

# *Greensward*

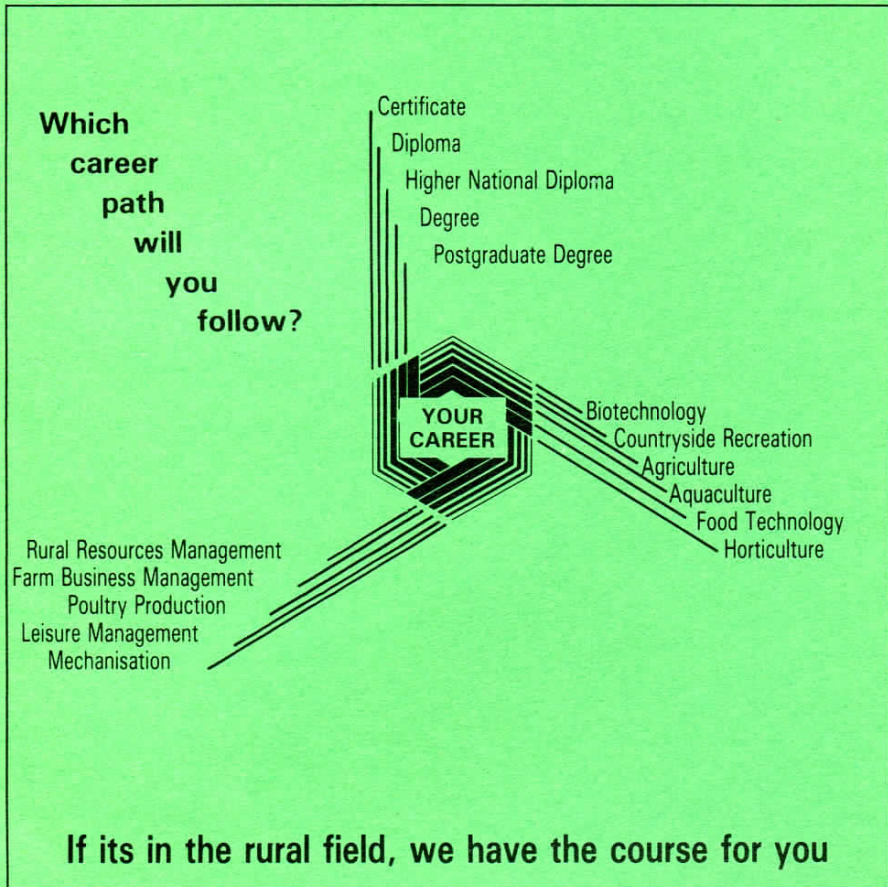
## **1990**

**JOURNAL OF THE SOUTH WEST  
AND CENTRAL SCOTLAND  
GRASSLAND SOCIETIES**

**No. 33**



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## FOREWORD

The dominant theme in this number of *Greensward* is the Environment. During 1989 the South West Society made local grassland society history by introducing a Grassland Environmental Competition, which stimulated considerable interest. The winner of the first competition was Mr Derek Roan, and a report on a memorable visit in the spring of 1990 to his farm - Barnbarroch, near Dalbeattie - is included in these pages.

Another innovation of the South West Society was a day conference in October 1989, and its topic was "Grassland and the Environment". The British Grassland Society adopted the same theme for its 1989 Winter Meeting entitled "Environmentally Responsible Grassland Management". Both of these meetings are reported in this number of *Greensward*. With increasing public concern for the conservation of the environment, grassland societies will have to pay more attention to environmental matters in the future and less to the production topics of the past.

Many other subjects of current interest are covered in the articles in this issue, ranging from slurry disposal and the prevention of pollution to bovine spongiform encephalopathy (BSE). The report of Mr Robert Doyle's talk on BSE should be required reading in view of the present controversy over this disease. Attention is also directed to articles on two of the main annual events of the British Grassland Society, namely the BGS/MLC Grass to Meat Awards and the BGS National Silage Competition. These articles were kindly provided by Dr John Frame who is an Honorary Vice President of the South West Society and currently President of the BGS.

Editing this Journal would be a much more difficult task if it was not for the continuing assistance of Dr Gordon Tiley, the Secretary of the South West Society, who I must once again thank. I also thank Mrs June Bishop of the Publishing & Visual Presentation Department of the Scottish Agricultural College, Auchincruive for her help.

David Reid - Journal Editor

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## **HONORARY VICE PRESIDENTS OF THE SWSGS**

In a short ceremony at the Day Conference of the South West Scotland Grassland Society at Castle Douglas on 31 October 1989 the title of Honorary Life Member and Vice President was conferred on Mr John Watson and Dr John Frame, both of whom have made outstanding contributions to the Society. They join a short list of members who have been similarly honoured in the past, namely Dr Malcolm Castle, the late Mr Idris Hunt, Dr Ron Harkess, and Mr Michael Milligan. The new Honorary Vice Presidents were each presented with a hand-inscribed scroll by Past Chairman Michael Milligan.

### **Mr John Watson**

John Watson was the first person to join the South West Scotland Grassland Society (membership number 001) and was the Chairman in 1989. Over the years since 1962 he has been a regular attender and participant at meetings and a prolific source of ideas for Society activities. He was the original proposer of the Society's very successful Silage Competition now in its 17th year. As Farm Manager at the Hannah Institute he has been involved with numerous trials on grass and silage with direct practical benefit to farmers.

### **Dr John Frame**

Dr John Frame of Alloway, Ayr, was a former Secretary of the South West Scotland Grassland Society, and has given a lifetime of service to grassland farming, research and advice. He is currently President of the British Grassland Society and Grassland Lead Centre Leader in the Scottish Agricultural College. His enthusiasm for grassland did much to lay the foundations of the Society together with the late I V Hunt, who was also an Honorary Vice President and first Secretary of the Society. Dr Frame's promotion of grassland now extends internationally but he is still a keen supporter of the local Society.

# CONFIDENCE IN GRASS

## THE BRITISH GRASSLAND SOCIETY SUMMER MEETING, 1989

**Malcolm E Castle, Tobergill, Low Coylton, Ayrshire**

Dyfed, which consists of the three old counties of Carmarthenshire, Pembrokeshire and Cardiganshire in South-West Wales was an ideal location for the 1989 Summer Meeting. The area is attractive, well farmed and has many similarities to South-West Scotland. Dyfed covers almost 30% of the total area of Wales, but contains only 12% of the total population. Thus, a combination of low population and magnificent scenery is the background for farming which relies heavily on grassland for livestock production.

There is no grade 1 land in Dyfed and only 0.4% of grade 2 land. Indeed the county is mainly grade 4 land with much in Less Favoured Areas. The rainfall increases sharply with increasing distance from the coast, and the annual average is approximately 1500 mm. Because of the high rainfall almost 95% of the total area is grassland, and crops such as cereals and early potatoes are only grown on the coastal fringe.

Dyfed is a county of small family farms with over 75% owner occupied. The farmers cooperate in the ownership and use of machinery, and are also clearly ready to accept new technology, particularly on the farms visited by the BGS. However, it appears that there is scope for much further improvement.

The advances in grassland are spear-headed by the eight local grassland societies in Dyfed, and by the Federation of Welsh Grassland Societies, who jointly organised the highly successful 1989 Summer Meeting. Ten farms were visited by the 230 delegates in the 3-day period, and each farm was typical of its specific area and climate.

### **Intensive Dairy Farms**

On the first day two intensively- managed grassland farms of contrasting sizes were visited. Mr Iori Evans and family farm a total of 276 ha at Parc Cynog, Pendine, with a herd of 475 cows plus 354 heifers kept in topless cubicles. Three cuts of silage are taken each year, and an enzyme additive was being tested in 1989. In contrast,



Mr Eufryn Davies of Bryntrogin, Clynderwen has 64 cows on 61 ha with a yield of 5547 l per cow and a concentrate use of 0.19 kg / l. His target for silage quality is an ME of 11.0 with a low ammonia level. This immaculate farm also carries 180 ewes, 63 beef cattle and 14 suckler cows. Eufryn certainly shows confidence in grass and silage.

