afbi Agri-Food and Biosciences Institute ®

More from Grass

Proceedings of Industry Open Day

"More from Grass"

AFBI Loughgall

Tuesday 20 June 2017

MORE FROM GRASS

More from Grass

Introduction

Dr Sinclair Mayne
Chief Executive
Agri-Food and Biosciences Institute

Welcome to AFBI's "More from Grass" Event

I am pleased to welcome you to AFBI Loughgall to our "More from Grass" event. Northern Ireland has a natural advantage compared to many other important livestock production regions in the world – our ability to grow high yields of grass (up to 15t DM/ha) at relatively low cost. We must capitalise on this natural advantage to the full if we are to remain competitive in the future, particularly given that subsidies are likely to reduce post Brexit.

One of the key messages from today's event is the opportunity to refocus on grass as a way of reducing production costs in dairy, beef and sheep systems. Efficient grass production involves producing and utilising high yields of grass through attention to detail on:

- Soil fertility (efficient use of manures and fertiliser)
- Drainage
- Sward type (ensuring the correct species and variety mix within the sward)
- Efficient utilisation (grazing and cutting at the correct stage)

More from Grass

Average levels of grass utilisation on Northern Ireland farms are disappointingly low – typically 7.5 t DM/ha on dairy farms and 4.1t DM/ha on beef and sheep farms. This compares with potential grass yields from well managed swards of up to 15t DM/ha, with over 12t DM/ha being utilised on the top 1% of dairy farms.

AFBI research has shown that improving grass utilisation by 1t DM/ha, combined with improving grass quality by cutting and grazing at the correct stage, has the potential to increase margin over feed costs by £334/ha on dairy farms or £204/ha on beef farms. Today's event will highlight how this can be achieved in practice and I encourage you to discuss full details of work being presented with the research and advisory staff that will be available throughout the event.

Finally, I am pleased that today's event is supported by AgriSearch, CAFRE, the Ulster Grassland Society and our commercial grass breeding partner Barenbrug.

Dr Sinclair Mayne
Chief Executive, AFBI

More from Grass

Soil Compaction in Grassland

afbi Agri-Food and Biosciences Institute

Identifying compaction

Dig several small inspection pits 30cm deep to identify severity and distribution of problems.

- Look for poor soil structure
- Compacted horizontal layers
- Poor root penetration and/or roots running horizontally
- Relatively low earthworm populations
- Presence of a blue/grey anaerobic layer

Removing compaction

- Only loosen soil where compaction has been identified
- Soil conditions must be right
- Loosened soils are very prone to recompaction
- Grass yield could be reduced in the short term by 10% but trafficability may be improved
- Effects tend to be shortlived (2-3 years max)

www.afbini.gov.uk

Soil testing

Dr John Bailey, Agri-Environment Branch, AFBI

Soil Compaction in Grassland

Soil compaction occurs when soil particles are consolidated beyond an optimum level, making root penetration difficult, and reducing soil aeration, water infiltration and natural drainage. These changes can reduce grass yield by up to 25% and increase the risk of nutrient loss to water in surface runoff. Severe compaction can be reduced by loosening in optimal soil conditions through spiking and/or sub-soiling.

The most cost effective way of preventing soil compaction is to adopt management strategies which reduce the risk of soil damage.

1. Match operation to the nature and condition of the soil.
2. Reduce total axle loads (ideally below 5 t).
3. Reduce ground/tyre contact pressure.
4. Use a controlled traffic system within fields where appropriate.

More from Grass

afbi Agri-Food and Biosciences Institute

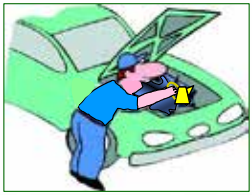
Nutrient Management Planning

3 Steps for Producing More Grass

Step 1

Soil test & make the most of soil nutrients

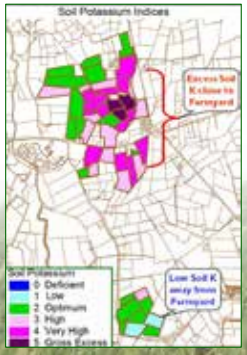
Not soil testing is like adding oil to an engine without first using the dipstick



Step 2

Apply slurry nutrients wisely!

Don't oversupply some fields and undersupply others



Step 3

Prevent nutrient deficiencies

Focus particularly on Sulphur (SO_3) & Potash (K_2O)

www.afbini.gov.uk

Nutrient Management Planning

Soil testing provides vital information on the nutrient supplying power of soils and enables us to estimate how much lime, phosphate (P_2O_5) and potash (K_2O) need to be applied to sustain optimal grass production. Less than 10% of grassland in NI is soil tested each year, and consequently a large proportion is under-performing, often as a result of under-liming. Intensively managed swards, require a soil pH of 6.0 (or 5.5 for peaty soils), a soil P index of 2+ (21-25 mg Olsen-P/l) and a soil K index of 2- (12—180 mg K/l). For extensively managed swards receiving less than100 kg N/ha/year, a soil P index of 2- (16-20 mg Olsen-P/l) should suffice.

