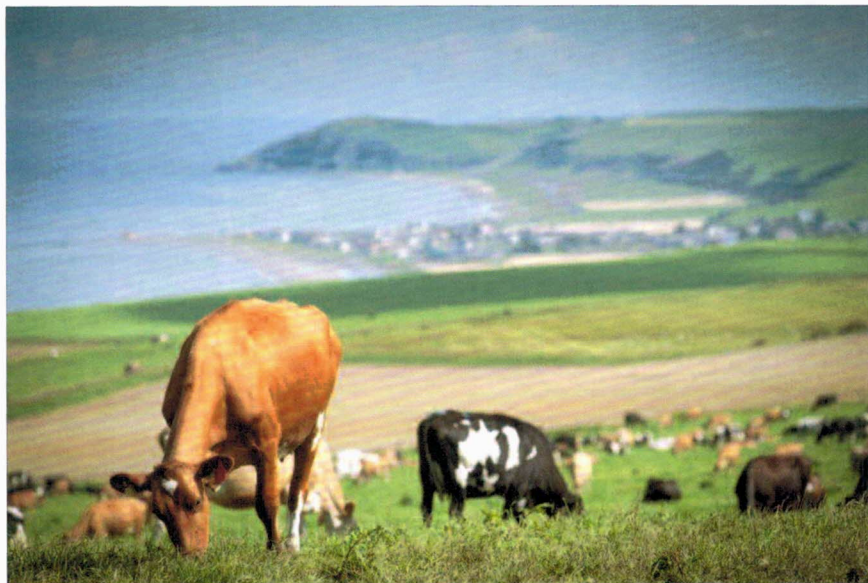


# GREENSWARD

*Journal of the South West and Central Scotland  
Grassland Societies*



No. 55

2014



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Front Cover Photo: Dairy cows paddock grazing spring grass, Glenapp Estate, Ballantrae,  
(Courtesy: Earl & Countess of Inchape and Estate Factor, Charles Russell).

*Photo: Charles Russell.*

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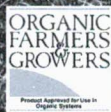
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## CONTENTS

	<b>Page</b>
Photo: SWSGS Silage Competition Winners 2013	4
Foreword	5
Officials: SWSGS	6
Meet the Chairman - SWSGS	7
Officials: CSGS	8
Meet the Chairman - CSGS	9
Grass- The Versatile Crop – S Mayne	11
BGS Summer Meeting, Cumbria – G E D Tiley	13
CSGS Silage Competition 2013	16
SWSGS Spring Farm Visit – G E D Tiley	19
Advanced Heifer – Calf Rearing Protocol – Advanced Nutrition	20
Notes from the Isle of Man 2013 – C Kneale	21
Managing Sara at Turnout – M Lochhead	23
Farming for a Better Climate – Rebecca Audsley	24
SWSGS Jubilee Summer Farm Visit, Ayrshire – G E D Tiley	27
Farming for a Better Climate – D Dunbar	29
A Visit to Chile – Kara Craig	34
Poorly Set-up Silage Equipment – A Strzelecki	36
Grass: Aesthetic, Multifunctional and Nutritious – S Giutini	37
Photo: Winner of SRUC Best Young Farmer Trophy	38
SWSGS Silage Competition 2013 – G E D Tiley	39
Judging the Scottish Silage Competition 2014 – J A Brown	45
BGS Grassland Farmer of the Year 2013	47
Soil Compaction and Earthworms – G Wilson & P Hargreaves	48
22 <sup>nd</sup> International Grassland Congress, Sydney – Jan Connell	52
Advances in Maize Growing – G E D Tiley	56
Milking Grass for Profit – Heather Wildman	59
Weather data for Auchincruive & Crichton Royal Farm 2013	62-63

## ADVERTISEMENTS

<i>Advanced Nutrition</i>	18	<i>Barenbrug UK Ltd</i>	10
<i>Biotal Ltd</i>	46	<i>Davidsons Animal Feeds</i>	32
<i>Dow AgroSciences Ltd</i>	17	<i>EnviroSystems UK Ltd</i>	2
<i>Galloway &amp; MacLeod Ltd</i>	8	<i>Germinal Seeds</i>	30
<i>GrowHow UK Ltd</i>	31	<i>Jack Lamb Ltd</i>	38
<i>John Watson Seeds Ltd</i>	26	<i>Kelvin Cave Ltd</i>	33
<i>KW Alternative Feeds</i>	22	<i>L S Smellie &amp; Sons</i>	16
<i>Pickles Agriculture Ltd</i>	12	<i>NWF Agriculture Ltd</i>	65
<i>Realistic Agri</i>	51	<i>Tarff Valley Ltd</i>	60
<i>Thomas &amp; Fontaine Ltd</i>	42	<i>Volac-Ecosyl</i>	61





Winners of SWSGS Silage Competition 2013 at Competition Evening, 30 January 2014.  
Front (Left-Right): N Mair, R Campbell, N Smith (representing S I Carlisle & Co), M Dixon (Silage Judge), S Hiddleston  
(Best Young Farmer Silage Winner)

Back row (Left-Right): S Craig, P Cowan (Chairman, and Contractors Cup Winner), G Tiley (Secretary)  
Photo: *Solway Press Services/Scottish Farmer*

## FOREWORD

Recovery from the damage of excess rainfall during 2012 was hampered by the markedly late Spring in 2013, and it was not until later in the summer did some normality return to grassland farming. This, however, was cut short by yet again abnormal rainfall at the end of the season, particularly in the Dumfries area.

The current edition of 'Greensward' features noteworthy improvements in grassland management in Cumbria and south west Scotland, where an increasing degree of precision is being applied. In parallel with these advances, refined levels of animal genetics plus electronic recording are being introduced, with the aims of greater efficiency and increased profit margins. Efficiencies in feed utilisation are also being sought and applied by animal nutritionists.

Looking into the future at the 22<sup>nd</sup> International Grassland Congress held in Australia, grassland scientists reported studies on robotic rotary parlours and robotic herdsmen to record pasture growth and cow behaviour! This could prompt the question: How near is the time when farmers will just sit at a control panel and manage their grass, animals and field operations from the comfort of an armchair? It is ironic that with an ever-expanding world population and increasing leisure time, there are seemingly fewer people to perform hands-on farming and food production activities.

The Central Scotland and South West Scotland Grassland Societies wish to record sincere thanks to all contributors and advertisers for their very willing participation in the content of this Journal. Likewise, best thanks are extended to all host farmers, Committee members and SRUC staff for their valued support. The patient and indispensable work of Lorraine Reid, SAC Consulting, Auchincruive in the compilation of this issue is especially acknowledged, together with the excellent processing work and final publication by Scott McDonald, CCB, Glasgow.

G E D TILEY - Journal Editor

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## MEET THE CHAIRMAN – SOUTH WEST SCOTLAND GRASSLAND SOCIETY

**Peter Cowan, East Lanegate Farm, Lochmaben, Lockerbie**



Peter runs a mixed arable and livestock farming operation along with a busy agricultural and haulage contracting business. He grew up at East Langate and attended SAC Auchincruive where he gained a Diploma in Agriculture. He is married to Hazel and they have four sons: Iain, Scott, Alistair and Stuart. Peter started to diversify the family business in 1980, as the 54ha farm was not going to be enough to support the growing family. Alistair and Stuart are working full-time in the family business. Iain and Scott both work away from home, but are often available to help out during busy periods. Since the 1980's the business has expanded to what it is today.

The agricultural contracting business predominantly operates between Annan and Castle Douglas. Peter has built the business around providing a quality service to his customers and covers a wide range of operations. These include silage & forage crop harvesting; complete arable cropping; slurry and muck spreading; hedge cutting; fodder beet sowing and harvesting; lime & fertiliser spreading; and crop spraying to name a few. Peter currently silages approximately 2,500ha, drills 1,000ha of cereals and combines 600ha. The haulage enterprise has been in operation for 10 years, the main market being bulk haulage along with some low-loader work and straw haulage. Peter has equipped his business to provide his customers with machinery suitable to achieve best practice.

East Lanegate farm is mostly down to grass for grazing with some arable cropping in a rotation. The land is heavy loam with some heavy clay. It was run as a dairy farm until 2008, but the cubicle buildings are now used for wintering cattle from local farms. Some of the grazing land is rented out annually to a neighbour, with the rest feeding a suckler herd and sheep flock. Peter has seen an increase in the area of maize and other forage crops grown in the region but grass remains and will remain the backbone of livestock production in South West Scotland. He believes that the SWSGS exists to promote grassland management techniques to its members and to a wider audience. Utilisation of forage and nutrients are ever important considerations for today's farmer.


**CENTRAL SCOTLAND GRASSLAND SOCIETY  
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- Vice-Chairman:** W Waugh, North Bankhead, Avonbridge, Falkirk
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## MEET THE CHAIRMAN – CENTRAL SCOTLAND GRASSLAND SOCIETY

Alistair Reid, Glen Farm, Glen Village, Falkirk



Alistair farms Glen Farm in partnership with his father, Robert. He is married to Suzannah and has four children: Jack 12; William 10 and twin girls Maddie and Emma, aged 5. The farm lies on the south side of Falkirk and runs from around 250-500 feet (76-152m) above sea level. Soil type is mainly heavy clay loam. The farm covers 380 acres (152ha) and is all down to grass. Around 180 acres (72ha) are cut for first cut silage, 140 acres (56ha) for second cut and 50 acres (20ha) for third cut.

Glen is a dairy unit with 170 pedigree Holstein Friesian cows which all graze day and night from around mid to end April until the end of October. The cows calve all year round and the milk is sold to Graham's dairies. Average yield is 8,000 litres/cow at 4.1% fat, 3.3% protein. Around 70% of the herd are inseminated to Holstein sires with the remainder to British Blue or Limousin. All male and beef calves are retained and sold as stores.

The farm is also home to 'The Milk Barn' – a purpose-built ice cream parlour opened in June 2013. The Milk Barn is run by Suzannah and uses milk from the dairy herd to make the retail artisan dairy ice cream. In 2013 it won an award for best new business in the Falkirk area. See [www.themilkbarn.co.uk](http://www.themilkbarn.co.uk).

Alistair considers the Central Scotland Grassland Society to be a very important farmers' group which is independent of commercial pressures. He is keen to attract younger members to enable the Society to continue to flourish.





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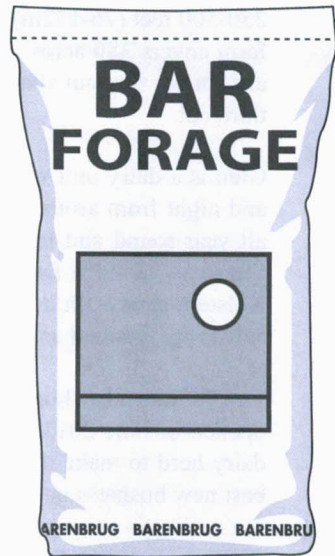
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## GRASS – THE VERSATILE CROP

Sinclair Mayne

*Agri-Food and Biosciences Institute, Northern Ireland*

*President of the British Grassland Society 2012-2013*

All grassland farmers recognise and value the versatility of the grass crop, in particular its ability to adapt to a wide range of climatic conditions and management regimes. However, the spring of 2013 will long be remembered as one of the most difficult given the fact that grass growth was up to 4-6 weeks later than normal due to adverse weather conditions. As President of the British Grassland Society, I saw at first hand the impact of late spring growth on animal performance and feed costs. Despite the very challenging conditions on many farms across the UK, the best grassland managers maintained their confidence in grass and managed to reap the rewards of excellent grass growth later in the season.

Throughout its 68 year history, the British Grassland Society has played a crucial role in providing a forum for farmers, advisers, commercial organisations and research scientists to interact and share their knowledge and understanding of grass production and utilisation. The role of the Society is particularly important at present with the current focus on **sustainable intensification**, or more simply “**producing more from less**”. In this context, grass once again comes to the fore. Grass-based systems enable production of livestock products for human consumption from land areas which are often not suited for what can be consumed directly, for example cereal grains and pulses. Globally, our priority should be to maximise the use of grain crops as a human food source – not for feeding livestock (over 35% of global grain is fed to livestock and in Europe this increases to over 50%). In order to address this challenge, we need a renewed emphasis on applied research and knowledge exchange focused on increasing grass productivity and utilisation. During my year as President, I was privileged to see some really good examples of excellent grassland farming. However, all too often these are isolated examples and the range in grassland production and utilisation between farms in the top and bottom quartiles across the ruminant livestock sector remains much too large.

