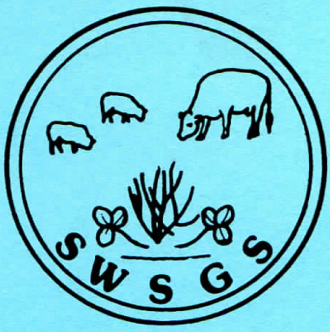

GREENSWARD

Journal of the South West Scotland
and
Central Scotland Grassland Societies

No. 44 2001

CONTENTS

Prizewinners at the SWSGS Silage Competition Evening, held in Castle Douglas, January 2001. Left to Right: A Braid, Gerwyn Owen (Silage Judge), H Parker (Chairman), D Hogarth (Silage Champion), H Chalmers, Glenys Owen, K Campbell.

FOREWORD

"The old order changeth, yielding place to new .... Lest one good thing should corrupt another". So wrote Alfred, Lord Tennyson in *Morte d'Arthur*.

Change or the need to change is the underlying theme of the present issue of 'Greensward'. The meetings and activities of the Central and South West Scotland Grassland Societies reported are very largely those held during the year 2000. All events from February to December 2001 were cancelled due to the outbreak of Foot & Mouth Disease. The conclusion in the article by Andrew Campbell OBE: a long-standing member of the South West Society who is in close contact with many rural interests, is 'move on we must'. In similar vein, after a wide ranging view of farming and research, David Leaver advocates change, adaptation and increased competitiveness. Opinions from economists, marketing, farm visits and a European grassland meeting all point to new approaches, diversification, niche and value added products closer to the consumer. Rapid change has never been a welcome guest in the traditional rural scene. A frequently oscillating management ill-befits an industry where development and investment require long time spans. This is true above all in what the public are increasingly demanding – conservation of landscape and in the environment. Grassland, a dominant feature in the west of Scotland, requires a high degree of stability in policy and management to maintain its value to farming and as a wildlife habitat.

The Central and South West Scotland Grassland Societies wish to thank all host farmers at their farm walks and all speakers at evening meetings, together with commercial sponsors and staff from SAC. All authors are thanked for their contributions to this issue, and all advertisers for their support. Special thanks are due to Lorraine Reid (Rural Business Unit, SAC Auchincruive) for her patience and skills in word processing and arranging the layout of the entire Journal, in addition to carrying out secretarial duties for SWSGS. Staff at the printers: Walker & Connell, a long-established local Ayrshire firm, are also thanked for the care taken in the design, printing and publication of the Journal.

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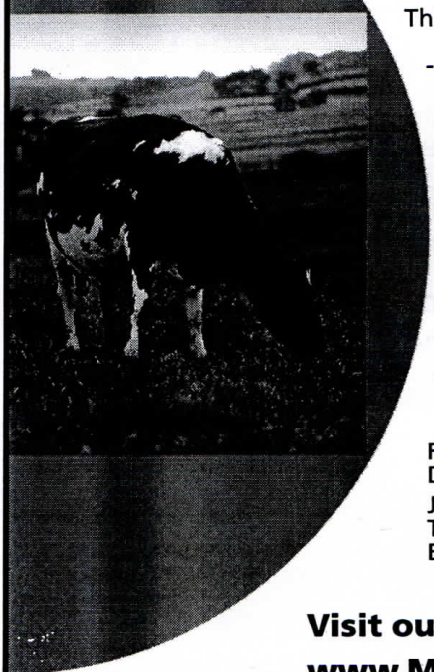

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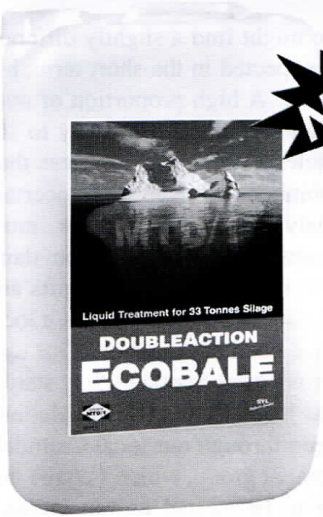

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THINKING BEYOND THE FARM GATE
Andrew Campbell OBE, Cuil, Castle Douglas

It is with some trepidation that I put pen to paper with thoughts about the future for farming. It is only just over a year ago that we saw our first confirmed case of Foot and Mouth Disease (FMD) in Dumfries and Galloway and the idea then that, twelve months on, I would be doing a piece for Greensward about future hopes for the industry would have seemed absurd. It is not possible to say "that's all behind us now", but it does feel like a long time ago. Colleagues here in the South West have been saying the same thing, perhaps because we were all anxious to draw a line under things as soon as we could. The intensity of the impact of the outbreak on the industry, the families who work in it and on the rural communities who depend on a smooth running farming sector has been well documented. In a recent BBC TV "special" on the outbreak (filmed in Castle Douglas Mart) one was struck by the palpable impact the supporting fly-on-the-wall film had on the four hundred strong audience as we temporarily relived some of the emotions of the time. Move on we must however and the process has begun. We are well rehearsed at dealing with peaks and troughs, bad seasons, market crises and income uncertainty. Working in agriculture clearly breeds a resilience that is hard to match in other endeavours. To illustrate this, the findings from a recently published (and Dumfries and Galloway Council commissioned) SAC rural economy and agriculture study were quite startling. Just after the height of the outbreak, a cross-sectoral questionnaire which focused on farmers' intentions for the future, showed that 83% were determined to carry on farming with only 17% saying they weren't sure. Having said that, one glib comment I overheard was "..... it either means we're very resilient or very stupid ..... !"

If we were to repeat the survey part of the study, we might find a slightly different result. A major shake out of farm businesses is not expected in the short term, but changes in attitude are apparent just below the surface. A high proportion of over 50's are still at the helm of many of our holdings, and we expect as many to see things through to retiral if at all economically feasible. Afterwards it is less than clear. Succession is a problem, with a growing number of businesses uncertain about who might take over. This will obviously open the way for more amalgamations or maybe more co-operative ventures, particularly in the dairy sector. In either case, it is important that we try to track these structural shifts and that decisions are taken based on the best available business information. At a local level, a number of successful post FMD measures have been put in place. Our own Local Enterprise Company (LEC) as with others across rural Scotland, has started to engage with farm businesses to try and see them as local SME's (Small-Medium Enterprises). This I am pleased about since it has been through our local Cairndale Group (an inter-agency agriculture and rural development group, which I chair) that I have tried to reverse the tendency for agriculture to be treated as "an industry

apart". Our LEC has therefore carried out over 400 Farm Business Audits aimed at helping businesses adapt to market conditions and increase their competitiveness. The feedback from this exercise has to date been most encouraging. Our local Farm Business Steering Group is also looking at ways of encouraging young talent to stay in the industry.

One lesson appears to have been learned at national level in the fall-out from FMD and that is a realisation of the inter-connection of farming and all other economic and community facets of our rural economies. It was very encouraging to see just how supportive all sectors of our community were during the crisis. The way in which people and communities pulled together was very heartening and shows we have a stronger platform for working more closely with other sectors. It was clear across the UK that when farming goes into crisis so too does the rural community, but more interestingly wider impacts are felt in the towns and cities across the land. This is not something to be complacent about. Indeed it is a factor which brings considerable weight of responsibility to us all as farmers. The challenge is that while everybody now understands that we are totally inter-connected with our rural communities, this doesn't necessarily mean we are fully integrated or perceived to be integrated with the small business or tourism sectors.

The key point is therefore that as an industry we must build on this special position which we hold, not just as producers of raw materials at the bottom of the food chain, but as rural businesses with talents and assets, the value of which was more fully appreciated by the public in those months when our countryside was all but closed down. Yes, our role as producers of food must remain central to our existence and I am confident that a strong and commercially viable industry will continue to be the bedrock of our rural communities. But also we must be seen to be developing our environmental assets, our links to tourism, our small business skills, alternative and niche products etc. No one of these options will fit all businesses. It is for ourselves to look at not only what's going on within our own businesses, **but to look and think beyond the farm gate** and see where we can position ourselves for the next generation. For many, the role will be different but we must start shaping it now and grasp this new agenda which will involve us all in wider aspects of rural development as well as food production. It's not about one or the other; it's about both!

SWSGS SPRING FARM VISITS IN KIRKCUDBRIGHT 2000

G E D Tiley

Visits by SWSGS to Mayfield and Fellend, Castle Douglas on 9 May 2000

Mayfield, Castle Douglas (By Invitation: Ronnie Wilson & Family)
A visit to the local South West Scotland Silage Champion is always a privilege, but this year's Spring visit to Mayfield was particularly impressive. With 1000 acres (400 ha) all-grass enterprise on 3 units, Ronnie milks over 550 Holstein-Friesians, together with 420 youngstock and 300 beef cattle. The land, with typical Stewartry rocky knowes, rises from 40-150m with a rainfall of 1375-1500 mm. The cows are managed in 3 groups: low, medium and high yielders for greater feeding efficiency, and mostly housed at night. Herd average is currently 8,400 l (June 2002).

Grazing. The grazing fields are set-stocked. Strip grazing was tried, but this produced excessive poaching. In the spring the low yield group goes out on 10 April, allowing 15 ha for 150 cows; the high yielders on 24 April. The fields are then shut for silage. Subsequently, all grazing is on silage aftermaths for the rest of the year. This ensures uniform quality and always clean grazing, with maximum milk yields as the grass is always fresh. A major change in 2000 was the use of umbilical slurry spreading during the first week of March. All stores can be emptied then regardless of weather conditions, at a cost of £2 per 4,500 l. At the time of the visit, slurry treated grass was visibly taller, darker green and more dense. In addition, nitrogen is applied: 125 kg ha^{-1} to silage, 85 kg ha^{-1} to grazing. Docks are controlled by fluroxypyr 3 weeks after first cut, which unfortunately damages clover.

One field is reseeded annually in Spring after treatment with glyphosate. Seeds mixtures are a blend of SAC recommended Late and Intermediate diploid and tetraploid perennial ryegrasses. All silage fields can be drilled since the rocky knowes were levelled – considered a very worthwhile investment. One third of the farm area is analysed for P, K and Ca every year, and lime applied when required.

Silage is cut and chopped by the farm and kicked out to dry, if necessary for two or more days. No additive is used. All 1st cut harvest is stored at Mayfield in a large, 30m x 42m open pit and 12m x 24m covered pit. The covered pit showed less deterioration in summer. The 24/48 milking parlour had recently been updated with new technology to log all milking data. The dairy was managed by 2 men milking and a third collecting cows. Cows in the collecting pen were moved forward by a mechanical barrier operated from the parlour. The cubicles were

bedded with equal parts of lime and sawdust. Night housing meant that making enough silage was the key to success. Youngstock were grazed over the whole grazing area from April to December. By feeding indoors on hard standing, there was much less damage on wet fields. Hoggs were wintered from 1 October-7 March to improve the grass over the whole farm.

Fellend, Ringford, Castle Douglas (By Invitation: Robin Austin, Family and Colleagues). Following the morning visit to the intensive dairy farm at Mayfield, the afternoon visit took members to almost the extreme opposite farm type – an extensive beef/sheep enterprise on rugged upland. Livestock management and production were however, of an equivalent high standard to be found in this part of south west Scotland.

Half the total farm area of 640 ha (1600 acres) is rough grazing including the neighbouring farm at Barstobrick, with additional long and short term rented ground. There were 500 ewes on the hill producing cross ewe replacements, and around 1000 ewes producing lambs to finish. 300 Angus x Friesian sucklers were outwintered at Barstobrick. Following the BSE crisis, own replacements have been reared (crossing to Beef Shorthorn) to give more backfat for outwintering. The cows were largely spring calved and out to grass before calving, resulting in better colostrum and no scouring. The hill grazings were rested in summer when the sucklers graze rented grass until October. Calves are speaned on grass, avoiding stress before winter. The problem of dense bracken on some areas of the hill is being tackled by heavy poaching rather than herbicides. Gorse thickets, which conceal the calves and harbour rabbits are being mechanically dug out. Felled timber areas were being replaced.

The silage ground is all spring grazed, receiving 75 kg N ha^{-1} as urea followed by 112 kg N for the first silage cut in the 3rd week of June. All areas receive 44:19kg N K for the second cut which is stored at Barstobrick. Grazing ground receives 41:9:9 kg N P K ha^{-1}.

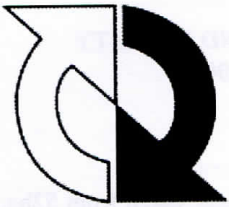
Diversification. A covered equestrian arena 60m x 54m was in the early stages of completion at Barstobrick to form a focus for a range of countryside recreational activities, including walking, cycling, all terrain vehicles and pony trekking. A stone built house and stable block had been converted into holiday homes for summer letting. The site of the former mansion house at Queenshill, burnt down 17 April 1890, is now the centre for holiday accommodation augmented by timber built lodges in the grounds.

Galloway Larder. This is a meat marketing company established by three farming families in 1994, with the aim of promoting the marketing of locally produced beef and lamb. The products come with the assurance of livestock reared in the natural environment of the Galloway hills, valleys and coastline, with careful regard to animal welfare and highest quality of end product. The butchery is based at Fellend and operated by 8 staff. Pork, venison and trout are bought in and outlets include independent retailers and village shops in southern Scotland and the north of England. Sales are also made to housewives by mail order and internet, with some to catering albeit with lower margins. Great importance was attached to packaging and presentation over the range of products. (*Unfortunately, this business was closed down in 2001 because of Foot & Mouth Disease. It is now operating at a reduced level from a butcher's shop in Gatehouse of Fleet*).

The South West Scotland Grassland Society is extremely grateful to Ronnie Wilson and Robin Austin, together with their families and staff for the privilege of both these visits, for the time spent in explaining their farm operations and for their very warm hospitality.

SWSGS PRIZES 2001

The Vice-President's Prize, which is awarded annually to the best Grassland student in the first year of the Bachelor of Technology in Agriculture programme (Diploma year), was awarded to Andrew T Stewart from Blackwood, Auldgirth, Dumfries. The Malcolm Castle Memorial Prize was awarded to Sarah Hutton-Bury from Co. Offaly, Irish Republic, who was the best overall student in the final year Bachelor of Technology in Agriculture.



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For further information contact Chris Totten

CENTRAL SCOTLAND GRASSLAND SOCIETY
FARM VISITS DURING 2000
C M McCombie

10 May – Rosneath Home Farm *(Courtesy: W Calderwood)*
A dairy farm with 120 Holstein/Friesians. First cut silage taken from 52ha, second cut from 40ha. Winter and spring cereals occupy 30ha and there is also a deer farming enterprise (see Greensward No.41, p74).

Shantron, Luss *(Courtesy: Bobby Lennox)*.
Traditional hill farm above Loch Lomond carrying 2,300 ewes and 35 blue grey sucklers. About 400 ewes are in the Blackface sire reference flock.

11 July – Murray Farm, Pathhead, Dalkeith *(Courtesy: Donald B Laird)*
Murray is a 132ha dairy unit, milking 110 Holsteins through a Robotic milker. It is one of 3 farms in the business.

