



Sinclair M^cgill

IRELAND

GRASS AND FORAGE CROPS HANDBOOK



Now with additional
LGAN Mixtures



INTRODUCTION

Sinclair McGill has long been associated with quality grass mixtures and is a firm favourite with many farmers up and down the country. Our continued focus on advancing our mixtures through research and development, in addition to strategic collaborations with global plant breeders, is a testament to our commitment to providing customers with the very best grass mixtures.

With digestibility and economical animal performance in mind, we have formulated mixtures such as Advance, Turbo and Prosper; all of which comfortably exceed the 4,000 litres "milk production from grass" benchmark.

Castleherb, our newest mixture which contains legumes, herbs and grasses, has been developed to provide the most efficient animal nutrition, but also deliver environmental benefits and contribute to your livestock's wellbeing. Described as Herbal Leys or a Multi-Species mixture, it can out-yield high N input grass systems, improve the organic content of the soil and draw up minerals and trace elements essential for animal health.

Improving grassland will be a priority for many farms this year, and whatever your requirement is for your reseeding project, we are sure you will find something in our comprehensive product range that is perfect for your farm.

If you have any further questions, please feel free to contact me on jenright@dlfseeds.ie or call 086 8290765.

John Enright
Sinclair McGill Business Manager



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SEED QUALITY



LESS WEED SEEDS AND MORE LIVE SEEDS IN EVERY BAG!

When it comes to grass seed quality, our no-compromise approach is simple - we aim to deliver less weed seeds and more live seeds than any other company. By specifying the **Sinclair McGill** brand, you really can make a significant difference to the performance of your new ley mixture.

GERMINATION STANDARDS

Species	EU	HVS	SMG Target
Perennial Ryegrass	80%	80%	90%
Italian Ryegrass	75%	75%	85%
Hybrid Ryegrass	75%	75%	85%

PURITY STANDARDS

Species	EU	HVS	Sinclair McGill
Perennial Ryegrass	96%	98%	98% +
Italian Ryegrass	96%	98%	98% +
Hybrid Ryegrass	96%	98%	98% +

HVS= Higher Voluntary Standard

THE CORNERSTONE OF A SUCCESSFUL LEY IS A TOP QUALITY SEED MIXTURE FROM THE SINCLAIR MCGILL RANGE

POSSIBLE WEED CONTENT IN AN OFFICIAL SAMPLE OF PERENNIAL RYEGRASS (60g of seed)

Weed	EU	HVS	Sinclair McGill
Docks*	5	5	Less than 1
Couch*	120	10	Less than 1
Blackgrass*	100	10	Less than 1

* Note: There is no EU standard or test for blackgrass or couch in 60gm so the figures quoted are an estimate based on our laboratory experience.

POSSIBLE INERT MATERIAL IN 10 ACRES OF PERENNIAL RYEGRASS

Inert Material	EU	HVS	Sinclair McGill
Dead Seed	30 kilos	30 kilos	7 kilos*
Impurities	6 kilos	3 kilos	1 kilos*

* Based on the laboratory analysis of our own contract crops and 10 acres being equivalent to 150 kilos of seed.



HEADSTART® GOLD

HEADSTART® GOLD

HEADSTART® was originally developed in response to pleas by groundsmen to give them something that would speed up the renovation of winter sports pitches in the short “window” between the end of one season and the resumption of play and training.

HEADSTART® proved to be so successful that it is now used by about 60% of football clubs in the English Premiership as well as rugby clubs and famous pitches throughout Europe. Growers of cultivated turf also took to it finding it not only improved cover, but rooting as well, enabling both faster establishment and earlier harvesting of the turf.

We recognised that the many benefits of HEADSTART® translated to forage grass as well and in difficult seasons farmers have often found that the seed applied with HEADSTART® established well, when untreated seed has struggled.

The introduction of HEADSTART® GOLD retains all the advantages of the original formulation but adds a scientifically balanced package of minerals and trace elements essential for the successful establishment of seedlings; further insurance that your grass seed gets off to a flying start.

Biostimulants

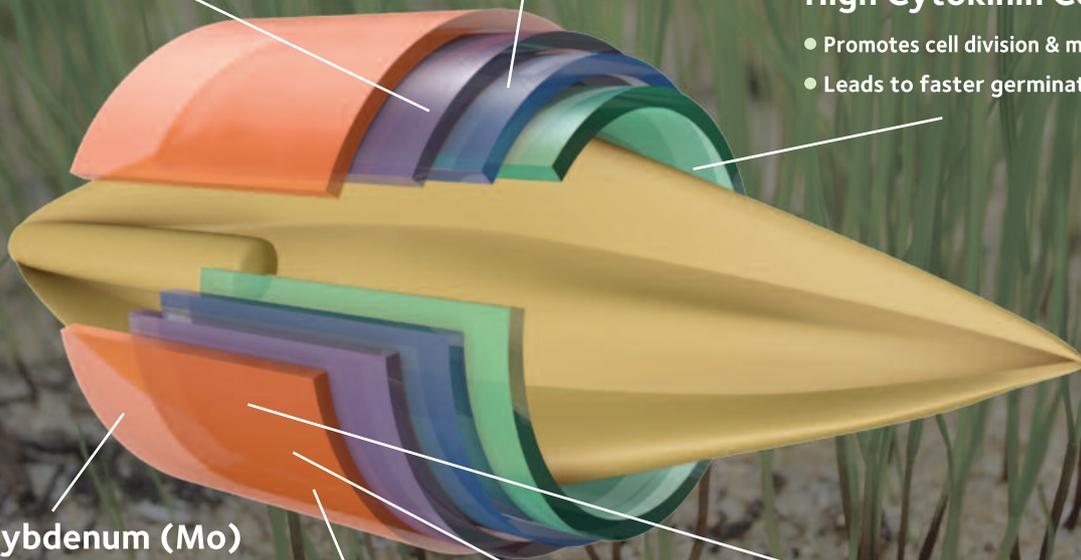
- Promotes the supply of nutrients
- Ensures efficient use of nutrients
- Prevents deficiency of trace elements

Enzyme Activity

- Stimulates growth of roots/shoots
- A catalyst for photosynthesis

Seaweed Extract with High Cytokinin Content

- Promotes cell division & metabolism
- Leads to faster germination



Molybdenum (Mo)

- Essential trace element for initial growth
- Required for enzymes that are involved with protein formation

Copper (Cu)

- Important trace element for re-growth
- Part of enzymes in photosynthesis/metabolism

Sulphur (S)

- Basic building block for production of proteins, hormones & vitamins

Phosphorus (P)

- Essential for photosynthesis and synthesis oils, sugars, starches and enzymes
- Ensures rapid rooting
- Enhances stress resistance

HOW TO ESTABLISH A NEW GRASS LEY

- Lime the field if necessary so that seed is sown into soil with a pH as close to 6.5 as possible. Try to maintain a stable pH in the future.
- Check the drainage status as undesirable weed grasses will invade waterlogged fields. Consider sward lifters, mole ploughs and other means of relieving compaction if you discover that this is a problem. Digging a few deep holes in the field to check soil structure is a worthwhile investment of your time and effort.
- Analyse the soil and correct any obvious nutrient imbalances.
- Prepare a fine, firm and weed free seedbed.
- Timing of the sowing is important. Spring sowing from March to mid-May and from July until late September – depending on where you are located and the altitude. Mixtures with clovers are best sown when soil temperatures are higher; from April through May and July and August. Clovers require soil temperatures of at least 5-10°C to germinate and higher temperatures to achieve satisfactory growth.
- Ensure the seedbed is sufficiently moist and if possible avoid mid-summer seeding in drought-prone years.
- Ring roll prior to seeding to close any gaps and again after sowing to ensure close contact between the seed and the soil.
- Broadcast or cross drill and then roll or very lightly harrow. Ensure that the seed is placed no deeper than 6mm.
- If you use a cover crop make sure that it is suitable to establish a grass ley and that the seed rate is not too heavy as the grass may get crowded out.
- Watch for any signs of pest attack and consult your agronomist if you see anything. (See separate section on Integrated Pest Management IPM).
- Specify a Sinclair McGill mixture treated with **HEADSTART® GOLD** to improve establishment, increase plant stand and get your new ley off to a vigorous start.



CLOVER BLEND TECHNOLOGY

Sinclair McGill pioneered the development of clover blends in the 1980s in association with IBERS (Institute of Biological, Environmental and Rural Sciences). Certain principles were established that are still valid today but the varieties we now use are far superior.

White Clover Blends

CloverPlus®

This blend is for inclusion in ley mixtures designed for beef and dairy systems. It includes varieties with a range of leaf sizes that can adapt to grazing with cattle and cutting for silage.

Cheviot®

A specialist blend primarily made up of very small leaved varieties with excellent persistence to stand up to the rigours of intensive and close grazing by sheep. As sheep are selective grazers it also includes some clover with large leaves which act as a “decoy” during the establishment phase.

Tweed®

A highly adaptable and persistent blend, for inclusion in long term mixtures. The range of leaf sizes enables Tweed to adapt to suit all classes of livestock and most management systems.

CloverPlus® Pelleted White Clover Blend

- Ideal for introducing clover into existing grass swards.
- Pellet increases the size and weight of the seed enabling easier drill adjustment and more accurate distribution.
- Treated with **HEADSTART® GOLD** a biological treatment proven to speed up germination and improve establishment.
- Pellet improves seed flow for more even distribution when broadcast.
- Suitable for broadcasting, harrows with a seed box and slot seeding.

FORAGE QUALITY & ANIMAL NUTRITION

What is LG Animal Nutrition?

The LG Animal Nutrition accreditation is used to denote varieties and mixtures that deliver superior nutritional value, whilst maintaining excellent agronomic qualities and yield. Independent trials conducted by leading scientific institutes have shown clear increases in animal performance using LG Animal Nutrition products.



More Efficient Production

Feeding grass with improved quality allows producers to maximise efficiency and reduce production costs. Animal feed, whether in the form of bought in concentrates or home grown forage, makes up a significant proportion of production costs. Increasing the nutritional quality of this feed helps increase milk and meat production.

Sinclair McGill has always been at the forefront of bringing the benefits of mixtures with enhanced nutritional benefits to our customers, so we were pleased to be the first to introduce LG Animal Nutrition (LGAN) accredited mixtures to the market.

LGAN offers a 'holistic' approach to mixture formulation; balancing the important attributes of WSC (sugars) with digestible fibre (dNDF), balanced protein, energy and D value. In doing so we have also ensured the mixtures will exceed expectations for yield, ground cover, winter hardiness, disease resistance and most important; palatability.

As explained in previous editions of this handbook, the use of NIRS (Near Infrared Spectroscopy) has enabled us to evaluate the nutritional attributes of a huge number of varieties. Having this knowledge at our fingertips enables us to make much more informed choices when formulating grass and clover mixtures. Although many mixtures will not achieve LGAN accreditation due to other agronomic attributes taking precedence, such as persistency in long term leys, it does ensure that we can make vital tweaks to improve the nutritional quality of all of our mixtures.

Proof of Concept

Work carried out at the Schothorst Research Institute in the Netherlands in 2013, compared a group of cows fed a diet including a high quality LGAN grass mixture, with a second group fed a control dual purpose mixture. The group of animals being fed the LGAN mixture produced **an additional 1.4 litres of milk per day**. This increase in production is worth **an additional €126** a year, per cow herd, at a milk price of 30 cent per litre.