One of the highlights of my Presidential year was the joint British Grassland Society/British Society of Animal Production Research Conference: “**Profitable and Sustainable Grazing Systems**” held in February 2013. Research findings highlighted that, whilst our best grassland farmers are amongst the most efficient in the world in terms of production from forage, there remains considerable scope to improve production from forage on the majority of farms. The main conclusions of the Conference were that real progress in improving production from forage requires researchers, advisers and farmers to work closely together to share knowledge and experience. This is precisely the objective of the BGS Summer Meetings and I would encourage members of the SW Scotland Grassland Society to attend this year’s Annual Summer Meeting being hosted by the North of Scotland Grassland Society from 4-7 July 2014.



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**A TASTE OF CUMBRIA**  
**BGS Summer Meeting in Cumbria, 23-26 June 2013**  
**G E D Tiley**

The 2013 BGS Summer Meeting was hosted by the Cumbria Grassland Society, who had previously arranged the 1990 and 1965 meetings. Some 160 visitors were welcomed by Sinclair Mayne, outgoing BGS President, Helen Mathieu, incoming BGS President and the local chairman. Main sponsors were Animax and Carrs Billington.

Cumbria, with its westerly location, has a strong livestock focus with strong contrasts. Herdwick sheep survive tough conditions in the hills while the fertile Solway Plain and Eden Valley support productive dairying. Rainfall ranges from 4.5m on the high peaks to only 176mm in just a few miles on the coasts. The Cumbria Grassland Society has an active membership with good attendance at the 6 winter meetings, and frequent visits beyond the county, including one to South West Scotland in 2013.

Grassland occupies 80% (62,414ha) of total land area, and includes 789km of public rights of way. One fifth of the 205 holdings are dairy, two thirds are grazing livestock and 6% are cereals. The visit included an evening boat cruise on Ullswater Lake, sponsored by **Yara**.

Mixed farming under high rainfall

**Weary Hallstyle Farm, Mealsgate** (*Ian Forster*). Mixed dairy, beef and sheep farm at 122m (400ft) with high (2800mm) rainfall. Area 202ha, 150ha grassland in rotation, 50ha cereals. Silage taken from cereals and 16ha grassland. Stock of 220 Holstein Friesian cows, 200 youngstock, 100 bulls and 30 heifers (Holstein, Limousin and Belgian Blue), plus 700 wintering sheep. Milk yield 9000 litres; 2.5t concentrates fed cow<sup>-1</sup> year<sup>-1</sup>. Soils medium-heavy resulting in difficult grazing under the high rainfall. Cows grazed in the day when ground conditions permit during summer, beginning with first silage cut aftermaths. Beef stock graze all-year. Though there is potential for twice the number of dairy cows, Ian prefers the flexibility of a varied enterprise with a sensible life balance. By growing his own grain, a high degree of self-sufficiency is possible.

Tight calving pattern on a large hill farm

**Greystoke Castle Farm, Greystoke, Penrith** (*Manager: David Lawton*). Dating back to Norman times, Greystoke Castle Estate contains 817ha rising to 335m, but only a moderate rainfall of 902mm. The Howard family are present owners. Part of the land still bears scars from its use as a tank training ground during World War II. 270 Limousin sucklers put to Charolais bulls are managed with a strict spring calving system and begin to graze the hill after calving. 2200 ewes (Swaledale/Bluefaced Leicester Mules) and 600 hoggets graze all the year. The

ewes produce mainly twins plus frequent triplets. Most of the farm is under a Higher level Stewardship environmental scheme. Upgrading of some of the swards by direct drilling was being considered.

#### Traditional fell farming in the near-alpine conditions

**Braesteads, Patterdale, Grisedale Valley** (*Andrew Keiley*). With only 50ha of inbye land and 8ha of woodland, the remaining 159ha steeply sloping rocky land rising to 914m, Braesteads offers major challenges for profitable animal production. Rainfall average is 902mm but in 2012 2500mm fell, requiring early housing of the 20 Simmental sucklers and bought-in silage. The fell sheep flock has 300 Swaledales, with home-bred replacements, together with 100 Cheviot ewes. Lambs are sold as stores or kept for another season and sold as 'Braesteads Mutton'. The farm participates in Agri-Environment Schemes to reduce grazing pressure on the fell and woodlands.

#### Turning High quality grazing and Silage into high milk production

**Smallthwaite, Penrith** (*Martyn Dixon*). With a limited farm area of 93ha on fertile lowland, Martyn aims for maximum grass production for grazing and large yields of high quality silage. 1000 overwintering sheep tidy up the swards and leave in early April ready for 1<sup>st</sup> cut silage on 45ha around 20 May. High yields are targeted with 113kg ha<sup>-1</sup> N applied late March, having already received slurry and N in late January. The grass is cut by mower-conditioner, completely spread and clamped indoors, with great care in compaction and sealing. Martyn has recently twice won the Cumbrian Grassland Society Silage Competition and was SWSGS Silage Judge, 2013-2014 (see p44). The 130 Holstein-Friesian cows are paddock grazed in a leader-follower system from 1 May and day/night paddocks. Heifers and youngstock graze the aftermaths. Calving is all year round and average milk yields 9,500 litres, maintained by feeding buffer silage and parlour concentrates.

#### College farm with plans for expansion

**Newton Rigg, Penrith** (*Jonathan Fisher*). College farm with 30 Aberdeen Angus cows and beef finishing unit; 200 lowland ewes to produce high quality lamb from spring grass; plus a Swaledale fell flock grazed on common grazings; plans for a £2 million new dairy unit for 250 cows and heifers; arable cropping with wheat and spring barley.

#### Improving cattle genetics, land and facilities on a lowland Estate

**Whinell Park, Penrith** (*A W Jenkinson, Manager: Nich Schofield*). Renowned for its high quality premium Limousin stock, Whinell is a large estate of 728ha within the upper Eden Valley. Among the resident pedigree bulls is Dolcorsllwyn Fabio, which achieved 120,000 guineas at Penrith. Other stock are 150 pedigree Limousin sucklers and 3000 Texel/North Country mule ewes, producing more than 5,000 lambs annually. An arable area of 283ha crops, winter wheat, oilseed rape,

spring oats and winter & spring barley in rotation with grass silage, leading to virtual self-sufficiency in feed. The light stony soils necessitate reseeding by direct drilling with a standard corn drill in two directions. Clover is omitted since it would tend to dominate on the dry land.

#### New Zealand style system for high milk solids in Cumbria

**Dophenby, Edenhall Estate, Penrith** (*Dolpehnby Farming Partners – Steve & Lesley Brandon, Robert & Jackie Craig*). Both families in this partnership, which was established in 2011, run successful grass-based dairies in Shropshire (Brandon) and Cumbria (Craig). With only a 15-year tenancy, the partners have promptly invested in a new infrastructure to operate a New Zealand system – cow tracks, water troughs, water piping with 50 new paddocks fenced with permanent electric fencing, a 40/80 New Zealand milking parlour, collecting yard, dairy and office. Farm size is 273ha with light soils and moderate rainfall (900mm). The 480 New Zealand Holstein-Friesian and Jersey cross cows graze from late February until November. The late spring of 2013 necessitated silage and concentrate supplements and late housing. Almost half the farm has been reseeded since 2011 and a rolling reseed programme under spring barley has been established. 12ha of Italian ryegrass are rotated with kale for outwintering.

#### High input-high output dairying with maximum use of grass

**Bridge End Farm, Kirkby Thore** (*Colin Dent & family*). After being wiped out by Foot & Mouth in 2001, Bridge End restocked with 450 Holstein Friesians which have now built up to 850 cows, 730 in milk with plans to add another 100. The cows are bred to produce on a high input/high output system, aiming for maximum production of milk: all year round calving, milking three times daily, high yielders housed all year, cows bedded with mattresses and ‘green bedding’ separated from the slurry. Complete diet fed all year with high proportion of grass and wholecrop silage. First cut silage cut from 223ha just before grass heading. No additive used. Slurry plus 375kg ha<sup>-1</sup> N applied in March. Fourth cut taken if required at end of season or grazed down by heifers; sheep no longer used. Grazing grass yields inconsistent due to soils drying out, though winter flooding is frequent from river Eden.

### **BGS SUMMER MEETING 2014**

**4-7 July 2014**

**‘Nowt Ewe Canna Dae Wi Girse’**

**Norgrass** – North of Scotland Grassland Society will be hosting this year’s BGS Summer meeting, based in Aberdeen. The usual programme of some of the best grassland farms plus an alternative tour will be featured.



**CENTRAL SCOTLAND GRASSLAND SOCIETY  
SILAGE COMPETITION 2013**

**Silage Judge: J Baillie, Hillhead of Covington, Thankerton**

Prizes were awarded as follows:

**HF Seeds Cup & 1<sup>st</sup> Prize**                      J Pollock & Sons, Bonnyhill, Bonnybridge

**Dairy Silage:  
1<sup>st</sup> Prize**    J Pollock & Sons, Bonnyhill, Bonnybridge

The CSGS Silage winner 2013 was declared joint Runner-up in the 2014 Scottish Silage Competition. J Pollock & Sons share the Dr Ron Harkess Silage Trophy with East of Scotland Grassland Society Winner, A Wilson, Greenhead, Rescobie, Fife. J Pollock and A Wilson each hold the runners-up trophy for six months (see p45).

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**SWSGS SPRING FARM VISIT – DUMFRIES**  
**Visit to Muirside, Holywood, Dumfries, 30 May 2013**

*(Invitation: Cowhill Trust Estate and James Howie)*

Visit sponsored by *Advanced Nutrition Ltd*

**G E D Tiley**

Muirside, situated approximately 4 miles north of Dumfries, is within the Cowhill Trust Estate and comprises a dairy unit with good lowland grassland and with arable cropping. Total farm area has recently been increased from 188-280ha by taking in Abbey farm, and there had been recent investment into new buildings. Current cropping was 48ha of winter wheat and spring barley, 22ha maize, the remaining 210ha being grassland, including 100ha for two cuts of silage. Forage maize (varieties: LG 3180, Ambitious and Activate) was sown on 12 April at Abbey farm and, at the date of the visit, was showing its 5<sup>th</sup> leaf. This would be ready for harvest in October and would be sufficient to fill two pits. These are sealed inside with black polythene and outside with green, and there is little waste.

Grass silage quality had been good in 2012, contributing to a high butterfat content (4.45%). First cut silage had been cut from 100ha then 30-40,000 litres ha<sup>-1</sup> of slurry applied plus 100kg ha<sup>-1</sup> straight N (27%). The land is high in P and K and lies in an NVZ. CAN is applied 3 times a year. Grass is cut by contractor and lifted by farm staff, after wilting for 2 days if weather favourable, aiming for 30% DM.

The 230-cow dairy herd was a mix of Red and White, Black and White Holsteins and Ayrshires, with breeding aiming for mainly Red and White. Calving is in autumn, calves being reared from 4 days to 4 months. Antibiotic is added to the milk to prevent pneumonia. High – and low – yielders occupy separate sides of the main cow shed, and take 2 hours to milk. Yield average is 10,000 litres. Youngstock (310 followers) are housed in another cubicle shed. Dirty water is separated from the slurry. All bull calves are reared as bull beef, fattened on barley, soya, molasses, straw and minerals in a converted cubicle shed. Diets are straightforward and designed for the milk contract in winter and summer, with 18% cake in the parlour.

The Cowhill Estate promotes the growth of trees and hedges.

The Society is grateful to the Cowhill Trust and Manager, J Howie, for this visit during the late Spring of 2013, and thanks *Advanced Nutrition* for their support.

## **ADVANCED HEIFER: A CALF REARING PROTOCOL LAUNCHED BY ADVANCED NUTRITION**

New guidelines to help all dairy farmers to maximise their youngstock's potential and in turn herd productivity have been launched by Advanced Nutrition. Called **Advanced Heifer**, the package developed by the company offers a unique holistic approach to youngstock management, from birth to first calving, taking in nutrition, health and husbandry.