CENTRAL SCOTLAND GRASSLAND SOCIETY
SILAGE COMPETITION 2000
HF Seeds Silage Competition Prizegiving Meeting of CSGS at the Newhouse Hotel, Newhouse on 21 February 2001
C M McCombie, Secretary, Central Scotland Grassland Society

Silage Judge: R Buchanan, Powmill Farm, Kinross
(last year's Scottish Regional winner)

The results of the 2000 Silage Competition, previously judged in December, were announced by Silage Judge, Robert Buchanan. Although the number of finalists in the Short Leet was smaller than usual, only 1.5 marks separated 1st, 2nd and 3rd positions. R Mackie, Goodockhill, Newhouse was declared the winner, this being a rare occurrence for a beef/sheep producer to win this Competition.

HF Seeds Cup & 1st Prize	R Mackie, Goodockhill, Newhouse
2nd Prize	W Armstrong, South Brackenridge
3rd Prize	J Warnock, Eastfield, Biggar
Hamilton Reco Salver for Best Beef & Sheep Silage:	R Mackie, Goodockhill, Newhouse

SWSGS EVENING FARM VISITS 2000
G E D Tiley

28 June 2000. Rainton, Gatehouse of Fleet (By Invitation: *David Finlay and Family)*

*(A Joint farm walk with Dumfries & Galloway FWAG. The farm walk was sponsored by **TIMAC (UK) Ltd**)*

At the start of the evening **Scott Shearer,** representing the sponsors: Timac (UK) Ltd, stated that the aim of Timac's organic and semi-organic products was to work WITH nature. Agricultural systems can work more efficiently if working with natural systems. **Ranald Macdonald**, a new member of Dumfries & Galloway FWAG, emphasised that FWAG gave advice on conservation without detracting from commercial farm basics. On Rainton they had helped with setting up the Nature Trail. FWAG could suggest features on all farms both organic and non-organic that would enhance the environment without being expensive.

David Finlay said that Rainton was in the second year of conversion to organic status, a major part of which was cutting off artificial fertilisers. His present permanent pastures had been improved 30-40 years ago by his father with the aid of grants for drainage and tree clearance. Requirements now were to create wetlands and plant trees! The organic scheme was viewed as essentially one of quality assurance, with premiums for marketing products to the consumer. Conservation was part and parcel of the scheme, with pollution regulations, etc. Future markets will be very competitive and efficient, hence Rainton had chosen niche marketing with organic ice cream. Quality assurance implies independent auditing, eg: by the Soil Association. A Health plan from the vets was necessary which provided a system to tackle each health problem using avoidance techniques. Modern drugs could be used when shown to be necessary.

The farm had been tenanted since 1927, though some buildings dated back to 1787. There was a tradition of milk processing as cheese had been made from 1825 until 1971 when it transferred to Loch Arthur. Stock were largely to be housed on non-slatted floors, as it was thought this reduced stress, allowing the animal to better fight disease. The cows preferred the new Pasturemats in the cubicles, with kiln dried sawdust. A new building provided generous space, with one cubicle free per 10 animals. Regulations required an equal exercise area outside. Calving was 40% October/November, remainder February/March. There were around 90 cows, mostly Ayrshires. 35 Aberdeen Angus and 850 ewes, Blackface and cross.

A grass sward visited had been undersown in barley in 1997 and had received liquid fertiliser for 2 years. It was grazed by sheep at 12.5 ewes and lambs ha^{-1} followed by dry cows and was typical of Borgue pastures which required 1 day's rain per week. In preparation for conversion on 1 April, it received a heavy application of FYM in the previous autumn, and a spring dressing of fertiliser in March. A topper with chains was used to control scrub. Docks would be controlled by CGP = Constant Grazing Pressure. Clover was the key to organic farming and the varieties: Grassland Demand (small leaf) and Merwi (medium leaf) had been sown with tetraploid perennial ryegrass. Pasture growth was very much less predictable in organic systems and turnout dates were 7-10 days later than normal this year. In dry conditions, stock numbers must be reduced. Because the soil surface was very stony and rocky, clover was stitched in using a Rebco harrow. Last year establishment from 10 September sowing was successful though such late sowing of clover could be susceptible to winter kill. All fields were topped in summer as the grass tended to go to head quickly due to the shallow soil. Cake was fed to prevent bloat that was a potential hazard on clover swards on a wet morning. As part and parcel of organic development at Rainton, initiatives aimed at improving wildlife and the overall environment were embarked upon. These included: 2 nature trails with interpretation, a pond, hedges and establishment of amenity woodland.

Alastair Bartholomew, ecological forester, expanded on the woodland developments. A 2 hectare area of virtually waste ground infested with rabbits was to be developed as a deciduous woodland (ash/birch), which would be used as a dog-walking area in association with the Visitor Centre. Such an amenity area would also contribute to improved local biodiversity. Being an organic farm, chemical weed control could not be used. A further 16 hectares beyond the dog walk would also be planted. Stopping on the path of one of the Nature trails amidst bog and scrub which had once been improved ground in earlier times, it was noted that the cattle often knocked down the interpretation signs. Sheep could only graze in rotation to meet clean grazing needs. Rabbits would have to be totally excluded for woodland development and a deer fence would be necessary.

Cream O'Galloway

Cream O'Galloway is the Trade Name of the public interface at Rainton – initially the organic, locally made ice-cream and yoghurt, but later extended to include the tourist facilities of Nature Trails, Children's Adventure Playground, Toddlers' Playbarn, Viewing Gallery and Farm Shop. The logo is: SIMPLY NATURAL, summarising this outstanding example of farm diversification which strives to meet the modern demands of the public.

The large gathering of Grassland Society and FWAG visitors wish to record their most grateful thanks to David and Wilma Finlay, and supporters for this visit, and particularly for the complimentary taste of their delicious ice cream and yoghurt.

19 July 2000. Coopon Carse, Palnure, Newton Stewart

(By Invitation: *Coopon (Koepon) Farms, Manager: Peter Bull)*

This was a joint meeting with, and at the invitation of, the Wigtown Agricultural Discussion Society.

Peter Bull sketched a brief background history of the dairy enterprise at Coopon Carse. Pon Farming had purchased the farm in 1983, just one among many in Holland, Germany, Canada, Scotland and other European countries. The farms bred and used high genetic merit Holstein cows under various feeding regimes. Initially, under Jan Vos, there were 130 cows increasing to 140. Forward budgets to cope with falling milk price indicated further increases in cow number, perhaps 300-500, under intensive systems. Therefore in 1999 it was decided in conjunction with the yoghurt factory to go organic. Beginning in the spring, all fertilising spraying, etc was completed before 5 May. The target was 300 cows and 3 million litres of milk. One farm was sold and two more farms purchased to provide extra land. 72ha of merse land with rough grassland were in the first year of conversion; the remaining 196ha were in the second year. There were 116ha of silage ground, cut 3-4 times annually, 40ha each of wholecrop forage peas and wholecrop cereals (barley, wheat). Cow numbers were 210 but aiming for 300 with 300 followers. The merse (hill) land carried dry cows and in-calf heifers in an ESA (Western Southern Uplands) grazing management scheme. Here slurry was applied using tankers, the grazing topped and clover, including red clover, added.

A completely new set of buildings was being developed to handle 300 cows and to provide a visitor centre. The cows were milked in a rotary parlour at the rate of 130 hour^{-1} with one person milking. Milk yields were currently 11,000 litres but would probably reduce to 9,000 litres per cow. Polythene tunnels were used for the calves and these were ventilated by side-to-side airflow to prevent ammonia. Previously, problems had arisen when the calves were housed together with older cattle. Slurry was stored in 4.5 million and 270,000 litre tanks and spread with the farm's own umbilical system at 33,000 litres ha^{-1}. The disadvantages of an injector were the heavy clay soils and residual open slots made in dry weather which allowed weeds to develop. 20cm dribble distributors required thin slurry which must be aerated continuously.

Docks could be controlled in the open field by regular cutting, but this could not be used in the hedgerows. Organic subsidies did not cover the additional costs of

cultivating machinery. The rotation practised was 4 years grass ley ploughed for forage peas to provide N for the following Italian Ryegrass to provide winter grass. Next year was wholecrop cereal manured with slurry or dry FYM which was turned every month. Red clover, cv Merviot, 3.8kg ha^{-1} was mixed with the Italian. Sainfoin was being tried sown with wheat. Maize did not yield consistently, being unsatisfactory 3 years out of 5.

At the end of the visit, Bruce Aden distributed samples of Rowan Glen yoghurt from the adjacent factory, managed by John McArthur. Members of the Wigtown Agricultural Discussion Society and of SWSGS wish to thank Peter Bull, his staff and colleagues for this most interesting farm visit.

LOW COSTS THROUGH CO-OPERATION

'Uel Morton, Chief Executive, United Farmers Ltd
62 West Harbour Road, Edinburgh

Although the Forward Strategy for Scottish Agriculture offers some encouraging pointers in the future, the pressing need for most farmers at this time is a healthy "bottom line". With end prices in the main static or declining, it is the input end of the farm accounts that could make all the difference. Farmers themselves can influence the input price through co-operation as they seek least cost solutions to their current problems. It is all about purchasing power! By actively co-operating through local companies such as Tarff Valley, which in turn taps into the negotiating strength of the federal co-operative **United Farmers**, farmers can access competitively priced quality inputs, one of the key elements in the pursuit of farm profitability.

United Farmers is the federal purchasing agency for many of Britain's leading agricultural supply co-operatives and as such has been pursuing vigorously a policy of greater scale and greater value for its members. The over-riding objective is to capitalise on the scale of operation of its members, allowing the federal to negotiate supply contracts which offer real, measurable competitive advantage. The statistics illustrate its negotiating strength – 18 co-operatives operating from the Northern Isles to Essex, (also including one business in the Falklands), which in turn supply some 50,000 members and customers. Since its establishment in 1971, United Farmers has developed to a position where it is now handling almost £24 million of agricultural inputs, either proprietary brands or sold as the Unifarm brand and marketed under the banner ... *"farmer-owned ... that's the difference"*. The Unifarm range includes fertiliser, feed, minerals and calf milk replacers but animal health, crop packaging, dairy chemical, pet food, livestock equipment and household products are also sourced.

Following a major review of the business in 1997, United Farmers has adopted a strategy for growth, establishing new relationships with manufacturers, many of whom now regard the federal's members as the preferred supply route to market. Structural and administrative costs have been stripped out and the product portfolio refined. Since restructuring, turnover has doubled, an outstanding achievement at a time when product values have been static or declining following a weaker demand from farmers. All businesses supplying agriculture have been forced to adapt to cope with rapidly changing circumstances in the industry. By putting more business through the federal, member co-operatives have managed to reduce costs and increase market share, illustrating a strong endorsement by individual members of the principle of federal co-operation; a reinforcement of the concept "farmer-owned".

Much of United Farmers' success can be attributed to the commitment of members such as **Tarff Valley** which, under the federal umbrella, has been working with other like-minded co-operatives to achieve mutual objectives. Although operating in a difficult trading environment, Tarff Valley is one of the few businesses in agriculture which is expanding. With around 750 members and a customer base of more than 1200, the South West Scotland co-operative is one of the country's most successful, regularly producing profit and passing on trading bonuses and share interest to members from a turnover of £12 million. The success has come about through a combination of paring costs to the minimum, shrewd investment, active contact with the customer base and response to their demands.

Colin Owen, Tarff Valley Managing Director and Vice Chairman of United Farmers explains: "Although scale is paramount, so too is customer feedback which leads to better customer relationships and loyalty, which are the key features of co-operation. The future of our business is therefore very much what the members wish to make it and on that basis, we will devise the appropriate strategies". In addition to a full selection of farm inputs and a range of services including bulk fertiliser delivery and spreading, Tarff Valley has four retail outlets at Glenluce, Castle Douglas, Ringford and Dumfries serving the farming and rural community. A fifth at Whauphill in Wigtownshire opened in the spring, complementing the feed store. There are further plans to add a retail shop to the feed and grain store at Castle Kennedy by the end of the year. Most of these facilities are being constructed by local contractors so there is a multiplier effect of a strong, successful business in the heart of the Dumfries & Galloway region supporting the local economy.

"We will continue to invest in the business to enhance the facilities available to members", said Colin Owen. "And because farming is such an integral part of the economy in this area of Scotland, we feel we are contributing to the wider business scene. Farming is the essence of our business – and by combining our purchasing power with other co-operatives we can buy right. In fact, we source around 50% of our requirements from UF, thereby providing our customers with very competitively priced supplies".

As an enabling organisation, United Farmers is committed to seeking better purchasing terms and value for members such as Tarff Valley. This in turn allows the local co-operative's members to gain distinct price and quality advantages which are paramount in the prevailing economic climate.

20 June 2000. Barfil, Crocketford Road, Dumfries (By Invitation: *M Gordon*)
Barfil had been purchased 10 years ago, with the intention of running an organic demonstration farm, aiming always for quality produce. Total area was 144 ha, 60 ha of which had been immediately planted to trees to provide shelter and increase wildlife. There were 4 arable fields, each divided in two to provide for an 8-plot rotation: 1 year Cereal; 1 year Roots (potatoes, turnips) and Kale; 1 year Cereal, undersown with grass/clover; 5 years Ley. The root crops were inter-row weeded with horses to keep weed free. The grass/clover mixture proved very competitive against annual weeds over its 5-year life. Oat crops competed much more against weeds than barley, but a rapid cover was needed in spring, and high seed rates were used. Because horse ploughing was shallow, clover regenerated under the Kale to provide a volunteer second crop. Varieties used were: White clover; Avoca instead of Grassland Huia, Grasslands Demand; For silage – Avoca and Alice. Potato – Marfona, Oats – Aberglen. Grass mixture as recommended by Martyn Wrathall, former SAC Adviser, Dumfries Office. Red clover was not grown owing to risk of bloat. The soils were stony and silty: cultivating machinery had cost only £30. Potato blight was countered by removing the haulms before lifting. Varieties with tuber resistance and early bulking before blight incidence were required and organic seed was planted.

150 Blackface Shetland and Whiteface breeding ewes were kept, aiming for batches of lambs and a spread of maturities. The Whiteface were crossed to Suffolk producing very long carcasses. The Shetland ewe lambs were bought in and kept for 18 months before breeding to allow parasite challenge. Foot rot was treated with zinc sulphate and scab by 3% formalin. Nutrients were conserved on the farm by roofing over the midden and keeping the cows on straw during winter. A silage field seen had been shut up on 31 March to meet the CPS management requirement for birds. It would be cut in mid July, commencing in the centre of the field and working outwards. It will be used for silage for 5 years, and manured with FYM and meadowsalt, containing potassium, from January onwards to avoid winter leaching. Permanent pastures grazed by sheep were herb-rich containing abundant yellow rattle and plantain, the latter said to be anthelminthic. Clover was spread naturally by the sheep, although it was not desired since it suppressed the wild herbs. Part of the grazing was fenced to receive different management to encourage fragrant orchids. **Anne Seaton** from the VI Centre, Dumfries commenting on organic veterinary requirements, said the emphasis was on **prevention** rather than solving problems. A balance had to be achieved between disease challenge and immunity. Genetics, nutrition and stress each play a part. The organic approach required a plan – what disease, what preventative was current

and what was allowed, with an assessment of risk factors of the disease present. Natural immunity must be increased by use of colostrum, and reduction of challenge both indoors and outside. Vaccination was permitted if there was evidence of a problem. Diseased animals must be isolated and withdrawal periods after treatment extended. **John Bryant** represented Organic Meats, Biggar, who were now exclusively organic meat specialists, and had been working with Barfil to obtain a top quality product. Galloway cattle matured later at 2 years, and carcase hanging times were greater – cattle 21 days, lamb 10 days, pigs 7 days. The organic market was strong but was almost in surplus, such that premiums may not always be available.