- 5% Higher Feed Efficiency
- 5% More Milk
- An Extra €126 Per Cow

SCHOTHORST INSTITUTE ANIMAL FEEDING TRIALS 2013	CONTROL DUAL PURPOSE MIXTURE	 DUAL PURPOSE MIXTURE
Feed Efficiency		
Milk production per kg fed	1.24	1.30
Milk Yield		
Litres per cow per day	28.5 litres	29.9 litres
Extra Milk Per Cow Per Year Assuming 300 milking days	-	+420 litres
Extra Profit Per Cow Per Year Assuming €0.30 cent per litre	-	€126

FORAGE QUALITY TRIALS

Not only do we measure the forage quality of individual grass varieties, but we also test our mixtures to ensure that the balance of characteristics we aim for when formulating a mixture are carried through to in field performance.

The table (below) shows the average difference in feed quality between Sinclair McGill Turbo and a "Low Quality" mix formulated using recommended varieties shown to be of poor nutritional value. At first glance the differences may appear minor but a small change in quality can have a big impact. An increase of 1% dNDF for example has been shown to increase milk yield by 0.25kg per day and intakes by 0.17kg per day (Oba and Allen, 1999).

	LOW QUALITY MIX	TURBO	DIFFERENCE
ME	13.78	13.91	0.13
Protein	16.14	16.89	0.75
Sugar	20.94	21.15	0.21
DNDF	81.49	82.71	1.22

Source: Limagrain Trials 2014-2016

Waterford Mixture Trials

In 2016 and again in 2017, grass mixture trials were sown at DLF's trial site in Faithlegg, Waterford.

LGAN grass mixtures will be tested at this site to determine their forage quality under conservation and simulated grazing. They are then compared with a control mixture consisting of varieties selected from the Recommended List, shown to be of poor nutritional value in Limagrain forage quality trials.

In grass mixtures trials from NIAB TAG in Dartington, UK, results clearly show that there can be a huge difference between the energy value of different grass mixtures, and that using recommended varieties is not a guarantee of forage quality.

The LGAN mixtures in the Dartington trial produced significantly more energy per year than the low feed value control mix. **An additional 23,518 MJ/Ha is equivalent to an additional 4,437 litres of milk worth €1300/Ha**, at a milk price of 30 cent per litre.

- 17% Higher Energy Yield
- More Sugar and Digestible Fibre
- An Extra €1300 per Ha

2014/15 MEAN RESULTS	LOW FEED VALUE CONTROL	 TURBO	TURBO BENEFIT COMPARED TO CONTROL MIX
Dry Matter Yield (T/Ha)	9.81	11.46	1.65
Energy Content ME (MJ/Ha)	13.69	13.8	0.11
Energy Yield (MJ/Ha)	134,508	158,026	23,518

SINCLAIR MCGILL MONITOR FARM, KILKENNY



FARM INFO

Farmers: Wally & Joey Ryan
Type: Dairy & Beef Farming
Location: Listerlin, South Kilkenny
Milking Platform: 16ha
Total Area Farmed: 43ha
Cow Numbers: 44
Total Stock Numbers: 158
Main Forages: Grazed Grass & Grass Silage
Supplements: 840kg concentrate
Production History: 5,750 litres milk per cow @ 4.2% BF & 3.65% Protein
Plan for Future: Continue to increase output per ha and maintain cow numbers

2018 REVIEW

2018 was a difficult year with a cold start to the spring. Sinclair McGill's Advance Mixture, which was put into the system in 2017 performed exceptionally well, with a lift in production seen after each grazing (more milk in the tank). The Ryans have a very dry farm and once drought conditions hit, it had an effect on overall production. Twelve acres were reseeded with Sinclair McGills' Prosper Mixture in late June 2018. This was then grazed 3 times despite the earlier drought conditions of 2018. The positive here is that regardless of the weather highs and lows around the country, all swards prospered. Exceptional yields were seen from late July onwards, with a lift in milk solids and overall volumes.

ABOUT THE FARM:

Wally and Joey Ryan are our father and son monitor farm in south Kilkenny. Cows calve down on the home block and when numbers reach 25-30 cows calved, the herd is moved to the 16ha block and remain there until the end of the lactation which is normally early-mid March. 87% of the farm has been reseeded in the last 4 years. All ground receives 2 tonne of lime at reseeding and is all sown directly with an Acheson drill into the burned off paddocks. Most of the paddocks are Index 1-2 for P and Index 1-3 for K. A nutrient management plan is in place to bring paddocks to the required level of fertility.

Soil Analysis Results November 2017 - next soil analysis due autumn 2019:

MIXTURE	PH	LIME REQ TONNES/HA	MG/L	SOIL P INDEX	MG/L	SOIL K INDEX
Advance	6.6	0	3.2	2	52	2
Prosper	6.3	0	3.2	2	60	2
Matrix 40	6.8	0	2.8	1	47	1
Scotsward	6.7	0	6.9	3	57	2
Castlehill	6.3	0	4.1	2	49	1

• All reseeded fields received 2 tonne of lime per acre before sowing
 Fields manured with either 10-10-20 or 18-6-12 at reseeding with Leifi Grass (20-4-10) or Nitrogen (27%) depending on rotation and grass growth during grazing season

MIXTURE SELECTION CHART



	PREDOMINANTLY GRAZING	DUAL PURPOSE	PREDOMINANTLY CUTTING
Cutting 1-4 years			
COLOSSAL® SILAGE 			Page 7
COLOSSAL® RED 			Page 7
ADMIRAL'S CHOICE 			Page 8
Cutting 4-8 years			
SCOTSWARD®			Page 8
Intensive 4-8 years			
POLYCROP® 		Page 9	
PROSPER® 		Page 9	
ADVANCE 	Page 10		
TURBO® 	Page 10		
MATRIX 40 ENHANCED® RYEGRASS 	Page 11		
MATRIX 70 ENHANCED® RYEGRASS	Page 11		
MATRIX ENHANCED® RYEGRASS WITH TIMOTHY	Page 11		
Long Term Persistent 8-12 years			
CASTLEHILL®		Page 12	
EMERALD HILL		Page 12	
CASTLEPARK		Page 13	
LAMBHILL	Page 13		
Specialist Mixtures			
CASTLEHERB	Page 14		
EXTRA LAMB	Page 14		

CUTTING MIXTURES

“ REALLY HAPPY WITH THE ESTABLISHMENT OF THE GRASS SEEDS AND THE TILLERING CAPACITY OF THE GRASS SEEDS ”



PJ McGrath
Castlecomer
Co. Kilkenny

Patsy Wilson & Lisa Cullen, Daltons with Farmer PJ McGrath in a field of Advance. Following sowing in reclaimed ground, grass seed took off perfectly despite drought. Grazed with light stock in the first 6 weeks after being reseeded. Cattle graze-out was perfect, with utilisation close to 100%. Very good tillering and regrowth was exceptionally fast.

COLOSSAL® SILAGE

High yields of quality silage

- Highly digestible Tetraploids, plus the very latest top yielding diploid Italian Ryegrasses give you MORE SILAGE in your clamp and also MORE MILK from your silage
- Close 'D' Value cutting dates make this a very easy mixture to manage
- The high sugars and high fibres stimulate rumen activity and maximise conversion to milk
- COLOSSAL SILAGE outyields Perennial Ryegrass based leys in the autumn
- Includes the new generation of Italian Ryegrass varieties, with improved digestibility



This mixture is treated with



Suggested seed rate:
10-12kg/acre (25-30kg/ha)

Guide cutting height:
10 cm (4 inches)

30% BELLUNA ITALIAN RYEGRASS

36% DAVINCI ITALIAN RYEGRASS

17% MESSINA ITALIAN RYEGRASS (TET)

17% SCAPINO HYBRID RYEGRASS (TET)

COLOSSAL® RED

Protein rich short term ley

- A powerful combination of high yielding Tetraploid Hybrid Ryegrasses and our RED ADMIRAL Red Clover blend
- In a 3 year farm scale trial in Devon, Red Admiral blend gave consistently higher yields over all cuts in all 3 years, than single varieties
- Predominantly a cutting mixture but it can also be grazed by lambs and ewes in late summer



This mixture is treated with



Suggested seed rate:
10-12kg/acre (25-30kg/ha)

Guide cutting height:
10 cm (4 inches)

20% HYMER HYBRID RYEGRASS (TET)

20% SCAPINO HYBRID RYEGRASS (TET)

30% ENDURO HYBRID RYEGRASS (TET)

30% RED ADMIRAL RED CLOVER BLEND



“GRAZINGS IN SPRING AND 4 CUTS IN THE SUMMER AND READY TO GRAZE ON THE 30TH OCTOBER”

Eoin Hickey

Dungarvan
Waterford

Will Quinn of Jim Quinns Dungarvan Co. Waterford with Eoin Hickey pictured in a field of Sinclair McGill Scotsward. "It was grazed twice in the spring, then cut 4 times for silage, with another grazing due, following taking this photo in November. Not bad for a very dry field overlooking the sea with no shortage of wind!"

ADMIRAL'S CHOICE

Late heading protein rich mixture

- Formulated to produce high yields of protein rich silage
- Slightly later than Colossal® Red
- High sugars to complement the protein in the clover
- Late Tetraploid Perennial Ryegrass is more persistent than Hybrid Ryegrass, matching the better persistence of some of the newer Red Clover varieties such as Maro
- Red Admiral blend contains both early and later flowering Red Clovers; Diploid and larger leafed Tetraploid varieties for more even yields over 3 or more cuts and better persistency



This mixture is treated with



Suggested seed rate:
10-12kg/acre (25-30kg/ha)

Guide cutting height:
10 cm (4 inches)

35% ASPECT LATE PERENNIAL RYEGRASS (TET)

35% MEIDUNO LATE PERENNIAL RYEGRASS (TET)

30% RED ADMIRAL RED CLOVER BLEND

SCOTSWARD®

Medium to long-term cutting mixture with an excellent heading date spread

- A late heading mixture with a good heading date spread which ensures flexibility on silage cutting dates
- Consistently higher ME, quality silage
- Timothy inclusion enables Scotsward to stand up to the mower
- White Clover contributes to quality aftermath grazing
- Now includes Meiduno and Nifty for even higher yields and improved animal nutrition



This mixture is treated with



Suggested seed rate: 13-16kg/acre
(32-40 kg/ha)

Guide cutting height: 7.5cm (3 inches)

21% NIFTY INTERMEDIATE PERENNIAL RYEGRASS

8% ELYSIUM INTERMEDIATE PERENNIAL RYEGRASS (TET)

29% GLENROYAL LATE PERENNIAL RYEGRASS

20% ASPECT LATE PERENNIAL RYEGRASS (TET)

10% MEIDUNO LATE PERENNIAL RYEGRASS (TET)

6% COMTAL TIMOTHY

6% CLOVERPLUS WHITE CLOVER BLEND

INTENSIVE MIXTURES

“REALLY IMPRESSED WITH THE NUMBER OF GRAZINGS”



Joey Ryan
Ryan Farm
Listerlin
Co. Kilkenny

Another 12 acres of pasture was reseeded with Prosper on the 19th of June and grazed 3 times before the end of the year. This was particularly important to the Ryans given the weather of 2018. The Ryans have extensively used Sinclair McGill mixtures for a number of years with continued success. “Really impressed with the number of grazings”