Advanced Heifer focuses on measuring and monitoring growth from birth to first service at a targeted 13 months, at which point heifers should reach 55% of the herd's mature body weight. To help achieve those targets, the guidelines monitor all dietary components to ensure nutrient requirements are being met. They check all necessary vaccinations, worming and other treatments are kept up to date in consultation with the farm's own vet. Finally, the protocol makes sure the heifer's environment is stable, focusing on housing, ventilation, bedding and other variables.

Calves continue to be the Cinderellas within the herd when in fact they are every dairy producer's lifeblood. Heifer rearing is one of the most important areas for managing the growth of every dairy business. This is why we have launched Advanced Heifer which all producers can readily adopt. The guidelines take a common sense management approach up to calving at 22 to 24 months setting growth targets based on the mature body weight of the herd from which they originated.

Advanced Heifer will help to improve health, rumen development and growth which in turn will reduce mortality, and time from birth to first service, thus increasing daily lifetime yield.

Please contact Advanced Nutrition for further details – visit [www.arm-ltd.com](http://www.arm-ltd.com) or call 0845 603 1911.

## **NOTES FROM THE ISLE OF MAN 2013**

**Chris Kneale, Secretary, Manx Grassland Society**

**January 2013** – Annual dinner and Prize presentation this year judged by Andrew Best of Watsons Seeds and sponsored by Mckeowns Haulage and Massey Feeds. Main prize winners included David Collister – Dairy Grassland management and overall grassland management, David Cooil – Beef and sheep grassland management. Silage Master was again Adam Kelly for his big bales; John Caley collected the pit silage award along with the best set up award. Best reseeds was won by David Cooil. Andrew gave an excellent evening presentation on the eve of the dinner which was well attended and appreciated by the attendees.

**March 2013** – Tim Kerridge of DLF Trifolium visited to give a talk on all things “reseeded” from machines, through to grass selection. Chris Kneale gave a talk on soils and compaction. The meeting concluded with a demonstration from Phillip Hampton and his new Moore Uni-drill and also a practical look at identifying soil compaction. The meeting was held at the Island’s new mart building and was well attended.

**June AGM** – was held following lunch at the Colby Glen Hotel. Neil Masson stepped down, thanking everyone for their help and assistance and welcomed in Juan Hargraves as chairman. Following the AGM a visit to David Cooil’s Ballagawne farm took place, where David and his brother Rob have been investing in buildings, grazing infrastructure and genetics to improve the performance of their impressive beef and sheep enterprise.

**October 2013** – Grassland trip to North Wales visiting Beef and sheep holdings from Mold through to the Lleyn peninsular. Wyn Jones at Angelsey was a specialist beef finisher and impressed the group with his attention to detail and simple finishing system. Hafod y Llan farm at the foot of Snowden was particularly impressive due to the spectacular environment and tough grazing conditions. The Welsh mountain ewes and Welsh black cows appeared happiest grazing the most challenging of locations! Richard Parry and his son Harri on the Lleyn peninsular had switched their farming business from a traditional suckler cow to Stabilisers and were clearly focused on the detail of animal performance. Meilir Jones farmed in Mold and is a demonstration farm for Farming Connect – here we saw a specialist beef finisher investing in handling systems and keeping things simple but effective.

**November 2013** – The MGS visited the Met Office at Ronaldsway where Adrian Cowin and David Boulbee welcomed us, explaining the data they captured, reported and monitored to allow them to provide a forecast for the Island. A very informative visit of a facility that the farming industry so often relies upon and which was enjoyed by all.



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## MANAGING SARA AT TURNOUT

### Martin Lochhead, KW Alternative Feeds

With grass growth starting to pick up as the weather improves, many dairy units will be turning cows out to grass. Spring grass is generally a very digestible, energy dense feed and can potentially lead to problems in the rumen with **sub-acute ruminal acidosis (SARA)**. With high sugar, low fibre levels and energy contents around 12.5MJ ME/kg DM, spring grass has the capacity to overload the rumen and cause SARA. A recent study showed that nearly 50% of cows on a diet of spring grass and low levels of concentrates had a problem with SARA.

To help cows manage the very digestible spring grass and reduce the risk of SARA, **Vistacell** live yeast should be included in the diet. It can be fed as part of the blend portion of the ration or alternatively they can be added directly into any buffer TMR which is commonly fed as a top up feed when cows are at grass.

Sub Acute Ruminal Acidosis is a problem that many farmers may have heard of, however on many farms it still goes undetected, especially when cows are at grass. It is much more common than full blown acidosis and hence the symptoms are more difficult to spot.

In another study carried out in Canada the use of Vistacell was shown not only to reduce SARA, but during a more severe SARA challenge, it helped limit the rumen pH drop and also promoted faster recovery.

In addition to helping with SARA, there are extra benefits of feeding Vistacell:

- Up to 2 extra litres of milk per cow per day
- Increased forage and dry matter intake
- Improved dung consistency
- Increased feed efficiency
- Animals visibly more content

The cost of including Vistacell in the diet is around 6-7p per cow per day which is minimal when compared to the improved performance and potential yield response to be gained. With every extra litre of milk worth over 30p the return on investment is a worthwhile 5:1 payback.

**FARMING FOR A BETTER CLIMATE**  
**Improving farm efficiency at Torr Farm, Auchencairn, Castle Douglas**  
**Rebecca Audsley**  
**SRUC Climate Change Adviser, Auchincruive**

**Ross and Lee Paton, Torr Farm** participated in the Scottish Government 'Farming for a Better Climate' initiative from 2010-2013, as a volunteer *Climate Change Focus Farm*. With help from SRUC they looked at practical ways to improve farm efficiencies and to what extent these could reduce the farm carbon footprint. Taking a second look at routine farm practices in 4 key action areas increased business efficiency and made better use of inputs, resulting in a saving of around £37,000 and a 11% reduction in carbon footprint.

**1 Fuel and energy use**

Small changes to reduce fuel and energy use may seem insignificant but, done on a daily basis, soon add up to appreciable savings. At Torr, the following measures were taken:

- SMART meter installed to measure electricity use
- Water heater timers checked and insulation of pipes and water tanks increased
- Hot water use reduced to once daily
- Variable speed milk pump fitted
- Fuel use monitored
- Tractor size matched to job, and equipment well maintained (eg: tyre pressures)
- Production of lightly contaminated water reduced to save fuel

Results: Electricity used reduced by 22, 455 Kwh (21%), saving £1900 and 13.3t CO<sub>2</sub>.

**2 Optimum use of fertiliser, slurry and manure**

- Bring fields up to optimum nutrient and pH status by regular soil sampling and targeted application.
- Carry out whole farm nutrient management planning using PLANET Scotland.
- Analyse farm slurry – one 10m<sup>3</sup> tanker could be worth £30 in equivalent fertiliser value.
- Installation of a new slurry store to maximise storage and allow nutrients to be used at the optimum time for the crop.
- Applying slurry by trailing shoe method, which places nutrients directly on the crop and can result in 30% more grass compared with splash plate application
- Introduction of additional rotational grazing



### 3 **Soil protection measures**

- Assessment and improvement of soil structure in problem areas.
- Remediating compaction with a programme of subsoiling. On 50ha grassland, this could achieve 38t fresh weight yield increase, equivalent to £950 and 4.4t CO<sub>2</sub> compared to buying additional silage.
- Renewal of drainage systems on 20ha arable and grassland, with potential to increase grass yield by 30-40%.
- Improved soil structure and drainage could allow livestock to remain outside longer and reduce the need for additional bought-in feed.
- Recently planted native woodland on 2.2ha could sequester c.24t CO<sub>2</sub> as the trees grow.

### 4 **Improved livestock management**

- Forage analysis. Producing high quality silage and knowledge of its nutritional value enables accurate blending of rations and potential saving of 1kg concentrate per day. Over a typical 182 day winter, this equates to a 32t saving of concentrates, saving £10,355 and 10.9t CO<sub>2</sub>.
- Ongoing monitoring of fertility and performance of dairy herd.
- Reduced age of calving from 34 to 24 months trialled with 15 heifers. Resulting earlier entry to the dairy herd increased milk output by an estimated 50,450 litres, generating around £17,500.
- Livestock housing improvements increased feed space, benefiting milk yield.
- Maximising feed use efficiency with condition scoring of cows and adjusting feeding accordingly.

### **Conclusion**

The key findings at Torr were:

- Monitoring is vital to identify current performance and highlight opportunities for savings.
- Weather has a large impact on farm costs and emissions. Emissions were increased by prolonged rainfall, as the farm had to adapt routine practices to cope with the adverse weather.
- Implementing measures now can put you in better shape for the future, leading to a more resilient farm to hand on in an uncertain climate.

*With acknowledgement and thanks to Ross and Lee Paton and staff at Torr Farm.*

*For more information on Farming for a Better Climate, see [www.farmingforbetterclimate.org](http://www.farmingforbetterclimate.org).*



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## **SWSGS JUBILEE SUMMER FARM VISIT – AYRSHIRE**

### **Grassland and stock developments on Glenapp Estate, Ballantrae, South Ayrshire, 24 July 2013**

*(By Invitation: The Earl & Countess of Inchcape and Charles Russell, Factor & Farms Manager)*

Visit sponsored by **John Watson Seeds Ltd**  
**G E D TILEY**

As part of its Golden Jubilee, the South West Scotland Grassland Society arranged a day visit to the Glenapp Estate at Ballantrae in South Ayrshire, sponsored by John Watson Seeds Ltd. The Estate occupies a 5000ha area of forestry, hill and upland grass, rising from the rugged Clyde coast to over 300m.

Faced with the challenge of increasing profitability, Estate Factor Charlie Russell has endeavoured to develop a combination of enterprises to fit the physical conditions of the Estate. Forward looking beef and sheep units have evolved during the last 13 years. From 2010 a modern dairy unit based on the intensively grazed paddock system has been established, trying to match the grass growth curve to stock requirements.

The beef herd of 180 native bred Shorthorn and Luing remain on the hill until November and calve in early April. 95% of calves are sold, all fattened on the farm, aiming to take the cattle to the feed and not the feed to the cattle.

The sheep flock of over 3,000 ewes include 1,000 mules, 250 Blackface, a nucleus wool shedding flock of 150 ewes, the remainder being cross bred easy cares derived from Blackface and Mules.

The easy care flock has been developed from Welsh stock, motivated by avoiding the difficulties of lambing Blackfaces on the hill. Over the years, ewes have been selected on performance outside and lambing without attention. A wool shedding character is being introduced from the nucleus stock. The long term target is a genetic base blending the easycare breed and other hill breeds. Being unattractive in the market ring, easy care lambs are sold direct to the processor.

Concerns over the efficiency of the red meat industry in comparison with imports, plus a TB outbreak in the suckler herd provided an impetus for the establishment of a dairy herd. A new 70-point rotary parlour with cubicle housing was established on a greenfield site, situated centrally at c. 100m above sea level within the grass resource, to minimise distances for cow travel. Water is supplied from boreholes on the farm and power from a nearby 3-phase supply. The herd of 650 Jersey and



cross-bred cows are bred to New Zealand Friesian and cross bred bulls using New Zealand semen, as this is backed up by a longer genetic history than local stocks.

Milking is under the management of Arnon Langridge, from New Zealand, and is twice daily with fully automated recording. The cows become grouped into 3 yield segments, subject to fortnightly regrouping as yields fluctuate.

Drying off occurs in December ready for calving from 7 February. Average yields at present are 4,200 litres with 600kg concentrates fed.

Maximum use is made of grazed grass, which is monitored weekly with a rising plate meter carried on a quad bike. Soils in all fields are sampled for P, K and lime with a GPS system. N is applied as urea all year; slurry applied *via* an umbilical system, not injection because of soil smearing. The short grazing rotation in summer precludes the use of slurry. The network of wide cow tracks between the paddocks have been built on a rotten rock base topped with a softer layer to make a cow-friendly surface.