Next to the soil, the slurry store contains the largest source of farm nutrients, and should be used wisely to prevent fields from becoming over or under-supplied with P_2O_5 and K_2O.

Sulphur (S) and potassium (K) deficiencies must be corrected to prevent significant reductions in grass yield. Yield losses of up to 30% can occur at 1st cut as a result of S deficiency, and at 2nd and 3rd cuts as a result of K deficiency.

More from Grass

Driving grassland productivity

- Grass remains the cheapest feedstuff available to N.I. ruminant sectors
- 1 tonne extra grass dry matter utilised per hectare = +£441
- Weekly measurement of grass key to maintaining animal performance
- GrassCheck provides weekly grass growth and quality monitoring

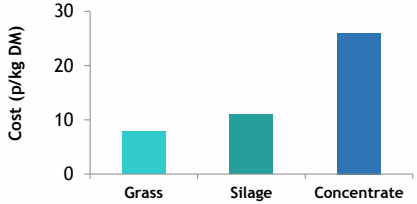


Figure 1: Cost of individual feedstuffs

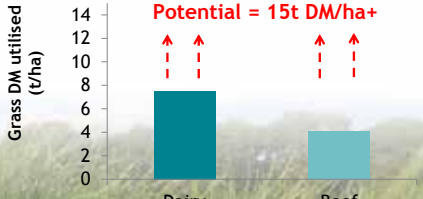


Figure 2: Estimated grass utilisation on N.I. farms

More from Grass

GrassCheck 2017

Weekly monitoring of two core locations:

- CAFRE, Greenmount
- AFBI, Hillsborough

Managed to replication intensive dairy grazing regime:

- 270kg N/ha

Weekly grass growth forecasts:

- 7 day
- 14 day

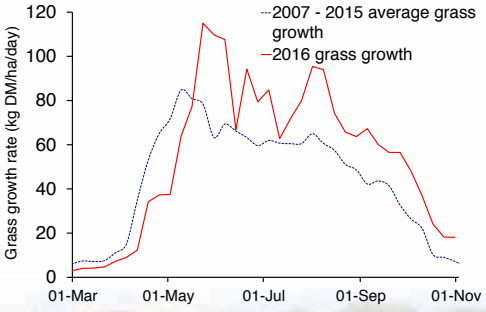


Figure 3: Seasonal grass growth curve for 2016

www.afbini.gov.uk

GrassCheck 2017: Driving grassland productivity

Dr Debbie McConnell and Ms Nuria Valbuena, Agriculture Branch, AFBI

To assist farmers in making grassland management decisions, GrassCheck continues to provide livestock farmers in Northern Ireland with weekly grass growth and quality information during the main grazing season over the past 16 years.

Well-managed grass remains the most cost-effective feedstuff for UK dairy cows. In Northern Ireland (N.I.) by improving both grass utilisation by one tonne dry matter per hectare (t DM/ha) and grass quality, an extra profit of £204 - 334/ha/yr could be realised on the average dairy farm. The current performance of managed grasslands in N.I. is estimated at 7.5t DM/ha utilised on dairy farms, less than 50% of the potential yield achievable from modern day grass varieties (Mayne and Bailey, 2016) Therefore, there is significant scope to improve grassland productivity in NI.

GrassCheck was originally established in 1999 to provide information on typical grass growth rates throughout the growing season. On-going collection of this information each year is crucial in understanding grass growth and grass quality across N.I. Since 2005, seven and 14 day grass growth rate forecasts have also been published to assist farmers in planning grazing management. Data is generated from four sets of monitored plots, managed under a simulated grazing regime, located at AFBI, Hillsborough and CAFRE, Greenmount. Management notes are also provided to advise farmers on best practice to utilise forecasted grass growth.

To date, grass growth in 2017 has been similar to the long term average, equating to a growth rate of 50.6kg DM/ha/day since the

More from Grass

2017: On-farm monitoring

- 35 dairy, beef and sheep farmers
- Range of systems, land type, growth potential and management intensity

Data collected:

- Grass growth and utilisation
- Grass quality
- Weather data

GrassCheck online:

Agrisearch.org.uk/grasscheck

@GrassCheck

GrassCheck

More from Grass

2017: On-farm monitoring

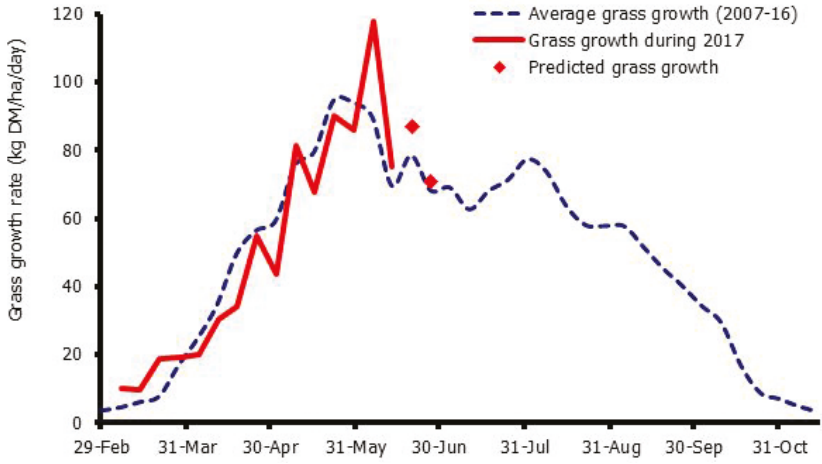
Table 1: On-farm grass growth during May 2017

	Total rainfall (mm)	Soil moisture (centibars)	Daily growth rate (kg DM/ha)	Total yield (kg DM/ha)
Antrim	49.4	17.6	101.9	3 159
Armagh	42.4	27.7	63.4	1 965
Down	35.3	55.2	60.3	1 870
Fermanagh	46.8	17.1	87.8	2 721
Londonderry	35.7	17.6	89.0	2 758
Tyrone	53.2	15.7	92.2	2 858
Average	**43.8**	**25.2**	**82.4**	**2 555**

www.afbini.gov.uk

beginning of March (Figure 1). Although growth was marginally slower than expected throughout March, April and May, excellent growing condition in early June have compensated for this with total growth this season equivalent to 5.33t DM/ha, 95% of the long term average.

Figure 1. Grass growth rates for 2017 and average over the past 9 years from plots at Greenmount and Hillsborough



This year, to better understand the growth potential of different areas across N.I., the GrassCheck project has recruited 30 dairy and beef farms to monitor grass growth and quality on a weekly basis during 2017. Spanning a range of production systems, land types and geographical locations, farms have also been fitted with automatic weather stations providing real time information on temperature, solar radiation and rainfall.

Considerable county-to-county variation in grass growing conditions has been evident across N.I. in recent weeks. During May, growth in Armagh and Down was 1,289kg DM/ha lower than the remaining N.I. counties, due to low rainfall and soil moisture levels (Table 1).