POLYCROP®

Dual purpose ley mixture

- High sugar mixture
- High Tetraploid content (57%) makes Polycrop® very palatable and extremely productive
- Expect improved liveweight gain in beef and lambs
- Multiple cutting potential with excellent aftermath grazing
- True dual purpose mixture with a productive lifespan of at least 3 years
- Includes Late Tetraploid Ryegrasses to enhance grazing potential
- Including Fintona, with improved digestibility for better conversion to meat or milk
- Also available with White Clover



This mixture is treated with



Suggested seed rate: 13-18kg/acre (32-45kg/ha)
Guide to first cut: 20th May (70D)
26-31st May (67D)
Guide cutting height: 10 cm (4 inches)

- 15% SCAPINO HYBRID RYEGRASS (TET)
- 10% HYMER HYBRID RYEGRASS (TET)
- 22% ENDURO HYBRID RYEGRASS (TET)
- 13% NIFTY INTERMEDIATE PERENNIAL RYEGRASS
- 10% FINTONA INTERMEDIATE PERENNIAL RYEGRASS (TET)
- 23% ASPECT LATE PERENNIAL RYEGRASS (TET)
- 7% GLENROYAL LATE PERENNIAL RYEGRASS

PROSPER®

At least two cuts of a highly digestible silage plus quality grazing

- Potential to reduce silage making costs per tonne of dry matter
- Production is concentrated on intermediate heading varieties to produce the highest forage quality
- Best suited to well drained soils where optimum fertility is maintained for best results
- Excellent forage quality from this LG Animal Nutrition mixture ensures more milk or meat for your money



This mixture is treated with



Suggested seed rate: 13-16kg/acre (32-40kg/ha)
Guide cutting height: 7.5cm (3 inches)

- 17% NIFTY INTERMEDIATE PERENNIAL RYEGRASS
- 25% ELYSIUM INTERMEDIATE PERENNIAL RYEGRASS (TET)
- 16% GLENROYAL LATE PERENNIAL RYEGRASS
- 14% MEIDUNO LATE PERENNIAL RYEGRASS (TET)
- 22% SOLAS LATE PERENNIAL RYEGRASS (TET)
- 6% CLOVERPLUS WHITE CLOVER BLEND

INTENSIVE MIXTURES

“TURBO, QUICK RECOVERY OF SWARD AS THE NAME SUGGESTS”



Morgan Maguires Farm
Ballinasloe
Co. Galway

Mark Ward & Padraig Ward, Contractor, and Tom Freeman on Morgan Maguires Farm, Ballinasloe, Co. Galway. Contractor Padraig Ward, turns to Turbo to ensure a speedy recovery of high yielding quality swards for dry stock everytime!

ADVANCE

100% late heading mixture with excellent ground cover and quality

- Developed especially for Ireland
- LGAN accredited mixture
- High tetraploid content with highest ground cover scores on RL
- All late mixture with 4 day heading date spread
- Highly palatable mixture with High DMD
- High on Teagasc PPI List and also very high quality variety.
- Includes the new and highly productive tetraploid ryegrasses Meiduno, Solas and Xenon



This mixture is treated with



UNIQUE MIXTURE

30% GLENROYAL LATE PERENNIAL RYEGRASS

10% DRUMBO LATE PERENNIAL RYEGRASS

15% MEIDUNO LATE PERENNIAL RYEGRASS (TET)

15% SOLAS LATE PERENNIAL RYEGRASS (TET)

25% XENON LATE PERENNIAL RYEGRASS (TET)

5% CRUSADER WHITE CLOVER

TURBO®

Medium to long term intensive grazing mixture for maximum production of milk or meat

- Suitable for both paddock grazing systems and set stocking
- If you have not grown TURBO® before, you might well be surprised by the speed of regrowth after grazing
- Now includes Matrix for an even longer grazing season
- Turbo contains the new generation of highly palatable tetraploid ryegrasses that are grazed more efficiently
- An LG Animal Nutrition mixture for more milk or meat from every bite



This mixture is treated with



Suggested seed rate:
13-16kg/acre (32-40kg/ha)

7% NIFTY INTERMEDIATE PERENNIAL RYEGRASS

6% DUNLUCE INTERMEDIATE PERENNIAL RYEGRASS (TET)

10% DRUMBO LATE PERENNIAL RYEGRASS

26% GLENROYAL LATE PERENNIAL RYEGRASS

20% ASPECT LATE PERENNIAL RYEGRASS (TET)

20% XENON LATE PERENNIAL RYEGRASS (TET)

5% MATRIX ENHANCED® RYEGRASS

6% TWEED WHITE CLOVER BLEND

MATRIX 40 ENHANCED[®] RYEGRASS MIXTURE

Intensive grazing mixture with high production and very early season growth

- Our most popular Matrix Enhanced[®] Ryegrass mixture
- Suitable for most areas in Ireland
- Best suited to intensive grazing
- Inclusion of conventional grasses help protect the Matrix from winter damage
- High (10%) White Clover content helps to feed the grass with clover nitrogen and increases protein and mineral content of the sward



This mixture is treated with



40% MATRIX ENHANCED[®] RYEGRASS

7.5% CANCAN LATE PERENNIAL RYEGRASS

7.5% ROMARK LATE PERENNIAL RYEGRASS

35% XENON LATE PERENNIAL RYEGRASS (TET)

10% ENSIGN PLUS WHITE CLOVER

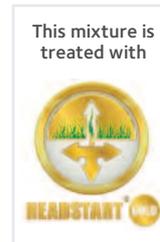
MATRIX 70 ENHANCED[®] RYEGRASS MIXTURE

Intensive grazing mixture with high production for dry ground

- Only recommended for the warmer parts of Ireland **unless** overseeding an existing pasture
- For overseeding we recommend a minimum rate of 8 kilos per acre
- Enables farmers in mild winter areas to exploit the value of the long season production of Matrix to the full



This mixture is treated with



20% XENON LATE PERENNIAL RYEGRASS (TET)

70% MATRIX ENHANCED[®] RYEGRASS

10% ENSIGN PLUS WHITE CLOVER

MATRIX ENHANCED[®] RYEGRASS MIXTURE WITH TIMOTHY

Intensive grazing mixture with high production and very early season growth

- Early to grow in the spring - both Matrix and Timothy will grow at lower temperatures than Perennial Ryegrass, thus making a greater contribution to early turnout
- This mixture was very high yielding in our trials
- The inclusion of Timothy also makes this mixture more winter hardy



This mixture is treated with



15% TODDINGTON LATE PERENNIAL RYEGRASS

20% XENON LATE PERENNIAL RYEGRASS (TET)

40% MATRIX ENHANCED[®] RYEGRASS

15% COMER TIMOTHY

10% ENSIGN PLUS WHITE CLOVER



LONG TERM PERSISTENT MIXTURES

“ A VERY CHEAP & EASY WAY TO MAINTAIN SWARDS ”



Roy & Wesley Hastings
Mullinaveigh
Lifford
County Donegal

100ha
200 cows
Medium/heavy soils

Due to small weather windows for reseeding, we have moved to overseeding the land. After a silage cut, the ground is power harrowed and overseeded. Swards contain little to no weed grasses, so burning off is not critical. We get back in much quicker so loss of production is minimised. It's a very cheap and easy way to maintain our quality swards.

CASTLEHILL®

Long term dual purpose mixture

Castlehill® is the long term ley with rock solid performance

- Suitable for most soil types and climate
- Excellent feed for all classes of livestock
- Superb disease resistance
- Delivers the performance of a medium term ley, combined with the persistence of a long term ley
- Reliable top quality grazing and cutting
- Invest in Castlehill® for the ultimate in long term productivity



This mixture is treated with



Suggested seed rate:

13-18 kg/acre (33-45 kg/ha)

Guide cutting height:

7.5cm (3 inches)

12% SOLOMON INTERMEDIATE PERENNIAL RYEGRASS

12% FINTONA INTERMEDIATE PERENNIAL RYEGRASS (TET)

12% ELYSIUM INTERMEDIATE PERENNIAL RYEGRASS (TET)

13% TIMING LATE PERENNIAL RYEGRASS

11% DRUMBO LATE PERENNIAL RYEGRASS

12% SOLAS LATE PERENNIAL RYEGRASS (TET)

15% ASPECT LATE PERENNIAL RYEGRASS (TET)

7% COMTAL TIMOTHY

6% TWEED WHITE CLOVER BLEND

EMERALD HILL

Late heading mixture for Irish conditions

- Developed especially for Ireland
- A later heading mixture of stem free production for much of the season
- Very dense sward for maximum resistance to poaching and treading
- Easy to manage and reliable mixture
- Suits both extensive and intensive livestock systems
- Mostly for grazing but it can be closed off for a late silage cut or hay



This mixture is treated with



Suggested seed rate:

13-18 kg/acre (33-45 kg/ha)

12% SOLOMON INTERMEDIATE PERENNIAL RYEGRASS

15% ELYSIUM INTERMEDIATE PERENNIAL RYEGRASS (TET)

15% GLENROYAL LATE PERENNIAL RYEGRASS

17% DRUMBO LATE PERENNIAL RYEGRASS

16% TIMING LATE PERENNIAL RYEGRASS

9% ASPECT LATE PERENNIAL RYEGRASS (TET)

10% SOLAS LATE PERENNIAL RYEGRASS (TET)

6% TWEED WHITE CLOVER BLEND

“SOWN IN SEPTEMBER ON DIFFICULT GROUND AND GRAZED WITH SHEEP UP TO THE END OF DECEMBER”



Cian O Sullivan
Beaufort, Kerr

John Lynch & Adam Heffernan (Kelliher's), John & Sean O'Connor (Contractor), and farmer Cian O'Sullivan.

Fantastic results from Lambhill sown on difficult ground in September with sheep grazing after 6 weeks, up to the end of December.

CASTLEPARK

Mixture for drought prone areas

- Dual purpose mixture for drought prone areas
- Excellent early bite followed by reliable production throughout the season
- Includes TWEED White Clover blend to fix 'free' nitrogen and provide nutritional benefits to stock
- Now includes Tall Fescue which is widely used in Northern Europe for its tolerance to drought and heat



This mixture is treated with



N.B: Castlepark should be grazed hard to prevent Cocksfoot from forming clumps

Suggested seed rate:
13-18 kg/acre (33-45 kg/ha)
Guide cutting height:
10cm (4 inches)

- 9% CARRAIG EARLY PERENNIAL RYEGRASS (TET)
- 7.5% ELYRIA INTERMEDIATE PERENNIAL RYEGRASS
- 10% FOXTROT LATE PERENNIAL RYEGRASS
- 13% NOVELLO LATE PERENNIAL RYEGRASS (TET)
- 14% XENON LATE PERENNIAL RYEGRASS (TET)
- 5% DARIMO MEADOW FESCUE
- 16% SOFTANE TALL FESCUE
- 8.5% LUFOR COCKSFOOT
- 10% COMATAL TIMOTHY
- 7% TWEED WHITE CLOVER BLEND

LAMBHILL

Versatile mixture for harsh environments

- Formulated for harsh environments and marginal land
- Suitable for upland reseeds and bogs
- Excellent long term sheep grazing mixture
- Lambhill is also perfectly suited to extensive farming systems and all classes of livestock
- Despite the name, Lambhill is also suitable for both beef cattle and dairy cows!



