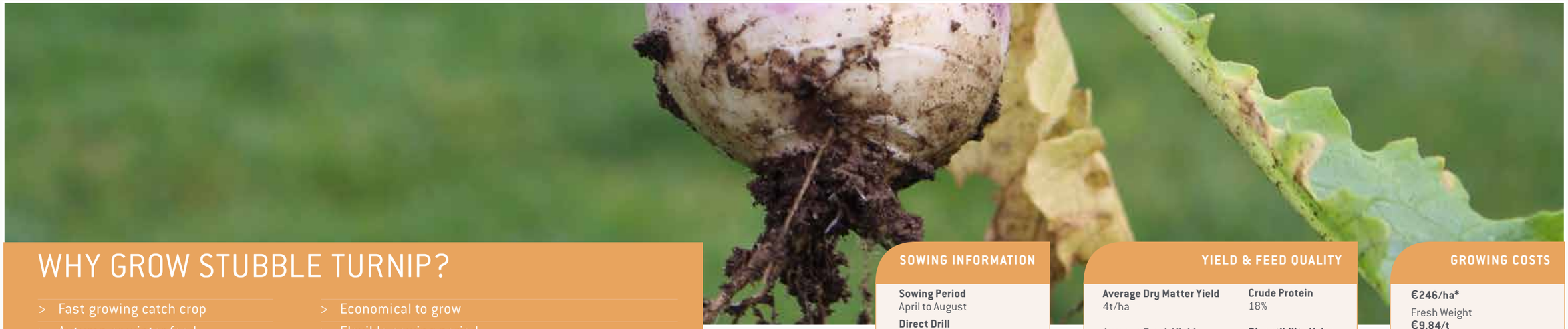
Invitation is a very uniform, clubroot resistant variety, ideal for utilisation after Christmas.

It also has excellent resistance to powdery mildew and will produce large leaves for extra grazing potential. Invitation is winter hardy and is suitable for sheep or cattle.

TRIAL DATA

VARIETY	RELATIVE DM YIELD	RELATIVE FRESH YIELD	DM CONTENT %	MILDEW RESISTANCE 9 = BEST	ROOT SHAPE 9 = BEST	NECK LENGTH HIGH SCORE = LONGER NECK
100% - Tonnes/Ha	9.78	89.6				
LOMOND	111	109	11.3	9	7	1.4
RUBY	107	102	11.7	7	5	2.0
INVITATION	106	94	12.6	8	6	3.5
BRORA	100	106	10.4	3	7	1.6
RUTA OTOFTE (C)	100	100	11.0	4	5	2.4
MAGRES	100	93	12.2	7	6	1.7
HELENOR	96	99	11.0	3	7	4.0
MARIAN	96	97	11.0	5	5	1.5

Data Source: Limagrain UK trials 1993-2017 c Control* No data available Winter HardinessScored January 2011 only **Note: Not all varieties trialled every year, not all scores taken every year**



WHY GROW STUBBLE TURNIP?

- Fast growing catch crop
- Autumn or winter feed
- Finishing lambs
- Summer buffer feed for dairy cows
- Economical to grow
- Flexible sowing period
- Helps reduce winter feed costs

Stubble Turnips are a fast-growing catch crop, popular with livestock farmers. They may be sown after first cut silage for summer grazing or after winter cereals for autumn usage.

FEEDING:
The stubble turnip crop is an attractive source of very palatable and easy to digest fodder. Both cattle and sheep should be introduced gradually to the crop and between grazing's, be able to run-back on grass or have access to grass silage. It is also advisable to have hay or straw on offer prior to each grazing, particularly in the case of dairy cows. It is a good idea to introduce animals to the crop gradually, allow stock about three weeks to fully adjust to stubble turnips.

Throughout the grazing period, adequate mineral supplements should be fed to all stock. Although the DM content of both the root and the leaf is low, the quality of this DM is very good.

SKYFALL

So, let us introduce to you Skyfall Bounce Back Brassica (BBB)

Skyfall is a leafy brassica ideally suited for grazing. The large strap leaves are soft and are very easily eaten by dairy, beef or sheep livestock. The leaves have the appearance of a stubble turnip leaf, whilst the root is more like forage rape - deeper, elongated and better able to penetrate the soil. With this deeper rooting system, Skyfall can regrow quickly and will tolerate dry soil conditions.Also comes with Start-up seed treatment, which improves vigour and makes a more even establishment.