DUMFRIES & GALLOWAY FWAG
Ranald Macdonald, FWAG Adviser

Like many businesses we were affected by the Foot & Mouth outbreak, but once it was possible to get back onto farms FWAG was busier than ever catching up on work we were unable to do last summer. We have visited over 100 farms, with more farmers than expected gaining access to the new Rural Stewardship Scheme (RSS). In addition, FWAG has recently initiated a Waste Minimisation project, aimed at reducing and recycling waste on farms which could **save money**, as well as helping the environment and reducing pollution. This project is supported by ***Dumfries & Galloway Council*** through the Landfill Tax Credit Scheme. It provides for a **free** FWAG visit to discuss improved methods for the disposal of wastes, eg: plastic, tyres, sheep dip. For more information, contact either Kirsty Hutchison or Ranald Macdonald on 01387 760576.

FWAG is the foremost organisation providing conservation advice which is practical and confidential, and aims to promote the integration of efficient farming and countryside conservation.

In the future, FWAG will be working more closely with SAC again to pursue a joint approach to conservation and environmental advice, as these two aspects assume greater importance in farm business decisions.

IMPROVING SCOTLAND'S MEAT MARKET

Alasdair Muir, Managing Director, Quality Meat Scotland, Ingliston, Edinburgh
Donald Biggar, Grange, Castle Douglas

Meeting of SWSGS held at Embassy Hotel, Dumfries, 5 October 2000.
*Meeting sponsored by **McIntosh Donald Ltd,** Port Lethen, Aberdeen*

Donald Biggar was a Founder Member and Vice-Chairman of Quality Meat Scotland (QMS). QMS had come into being about one year earlier through a combination of devolved government and the MLC (Meat & Livestock Commission). A similar group had been formed in Wales. These organisations (SQBLA, MLC and the Scottish Pig Industry Initiatives, SPII) had been brought together to promote red meat in Scotland with 9 Board representatives of the whole industry. It was hoped to attract funding from Scottish Enterprise and also the Scottish Executive as well as providing a stronger case for a call on market levies. The competitive position of Scottish meat would be improved and leadership co-ordinated. QMS had statutory responsibilities as well as promotion and education roles. The Scottish image would be built upon to produce a superior product which would attract premiums.

Alasdair Muir, Managing Director QMS, spoke in more detail on the constitution, aims and priorities of the new marketing organisation. QMS integrated the activities of its 3 parent groups – SQBLA, SPII, MLC, building on previous developments, quality assurance and brands. It had been operational since 1 July 2000. MLC was a statutory body funded by levy with a Great Britain-wide remit to improve the efficiency of the meat and livestock industry with due regard to consumers. It was mainly concerned with meat marketing, with nutrition and education programmes, new product development and eating quality.

The **main objectives of QMS** were to:

- improve the competitiveness of Scottish meat and livestock;
- provide co-ordination and leadership for the industry.

Priorities were:
Understanding, 'Specially Selected Scotch', quality assurance schemes, eating quality, co-operation with other initiatives, business support, communication

Understanding the Market and how it is changing. The UK meat market amounts to £14 billion, representing 22% of all food expenditure and eaten by 97% of the population. Markets are changing due to: Globalisation with new markets emerging, enlargement of the EU, currency changes, Food Safety and quality

issues. Trends in UK indicate increasing meat consumption in the ready cooked and eating out categories, with correspondingly less in retail. Thus supplies to caterers will increase. Consumer habits are changing due to: more travel and media influence, demands for greater variety and interest, a "cash rich/time poor" lifestyle, desire to spend less time cooking (20 minutes maximum), "Grazing", ie: eating "on the hoof". A majority of consumers judged red meat by tenderness and juiciness. Supermarkets with their massive buying power, basically required what their customers wanted which translated into clear standards of:

- Animal welfare and Husbandry (The 5 freedoms laid down by MAFF – Freedom from hunger and thirst, from discomfort, pain, injury and disease, fear and distress and freedom to express normal animal behaviour).
- Farm management – production, feeding, over-wintering and including record keeping.
- Slaughter procedures.

The product label: 'Specially Selected Scotch' had been shown by research to be a real asset and widely respected, denoting Quality and with potential to attract a premium price. This label would be developed and brought up-to-date. Quality Assurance schemes were in operation for Beef and Lamb (80% of production) and for Pork (90% of production). Feed companies, farms and auction marts were inspected annually. Twenty-eight approved meat plants inspected six times annually and 610 approved Guild Butchers subject to annual inspection. A Livestock Haulage Quality Assurance Scheme was due to be launched in 2001 and also possibly an Approved Importers Scheme. (June 2002 The Livestock Haulage Scheme has been introduced to EN45011 standards).

A Meat Eating Quality project is being undertaken with the clear objective of establishing best producer and processor practices that will deliver optimum eating quality for Scottish red meat. There would be co-operation with other Initiatives to put consumer needs uppermost and to mount a drive for increased exports. Support would be given to businesses in all Sectors – retailers, caterers processors, wholesalers, in a UK-wide programme but also aiming for Europe when the markets fully reopen. Focus of support would be to get our logos seen and understood, be part of the caterers and prepared markets and to educate chefs, schools, health and tourist centres.

Communication would be a vital facet to all sections from producers, consumers to politicians, with simple focused messages. Marketing success in the end would depend on meeting the changing demands of what the consumer thinks it wants.

GRASS THE CHEAPEST FEED

Andrew Best, John Watson Seeds Ltd

Grass is the most cost efficient feed available for ruminants and past research work on breeding grasses for agricultural use has concentrated on yield and varietal characteristics such as D-value, ground cover, winter hardiness and disease resistance. Grass unfortunately is unbalanced in the ratio of energy to protein content so that only 20% of the protein ingested is utilized. One goal for breeders has been to increase the energy content of grass whilst maintaining the other desirable attributes necessary for success in mixtures in the field. One of the developments in the 1960's was the introduction of Tetraploids, which contain twice the number of chromosomes of the normal diploid grass. Tetraploid perennial ryegrasses have on average a 20g Kg^{-1} DM of sugar advantage over their diploid counterparts, and therefore their inclusion helps increase sugar content in grass mixtures. However, DM contents are lower and swards more open. Thus breeders are trying to breed higher sugar diploid perennials to add to their higher dry matter and better ground cover characteristics. The new high sugar diploid, variety Aberdart, has given increased animal performance in IGER trials.

Combining the best tetraploid and diploid perennials in terms of sugar potential maximizes the opportunity for higher dry matter intake and increased animal performance. As seed specialists, John Watson Seeds Ltd has the challenge of creating grass mixtures with high yields, good ground cover and the maximum feed value for ruminants. The company fully supports the independent variety testing carried out by SAC, NIAB and DARD (N.I.). From these trials the seasonal performance of the grass mixtures can be predicted. Unfortunately data on sugar in individual grass varieties are not normally available, important both for animal performance and in determining the choice of a grass mixture.

During August and September 2001 John Watson Seeds Ltd monitored sugar contents in a few varieties currently in trial at SAC. The results indicated clearly that there was variation in this attribute among the varieties studied. John Watson Seeds Ltd will be continuing this monitoring of sugar content on a broader range of grasses in 2002.

JOHN WATSON SEEDS LTD

Skateraw : Dunbar : East Lothian : EH42 1QR
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Just four of our outstanding mixtures designed in consultation with the N.I.A.B. and in particular the Scottish Agricultural College.

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To discuss your requirements please contact the above or

Andrew Best: 01556 503309

CONTAINING COSTS ON THE DAIRY FARM

Dr Michael O'Donovan, Moorepark Research Centre, TEAGASC, Fermoy, Co. Cork, Irish Republic

Meeting of SWSGS at the Northwest Castle Hotel, Stranraer on 9 November 2000
Meeting sponsored by ***Kemira Agriculture***

TEAGASC is the Agriculture and Food Development authority of the Irish Republic. Mike O'Donovan is one of the team at Moorepark which did research on 14 farms to develop more precise grassland management in order to increase profit from dairying. The work was funded by Irish Fertiliser Industries, FBD Insurance and Dairy Levy funds. A booklet "Grassland Measurement – Benefits and Guidelines" summarising the practical results of the research has been published. The theme of strategies to contain the costs of dairying recalls that running through the BGS West Sussex visit (p33) and 'Pasture to Profit' (Extended Grazing) groups, all as a result of the prospect of an ever-decreasing price for milk.

Dr O'Donovan began by emphasising that the work at Moorepark aimed to develop a blueprint for southern Ireland. Comparison of costs per kg of DM of concentrate, 1st cut silage, 2nd cut silage and grazed grass showed that grazed grass was by far the cheapest feed; though it might not be if it was not being used or managed correctly. The Moorepark Model depended on a compact spring calving herd, stocked at 2.5 cows ha^{-1} using 350kg N ha^{-1}; a grazing season of 10 months allowing 3.9t grass DM, 0.6t concentrates DM and 1.5t silage DM cow^{-1}. Milk yield was budgeted for 6,400 litres at 3.4% protein and 4.0% fat. High genetic animals would have higher feed requirements.

Grass Budgeting. It was essential to know how much grass was being produced in the system, both medium-term and day-to-day. Calving data should be matched to the start of spring grass growth (mid March in S.Ireland). Measurement of grass yield is based on **Farm Grass Cover**, which is the total available grass present above the 4cm level on all paddocks available for grazing. This is calculated simply from the Area of paddock x grass yield estimate from visual inspection, though previously calibrated by cut samples. In spring the available grass is budgeted to finish the 1st grazing rotation by 15 April – the so-called Magic Day when grass growth equals grass demand. A Farm Grass Cover of 950kg ha^{-1} is then the target through the season at 4.5 cows ha^{-1}, avoiding grazing below 5cm, which retards recovery growth. Paddocks with post grazing residues >7.5cm require topping in early-mid-May. Grazing rotations are increased from mid-August progressively to 35 days by mid-October when resting of paddocks should begin. Residual grass up to 850kg ha^{-1} is left for use in spring when it can reduce

concentrate usage. All paddocks must be closed by late November, poaching avoided and concentrates fed from late September. In summer surplus grass is taken as round bale silage on the day that grazing begins, to allow a 21-day recovery.

Results from the 14 commercial farms, which were high achievers for the region, showed a marked decrease in concentrate usage and increase in grass grazed after the 2-year study period. In summary, on the study farms there were increases in mean April-October milk yields and milk protein contents, accompanied by increased feed budget and total grass allowance.

Costs. In the Moorepark model, total fixed costs were 3.6p l^{-1} and total variable costs 4.8p l^{-1}. Returns were: milk yield and composition 24p l^{-1} and calves and cull cows 3.3p l^{-1}. While there was a need for winter milk production on a few specialised dairy farms, this required autumn calving, high feed, labour and machinery requirements, good facilities though with a limited role for grass. It could be of interest if land area was restricted.

The future trends foreseen were those arising from labour shortage, high costs of feed inputs and environmental issues. To remain competitive would require:

- Spring calving herds and grass based feed
- Low fixed costs
- Increased contractor usage, eg: slurry spreading, winter feeding
- Choice of cow type
- 80-100 cows per labour unit
- Reconsider value of 2nd silage cut
- Possible winter grazing on arable land (eg: Italian ryegrass, Westerwolds).

In discussion, topic raised were: silage feeding at Moorepark – simple, easy feed, avoiding high fixed costs. The 2nd grazing rotation was critical and would govern the rest of the season's success. Pasture topping important and could be used for bales.

Mark Garrett (Kemira Agriculture) spoke briefly about the value of **Nutrient Budgeting**, which could reduce overall fertiliser requirements. He felt that this may be introduced onto farms from environmental considerations.

TAKING CONTROL OF SILAGE PROTEINS

Mark Garrett, Kemira Agriculture

Fashionable thinking seems to follow one track when it comes to farm inputs – reduce is good – increase is bad. But is this track a dead end? Some people believe that this blinkered approach is implicated in the worrying downward trend in silage proteins that has been measured in recent years.

Small wonder that, with farm profits in danger of extinction, the pressure is on to save costs. But simply slashing costs by cutting fertiliser inputs or silage additives or delaying the establishment of new leys for example, without looking at the bigger picture can be misleading. Let's face it, the easiest way for an adviser to justify his or her fees is to point to savings on inputs but if those savings result in lower quality silage and consequently poorer milk yields, a small saving can quickly turn into a big loss by the time it has worked through to the bottom line. Last season's silage proteins fell to 12.5% from 12.9% in the previous year, continuing the downward trend of recent years. Of course, final silage protein levels are the result of a whole range of factors – varietal characteristics, the weather, fertiliser regime, the conditions at silage making time and so on. Some of these are outside farmers' control. If it is cold and wet at harvest for example, protein may be low. But it is no use simply blaming the weather.

"There's plenty that farmers can do to tip the balance in their favour," says Dr George Fisher from Kemira Agriculture. "Developments in plant breeding have led to higher yielding grasses and that has a dilution effect on proteins making it all the more essential to get the fertiliser input right," he suggests. Sulphur status is a key factor. Where soils are Sulphur-deficient, grass is unable to fully use the available Nitrogen. "Soils used to get plenty of free Sulphur from the atmosphere as a by-product of industrial activity," says Dr Fisher. "But from research work at Rothamsted we now know that Sulphur levels in the atmosphere have declined dramatically. Indeed, by 2005, Sulphur will have returned to levels not seen since pre-industrial revolution times. Light soils are most at risk but many medium soils are now showing a response". IGER has looked at the effects of Sulphur-containing fertilisers and has concluded these can benefit protein levels in silage even when there are no obvious symptoms of Sulphur deficiency.

The efficiency of Nitrogen use by the plant is also affected by the availability of Potash. When a negatively charged nitrate ion meets a positively charged potassium ion, the nitrate is actively made to cross the cell wall of the root into the plant. A ratio of 5:3 is the accepted goal but we have noticed that protein levels are much higher when a high quality granular compound fertiliser is used rather than a blend, even though the fertilisers have the same analysis. We suspect that this is because, unlike Nitrogen, Potash only moves very slowly through the soil so whilst

the blend provides plenty of Potash it may not all be in the right place. In a granular compound the Nitrogen and the Potash are delivered to the plant together in the same granule allowing more efficient use of N, hence giving higher protein levels. Failure to replace old weedy leys could also be a factor since weed grasses are more likely to produce low protein silage.