### **Dairying and Potatoes**

The journey to the next farm was by boat - the "Tudor Princess" - down the Cleddau Estuary, and delegates either enjoyed the scenery from the deck or listened to a lecture on fish farming in the bar. The farms of Mr John Mathais, Church Farm, Burton, Milford Haven are adjacent to the estuary. On this relatively light land facing south there are leys, first- and second-early potatoes and even seed potato production. The herd of 170 cows averages 5372 l per cow with a concentrate input of 0.18 kg per l. Irrigation equipment is used mainly on the potatoes but it was being used on grass at the time of this visit because of drought conditions.

### **Upland Improvement**

In marked contrast, the upland farm of Fritz Hormann - Fan Farm near Llandovery - was visited on the second day. Pasture improvement over 25 years has masked the mediocre quality of the land. Drainage and reseeded has altered the farm completely, but now no more ploughing is done and the silage swards are, on average, 18 years old. Mr Hormann plans to continue the suckler cow and sheep enterprises with the aim of improving the quality of both silage and stock without increasing fixed costs.

### **Silage Champions**

Sam Davies and his sons of Tynlofft near Lampeter have won seven major silage awards since 1984, including the BGS National Silage Competition. In 1988 the silage on this intensive, high-performance dairy farm had a D value of 72.9 and an ME of 11.6 MJ / kg. Great attention is paid to every detail of silage making. The 65 cows averaged 6796 l of milk per cow with only 0.18 kg of concentrate per litre. This farm wonderfully demonstrated the value of high-quality silage in a Less Favoured Area with 1300 mm of rain per annum. The flock of 115 pedigree Llanwenog sheep are most impressive with high prolificacy, a placid temperament and high outputs of prime lamb.

## **Soil aeration**

The visit to the farm of the Host Vice-President, Mervyn Davies, will be remembered for the discussions on the soil aeration trials conducted by ICI and the University College of Wales at Aberystwyth. On Nantgwynfyndd Isaf near Llanarth treading by dairy cows had resulted in severe soil compaction, shallow rooting, sod pulling, poaching and loss of grass yield. Soil slitting to penetrate the compacted layer approximately doubled the yield of herbage. Other trials showed substantial increases in herbage yields by using a golf-course aerator to break through the compacted surface of the soil.

## **Diversification**

On the third day an example of diversification was seen and enjoyed on the farm of Jeffrey McNamara, Newton Farm, near Canaston Bridge. After plans to increase the dairy herd were stopped due to the introduction of milk quotas in 1984, Jeffrey and his family created a leisure park on part of the farm. More than £1.5 million has been invested in landscaping, shops, a railway and other leisure attractions. The success of the idea is demonstrated by the fact that there were 220,000 visitors in 1988. Delegates only inspected the grass on the lawns, but had great fun in Nutty Jake's Shooting Gallery, on the Bobsleigh Run and the Go-Karts.

## **Economic feeding of livestock**

The final farm visits were more serious, emphasising the importance of productive and well-managed grass in the economic feeding of ruminant livestock. Lyn Davies, Waunfach, Nevern had only 20 ha in 1983, but now farms 50 ha carrying 78 cows with a yield of 6776 l per cow. Delegates discussed the farm policy as an example of a typical Dyfed dairy farm, and concluded that more milk quota must be acquired, although not everyone agreed. However, the value of this discussion, and indeed of the entire Summer Meeting, was that one could see new ideas and have adequate time to discuss and reflect on one's own system of grassland farming. This is surely an important reason for attending a BGS Summer Meeting.

The visit to Dyfed was highly informative, well planned and enjoyable. Congratulations are due to the local organizing committee, the BGS and to its President Dr John Frame from Auchincruive who was at the helm at all times.

## **SWSGS EVENING VISITS TO FARMS IN SUMMER 1989**

**G E D Tiley, Secretary, South West Scotland Grassland Society**

### **James Forrest & Son, Meinfoot, Ecclefechan - 27 July**

Meinfoot is a 134 ha farm (three-quarters owned) on gravel soils which are free draining except where disturbed by recent gas-pipe installation. Crops include 44 ha of barley and 5 ha of fodder beet. There are two steadings about 0.8 km apart. Additional grazing rented from a neighbour was of considerable value in the dry summer of 1989. The dairy herd consists of 125 Friesian cows, with all heifer replacements reared and graded to pedigree. Bull calves are finished in a cereal bull beef enterprise.

The Forrests won the Michael Milligan Prize and the Dumfries county prize in the 1988-89 Silage Competition. High quality silage is made from a 3-year cutting mixture, which is cut and grazed alternately to distribute fertility and slurry round the farm. Fields are rolled after grazing and the mower cutting height is raised slightly. The aim is to make uniform quality silage to feed to all stock. Silage fields receive 138, 125 and 100 kg nitrogen / ha for the successive cuts. At the time of the visit the second growths were thin, wilting and beginning to shoot. Late cutting was anticipated with the quality of the resulting silage suitable only for growing stock.

Long term leys are near the steading. Grass is undersown in barley following fodder beet. In 1989 the fodder beet was sown on 29 April, with barley sown on the end rigs to assist harvesting in late October / November. The beet tops are fed to heifers after wilting for 3 days to reduce the oxalic acid content. The roots are stored in an outside clamp made of round bales and fed at 20 kg / head for 180 days to replace barley in the ration. In 1988 the yield was 75 tonnes / ha costing £74 / ha to grow. Beet sowing and harvesting machinery is shared with a neighbour.

Silage is removed from the clamp by a shear-grab cutter, which seals the face after cutting. An inoculant additive was used in 1989 for safety reasons. There is storage for 7000 l of effluent, which is fed to the cows. Features seen in the buildings were a recently completed calf house, and Dutch cubicle mats guaranteed for 10 years. Moisture problems in the cubicles have been overcome by using sawdust.

## **Ronald Campbell, Craigalbert, Ballantrae - 9 August**

Craigalbert is an upland grass farm of 40 ha owned and 32 ha rented. Ron's father, who is a long standing member of the Society, built up the farm from 1953. After the dairy herd was dispersed in 1975 there was a 2-year gap in income. A suckler herd was established and barley was grown prior to converting to an all-grass farm. Cattle numbers were then reduced in favour of sheep. The unit now carries 65 suckler cows, 250 cross ewes, 80 cross hogs and 120 draft Blackface ewes.

A Charolais bull is used on the suckler herd, which is mainly autumn calved. The aim is to run a low-cost, silage-based system for which two cuts are taken.

The 250 homebred ewes are put to Suffolk and Texel tups and housed from mid January. Lambing starts in the third week of March, and last year the ewes produced 177% lambs sold. Most of the cross hogs are now put to Suffolk tups, and gave 95% lambs sold in 1988. The Blackface ewes are lambed outside giving 129% lambs sold, but it is planned to replace these with cross ewes lambed indoors. All sheep are fed silage when indoors. Craigalbert is a member of the newly formed lamb marketing cooperative, Ayrshire Country Lambs Ltd, which aims to produce quality lamb mainly for export.

The sheep are not clean grazed but are dosed regularly for worms. They are also dosed twice with copper which is deficient on this land. The farm shows a high incidence of staggers, which was particularly bad in 1985. All cows are given magnesium bullets in the spring and a magnesium-rich cake in the autumn.

Craigalbert was short listed in the BGS-MLC 1989 Grass-to-Meat Awards for efficient grass and stock production. Long-term seeds mixtures are sown for hardiness. With the excellent management, the swards seen on the visit did credit to both father and son. Two grand daughters also demonstrated their shepherding and dog-handling prowess.

The silage fields receive 250 kg/ha of Nitram in the third week of March and 500 kg/ha of 20:6:12 in the first week of May for the first cut in the third week of June. A dressing of 377-500 kg/ha of 20:6:12 is applied immediately after the first cut. Grazing fields are topped with a turbo mower in late summer. These fields receive 250 kg/ha of 26:13:0 in the third week of March, 188-250 kg/ha of 27:5:5 in mid

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May and again in mid July, and a final dressing of 188 kg/ha of Nitram later in the season.

Ron Campbell runs a contracting business cutting about 1000 ha of silage annually - mainly in Wigtown. Drainage contracting is also done. The implement shed doubles as a lambing shed.