More from Grass

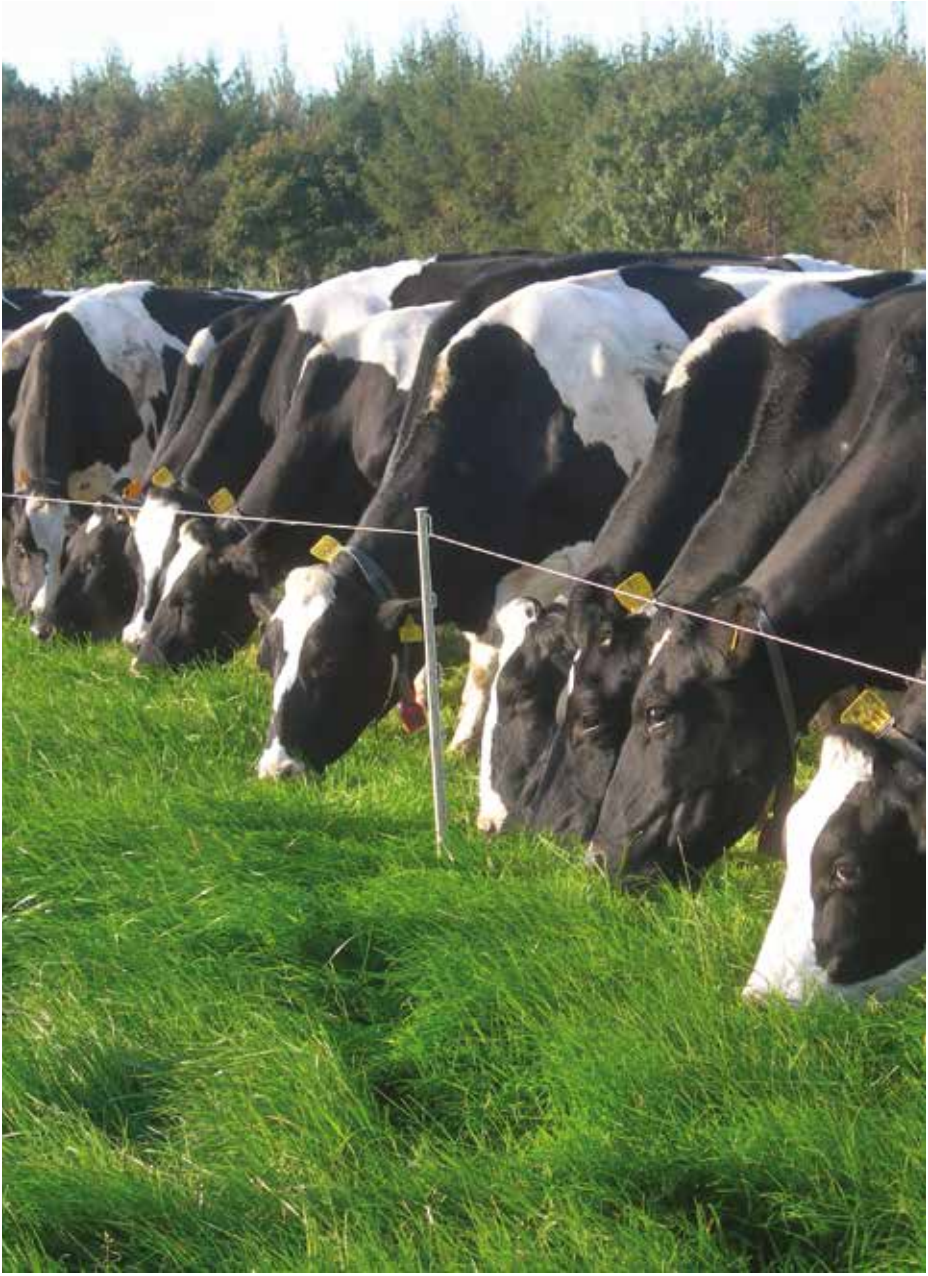


Table 1: Variation in weather and grass growth parameters between NI countries for the 2017 GrassCheck dairy farms.

	Total rainfall (mm)	Average daily temperature (°C)	Daily growth rate (kg DM/ha)	Total yield (kg DM/ha)
Antrim	49.4	12.0	101.9	3,159
Armagh	42.4	12.4	63.4	1,965
Down	35.3	11.9	60.3	1,870
Fermanagh	46.8	12.3	87.8	2,721
Londonderry	35.7	12.2	89.0	2,758
Tyrone	53.2	12.3	92.2	2,858
Average	43.8	12.2	82.4	2,555

To find out more visit www.agrisearch.org.uk/grasscheck or follow the project on Facebook or Twitter.

Acknowledgements: GrassCheck 2017 is funded by AgriSearch and supported by the College of Agriculture, Food and Rural Enterprise.

More from Grass

afbi Agri-Food and Biosciences Institute

Perennial ryegrass breeding

Key Objectives:

Yield: Spring production and total yield under silage & grazing

Persistency: Sward longevity, ability to withstand poaching

Diseases: Resistance to crown rust and leaf-spot

Nutrient efficiency: More efficient use of nutrients & water

Nutritional quality: Digestibility, palatability, protein

www.afbini.gov.uk

Perennial Ryegrass Breeding at AFBI Loughgall

David Johnston and Gillian Young, Grass Breeding Programme, AFBI Loughgall
David Linton, Barenbrug UK Ltd.

The main objective of this programme is to breed new high yielding, persistent varieties which will improve output and profit from beef, sheep and dairy farms in Northern Ireland.

Since this programme began in 1952, there have been considerable changes in grassland management on local farms. Through close links with local farmers, the agricultural supply trade and liaison with CAFRE technologists, the objectives of the breeding programme are routinely reviewed and revised to meet the needs of the industry.

Key objectives

- **Yield:** Total yield under silage and grazing and also improved spring production
- **Persistency:** Sward longevity, the ability to withstand poaching by livestock and heavy machinery. On farm trials are highly valued.
- **Disease resistance:** Crown rust and leaf-spot are increasingly evident in Northern Ireland, hence the requirement for resistant varieties.
- **Nutrient efficiency:** Objective is to find grasses which are more efficient in their use of soil nutrients and water.
- **Nutritional quality:** Selecting grasses with enhanced levels of protein, digestibility, sugars and fibre. Particular emphasis placed on improved palatability.

More from Grass

afbi Agri-Food and Biosciences Institute

AFBI varieties

Intermediates

Glenariff (D): Dense, leafy grazing swards

Moira (D): Excellent spring growth, high quality

Fintona (T): Exceptionally high production with good quality

Seagoe (T): Very high silage yields, good spring production

Lates

Drumbo (D): Leafy, dense swards with good summer & autumn production

Glenarm (D): High quality for silage and grazing

Dundrum (T): High 2-cut silage yields and quality grazing

Ballintoy (T): New variety with exceptional total production

www.afbini.gov.uk

Variety portfolio

An extensive portfolio of AFBI-bred varieties is presently available for use in NI, with further varieties being multiplied for commercial release.