Soil conditions on some of the fields, which have been reclaimed from dense rushes and gorse, have not proved to be optimum for grass growth, in spite of applications of lime and trace elements. Trials, eg: of S application and of several machines are in progress to monitor possible reasons. There is also a high weed burden and one field was seen where a new weed infested reseed was cleared of annual weeds by mob-stocking 320 heifers for 3 days, resulting in an even establishment of grass.

New fields are reclaimed by burning and uprooting the gorse and rushes, followed by a second burning and pioneer cropping with rape or kale which is then grazed by cattle to somewhat level the land. A short term, low cost grass mix is then established for 2 years prior to sowing longer term mixtures.

The heather-rich vegetation within the SSSI at the Glenapp hilltop now supports nesting hen harriers and grouse in an improved grazing management – the Glenapp Moorland Management. This was evolved in discussion with SNH and involves fencing and grazing in hefted blocks with periodic stock exclusion. The resulting management is thus mutually beneficial to both nature conservation and to farm stock management.

## FARMING FOR A BETTER CLIMATE

### Building business resilience at two Borders farms: Langton Lees and Kelloe Mains

Donald Dunbar, SAC Consulting, St Boswells

**Langton Lees** (*Courtesy: Louis & David MacVie*). 550ha (481ha grassland), 186 Friesian x Limousin sucklers put to Aberdeen Angus bull (150 spring; 36 autumn calving). 600 Texel ewes mated to Texel.

Straw bedded cattle sheds were damaged by snow in 2010 and were replaced by a slatted shed with underground slurry storage. This greatly decreased requirements for straw, labour and fuel, but also increased farm output by enabling all progeny to be finished. Dry cows are also housed on slats, but moved to straw bedded courts, with outdoor feeding area to calve, which also helps in reducing straw requirements.

#### Business resilience build

- Increased output without reliance on purchased straw and with minimal purchased feeds
- Increased output with decreased labour hours and fuel use
- Saved labour hours allow other jobs to be done, eg: attending to field fencing and drainage
- Reduced reliance on and cost of purchased fertiliser
- The slurry storage capacity allows applications to growing crops maximising nutrient use
- Maintain a high standard of animal welfare through building design and slat mats
- Reduce energy costs from 3 x 10 kW wind turbines.

**Kelloe Mains** (*Courtesy: R & J McDonald*). 1055ha, 198ha grassland. Large areas of homegrown crops (wheat, barley, beans, wholecrop cereals, grass silage) allows purchased feeds to be limited to distillery by-products: Spey Syrup and Dark Grains.


The dairy herd is being expanded from 430 to 730 cows. The new cow shed features photovoltaic (PV) solar panels and low cost LED lighting. Cow comfort is improved by internal passage ways being lined with recycled conveyor belts from the Australian mining industry. Shed space is optimised by feed troughs being located along the open shed perimeter, avoiding the need for an internal feed passage. A slurry separator isolates the liquid fraction which is stored in a lagoon prior to application to growing grass and crops. It is also easier to pump through the umbilical pipeline. The solid fraction can be transported, stored and spread on land or used to provide a sustainable cubicle bedding material.

## Building Business Resilience

- 800 PV solar panels located on two shed roofs, expected to produce 180,000 kWh of electricity per year
- LED lighting has lower running costs when compared to sodium lighting
- Using recycled conveyor belts and waste saves on resources use and cost
- Cubicles using recycled waste provide a high level of animal welfare and comfort
- Home grown crops reduce reliance on purchased feeds
- Using a trailing dribble bar to apply slurry maximises nutrient use and minimises greenhouse gas emissions.
- Targeted waste applications to growing crops reduce the risk of diffuse pollution and purchased fertiliser requirement.


For more information and case studies on ways to improve business resilience, visit the website at [www.farmingforabetterclimate.org](http://www.farmingforabetterclimate.org).

*The event was funded by the Scottish Government as part of its Public Good Veterinary and Advisory Services.*



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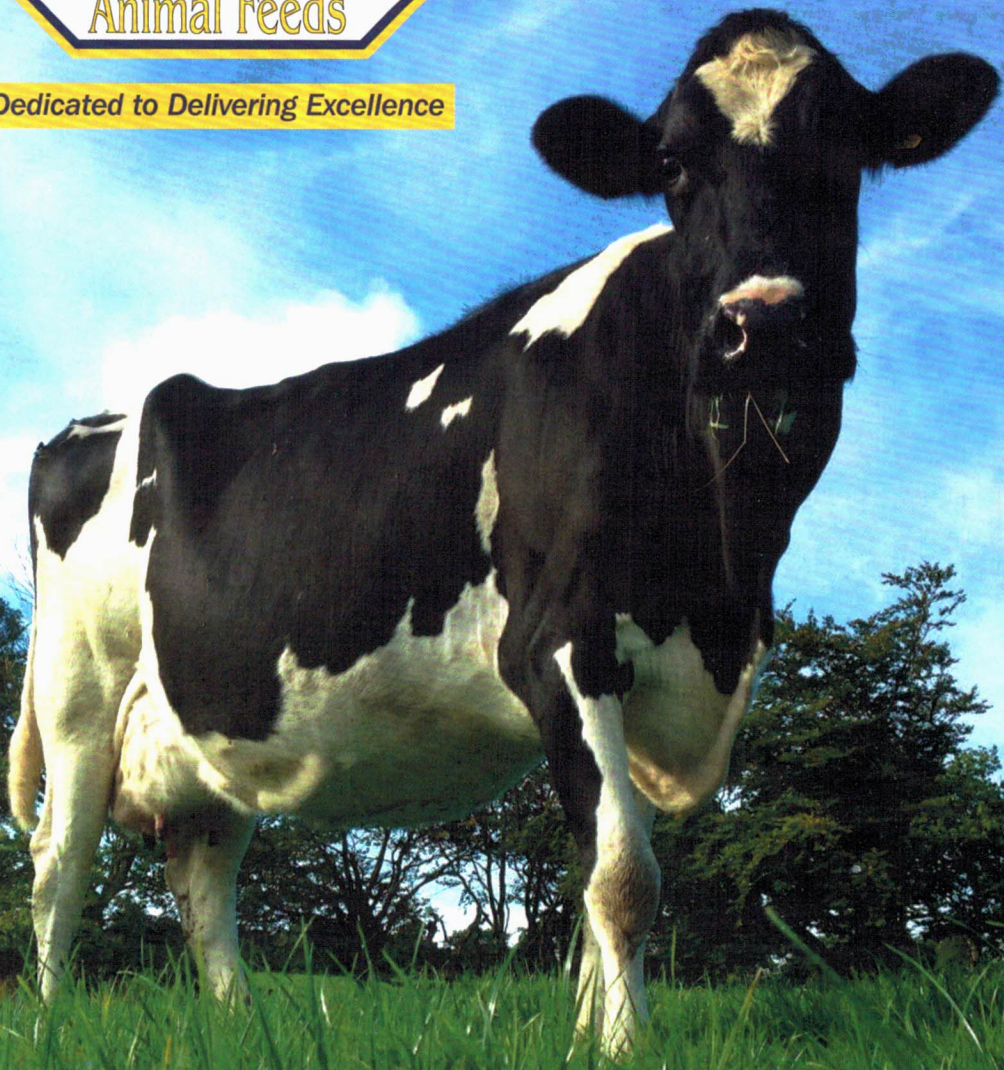
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**A VISIT TO CHILE**  
**Kara Craig, Agricultural Consultant, SRUC**

**Report of a Rotary International Group Study Exchange Chile, May 2012**

In May 2012 I travelled to Chile as part of Rotary International Group Study Exchange. I was part of a team of three all from different vocations in south west Scotland. The exchange was an opportunity to experience my vocational interests in the southern part of Chile as well as the culture of this part of the country.

Chile is approx. 4,300 km long and 175 km wide which is almost 3 times the size of the UK. The population, however, is only just over 17 million (4.6% indigenous population) which is reflective of significant geographic limitations in Chile. There are deserts in the North, ice in the South, the Pacific Ocean to the West and the Andes mountains along the border of Argentina to the East. Chile is aptly named, meaning “where the land ends”. As a result of the landscape and climatic influences, Chilean agriculture is limited to a strip along the coast (9% of total land area) but varies greatly, with fruits and vegetables in the North and central regions, and cereals, livestock, fish and timber in the Southern regions. Major agricultural products of Chile include wine and salmon. In fact, Chile produces 30% of the world production of salmon, around 5 times more than Scotland.



During my visit, I had the opportunity to visit a large estancia (ranch) where sown pastures produced low yields of hay and alfalfa, similar to a hill farm in Scotland where there is a vast area of relatively unproductive native grassland with a small proportion of in by land. The sheep were based on the Merino breed and stocked at less than 1 ewe ha<sup>-1</sup>. The challenges in these areas were great with high losses in the winter months, high input costs due to the remote location and foraging by non domestic animals such as geese, deer and guanaco (similar to llama). The interesting part of this visit was the detailed record keeping system including tagging and branding for identifying livestock (Photo 1).

I also had the opportunity to visit a beef farm near Coyhaique where the farmer purchased young calves and fed these on paddocks of alfalfa, rotationally grazed using electric fencing. This farm was small so was maximising output by smarter grassland management using highly nutritious forages (Photo 2).

Cattle breeds varied from Limousin, Angus to Hereford. The market for cattle produced in southern Chile is in the northern regions and due to the lack of infrastructure, road and rail are not options, but all cattle are transported by sea. This journey from Puerto Aysen takes around 40 hours of which over 20 hours are in the ferry. Cattle are held in open topped single and double decker lorries. This was an interesting experience.

I visited a dairy farm near Oysen. This region had a high proportion of dairy farming indicating the ability of the land to grow grass and crops. I met with a farmer discussion group which was on its 277<sup>th</sup> meeting. This group, all farm owners/managers, met on farm to look at a system before meeting later to discuss technical interests. The day was spent looking at forage crops and undersown cereal crops, which could be grown at good Scottish average yields but soils were very shallow and high rainfall events often resulted in poor yields. Use of clover in grass mixes was evident. The farms worked a system where cows were outwintered and silage pits were located around the farm where fields were cut and cows were to be grazed. Regulation covering good agricultural and environmental practices was in its infancy and there were obvious issues with diffuse and direct pollution. Some farmers were using GPS technology for lime and fertiliser spreading whilst in contrast the stockmen used horses to work with livestock. The agricultural labour force is very low paid and it was difficult to keep staff.

It was interesting to note obvious cultural and economic inequalities. This country could be relatively self sufficient in terms of feeding its population but food was expensive as a result of the cost of haulage from the main production areas within the country. Farms are generally small to medium in size and the farmers in Chile are very enthusiastic and keen to learn. There are some regions where modern technology is being utilised but in most, more traditional systems are in operation and there would be a long way to go to meet the regulatory standards currently used in Scotland. There is great scope for research and consultancy in Chile to help develop systems to meet the challenges to be faced and teach farmers good practice.

## **POORLY SET-UP SILAGE EQUIPMENT IS WASTING FARMERS' MONEY**

**A Strzelecki, Forage Specialist, Kelvin Cave Ltd**

Farmers planning to buy silage additives this season will be throwing their money away if they fail to ensure their application equipment is properly sited and calibrated. Independent trials show that almost half the additive applied to silage can be lost using standard delivery equipment and it is not uncommon for 50 per cent of a crop to end up without coming into contact with the additive.

Forage additives for silage making have had a mixed press over the years, which is partly because there are so many products on the market with varying degrees of efficacy, and partly because of poor application. Typically, products are applied above the pick-up on the 'air side' of the grass, or at the base of the chute after the accelerator on self-propelled forage harvesters, but this means they are vulnerable to drift. Further wastage has been shown to occur when flat-fan nozzles are used to spray the additive, and these would be better replaced with solid-jet sprays.

These have been amongst the findings of extensive trials undertaken by Matts Nysand and Antti Suokannas of MTT, Agrifood Research from Finland - a country in which silage making has been developed to a fine art. Our observations in the UK are very similar to those found in Finland, and we would echo the report's conclusions. These are as follows:

- With a loader wagon, ideally half the additive should be dosed from above, and half from below on the pick-up, and solid jets used instead of fans;
- In a trailed harvester, the best place of application is in the lower part of the chute;
- In a self-propelled harvester, the best place of application is inside the inlet channel before the knife rotor or accelerator.