### **J A Houston, Boreland, Kirkcudbright - 15 August**

Boreland is an upland beef/sheep farm on the outskirts of Kirkcudbright. It covers 122 ha plus 40 ha on a neighbouring farm. The main enterprise is a flock of 400 ewes with a lambing percentage of about 170 and all lambs fattened. In addition, there are 154 hoggs and 17 tups. Over 200 cattle are fattened or sold as forward stores. A suckler herd of 21 cows put to a Limousin bull was started in 1988.

Crops include 5 ha of swedes and 5 ha of arable silage (2 barley : 1 oats) which was cut on 20 July. This was fertilized with 188 kg/ha of 17:17:17 and a further 250 kg/ha was applied after cutting for the undersown grasses. In 1989 grass was cut from 12 ha and precision chopped for a sausage silo. Big bales were made from 5 ha and hay from a further 5 ha. First cut silage received 439 kg/ha of 22:11:11 on 18 April for cutting on 17 June. The second cut received 5500 litres of slurry and 250 kg/ha of 25:15:0. All fields were limed according to soil analysis.

John won the first prize in the Beef/Sheep class of the 1988-89 Silage Competition with his sausage silage. This system is slow and expensive costing £500 to fill each sausage, which can only be used once. However, there is no waste and no effluent. In 1990 the sausage will be replaced by a pit which was under construction at the time of the visit. It has a capacity of 760 tonnes, and has earth walls with shuttered concrete edges. The floor was to be asphalted after a heavy spraying with simazine and dalapon to kill volunteer docks and weeds.

The grazing fields visited showed good growth in spite of the drought, and included knowes, whin copses and a sheltered low-lying field for wintering. 20 ha of rough grazing have been slowly improved since John took over the farm in 1982.

### **G M Campbell, Carsewalloch and Larg, Creetown - 17 August**

The visit was made only to Carsewalloch, which is a 364 ha lowland

all-grass farm on the banks of the River Cree. It is run together with the nearby Larg hill farm of 405 ha. The main enterprises are suckler herds producing store calves, and Blackface sheep flocks. Cattle on the two farms include 140 autumn-calving and 40 spring-calving cows, plus 30 multi-suckling cows. The sheep flocks consist of 250 cross ewes put to a Suffolk tup and 1050 Blackface ewes of which 450 are put to a blue-faced Leicester tup. Although the evening light was curtailed, the Society was treated to a most interesting and comprehensive tour of the lowland unit.

The low ground at Carsewalloch is mainly alluvial, poorly-drained silt with the remains of raised peaty moss. 60 ha have been drained over the last 10 years using about 110 tonnes of gravel infill per hectare, and laser levelling due to poor outfalls. Much of the land is lower than the merse, and protected by flood banks. These have been recently raised, taking 12 days to add 610 mm to the height along a length of 2470 m using a Hymac, and finishing the top with sod from the merse. The bank was rested for 2 months to avoid poaching damage. There is grazing access to the merse which consists of pure creeping bent - the traditional sea-washed turf used for bowling greens. On the reclaimed land there is constant risk of flooding with consequent danger to stock.

The sucklers consist of Blue Greys which are outwintered in a wood and use an old railway line for hard standing. Among the mixture of breeds used the Angus cross gives the best calves which can be sold at 11 months.

The excellent swards on Carsewalloch are grazed by sheep in the spring and cut for silage in the middle of June or later. Arable silage is grown for undersowing, since the backend is too wet for direct sowing of grass. Stubble turnips are also established by direct drilling. Grass seed mixtures are based on late or intermediate perennial ryegrass with timothy and white clover, which is encouraged and is abundant in most fields. Red clover is sometimes added to the mixtures.

### **Acknowledgements**

The Society wishes to thank the Forrest family of Meinfoot, the Campbell family of Craigalbert, John Houston of Boreland and the Campbell family of Carsewalloch for arranging this most interesting and informative series of farm walks. The warm hospitality offered to members was also much appreciated.



## GRASSLAND AND THE ENVIRONMENT

*A day conference of the SWSGS at the Ernespie Hotel, Castle Douglas  
on 31 October 1989*

The Society extends its appreciation to Scottish Agricultural Industries plc who were sole sponsors of this conference, and particularly thank Bob Fullerton, SAI, Dumfries.

Dr John Frame, current President of the British Grassland Society, was the Chairman of the day's proceedings, and Professor Phil Thomas, Principal of the West of Scotland College, Auchincruive, gave the summing up and the votes of thanks.

The Chairman emphasised that grassland was the "Green Gold" of Scotland, but it was also a highly visible industry in days when the public was increasingly concerned with the appearance of the countryside. He urged the grassland societies to build bridges with conservationists in a positive manner rather than to allow conflict to smoulder over such problems as slurry. It was a significant coincidence that the BGS had decided independently that the subject of its Winter Meeting in December 1989 should be "Environmentally Responsible Grassland Management" (see report in this Journal).

### **Environmental restrictions on grassland in the EEC**

The first speaker was Mr Wien van den Brink, a Dutch guest of the Society. In addition to being a dairy farmer and having interests in a feed firm, he is chairman of several agricultural and environmental committees involved with EEC restrictions on livestock farming in Holland. His wife, Wilhelmina van Altvorst, ably and entertainingly interpreted his talk.

Some of the problems and restrictions of intensive grassland farming and pollution from animal products in Holland can be regarded as forerunners of what might happen in the UK. Mr van den Brink's farm at Putten near Arnhem is surrounded by cycle paths which bring many tourists - mainly urban folk - to the area. They are able to watch and witness what happens on farms, which in Holland are close together.

Mr van den Brink started farming with 48 cows on 5 ha, but his stock now consists of 400 breeding pigs and 120 Holstein cows kept on 60 ha owned plus 10 ha rented. Cropping is based on maize and grass

silage. New buildings have been erected, and the modern milking parlour is fitted with an electronic milk meter linked to a computer. This calculates the feed requirements of each cow based on milk and roughage analyses. Concentrates are trickle fed to keep the cows quiet during milking. The pig operation is linked to a UK breeding company.

In discussing the environmental problems of grassland the speaker pointed out that grassland and farming in general are highly visible industries. As a result they are liable to interference from people with little knowledge who base their statements on emotions. Farmers are a small political group, and it is important that they give a clear picture of what they are doing. A positive offensive stance is required, and dialogue should be pursued with people who care, not with environmental maniacs.

A balance of minerals in the soil should be sought, and care taken to put no more into the soil than the plants can utilise. If excess is applied this could invite restrictions which will be based on the less productive farms. A restriction to less than 70 kg nitrogen / ha is under discussion in the EEC. The structure and capabilities of the soil should be known so that mineral turnover can be regulated. New varieties of grass and greater use of clover may be required.

New rules on the use of pesticides could lead to higher costs, so that better levels of grassland management may be required to counteract weeds. Roadside weed infestations should be controlled by local authorities.

Ammonia from manure spreading and emanating from buildings may need to be monitored in the future, and new building modifications imposed. It is essential that any such building investments suggested will effectively control the ammonia release.

Environmental objections will lead to the need for farm investment on behalf of the environment during the next 10 years. Larger intensive farms will be better placed than small farms to do this. Mr van den Brink forecast that robots will take over at milking during the next decade to automate the present time-consuming daily operation. Value added increments will be required for milk products to provide a means for the consumer to pay for environmental improvements otherwise the measures will be of no avail.

## The nitrate issue

The latest results from ICI studies on the soil nitrate problem were presented by Barry Livesey, who is Environmental Issues Manager from the External Affairs Group of ICI at Billingham. He has been Secretary of the Hertfordshire Grassland Society.

Mr Livesey felt that environmental awareness permeated the farming community but bad messages were being put out by the media. Farmers who "did it right" should be publicised. Grassland societies who previously concentrated on production should now turn to anti-pollution and environmental themes.

The nitrate content of drinking water is not a problem in Scotland. Figures from the Scottish Office indicate that it is less than 25 mg/l. The maximum limit recommended by the World Health Organization is 45 mg and by the EEC 50 mg. Nitrates present in vegetables and in cheese are converted by bacteria in the mouth to nitrites, which can cause methaemaglobanaemia - "blue-baby" syndrome. Private water supplies should be checked for nitrates and bacteria. No correlation has been established between nitrates and gastric cancer. However, farmers should be concerned with the efficient use of nitrogen on grassland. If the nitrogen cycle is overloaded by high input or through the removal of plants this will lead to throughput losses. Nitrate losses will also increase with autumn cultivations and with ploughing of leys. Improved agronomic management is required, e.g. closed seasons in nitrate-sensitive areas.