Intermediates

- **Moira (D)**
  Excellent spring growth with good quality
- **Fintona (T)**
  Exceptionally high production with good quality and persistency
- **Seagoe (T)**
  Produces very high 2-cut silage yields and high silage yields with excellent spring growth
- **Glenariff (D)**
  Excellent grazing variety producing dense, leafy swards

Lates

- **Drumbo (D)**
  Produces leafy, dense swards with good summer and autumn growth
- **Dundrum (D)**
  Very high 2-cut silage yields with good digestibility. Produces high quality grazing.
- **Glenarm (D)**
  Excellent production of high quality grass for silage and grazing.
- **Ballintoy (T)**
  A new variety for 2018 which will set a very high standard for total yield and spring growth.

The AFBI Grass Breeding programme is now jointly funded by DAERA and Barenbrug, with main trial sites at Loughgall and Evesham (Worcestershire)

More lamb and beef from grass?

AgriSearch
Driving Excellence & Innovation

- 3 year project funded by DAERA and AgriSearch
- Grazing trials to investigate the effects of different grazing strategies and sward types on:
  - grass growth and quality
  - animal performance
- On-farm work (on lowlands and hills) to:
  - evaluate the benefits of grass measurements
  - monitor livestock performance across a range of animal types and environmental conditions

What is the quality of grazed grass?

	March	April	May	June
Dry matter (%)	20.1	17.9	19.6	17.8
ME (MJ/kg DM)	12.0	11.9	11.7	11.5
Crude protein (% DM)	21.4	19.8	18.2	19.2
Water soluble carbohydrate (%DM)	15.0	14.8	15.7	14.2

Don't underestimate the quality of grass

Producing more beef and lamb from grass

Dr Francis Lively and Dr Aurélie Aubry, Agriculture Branch, AFBI Hillsborough.

Low profitability in beef and sheep production enterprises is a real threat to the sustainability of the Northern Ireland red meat industry. The key factors directly affecting the economic and biological efficiency of beef and sheep production are feed requirements, reproductive performance and progeny growth rate. Grazed grass is the cheapest form of feed currently available for ruminant livestock in Northern Ireland. However it is often poorly utilised on beef and sheep farms with the estimated average utilised annual yield being only 4.1 tonnes of dry matter per hectare (t DM/ha). This is considerably lower than the equivalent yield on dairy farms (7.5 t DM/ha) or the potential yield achievable from modern day grass varieties (15 t DM/ha).

A recent AFBI study has evaluated the effects of beef farm sustainability measures (concentrate usage, animal performance and profitability) resulting of a 1 t/ha increase in utilisation of grass/forage DM, with or without an increase in grass quality. This was compared to a typical beef rearing and finishing farm situation in NI utilising 4.1t DM/ha, based on the standard UK energy rationing guidelines. For the purpose of the exercise, the 'typical' beef rearing and finishing system assumed a continental beef steer was purchased at 7 months of age at 264 kg and taken to 689 kg live weight at 24 months. Standard performance was taken with growth rates of 0.7, 0.8 and 1.0 kg per day for winter 1 growth phase, summer grazing and winter 2 finishing phase, respectively. The duration of each phase was 151, 228 and 137 days, for winter 1, summer grazing and winter 2 respectively. Table 2 shows the amounts of grass, silage and concentrate utilised and the ME content of the forage.

Table 2. A comparison of a 'typical' beef system, with 3 alternative systems, showing the effects on concentrate usage, live weight gain and farm profit, of a 1 ton/ha increase in grass DM utilisation by beef cattle - with or without increases in forage quality and animal performance

System Variables	Typical NI rearing and finishing beef steer system	(a) 1 t/ha extra forage DM utilisation of similar quality with similar performance	(b) 1 t/ha extra (better quality) forage DM utilisation with similar finishing performance	(c) 1 t/ha extra (better quality) forage DM utilisation with higher animal performance
Grass & silage utilization per ha (t DM/ha/yr)	4.1	5.1	5.1	5.1
ME content of grass (MJ/kg DM)	10.7	10.7	11.2	11.2
ME content of silage (MJ/kg DM)	10.2	10.2	10.7	10.7
Winter 1 live weight gain (kg/day)	0.7	0.7	0.7	0.7
Summer grazing live weight gain (kg/day)	0.8	0.8	1.0	1.0
Winter 2 finishing live weight gain (kg/day)	1.0	1.0	1.0	1.2
Final age (months)	24.0	24.0	22.4	21.9
Grass or silage intake per head (t DM)	3.99	3.99	3.84	3.70
Stocking rate (steers/ha)	**1.33**	**1.66**	**1.58**	**1.59**
Live weight gain (kg/ha/yr)	401	498	519	541
Concentrates required per head (t DM/yr)	0.34	0.34	0.18	0.22
Concentrates required per hectare (t DM/yr)	0.45	0.56	0.28	0.31
Production economics				
Change in live weight gain	-	+£197/ha/yr	+£239/ha/yr	+£283/ha/yr
Change in concentrate use	-	-£25/ha/yr	+£38/ha/yr	+£23/ha/yr
Additional costs for silage cutting	-	£0/ha/yr	-£68/ha/yr	-£68/ha/yr
Additional fertiliser N on silage area	-	-£12/ha/yr	-£19/ha/yr	-£19/ha/yr
NET CHANGE IN PROFIT	-	+£160/ha/yr	+£190/ha/yr	+£218/ha/yr