When it comes to Nitrogen, the old rule of thumb of applying the equivalent of two units per acre per day (2.5 kg ha^{-1}) between application and harvest still holds true. Dr Tim Keady (Agricultural Research Institute of Northern Ireland, Hillsborough) has suggested that current recommendations for Nitrogen applications – organic and inorganic – of 125kg ha^{-1} (100 units per acre) for silage grass are too low. He recommends that 132-138kg ha^{-1} (105-110 units/acre) should be applied before the end of March for a mid-May silage cut. An application between early and late March will spread the workload and also the risk should the weather prevent a full application at the traditional late March date. But, according to Peter Light from Alltech many farmers believe that if they increase their Nitrogen they will be forced to use an acid to obtain a good fermentation. But if Nitrogen is applied at the correct time and an effective biological additive is used, the extra Nitrogen will raise both yield and protein content of the silage.

However, a bacterial inoculant should be selected which applies at least 100,000 bacteria for every 1g of grass and preferably 1 million. A good quality additive allows control of the fermentation process. Just as a good brewer never relies on any old natural yeast to start his brew but selects the perfect yeast for the job, a good biological additive will help achieve the correct pH and preserve the best possible protein levels. "In trials we have seen protein levels of up to 20% from fermentations using our products," he concludes.

CHANGING TIMES

C M McCombie, Secretary, CSGS

Panel Night of CSGS, following the Silage Prizegiving on 21 February 2001

The 3 members of the Panel: Niall Bowser, Lerrocks Farm, Doune; Alec Brown, East Gartmillan, Airdrie; Sandy Nicolson, Meikle Camoquhill, Balfron described how their farming had changed in recent times.

Niall Bowser farms 560ha, two thirds of which is in a Less Favoured Area, and rears sucklers and sheep. He had diversified into **wild boar** (85 animals) which he sold as meat in farmers' markets. Following market customer interest, he was also growing potatoes, cabbage and turnips. Future diversification may include a park with red kites which have recently been introduced into the area. Niall also ran an agency for Pratley sheep handling and fencing systems, constructed in New Zealand, using aluminium for lightness.

Alec Brown milked 125 cows which have increased yields from 6,800 to 7,400l over 4 years, with 3.24% protein and 4.07% butterfat. Concentrate was reduced to 2.9p l^{-1} and milk from forage increased from 2,500 to 3,400 litres. Cows are set stocked to follow growing grass, using an electric fence. A longer growing season would be required to increase further milk from forage. Net profit per litre had fallen: 1997 – 4p; 1998 – 0.02p; 1999 – 0.04p; 2000 – 0.008p, and margins cow^{-1} had fallen from £1,100 to £876. Farm area 84ha plus 40ha rented from 5 landlords. All fields were sown with HF Seeds mixtures, the Turbo silage mix being successful. Grass seeding was being delayed for an extra year to reduce costs.

Sandy Nicolson and his 2 sons farm 400ha. At Meikle Camoquhill, 144ha carry 200 dairy cows, the remaining area (LFA) being used for beef and sheep. In 1989 while at the Paris show Sandy decided to import French Montebeliarde cows. This breed has good milk quality and longevity, are very docile, easy to manage and averaged 6,000 litres. Winter feeding was silage, soya bean and dark grains fed through a forage box with concentrates to yield in the parlour. Lower yielders and heifers are crossed with Angus and all calves reared and sold through Scotbeef at 2 years old. Selected Limousin x Angus fatteners were sold through a stall at Stirling Farmers' Market. Charolais stores (mainly heifers) were bought in at Gortartan. 600 ewes on the LFA areas of Gortartan and Garret were crossed to Suffolk and Texel and lambed inside. Lambs were sold fat together, a further 1000 bought-in to clean up the grazings in autumn. Silage was cut twice on 140ha with a mower conditioner with spreader, left for 24 hours and lifted with a self propelled chopper. Areas sown to barley have been reduced with falling price and the grain was clamped in 2000.

INDUSTRY IN CRISIS – SIMPLE SURVIVAL STRATEGIES
The BGS Summer Meeting, Sussex, 8-10 May 2000
G E D Tiley

(Abstracted from Sara Gregson's report in Autumn 2000 "Grass Farmer" and from the Meeting Handbook, with acknowledgements)

The BGS Summer Meeting in 2000 was held in Sussex at the invitation of the West Sussex Grassland Society. Host Vice President was Christian Fox, who writes in 'The Farmers Weekly'. The meeting was accommodated at Brinsbury Agricultural College, near Pulborough, West Sussex. This summer meeting was held in May, since grass growth in this area in July is restricted due to low rainfall (annual 600mm – 815 mm) and often chalky soils. The West Sussex Grassland Society has a large (c. 200) and enthusiastic membership and, as with our own Societies, publishes an annual Journal. William the Conqueror was unable to survey the Weald of Sussex in 1086 due to the impenetrable oak forests and unfriendly natives! Farmland is now under severe pressure for use as a dormitory for London commuters. The meeting aimed to highlight **simple survival strategies** for an industry in crisis. The programme included 6 farm visits, and an evening Panel discussion, as well as the BGS AGM and an Alternative Programme.

Traditional Mixed Farming within an ESA

Applesham Farm, Coombes, Near Lancing (*Chris and Hugh Passmore*)

The first visit was to this 344ha mixed farm set in an Area of Outstanding Natural Beauty within the South Downs ESA. Livestock and arable enterprises are fully integrated in a 3-4 years cereal/3 years grass and clover ley rotation. Italian ryegrass, mustard and forage rape catch crops are sown where possible, and cereal stubbles grazed for additional grazing. Youngstock benefit from a low cost, high quality grazing on clover-rich swards throughout the summer. Crop areas were: arable 175ha, leys 83ha, permanent grass 44ha, downland grazing 28ha. Livestock were 400 ewes (Lleyn and Texel X) and 100 Limousin and Friesian X sucklers. Soils mainly loams over chalk. The ESA Scheme included conservation of old chalk grassland, followed by reversion of some arable land to chalk grassland and also permanent grassland. The integrated arable/grassland mixed farming supported a more diverse wildlife than either arable or grass alone.

Cost Effective Dairying with a Summer Holiday

Hillhouse Farm, Staplefield, Near Handross (*Tony Hextell*).

Tony runs 235 cows on 89 ha rented National Trust land plus 73ha owned at 2 other sites, at a stocking rate of 2.0 lu ha^{-1} and average milk yield of 6,900l. The whole herd is dry for 6 weeks from 17 July to 1 September, and calve from late August-October. "Keeping the calving period tight is the key to the system". All

silage, slurry and some cultivations are done by contractor so there is little capital invested in machinery. Maize silage (30ha) and grass (121ha) provide 6.5t maize and 5t grass silage per cow, fully housed from October-March, with winter production of over 5,000l. Silage is fed in an extra wide trough filled once daily by sheargrab.

Surviving with Pedigree Friesians

Wintersell Farm, Edenbridge, East Sussex (*John Downing*)

The 163 pedigree Friesian herd at Wintersell was started in the 1920s by John Downing's grandparents and is one of the oldest in the UK. The stock is in demand for breeding and averages over 1600 guineas at pedigree sales. Current milk yield was 8,300 litres and feeding on a TMR system based on maize and grass, with winter concentrates of 10kg per cow. Contractors are used on the 151ha farm which includes 68ha grass and 40ha maize, with 24ha wheat (some for wholecrop). Some old buildings had been refurbished to improve milk hygiene and throughput; other buildings are being adapted to meet keen demand by fashion designers and similar urban businesses to rent office space in a rural environment. These give a quicker return on the high investment than traditional farming.

From Loss to Profit by Paddocks

Carters Lodge Farm, Handcross (*Oliver Grant*)

Following loss-making dairying in the 70s, the Grant family adopted a system of seasonal calving, self-feed silage, flat rate feeding, cubicle housing and a low cost approach as a route to profitability. Output per hectare has doubled in 20 years from 320 cows on 200ha of sandy soil. Herd average from a New Zealand type herd is nearly 6,500 litres. 42ha maize are grown, feeding 6t per cow over winter. From mid-April to mid-September there is full grazing on 36 paddocks without silage. Milk yields increased after switching to paddock grazing, and when the right allowance of grass per day could be judged.

Suckler Calves from the Sand

Greenacres Farm, Witley, Guildford (*Robert and Susan Ranson*)

Greenacres is a 80ha unit entirely on greensand in the Surrey Hills area of Outstanding Natural Beauty. Greensand supports an acid, free draining but drought-prone and hungry soil. Rainfall only 700mm. Owing to the uncertainties of rainfall and grass production and the temporary land lease, a suckler herd of 100 Sussex cross cows is kept; the calves sold as stores after wintering on maize and grass silage plus maize gluten. The cows are crossed to Belgian Blue and Charolais, and the heifers to Blonde d'Aquitaine. A spring dressing of 125kg Nha^{-1} is given, followed by up to 250kg N over the summer. Robert runs a 220 cow dairy herd on other land. Greenacres is farmed in Susan's name and is eligible for suckler cow and extensification subsidies.

From Fish to Low Cost Dairying

Dedisham Farm, Slinfold, Billingshurst (*R Harrison & Sons*)

Dedisham (300ha) is part of a 720ha estate with 700 cows in 3 units, together with a beef fattening enterprise and metal fabrication business. There were 286 cows on Dedisham, block calved from August after a complete month dried off. As with the other low cost farms, no silage is fed during the grazing season from late April-August. The soil is a heavy weald clay, not suited to extended grazing. A catch crop of 16ha Bartissimo Italian is grazed from mid-March to mid-April. Also, approximately 500t silage store capacity is used first for grass and then later for maize. The whole estate is co-operatively run by 3 brothers (originally 4) who built up the business by virtue of hard work from an initial 44ha tenanted farm bought by their father who started life as a fish salesman.

The Alternative Programme visited Applesham Farm, Arundel Castle and Arundel town, The Body Shop factory and Singleton Open Air Museum.

The Evening Panel consisted of **Con Hurley**, Dairy Farming editor of the Irish Farmers Journal and Past President of the Irish Grassland Association; **Ian Potter** of Ian Potter Associates, the quota brokering business and a well known exponent of dairy farming business; **Jerry Rider**, a past BGS President and largely responsible for promoting 'Pasture to Profit' extended grazing – his Wiltshire farm (267ha rented) carries 400 cows and makes no silage.

BRITISH GRASSLAND SOCIETY VISIT TO SOUTH WEST SCOTLAND – JULY 2003

At the invitation of SWSGS, the British Grassland Society will hold its 2003 Summer Visit in South West Scotland. This was postponed from the original date of July 2002 due to the outbreak of Foot & Mouth Disease. The Event will be based at SAC Auchincruive, from which farm visits will be made to Stranraer (Day 1), Isle of Arran (Day 2) and Dumfries/Castle Douglas (Day 3). There will also be the usual Alternative tours to places of tourist interest in the same areas as the Main Tours.

GRASSLAND SCIENCE AND PRACTICE – A SUCCESS STORY BUT WE CANNOT STAND STILL

David Leaver, Imperial College, Wye, Ashford, Kent
President of the British Grassland Society 2000-2001

I have been fortunate to be a member of the British Grassland Society during a time when we have seen massive developments in the science and practice of agriculture. We have moved from food rationing to an abundance and diversity of high quality foods available to the consumer in about half a century, and this should bring great credit to those involved in the agricultural industry. It is perhaps a sad reflection on our mainly urbanised society that the industry receives no recognition for this achievement. Advances in grassland technology have been considerable, and have been supported by many outstanding research and development programmes carried out by staff, many as members of BGS, working in research institutes, colleges, universities, experimental husbandry farms and supply industries. Nevertheless, we massively underestimate the contribution that farmers have made as innovators, to new ideas, to new equipment and machinery and to new agricultural systems.

In spite of these successes, the UK ruminant livestock industry is once more at a crossroads with many farm businesses struggling for survival. Many of the reasons for this cannot be blamed on farmers, eg: the strength of the pound and its influence on product price. Also, the widespread impacts of foot and mouth and BSE are unlikely to go away quickly, leaving the UK industry at a significant competitive disadvantage for some time to come. The gradual liberalisation of markets and increasing globalisation of agricultural products have meant that no country can operate in isolation from the rest of the world. This is a challenge we have to face and address positively. Consumers have had food at ever reducing real prices in the past, but increasingly they are voicing their desire for livestock systems with low environmental impact, which have high standards of animal welfare and above all else that produce food which is considered safe for human health. These driving forces for change are already having an impact on research priorities and agendas. Grassland research into lower external input systems and into biodiversity conservation will therefore continue to increase at the expense of research into high external input, more intensive systems. The areas requiring research are many and varied, ranging from molecular genetics, and soil/plant/animal interactions through to grassland-based production systems, farmer livelihoods and amenity grassland.

The future direction of grassland farming and consequently of grassland research in this country will be strongly influenced by agri-environmental policies in the EU and how these are applied within the UK. The proposals on Nitrate Vulnerable Zones are a good example of this. Increasing or even sustaining food production is

no longer a government priority, primarily because self-sufficiency in food is no longer seen as a useful national goal. The dairy, beef and sheep industries will therefore have to be very competitive to be successful. We can get some indicators for the future from the non-subsidised sectors of horticulture and non-ruminant livestock. These are highly research driven, and are much better integrated structurally from producer through to consumer than the subsidised ruminant industries. We might conclude from this that if the ruminant livestock industries are to be successful and competitive in the global marketplace, they will also have to be much more research driven, and much more efficiently integrated in terms of production, processing and retailing.

The traditional view of 'top down' communication where the scientist has the new knowledge and passes this down to the farmer is over-simplistic and no longer applicable as a means of solving industry problems. Instead, it is essential that all those involved in the grassland-based industry, namely farmers, researchers, consultants, supply industry personnel, processors, retailers and consumers work together towards a common goal, as these are stakeholders with an interdependent future. This dialogue is particularly important if research is to be meaningful to the industry. We are extremely fortunate that in the subject area of grass and forage, BGS provides excellent opportunities for such communication to take place between all these stakeholders. The activities include a range of meetings and conferences each year, the formation of special interest groups and the written word in Grass and Forage Science, in Grass Farmer, in the proceedings of meetings and in book publishing. As a farmer's son I have always felt very strongly that science and practice have to work together for success. It is imperative that the present problems of the industry are overcome, but we have to change, adapt and be competitive in this new millennium if we want to have successful and sustainable grassland-based farming systems.

David Leaver, hitherto Professor of Agriculture at Imperial College, Wye and formerly Director of Crichton Royal Farm, has just been appointed Principal of the Royal Agricultural College, Cirencester. The South West and Central Scotland Grassland Societies wish David and his family every success with this new challenge in south west England.