The wrong product and the wrong delivery system are too often the cause of disappointing results, whereas the right product applied in the correct way is capable of rescuing a silage crop from the most difficult conditions.

For more detailed information contact Kelvin Cave Ltd.



## **GRASS: AESTHETICALLY PLEASING, MULTIFUNCTIONAL AND A NUTRITIOUS SOURCE OF ENERGY**

**Sergio Giuntini**

**3<sup>rd</sup> year agriculture student, SRUC, Craigie Campus, Ayr**

In common with many of the population at large, I am not from an agricultural background and as such I used to take grass for granted. The green pastures of the countryside, the well maintained parks, the pristine golf courses, bowling greens and tennis courts, not forgetting the football and rugby pitches, were appreciated but not fully understood. Little did I realise the thought, effort and planning that is involved in achieving and maintaining that thick sward of green tillers. From seed selection to sowing date, to seed bed preparation plus method of sowing, to fertiliser choice, amount and timing of application, to deciding when to turn out livestock and when to possibly house depending on the system, from set stocking to rotational grazing etc., the multifaceted art of producing, maintaining and maximising utilisation of the lush leys was unknown.

Grass benefits all types of farming, be it in the arable situation as set aside retaining nutrients, avoiding leaching and soil erosion, or as a useful break in a rotation. The use of clover under-sown as a disruption to pests' normal feeding behaviour, as the main food for livestock, for in-bye land and better ground, or even weed grasses, in the hills, it is without doubt one of the most valuable assets in any farmer's armoury. Good establishment, utilisation and maintenance can be the difference between successful profit or having to buy in expensive alternative feeds. After all, every farmer is a grassland farmer and in Scotland we are fortunate enough to have grass and the potential to grow grass relatively easily with our wet, relatively mild climate. I remember and still notice when leaving Italy, the ground in the summer is scorched by the sun, golden fields are visible as far as the eye can see, with very little green coverage, except that provided by the trees. However, as soon as the aeroplane comes down to land through the clouds in Scotland the first thing that catches the eye is the abundance of green pastures to be found.

I would like to thank the staff at SRUC, formerly SAC, because now I understand and appreciate the effort that all farmers, land managers and sports turf keepers apply to produce something productive, nutritious and aesthetically pleasing, but that so many of the public at large take for granted. I would also like to thank all of you for your hard work in maintaining the countryside so that everyone can observe and enjoy the everlasting appeal of the green fields, rolling hills and contented ruminants grazing on their food of choice. Without grass where would we be?

**Sergio Giuntini** was awarded the SWSGS Vice-President's prize for **Best Grassland Student, 2013**.



Sam Hiddleston, Newmans, Lochfoot, first winner of the SRUC Trophy for Best Young Farmer Silage 2013, receiving his prize from Silage Judge, Martyn Dixon.

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**SWSGS SILAGE COMPETITION 2013**  
**Competition Evening of SWSGS, held in Woodland House Hotel,**  
**Newbridge, Dumfries on 30 January 2014**  
**G E D Tiley**

*Sponsored by Jack Lamb (Agricultural Merchant) Ltd , with prizes sponsored by  
Biotol Ltd, John Watson Seeds Ltd, Limagrain UK Ltd, Nickerson UK Ltd, and  
Scotlands Rural University College (SRUC)*

**Silage Judge: Martyn Dixon, Smallthwaite, Penrith**

Chairman, Peter Cowan, welcomed members to the 52<sup>nd</sup> AGM and Silage Competition evening. The business of the AGM was briefly conducted.

In his report, the Chairman mentioned a special day visit to the dairy/beef/sheep enterprise at Glenapp Estate, Ballantrae, which celebrated the South West Scotland Grassland Society's Golden Jubilee. This featured a new rotary parlour, dairy paddock grazing and shorthorn sucklers on the hill (see p27). Earthworm studies and an overseas visit were also sponsored to mark the Jubilee (see p48). The Farmers' Weekly Dairy Farmer of the Year Award to Hugh McClymont was warmly applauded by the AGM. Grateful thanks were expressed to all host farmers, commercial sponsors, advertisers in Greensward and Committee Members, as well as for the support of all Society members.

The Chairman then welcomed Silage Judge Martyn Dixon and Anne, on behalf of Society members. With a dairy farm in the great grass growing area of Cumbria just south of Dumfries, Martyn had been selected for a visit from the British Grassland Society during its 2013 summer tour. He had also won the local Cumbrian grassland society's silage competition for two years in succession. Martyn thanked SWSGS for the invitation to judge our competition. Both Anne and himself had enjoyed the 3-day itinerary and wished to thank the Society for making the arrangements for comfortable accommodation and excellent meals, and thanked all who had entered the Competition. He had seen some wonderful cows and enterprises, with a complete range from sucklers to beef/sheep and dairy. Silage management 'was phenomenal' and feeding methods exceptional. All farms had different objectives but all had adapted to the local conditions of each farm. There was a great attention to detail with regard to choice of breed and how it should be managed. For example, Ayrshire cows can do a great job within their own set-up.

He particularly congratulated the Society on the introduction of a Young Farmers' class, which would be an excellent way to keep the younger generation interested.



In judging this class, there was little to choose between the top entrants. There was great attention to detail and the young entrants had explained why they made good silage and their methods of feeding it. The Judge was impressed with their forward-looking of what they might do to progress their farming. Best in the Young Farmer class was Sam Hiddleston, Newmains, Lochfoot, Dumfries. Sam became the first winner of the new SRUC Trophy for the Best Young Farmer silage, which is generously donated by SRUC. The runner-up tankard went to Neil Mair, Knowe, Auchinleck.

Winner of the Dairy class, Hamish Campbell, Auchlane, Castle Douglas, was given almost perfect marking for on-farm inspection. The Judge found an excellent silage face, a clean clamp and, what he termed, 'cow strength'. Winner of the Beef/Sheep Section, S I Carlisle & Co, Nether Dargavel, Dumfries showed great attention to detail, careful costing records with economical methods of crop and stock management. In addition to the BP Nutrition Trophy, Nether Dargavel clinched the Society's Championship Rosebowl by the slimmest of margins, due to a slightly higher analysis mark than Auchlane. The Limagrain Contractor Prize went to Peter Cowan, East Lanegate, Lochmaben, again by a very small margin from Drew Watson. Table 2 gives a full list of Short Leet Entrants plus awards.

### **Silage Quality 2013 – David Keiley, SAC Consulting, Dumfries**

Spring and early season conditions in 2013 had been very challenging for forage production. Very cold temperatures had led to poor early grass growth, so much so that Scotgrass at Crichton had to be cancelled due to insufficient grass. First cut silage yields were generally low, though of good quality. Second cuts had more bulk but often of lower quality. Third cuts were of good quality with good proteins and energy, though naturally with low DM. Wholecrop and maize generally thrived in the late season sunshine, producing good starch levels. Wholecrop oats came through well and big bale quality was very good. Mean values for samples entered in the SWSGS Silage Competition are given in Table 1. The trend to higher silage quality (DM, protein, ME and intakes) over the past 4 years was maintained in 2013.

The monetary value of cutting the first cut at the correct stage compared with cutting 2 weeks later was emphasised. With milk priced at 34p l<sup>-1</sup>, the benefit per 100 cows over 6 months could amount to over £25,000.

The second cut is at its best 35 days (5 weeks) after the first cut, aiming for ME 12. If cut 3 weeks later (at 55 days), ME would fall to 10.4. **It was important to note that an early 1<sup>st</sup> cut results in a better sward density** due to a quicker recovery, more tillers and a greater leaf area.

Trials in Northern Ireland on the value of silage showed that silage with ME 11 and Intake Factor of 100 gave maintenance +3l milk, with corresponding reductions as ME and Intake values decrease. Storage losses were higher in low DM silage compared with good silage. Clamp wastage was also reduced by using a block cutter to remove silage compared with a shear grab or traditional silage grab. There was less deterioration and secondary fermentation, especially with very dry silage.

The highly topical problem of excess surface water was mentioned in relation to avoiding soil compaction. The trial at Crichton Royal Farm showed reduced silage yields from both cattle trampling and tractor wheeling on water logged soil. In conclusion, in the light of possible CAP reforms, it was essential for farmers to **focus on what they were doing with grass.**

**Table 1 - SILAGE COMPETITION 2013 - ANALYSES MEANS**

<b>Overall Means - Grass Silages</b>					
<b>Group (Number)</b>	<b>DM (%)</b>	<b>D (%)</b>	<b>ME</b>	<b>CP (%)</b>	<b>SIP</b>
All Dairy (83)	33.9	71.5	11.4	14.2	109
Beef/Sheep (21)	32.3	68.3	10.9	12.8	101
Big Bale (4)	47.8	75.5	12.1	13.9	134
Young Farmers (17)	31.9	72.1	11.5	14.3	111
<b>Dairy</b>					
Ayr (23)	32.8	69.9	11.2	14.3	108
Dumfries (26)	32.0	72.5	11.6	13.9	107
Kirkcudbright (31)	36.2	72.2	11.5	14.4	112
Wigtown (3)	35.5	72.0	11.5	14.7	112
<b>Wholecrop and Maize Silages</b>					
	<b>DM (%)</b>		<b>ME</b>	<b>CP (%)</b>	<b>Starch (%)</b>
Wholecrop (11)	50.7		8.4	10.5	-
Maize (9)	33.9		7.7	11.5	32.7

**Best New Entrant** prize donated by **John Watson Seeds Ltd. Best Wholecrop Silage** prize by **Biotal Ltd, Best Maize Silage** prize by **Nickerson (UK) Ltd** and **SRUC Trophy** by **SRUC.**



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**Table 2 – 2013 Silage Competition – Short Leet Entrants**

<i>Prizes</i>		<b>Marks</b>		<i>Total (100)</i>
		<i>Analyses (35)</i>	<i>Inspection (65)</i>	
<b>Dairy Class</b>				
1 <sup>st</sup>	I G Campbell, Auchlane, Castle Douglas	26.4	64	90.4
2 <sup>nd</sup>	K & G Campbell, Kerricks, Auldgirth	25.0	61	86.0
3 <sup>rd</sup>	J Rome, Ingleston, Irongray	23.9	59	82.9
	A Marshall, Hardgrove, Carrutherstown	26.2	56	82.2
	A & W A McWilliam, Colfin, Lochans	17.6	61	78.6
	J Forest, Townhead, Stewarton	24.9	36	60.9
<b>Beef/Sheep Class</b>				
1 <sup>st</sup> & BP Trophy & SWSGS Rosebeowl	S I Carlisle & Co, Nether Dargavel, Dumfries	27.5	63	90.5
2 <sup>nd</sup>	S Hiddleston, Newmains, Lochfoot	25.6	62	87.6
3 <sup>rd</sup>	D Hair, Drumbredan, Ardwell	23.4	58	81.4
Michael Milligan Prize	R Nelson, Bargany Mains, Girvan	19.4	55	74.4
<b>Young Farmers Class</b>				
1 <sup>st</sup> & SRUC Trophy	S Hiddleston, Newmains, Lochfoot	25.6	62	87.6
2 <sup>nd</sup> & Best New Entrant	N Mair, Knowe, Auchinleck	25.8	58	83.8
	K Campell, Kerricks, Auldgirth	25.0	56	81.0
	E McTaggart, Rascarrell, Auchencairn	27.3	48	75.3
				<i>Analyses (35)</i>
<b>Big Bale Class</b>				
1 <sup>st</sup>	M Callander, Crofthead, Crocketford			31.1
<b>Best Silage in County</b>				
Ayrshire	W & A Watson, Muir, Mauchline			30.9
Dumfries	J & E Johnstone, Girthhead, Johnstonebridge			28.6
Kirkcudbright	J R Heuchan, Gerranton, Castle Douglas			30.0
Wigtown	F R Evans, Penkiln, Garlieston			23.8
				<b>Marks (%)</b>
Biotal Prize	J Maxwell, Netherwood, Dumfries			59.8
<b>Best Maize Silage</b>				
Nickerson Prize	J S Craig, Back of Wall, Glenluce			75.6
<b>Contractors Class</b>				
Limagrain Cup	P Cowan, East Lanegate, Lochmaben			

## **Martyn Dixon, Smallthwaite, Penrith**

Silage Judge, Martyn Dixon, briefly described how he farmed on his own all-grass dairy farm in Cumbria. His father started in 1964 with 12 cows on 90 acres (36ha) at Smallthwaite. Additional land areas were purchased in the 70s to give the present size of 93ha (230 acres). The farm is on level lowland receiving 900mm (36 inches) annual rainfall.