This mixture is treated with



Suggested seed rate:
13-18 kg/acre (33-45 kg/ha)

- 16% MOYOLA EARLY PERENNIAL RYEGRASS
- 28% DRUMBO LATE PERENNIAL RYEGRASS
- 11% NOVELLO LATE PERENNIAL RYEGRASS (TET)
- 11% XENON LATE PERENNIAL RYEGRASS (TET)
- 5% DARIMO MEADOW FESCUE
- 13% COMTAL TIMOTHY
- 7.5% CORAIL STRONG CREEPING RED FESCUE
- 3% ALSIKE CLOVER
- 5.5% CHEVIOT WHITE CLOVER BLEND

SPECIALIST MIXTURES



CASTLEHERB

Exploits the attributes of deep rooted herbs



Exploits the attributes of deep rooted herbs.

- Contains a diverse range of legumes, herbs and grasses
- Can out-yield pure grass swards that are receiving up to 200kg/ha of nitrogen
- Will improve organic content of soil

Suggested seed rate: 11 -13kg/acre
(27 - 32kg/ha)

This mixture is treated with



10% ENHANCED RYEGRASS MATRIX

5% TIMOTHY

15% LATE PERENNIAL RYEGRASS (TET)

5% INTERMEDIATE PERENNIAL RYEGRASS

5% MEADOW FESCUE

6% RED CLOVER

5% WHITE CLOVER BLEND

5% ALSIKE

4% BIRDSFOOT TREFOIL

10% SAINFOIN

11% FORAGE CHICORY

11% FORAGE PLANTAIN

4% SHEEP'S BURNET

2% YARROW

2% SHEEP'S PARSLEY

EXTRA LAMB

Popular medium term mixture for economic lamb production



- Ideally suited to intensive sheep enterprises
- Combines early spring growth for lambing outside
- Very persistent under tight grazing
- Cheviot White Clover blend has been specially developed for sheep and lambs and has been proven to increase liveweight gain
- Rich in protein, minerals and trace elements essential for healthy livestock
- Extra lamb can be closed off for a high yielding cut of quality silage, if desired

This mixture is treated with



Suggested seed rate: 13 -17kg/acre
(32 - 42kg/ha)

13% ELYRIA INTERMEDIATE PERENNIAL RYEGRASS

30% PENSEL INTERMEDIATE PERENNIAL RYEGRASS

24% TIMING LATE PERENNIAL RYEGRASS

16% ROMARK LATE PERENNIAL RYEGRASS

10% COMTAL TIMOTHY

7% CHEVIOT WHITE CLOVER BLEND

ORGANIC GRASS & CLOVER MIXTURES

This mixture range contains the requisite amount of organically produced seed to satisfy the demands of the organic certification authorities. Further details are available on request.



SHORT TERM FERTILITY BUILDER

This is for farmers converting to organic or seeking a fertility building mixture which can also provide high protein hay or silage. Contains Red Clover, Italian Ryegrass and Tetraploid Hybrid Ryegrass. Similar to Colossal® Red, (see page 5).



CASTLEHILL® ORGANIC MIXTURE

This is the organic version of our best selling long term mixture. It differs from the conventional version by having a higher White Clover content and containing the requisite organic seed content to conform to the current regulations.

ORGANIC FORAGE CROPS

We can offer the following range of crops to produce high quality feed for a range of animals and systems.

Stubble Turnip *Dynamo*

An excellent variety for finishing lambs from November to January. Dynamo is very leafy (good protein content) and also has good root anchorage which helps reduce grazing wastage. To add extra winter hardiness and to extend the period of use, Dynamo can be mixed with forage rape.

Forage Pea *Magnus*

Forage peas deliver a high crude protein feed which is ready for harvest 12-14 weeks from sowing. Magnus is a semi-leafless type which prevents the crop lodging and reduces soil contamination. Magnus is an excellent break crop between grass leys and will also fix an amount of 'free' nitrogen.



KEY VARIETIES IN SINCLAIR MCGILL MIXTURES

	RL England & Wales	SRUC Scotland	DAFM Ireland (Republic)		RL England & Wales	SRUC Scotland	DAFM Ireland (Republic)	
Early Perennial Ryegrass (Diploid)					Late Heading Perennial Ryegrass (Diploid)			
Kimber High yields with good seasonal distribution. Good mildew resistance.	G	1	N/A		Drumbo Good yields for both grazing and silage, with good forage quality.	G	1	Rec
Moyola High yields for cutting and grazing with good spring and autumn growth.	G	1	Rec		Cancan Good yields, especially for grazing with high sugars.	G	2	N/A
Early Perennial Ryegrass (Tetraploid)					Timing High yields and good all-round disease resistance.	PG	2	N/A
Carraig High yields under both managements but relatively poor resistance to crown rust. Classified as intermediate in The Republic of Ireland.	PG	1(P)	Rec		Toddington  Good yields of very high quality forage. Very good winter hardiness and disease resistance.	G	1	Rec
Mid Season Perennial Ryegrass (Diploid)					Romark High grazing yields, with very good forage quality.	G	2	N/A
Solomon Good yields with exceptionally good forage quality	S	1	N/A		Glenroyal Late heading variety with good seasonal distribution of high yields and very good ground cover.	G	1	Rec
Elyria High yields of good digestibility especially under grazing.	PG	1	N/A		Late Heading Perennial Ryegrass (Tetraploid)			
Nifty Highest yielding variety on the PPI with exceptional spring growth – a high DNDf variety.	PG	1(P)	Rec		Aspect High yields for silage and grazing of excellent forage quality. Good disease resistance package.	G	1	Rec
Mid Season Perennial Ryegrass (Tetraploid)					Novello Good yields combined with excellent disease resistance.	G	2	N/A
Elysium New Tetraploid variety with excellent quality spring growth and high PPI values.	G	1(*)	Rec		Xenon The best grazing Tetraploid, with dense swards of high forage quality. Good winter hardiness and above average disease resistance.	S	2	Rec
Pensel Best variety in the group, with outstanding forage quality and top disease resistance.	PS	1	N/A		Solas High yields with good D values	PG	2	Rec
Fintona Very high yielding Tetraploid bred in Northern Ireland	S	2	Rec		Meiduno A new variety with high yields under both managements. Erect habit makes it look open but the forage yields are excellent and forage quality is very good too. Excellent resistance to all the major grass diseases.	PG	1 (P)	Rec
Dunluce Good yields under both managements, with good forage quality. Rather open habit.	G	1	Rec					

Grass Management: Grazing and Silage

KEY

RL England & Wales

G = Fully Recommended for general use
S = Recommended for specific use
P = Provisionally Recommended

SRUC Scotland

1 = 1st Choice
2 = 2nd Choice
***** = Downgrading

3 = 3rd Choice
(P) = Provisional

DAFM Ireland (Republic)

Rec = Fully Recommended
In Trial = In Trial
N/A = Not on Recommended List

	RL England & Wales	SRUC Scotland	DAFM Ireland (Republic)
Enhanced® Ryegrass (Grazing Festulolium)			
Matrix A unique New Zealand bred Festulolium with the potential to extend the grazing season by up to 3 weeks each in spring and autumn.	N/A	N/A	N/A
Hybrid Ryegrass (Tetraploid)			
Enduro High yielding hybrid that leans towards its perennial parentage. Excellent resistance to all the major grass diseases.	G	2	N/A
Hymer A very high yielding but less persistent variety that inherits its high yields from its Italian parents.	N/A	1	N/A
Scapino Very persistent perennial type with leafy growth and good yields. Very good forage quality with acceptable resistance to most diseases.	PS	2	N/A
Italian Ryegrass (Diploid)			
Davinci Very high ME yields combined with good disease resistance.	G	1	Rec
Belluna High annual yields and good winter hardiness	G	1	N/A
Italian Ryegrass (Tetraploid)			
Udine Exceptionally high yields in the first year of sowing. Good resistance to diseases.	G	3	N/A
Gemini Very high yields with good D values. Good resistance to mildew and brown rust. Poor resistance to crown rust.	S	1	N/A
Messina  Excellent DM yields, spring growth & disease resistance. The best Italian Tetraploid on both UK Recommended Lists	PG	1(P)	N/A

	RL England & Wales	SRUC Scotland	DAFM Ireland (Republic)
Timothy			
Comer Very high yields for cutting and grazing. Good seasonal yield distribution.	G	1	N/A
Comtal High grazing yields of good digestibility. Has very good conservation yields.	G	1	N/A
White Clover			
Violin High yields with medium to large leaves. Very high yields and good persistency even under hard grazing.	G	1	N/A
Grasslands Demand Small leaved variety with high yields and good persistency.	G	1	N/A
Crusader Medium leaved variety with high yields especially under lighter defoliation.	G	1	Rec
Barblanca Large leaf with good cutting yields.	G	1	Rec
Alice Large leaf (similar to Barblanca).	G	1	Rec
Grasslands Bounty High yields for grazing by all classes of livestock.	G	2	N/A
Aberystwyth S184 Very small leaf and good persistency. Especially useful for sheep grazing.	G	1	N/A
Red Clover			
Maro A tetraploid variety with very high yields and good persistency.	G	N/A	N/A
Merviot Benchmark Diploid variety yields.	G	N/A	N/A
SW Ares Good yields and persistency in our own trials.	N/A	N/A	N/A

SPECIALIST CROPS

Lucerne

The realisation that lucerne offers such a high protein content – good drought tolerance and is relatively long lived – has prompted a revival of interest in this very underrated crop. Lucerne can be baled for hay or made into big bale silage and its potential yield will be in the order of 14-15 tonnes of DM/ha/year. The crop can provide excellent yields for three full years (following a summer sowing).

The variety Mezzo has high dry matter yields with excellent protein content.



Agricultural Mustard

Depending on soil fertility and soil moisture a good crop of mustard for ploughing in can be obtained from applying 30-40 units of N. You can expect around 15 tonnes of green manure/acre which can be achieved from 80 units of N. The variety Vitaro offers fast growth potential, excellent leaf production and good tolerance to drought. The rapid establishment of this variety means that it can compete successfully against weeds in late autumn.

FODDER MIXTURES

Autumn Keep Mixture

MIXTURE COMPOSITION

Forage Rape Rampart	1.00 kg
Samson Stubble Turnip	0.50 kg
Rondo Stubble Turnip	0.75 kg
Keeper Kale	0.25 kg
	2.50 kg

- Very fast establishment for autumn use
- Good disease resistance to ensure quality
- Value autumn feed

Sow at: 2.5 kg/acre

Sowing Time: Summer/early Autumn

Late Lamb

MIXTURE COMPOSITION

Interval Rape/Kale Hybrid	1.00 kg
Rondo Stubble Turnip	1.00 kg
Italian Ryegrass	5.00 kg
	7.00 kg

- Ideal for later use
- Winter hardy varieties
- Italian ryegrass improves crop density

Sow at: 7 kg/acre

Sowing Time: Summer/Autumn



GAMECOVER MIXTURES

If you want to encourage game birds onto your farm, then you need to have access to a range of sensibly priced and commercially proven mixtures and individual crops. Fortunately, our technical staff have spent many years working with the acknowledged experts in this field and, as a result, we have been able to bring together all the information you need to make the right cropping decisions based on your individual needs.

This vital information can be found in our **HiBird Gamecover catalogue** which features crops like millets, giant sorghum, maize and quinoa. In addition, the HiBird catalogue also provides helpful hints on how to establish and manage the mixtures and individual crops which are featured.