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TRIDENT FEEDS

The Natural Partnership

SWSGS SILAGE COMPETITION 2000

The Competition Evening of the SWSGS held in the Douglas Arms Hotel, Castle Douglas on 18 January 2001

G E D Tiley

*Sponsored by **Trident Feeds, Kemira Agriculture, Biotal Ltd, Nickerson (UK) Ltd** and by **Plasti-Covers Ltd***

Silage Judge: **Gerwyn Owen, Lampeter, Ceredigion, Wales**

SWSGS Chairman, Hugh Parker, opened the meeting with a warm welcome and introduced the guests for the evening: Silage Judge, Gerwyn Owen, accompanied by his wife, Glenys; Chris Totten, local representative of Biotal Ltd, Dr Andy Beardsmore, Ecosyl Products. At the outset, the Chairman expressed the Society's appreciation to all County Committee members who had enthusiastically assisted with the preliminary silage judging, and secondly to the several sponsors of the Competition.

Chris Totten, Biotal Ltd, then showed a short video on Wholecrop cereals, produced by Biotal. The video, entitled "**Homegrown Feeds**", describes the advantage of wholecrop, which crop to grow, methods of harvesting, ensiling and feeding. Homegrown wholecrop cereal provided a step towards self-sufficiency and reduction of bought-in feeds. There were also lower costs in making wholecrop silage compared with grass silage and the product was more consistent in quality. Other advantages were: no effluent, eligible for arable aid payments, high DM and starch, less likely to produce acidosis. A disadvantage is high susceptibility to aerobic moulding at feed out. Biotal advocate the use of Wholecrop Gold additive to inhibit mould development.

Silage Quality 2000 – G Conchie, SAC Advisory Office, Dumfries

An overview of silages in the Competition showed a slightly lower entry in the Dairy class compared with 1999. Average DM was very slightly lower, but still good at 27.7 per cent. Mean D-value (ME similarly) was considerably higher than last year, though below the high value of 1996. Crude Proteins were low and very similar to last year. Among the counties DM, D-values and Intake Factors were highest in Ayrshire (see Table 1). Beef/sheep entries continued to show a gradual improvement in DM and nutritive quality.

The analysis data for all silages sampled in Dumfries emphasised the tremendous variability to be found in silage, in terms of season, between farms and on the same

farm. To a large extent, this was the result in a great variation in pit management. Variations in sampling further compounded the analytical variability. For example, in 2000 DM in all Dumfries samples ranged between 17 and 56, and D-value between 56 and 75.

Table 1 - SILAGE COMPETITION 2000 - ANALYSES MEANS

Overall Means (Grass Silages)

Group (Number)	DM (%)	D (%)	CP (%)	ITF (c)	ME	NH_3 (% total N)
All Dairy (101)	27.7	69.7	13.7	105.3	11.1	7.3
Beef/Sheep (17)	29.5	67.5	12.3	107.1	10.8	9.0
Big Bale (2)	26.9	70.0	15.6	106.0	11.2	15.4
Dairy						
Ayr (27)	29.8	70.4	13.4	110.2	11.3	7.6
Dumfries (29)	24.9	70.1	14.1	99.6	11.2	7.7
Kirkcudbright (26)	29.0	68.7	13.4	106.0	11.0	5.9
Wigtown (19)	27.5	69.2	14.1	105.9	11.1	8.3

Wholecrop and Maize Silages 2000 – Analyses Means

	DM (%)	PH	CP (%)	Starch (%)	ME
Wholecrop (15 entries)	38.2	3.8	10.0	24.2	10.9
Maize (3)	23.4	3.8	10.7	25.3	11.1

Table 2 - FREQUENCY DISTRIBUTIONS (%) 2000

					Dairy		
	Bale	**Beef/ Sheep**	**A**	**D**	**K**	**W**	**All**
No of Entries	2	17	27	29	26	19	101
D-Value							
>75	0	0	4	10	4	0	5
70-75	50	35	59	52	39	58	51
65-70	50	41	33	34	42	32	36
<65	0	24	4	4	15	10	8
DM							
>40	0	12	7	3	11	5	7
30-40	50	35	37	21	19	16	25
25-30	0	23	26	14	31	42	25
23-25	0	12	11	14	12	16	13
20-23	50	6	19	27	19	11	20
<20	0	12	0	21	8	10	10
CP							
>18	0	0	0	30	0	11	3
16-18	50	12	15	21	15	11	16
14-16	0	6	22	24	31	21	25
12-14	50	35	44	28	15	43	31
<12	0	47	19	24	39	16	25
ITF (c)							
>125	0	0	22	3	19	11	14
120-125	0	24	11	10	4	0	7
110-120	50	18	15	21	15	26	19
100-110	0	35	30	14	27	37	26
<100	50	23	22	52	35	26	34
Ammonia-N							
<4	0	0	4	7	19	5	9
4-7	0	29	33	31	54	32	38
7-10	0	47	52	45	27	47	42
10-20	100	24	11	17	0	16	11
ME							
>12	0	0	4	7	4	0	3
11.5-12.0	50	18	37	24	19	32	28
11.0-11.5	0	18	33	41	27	37	35
10.5-11.0	50	29	15	17	31	21	21
10.0-10.5	0	35	11	7	15	5	20
< 10.0	0	0	0	4	4	5	3

Silage Judge's General Comments

Silage Judge, Gerwyn Owen, had travelled from west Wales accompanied by his wife, Glenys, to judge the SWSGS Competition. Two years previously he had won the UK National Competition after being winner in the Welsh regional event. He was currently Chairman of the Federation of Welsh Grassland Societies. He thanked the Society for the honour of being Judge and had received a very warm welcome everywhere. All farms had asked if himself and Glenys had visited the area previously. It transpired they had spent their honeymoon here 32 years ago, and had thus been reluctant to answer! The Judge had never had so much information to absorb in such a short time, and he felt fortunate to have Glenys to help in recording and marking. He thanked the Chairman and Society Committee, especially those who had chauffeured him around. He considered the standards of silage making and farming to be outstanding on both dairy and beef/sheep farms.

Particular features highlighted were:

1 **Clamps too full**. The main fault found by the Judge on Inspection was **shoulder waste**. The reason was that the clamps were too full, heaped in the middle and thus difficult to consolidate at the edge.

2 Not a single farm used **sandbags** which would go a long way to eliminating waste. The Judge emphasised that waste silage not only represented a loss, but was also a nuisance, which would end up in the troughs mixed with good silage. Because of its smell, the waste would be pushed away by the stock.

3 **Secondary fermentation** was a problem on some farms, especially when using grabs with forks. Any silage above 24% DM required the use of a sheargrab.

4 **Side Sheeting**. About half the farms visited used very efficient sheeting all the way down the side of the clamp. In an open clamp, this was a must.

5 **Effluent Control**. Good on most farms, though one or two still showed effluent seepage.

6 **Effluent Use**. Almost all farms went for disposal of silage effluent. The Judge asked "Do you realise its food value? It should be called **'GRASS JUICE!'**" At DM above 24%, the ME of effluent could be 12.5, protein 22%. It was therefore a high quality liquid.

7 **Diet Feeders.** A large number of stock and several ingredients were needed to justify these.

Further refinements suggested to compete at the National levels were:

1 **Footbath.** There should be a footbath at each farm to be visited by the Judge, to show awareness of the need to take disease precautions (*in hindsight, this was very prophetic advice given by the Judge*).

2 **Safety at Slurry Stores.**

a) There should be padlocks on gates leading to a slurry lagoon, and on outlet sluices.

b) Lower inspection ladder should be removable to prevent children climbing.

c) Safety signs should be displayed on gateways and near pits.

3 **Animal Welfare** should be a specific item in SWSGS Competition rules – cubicles correct size for class of animal; lame cows should have loose housing available; adequate feeding widths at the feed interface.

4 **First Impression** on entering a farm goes a long way, thus tidiness and order important.

5 **Marks weightings** in local SWSGS Competition were slightly different from National, eg: Analysis: SWSGS 35, BGS 30, Inspection 10, 20; Production 35, 30.

6 **Care of machinery.** It does not give a good impression if the forage harvester has been left parked in the yard and a thick take of grass is growing from seed lodged in its crevices.

Gerwyn and Gladys have produced a short video film from footage shot by Glenys during the Judging visits to all farms in the Short Leet. A copy of this video can be loaned from the SWSGS.

2000 Results. The full placings of the farms judged in the Short Leet are given in Table 3 with the prizewinners indicated. Overall winner and Silage Champion was David Hogarth, Sorbie, Ardrossan, only the second time a farm from Ayrshire has won the Competition (Previous: Ladykirk in 1977). David's silage was drier than usual due to unusually dry weather in May. Waste was minimal owing to a well-compacted level clamp.

Table 3 – 2000 Silage Competition – Short Leet Entrants

Prizes		*Analyses (35)*	Marks *Inspection (65)*	*Total (100)*
	Dairy Class			
1st & SWSGS Rosebowl also Best New Entrant	D Hogarth, Sorbie, Ardrossan	32.25	51.00	83.25
2nd	Lakehead Farming Co, Closeburn	29.15	53.75	82.90
3rd	H Chalmers, Craigencrosh, Stoneykirk	32.25	50.00	82.75
	T & W McMillan, Drumwall, Gatehouse	33.40	47.00	80.40
	P Rowney, Myremill, Maybole	27.35	51.00	78.35
	A Marshall, West Kirkland, Wigtown	26.60	51.75	78.35
	R Marchant, Barony, Parkgate	28.50	49.50	78.00
M. Milligan Prize	K Campbell, Slagnaw, Castle Douglas	25.90	52.00	77.90
	J McAuslan, SAC Auchincruive	27.40	45.00	72.40
	J Wallace, Whitehills, Sorbie	24.35	47.00	71.35
	Beef/Sheep Class			
1st & BP Trophy	A Stannett, Broughton Grange, Drumlanrig	28.20	51.00	79.20
	J Nelson, Cogarth, Parton, Castle Douglas	23.50	51.50	74.70

		Analyses (35)
	Big Bale Class (on analysis)	
	S Craig, Back of Wall, Glenluce	22.60
	Best Silage in County (on analysis)	
Ayrshire	D Hogarth, Sorbie, Ardrossan	32.25
Dumfries	Lakehead Farming Co, Closeburn	29.15
Kirkcudbright	T & W McMillan, Drumwall, Gatehouse	33.40
Wigtown	H Chalmers, Craigencrosh, Stoneykirk	32.25

Cash tokens for the purchase of plastic products, donated by **Plasti-Covers Ltd**, were awarded to the 1st Dairy and 1st Beef/Sheep prizewinners. This year's Best New Entrant prize was donated by **John Watson Seeds Ltd.**

Judge's Farm – Pantygwiail, Lampeter, W. Wales

Gerwyn Owen then gave a description of his dairy farm in west Wales and its management. He began by translating the name: *Pantygwiail* which in Welsh meant 'valley with hazel growing'. Pantygwiail, of 83 ha plus 9 ha bought last year, was run in partnership with Glenys, their son and daughter-in-law, Ann. There were approximately 120 milking cows and followers. The steading and buildings were situated in the middle of the farm and the fields had been divided into paddocks 30 years ago, choosing the best land for these. Wetter fields, which had been drained, were used mostly for silage. A new covered silo had been built in 1997, 36m x 21m, conforming to planning and environmental regulations. A 1-metre fall was created both lengthwise and breadthwise, to the centre; quick drainage of effluent was achieved through holes in the floor at 15 cm intervals draining to an underfloor porcupine pipe. Sealant had been used between the girder supports before the concrete was brought in. The silo was filled with fresh grass to the top of the 4m walls and compacted level. The edges were sealed with sandbags and the sides sealed with side sheets placed ready on wire earlier in the spring, and tyres also ready on pallets. Silage effluent was stored in two 4,500 litre tanks with interconnecting pipes. The effluent was conveyed by a submersible pump to the cows' water troughs where it was consumed avidly.

The cubicles had been lengthened from those installed 30 years ago. Sufficiency of cubicle space could be gauged by whether or not the pipes were shiny. Slurry drained unaided down a channel to the 2.1 million litre slurry tower. It was spread in a very thin condition on silage fields in early March to be ready for grass growth. In addition, 150 kg N ha^{-1} were applied as fertiliser. Slurry was also stored solid behind a sleeper weeping wall, the dried material being spread in August. Docks were regularly spot treated using hand held lances from the two ends of a tractor mounted boom working at 1.5 ha per hour. This halved the cost of treatment and more powerful herbicides could be used since clover would not be greatly damaged. Gerwyn shared labour with neighbours but not machinery. Cut grass was tedded, rowed up and collected with a Claas chopper. Pharmor or Live System inoculant additives were used. The grazing paddocks were bounded by cow tracks allowing access anywhere along the edge. Paddocks (0.8 ha) were each grazed for 12 hours on a 3-week cycle. Every 3rd cycle (9 weeks) the grass was trimmed at 8cm with a disc mower immediately before grazing, to control grass heading and avoid summer drop in milk yields. The cut grass was eaten up by the cows. This only required 20 minutes twice per day. Calving was year round; extended grazing was not possible due to heavy clay soils liable to poaching, so wintering ('tack') lambs were taken.

SCOTTISH REGIONAL SILAGE COMPETITION 2001
Dr Ron Harkess OBE
Scottish Regional Silage Judge 2001

Winner: Graham A Stewart, Fans, Earlston, Berwick, East of Scotland Grassland Society

Runner-up: D Hogarth, Sorbie, Ardrossan, SWSGS.

UK NATIONAL SILAGE COMPETITION 2001

The National Competition, run by the British Grassland Society, was sponsored by ***Kemira Agriculture***, in association with ADAS and SAC, as in previous years. 2001 was the last (22nd) year for the UK National Silage Competition, which is to be replaced by a National Grassland Management Competition from 2002.

The Competition was judged as usual, but the results were not declared until late in the year, the normal ceremony having been cancelled due to Foot & Mouth.

2001 UK National Silage Champion was: **Roger Comber, Manor Farm, Selham, Petworth, West Sussex**, who farms 122.5ha with his daughter, Elizabeth and one other helper. There are 159 cows, replacements and 100 beef animals. Herd average was 7,637 litres (4,704 litres from forage) at 4.33% butterfat and 3.36% protein. Cropping was 88.5ha grass (75% 4-year; 25% 2-year leys), 26ha maize and kale, 8ha potatoes. Silage was cut from 1 May 2000 – 60ha first cut, 44ha second cut, aiming for the same quality as first cut, and 73ha third cut. Silage is fed by a 30 year old conveyor belt system. Roger received the Kemira Star Trophy plus 5t Kemira fertiliser.

Runner-up was: **David Davies, Gwarffynnon, Silian, Lampeter, Ceredigion,** who won 3t Kemira fertiliser.

Judges were: Roger Chesher, Kemira; Margaret Wolton, a vet and technical judge and last year's winner, Ian Walton, East Richmond, Yorkshire.

GROWING GRASS: GRAZING FOR PROFIT

Richard Huston, SAC Advisory Office, Lanark

Yet again UK dairy producers are faced with a falling milk price and tough trading conditions with the prospects for improvement fairly poor. When there is a reduced commodity price, industry often turns to increasing output to compensate for the reduction in income. However, the UK dairy farmer has the disadvantage of milk quota restricting increased output and on many units output has already been maximised. In these circumstances, the emphasis should be on containing costs. Feed represents one of the largest costs of production, with concentrates generally accounting for 25 to 30%. As the cheapest feed for dairy cows, grass provides a major opportunity to lower production costs and improve profits. However, few farmers attach much priority to a more extensive approach involving rotational grazing to increase the contribution of grazed grass to overall production. Attitudes need to change. Producers faced with the prospect of a 16 ppl milk price or less cannot afford to ignore this opportunity to cut costs. The UK has a climatic advantage for growing grass compared to the rest of Europe, but the lack of grass management skills of the UK dairy producer greatly restricts the benefits of this competitive advantage. As a consequence of the year-round milk production systems and the input of the feed industry, winter-feeding management has been greatly refined and efficiency increased. If this level of commitment were applied to grazing management it should be possible to improve the utilisation of grazed grass.