This typical beef system was compared with three others:

a) similar performance levels gained from utilising an additional 1 t/ha DM low quality grass/forage (based on ME content)
b) similar growth performance levels during the indoor periods gained from utilising an additional 1 t/ha grass/forage DM of better quality forage, (based on ME content), slaughtering at same final live weight but at a younger age
c) higher performance levels gained from utilising an additional 1 t/ha grass/forage DM of better quality forage,(based on ME content), slaughtering at same final live weight but at a younger age

Results

Increasing the yield of utilisable forage from 4.1 to 5.1 t DM/ha required additional fertiliser, whilst improving the quality (energy content) of the forage required improved grassland management and moving from a 2 cut to a 3 cut silage system. As shown in Table 2, moving to system (a) where 1/t ha extra forage DM of low quality forage is utilised a higher stocking rate leads to an improved live weight gain per ha with potential to increase net profit by £160 per ha. Moving to system (b) results in higher performance at grass, which further increases live weight gain per hectare (+159 kg), in addition to requiring lower concentrate levels to reach the target growth rates and results in further financial savings (£190 per ha relative to base system). Moving to system (c) also resulted in higher performance at grass but higher finishing performance (+0.2 kg/day) with modest concentrate input reduces slaughter age by 62 days and attracts further savings over systems (a) and (b) (£218 per ha compared to base system).

These findings indicate that practical means of increasing grass utilisation and quality is critical for improving the financial performance and sustainability of the red meat industry going forward. DAERA and AgriSearch have recently funded 2 projects which aim to maximise grass production and utilisation within beef and sheep enterprises.

More from Grass

What is the impact of increasing utilised grass yield and quality for a beef farmer?

	Base system	Increasing utilised yield by 1 t DM/ha	Increasing utilised yield by 1 t DM/ha plus improved quality
Grass & silage utilisation per ha (t DM/ha/yr)	4.1	5.1	5.1
Stocking rate (steers/ha)	1.33	1.66	1.59
Concentrate use (t/steer)	0.39	0.39	0.22
Live weight gain/ha (kg)	401	498	541
Economics (£/ha/year)			
Live weight gain		+197	+283
Concentrate cost		-25	+22
Fertiliser and silage cost		-12	-87
Net change in margin		**+160**	**+218**

www.afbini.gov.uk

More from Grass

What is the impact of increasing utilised grass yield by 1 t DM/ha and quality by 0.5 MJ for a beef farmer?

↓ Concentrate input by 21 % per hectare

↑ Stocking rate by 19% per ha

↑ Live weight gain by 35% per hectare

↑ Net margin by £218 per ha

Don't underestimate the value of grass

www.afbini.gov.uk

In addition to detailed production studies undertaken at AFBI, these projects involve 18 beef and 6 sheep producers throughout Northern Ireland who will be measuring grass growth and quality on a weekly basis and will be monitoring the utilisation of this grass into beef or lamb production. These studies will further highlight the importance of improving grass utilisation and quality for beef and lamb production.

More from Grass

afbi Agri Food and Biosciences Institute

Alternative grasses

BARENBRUG

Italian ryegrass: For short term silage and biogas

Hybrid ryegrass: Perennial x Italian, extended growth and high yields for 3+ yrs

Cocksfoot : Drought resistant, good mid-summer production under lower soil fertility

Alternative grasses and legumes

James Ingles and Mhairi Dawson, Barenbrug UK Ltd

Perennial ryegrass and white clover are the main components of forage seeds mixtures in Northern Ireland. However, there are several alternative grass and legume species which have particular merits and are already used to a lesser extent, either in monoculture on in mixtures with perennial ryegrass. These include:

Hybrid ryegrass

Varieties of hybrid ryegrass are obtained by crossing perennial and Italian ryegrass and as a result two distinct types can be distinguished. The Italian types have an erect growth, give an excellent spring growth and are suitable for intensive silage production whereas the perennial types form a denser sward and have later spring growth. In comparison with perennial ryegrass, a hybrid has more extended growth and higher production.

Italian ryegrass

Provides excellent quality forage for up to two years, depending on climate, moisture and management. Due to its quick re-growth, very early spring production and prolonged growing period in autumn, this species usually out-yields all other grasses in NI. Newer Italian varieties are productive and with improved digestibility, of special value in short-term silage swards and for biogas.