- Drill from Mid May onwards for the best results
- Should be ready for grazing within 5 - 7 weeks.
- Yields - 9.55 tonnes of dry matter per hectare, over the 4 grazing periods.
- You can expect bounce back regrowth in approx. 4 - 6 weeks from your first grazing

SOWING INFORMATION

Sowing Period
April to August

Direct Drill
5kg/ha

Broadcast
7kg/ha

Soil Temperature
+10^{0}C

YIELD & FEED QUALITY

Average Dry Matter Yield
4t/ha

Average Fresh Yield
35-40t/ha

Dry Matter
8-10%

Crude Protein
18%

Digestibility Value
75-80%DMD

Energy (ME)
11 MJ/kg

GROWING COSTS

€246/ha*

Fresh Weight
€9.84/t
(@25t/ha fresh weight yield)

Dry Matter
€0.10c/kg

*as per Teagasc 'Crops Cost and Returns 2021'

(NEW) SKYFALL

Skyfall (BBB) can also be drilled after first cut silage.

It will produce a very leafy, highly palatable crop in a short period of time. The leafy forage should be grazed to a height of approx. 10 cm.

An application of 30-35 kg N per hectare will encourage faster growth and recovery

TYFON

Tyfon is ideally sown in the spring and utilised in the summer months when grass growth generally declines.

Tyfon should not be sown too early as it is susceptible to bolting. Tyfon's growth habit is very leafy with regrowth potential.

TRIAL DATA

VARIETY	TYPE	RELATIVE DM YIELD %	RELATIVE FRESH YIELD %	RELATIVE ROOT DM YIELD %	RELATIVE LEAF DM YIELD %	DISEASE RESISTANCE 9 = BEST MILDEW	ALTENARIA
100% - Tonnes/Ha		5.52	51.8				
SAMSON (TET)	Purple Tankard	103	108	119	83	5	6
DELILAH	White Tankard	100	101	118	77	8	7
BARKANT (C)	Purple Tankard	100	100	100	100	*	*
RONDO	Green Globe	94	88	96	91	8	7
DYNAMO	Purple Globe	88	89	97	75	5	8
WHITESTAR	White Globe	84	81	78	91	*	*
SKYFALL HYBRID	Leafy	87	70	42	141	6	7
TYFON	Leafy	79	75	57	105	3	7

Data Source: Limagrain UK trials 1993-2018 **(c)** Control **Tet:** Tetraploid * No data available Disease scores Dec 2017
Note: Not all varieties trialled every year, not all scores taken every year

WILD BIRD COVER

About 25% of common Irish farmland bird species are in serious decline. Birds like the greenfinch, yellowhammer, cuckoo and kestrel are becoming rarer and rarer in our countryside while the likes of the corn bunting have already disappeared completely. One very simple but effective measure all farmers can implement is to sow a headland or field-corner with a wild bird cover mixture.

Products
DLF offer the standard wild bird cover option of cereal and linseed which satisfies the minimum requirements of GLAS. In recent years we have been engaged with various gun clubs around the country and have extended our offering to widen the window of feed available to birds and flowers available for pollinators to forage while enhancing the appearance of the crop.

What is involved in the GLAS wild bird cover scheme?

- Establish wild bird cover before 31st May.
- Establish a one-year mix using approved cereals.
- Establish a two-year mix using approved cereals plus kale.
- Half-plot of cereal and half-plot of kale.
- Crops must remain in situ until March 15th the following year.

To encourage uptake of this simple measure it is included as part of the GLAS scheme and is worth €900/ha per year up to a maximum area of 3ha.

WILD BIRD COVER EXTEND

TRADITIONAL GAME COVER MIXTURES

NEW

7.5kg	Triticale
7.5kg	Linseed
5kg	Mustard
0.5kg	Phacelia

AVAILABLE IN 22 KG PACK (0.6 ACRES) PACKED TO ORDER, ALLOW 5-7 DAYS FOR DELIVERY

WILD BIRD MIX WITH PHACELIA & QUINOA

TRADITIONAL GAME COVER MIXTURES

NEW

15kg	Triticale
3kg	Linseed
0.25kg	Phacelia
0.25kg	Quinoa

AVAILABLE IN 18.5KG, PACKED TO ORDER, ALLOW 5-7 DAYS FOR DELIVERY

WILD BIRD MIX WITH MUSTARD & GOLD OF PLEASURE

TRADITIONAL GAME COVER MIXTURES

NEW

15kg	Triticale
1.5kg	Linseed
2.2kg	Mustard
0.30Kg	Gold of Pleasure

AVAILABLE IN 19KG, PACKED TO ORDER, ALLOW 5-7 DAYS FOR DELIVERY

WILD BIRD COVER STANDARD MIX

TRADITIONAL GAME COVER MIXTURES

NEW

(Also available with Triticale)