Ask for
a copy
today!

ARABLE SILAGE MIXTURES

This mixture contains different combinations of both cereals and peas that can provide a valuable source of protein and starch. The ensiled crop can produce excellent winter feed rations for dairy, beef or sheep.

- Excellent yields in 13-16 weeks
- Can be undersown with a new grass ley
- Ideally used as part of a mixed forage diet

Prostile

60%	Forage Pea
40%	Spring Barley
100%	

Sow at 125-150 kilos/ha undersown with grass.

Sow at 175-200 kilos/ha for best results.

FORAGE HERB MIXTURES & CHICORY

Forage Herb Mixtures

These mixtures offer an improved variation in diet for your stock as well as significant agronomic and nutritional properties.

Agronomic benefits include improvements in drought tolerance and soil structure.

Nutritional benefits derive from the mixtures high mineral content and palatability. Chicory has been shown to increase live-weight gain in lambs even faster than White Clover.

Health benefits aids the natural expulsion process and creates a hostile gut environment.

The following mixtures are best sown in distinct strips or small open paddock blocks freely accessible to stock. Allow sufficient time for the herbs to fully establish before allowing access to stock. Once fully established, the mixtures should be grazed hard to prevent the herbs running to seed or becoming "woody".

Lamb Tonic is a new concept which was developed in New Zealand. The use of plantain provides additional mineral content and faster finishing. The crop has the ability to regrow after initial grazing.

Cheviot Chicory Mixture

- 35% Forage Chicory
 - 20% Comer Timothy
 - 20% Intermediate Perennial Ryegrass (tetraploid)
 - 10% Late Perennial Ryegrass (tetraploid)
 - 15% Cheviot White Clover Blend
- 100% Sow at 14 kilos per hectare (5.7 kilos per acre)

White Clover, Timothy and Tetraploid Ryegrasses make excellent companions for Chicory and this mixture provides a complete summer diet for finishing lambs.

Forage Herb Mixture

- 30% Forage Plantain
 - 20% Forage Chicory
 - 20% Intermediate Perennial Ryegrass (tetraploid)
 - 15% Comer Timothy
 - 15% Cheviot White Clover Blend
- 100% Sow at 14 kilos per hectare (5.7 kilos per acre)

Similar attributes to Cheviot Chicory mixture but the inclusion of Tonic Forage Plantain elevates the mineral content.

Lamb Tonic

- 25% White Clover
 - 12.5% Plantain Tonic
 - 62.5% Chicory
- 100% Sow at 10 kilos per hectare (4 kilos per acre)

Stock Finisher

- 30% Forage Chicory
 - 40% Red Admiral Red Clover Blend
 - 15% Cheviot White Clover Blend
 - 15% Intermediate Perennial Ryegrass (tetraploid)
- 100% Sow at 14 kilos per hectare (5.7 kilos per acre)

Up to three year mixture for intensive finishing of livestock. A very high source of protein which is ideal for finishing early lambs. Full season production.

FORAGE CHICORY

Advantages:

- Increased milk production
- Higher live-weight gain in lambs and beef animals
- Good drought tolerance and mid-summer growth
- Elevated mineral and trace elements
- Contributes to the creation of a hostile gut environment for healthy livestock
- Persists for two to four years

Management:

Drill in to warm (10°C +) well drained soils at a depth of about 10mm.

Sow at 3 to 6 kilos per hectare straight or 1 to 4 kilos in a mixture with grasses and clovers.

Best sown in herbal strips or blocks rather than through an entire ley, as if it bolts (flowers) the ley might need to be taken out of production.

Best rotationally grazed. Re-grazing should only be undertaken when 2 to 4 leaves per plant have fully regrown.

Preferred Varieties:

Grasslands Choice

- Very high yields in temperate climates
- Extremely tolerant of drought
- The best variety for dairy units as Grasslands Choice was especially bred to reduce the concentrations of lactones that cause bitterness and can lead to milk taint



Lambs finish faster on Chicory.

Forage
Chicory
Growers Guide
Available

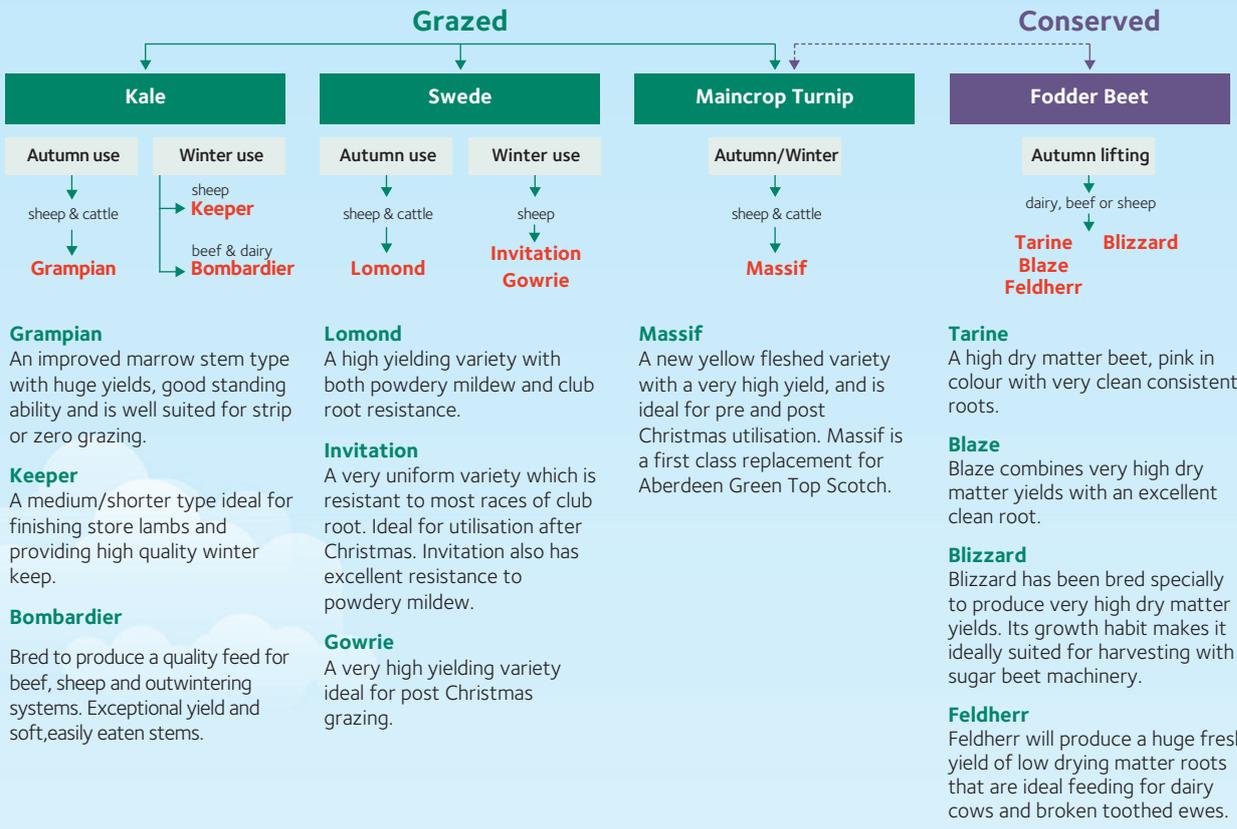
FULL SEASON CROPS

These crops require a full season production cycle but can offer the highest yield potential



Crop Data	Kale	Turnips	Swede	Fodder Beet
Sowing Date	April-July	Late May-early June	Early May-mid June	Early March-April
Sowing Rate (kg/ha)	Nat. 4-5 Gr. 1-2	Nat. 2.5-5 Gr. 0.6-0.85	Nat. 3-5 Gr.0.6-0.85	100,000 seeds
Utilisation Period	Sept-March	Oct-Feb	Oct-March	Nov-April
Fresh Yield (tonnes/ha)	60-70	59-69	70-90	80-90
% DM	14-16	8-10	10-13	15-23
Total DM (tonnes/ha)	8-10	5.50-6	7-10	15-18
Crude Protein % of the DM	16-17	15-17	10-11	12-13
D Value	70-75%	80%	82%	78-80%
Metabolisable Energy MJ/kg D	10-11	11	12.8-13.1	12.5-13.0

Nat. = Natural Gr. = Graded



Benefits of Forage Crops

- Improved profitability
- Reduced reliance on purchased feed
- Full traceability
- Flexible cropping options
- An excellent break crop

The Importance of Mixed Forage Crops

Mixed forage diets will help increase intakes and ensure optimum rumen stability, improved feed utilisation and animal performance.

Many forages are now better understood leading to improved intake predictions, and accurate assessments for both energy and protein requirements.

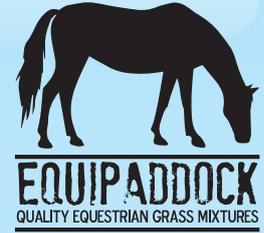
As milk yields have risen, so has the drive to increase the amount of food the cow will eat, allowing the opportunity for Irish farmers to exploit the use of cheaper home grown forages.

EQUIPADDOCK RANGE

Our popular range of equestrian mixtures continue to satisfy the demands of a diverse range of requirements from horse hay to herbs.

All our mixtures (which are packed in 10 kilo bags) have been specifically formulated after extensive consultation with Equine Nutritionists. They therefore avoid high sugar grasses, popular in agriculture, because they can increase the risk of Laminitis in horses and induce "stroppy" temperaments in mares.

The requirement in a mixture can vary depending on the type of horse involved and these mixtures cover the range of requirements we have had over the years from racing gallops to pony paddocks.



Horse Paddock Mixture

7%	Smooth Stalked Meadowgrass
14%	Creeping Red Fescue
17%	Timothy
62%	Late Perennial Ryegrass

100%

- Mixture formulated to provide grazing for horses and ponies with intermittent rests from grazing to produce a hay crop.
- Depending on any herbs present we would recommend the addition of a minimum of 250 grams of mixed herbs per acre (either mixed with the grass or preferably sown in strips in the sward) to improve the nutritional aspects of the sward.
- The mixture is designed to perform well with moderate inputs of nitrogen, but a good application before closing off for hay will produce the best results.

All natural seed

Sow at 10-15 kg per acre

Equipaddock Original Mixture

15%	Early Perennial Ryegrass
30%	Mid-season Perennial Ryegrass
23%	Late Perennial Ryegrass
12%	Timothy
4%	Smooth Stalked Meadowgrass
16%	Creeping Red Fescue

100%

- Our Equipaddock Original Mixture is available in 1/2 acre plastic buckets containing 7kg of seed and also in 10kg bags.
- A slightly amended mixture to our standard Horse Paddock, this handy pack enables you to reseed areas and at the same time leaves you a plastic container that will be useful around your stables.

All natural seed

Available in 1/2 acre buckets

SOWING RATES:

For complete re-seeds we recommend a sowing rate of 15-20kg per acre and for overseeds or improvements 10-15 kg per acre depending on how much the sward has deteriorated.

Our seed is supplied in handy 10kg packs

Gallops & Schooling Area Mixture

4%	Crested Dogstail
20%	Slender Creeping Red Fescue
10%	Smooth Stalked Meadowgrass
10%	Creeping Red Fescue
28%	Late Perennial Ryegrass
28%	Turf Type Perennial Ryegrass

100%

- This mixture is designed to produce a very dense, springy sward, capable of withstanding very heavy wear and is of course also perfectly suited to racecourses and polo pitches.
- Naturally the regular maintenance of this area will pay off by ensuring the turf maintains its springy nature.