So what do we need to do? There is no simple broad sweeping answer to improving grassland management in UK dairy farms. Perhaps the most important thing is to keep an open mind and view problem issues as a challenge rather than an obstacle. With our obsession over concentrates and individual cow yields has come the over reliance on Margin Over Concentrate (MOC) as a key performance indicator. Unfortunately, this system totally overlooks most of the costs associated with producing milk and is a major obstacle to improving profitability and grassland utilisation. Kiwi and Irish dairy producers use Comparable Farm Profit to monitor farm performance; their drive to maximise profits makes them focus on all costs not just the concentrate bill. There have been many debates on the best or most suitable grazing system for UK conditions. Without a doubt which grazing system is in place on a dairy unit will have a major influence on performance from grazed grass. Although numerous trials have been carried out comparing continuous and rotational grazing, no clear conclusion on what is the best system has emerged. New Zealand experiments have clearly shown the benefit of rotational (paddocks) over continuous grazing systems. Experiments in the UK have failed to address the rotational grazing system as it should operate, but have been characterised by rigid rotations and identical stocking rates – hardly surprising therefore that similar results were achieved from the two systems. In New Zealand

and Southern Ireland, paddock grazing has been adopted successfully. In these countries paddocks are monitored for grass growth and herbage availability. There is no set rotation; paddocks are grazed when herbage mass is at optimum levels – the key to good paddock management. Where a rotational grazing system is managed in this manner milk production increases of 8% have been achieved.

Grassland management is complicated in comparison with ordering concentrates over the 'phone. The difficulties of balancing herd demand and pasture supply involve many unknowns but this situation can often be improved. January calved cows have the highest potential to produce milk from grass. However it would not be sensible or indeed practical for all UK milk producers to shift to January/February calving. The average UK dairy herd calves all year round, a system that complicates management both in terms of animal husbandry and of grassland management. Block calving the herd, whether it is in the spring or autumn, will greatly improve performance from grazed grass and considerably ease management. A tight calving block will stamp uniformity across the herd in terms of pasture demand. This should make striking the balance between herd demand and pasture supply somewhat easier.

The second part of the grassland management equation – pasture supply – is often an unknown and is particularly variable. Very few farmers monitor grass growth and pasture availability but most regularly check concentrate and silage supplies through the winter. These budgeting skills should be transferred to the grassland situation. The lack of pasture monitoring is a major stumbling block for improved yields from grass. Pasture growth rates and herbage mass must be measured and management changes made to keep pasture covers at optimum levels. Roughly speaking pasture covers should be 3000 kg DM ha^{-1} when the cows go in and should be grazed down to 1700 kg DM ha^{-1} to maintain swards in the vegetative stage. Grazing below 1700 kg DM ha^{-1} compromises pasture growth and also pasture intake per bite.

Many farmers cite lack of time as the main reason for not monitoring grass growth. However, it need not be a time consuming exercise nor indeed is it an exact science - you don't necessarily need plate meters or sward sticks. Work has shown that eye assessment was 75% accurate when compared to quadrat readings, suggesting farmers had "got their eye in". As with many things in farming, it is about taking time to stand back and look at what is happening. Once a routine has been established it is then easy to budget pasture supply and herd demand. The next question is which element do you compromise when the system goes out of balance. Our Kiwi counterparts will often sacrifice milk yields to maintain pasture cover. In the UK where milk price is slightly better, concentrates can be used to supplement pasture supply and maintain milk production, but in a market where

summer milk price could be as low as 13 ppl it is even questionable whether concentrates should be fed at all.

Farmers lack confidence in the ability of grass to grow and perform in modern dairying. Grass availability varies from year to year; this variability has made some farmers reluctant to invest in rotational paddock systems. Confidence will only improve if farmers and those who advise them take a grasp of modern grassland management issues and develop flexible systems that can cope with the changes in grass growth. Many farmers shun the farming systems of New Zealand and Southern Ireland. However these countries are likely to have the last laugh. With production costs of 6 ppl in New Zealand and 10 ppl in Southern Ireland, it is easy to see that these farmers have a future at World market prices. With UK production costs of 19 ppl the future is not so certain.

Richard Huston was winner of the Malcolm Castle Memorial Award in 2000.

SWSGS COMPETITIONS

In addition to the Silage Competition, SWSGS also runs an Ideas Competition, Sward Competition, Environmental Competition and Photographic Competition. Due to the outbreak of Foot & Mouth disease, these Competitions (excepting the photographic competition) have been suspended. The Society would hope to be able to resume them in 2002. The **Ideas Competition**, sponsored by **Kemira Agriculture** seeks original ideas and innovations in use on livestock farms. The **Sward Competition**, sponsored by **Nickerson (UK) Ltd** aims to draw attention to quality in the growing sward, arising from dense, weed-free grass, with clover where required, following on good establishment and subsequent management. The **Environmental Competition**, sponsored by **Bank of Scotland**, seeks to recognise sympathy and care for the environment and wildlife in every day successful commercial farming operations. The **Photographic Competition** is a recreational adjunct to the Competition Evening, when skills at selecting photographic subjects on a rural theme are displayed informally.

FARMING FOR SURVIVAL
John Maxwell, The Jaw, Fintry, Stirling

Joint Meeting of SWSGS with Ayr, Renfrew & Bute Blackface Sheep Breeders Association, at the Gartferry Hotel, Ayr on 22 February 2001
Meeting sponsored by ***Volac International***

John Maxwell had latterly been Chairman of the Blackface Sheep Breeders Association of Great Britain. Hailing originally from Thornhill, Dumfries he began his working life as a shepherd before taking on a tenancy and eventually buying the farm. He moved to Cashel, Loch Lomond, which he sold to the Millennium Forest, before coming to his present farm, The Jaw. Here he kept 680 Blackface ewes plus 10 Blue Leicester and 30 pedigree Dun Galloway cows. The cattle are spring calved and finished at 250-350kg deadweight at 14-18 months on rented grazing.

John said he used to farm as if he was going to live forever, but now he has to farm to survive until next year. To diversify he was converting to organic farming, but had delayed a year in order to spray 40 ha of bracken. He had found it difficult to comply with the organic regulations, particularly with regard to animal health, where veterinary opinion was required before chemical treatments could be used. He was also participating in the EU Habitat and Countryside Premium Schemes, with a wetland site, bracken control, and heather management. He then showed slides from a visit to Australia 10 years previously with his wife, Margaret. He also had been honoured by a visit from Queen Beatrix of the Netherlands to his Loch Lomond farm.

A raffle for a Bottle of Whisky during this meeting was won by Colin Wright, SEERAD, Ayr.

BETTER BIG BALES
David Allan, Volac International, Ayr
SWSGS Meeting on 22 February 2001

Making Big Bale silage had expanded enormously since the mid-1980's and in 2000 some 30 million bales were made. If done properly, the big bale method was a very economical way to make silage. Volac International marketed plastic film manufactured by I P Europe Ltd, which had one of the most advanced factories in Europe. The aim was to produce a plastic which would result in baled silage with little or no mould. A new film, '**Enduro**' was to be produced which was thinner than 'Silawrap' and pre-stretched at the factory. The thinner film is no less durable; it does not puncture so easily because it is not stretched. Silage quality

has proved better with 'Enduro' as the film is tacky and forms a better seal against water movement in an effluent seepage duct. Being of thinner gauge, the film in the supply rolls came in longer lengths and fewer rolls were required. The green colour reflected sunlight and tended to keep the bales cool.

A video entitled: Forage for the Future, was then shown describing **Alkalage**, a new system for feeding high performance dairy or beef animals. High DM near-mature cereals were harvested with a forage harvester fitted with a Claas Wholecrop mill. This ground the crop before it was preserved with Ammonia released from a urea-enzyme mini-pellet, 'Home 'n Dry', produced by Volac. The system was developed in America for feeding high producing stock.

The advantages of this alkaline forage (Alkalage) were: home grown feed; wide harvest window (60-85% crop DM); no effluent; effective preservation by ammonia; complements wet acidic grass silage; high starch and energy contents; suited to high producing animals; reduced lameness and fertility problems. Winter wheat is most commonly used, but spring wheat, barley, naked oats and triticale are also suitable.

An Alkalage Information service is available in UK on Freephone: 0800 919 808; or contact David Allan ,Volac International on 01292 441858.

BALANCING ENVIRONMENTAL AND ECONOMIC DEMANDS IN GRASSLAND FARMING

G E D Tiley & J Frame

The 18th General Meeting of the European Grassland Federation

The 18th General Meeting of the European Grassland Federation was held in Aalborg, Denmark, 22-25 May 2000. It was attended by 255 participants from 34 countries and over 160 presentations were made by talks and posters. Several of these were from the UK, including 7 from Scotland. These biennial meetings – the next one is in France – provide a forum for European grassland scientists to get together and discuss their current research and development work. Customarily only a sprinkling of farmers attend but field trips and a post-conference farming tour give the delegates an opportunity to see and discuss aspects of local farming.

There were 5 main topics in the Meeting, each sub-divided:

1 **Forage Production and Conservation**: Forage breeding, conserved feed and its management in economically viable systems, both intensive and extensive. The possibility was discussed of adding value to milk and meat produced from grassland-based animal production systems, which have a 'green' image, particularly from the grazing parts of the systems. Landscape enhancement and biodiversity should be practised on responsive, suitable types of land, reserving other land for food production. There should be increased use of forage legumes and utilisation by grazing rather than conservation.

2 **Herbage Quality**: Management, breeding and methods to increase herbage quality and nutritive value. One of the most important points that emerged was the influence of forages that contain condensed tannins (CT) in reducing protein degradation in the rumen. The best known species are the legumes: birdsfoot trefoil, greater lotus and sainfoin. The presence of CT gives improvement in milk yield, liveweight gain and wool growth, and plant breeders are trying to introduce them into white clover and red clover.

3 **Plant-animal relationships**: Animal behaviour in different grazing systems, legumes and mixed grazing (heifers with sows).

Grazed grass is the cheapest source of nutrients for dairy cows and should be the basis of profitable milk production systems with low inputs-lower outputs as required in the EU. In this way the 'green' image of animal production would be maintained. The challenge however was to satisfy the needs of high-producing animals where a high herbage allowance is necessary at grazing to achieve maximum intake and milk yield. The problem is that increased

allowance (taller sward height and grass yield) in spring leads to a high residual sward height that may cause poorer herbage quality later in the season due to more stem and dead material, and lower digestibility, than if it had been tightly grazed. In effect it is the old story of maximum individual animal performance aims conflicting with maximum production per unit area. Potential strategies proposed were: utilise the lower-quality residual forage by low-producing animals – though this complicates management; restrict grazing and feed supplementary concentrates; plant breeding to develop sward structures that allow high intake in association with low residual sward height.

4 **Nutrient management**: Integrated nutrient management, leaching and run-off and gaseous N exchange. Considerable leakage of N and P occurs in intensive dairying but nutrient budgeting limits the losses. This topic was of mounting concern in Denmark and other European countries.

5 **Organic Farming**: Nutrient application and management, forage production and quality, seeds and plant species, and animal performance. In organic grassland, maintenance of animal health and of soil nutrient levels were of prime importance. Soil compaction and weed invasion could also be problems. Premium prices were required for profitability and the future of organic farming depended on the consumers' willingness to pay.

Danish Farming

Denmark is a small country (4.4m ha) with 85% of the population concentrated in the cities. The latitude is similar to the UK, but its climate is much more continental with higher summer and, occasionally lower winter temperatures and lower rainfall (500-800 mm). Historically, farming has been the main industry in Denmark with intensive agricultural production the norm. However, the emphasis has changed in recent years towards extensification, minimising environmental problems, improving animal welfare and encouraging nature conservation. Only 2% (100,000) of Denmark's 5.1m population are engaged in primary agriculture, but they produce enough to feed 3 times its own population. Another 100,000 people are employed in food processing. The farms are mostly owner-occupied, but numbers have decreased over the last 20 years and average size increased, with more part-time farmers. Of the current area (2.7 million ha) of land used for agriculture, only 23% is under forage crops, made up of 9% grassland within a crop rotation system, 6% permanent grass, 5% maize for silage, 2% whole-crop cereals or cereal/peas and 1% fodder beet. Denmark has a thriving grass and clover seed producing industry (3% of the agricultural land). Winter wheat and spring barley are important, with an increase in winter cropping to a statutory level of 65% winter cover crop to reduce N leaching. Some 21m pigs are produced annually, 75% of

which go for export. More than 85% of the 817,000 cattle are dairy, mainly Danish Holsteins, averaging 7,600 litres at 4.1% fat and 3.4% protein. Organic dairying is on the increase. Grass is mainly rotational with crops, now with more emphasis on white clover and integration of cutting with grazing. Summer irrigation is frequently used. Reduction in N leaching is a primary consideration and maximum standards for N application were introduced in 1994. These were further reduced in 1999 to 90% of economic optimum rates. An EU directive limits average stocking rates.

Outlook

With the need for higher economic efficiency, dairy farm numbers are expected to decrease and average herd size to increase to 150. Cow grazing would become more concentrated near the steading, or may become less important with the use of milking robots and a zero grazing system to optimise N utilisation. More emphasis will be placed on environmental protection, animal welfare and milk quality. The theme of the EGF meeting – Balancing Environmental and Economic Demands – arose from the conflicts and challenges of producing safe better quality food at low prices and thus very efficiently, with the environmental demands of more land being devoted to forestry and nature conservation. While in the majority of papers there was an implicit goal of improved, more efficient production and reducing environmental impacts, only 3 or 4 contributions dealt directly with practical economic consequences.

In addition to papers and posters there were mid- and post-conference tours to view aspects of current Danish farming. Intensive dairying, nature conservation and organic farming were the subjects of the mid-tours. The Nature Conservation tour saw cattle grazing on a raised bog grassland, weed control in Christmas trees by grazing with Shropshire sheep and pigs grazing fescue/white clover. Red fescue was used because it only flowered once and also was more resistant to trampling than ryegrass. Outdoor pigs were only suitable on sandy soils. A wetland experiment grazed by cattle showed that heavy grazing gave higher species numbers because of the gaps created by the cattle.