15kg	Oats
3kg	Linseed

AVAILABLE IN 18KG, AVAILABLE AS A STOCK ITEM SUITABLE FOR GLAS

Do something amazing – plant some wildflowers

Bumblebee Conservation Trust

Wildflower meadows are an important part of our countryside providing a diverse habitat for many species of birds, mammals and invertebrates. They also offer a rich and colourful display for us humans to enjoy. Our exciting range of wildflower mixtures have been designed to create attractive amenity spaces that act as an essential food source for a range of animals and invertebrates, especially pollenating insects. These versatile mixtures are ideal for bare patches around the farmyard, on banks along roadways and ditches or as a colourful buffer strip along streams or drains.

Sowing wildflowers adds colour to your life and offers food for pollinators

ANNUALS MANAGEMENT

Annual wildflowers will grow best in medium/high fertility soils

Remove/destroy existing vegetation

Work soil to create a fine tilth

Sow spring/early summer

Roll in

Flowers will appear from 6-8 weeks onwards

CARNIVAL

BRIGHT AND BOLD ANNUAL

FEATURES

- With 17 flower species it is designed to create a robust and attractive display in any park, public open space or golf course.
- This 100% flower mixture will provide a dazzling annual display.
- Quick to establish Carnival has a long flowering period from 8 weeks after sowing up until the first frosts.

Sowing Rate 3 - 5g/m²

AVAILABLE IN 500G PACK = 100M²

FLORAL CARPET

HIGH IMPACT LOW-GROW ANNUALS

FEATURES

- Low-Growing seasonal annuals mixture designed to create a robust and attractive display in areas where final growing height is of paramount importance.
- This is particularly relevant when sowing near visibility splays and sight lines on road junctions. This 100% dwarf flower mixture will provide rich blooms throughout the season, perfect for enhancing any street scene.

Sowing Rate 3 - 5g/m²

AVAILABLE IN 500G PACK = 100M²

BIODIVERSITY

HIGH IMPACT PERENNIALS

FEATURES

- Seasonal Perennials mixture containing 100% Flowers, the mixture consists of 90% perennial flower species, and 10% annual species that give colour the first year.
- The composition of species is wide and ensures a good adaptability to different growing conditions.
- The colour scheme of the mix changes during the season according to which species are in bloom at the time.

Sowing Rate 3 - 5g/m²

AVAILABLE IN 500G PACK = 100M²

MANAGEMENT PERENNIALS

Sowing

Sowing can take place throughout most of the year, providing a good tilth can be prepared, however the months of March/April and August/ early September are generally the most suitable.

a. Mix seed – regularly mix to ensure even species distribution

b. Drill/broadcast – calibrate sowing device

c. Sand – bulk up small seeding rates with 4 parts silica sand to one part seed by weight

d. Raking/harrowing – mix seed into soil (depth approx 0.5 cm)

e. Ring Roller – use Cambridge roller to firm seed bed

WILD FLOWER MAINTENANCE FIRST YEAR

The requirement in the first year is to control weeds and reduce competition from grasses. Cut the sward to a height of 5cm every two months or when the sward reaches 15cm. Remove all cut material to avoid smothering the sward. Where persistent weeds are a problem, spot treat with herbicide or dig-out.

FUTURE MAINTENANCE

The sward should be well established after the first 12 months and contain a diverse range of species. Cut to 7.5cm during March/April and remove cuttings. The second cut should take place at the end of the flowering season during August/September (the flowering period may alter slightly according to climatic conditions) Remove all cuttings or use as hay. The site may require further cuts in the autumn period to remove untidy growth in an extended growing season.