There was the opportunity to bring in fresh stock of pedigree Holstein-Friesian cows after all cattle and sheep had been eliminated by Foot & Mouth in 2002. New families are being introduced at present by embryo transfer. The 1000 head of sheep were now only used for winter grazing. Martyn had recently won the local silage competition for 2 years in succession and had hosted a farm walk in the 2013 BGS Summer Tour, receiving 170 visitors. After a lot of careful planning for the visit, the very cold 2013 spring had delayed grass growth. His dairy herd of 130 cows are paddock grazed from 1 March, using a leader/follower system and day/night paddocks. A new field is offered after each milking with buffer silage fed by transporter. Calving is all year round, lactation of 240 days and average yield of 9,500 litres. The bull calves are kept and sold at 6 months. The grass is planned to be eaten back by October, when the sheep are brought onto the farm. The swards are very thick and no reseeding has been necessary for 6 years. Slurry is applied in late January, followed by straight N or 27% CAN. Trace elements (Selenium) have been applied, more recently also Copper and Cobalt. In late March or April 113kg ha<sup>-1</sup> N are applied aiming for a big first cut yield. All fields are rolled and 45ha shut up for first cut. Cutting is by mower/conditioner and completely spread. All clamps are covered, and there is great care in compaction, especially at the sides as the centre will look after itself. No additive is used. The edges are sealed with gravel bags, which are checked and adjusted afterwards. New sheets are used every year. "Management of silage in the pit was the deciding factor in final quality".

## **DAIRY FARMER OF THE YEAR**

Many Congratulations to **Hugh McClymont**, Farm Manager at Crichton Royal Farm, on winning the Farmer's Weekly Dairy Farmer of the Year 2013 award, sponsored by DairyCo. A well deserved honour acknowledging the outstanding work of Hugh and his team at Crichton. There is an excellent management of the dairy herds together with overseeing top class dairy-related research carried out there by SRUC. This includes work on welfare, grazing, slurry management, promotion of maize and novel crops, and reduction of mineral fertiliser use. A past Chairman of SWSGS and present Chairman of the Maize Growers Association, Hugh is deeply committed to educating farmers, visitors and the wider public, particularly school pupils, on farming issues. With a natural ability to communicate, Hugh's engaging personality is popular with all. We thank him for bringing this honour to south west Scotland.

## JUDGING THE SCOTTISH SILAGE COMPETITION 2014

### J A Brown, Gaindykehead, Airdrie

Last year if you recall, I was telling you of my trips around Scotland judging the finals of the Scottish Grassland Societies' Silage Competition. Having received the Winner of the Central Scotland area a few days ago, I was able to complete my task by visiting the only dairy farm in the finals which was to the Pollock family at Bonnybridge. This was never going to be an easy job, so what were my criteria? I did have the analyses of all four which to some extent is a help, but in order to find a winner one has to look much more deeply. For example, what is the overall impression on visiting the farm and how is it farmed? What type of stock are there and how well do they look? I like to walk along the feed passages particularly to see what the cattle are selecting from the diet, and more importantly, what is being left as I do not like to see small handfuls of silage left to the last. Then, to the main part - what is the product like in the pit or clamp? Is it a tidy silage face? Is the colour even throughout? Are there any dark seams or signs of any soil in the clamp? Most importantly, **is there any waste**, particularly on the shoulders or along the top and what about secondary fermentation?

My final test is when I handle and smell the silage, and most important of all, how long does the smell linger on my hands. Those who side sheet and use the cling film sheet on top first, followed by the usual black plastic with most covering this with the now familiar green net, followed by either gravel bags, the long time used tyres or cubicle type mats, were all doing a great job of conserving what must be Scotland's most important forage crop for livestock. It will certainly be the largest area of any crop harvested in our country.

Finally, the honour of winning this year goes to the Martin family on the Black Isle, **W W Martin & Son, Garguston, Muir of Ord** (beef farm, North of Scotland Grassland Society). Their farm was featured in this publication back at the beginning of March. The next decision was much more difficult. The other three were so close, it was like splitting hairs. In fact when the points were all added up, I had equal seconds, namely **A Wilson, Greenhead, Rescobie, Forfar** (beef farm, East of Scotland Grassland Society), and the Pollock family, **J Pollock & Sons, Bonnyhill, Bonnybridge** (dairy farm, Central Scotland Grassland Society), with Sam Carlisle from Dumfries, a close third, **S I Carlisle & Co, Nether Dargavel, Dumfries** (South West Scotland Grassland Society).

Garguston is this year's recipient of the British Grassland Society Silage Trophy. Joint runners-up Bonnyhill and Greenhead share the Dr Ron Harkess Silage Trophy. Marks given (analysis + inspection) were: Garguston 96 (34 + 62); Bonnyhill 85 (27 + 58); Greenhead 85 (34 + 51); Nether Dargavel 82 (34 + 48).

*With acknowledgement to 'The Scottish Farmer'*



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## BGS UK GRASSLAND FARMER OF THE YEAR 2013

Sponsored by *DLF Trifolium* and *GrowHow*

The British Grassland Society's National Competition for the UK Grassland Farmer of the Year (formerly the National Grassland Management Competition) was won by Cheshire dairy farmer, **Mathew Venables, Pigeon House Farm, Handley, Cheshire.**

Mathew and wife Nikki have contract-farmed Pigeon House Farm with the landlord since 2008. The 132ha is run as a separate closed unit solely for grazing the milking herd (480 spring calving New Zealand cross bred cows). Blocks of land away from the farm provide silage, youngstock grazing and fodder beet for in-calf heifers, which is 'bought' by the Pigeon House business.

Grassland management has been helped by a visit to New Zealand. Knowledge of how much grass can be grown on the farm allows stocking with enough cows to graze it efficiently. This involves weekly grass measurement to show which fields to graze and to predict possible shortages or surplus. It also indicates which paddocks require reseeding, so that this can be done promptly in the following year. Nutrient management revolves around a target production of 14+ t DM ha<sup>-1</sup> annually, while keeping within NVZ rules. Soils are analysed every year to target P and K applications. N use averages 250kg ha<sup>-1</sup>. The judges commented that a willingness to change and flexibility in herd management had made Matthew a worthy winner.

Runners up were:

**Andrew Owen, Lampeter, Mid-Glamorgan Grassland Society**, who relies heavily on top quality grass for milk production from the 130 Holstein-Friesian cows. The aim is for self-sufficiency in grazing and silage, growing and utilising as much grass as possible. Paddocks of 0.8-1.6ha are used and these are cut ahead of the cows twice a day before grazing from the end of May – avoiding selective grazing and maintaining high quality.

Soils in the lighter land are routinely aerated every year. Mole draining is carried out on heavier soils when conditions are suitable. Average milk yields were 6,151 litres, 78% coming from forage. Andrew's father was winner of the UK National Silage Competition in 1999.

**Mark Cash, York, Ripon Grassland Society** who is farm manager for Evolution Farming in a joint venture with the owner of the 100ha farm. After only one year, management has changed from set stocking to paddock grazing, with provision of cow tracks and water troughs. 90 pedigree Ayrshires had been replaced by 290 spring calving crossbred cows. There had been extensive reseeding down to grass-clover leys with weekly grass plate measurements.



**THE EFFECTS OF SOIL COMPACTION ON A GRASSLAND  
EARTHWORMS POPULATION**  
**Gregor Wilson and Dr Paul Hargreaves – SRUC Dairy Research Centre,  
Dumfries.**

Compaction in grassland soil has become a greater concern in recent years, especially after two very wet winters. Greater pressure on the use of pasture for grazing to reduce feed costs has increased the potential for increased soil compaction, caused when the soil is wet at the start and end of the grazing season. The increasing size and weight of farm machinery have the potential to increase soil structural damage, especially when fields are trafficked in wet conditions or after heavy rain. Earthworms in the soil are recognised as important both for improving soil structure by increasing porosity (Capoweiz et al., 2009) through worm channels that help drainage and soil aeration, and for the cycling of nutrients (Edwards and Bohlen, 1996). Previous work has indicated that soil compaction decreases earthworm abundance (Chan, 2001; Jouquet et al, 2012), since compaction requires the worms to use more force to move through the soil thus requiring a greater expenditure of energy. However, most studies on compacted soil cores have been conducted in the laboratory and not in the field.

Work was undertaken during the summer of 2013 to investigate whether earthworm numbers and their overall biomass had been affected by soil compaction using compaction treatments imposed on established grassland. As part of DairyCo funded work, a compaction experiment was started in October 2011 at the SRUC Dairy Research Centre, Crichton Royal Farm, Dumfries with three distinct treatments; 1) compaction by livestock trampling, 2) compaction by tractor and 3) no compaction. Three replicates of each treatment provided nine areas in which to investigate the number and biomass of earthworms. At each sampling, a 35cm x 35cm soil block was excavated to a depth of 20cm using a spade and hand sorted by pulling apart the soil aggregates. Any earthworms were removed and stored in a 70% ethanol solution for later identification in the laboratory. 2.5l of a 5% mustard solution were then poured in to the excavated pit to extract any earthworms below 20cm in depth. Separate soil samples were taken next to the excavated area for measurements of bulk density and soil pH. The earthworms species were identified using a recognised key ([www.opalexplornature.org/EarthwormGuide](http://www.opalexplornature.org/EarthwormGuide)), the number and maturity of each species recorded as well as the length of each earthworm.

**Results of Hand sorting of soil blocks, Earthworm numbers and biomass.**

Although there was no significant difference between the total number of earthworms found in each of the three soil treatments there were differences in numbers of earthworms found; 117 for the livestock compacted, 130 for the tractor compacted and 124 for the no compaction. This did not give a strong agreement with the current perception that increased compaction reduces worm numbers. No



significant relationship between bulk density and total worm numbers was found across the treatments. However the total earthworm biomass (length in mm) was greater in the no compaction treatment than in the compacted soils, but not significantly so.

### Numbers of immature worms.

The samples taken showed that tractor compaction had affected the numbers of immature worms, there being significantly ( $P < 0.05$ ) more immature earthworms after tractor compaction compared to both livestock compaction and no compaction treatments (Figure 1). This indicated that either the larger, mature earthworms found it more difficult to move through the more compacted soil or the compaction slowed the development of the earthworms. Binet et al (1997) suggested that the increased numbers of immature worms was a result of more time spent moving through the more compacted soil and less time spent feeding.

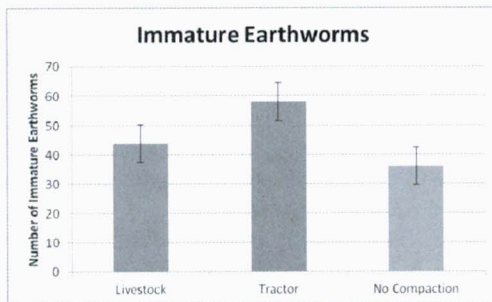


Figure 1: Total number of immature earthworms in each treatment.

### Species of earthworm identified.

In total seven individual earthworm species were identified across the treatments. One of the more common species found in Scotland (Boag et al, 1997), *Aporrectodea caliginosa*, was significantly ( $P < 0.05$ ) more abundant in the no compaction treatments than in both of the compacted treatments (Figure 2).

A study by Chan and Barchia (2007) showed that *A. caliginosa* numbers were reduced in more compacted soil compared to another earthworm species, *Aporrectodea trapezoids*. The significant difference in the number of *A. caliginosa*, between the no compaction and the compaction treatments suggests that *A. caliginosa* was more sensitive to compaction in the current work. This suggests that a method of identifying potential soil compaction problems across a field in future could be by looking for reduced counts of this common species of earthworm.