A 2-day post-conference tour, from Aalborg in northern Jutland south across a new 13 km bridge to Copenhagen on Zealand, combined tourist sightseeing with technical visits. The tourist visits included a 15th century Manor house and museum, Hans Christian Andersen's house at Odense, an ancient church at Hajerup and the Tivoli Gardens in Copenhagen, as well as the opportunity to see the Little Mermaid, which overlooks the harbour, by night. The technical visits included grazing management by cattle for nature conservation in National Park areas frequented by urban visitors; a visit to an organic dairy farm where the Jersey herd

fed on clover-rich grazing and barley/forage pea silage to meet the high protein demand. An organic experimental farm was visited where mixed cow/pig grazing was practised and pigs sheltered from the sun in specially designed circular structures, with double hyperbolic roofs.

On Zealand, where farming is mainly crops and pigs with very few cattle, a whole day was spent visiting the Vallø Foundation Estate, a DLF-Trifolium seed grower and the DLF plant breeding station at Store Heddinge. At Vallø, white clover and grass varieties were grown on 400ha for seed production and 300ha for sugar beet and cereals. Red fescue was grown undersown thinly in winter wheat; after seed harvest, burning the straw was good for the fescue. At the DLF breeding station, traditional and modern breeding techniques were seen, together with cleaning machinery and test plots. Denmark is Europe's largest producer of grass (40-50%) and clover (nearly all the European production of white clover) seeds.

As with previous EGF meetings, this was well organised and characterised by quiet Danish efficiency and warm hospitality. The Meeting concluded with the Conference Dinner at which Honorary Life Presidencies of EGF were conferred on Professor German Blagoveschensky from Russia and SWSGS Honorary Life President Dr John Frame. A memorable feature of the dinner was the rendering of 'Frère Jacques' by each national delegation in its own native language – 34 in all. The most applauded version was that of the Rumanian delegate – Dr Marusca – who very capably sang a solo!

THE RIGHT MIX: BLENDING SCIENCE AND PRACTICE IN DAIRYING

Jan Connell, Animal Biology, SAC Auchincruive

The Winter Meeting of the BGS, Great Malvern, 19-20 November 2001

The 2001 winter meeting of the BGS was specially planned to bring together young scientists and dairy farmers to discuss topics of mutual interest. The first afternoon saw the presentation of research on environmental issues and plant/animal interactions. The second day concentrated on the 'Pasture to Profit' project funded by MDC. Farmers from England, together with some of the NZ consultants working in Ireland, presented their practical messages for good grassland farming within a dairy system.

The paper by Moss and Jarvis (ADAS and IGER respectively) on grassland and Global warming is worth highlighting. Farmers are custodians of the countryside, and therefore it is in their interest that the environment should be sustained and protected. Agriculture contributes significantly to greenhouse gases (carbon dioxide, methane and nitrous oxide) and intensive animal production systems have been identified as important sources of pollution. A model has been developed to estimate the effect of management on greenhouse gas emissions. The authors concluded that nitrogen emissions can be reduced by approximately 40% through a change of management, eg: slurry injection and tactical fertiliser N application in relation to soil mineral N content. Replacing fertiliser N with white clover and the introduction of maize silage further reduced N loss to around 60%. A decision support system for more efficient management of N fertiliser developed by IGER, called NGAUGE, was described by Brown. This enables the efficiency of N use to be improved, allowing production targets to be met while reducing N losses. Work at IGER by Rutter showed that, when given a free choice, cows had a partial preference for white clover, spending 70% of time within the clover monoculture as opposed to 30% of time eating grass. There was also a clear diurnal pattern with a stronger preference for clover in the morning. Cows grazing adjacent monocultures of clover and grass had both higher daily intakes and milk yield than when grazing on a traditional grass/white clover mixed sward. An alternative was to offer pure white clover swards to cows between morning and afternoon milking and pure grass swards between afternoon and morning in order to match their diurnal preference, but this 'temporal allocation' produced the same yields as those from a totally free choice throughout the 24 hours. Studies on high sugar perennial ryegrasses showed that these can give increased DM intakes and milk yield but reduced urinary N excreted. These results were from housed animals fed cut grass in restricted quantities, and they may differ under a free grazing situation with diet selection by the animal. Lynn Wilson from SAC Crichton Royal Farm, Dumfries reported her work on the effect of concentrate type on high yielding dairy cows at

grass. The results suggest that feeding either high starch or high fibre concentrate to high yielding dairy cows had little effect on performance. The use of an additive to these concentrates, to reduce herbage protein degradation, however, did show significant potential for promoting herbage intake and production. Increasing individual animal intake and performance rather than output ha^{-1} will be important in the future in order to comply with the EU policy of encouraging more extensive animal production systems.

Practice into Profit results were reported from contrasting college dairy farms, Newton Rigg (Cumbria), Gelli Aur (Wales) and Duch (Cornwall). The aim at each farm was to improve profitability per litre, per hectare and per herd together with improved grassland utilisation. The strategy to achieve these aims was to introduce rotational grazing, improve pasture quality through reseeding, extend the grazing season, reduce reliance on silage and concentrates and control other production costs. These changes were implemented during 1997 and the physical performance of the herd in 2000 showed between 0% and 14% increase in total milk yield with an increase of between 50% and 90% milk from grazed grass or 30 to 50% increase of milk from all forage. Concentrate feeding level dropped to between 1.5 and 0.44 t cow^{-1} from nearly 2 to 0.5t cow^{-1}. The financial implications through cost reduction amounted to the equivalent of nearly 5p $litre^{-1}$ or £36,000 for a 100-cow herd. There were presentations from farmers describing systems which aimed for profit without compromising a lifestyle geared around their family. One such farmer was Les Scaife from Whitby, Yorkshire. Having spent years chasing a system of high margins over concentrates, profit and cash were minimal. He searched for a new beginning and joined the Whitby grassland discussion group, as well as speaking to enthusiasts around the UK and Ireland. He embarked on a very simple grass-based system, investing in reseeding, trackways, water supply and discarding his sheep enterprise! There were attention to detail and flexibility in high grazing management using backfences to protect regrowths, assessing soil nutrients and liming to correct pH. The calving pattern was changed from all year round to blocked spring calving over a 2-3 year period. Unfortunately, Les' farm got struck by Foot & Mouth in spring 2001 so presently they are restocking and starting again. However, he is quite sure his system although more challenging will pay dividends to the pocket and family lifestyle.

The full proceedings can be obtained from the BGS office, or even better get directly involved with these meetings and attend one to see what you can learn, and equally important, contribute.

PATIENCE A VIRTUE IN THE 2001 FORAGE MAIZE CROP

L J Baker, SAC Auchincruive

Forage maize growers who played the waiting game before harvesting their crop found that their patience paid off in 2001. Waiting until the end of October or early November meant that the maize was able to accumulate higher DM yields and a much greater cob maturity than earlier harvested crops. 50 per cent of maize yield lies in the cobs, and better grain development means higher starch contents. Several growers in Dumfries & Galloway reported up to 28% starch values and up to 30% DM from maize grown under polythene mulch. The quality and maturity of the crop were enhanced by the late harvest date. This calculated risk paid off in the mild, open October of 2001. However, in other years, a late harvest might have run into wet ground conditions.

An excellent maize crop was also grown at SAC Crichton Royal Farm, with high DM and starch contents and good conditions at harvest. No polythene was used at sowing for the Crichton maize since the crops mature naturally in most seasons. The expense of polythene may possibly be justified in more marginal conditions for maize. Weed problems are however, beginning to appear where polythene has been used for 2 or more years on the same field, due to the polythene limiting the use of post-emergence herbicides.

Trials

SAC trials on maize were grown at the Hannah in Ayrshire due to the Foot & Mouth outbreak. Polythene mulch gave a 3% benefit in DM contents and 1-2 tons per ha extra yield. After a warm start in May, the season went cool in June and early July, resulting in the usual mid-summer retarded maize growth. A warm August and September with welcome sunshine allowed the crop to recover to give a reasonable yield level of around 10-11t ha^{-1}.

Compared with 2000, overall temperatures (Heat Units) were lower in 2001, explaining the generally lower total DM yields. There has been no great increase in the number of farms growing maize, and only a slight increase in total acreage grown.

MANX GRASSLAND SOCIETY 2000 PROGRAMME

Caroline L Perry
Secretary, Manx Grassland Society
Department of Agriculture, Fisheries & Forestry, Knockaloe Farm, Peel, Isle of Man

There were 4 farm walks, a grassland management competition and an evening meeting in the 2000 programme, culminating in the annual dinner in January 2001. During the remainder of 2001, all activities were cancelled.

29 February 2000. Billown and **Ballavitchel Farms.** *Billown Farms Ltd, Ballasalla* (Messrs Taggart Bros). A 160 ha total area is contained in 2 lots of 120 ha at Billown and 40 ha outside. Cropping at the time of the visit was 96 ha grass, 12 ha maize, 3 ha fodder beet, 2 ha lucerne, 1 ha each peas, beans and 48 ha barley and wheat. Stock were 140 cows, averaging 8,100 litres, 105 replacements and 64 bulls and cross bred heifers fed on silage and barley-protein ration. All cereals were used on the farm, wheat being caustic treated for use in a complete diet. The cows receive a TMR ration from a Keenan Feeder which pre-washes and chops fodder beet. Ration was (kg) Silage 33, maize 15, purchased protein 3, caustic wheat 3, fodder beet 10 – to provide M + 26l. The grazed grass received 325 kg N ha^{-1} and the silage ground, 263 kg ha^{-1} compound. The buildings include a light airy 160-cow cubicle house based on a Cogent building in Alford, Cheshire: cubicles bedded with car tyres, lime dust and chopped straw. Slurry stored in a new 2.2m litre concrete panel tank. An Ocmis system pumps dirty water to sprinklers on the hill. Future plans include growing wholecrop peas and wheat to decrease purchased feeds, extend grazing using cow tracks and electric front and back fences, increase herd to 150 cows producing 1.1m litres, create a new 14:28 milking parlour.

Ballavitchell Farm, Crosby (Howard Quayle). Ballavitchel lies at 150m in a high rainfall area. The 36 ha unit is run with a further 187 ha (160 ha rented). There are 590 ewes lambed in 2 blocks: late January and mid-April, all lambed indoors. The early lambs finish off grass, the later off grass, rape and Italian ryegrass before housing in the lambing shed, which has a galvanised mesh floor. 60 fattening cattle, bull beef and Aberdeen Angus pedigree calves are housed. 77 cows outwinter on the hills and are fed round bales 3 times weekly plus Rumevite. A further 140 autumn suckler calves are outwintered on creep feed. All commercial crosses were to Limousin in 1999. The grass fields at Ballavitchel have been progressively improved by ditching, ploughing, liming (5t ha^{-1}) and reseeding, mainly to cv Monarch 7-year permanent ley. It is planned to reduce sheep numbers to 450-500 and expand the Angus pedigree herd using Canadian blood for size and conformation.

29 June 2000 Baljean Farm, Laxey (*Ellwood Parsons*). Baljean was purchased in 1947 having been previously tenanted by Mr Parsons' father. Lough Mallow was added in 1952. Current land areas are: Baljean: 360 ha – 240 ha grass leys, 120 ha rough grazing in steep valley bottoms; 180 ha at Lough Mallow; 1600 ha hill land rented from the Department. Annual rainfall is 1650 mm, but Baljean is very stony and liable to dry out in summer. Conversely, Lough Mallow is near sea level and is very wet due to drainage from the surrounding areas. Soils vary from clay to white sand and peat. The land is divided into 3 management units: **Highhill**, including Snaefell and Slieu Menagh for 1200 younger sheep, crossed to Swaledale or Blackface; **Baljean** and lower hill, 1300 older draft and mule ewes crossed to Leicester. The steep valley scrub is very sheltered and ideal for wintering 200 cows. **Lough Mallow** mule ewe lambs wintered and summered with 40 Angus x Holstein cows. The grazing grass receives high P fertiliser in autumn and 185 kg N ha^{-1} in May when the grass begins growth, followed by later N applications as required. The silage fields receive PK in autumn and 315 kg N ha^{-1} late May/early June for the late July silage cut. Rape/green globe turnips are grown at Lough Mallow and Baljean, plus precision sown turnips and arable silage at Baljean.

8 August 2000. Barony and Thalloo Queen, Laxey (*Derek Kermeen*). The present unit of 350 ha has been built up over the years from several smaller units. The land extends from the eastern shore to over 300m, and includes 200 ha rough grazing, with average rainfall of 1350 mm and shallow silty and stony loams, and occasional peat. Grass is all permanent pasture and growth is again delayed until May. Compound (17:17:17 NPK) is applied to the better areas at 250 kg ha^{-1}. Silage is taken from 24-28 ha shut up in late May and receiving 187 kg ha^{-1} Kaynitro. Reseeding is carried out on 16 ha annually by surface seeding using an Einboch harrow with late PRG and white clover. Livestock are 600 mule ewes put to Berrichon du Cher rams on the better ground; 425 Blackface/Swaledale on the higher and poorer land, crossed with Swaledale and Blue Faced Leicester. Lambs are finished July-February. A suckler herd of 50 Angus, Limousin and Simmental cross cows are put to Belgian Blue, Simmental and Limousin. Cattle and ewes are fed big bale haylage.

9-10 August 2000. Grassland Management Competition. This was divided into Dairy and Beef/Sheep sections, and was judged by John Chippendale of British Seed Houses, who sponsor the Competition. The Dairy Section was won by Ballakissack Farm, Santon (Ashley and Sandra Kinvig) and the Beef/Sheep section by Ballamanaugh, Sulby (Farm Manager: Andrew MacLeod). Both winners received 5 acres (2 ha) of grass seeds from Isle of Man Farmers Ltd. Overall Competition winner was Ballamanaugh with the prize of 5 acres (2 ha) grass seeds

from British Seed Houses. **Ballakissack** runs 90 Holstein cows of impressive quality, as reflected in their show results. Herd average was 7,700 litres. Grass quality is kept very high by a rotational paddock system, allowing a 1.2 ha fresh area per day with electric fencing. Gateways were good and turnout date was 15 March in 2000, aiming to graze until mid-November. The Kinvigs spent a lot of time ensuring grassland management was correct and the grass kept in a young condition, although some swards were over 30 years old.

Ballamanaugh. As much feed as possible is grown for the 185 cows and 1200 breeding ewes. All youngstock are home reared to reduce numbers bought-in. Cereals (80 ha) and forage peas are grown on the arable land and the grassland is regularly renewed in rotation. Silage and grazing management were good under difficult conditions. Ballamanaugh was chosen for the overall award on the quality, composition and performance of the grass crops which produced very high yields.

The Isle of Man programme finished with a **Slide Show** on 12 December given by retired farmer Mike Godfrey, who had recently visited New Zealand. Mince pies concluded the evening!

LEGUME SILAGES FOR ANIMAL PRODUCTION

Kairsty F E Topp and C J Doyle, Agriculture and Food Economics Department, SAC Auchincruive

Forage legumes can contribute to efficient livestock production systems through nitrogen fixation by bacteria in root nodules, reducing or eliminating the need for fertiliser nitrogen and producing feeds of high nutritive quality which reduce the need for concentrate feeds.