Results from ICI trials suggest that lower nitrogen fertilizer rates used more efficiently could give higher yields and less effluent. The new ICI 'Turnout' fertilizer has been shown to increase grazing from mid April. Other ways suggested by Mr Livesey to increase efficiency and reduce losses were -

- (1) More accurate fertilizer spreading, avoiding striping and not sowing in the hedgelines.
- (2) Since fertilizer accumulates during the summer aim to take a third cut of silage in grazing fields.
- (3) To prevent nitrate losses when permanent pasture is ploughed undersow arable silage.
- (4) Apply slurry in the spring.
- (5) Grassland societies should exchange information on optimum fertilizer practices.

## Importance of grassland to nature conservation

The final talk of the day was given by Dr Richard Robinson of the Rural Development Unit in the Nature Conservancy Council's headquarters in Edinburgh. Dr Robinson claimed that a more rational ecological assessment of grassland areas was required before its conservation value could be gauged in relation to commercial management. Historically, natural grassland areas in Scotland were very limited before the advent of man, and were mainly above the tree line, along coasts, in woodland glades and forest clearings and on thin soils. The development of agriculture greatly increased these areas. More recently, large scale afforestation has led to an appreciable loss of grassland.

The relative conservation value of different types of grassland is hard to define. It is based on the plant species content and the provision of habitat for insects and birds. Variety as such is not the whole story since a sown pasture can contain many species. Very little totally natural grassland still exists, so it is the semi-natural grassland which is of greatest value. This is the grassland originally derived from purely natural vegetation through some activity of man, but then later maintained in a relatively undisturbed condition. Thus, semi-natural grasslands are usually very old areas which have developed a characteristic community of plants in equilibrium with the prevailing ecological conditions.

There is a range of semi-natural grassland types in Scotland and these have differing conservation value. An example of a low-value type is the wet soft-rush pasture dominated by soft rush and occurring on wet flats and slope where the drains are old and blocked. Also of low conservation value is the high fertility ryegrass-crested dog's-tail pasture in arable areas. In contrast, upland herb-rich bent-fescue grassland on basic flushes on steep hill slopes has high value. Hay meadows are not semi-natural, while improved hills and rotation grassland are of low conservation value owing to high soil fertility, rapid growth and low species variety.

Infertile soils and non-uniform habitats have a greater range of species. Small isolated examples are to be found on most farms, e.g. unimproved parts of fields, corners, tracks, road verges and drainage lines on flushes. To maintain the conservation values of such areas an extensive, traditional type of agricultural management should be used. No manures, fertilizers or herbicides should be applied, and above all there

should be no abrupt changes in management such as fencing off completely.

## **Discussion**

**Mr van den Brink** was questioned on exporting slurry from farms in the Netherlands. He replied that the Dutch government pays a subsidy for the transport of slurry above a certain distance. However, this is being phased out in 1994.

On the question of conservation grants in, for example, ESA's, **Dr Robinson** said that these were to encourage farmers to undertake measures of benefit to the environment. The Nature Conservancy Council is conducting a survey of grassland areas of high conservation value in south-west Scotland.

Summing up the day's proceedings **Professor Thomas** remarked that a conference of this nature would not have been held 10 years ago. As farming is in a very public arena farmers must not only do right but their management must be correctly presented. Farmers should be positive and be involved in local, national and European discussions before decisions are made. Problems such as pollution or ruminant production of methane should not be hidden away but correctly presented as problem areas. Nature conservation means different things to different people, and further education of the public is required. Funding of conservation and public access measures on farms should be organised by central government as diversification from specialist agriculture continues.

**G E D Tiley**

## **SOUTH WEST SCOTLAND GRASSLAND SOCIETY 18th ANNUAL SILAGE COMPETITION 1990-91**

The 18th Annual Silage Competition of the the South West Society will be run this year with no changes in the marking system. However, the Executive Committee propose to make changes in the judging procedure. Full details of these will be clearly described in the rules for the competition which will be sent out with the entry forms.

# THE XVIth INTERNATIONAL GRASSLAND CONGRESS, NICE, FRANCE 1989

**G E D Tiley, Secretary, South West Scotland Grassland Society**

The XVIth International Grassland Congress was held in Nice on the French Riviera from 4 to 11 October 1989. The Congress is a gathering of international grassland scientists held every 4 years to review world-wide progress and developments in grassland, and to indicate directions for the future. The Nice meeting was attended by 1200 delegates from 78 countries. There were strong representations from Europe, France, Australia and New Zealand (venue for the XVIIth Congress in February 1993). Scotland was well represented, including several from the west and from the SWSGS.

The programme each day began with plenary papers for all delegates, followed by short papers on fourteen specialist topics. The specialist sessions were held concurrently in four lecture rooms, which allowed delegates to choose papers of particular interest. All sessions were centrally synchronised and strict time keeping ensured by the playing of music to signal speakers to stop. The conference centre ('Acropolis') was a modern and comfortable building with simultaneous translation facilities, giving a magnificent venue for a well organised Congress. Over 800 papers were presented, more than half of which were displayed as posters in two separate sessions. The proceedings have been published in two volumes with a third to follow containing the plenary papers and discussions.

A well attended pre-Congress meeting was organised by the British Grassland Society and chaired by Dr John Frame. This was a very valuable aperitif to the main meeting which allowed European and Antipodean grassland scientists to discuss nitrate losses, grazing efficiency, diversification and nature conservation themes. It was remarkable to hear reference in such a distant venue to research carried out by one of our own farmer members - Stewart Jamieson.

The grassland topics covered were numerous, ranging from feeding yaks in Outer Mongolia, through shrub grazing in Indonesia and beef production in Argentina to seed production in Algeria. There was a forum for French farmers describing stock farming methods in different geographical areas of France.

Among new technical advances could be noted - inoculation of the rumen to allow animals to digest new types of plant; a fungus on grass which actually increases feeding value and livestock performance; use of white, clear polythene instead of black for big bales and storage in the upright position.

Impressions of the visit included :

- The dryness of the countryside in southern France and the general lack of grassland, so that shrub grazing assumes greater importance.
- The high level of government support, derived partly from product levies, for research and training in agriculture. Young farmers, especially those in Less Favoured Areas, were eligible for substantial long-term loans at very low interest rates. This was an attempt to reverse the drift from the land as older, traditional farmers retire.
- There appeared to be farm structure problems based on splitting inherited parcels of land. Common land also gave rise to management problems.
- A strong theme throughout the Congress was "Grassland farming to take better care of the Earth". There was a world-wide interest in the efficient management of grassland and its environmentally sympathetic use for animal production.
- A lasting impression of the XVIth Congress was being able to hear and meet with the World's leading grassland specialists, previously only names in scientific journals. There were high standards of visual aids and presentation and posters. The Congress organisers were remarkably successful in achieving a uniform presentation from the numerous delegates from so many diverse countries and backgrounds.

### **NEW NAMES FOR THE AGRICULTURAL COLLEGES**

In the spring of 1990 the name "The Scottish Agricultural College" was adopted to cover the combined organisation of the three Scottish colleges. The west college will now be known as "The Scottish Agricultural College, Auchincruive", while the north and east colleges will be called "The Scottish Agricultural College, Aberdeen" and "The Scottish Agricultural College, Edinburgh" respectively. The headquarters of the new organisation will be the SAC headquarters in Perth.

# **BOVINE SOMATOTROPIN (BST) & BOVINE SPONGIFORM ENCEPHALOPATHY (BSE)**

*A meeting of the SWSGS in the Royal Hotel,  
Cumnock on 23 November 1989*

Two speakers addressed the South West Society after the Annual General Meeting. Roger Dakin, who is Business Development Manager in the Animal Sciences Division of Monsanto Ltd., discussed the use of the growth hormone BST. He was followed by Robert Doyle, a veterinary officer in the Animal Health Office, Russell House, Ayr, whose topic was the so-called "mad cow disease" now claiming 100 new victims each week in Britain.