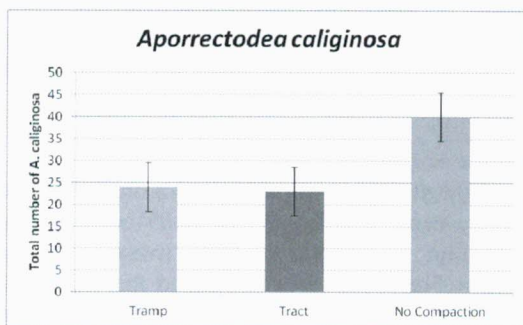


Figure 2. Total number of earthworm species *A. caliginosa* identified in each treatment.

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**Gregor Wilson** was awarded an SWSGS Golden Jubilee Scholarship to help finance this study.

## **PRO 90 THE CONCENTRATE ENERGY TRIGGER FOR DAIRY COWS AND CALVES**

**Peter Jefferis, Realistic Agri, Telford, Shropshire**

Pro 90 in its different forms, when fed as part of a structured feed programme, is a highly cost effective product, especially so where the farmer is looking to successfully manage a high forage feeding system. At calving, cows suffer from a severe drop in blood glucose which depresses appetite and affects liver function. A cow yielding 30 litres a day needs 2000g of glucose per day. The most she can obtain from food and its resultant metabolism is 1300g. The balance drawn from tissue reserves.

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**REVITALISING GRASSLAND TO SUSTAIN OUR COMMUNITIES**  
**22<sup>nd</sup> International Grassland Congress, Sydney, Australia and New Zealand**  
**Jan Connell, Programme Leader, SRUC Riverside Campus, Ayr**

Scotland's ability to grow grass and produce high quality produce from it is one of our strengths. However, it is not always realised by our farmers for various reasons, one of these being the lack of confidence to manage their grassland effectively. I wanted to try and address this by enhancing the education and training of farmers in grassland management through our education and consultancy services.

The objectives of my study trip were:

- To increase my technical expertise in grassland science.
- Investigate techniques to exchange knowledge and advice on-farm within intensive grass based systems used in New Zealand.
- Develop links with Universities which may allow SRUC agricultural students to participate in studies overseas during their degree.

**“The International Grassland Congress** promotes interchange of information on all aspects of natural and cultivated grasslands and forage crops for the benefit of mankind, including sustained development, food production and the maintenance of biodiversity. It is the major international forum for scientists involved in grassland and livestock R&D and for people managing one of the world's largest natural resources”. Grasslands occupy 54% of the world's ice free land area. They are the dominant ecosystem of many countries providing biomass for grazing as well as biodiversity. It could be stated that humankind depends on understanding, managing and sustaining grasslands in both developed and developing countries. However, despite this grasslands are often poorly recognised by Governments and results in a reduction of support in grassland research. Delegates from all over the world, with only 6 from the UK, met over 4 days to discuss wide aspects of grassland. There were 3 main themes with many subsections within. The main themes were:

- Theme 1 – Improving production efficiency: forage improvement, livestock production and quality improvement, managing seasonality of grassland quality and quantity.
- Theme 2 – Improving grassland environment and resources: ecology of grassland, plant-animal interactions, climate change impacts, management of nitrogen and other nutrients and biodiversity and conservation of grasslands.
- Theme 3 – Grassland people, policies and processes: drivers for change, policy issues, tools to aid uptake of technology and innovated methods in grassland research and education.

## Plenary Paper

### **Feeding the world in 2050: trade offs, synergies and tough choices for the livestock sector** - Dr Jimmy Smith, Director General, International Livestock Research Institute, Kenya.

The emphasis has shifted from food production to feed the world, this is no longer sufficient and we now need to feed the rapid population expansion with food produced sustainably, taking into account social and economical aspects. Countries which are the poorest and hungriest are also those with least agricultural investment. Livestock production and its connection with greenhouse gas emissions cannot be ignored. Poor efficiencies in Africa show twice the gas emission per kg milk compared to the world average and a four fold increase over the intensified US systems. We need to engage with the next generation in order to sustain our agricultural industry. In order to do this we need to engage with school children, connect and better inform school teachers and careers advisors. Graduate employment is highest for agriculture with rates of around 95% in the UK. The agriculture industry needs to catch up with other sectors in providing a structure, competitive salaries and benefits to attract young graduates.

### **Post Congress Tour of NSW – A taste of the NSW Southern Tablelands.**

I am indebted to the South West Scotland Grassland Society who contributed to my finances and allowed me to participate in this post congress study tour. The 2-day tour took in University of Sydney Dairy research, a commercial dairy farm in Sydney's suburbs, a wool and meat producer, a grain and graze revolution farm and CSIRO alternative legume knowledge exchange project. This allowed me to see Australian farming systems, and also to participate in valuable discussion with a relatively small group (35) of researchers from Africa, China, Germany, USA and 2 farmers from the UK!

The Leppington Pastoral Company (LPC) is situated at Bringelly on the suburbs of Sydney. It milks 2000 Holstein/Friesian cows producing on average 11,000 litres per lactation on three times a day milking, and provides approximately 7% of Sydney's drinking milk. The cows are housed all year round on free stalls with climate control using fans and sprays when temperatures are over 21°C. Exercise lots are available adjacent to the sheds and cows have access during dry weather. Dry cows get out to graze pasture. The farmed area is one with relatively high rainfall (750mm/annum). However to ensure maximum production of grass irrigation is also available. The farm grows all their grass silage, maize silage, barley, wheat and lucerne on a total of 2,500ha. Other feeds such as cotton seed, brewers grains, bread waste are purchased. Milk is marketed as A2 type which is a specific casein protein within the milk which has been shown to cause less allergies. 60% of the cows are the A2 genotype and by using bulls with A2 gene they are increasing their homogenous A2 status in the herd.

University of Sydney's dairy farm nearby is a contrast with 75ha grazing platform for 350 Holstein cows. The farm has just recently completed an industry-funded Future Dairy 2 project. The emphasis on the system was to maximise milk from grass and forages with minimal purchased feeds. Future Dairy project was covering the largest sector within dairy systems of Australia. 100 cows using 21ha (65% *Pennisetum clandestinum* or kikuyu pasture oversown annually with ryegrass and 35% other forage crops, eg: peas, oats, maize) and purchasing over 1t grain based concentrates/cow/year on all year round calving. Over 26t DM/ha was utilised. Kikuyu is a tropical grass with extremely high growth rates of up to 200kg DM/ha/day in summer and autumn. However, it must be kept tightly grazed, otherwise the quality can be very poor. It is also susceptible to winter kill and it is for this reason that the annual ryegrass is oversown to maintain high quality and carry the pasture through the winter grazing. The use of homegrown forages and feed with approximately 1t concentrate per head has allowed 28,000 litres/ha to be produced. This is a 25% increase in milk yield coupled with a 35% reduction in concentrate feed compared to the national average.

Other projects ongoing within the Dairy Science group at Sydney include technology use to reduce dependence on labour and allow greater time for farm management. Most Australian farms struggle to attract good stockmen and as a result farmers spend time on labour intensive tasks involved with milking. Researchers are currently planning to join with DeLaval to introduce a robotic rotary, of which there are only 5 operating in the world (3 Sweden, 1 Germany and 1 Tasmania). They are also looking at *robot herdsmen* who can also carry out pasture recording and cow observations for heat detection! These are just prototypes currently, and likely to be 3-4 years to commercialisation. Other technology being explored is electronic chips which can detect rumination, calving, grazing times, etc and send a text to alert the farmer.

A visit to Evandale estate showed the difficulties of sheep production in this area for both meat and wool. Evandale is owned by a Sydney based businessman with a farm manager left on site to run the 600ha carrying 600 Merino cross ewes and 100 Angus cows crossed to a Simmental bull. The main problem faced at this farm, like many farms in NSW territory of Australia is the invasion of weed grass: serrated tussock (*Nassella trichotoma*). This weed grass is highly adapted to droughted low fertile soils in a cooler climate and a very prolific seed producer spreading far and wide by wind. The grass has poor feed value and unpalatable to stock. Much work has been undertaken by Department of Primary Industries to help understand the effects of this grass and mechanisms to control it.

Tirranra was a fine wool Merino sheep and Devon cattle farm until about 10 years ago, when arable crops for 'grain and graze' or dual purpose crops were introduced. Prime lamb and beef together with wheat and canola are produced. In order to allow the wheat to be suitable for both grazing and grain, it is sown 3



months earlier in March to allow grazing equal to 1.5t DM/ha when there is sufficient root formation to prevent sod pulling. The animals need to be off the crop by GS31 (1<sup>st</sup> node appearing) to have no effect on grain yield. Canola (rapeseed) double zero erucic acid varieties are also grown as a break crop for wheat and sheep grazing. These crops have allowed extra sheep grazing days: 1700 with winter wheat and 1560 with canola. While the arable crops are grazed, this allows for the accumulation of pasture giving an overall 30-40% extra sheep grazing compared to pasture only. This farm was used as a technology transfer experimental farm under CSIRO to help develop this system for southern Australia.

The development of grain and graze has revolutionised the traditional sheep and beef farm, and has had a major effect on the profitability of the farm. The final visit was to the CSIRO and NSW DPI alternative legume experiments and the use of phosphorus to manage soil fertility. Soils in Australia are mostly deficient in P and the rock reserves to produce P fertilisers are a finite resource and prices have doubled over the decade. This has had a huge effect on farm profitability, and there is a need to use phosphate fertilisers more efficiently while still retaining productivity from pastures. The results of experiments at a farm level have shown the stock carry capacity is influenced directly by the soil P level to a critical point and thereafter there is little or no effect. It is therefore crucial for farms to be soil tested in order to determine accurately the phosphate fertiliser application required to achieve the critical point and no more or less. Other trials also looked at alternative phosphate containing products and their effect on native pasture growth. The results showed there were a few fertiliser products which produced as much herbage as superphosphate at a similar cost eg: semi dry pig manure and Agriash (burnt sewage ash with liming agent).

A third element of the trials was to evaluate alternative legumes with varying phosphate applications. Perennial legumes were: Lucerne (*Medicago sativa* L.) Birdsfoot trefoil (*Lotus corniculatus*), Tecera (*Bituminaria bituminosa*), Caucasian Clover (*Trifolium ambiguum*) and annual Legumes: Subterranean clover (*Trifolium subterraneum*), Rose clover (*Trifolium hirtum*) and Yellow serradella (*Ornithopus compressus*).

These trials were sown in 2012 and the first harvest year had shown only 2 of the annual legumes, rose clover and subterranean clover, to have produced greater dry matter than the rest and responding up to P application of 50kg/ha. The trials will continue for another 2 years to gather a complete set of data.

**Jan Connell** was awarded a **Golden Jubilee Scholarship** to attend the Post Congress Tour.

**ADVANCES IN MAIZE GROWING**  
**2014 Annual Conference of Maize Growers Association (MGA)**  
**13 February 2014, Easterbrook Hall, Crichton Royal Farm, Dumfries**  
**G E D TILEY**

*Sponsored by Syngenta, LG Seeds, Bayer CropScience*

The 2014 Annual Conference of MGA was held at Crichton Royal Farm under the chairmanship of Hugh McClymont. The meeting was arranged into 6 short papers on recent developments in maize growing followed by a 'Short and Sweet' session from commercial company staff, who were given 5-minute slots to describe recent developments.

**Graeme Cock, Chairman, Mole Valley Farmers** (MGA major sponsor). Graeme briefly referred to technical developments and opportunities within Mole Valley. He emphasised how global markets greatly influenced the value of crops,.

**Dr Bridget Lynch**, Grass and Forage Science Department, School of Agriculture, Food Science and Veterinary Medicine, University College, Dublin (UCD). Bridget described a 3-year research project on maize growing in marginal areas, especially under plastic. This was supported by a Samco-UCD Enterprise Ireland Innovation partnership. Aims of the project were to: i) investigate the agronomic factors affecting the nutritive value of maize; ii) determine milk yield and composition responses to energy content (MJ) per kg maize DM supplemented at grass. Factors investigated over 2 seasons would be: site location, maize variety, herbicide product and timing, N fertiliser, type of plastic cover. In parallel, milk yields would be quantified from different rates of maize supplement when feeding grass. Results to date showed that **yellow** SAMCO film degraded faster than **green**, but plastic film of both colours resulted in fewer days required for silking (female flowering), gave higher ME, DM and starch, plus higher DM% and yields of grain.