All natural seed

Sow at 20-40kg per acre

Herb Mixture

35%	Chicory
25%	Burnet
10%	Ribgrass
30%	Sheep's Parsley

100%

- Our herb mixture has been specially developed for horses and ponies. It includes a number of deep rooting and nutritious species, which provide a good source of minerals and trace elements.
- Our mixed herbs are included in selected grass seed mixtures, but are also available separately for sowing in strips or islands in the field which often gives better establishment.

Available in 1kg packs

Sow at 250-500g/acre

Haylage Mixture

8%	Timothy
50%	Italian Ryegrass
22%	Mid-season Perennial Ryegrass
20%	Hybrid Ryegrass

100%

- A short term mixture for the production of quality haylage. High in fibre, but with a good "nose".

All natural seed

Sow at 12-15kg per acre

Horse Hay Mixture

15%	Timothy
5%	Cocksfoot
5%	Meadow Fescue
75%	Late Perennial Ryegrass

100%

- This mixture is designed to produce high quality horse hay with that special 'nose' that can only come from a good Timothy content.
- It will also provide useful grazing in the early spring and during late summer and autumn. In winter it should only be grazed lightly if a good hay crop is desired.

All natural seed

Sow at 12-15 kg per acre

Stud Paddock Mixture

6%	Crested Dogstail
6%	Smooth Stalked Meadowgrass
15%	Creeping Red Fescue
48%	Late Perennial Ryegrass
20%	Turf Type Perennial Ryegrass
5%	Herb Mixture

100%

- This mixture is designed to produce a good, well balanced sward especially suitable for mares and their foals.
- The deep rooted herbs will improve the calcium and phosphorus levels, being two of the more important trace elements so important for the growth and bone development in young horses.

All natural seed

Sow at 15-40kg per acre

Stallion Paddock Mixture

6%	Crested Dogstail
10%	Slender Creeping Red Fescue
12%	Smooth Stalked Meadowgrass
12%	Creeping Red Fescue
29%	Late Perennial Ryegrass
28%	Turf Type Perennial Ryegrass
3%	Herb Mixture

100%

- The Stallion Paddock mixture is formulated to withstand harder wear whilst still maintaining a dense, springy and nutritious sward.
- Contains MONDIAL turf type Perennial Ryegrass, which is rated very well indeed for its wear tolerance and early growth.

All natural seed

Sow at 15-40kg per acre

AMENITY

Olympic

- 40% Himalaya Perennial Ryegrass
- 40% Bocelli Perennial Ryegrass
- 20% Melbourne Perennial Ryegrass

100%

Winter sports renovation (Football & Rugby) and any situation where good wear tolerance and rapid establishment are the main requirements.

Sowing Rate **35-50g/m²**
Cutting Height **20mm**

Anfield

- 45% Cyrena Perennial Ryegrass
- 40% Himalaya Perennial Ryegrass
- 15% Corail Strong Creeping Red Fescue

100%

For winter sports renovation, playing fields and other areas requiring rapid establishment.

Sowing Rate **35-50g/m²**
Cutting Height **20mm**



Alderley

- 30% Cyrena Perennial Ryegrass
- 35% Himalaya Perennial Ryegrass
- 20% Heidrun Strong Creeping Red Fescue
- 15% Yvette Smooth Stalked Meadow Grass

100%

For recreation grounds, good hardwearing lawns and landscaped areas.

Sowing Rate **35-50g/m²**
Cutting Height **20mm**

Universal

- 25% Passion Perennial Ryegrass
- 15% Cyrena Perennial Ryegrass
- 15% Himalaya Perennial Ryegrass
- 10% Corail Slender Creeping Red Fescue
- 35% Trophy Chewings Fescue

100%

For recreation grounds, good quality hardwearing lawns and landscaped areas.

Sowing Rate **35-50g/m²**
Cutting Height **20mm**



Stately Home

- 30% Cyrena Perennial Ryegrass
- 20% Bocelli Perennial Ryegrass
- 25% Trophy Chewings Fescue
- 20% Smirna Slender Creeping Red Fescue
- 5% Highland Browntop Bent

100%

For top quality lawns that will also take some wear and tear. The turf ryegrasses included produce a fine leaved lawn, which will give an excellent appearance.

Sowing Rate **35-50g/m²**
Cutting Height **13mm**

Economy

- 15% Columbine Perennial Ryegrass
- 35% Double Perennial Ryegrass
- 20% Nagano Perennial Ryegrass
- 30% Corail Strong Creeping Red Fescue

100%

For high wear utility areas and winter sports at a competitive price.

Unlike some of our competitors products this mixture does not contain agricultural strains of ryegrass.

Sowing Rate **25-35/m²**
Cutting Height **25mm**

Trophy

- 20% Trophy Chewings Fescue
- 75% Corail Strong Creeping Red Fescue
- 5% Highland Browntop Bent

100%

For front lawns, landscaped areas, building surrounds and low maintenance areas.

Sowing Rate **35-50g/m²**
Cutting Height **25mm**

All our amenity mixtures are treated with **HEADSTART® GOLD** and packed in 10kg bags. All varieties are subject to change.



Trafford

- 50% Heidrun Strong Creeping Red Fescue
- 25% Trophy Chewings Fescue
- 20% Smirna Slender Creeping Red Fescue
- 5% Highland Browntop Bent

100%

For ornamental lawns and high quality landscaping.

Produces a dense, fine leaved sward that can be mown as low as 20mm.

Sowing Rate **35-50g/m²**
Cutting Height **20mm**

Putting & Bowling

- 55% Wagner 1 Chewings Fescue
- 10% Carousel Slender Creeping Red Fescue
- 15% Smirna Slender Creeping Red Fescue
- 20% Highland Browntop Bent

100%

For golf greens, putting greens and any other very close mown turf.

Produces a fast, true green.

Sowing Rate **35g/m²**
Cutting Height **5mm**



Shade

- 20% Trophy Chewings Fescue
- 10% Smirna Slender Creeping Red Fescue
- 35% Corail Strong Creeping Red Fescue
- 10% Cocktail Smooth Stalked Meadow Grass
- 10% Crystal Hard Fescue
- 10% Dasas Rough Stalked Meadow Grass
- 5% Highland Browntop Bent

100%

For partially shaded areas or dry conditions.

This is a very low maintenance mixture and it is also suitable for environmental headlands.

Sowing Rate **25-35/m²**
Cutting Height **25mm**

INTEGRATED PEST MANAGEMENT

The withdrawal of the pesticide Chlorpyrifos (trade names including Dursban™ and Lorsban™) means growers will need to take a more integrated approach to pest management, to ensure successful establishment of a new ley.

Pests such as Frit Fly and Leatherjackets that could previously be controlled by Chlorpyrifos can cause serious losses in established grassland, and can be devastating to new leys if control measures are not taken.

Damage and Importance

Leatherjackets (*Tipula paludosa*)

Leatherjackets are the larvae of Crane Flies, which feed on the roots and stems of grass plants at or below ground level. Severe infestations in established grassland can lead to yield losses of more than 5t/DM per hectare whilst attacks in newly established leys are more likely to lead to plant death and crop failure.

Frit Fly (*Oscinella frit*)

Frit Fly produce 3 generations of larvae a year and are prevalent in almost all grass swards. The small larvae feed on the central shoot of the plant causing tiller death. Loss of tillers reduces yield and persistency in established leys. Attacks in plants at the seedling stage or with low tiller numbers leads to plant death.



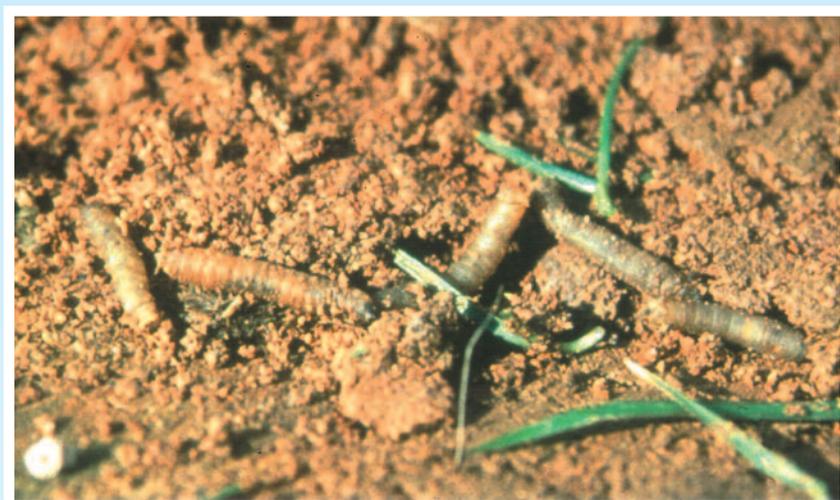
Leatherjacket.

Risk Factors

Damage to newly sown grass leys by either Leatherjackets or Frit Fly are most likely in the following situations:

- Following established grass or grassy cereal stubbles
- In predominantly grassland or mixed arable/grass areas
- In autumn sown leys – particularly mid to late August, and if conditions are warm and damp
- In leys sown with less than a week interval between cultivation and drilling
- In fields where there is a previous history of damage

Sampling a field to assess the number of Leatherjackets present can help determine the risk level. Indicators of large populations include; birds flocking to feed on the larvae and large numbers of adult Crane Flies (Daddy-long-legs) in July/August.



Frit Fly.

INTEGRATED PEST MANAGEMENT (IPM)

With no chemical pesticides available, damage by these pests can be reduced or avoided by carrying out some/all of the measures below:

- Ploughing in July before reseeding can reduce leatherjacket populations by 50%.
- Establishing a brassica break crop, such as Interval Rape/Kale Hybrid or Delilah Stubble Turnips between grass crops, removes the pests food source.
- If sowing grass after grass, leave at least 2 weeks between cultivation and sowing to allow birds to feed on the grubs.
- Move to Spring reseeding.
- Consider overseeding - sowing into an existing ley may allow seedlings to escape attack as the cover crop provides an alternative food source (Frame et al, 1992).
- Increase seed rate to 15-20kg/acre to neutralise any seedling losses.
- Use **Headstart® GOLD** treated seed to ensure rapid establishment and vigorous early growth.
- As with any reseed – soil sample prior to seeding, to ensure pH and nutrient status is correct.

See below for examples of rotations designed to reduce the threat from grassland pests and maximise forage production.

Example Crop Rotations

May	June	July	Aug	Sept	-	March	April
	2nd cut Silage	Cultivate - leave fallow for >2 weeks Forage Rape	Sow Delilah Stubble Turnip or Interval	→		Plough - leave fallow for >2 weeks	Sow Sinclair McGill grass ley
1st cut silage	Cultivate - leave fallow for >2 weeks	Sow Gowrie Swede or Grampian Kale	→	→		Plough - leave fallow for >2 weeks	Sow Sinclair McGill grass ley
1st cut silage	Cultivate - leave fallow for >2 weeks	Sow Tyfon Stubble Turnip	→			Sow Sinclair McGill grass ley	

Wireworms

Grassland is the natural habitat for wireworms and very significant numbers of this pest will often be found in permanent pasture. Not surprisingly when old pastures are taken out the newly seeded grass will be especially vulnerable to attack by this pest (Agriotes spp.). The damage may become more severe in the second or third year of the new ley's life.