## **BST - R Dakin**

The research on bovine somatotropin (BST) begun by Monsanto in 1973 has created considerable attention in the media and among farmers. BST is a naturally-occurring protein which is produced by the pituitary gland in cows and regulates the conversion of food input to milk production. The effects of BST were first demonstrated in 1928 in Russian trials on about 3000 cows. These trials showed that the solution of an extract from the pituitary gland could increase milk yield by about 20%. However, the extraction of natural BST from the glands of slaughtered cattle was tedious, uneconomic and unsafe because of possible disease contamination. Further work was done during the second World War, when methods of rendering the extract sterile were devised.

BST is now produced by biotechnological methods which are economic and safe. Biologically the product of these methods is identical to the natural extract. The overall effect of BST in the lactating animal is to direct more of the feed input into milk output, and in the non-lactating animal into fat production. Cows with higher levels of their own BST give the highest milk yields. Administration of BST to lower yielding animals mimics the genetically higher-producing cows.

The biotechnological system for producing BST is similar to that used for the production of insulin. The natural gene governing the synthesis of BST is isolated from the cow and recombined into a common bacterium. This is allowed to multiply in a controlled fermentation process during which BST is produced in quantity. The bacteria are then killed and the BST is separated and purified. Finally the highly



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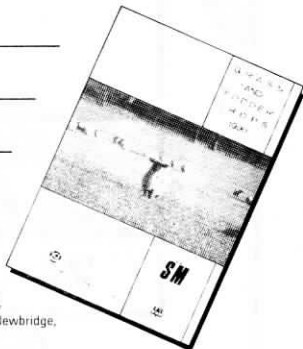
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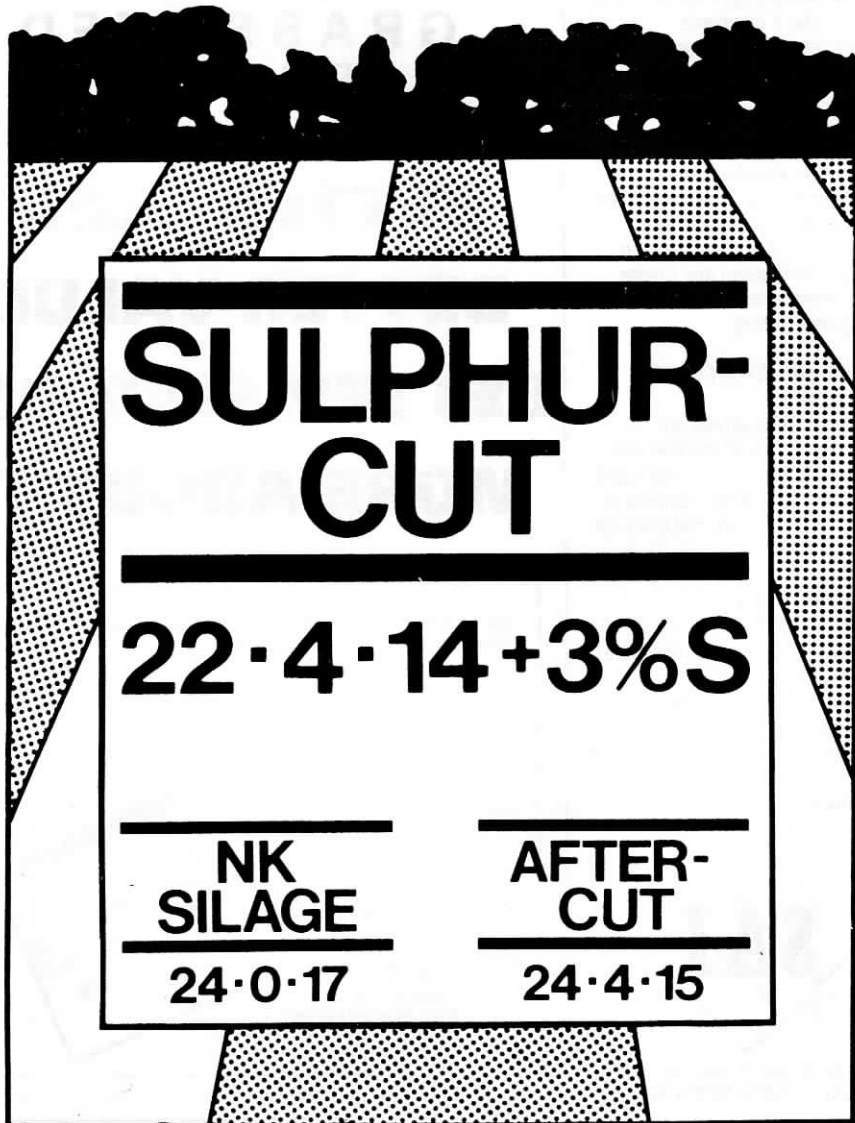


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Trials on more than 3000 cows have shown no health problems following the injection of BST. For example, ketosis, milk fever and mastitis have not increased in trials lasting up to three lactations, and reproductive performance has been unaffected.

BST is a protein and has no effect on human health. It is present in very small quantities in the milk from all cows and is not increased by administering supplementary BST. Pasteurisation destroys the BST in milk. No changes in milk quality have been observed, nor has the processing of milk into cheese and yoghurt been affected.

## **BSE - Robert Doyle**

Bovine spongiform encephalopathy is a new disease in cows, but similar diseases are found in other species, e.g. scrapie in sheep and goats, Creutzfeldt-Jakob Disease and kuru in man, and TME in farmed mink. So far BSE has only been noted in the British Isles. All diseases of this type are infectious but the agents causing them have not yet been recognised. They have long incubation periods, usually occur in adults and show progressive neurological dysfunction leading to death.

BSE was first found in November 1986 on four farms in the south of England and by June 1987 there were over 100 cases in that area. Although not recognised at the time, the first clinical cases were in fact seen in April 1985. It is suspected that the "extended common source", which was infected animal protein, was introduced in early 1982 mostly in calves.

BSE was made a notifiable disease on 21 June 1988. The feeding of ruminant-derived protein to ruminants was banned as from 18 July 1988. At the same time it was ruled that infected animals must be retained on the farm, but isolation was only required at calving since infection was thought to be via the placenta. On 8 August 1988 compulsory slaughter with compensation was introduced. The head was to be removed from the carcass and sent to the vet lab for inspection and the rest of the carcass incinerated and buried. As from 30 December 1988 the feeding of milk from BSE suspects to animals (except their own calves) or humans was banned.

The causal agent is small, filterable and resistant to formalin, heat and radiation. It produces "scrapie associated fibrils" (SAF) in the brains of cattle. Infection most likely occurs in calfhood, and the incubation period averages 4 years, with a minimum of 2½ years and a maximum of 8 years or more. The maximum suggests that carrier animals could occur which, although infected with the organism, show no symptoms in their lifetime. The origin of the infection in cattle was probably feed containing animal protein consisting of the carcasses of sheep infected with scrapie. Direct infection from sheep to cattle is not suspected.

The mystery why BSE has appeared in cattle now might be explained by an increase in the sheep population, but more likely by changes in the methods of processing feed. About 1982 the industry began to change over to a batch continuous process in which the feed probably does not reach a sufficiently high temperature to kill the organism. In addition, the fat is not now removed as previously.

The incidence of BSE is in dairy cattle, particularly Friesians and Holsteins and mainly females. On 70% of the infected farms there has been only one case, but some have had up to twenty cases.

The clinical signs are insidious, consisting of loss of condition and of milk and many behavioural signs. Most commonly the animals show apprehension, anxiety, fear or mania, and are excessively sensitive to touch or sound. There are also postural changes and changes in the gait which lead eventually to paralysis. Not all infected animals show all the signs, and it is difficult to diagnose except by postmortem tests which take several weeks. No cure has been found and all cases are fatal.

Since the disease was first recognised there have been 204 cases on 172 farms in Scotland, with 7491 cases on 4596 farms over the UK. New cases are now running at 125 per week. Since feeding of the infected feed was stopped in 1988 new cases should continue to appear about the same rate until 1993 and then decline to disappear after 1996. In the interim further controls will be introduced on the use of organs in which the organism might occur, and research on the disease will continue. Meanwhile many countries have placed embargos on the export of cattle from the UK.