Cocksfoot

Cocksfoot is valuable on light soils in dry areas. It is quite slow to establish in a newly sown sward but has an excellent summer growth. Newer varieties are more leafy and palatable and are a useful component in swards which are maintained under lower levels of soil fertility.

More from Grass

afbi Agri Food and Biosciences Institute

Alternative grasses & legumes

BARENBRUG

Tall fescue: Deep rooting, nutrient and moisture efficient and moderate resistance to flooding, high fibre content

Timothy: Palatable and excellent winter hardiness. Suits wet, peaty soil in high rainfall areas

Red clover: Useful component in silage swards fixing Nitrogen and boosting protein

Lucerne: Productive silage legume on high pH, free-draining soil

Tall fescue

Tall fescue is a deep rooting, very adaptable species which grows well in dry or wet conditions producing high yields and early spring growth. It is also winter hardy and persistent and can even survive better than most grasses under flooding. New varieties have softer leaves with improved palatability. A useful species in mixture with perennial ryegrass to increase fibre content.

Timothy

Palatability and superior winter hardiness are Timothy's most important features. It does very well on wet, peaty and heavy textured soils and is an important constituent in seeds mixtures in NI, especially in areas of higher rainfall.

Red clover

A very valuable component in silage mixtures, appreciated for its ability to fix Nitrogen and raise protein level. Often used in mixtures with hybrid ryegrass or tetraploid perennial ryegrass.

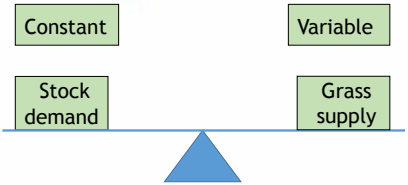
More from Grass

Reseeding – Methods and costs

		£/acre	
	Ploughing	Min-till	Overseeding
Spray and spraying	33	33	-
Cultivations	67	22	-
Seed, sowing, rolling	78	87	59
Fertiliser and sowing	35	35	35
Total cost	213	177	94
Reliability	High	Moderate-high	Moderate

More from Grass

Getting the balance



Paddock grazing

- 3 leaves, 3 days, 3 weeks
- In at 10 cm (3000kg DM), out at 4 cm (1600kg DM)
- Sward quality, yield and utilisation high all season

Entry and exit

- Entry too high – hard to graze out
- Exit too low – slow regrowth, lose production
- Exit too high – dead material at the base, lose production

Grass budgeting

Dr Norman Weatherup, Senior Beef and Sheep Technologist, CAFRE

Improving swards and grass utilisation

Reseeding methods

Swards can be improved in several ways. The traditional method is by sward destruction using chemicals followed by ploughing, cultivation and sowing a completely new sward. This method is the most expensive, takes the field out of production for the longest time but is the most reliable.

Minimum tillage or min-till also involves destruction of the old sward but reduced cultivation (one or two passes with a power harrow) is used rather than ploughing. This reduces the cost of reseeding and unproductive time for the sward but will slightly reduce reliability.

Overseeding can be used where a sward has some productive grass present but the sward is thin or open. The old sward is not destroyed and a reduced rate of seed is stitched in. This method has the lowest cost and shortest unproductive time but also further reduces reliability.

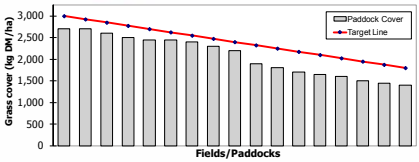
Getting the balance between supply and demand

Grassland management is about having excellent stock performance by growing and utilising sufficient grass to meet requirements. Animals have to eat every day but grass growth varies significantly throughout the season, sometimes on a daily basis. The key is keeping supply and demand in balance.

Set stocking

If animals are set stocked, sward height will fluctuate during the season due to variations in supply and demand. This can often result in areas of rejection by stock leading to wasted grass and poor utilisation or areas which are overgrazed resulting in lower overall grass growth.

Keeping the balance



Deficit wedge

- Graze silage area
- Increase concentrate
- Increase fertiliser application
- Reduce stock numbers

Summary

- **Walk** your paddocks
- Are they leafy to the base?
- Use a measuring system – wellie boot, mobile phone, plate meter
- Assess your wedge
- Computer programmes can help

www.afbini.gov.uk

Paddock grazing systems

Moving from a set stocking to a rotational grazing system (where there are 3-5 paddocks) can increase utilisable yield of grass by 56%. Increasing the number of paddocks to seven or more can increase utilisable yield by 92% over a set stocking system. In practice, this means 5 stores/ha could be grazed rather than only 2.6/ha.

Grazing wedge

It is important to graze swards at the correct stage. Having too much grass will result in dead leaves, stem and seed head production. In turn this will reduce the palatability and energy content of the sward, sward deterioration over time and reduced stock performance. Stock should enter grazing swards at 10cm (3000 kg DM/ha) and exit at 4cm (1600 kg DM/ha). The easiest way to manage this is to maintain a grazing wedge. The field that stock have just grazed will have the lowest cover and they should be entering the field with the highest cover with the other fields being intermediate. This is the easiest way to identify when a surplus or shortfall is likely to occur and allow remedial action to be taken, i.e., taking out surplus paddocks for silage or feeding additional concentrate. This will result in more grass being grown and also increase its utilisation resulting in a significant increase in stocking rate.