SAC, in association with IGER and research institutes in Sweden, Germany and Finland, have been examining various legumes (red and white clover, lucerne, Galega and Lotus) in pure stands and in mixtures with grass to assess their potential for the production of silage. The results indicated that the yields of red clover and lucerne were comparable with grass receiving 200 kg N ha^{-1}, and that there was little difference whether the legumes were sown pure or in a mixture. The yields for white clover and Lotus were lower, but increased when sown in a mixture with grass, which would be the normal recommendation. However, **establishment** of the legume is critical. Galega did not establish satisfactorily at any of the UK sites, although promising results where achieved in the other 3 countries. The persistency of legume species can be a problem, and the yields and average legume contents declined in the second year, particularly for red clover and Lotus. The establishment of legumes is generally found to be better on a well-structured soil, with a pH greater than 5.5. If the species has not been regularly grown, it is recommended that an appropriate rhizobium inoculant is used. It is essential that there are adequate supplies of P and K available, but equally, it is important to avoid supplying N to the soil/crop. The best performance of forage legumes usually occurs when the species is sown with grass of a similar development and competitiveness.

Making silage from legumes

Difficulties in ensiling forage legumes can occur because of low contents of water soluble carbohydrates and high contents of buffering substances, and techniques must be adapted to allow for these features. The preservation of legume silages was consistently good provided they were wilted to above 30% dry matter. Good fermentation will also be aided by rapid wilting of the crop, and the use of a mower conditioner with rubber rollers has been particularly effective as it crimps the stems and increases drying without increasing field losses. The silage additives used to aid fermentation were Ecosyl and formic acid. Both additives were equally successful in reducing the butyric acid content, although the formic acid was more efficient in preventing protein breakdown. The legume silages and grass and legume silages made to these guidelines showed no sign of heating or fungal spoilage on exposure to air.

Nutritional characteristics

The crude protein content, neutral detergent fibre and the water-soluble carbohydrates of the silages differ between the legume species. The water-soluble carbohydrate content of legume silages is lower than for grasses, whereas the mineral contents are higher. Legume silages were fed to dairy cows and lambs. The dairy cows produced more milk and the lambs grew faster when legume and legume-grass silages were fed compared to grass silages. Increased forage and higher legume proportions lead to higher contents of unsaturated fatty acids in the products. This may be positive for human health, but increases the risk of oxidation of fat in milk and meat.

Economics of forage legumes

Silages from red clover and lucerne cost about 10% less than grass silages to produce. Grass-legume silages have a similar or slightly lower production cost to pure legume silages. In terms of feed value, pure legume silages have the highest economic value as a feed, while grass silage is the least valuable. However, the attraction of growing forage crops is determined by the profitability per hectare. Red clover and grass-red clover mixtures appear to be the most profitable forage legumes to ensile. While clover and Lucerne, grown either as pure crops or mixtures with grass also appear to be more economically attractive than grass silage produced from swards receiving 400 kg N ha^{-1}. While pure legume silages were more profitable than grass-legume mixtures, the trials indicated that grass-legume mixtures produced more dry matter than pure legume silages. Red and white clover, whether grown pure or as mixtures, seem especially promising for organic silage systems. The overall forage yields for organic conservation systems can be 15-20% less than those obtained from conventional grass silage systems for equivalent returns.

Possible problems with forage legumes used for silage

The levels of N leaching from fields growing pure legumes may be slightly higher than from grass receiving 200 kg N per hectare. However, this impact can be reduced by growing grass-legume mixtures, and indeed pure legume swards should be avoided in nitrate vulnerable zones. In addition, the high crude protein content of legume silages may result in increased loss of nitrogen in excreta, particularly urine. This can be mitigated by feeding grass-legume silages or concentrate feeds with a low crude protein content, for example maize or whole crop cereals, with the legume silages. Fresh legumes may cause bloat, although this is rarely a problem with silages. The fertility of livestock, particularly sheep, can be reduced by varieties of red clover that contain high levels of oestrogen. There were also

differences in the taste of the milk produced from legume silages compared to grass silages, although this is not thought to be a major problem.

Conclusions

- Forage legumes can increase profitability in livestock production systems.
- The most suitable species for silage crops are red clover and, in the right conditions, lucerne, giving yields as high as grass receiving 200 kg N ha^{-1}.
- Where legumes are to be grazed as well as ensiled, grass-white clover mixtures are the most suitable.
- Legumes can be successfully ensiled in bunkers and big bales with acid or additives when wilted to 25% DM or with either acid or an effective inoculum when wilted to 35% DM.
- Legume silages give higher milk production than grass silages, associated with high levels of silage intake
- Legumes should generally be fed with concentrates or forages of low crude protein content in order to reduce the losses of nitrogen in faeces and urine.

This article is based on research carried out in the project: LEGSIL from 1997-2001 with funding from the European Union (FAIR – CT96 –1832). A booklet summarising the main results is available free of charge from IGER, North Wyke, Okehampton EX20 2SB. Tel: 01837 883500.

MAKING FULL USE OF MANURES AND SLURRIES

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Farmyard manure (FYM), and livestock slurries are valuable sources of organic matter and of the major nutrients, nitrogen, phosphate, potash and sulphur. They also contain magnesium and other trace elements. Taking account of these nutrients can often result in considerable savings in inorganic fertiliser use. However, nutrients can also be lost from manures and slurries during storage and spreading, posing a water pollution risk. These losses can be reduced by good waste management practices, and by ensuring that farm manure and slurry are stored in accordance with regulatory requirements. Manure nutrient composition is affected by a number of factors including: type and age of livestock; livestock diet; method of manure handling and storage; extent of slurry dilution; and the type and amount of litter in FYM. Typical amounts of nutrients in the readily available form (i.e. can be taken up by crops and grass during the growing season following application) are: **Farmyard Manure** (kg t^{-1}) 1.5 N; 2.0 P_2O_5; 4.0 K_2O; **Slurry (diluted 1:1)** (kg m^{-3} or 1000 l^{-1}) 0.8 N; 0.5 P_2O_5; 2.2 K_2O. Further gradual releases of nitrogen and phosphorus will occur in the years following application. An application of 50 m^3 ha^{-1} slurry in the spring will also usually supply sufficient sulphur for one cut of silage.

Losses From Stored FYM and Solid Manures. When FYM is stored in the open, up to 20% of the nitrogen, 7% of the phosphate and 35% of the potash can be lost during the season by leaching. It is therefore essential that middens and field heaps are well sited. These losses (and gaseous losses of nitrogen) will be greater from a shallow, flat heap, and so a deep stack with steep sides is best. Any dirty water and leakage from FYM must be collected and prevented from getting into watercourses. A roofed store, with retaining walls, is an expensive option and not practical for all farms, but would prevent leaching losses and allow easier removal and handling of the manure. As well as water losses, about 10% of the nitrogen can be lost to the air as nitrogen or ammonia gases, but the extent of these losses depends on the method of handling and storage. If the manure is compressed firmly and remains undisturbed, e.g. as with yarded cattle, little nitrogen is lost. If the manure is piled in a loose heap in layers, as much as 40% of the nitrogen can be lost, especially if the heap is turned to aid composting.

Losses From Stored Slurries. Nutrient losses from adequately designed and constructed slurry stores are confined to nitrogen, which escapes into the atmosphere as ammonia or, by denitrification, as nitrogen gas. The amount of nitrogen lost in this way can be influenced by: Livestock husbandry and feeding; Weather; Duration and type of storage; Exposure of slurry store; and Agitation or aeration of slurry. Nitrogen losses of 10-20% from undisturbed cattle slurry can

occur over a period of a few months, although greater losses may occur if the slurry is agitated or aerated.

Losses During Field Application. Soil type, weather conditions, timing and rate of application, dilution (slurry) and soil incorporation have all been shown to influence crop responses to slurry and manure nitrogen. The figures for available nitrogen shown above are based on spring applications, which are used more efficiently compared to applications made at other times of the year. Much available nitrogen in manures applied in the autumn can be lost during the winter through leaching, leading to possible pollution of water by nitrate. The approximate relationship between the time of application of manures and the remaining proportion of available nitrogen that is effective for spring growth is shown in Table 1.

Table 1: Typical relationship between time of application of manures and amount of available nitrogen remaining for spring growth

Time of application	Available nitrogen effective for spring growth (%)
Autumn	0-20
Early winter	30-50
Late winter	60-90
Spring	90-100

During the winter, there are leaching losses of sulphur as well as nitrogen, but very little losses of phosphate or potash. The figures given for available phosphate and potash can therefore be used irrespective of the season of application. It is good agricultural practice to avoid autumn and winter applications on unsuitable fields where surface wetness encourages run-off and increases the danger of water pollution from organic matter and nitrate.

Legislation and Further Guidance. Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 2001 cover the legal requirements for slurries which farmers must follow. There are further legal requirements for farms in Nitrate Vulnerable Zones (NVZs). Currently there are no NVZs in the west of Scotland and it has recently been announced that Nithsdale will not now be designated as a NVZ. Details of all legal requirements on livestock slurries and manures along with further guidance is given in the Scottish Executive "Prevention of Environmental Pollution From Agricultural Activity (PEPFAA) Code" available from the Executive, SEPA and SAC.

SALT FOR GRAZED GRASS

Bill Thompson, Thompson Fertiliser Sales
Cornfield House, Thorpe Bassett, Malton, N.Yorks

Evening Meeting of CSGS at Newhouse Hotel, Newhouse on 20 January 2001

Thompson Fertiliser Sales is a fertiliser company established for over 30 years in North Yorkshire and selling all types of fertiliser, including salt mixes for sugar beet. The company has been conducting trials on grassland which point to beneficial effects from salt application. Thompsons marketed the salt as 'LINDROX FF' which was an industrial by-product. The recommended application rate is 375kg ha^{-1} every 3 years, equating to approximately 3.5p $week^{-1}$ cow^{-1}.

The **benefits** were: increased biting rate and longer grazing times; this reduced grass height and raised grass digestibilities, the effects being greater on poorer grass. Potash luxury uptake was reduced and magnesium content of herbage increased, thus helping to prevent hypomagnesaemia. Increased production of saliva, which contains bicarbonate and buffers the acidity in silage. Improved milk yields and butterfat content. Improves grass sugar content to give better fermentation. Animals were healthier, with better liveweight gains. Lindrox FF could also be used to apply to forage maize silage; this reduced top and shoulder waste and secondary fermentation of opened clamps.

LOW COST GRASS SWARD RENOVATION

George Simon, Aitchison UK, Brick Kiln, Campsea Ashe, Woodbridge, Suffolk

Speaking at the CSGS Meeting of 20 January, George Simon, formerly a beef farmer and contractor, described the Aitchison Direct Drill ('Seedmatic') imported from New Zealand. This direct drill or slot seeder sows seed into an existing sward by means of a specially-designed, winged coulter which follows a cutting disc. The seed is placed in the slot at a depth of 3-5cm where it is in contact with moist soil and away from immediate plant competition. The slot partially closes after the drill has passed, thus conserving moisture around the seed. The seeds are delivered by a sponge roller which can handle a range of seed sizes and shapes, and can be accurately geared for different seed rates. The Aitchison can be used to rejuvenate ageing, damaged or thin swards by boosting with more productive grasses or clover. It is not suited to stony soils and the direct drilling method requires a high degree of husbandry. Guidelines for successful slot-seeding include: Assess sward and decide if slot seeding suitable; check pH and fertility; bare sward by hard grazing or cutting; use vigorous varieties; slug pellets may be needed; manage post-sowing grazing very carefully.

Conventional Seeding, spray and direct drilling and rejuvenation compared

Conventional Seeding: *Advantages*: Levels land, buries weed seeds and trash, seed germination even, organic option. *Disadvantages*: Expensive, time consuming, land out of production longer, and time required before stock can be carried, buries fertile top soil, disturbs buried weed seeds.

Spray and direct drilling: *Advantages*: Cheaper, quicker, simple management, land remains firm, minimum time land out of use, surface not inverted, weeds and pests can be treated when spraying, break crops (turnips, kale, rape) can be drilled. *Disadvantages*: Land is not levelled, compaction not dealt with, trash remains on surface, no organic option.

Rejuvenation: *Advantages*: Low cost, very little time out of production, pasture composition can be varied, clover can be added, can repair damaged areas, organic option. *Disadvantages*: Not suited to all situations, requires good management, old pastures with a dense mat are difficult, pests may be a problem.

Comparative costs per ha could be:
Conventional £280; Direct Drill £240; Rejuvenation £140.

WEATHER DATA FOR 2000
SAC AUCHINCRUIVE (35°29'N 4°34'W) Alt 45m

	Mean Air Temp °C		Mean Soil Temp °C	Rainfall		Sunshine
Month	***Max***	***Min***	***At 10 cm***	***Total (mm)***	***No of Days***	***Total Hours****
January	8.0	2.4	4.5	97.0	19	56.2
February	8.1	2.9	4.8	136.2	25	62.0
March	9.6	4.3	6.4	68.0	17	92.8
April	10.5	3.2	6.6	45.1	15	153.2
May	16.3	6.6	11.5	38.8	13	305.1
June	16.8	9.5	13.4	48.0	14	171.6
July	18.9	10.1	15.4	31.3	7	230.7
August	18.7	11.1	15.0	104.4	19	146.3
September	16.8	10.6	13.7	161.1	25	97.5
October	12.6	6.6	10.1	165.4	25	88.4
November	9.0	3.7	6.6	92.3	24	65.4
December	6.9	1.8	5.6	83.9	18	34.1
Means/ Totals	**12.7**	**6.1**	**9.5**	**1071.5**	**221**	**1503.3**

Max air temperature: 26.4° on 18 June. Min air temperature: -10.7° on 30 December 2000. Last frost: 15 April 2000. First frost: 31 October 2000.

* Prestwick Royal Navy Air Squadron (HMS Gannett).

WEATHER DATA FOR 2000
SAC CRICHTON ROYAL FARM (55°3'N 3°35'W) Alt 65m

	Mean Air Temp °C		Mean Soil Temp °C	Rainfall		Sunshine
Month	*Max*	*Min*	*At 30 cm*	*Total (mm)*	*No of Days*	*Total Hours*
January	7.9	1.6	4.4	105.2	17	76.7
February	8.4	2.7	5.4	127.8	26	82.5
March	10.4	4.2	7.5	71.0	11	97.7
April	10.9	3.7	8.8	57.6	11	136.9
May	16.4	6.3	13.4	64.8	15	249.9
June	16.7	9.5	14.7	65.1	17	129.3
July	19.4	10.3	16.7	52.0	7	156.7
August	19.5	10.7	16.8	125.7	22	170.2
September	17.3	10.3	15.3	207.4	26	93.6
October	12.8	6.0	11.3	182.8	27	45.1
November	8.9	3.6	7.3	129.0	23	47.9
December	7.0	2.5	6.5	171.6	16	18.0
Means/ Totals	**13.0**	**6.0**	**10.7**	**1360.0**	**218**	**1304.5**

Max air temperature: 25.7° on 18 June. Min air temperature: -8.7° on 27 December 2000. Last frost: 16 April 2000. First frost: 31 October 2000.

After a cold start and late spring, there was a burst of warmth in early May which then tailed away until really wet conditions set in for autumn.

Meteorological data reproduced courtesy of SAC Auchincruive, SAC Crichton Royal Farm and RNAS Prestwick.

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