**D Reid**

## **GRASSLAND IDEAS COMPETITION 1989**

### **South West Scotland Grassland Society**

Winner 1989: Jan Vos, Coopon Carse, Palnure

#### **Tyre harrow**

Jan's grassland idea was a tyre harrow for spreading dung pats on a field where a silage cut is to follow a grazing. This simple but effective device consists of cross-ply lorry tyres cut in half with a knife. They are strung together, cut-edge down, and connected to a bar for pulling behind a tractor. The dung pats are spread out without tearing up the sward giving a cleaner base for silage to grow.

Jan received his prize - a tankard donated by Kemira Fertilisers - at the Competition night at Castle Douglas on 18 January 1990.

Other ideas submitted for the 1989 Competition were a sila-plough for splitting the silage down the middle of the feeding passage; a silage barrow for distributing silage in the feeding passage; and a metal shelf for storing tyres along the sides of a covered silo. The total of four entries was a record number for the Competition, and the Society hopes that further ideas and innovations will be offered for judging in the 1990 Competition.

## ENVIRONMENTALLY RESPONSIBLE GRASSLAND MANAGEMENT

*The 1989 Winter Meeting of the British Grassland Society held at the Conference Forum, Whitechapel High Street, London on 6 December 1989*

The most recent in the long series of successful Winter Meetings held by the BGS in London launched into the field of environmental matters in contrast to previous meetings on production. The SWSGS had already taken a similar step in its Day Conference in October 1989. The London meeting was packed out with almost 200 delegates.

The morning talks were on : "The impact of grassland management practices on the environment" (Professor B Green, Wye College); "Responsible nitrogen management" (Dr D Barraclough, ICI & Dr S Jarvis, Hurley); and "Responsible use of animal manures" (Mr I Svoboda, West of Scotland College & Professor D Godwin, Silsoe College). Professor Fred Gordon, who is the BGS President Elect, then reviewed the 22 posters, which were mainly on slurry, effluent, nitrogen and wildlife conservation on grassland. In the afternoon session there were papers on "Responsible management for botanical diversity" (Dr T Wells, ITE, Monkswood); "Role of farmer conservation groups" (Mr I Crawford, Blairgowrie); "Partnership in environmental responsibility" (Mr H Currie, Leeds); and "Farming within conservation constraints" (Mr C Passmore, West Sussex). The proceedings have been published in a report available from the BGS.

The meeting was remarkable for bringing together, in a finely balanced consensus, the two opposing approaches - ecological/natural history and commercial farming. The ecologists were keen to invoke the farmer in the future management of 'natural' grasslands, whilst the farmer wished his commercial operation to be sympathetic to the environment. Inevitably grassland ecology, consideration of soil nitrates and handling of effluent and slurry require detailed scientific understanding and explanation to develop meaningful guidelines for land managers. These subjects were discussed in detail. The speakers and posters contributed a great deal to an understanding of the current position of grassland; whilst the more practical presentations displayed a real sympathy and desire to farm in harmony with wildlife though still on commercial lines.

Professor Green forecast that 3 million ha of grassland could be in surplus by 2015, and there might be a shortage of stock for grazing. Grassland could revert to scrub and woodland or large areas of the upland could be afforested, as these would not be required for food production. Depopulation of the hills seemed likely. Farmers may well be paid to look after the countryside.

Lower production and reduced fertilizer usage to avoid leaching losses were forecast by Dr Barraclough and Dr Jarvis. They also predicted a greater use of clover. More controlled slurry application using tankers or umbilical injection would be more environmentally acceptable.

Methods of managing meadows to maintain floral diversity were discussed by Dr Terry Wells. Regular but controlled grazing was an essential feature of this management.

The great value of FFWAG and farm conservation advisers was stressed by Ian Crawford. The operation of an ESA in the Pennine Dales was detailed with discussion of the practical problems. Constraints were placed on the management of the grassland, drainage, buildings, historic features and woodlands in return for ESA-farmer payments. The scheme was very popular and the Advisory Services played a key role. The ESA's were concluded to be a good example of partnership in environmental responsibility.

**G E D Tiley**

### **SOUTH WEST SCOTLAND GRASSLAND SOCIETY GRASSLAND IDEAS COMPETITION 1990-91**

The Ideas Competition attracted a record number of entries last year, and original ideas or innovations are again sought in 1990-91. These should have been developed and used by individuals on their own farms. The prize for the winner is a tankard donated by Kemira Fertilisers. Local winners may go forward to the national BGS Grassland Innovations Competition, which is held every 3 years. Entry is free and forms will be circulated with the silage competition forms.

# SILAGE ADDITIVES NOW AND IN THE NINETIES

Graeme Matthew, Technical Services Manager, SAI

*A meeting of the CSGS at the Stuart Hotel, East Kilbride  
on 12 January 1990*

ICI produce both biological and acid additives, but the biological area will have increasing importance in the nineties. Dramatic changes in biological additives will result from genetic engineering.

Over the years silage production has increased steadily to reach 35 million tonnes in 1989. Mr Matthew believed that this was about the peak and that production would now remain fairly constant. The number of silage additives available has also increased considerably as shown below.

	Organic acids	Inorganic acids	Formalin	Others	Inoculants	Enzymes	Absorbents
1977	10	1	1	2	0	0	0
1988	13	17	11	13	50	4	8

Despite the large increase in inoculants the standard of testing of these varies from country to country with France in particular carrying out rigorous tests.

The objectives in a good silage are high digestibility, good fermentation, high intakes (10t/cow), and improved animal performance. Fermentation is affected by -

- (1) The chemical composition and type of crop, weather, fertilizer nitrogen and wilting.
- (2) Machinery, and forage harvester chop length.
- (3) Ensiling technique, rate of filling, compaction, sheeting and sealing.
- (4) Silage additives.

Oxygen is the biggest enemy of good fermentation. Anaerobic conditions are necessary for the desired type of fermentation and for the lowering of the pH. Air should be kept out of the pit by sealing the silo walls with sheets or fertilizer bags. The pit should be filled quickly, rolled to compact using the Dorset Wedge method and sheeted overnight. When full the pit should be sealed properly with a heavy gauge sheet well weighted down. A trial showed that if there was no



**Table 1.** Short list for Judge's visit.

	<b>Analyses</b> (35)	<b>Inspection</b> (33)	<b>Production &amp; Utilisation</b> (32)	<b>Total</b> (100)
A Bankier Fernieshaw Cleland	34.79	33.0	29.5	97.40
J Kerr Kirklands Dunsyre	33.39	31.0	30.0	94.39
A Lyon Drumachloy Rothessay	33.12	29.5	26.5	89.12
J Minto Midhill Farm Biggar	30.52	30.0	27.0	87.52
J Telfer High Branchal Bridge of Weir	32.24	29.0	26.0	87.24
W Ralston East Drumlemble Campbeltown	31.50	28.5	27.0	87.00
W Carruthers Netherton Auchenheath	33.96	25.0	27.0	85.96
C Murray Inchbelle Kirkintilloch	28.32	30.5	26.0	84.82
R Black Braes of Boquhapple Thornhill	30.06	30.0	24.0	84.06

Table 1 shows the marks given to the ten finalists. The overall winner and recipient of the SAI Cup was Mr A Bankier, Fernieshaw, Cleland. In the Beef/Sheep Class the winner of the first prize and the Hamilton Reco Salver was Mr R Black, Braes of Boquhapple, Thornhill. Mr W Ralston, East Drumlemble, Campbeltown was awarded the prize for the best new entrant.

Table 2 shows a summary of the mean silage analyses in the competitions since 1979. The maximum number of entries occurred in 1982, and since then the numbers have decreased. Over the years the dry matter and crude protein contents have been relatively constant, but digestibility and ammonia-nitrogen levels have shown big changes.

**Table 2.** Mean Silage Analyses for Silage Competition 1979-89

<b>Year</b>	<b>Numbers Entered</b>	<b>%Dry Matter</b>	<b>%Crude Protein</b>	<b>D Value</b>	<b>Ammonia N % Total N</b>
1979	33	20.8	17.0	61.8	18.9
1980	37	21.6	15.7	61.3	16.3
1981	53	22.6	13.8	60.1	14.0
1982	59	26.6	14.6	63.6	13.6
1983	53	24.0	14.6	61.5	11.3
1984	40	23.5	15.7	66.3	11.6
1985	49	20.4	15.9	64.3	12.9
1986	43	21.6	14.8	64.4	11.8
1987	28	21.8	13.3	65.2	8.7
1988	26	21.1	14.1	65.1	6.9
1989	27	23.6	16.0	69.0	8.1

The ammonia-nitrogen levels dropped quite steadily from 18.9 % of total nitrogen in 1979 to 6.9 % in 1988. However, the second cut silages had high ammonia contents in 1989 resulting in the average for the year being slightly higher at 8.1 %. Changes in D value have not been so consistent, but the average in 1989 was 69.0 compared with 61.8 in 1979. Overall the competition has achieved its goal in encouraging the production of better silage through better techniques and attention to detail.