**Graeme Cock** then described his family farm in Devon where topography and soil type were major challenges for growing maize. 2000 dairy and beef cattle were kept on 800ha; winter wheat, winter and spring barley were grown. 650 dairy cows were housed and 300+ steers finished annually. To simplify cereal and maize growing, a **Min-Till-no plough** system was introduced. This improved/maintained soil structure, could speed up drilling, reduce costs, and improved flexibility. Sequence was: spray with glyphosate, apply fertiliser, lime, slurry or manure, cultivate, power-harrow once and drill maize, or drill cereals. Long term grass had to be ploughed.

The advantages of **maize under plastic** included: greater consistency of crop, higher maize quality, better cow health, lower costs per tonne, wider drilling

window and earlier harvest. The great importance of the tractor driver was emphasised for successful Min-Till. He must remain focused, understand the aims and apply chemicals and seeds correctly and not over-cultivate.

**Dr Jonathan Blake**, Technical Secretary of the Forage Analytical Assurance Group (FAA), reported the results of a 2-year LINK project. This studied the Estimation of ruminant energy and degradability values of maize silage using NIR Spectroscopy. Ninety one-quarter ton samples were collected nationwide in 2010 and 2011. A great variability between samples was found. Degradability values of feeds were used to estimate microbial activity in the rumen, where larger numbers of microbes will achieve greater breakdown and fermentation of feeds. Nutritional aims should be for optimal microbial activity. It was recommended that ME values should be used from a single laboratory, relying on the technique employed there.

### **Alistair Wannop, Linstock Castle, Carlisle, Growing maize for Anaerobic Digestion**

As an alternative to dairy farming to ensure future farm profitability, it was decided in 2010 to initiate a **biogas** venture. After planning formalities were concluded, construction of 2-ring digester took place in 2012, coming onstream later that year. The plant is fuelled by a combination of maize silage, grass silage, cattle slurry and FYM. Generated output is 1100 Kwh. Farm areas now are: total 440ha, 360ha temporary and permanent grass, 80ha forage maize. Cattle numbers have reduced from 580 dairy cows and followers to 180 beef animals, and staff reduced from 7 to 2. Reliable maize yields are essential so all is grown under plastic, producing fresh weight of 40-50t ha<sup>-1</sup> at 28-32% DM and starch contents 28+%. Target ME is the same as for feeding cows, otherwise more material must be loaded into the digester. A short chop is necessary. The digester is fuelled hourly from a feed hopper which is loaded daily. Maximum use is made of the residual digestate as a valuable manure which is applied before ploughing.

### **Summary of MGA Research results, 2013.**

**Simon Draper, Agronomist** overseeing the MGA R & D Programme.

The best stage for herbicide application in a 1-spray programme is the 1-3 leaf stage, as early weed control in maize was very important. Good pre-emergence results were given by Wing-P and pendimethalin with either Calaris or Dual Gold. In sulphur trials, a DM yield response was sometimes obtained from up to 10kg S ha<sup>-1</sup> when applied with FYM. This could be achieved from 50kg ha<sup>-1</sup> ammonium sulphate equivalent.

**Neil Groom**, Grainseed Ltd, referred briefly to trials with plastic cover at Crichton and also to Maize Eyespot disease. Comparing the use of plastic on late vs early varieties, and early with late sowing dates, plastic always gave increases in DM yield and in quality. However, ultra early varieties sown in late May went through the growth stages too quickly, with reduced benefits of yield and quality. Maize



Eyespot was favoured by cool, wet conditions in some regions, but could be controlled with fungicides and by management techniques.

**Brian Chambers**, DEFRA project with Plymouth University.

Maize is a spring sown crop where there is a risk of surface soil runoff and nitrate leaching from overwintering bare soil. Total areas grown had increased from c.1000ha in the 1970s to some 190,000ha in 2013. Trials on sandy loam in Norfolk and Devon compared maize crops conventionally grown with maize strip-drilled into oversown perennial ryegrass or a biodiverse seed mix. While the ryegrass treatment reduced soil mineral N, overwinter nitrate losses and overwinter sediment losses, maize DM yields were greatly reduced when sown into the growing cover crop, due to the poor competitive powers of maize.

**‘Short and Sweet’**. Five minute comments from commercial representatives highlighted selected products from each company.

**BASF**. *Wing-P* pre-emergence herbicide and *Comet200* to control eyespot.

**Bayer**. *Maister WG*. Foramsulfuron + Mero herbicide. Requires 11m buffer zone from water bodies.

**Genus Breeding**. *Powerstart* feed additive reduces blood urea.

**GrowHow**. *Ncalc* service will calculate amount of N required for maximum potential yield from soil samples submitted to the lab.

**Limagrain**. have conducted trials with plastic covers as well as variety trials.

**Samco** have tested many types of plastic film in different climates with monitored records and lab tests.

**Strathclyde Nutrition**. *Maxammon* used on grain increases protein and pH, giving better animal performance.

## MAIZE AT CRICHTON 2013-2014

Hugh McClymont

In the late cold spring of 2013 the tremendous advantage of sowing maize under plastic was again clearly shown. For example, variety Ardent sown 30 April under plastic yielded 50t ha<sup>-1</sup> at 33% DM, with the added advantage of a timely harvest on 15 October. This echoed the benefits of plastic in the very wet and poor 2012 season, when 37t ha<sup>-1</sup> were achieved. Sowing under plastic can guarantee a yield, and also allows harvest in reasonable time for establishing a succeeding crop.

Already in 2014, some maize crops sown under plastic were waist high on 24 June. A crop sown on 20 May was knee high at the same date!

## MILKING GRASS FOR PROFIT

Visit to Glenapp Estate, 26 March 2014 by RABDF, DairyCo and BGS  
Heather Wildman, DairyCo

On a bright early spring day, a large turnout of farmers and others came to Glenapp, now a DairyCo Monitor Farm, to share practical aspects in achieving top performance from grazing. The visit was jointly organised by RABDF, DairyCo and BGS, with permission of The Earl & Countess of Inchcape and Estates Factor, Charles Russell. Support from 28 commercial sponsors was acknowledged in the visit guide.

The Estate now supports 2200 cross bred ewes, 200 suckler cows and 700 dairy cows, on grass-based systems. Commercial and amenity forestry, a sporting business and residential property also figure in the Estate enterprises. The central agricultural aim is to produce quality lamb, beef and milk from maximum growth and utilisation of grass possible within the prevailing environmental conditions. At the same time, improvement of the natural environment, safeguarding the health and welfare of the livestock and promoting staff development are parallel aims.

Visitors were transported by farm trailers to key points for demonstrations and discussion of four main topics:

- 1) **Drainage & Soil management**, led by James O'Loughlin, Teagasc, Moore Park, Eire. Drainage is costly and it is imperative to choose the correct drainage design and system in relation to soil and ground conditions (eg: ground water at depth, surface water on impermeable soils). Test pits will give information on what is required. Once installed regular maintenance is required. Sward type, low soil fertility, poor existing drainage may also give rise to low grassland production.
- 2) **Technology to get the most from grass**, led by Oliver Hall, Evolution Farming. This entails a) regular measurement of herbage in grass fields by plate meters, sward stick, electrical stick, validated by cut-and-weighing samples; b) recording and managing the data in suitable computer programs, to which soil analysis, fertiliser and spray information can be added. Grass yields can then be mapped and budgeted and accurate fertiliser application planned.
- 3) **Reseeding and Diploids vs Tetraploids** led by George Fisher, BGS. The reasons for undertaking reseeded which can cost £400 ha<sup>-1</sup> were summarised, yield and quality being the most tangible. Loss of production is indicated by plate meters, reduced grazing or silage yields or by lower stock production. Lower grass yields can result in higher production costs. Tetraploids with larger leaf cells have relatively higher sugars and proteins than cell walls (cellulose, lignin). Hence tetraploids are more palatable, with higher intakes. However, their swards are more open, less persistent and less hardy.

- 4) **Balancing the high protein of spring grass** led by Donald Lawson, Premier Nutrition Ltd. Spring grass has very high crude protein levels, with averages above 25% of DM, which can stimulate milk yields if sufficient grass is available. However, such large intakes of protein results in increased blood urea levels and high environmental N loss, and could reduce cow fertility. A trial at UCD (Dublin) showed that a starch energy source could balance excess dietary protein. Maize proved to be a better source of starch than barley.

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**WEATHER DATA FOR 2013**  
**SAC AUCHINCUIVE (55°29'N 4°34'W) Alt 45m**

<i>Month</i>	<b>Mean Air Temp °C</b>		<b>Mean Soil Temp °C</b>	<b>Rainfall</b>		<b>Sunshine</b>
	<i>Max</i>	<i>Min</i>	<i>At 10 cm</i>	<i>Total (mm)</i>	<i>No of Days</i>	<i>Total Hours*</i>
January	6.8	2.3	4.9	100.8	23	36.0
February	6.9	0.4	3.5	46.0	16	90.7
March	6.3	-0.4	3.2	37.5	15	67.1
April	10.8	2.8	5.8	66.2	17	191.9
May	13.8	5.9	9.2	82.4	18	151.2
June	17.0	9.1	13.1	55.8	16	177.6
July	21.3	12.3	16.1	74.2	15	230.9
August	18.6	11.5	14.6	61.6	22	117.5
September	16.0	9.6	11.9	67.6	17	87.0
October	14.1	8.7	10.4	105.2	24	48.8
November	9.0	2.5	5.6	76.6	22	42.8
December	9.5	4.9	6.1	166.2	28	20.6
<b>Means/ Totals</b>	<b>12.5</b>	<b>5.8</b>	<b>8.7</b>	<b>940.1</b>	<b>233</b>	<b>1262.1</b>

Max air temperature: 29.1°C on 19 July. Min air temperature: -7.1°C on 12 March. Last frost: 10 April 2013. First frost: 4 November 2013.

\* RNAS Prestwick.

**WEATHER DATA FOR 2013**  
**SAC CRICHTON ROYAL FARM** (55°3'N 3°35'W) Alt 65m

<i>Month</i>	Mean Air Temp °C		Mean Soil Temp °C	Rainfall		Sunshine
	<i>Max</i>	<i>Min</i>	<i>At 30 cm</i>	<i>Total (mm)</i>	<i>No of Days</i>	<i>Total Hours</i>
January	6.1	2.0	4.1	83.9	18	25.4
February	7.3	0.4	3.4	49.2	10	99.4
March	5.9	-0.1	3.8	55.4	14	70.9
April	10.8	3.0	6.9	97.4	19	148.5
May	14.7	6.6	11.2	80.4	17	176.6
June	18.3	9.5	15.8	50.2	12	160.1
July	22.9	13.4	18.9	126.0	12	222.2
August	19.5	11.5	17.2	55.2	14	119.3
September	16.5	9.6	14.5	83.0	16	84.5
October	14.4	8.9	12.5	195.6	24	67.8
November	9.3	2.0	7.4	41.4	15	78.9
December	9.3	3.8	6.6	234.2	27	35.6
<b>Means/ Totals</b>	<b>12.9</b>	<b>5.8</b>	<b>10.2</b>	<b>1151.9</b>	<b>198</b>	<b>1289.2</b>

Max air temperature: 29.0°C on 18 July. Min air temperature: -4.4°C on 12 March. Last frost: 9 April 2013. First frost: 4 November 2013.

From a mild start, a colder winter developed, with occasional strong gales, frost, sleet and snow and bitter winds, into March and early April. This was followed in May with cool winds, rain and gales, resulting in a markedly late Spring. June saw the beginning of warmth before a longer hot spell in July. Autumn was milder than usual, but with frequent drizzle and gales developing. Frosts in November gave way to a sequence of severe gales and very heavy rain in December.

*Meteorological data reproduced courtesy of SAC Auchincruive, SAC Crichton Royal Farm and Met. Office, Exeter.*



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