Summary

- Walk paddocks and assess quality regularly.
- Measure grass covers regularly and manage the wedge for best utilisation of grass.
- Act promptly when a surplus or shortfall of grass is identified.
- Several computer programmes are available which can help with making grassland management decisions.

More from Grass

afbi Agri Food and Biosciences Institute

Grass Variety Evaluation

How can you select the best variety for your farm?

- Choose a variety adapted to your soil, climate and farming system.
- There is a steady stream of new varieties coming on the market.
- Varieties are assessed under closely controlled regimes.
- Under real farm conditions varieties may perform differently.
- We need a variety selection process that is fit for purpose.

Variety testing- shaping the future of agriculture

www.afbini.gov.uk

New proposals for grass variety evaluation

Prof Jim McAdam and Gerry Hoppe, Grassland and Plant Science branch, AFBI

Grass Testing

Unlike many of the factors that govern the productivity of grassland on-farm, selecting the most appropriate variety for reseeding is directly under the control of the farmer. Plant breeding in AFBI produces a steady flow of new varieties, whose performance has been compared to a limited extent with those currently available under specific cutting and fertiliser regimes.

However, on farm, grass is subjected to a much greater range of conditions and stresses than current testing systems measure. It isn't known how particularly animal behaviour affects the longevity of varieties, i.e. their long-term productivity and persistence, or how the economic contribution of varieties to profitable outcomes from grass can be assessed.

Currently there is no local variety evaluation system to identify varieties which are optimally adapted to growing conditions and farm systems in Northern Ireland. AFBI is a preparing a project with the overall aim of producing a decision-support tool for farmers, advisors and the grass seed industry to address these unknowns.

The project will:-

- identify the best locally-adapted varieties amongst those completing National List trials annually and those already commercially available by establishing trials of grass and clover species at AFBI Crossnacreevy

More from Grass

Grass Variety Evaluation

AFBI is preparing a project that will:-

1. Identify the best varieties for local conditions.
2. Test these under cutting and grazing managements on a range of soil types.
3. Develop a Herbage Value Index to identify varieties suited to the main grass utilisation scenarios.

- determine new characteristics for intermediate and late perennial ryegrass varieties contributing to longevity of swards under grazing and silage management and develop methods for routinely rapidly and cost-effectively assessing these
- conduct a survey to determine how farmers understand variety information and select grass and clover varieties when re-seeding
- develop a Herbage Value Index identifying varieties suited to the main grass utilisation scenarios on farms in Northern Ireland

The results from this project will enable farmers to select varieties which are fit-for-purpose and best suited to their farm.

Key Messages

Today's event resets the focus on grass as a way of reducing production costs in dairy, beef and sheep systems. Efficient grass production involves producing and utilising high yields of grass through attention to detail on:

Soil fertility (efficient use of manures and fertiliser)

1. Soil test regularly to identify fields where lime, P and K are needed.
2. Make the most of manure nutrients by applying to match (but not exceed) crop P and K requirements across all fields.
3. Routinely apply S-containing fertilisers for 1st cut silage crops, and manure and/or K-containing fertilisers to match the K requirements of 2nd and 3rd cut crops.

Drainage

1. Identify compaction by digging 30cm (12") inspection pits.
2. Remove compaction if identified and check again regularly.

Sward type (ensuring the correct species and variety mix within the sward)

1. There are a wide range of perennial ryegrass and white clover varieties available to suit most farm situations.
2. There are several alternative grass and legume species which have particular merit either in monoculture or in mixtures. Choose the variety best suited to your needs.
3. AFBI plans to produce a financially-based grass variety evaluation tool which will be tailored to meet local conditions and needs.

Manage grazing platforms

1. Walk paddocks and assess quality regularly.
2. Measure grass cover regularly and manage the wedge for best utilisation of grass.
3. Act promptly when a surplus or shortfall of grass is identified.

Efficient utilisation (grazing and cutting at the correct stage)

1. Average levels of grass utilisation on Northern Ireland farms are disappointingly low – typically 7.5t DM/ha on dairy farms and 4.1t DM/ha on beef and sheep farms. However, there is significant scope to improve grassland productivity.
2. Improving grass utilisation by 1t DM/ha and grass quality on an average dairy farm can add profit of £334/ha/yr.
3. Visit GrassCheck to help manage grass utilisation: www.agrisearch.org/grasscheck (also on www.afbini.gov.uk/articles/grasscheck-2017).

www.afbini.gov.uk
@AFBI_NI