**C M McCombie**

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"We have used Super Sile Plus for the past three years now and have been pleased with the quality of its performance." David Yates, East Logan Farm, Castle Douglas, Kirkcudbright.

"I looked for a biological additive that we could rely on and have found one in Super Sile Plus." Roger Mills, Fields Farm, Darnhall, Winsford, Cheshire.

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# **MILK AND MEAT FROM FORAGE CROPS**

**Malcolm Castle, Tobergill, Low Coylton, Ayrshire**

Congratulations to the British Grassland Society for organizing a highly successful 3-day forum on forage crops at Peebles. The meeting was well attended by farmers, advisers and research workers who discussed the role of a wide range of crops, both now and in the future.

Forage crops have always been of minor interest in the UK, and their total area has declined to only 1.5% of the total tillage area. This decline was attributed to lack of farm labour, and the availability of purchased feedingstuffs which are easy to handle and to feed to livestock. However, there is now a renewed interest in forage crops because of improved varieties, simpler weed control, mechanical harvesting and some cost benefits. Clearly, forage crops are not suitable for all farms, but the appropriate crop, if well grown and properly utilized, can reduce overall costs of feeding. So what are the options for farmers in south-west and central Scotland?

## **Maize and fodder beet**

Unfortunately, maize is not a reliable crop in this area, and current varieties are still only on the margin for use on Scottish farms. In France and many parts of southern England forage maize was reported to be a highly attractive crop; in Scotland we can only wait for improved varieties to appear.

Without any doubt, fodder beet can be grown in many parts of this area, and with skill and care can produce really high yields of energy per hectare. The cost of growing fodder beet is high, so it is essential to have excellent yields. Weed control is vital if high yields are to be obtained. The inclusion of fodder beet in the diet of cattle will invariably increase the total intake of dry matter and, with dairy cows, increase the fat and crude protein content of the milk. Fodder beet should be considered seriously by farmers in good root-growing areas.

## **Brassica crops**

Swedes, fodder rape and kale are particularly valuable for sheep in many areas. These crops can improve the returns from the sales of both lambs and cast ewes by marketing later in the season; they can act as pioneer crops when breaking pasture; and they can be useful

as a game crop. Thus, there are sound reasons for an increase in brassica growing on many sheep farms. Frost-hardy varieties high in crude protein can help to balance the diet with swedes which are high in energy. Crop yields will have to be satisfactory, particularly in marginal areas, but an extended use of brassica crops is anticipated in these uncertain times.

### **New ideas**

Other forage crops and techniques which are being investigated at the moment are a semi-leafless forage pea, forage chicory, forage rye, whole-crop wheat, and whole-crop fodder beet. Initial results indicate that whole-crop wheat preserved with urea in a silo gives cost savings, has environmental attractions, and is an ideal complement to grass silage. Whole-crop fodder beet requires a specialized harvesting and chopping machine, but the final product containing both the tops and the roots has a high feeding value. All these new ideas require much more detailed research and costings before they can be assessed fully.

### **Summary**

If any forage crops, either old or new, are to be incorporated into a farming system, the element of risk must be low, the forage system should be simple to operate, and the economic benefits must be quite clear. With these three criteria in mind, it would appear certain that there is still only a limited place for forage crops in south-west and central Scotland. Grass still remains our major crop.

Brassica crops could be of increasing importance on many sheep farms, fodder beet might have a limited role on some dairy and beef farms, but maize and other forage crops are still speculative. Forage crops cannot offer an instant solution to our current farming problems, but it would be wise to keep a watchful eye on future varieties and developments. This BGS Symposium which attracted many visitors from south of the Border provided an excellent opportunity to do just that.



**Table 1** Short list for Judge's visit (in order of analysis)

		<b>Analyses</b> (35)	<b>Marks</b> <b>Inspection</b> (65)	<b>Total</b>
<b>Open Entries</b>				
Milligan Prize	M & J D Ramage, Several, Drummore	31.14	45.00	76.14
2nd	A & W A McWilliam, Colfin, Lochans	29.81	49.00	78.81
3rd	D Yates & Sons, East Logan, Castle Douglas	29.78	48.00	77.78
	W A Shuttleworth, Bruntsields, Lochmaben	29.67	44.00	73.67
1st and Silver Rosebowl	J & J McColm, Cairngarroch, Drummore	29.19	50.00	79.19
	J Cochrane, Portencailzie, Kirkcolm	29.00	38.00	67.00
	J Forrest & Son, Meinfoot, Ecclefechan	29.00	47.00	76.00
	R F Broatch, Thwaite, Ruthwell	28.72	42.00	70.72
<b>Beef/Sheep Entries</b>				
	J Robertson, Meiklewood, Ringford, Castle Douglas	26.95	45.0	71.95
1st and BP Trophy	H M Parker, Culhorn Parks, Stranraer	25.78	47.00	72.78
	J Cummack, Killymingan, Kirkgunzeon	24.25	43.00	67.25
	W T McCombe, Trohoughton, Dumfries	21.69	49.00	70.69
<b>Best Big Bale Entry</b>				
	W Sloan, Ryemuir, Lochmaben	25.36	N/A	N/A

The Michael Milligan Prize for the best placed entrant who had not previously won a prize, was awarded to M & J D Ramage, Several, Drummore. The prize for the best new entrants was given to A & W A McWilliam, Colfin, Lochans.

For the second year in succession R Lindsay, Overlochridge, Stewarton won the prize for the best silage (on analysis marks only) for Ayrshire. Prize winners in the other counties were W A Shuttleworth, Bruntshields, Lochmaben for Dumfries; D Yates & Sons, East Logan, Castle Douglas for Kirkcudbright; and M & J D Ramage, Several, Drummore for Wigtown.

Additional prizes, donated by Plasti-Covers Ltd, Irvine, of new plastic silage sheets were awarded to the first and second Open and Beef/Sheep winners, and big-bale bags to the Big Bale winner.

### A Grant: Silage Quality and Additive Use 1989

Table 2 summarizes the quality of the silages in the last five competitions, and shows a steady increase over the years. In 1989 89% of the entries had a D value over 65. 62% of the entries had, in fact, values over 70, compared with only 38% in 1988.

**Table 2** Silage Quality 1985-89

Quality	D-Value	% of total in each group				
		1985	1986	1987	1988	1989
Very good	>70	0	7	33	38	62
Good	65-70	48	42	31	42	27
Medium	57-64	45	51	34	20	11
Poor	<57	7	0	2	0	0
Mean DM%		20	22	22	22	23
Mean Ammonia N (% of total N)		13	11	9	8	8
No. of entries		56	57	64	66	73

In the Open Class 95% of the silages had a D value over 65 in 1989 compared with 90% in 1988. The comparable figures for the Beef/Sheep Class were 62% in 1989 and 50% in 1988. The mean dry-matter content was marginally higher in 1989 than in the previous 4 years, but the mean ammonia content was the same as in 1988.

The mean D value for the competition silages was almost 4 units higher than the average for 382 samples from the Dumfries area

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analysed by SAC, values being 69.9 and 66.1 respectively. This tends to contradict the judge's opinion that the competition values were too high. The average dry-matter content for the competition silages was 23% - 3 percentage units lower than the Dumfries silages. On the other hand, the mean crude-protein content was 16% for the competition and 14.6% for the Dumfries samples. The mean ammonia contents were the same for both - 8%.

The use of acid additives decreased from 35% in 1988 to 26% in 1989. This was counterbalanced by an increase in enzymes from 0 to 6% and in inoculants from 27% to 31%. Half of the top twenty silages were treated with inoculant additives. Molasses also showed an increase from 0 to 4%. while formalin mixtures remained constant at 6%.