The wireworms will chew the base of the grass plants – typically just below ground level – and the plants will turn yellow and show signs of wilting. The symptoms can sometimes be confused with the damage seen in grass which has been attacked by frit fly. However, the very 'ragged' nature of the damage along with the presence of the wireworms themselves will confirm the initial diagnosis. Attacks by wireworm are often more serious when the grass crop is already under pressure from another problem – such as soil acidity or poor soil conditions and fluffy seedbeds.

Control measures:

A good seedbed will help your grass crop get off to a good start and will help the plants to withstand a minor attack. If the soil has been



Wireworm @ James Christian-Ilett

sampled and there is the risk of a serious attack then consider an appropriate insecticide which will need to be applied in a high volume spray before drilling. A risk assessment can also be made which is based on previous experience on the farm or local conditions in a specific year.

PEST ATTACKS IN WELL ESTABLISHED GRASS

Farmers may sometimes overlook the fact that a well established ley can still be subject to attack by pests. The damage they can cause can be significant – it may not just be the development of obvious patches in the field, but a decline in the actual population of the desirable grasses.

Grass Aphids

There are several species of aphid that may be found on established grass but only one species is usually responsible for any damage and this may be prevalent after a mild, open winter. If an established ley is invaded by a large number of aphids then the grass may turn brown and have a 'scorched' appearance. If you feel that there is a significant aphid population then it might be worth considering the use of an aphicide – if in any doubt consult one of the major chemical suppliers.

WEEDS

All weeds grow at the expense of your grass crop! The broad leaved weeds will make a serious attempt to smother out the narrow leaved grass plants in their search for light, nutrients and water. Serious weed infestation is bad at any time but is especially serious during the critical establishment phase when the young grass is vulnerable to competition. In particular the control of annual meadow grass and chickweed is vital in any intensive grassland system. The most beneficial time to control them is at establishment before they have a chance to compete for valuable nutrients and reduce both the yield and the quality of the grass.

Patches of weeds which remain uncontrolled in the early stages will, as often as not, remain in the sward for the whole life of the ley. What is more, the weeds will certainly spread over time and inhibit grass output still further.

It is probably safe to assume that a very high proportion of grass fields (perhaps 25% or more) have some level of infestation with broad leaved weeds. In long term leys this infestation probably means a ground cover figure in the 7 to 15% category. This means on a livestock farm with 100 acres of grass, around 15 acres could be made up of broad leaved weeds – which represents a staggering loss of potential yield (and herbage quality).

We must remember that all agricultural soils carry a weed seed burden and the levels involved can easily be as high as 100 million viable seeds a hectare! On this basis, we can't talk about getting more from grass without tackling this potential problem.

Weeds are, unfortunately, a visible sign of rather lax grassland management. Their presence is also indicative of many other problems. These include:

Soil pH

It is important to ensure that your soil has a pH of 6.5 – if it is well below this figure then you need to consider an application of lime. Certainly, if the pH is wrong, this will mean that you are not fully exploiting the value of your fertiliser or other expensive inputs. With the application of lime it is always better to work on a 'little and often' basis rather than making large applications several years apart.

Chafers

The grubs of several species of chafer beetle may cause damage to grass in various parts of Ireland. The garden chafer (*Phyllopertha horticola*) is likely to be the most serious. The adult is around 8–9mm long with a metallic green head and thorax and reddish-brown wing cases. The grubs are white and measure about 18–20mm when fully grown. Due to the nature of the life cycle, affected fields tend to be re-infested each summer. The feeding action by the grubs (they sever the roots) will produce patches of poorly grown grass and these may turn very brown in dry weather. The damage is most likely to be seen in September and October. There may well be a lot of bird activity on the pasture – as they look for the grubs to eat. If you are concerned that you may have a very high population of chafers you would be advised to contact a suitable agrochemical company for further advice.

Drainage

Check the drainage in your grass fields because heavy infestations of weeds can be a symptom of poor drainage. Wet areas of ground will encourage weed growth and will lead to other difficulties such as poaching and shallow rooting in the grass.

Phosphate & Potash

We recommend that you have a soil analysis done to determine the P and K status of your fields. If a dressing is needed then work it into the seedbed prior to drilling.

Soil Compaction

As with most crops, grass does not like soil compaction. Soil pans mean that the grass roots cannot grow down to where the moisture is in the dry summer months. Regular subsoiling is an important part of good grassland management.

When embarking on a weed control programme it is vitally important to apply the spray when the plants are at their most vulnerable stage. The stage of grass growth is also important. You may well damage the ley if sprays are applied before the grass has tillered and avoid spraying in very dry conditions when the grass plants may be suffering from stress.

It is, of course, essential to follow the instructions supplied by the manufacturer whenever a herbicide is being used. Failure to do this may also lead to some very unwelcome health problems in your grass crop.

A sound back-up policy after spraying will help to ensure success. As part of this programme you need to maintain target stocking levels so that your animals keep on top of your grass growth. Neither under nor over grazing is conducive to good weed control. Top the fields regularly to get rid of unpalatable grass or other species that stock have left and apply fertiliser as appropriate. Alternating mowing with grazing will discourage the production of weeds which favour one or the other regime. If patches of weeds become a problem then use a knapsack sprayer to take them out at the earliest possible opportunity.



SEED & HERB MIXTURE SOWING RATES

Type of Seed		Quantity (kilos/acre)	Sowing Date
Barley	(Spring)	65-75	February-March
	(Winter)	50-75	September-October
Wheat		75	September-November
		75	January-March
Oats	(Winter)	75	September-October
	(Spring)	75	September-October
Field Beans	(Winter)	75-100	October
	(Spring)	75-100	February-March
Combining Peas	(Marrowfat)	100-115	February-March
	(Small Blues)	110-125	
	(Large Blues)	100-120	
	(Whites)	90-110	
Linseed		25	Mid March-mid April
Ryegrass	(Hybrid)	14.75-16.25	March-September
	(Italian)	13-16	March-September
	(Perennial)	13-18	March-September
	(Westerwolds)	16	March-May
Clover, Red		3.5-5	March-August
Clover, Tetraploid Red		4.5-5.5	March-August
Lucerne		7.5	April-August
Forage Peas		75*	March-late July
*(Sowing rate is reduced in arable silage blends)			
Forage Rye		75	September-October
Forage Rye/Italian Ryegrass	50/7		September-October
Forage Maize		45,000 seeds	Mid April-mid May
Mustard		5-10	May-August
Fodder Rape		2-4	May-August
Tares (Vetches)		75	January-April or Sept
Stubble Turnips		2-3	April-August
Full Season Turnips	(Natural)	1-2	Late May-early June (N)
	(Graded)	0.25-0.35	June-early July (S)
Fodder Beet	(Monogerm)	50,000 seeds	April-early May
	(Pelleted)		
Kale	(Natural)	1-3	April-June
	(Graded)	0.5-0.75	
Swedes	(Natural)	1-2	Early May-mid June (N)
	(Graded)	0.25-0.35	Late May-mid June (S)

(N) North (S) South

KEY SPECIES FOR PRODUCTIVE GRASSLAND

The grasses which are used most often when formulating mixtures for livestock farmers in Ireland and the UK, are detailed below. In addition to the Ryegrasses we also provide information on other species including Timothy, Cocksfoot and the Fescues.

Conventional Grasses

Perennial Ryegrasses

This grass species is the most widely used here and is the cornerstone of the vast majority of the ley mixtures sown in Ireland. This is not surprising when you consider that it is a persistent, adaptable, long-lived species and is capable of very high yields – especially in the first harvest year. Generally speaking, the Perennial Ryegrasses have good winter hardiness and they establish rapidly.

There are many varieties available and these are basically subdivided into three categories – Early, Mid-Season and Late Flowering. The early varieties will head in mid-May whereas the late varieties generally come into flower in mid-June.

Early Perennials

These early flowering varieties have an erect growth habit and the ability to bulk up rapidly in the spring for conservation cuts. The varieties also grow well in early spring which is a valuable attribute in most grazing mixtures. Early Perennials are more persistent than Italian Ryegrasses but tend to have a lower mid-season production potential.

Mid-Season 'Intermediate' Perennials

These have a denser, more prostrate growth habit than the Early Perennials and boast a longer production season. Persistency is good and the yield potential under both grazing and conservation management is high. Mid-Season Perennials are sometimes used to help put some extra 'bottom' into short term mixtures as well as in the primary role of providing good yields in long term mixtures.

Late Flowering 'Pasture' Perennials

Ryegrass varieties in this category should be extremely persistent and consequently provide the essential backbone of any long term ley designed for intensive grazing by cattle or sheep. The dense growth habit associated with Pasture Perennials will give a well designed ley extremely good tolerance to treading. The yield potential is very high and Pasture Perennials generally exhibit good mid-season and end of season growth.

Tetraploid Ryegrasses

There are Tetraploid versions of both the Italian and Perennial Ryegrasses. The plant size is similar to the traditional Diploid types but the leaves of Tetraploids are normally much broader and the overall growth habit is more erect. Compared with Diploids, the Tetraploid varieties offer a number of plus points, including the following:

- A higher palatability factor
- An increase in soluble carbohydrates (high sugar levels)
- Good winter hardiness
- More tolerance to drought conditions

Traditionally, Tetraploids were less persistent but this trait has been largely eradicated by plant breeding. Tetraploids can be up to 2% higher in moisture than Diploids.

High yield/Fast Growing Grasses

Italian Ryegrasses (*Lolium multiflorum*)

As Italian Ryegrasses offer the highest yields of any Ryegrass species they are the mainstay of conservation mixtures. However, Italians do not have great persistency – they last between 18–30 months – so their use tends to be in short term leys for silage. Italian Ryegrasses have an erect growth habit and are 2–3 weeks earlier than the 'Early Perennials'. The vigorously growing Italians should respond well to nitrogenous fertiliser but as they produce relatively few tillers the sward can become rather open. Italian Ryegrasses are sometimes sown specifically to provide 'early bite' grazing in March or earlier – followed by a leafy silage cut. Note that the winter hardiness of Italian Ryegrasses will be enhanced when all the surplus growth which is present in the autumn is removed. To achieve the optimum level of

spring growth with this species it is best to establish it in late summer or early autumn. Italian Ryegrasses really need frequent cutting and tight grazing to maintain quality.

Hybrid Ryegrasses

Carefully bred hybrids between Italian and Perennial Ryegrass parents can exhibit some very useful attributes indeed. They should be more persistent than the Italians and last between 24–48 months depending on the variety. They can be more productive than Perennials and offer quick recovery after cutting or grazing. Hybrids will respond well to applications of nitrogen and will help to improve the persistency of short term conservation mixtures. Hybrids normally exhibit better ground cover than Italian Ryegrass. Hybrid Ryegrass makes an excellent companion to Red Clover for high protein leys.

Westerwolds (*Lolium multiflorum westerwoldicum*)

These are annual grasses and when sown in the spring or summer will flower in the same year. This is a prolific species when it comes to heading so defoliation by cutting or grazing is essential to prevent a serious decline in digestibility. The key benefit with this species is the rapid production that can be achieved within 12–14 weeks of sowing. Westerwolds are rarely used in ley mixtures – their relatively short life but fast growth potential means they are invariably sown straight. From a spring sowing of Westerwolds, one would expect a typical silage yield of 13.5 tonnes of DM/ha.