BUTTERFLY AND BEE

PERENNIAL

FEATURES

- 50% fine non-aggressive grasses
- 50% Flowering species
- Grasses provide the Habitat
- Flowers provide the Nectar
- Ideal for banks/wasteground

Sowing rate 1.6g /m²

AVAILABLE IN 1KG PACKS
(covers 600 mt²)

WF1 - FLOWERING MARGIN MIX

PERENNIAL

FEATURES

- 100% flowering species
- Ideal for field margins or meadows
- Can be wrapped into bales or hay after flowering
- Economical option with a huge environmental return

Sowing rate 1.6g /m²

AVAILABLE IN 1KG PACKS
(covers 600 mt²)

PRO MASTER 79

PLAYING FIELD

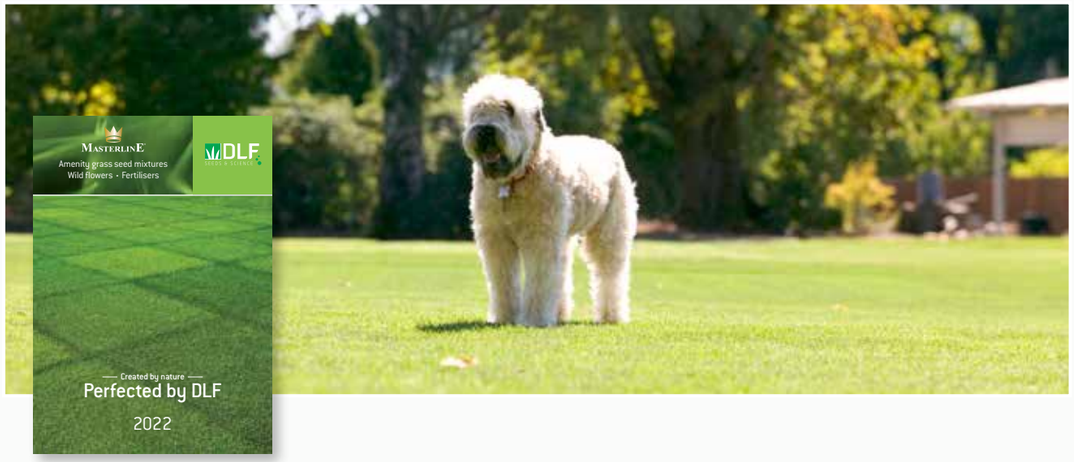
FEATURES

- The introduction of New Double 4Turf™ Tetraploid ryegrass introduces the latest World cup genetics from DLF, delivering fast establishment, improved colour, drought tolerance, nitrogen efficiency and incredible disease resistance!.
- A good quality sports field renovation mixture.
- Contains only STRI UK listed cultivars. Delivers great results and value.

50%	Double	Perennial Ryegrass
20%	Ponderosa	Perennial Ryegrass
30%	Esquire	Perennial Ryegrass

Sowing rate 35 - 75g/m2

AVAILABLE IN 20KG PACKS



AMENITY MIXTURES

A selection of mixtures from the DLF-TRIFOLIUM Masterline Range. To see the full range, see Masterline Amenity grass seed mixture brochures

PRO MASTER 51

HARDWEARING LAWN (WITH RYEGRASS)

FEATURES

- A hard-wearing mixture that will establish rapidly.
- Ideal for general purpose landscaping & lawns. Contains only BSPB UK listed cultivars.

50%	Maxima	Creeping Red Fescue
40%	Esquire	Perennial Ryegrass
10%	Double	Perennial Ryegrass

Sowing rate 35 - 50g/m2

AVAILABLE IN 10KG & 20KG PACKS

PRO MASTER 81

SPORTS FIELD RENOVATION

FEATURES

- Incorporating top rated Perennial Ryegrass giving unrivalled sward density and wear tolerance.
- The mixture will establish rapidly providing excellent all year-round colour. A mixture suitable for new builds and the renovation of top performance winter sports pitches.

20%	Tetragame	Perennial Ryegrass
30%	Eurodiamond	Perennial Ryegrass
20%	Gildara	Perennial Ryegrass
30%	Europitch	Perennial Ryegrass

Sowing rate 35 - 75g/m2

AVAILABLE IN 20KG PACKS

If you have any questions our experts are here to help, see page 2 for contact details

MORE MILK & MEAT

More Milk With DLF is the concept whereby DLF focuses on the feeding value of grass. The development of the DLF brand is aimed at launching new varieties and mixtures for livestock farmers. DLF has become the most widespread forage grass brand in Europe and is being used in more than 25 countries.

To showcase this in the Irish market we're partnering with six dairy farmers to provide top class varieties and products, along with sharing advice, expertise and knowledge. Ultimately, we will turn our products into profit for our partner farmers, through an increased output of milk.

AVAILABLE FROM:

DLF SEEDS & SCIENCE

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