Specialist Grasses

Timothy (*Phleum pratense*)

This is a very winter hardy species which will persist well in wet conditions. Timothy (sometimes called catstail) has the ability to maintain its production on poorer soils. In addition, this species provides good mid-summer growth and maintains its palatability when other grasses are losing theirs. With these features, Timothy is often included in both cutting and grazing mixtures which are being sown in the North and West of the country. In cooler and wetter conditions, the Timothy will enhance the palatability of the leys and boost that all-important mid-season production. It is very good for sheep grazing pastures. Timothy commences growth at a lower temperature than Ryegrass thus producing good early bite.

Cocksfoot (*Dactylis glomerata*)

In the past, Cocksfoot has traditionally been added to leys sown on lighter soils to help improve drought tolerance and provide autumn keep in November and December. A good variety of Cocksfoot will boost the mid-season production potential of ley mixtures and most varieties have good winter hardiness. Although Cocksfoot has some strong attributes it also has a major drawback – it very easily becomes 'tussocky' and unpalatable to stock. Cocksfoot has lower digestibility and soluble carbohydrate figures than Ryegrass. Its use tends to be limited to leys which have a very specific role to play on difficult soil types.

Red Fescue (*Festuca rubra*)

This winter hardy early growing species is also used very sparingly in modern ley mixtures. Red Fescue will maintain production on poor soils with a low pH. It offers good mid-season growth and will invariably thrive when grown under cold, wet conditions. Like Cocksfoot, Red Fescue is used in mixtures which have been targeted at quite specific farming situations. It needs tight grazing to maintain leafiness and quality.

Meadow Fescue (*Festuca pratensis*)

A nutritious and leafy species which has traditionally been sown with Timothy in grass/clover leys. This species is less vigorous and has a lower yield potential than Perennial Ryegrass. It is sometimes used in mixtures which are designed for extensive rather than intensive situations.

COMMON ESTABLISHMENT DISEASES

Pre-Emergence Damping-Off

Pre-emergence damping-off can lead to quite a high number of seeds failing to produce a viable plant. The soil borne fungi (usually Pythium and Fusarium species) only have a relatively short time span in which to make an attack. Such attacks will be more successful if the soil conditions are 'suitable' i.e. cold and wet or soon after the seed has been sown. However, there can still be attacks in warm weather when the soil conditions are very dry! Seeds which fail to produce a seedling will show distinct signs of rotting after the seed coat has been broken. To increase the proportion of seeds which produce a viable seedling, it is important to ensure that careful attention is paid to the preparation of the seedbed and sowing depth. In addition, proven seed treatments represent a major breakthrough – See page 29 for more information on our unique seed treatment HEADSTART® **GOLD**.

Post-Emergence Damping-Off

The two soil borne species mentioned previously (Pythium and Fusarium) along with several other species, notably Rhizoctonia solani, Cylindrocarpon radicola and the seed-borne Dreschlera, can cause this problem. The typical symptoms include the rotting of seedlings at their stem base and damage to their roots. This damage is normally seen after the emergence of the second or third leaf and it may be more prevalent when the soil is very dry and the weather warm. Paying careful attention to the quality of the seedbed and making sure that the grass is given a good start with adequate fertiliser will all help to reduce the risk of damage. Our seed treatment, HEADSTART® **GOLD** will prove very valuable.

DISEASE ATTACKS IN ESTABLISHED GRASS

Overwintering Diseases

Although winter kill is recognised as a key problem in northern areas of Ireland it can lead to problems even in southern parts; as it did during the winter of 2010. Several factors contribute to the disease but major pathological causes of death result from attack by Fusarium culmorum and Fusarium nivale (snow mould) and a number of other viruses. The damage is most severe when sudden cold spells follow periods of milder weather.

Grass that has been attacked by snow mould will exhibit patches of yellow which later turns a whitish-grey. This will be most noticeable in February and March. Pinkish white mycelium can often be seen within the matted turf, attacks by Fusarium nivale.

It is important to ensure that swards do not enter the winter in a long, rank state. In northern areas, avoid sowing mixtures which contain a large proportion of less winter hardy varieties.

Crown Rust

Crown Rust is now recognised as one of the most serious leaf diseases of grass, capable of devastating pastures. Once the disease takes a hold there can be a noticeable reduction in tillering and root growth and the foliage will turn yellow. Palatability can be badly affected with stock refusing to eat a heavily infected pasture. The re-growth and response to nitrogen can also be hit by crown rust. Once confined to the south and west, the disease seems to be steadily moving northwards; possibly as a result of global warming.

The disease is often seen in late summer and during the autumn and its spread is encouraged by warm, dry days and cool moist nights. Badly infected fields will take on a very yellow appearance. If you look carefully you should see the overwintering spores on the leaves – these are shiny and black and will appear on both sides of the leaves from mid-autumn onwards.

One of the best methods of control is frequent grazing. If a pasture has already been attacked and stock are rejecting the crop then the

best approach is to top the field and remove the infected herbage. Fertiliser should then be applied to encourage new growth – but ensure that the field is then grazed regularly (ideally at intervals not exceeding three weeks).

There is a degree of varietal resistance and this should be exploited in areas where the disease is known to be a regular problem.

Net Blotch

This is probably the most damaging fungal disease of ryegrasses in this country. It can be found throughout the year in a very large number of fields and can lead to some losses in digestibility. The symptoms of net blotch are sometimes confused with nitrogen deficiency because there is a superficial similarity.

The form of defence is to ensure that grass is grazed regularly so that it does not become long and rank.

Brown Blight

Not surprisingly, this disease may sometimes be confused with net blotch, although the former does not usually cause as much damage to the grass. If crops have been badly infected, it is worth cutting them to prevent further leaf damage.

Leaf Scald

Also called 'spring burn', this disease (caused by two main species of Rhynchosporium) can be especially prevalent in Italian Ryegrasses and it can lead to a loss of quality and yield. In addition, palatability may also be affected. The irregular 'scald-like' blotches are commonly found on the under surface of the leaves and these may also show signs of browning of the edges (which may be confused with windburn). The greatest damage may well have occurred before the ley has been given its first cut of the season. There is evidence of some varietal resistance.

Continued>

DISEASE ATTACKS IN ESTABLISHED GRASS

Drechslera (Leaf Spot)

Another serious disease of grass that is increasing rapidly is Drechslera. Recent NIAB TAG trials recorded more than 40% of the leaf area of some swards were affected by it. The disease is encouraged by wet and cloudy weather and is most prevalent in the autumn but unlike many other diseases it can be active well into the winter months, resulting in a decrease in Spring silage yields of as much as 18%.

Drechslera attacks the leaves of the grass plant starting as small speckles which later develop in to brown/black lesions, often with a yellow halo. The leaf eventually dies, reducing grass yield and feed quality. Cattle and sheep will reject infected grass, which in the worst cases can devastate whole pastures, turning them black. Like Crown Rust, there is a degree of varietal resistance to Drechslera. The use of resistant varieties or complex multi-gene mixtures such as Castlehill® will stop, or at least slow down the progress of the disease. Diploid Ryegrasses are more prone to the disease than Tetraploids.

Where the disease has taken hold in established pastures, it is best to remove infected material by light grazing (if not rejected by stock) or failing that, topping, which will inhibit the spread of the disease and reduce the chances of survival into the winter.

In the worst cases, advice should be sought from your crop protection specialist and the grass should be sprayed with a fungicide.

Mildew

Mildew (*Erysiphe graminis*) may be seen in lush, dense crops of ryegrass in the Spring and early Summer. Incidence of the disease can certainly lead to a loss of both yield and quality in Italian and Perennial Ryegrasses. Excessive soil nitrogen, shade and high humidity will all favour the development and spread of mildew. Crops earmarked for conservation are especially at risk.

To check for mildew, look for oval fluffy pustules on the leaves – these will mainly be seen on the upper side. There will be whitish coloured mycelium in the pustules and over time the affected leaves will turn yellow and die.

If mildew has been a problem in the past, take a closer look at varietal resistance as a means of reducing the incidence of this disease.

Bacterial Wilt

This was first recognised as a disease of grasses back in the mid-1970s and has been closely linked to Italian Ryegrass varieties. The symptoms are most noticeable on the flowering tillers where a yellow/orange stripe may be observed on the flag leaf. The development of the disease may lead to leaves wilting and turning a light straw colour. Severe cases are fairly rare.

Ergot

This is caused by a fungus (*Claviceps purpurea*) and can be found throughout the UK but more especially in wetter areas. The main interest with this disease lies in the fungal structures which appear. These 'ergots' (which develop in the flowers of the grass) can cause poisoning in livestock. These ergots vary in length (from 0.25 – 2.00cm) and are hard with a white or purplish centre.

Grass crops which are grazed or cut before flowering should have no ergots present. If you are re-seeding fields which are known to carry infestations of ergot then ensure that they are ploughed well (so as to bury the ergots to a depth of at least 10cm and thereby prevent them from germinating).

Barley Yellow Dwarf Virus (BYDV)

BYDV is spread by aphids and individual fields can have a very high level of infection (up to 85% or more). It may lead to the dwarfing of individual plants and the grasses which are infected will invariably show some yellowing or reddening of the leaves. The best time to make a diagnosis is in May and June but the symptoms can be readily confused with the results of nutritional and environmental stress factors.

Ryegrass Mosaic Virus (RMV)

This is spread by mites and is most prevalent on the ryegrasses, particularly the Italians. The main symptoms are pale green streaks on the upper surfaces of leaves. As the plants get older these streaks may be yellow or brown. Both plant height and tillering may be reduced. RMV can spread very rapidly within a field and lead to losses of up to 30%. Digestibility may also be reduced. There is some tolerance to RMV in individual grass varieties.

SUMMARY

It is worth stressing that good grassland management is one of the major weapons that farmers have at their disposal when fighting diseases. By tight grazing, and where appropriate, regular sward topping you will promote conditions that are unsuited to the majority of grass diseases. In addition, and perhaps even more importantly, regular re-seeding with good quality mixtures will be a major benefit. This is because it introduces newer varieties (which will have better disease tolerance) and young, vigorous grass plants will be naturally more resistant to infection.



RUN A HEALTH CHECK ON YOUR GRASS

Take a good look at all your grass fields this year and if you can answer **'yes'** to any of these questions then you need to think very seriously about the various options that are open to you.

- Q: Are your leys struggling to support the numbers of livestock they did in the past?
- Q: Is the speed of re-growth after silage cuts slower than it was?
- Q: Have your fields been attacked badly by pests and/or diseases in recent years?
- Q: Do you see more and more patchy areas on some fields?
- Q: Is the population of weeds and weed grass much higher than you thought?
- Q: Have your fields been badly poached in recent years?
- Q: Do you detect a reduction in the amount of silage being taken off each field every season?
- Q: Has the level of broad-leaved weed infestation been rising?
- Q: Could you make better use of the high feeding value of legumes like White Clover?

You have various options if you have answered 'yes' to any or all of these questions. It may be that in some cases you will be able to bring the ley back up to speed by close attention to the control of weeds and pests. Alternatively, it may be necessary either to consider a complete re-seed or perhaps an overseeding operation.

The key point to remember is that it is important not to look at the cost of reseeding but instead consider the cost of not reseeding!



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