## **Discussion**

Responding to questions on top and side waste Mr Bushby said that in his opinion much of the trouble was due to the difficulty of properly consolidating the silage in buildings which were too low. He also thought it was difficult to get good consolidation when bringing in too fast and not sheeting up each night. On outside pits problems were again raised by filling too fast, and also by not filling sufficiently to avoid settlement below the top of the walls. This allowed water to collect along the sides. He strongly recommended roofing silos which he claimed paid off within 10 years by giving better quality silage and additional storage space.

In closing the meeting the Chairman expressed his gratitude to the Bank of Scotland who were the main sponsors of the competition. He also thanked Kemira Fertilisers and Plasti-Covers Ltd who provided prizes, and Gordon Tiley who organised the competition. The vote of thanks to Edwin Bushby for acting as Silage Judge was proposed by Michael Milligan.

**D Reid**

# GRASSLAND ENVIRONMENTAL COMPETITION 1989-90

## South West Scotland Grassland Society

The results of the first Grassland Environmental Competition of the South West Society were announced by Malcolm Castle, Chairman of the Ayrshire, Arran and Bute FFWAG at the Competition Night of the Society in the Ernespie Hotel, Castle Douglas on 18 January 1990. Malcolm congratulated the SWSGS for being the first grassland society, as far as he knew, to have a competition of this kind. He also thanked Forum Feeds for their generous sponsorship of the event.

The competition was introduced by the Executive Committee with the objective of encouraging an increased sympathy for the environment when managing grassland. Entrants were asked to list existing features on their farm which were beneficial to nature conservation or amenity. Items need not necessarily be restricted to grassland but could include such things as pond construction; fencing to improve moorland or woodland; tree planting; hedge or dyke improvement.

Out of a total of seven entries a short list of three was selected, and these farms were judged by Malcolm Castle and the chairman of the Dumfries and Stewartry FFWAG, Andrew Campbell, Cuil, Castle Douglas. The three farms were examined for their standards of commercial farming and of nature conservation and how well the two aspects were coordinated.

The standards were high and the judges had great difficulty in sorting out the entries. However, the first prize was awarded to Derek Roan, Barnbarroch, Dalbeattie, who received a tankard and £100 cash voucher from Forum Feeds. The second prize of £50 went to Robert Ramsay, Lodge of Kelton, Castle Douglas, and the third prize of £25 to Tom Lochhead, Beyond the Burn, Mouswald.

**D Reid**

## MY GRASSLAND TODAY AND IN THE NINETIES

*A panel meeting of the CSGS in the King Robert Hotel,  
Bannockburn on 21 February 1990*

### **J Allison, Anston, Dunsyre**

The first speaker stressed two salient points in farming at the beginning of the nineties. First, bank borrowing by the agricultural industry is nearly £7 billion at present. Second, a recent census has shown that only 10% of farmers are under 35 years old. Many young sons of farmers have only experienced times of economic stress, and are, therefore, not attracted to carrying on the family farm.

When Mr Allison took over Anston in 1966 soil analyses indicated a pH of 4 to 4.5, so a great deal of lime had to be spread over the next few years. By 1970 a dressing of 88 kg/ha of nitrogen was being applied on the grassland in late March/early April followed by 377 kg/ha of a compound. Barley crops on the farm were only yielding about 3 t/ha.

In 1974 the lambing percentage was poor at 68, and the lambs would not fatten. Watery mouth was a problem in the sheep. In addition, the cows fed on hay and straw plus a barley mix were scouring, and barley yields were still poor. At that time Mr Allison did not realise that applying lime to a soil which is borderline in trace elements reduces the availability of these elements. He later learned from a book entitled "Mineral nutrition of animals" that lime inhibits copper and cobalt. Blood samples taken from the livestock confirmed this, and a copper rich mineral fed to the cows gave a rapid improvement. The West College suggested the application of copper sulphate over a quarter of each field. This not only improved the stock, but clover appeared where it had been applied.

The farm consists of 142 ha of inbye land and 506 ha of south-facing hill at 305 m. On the inbye land cropping has increased from 16 ha barley, 8 ha turnip or rape and 16 ha hay in 1972 to 36, 20 and 30 ha respectively of these crops in 1982. Stocking on the remaining 102 ha of inbye land in 1972 was 100 ewes and 70 cows. In comparison, the remaining 56 ha in 1982 carried 400 ewes and 70 cows. Thus, there were 5 livestock units per ha in 1972 and 16 units in 1982.

When the price of copper sulphate rocketed an alternative approach was tried using an organic-based fertilizer plus ammonium sulphate instead of ammonium nitrate. The organic-based fertilizer seemed to be successful, and its slow-release properties reduced leaching. The application time of this fertilizer, which contained trace elements, was not dependent on T sums, and only a single application was required. In addition, a good thick sward developed which was resistant to winter kill, and soil condition improved. A 2:1:1 organic fertilizer is applied on the hay fields at 630 kg/ha, while grazing fields receive a 4:1:1 fertilizer.

### **A Brown, East Gartmillan, Airdrie**

East Gartmillan has been farmed by the Brown family since 1851 and covers 60 ha plus 7 ha of wood. Mr Brown also rents Greenlees, a farm of 32 ha, from his brother. This lies 12 miles away and is used for summer grazing and hay, and 12 ha is cut for big-bale silage. Barley used to be grown, but the farm is now all grass. Reseeding is only done when necessary, and then in August or September to avoid the many weeds which occur in spring reseeds.

The average rainfall in the area is 1270 mm, so slurry disposal has been particularly difficult in the last few years. Slurry is not applied on silage fields after mid March.

The farm is divided into a 26 ha grazing block and a 34 ha silage block. Usually two cuts of silage are taken but sometimes a third is managed. The silage is cut with a Tarrup mower/conditioner and lifted with a Reco forager. A rough terrain loader is used at the pit, and silage making is a four-man operation. Molasses was used for many years, but it was lost in the effluent in the wet years of 1985 and 1986, and since 1987 Safesile has been applied. Potatoes were added to the pit in 1989 with good results. In 1989 the silage had a dry-matter content of 22 %, a crude protein of 18 %, a pH of 3.9, a D value of 73 and an ME of 11.2.

The grazing block is set stocked night and day. If poaching starts during the grazing season, the stock are removed and the field may be cut for silage. The grazing fields receive 126 kg/ha of nitrogen in March/April with an additional 256 kg/ha through the season.

The dairy herd consists of 120 Holstein cows plus 110 followers. The cows are housed in a cubicle shed with a drive-through feed





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passage. At only 2.13 m x 1.22 m each the cubicles are too small for modern cows. Milk yield averages 6300 kg with a feed input of 52 kg of silage per cow and 0.2 kg/l of concentrate. Young stock are introduced to cubicles at 4 months to prevent the cows lying in the gutters. Previously calving was all the year round, but now all heifers and 20 % of the cows are calved in the last week in June.

Mr Brown foresees no dramatic changes in the nineties, and he will continue to grow grass and produce milk. The increasing pressure of the green and consumer lobbies may increase the number of pollution and animal welfare restrictions imposed on farmers, but they have no divine right to cause pollution. Animal welfare is important to farmers, since poorly treated animals will not perform and will give low profit margins. The consumer lobby consists of customers who should be educated by showing them agricultural practices.

#### **D Reid, Mosside, Dalry**

Mosside is a 142 ha dairy farm 6 miles inland from the Ayrshire coast at an elevation of 90 m. The soil type is Ayrshire clay classified as 4(2) for wetness. In 1965 Mr Reid had 49 ha of land at Mosside plus another 32 ha elsewhere, and has expanded since then. At present there are 200 dairy cows and 160 followers, and he considers that the farm is overstocked. Cubicles are available for 140 cows and 62 heifers, and silage is self fed. In the past 2 years maize gluten has been the only concentrate offered. This has resulted in lower yields but margins have increased.

A Tarrup autoswather is used in silage making to prevent soil contamination. As a result of quotas the gross income is static so inputs must be reduced. This is done by making large amounts of silage. Weather conditions during silage making are very variable in this wet area.

There has been no frost for 4 years and poaching occurred even in August 1989, so slurry is always a problem. This is spread by irrigator from an Amalgar slurry tanker.

Reseeding is infrequent because newly seeded fields are very "tender" for 2-3 years. After silage 22 kg/ha of grass seed are broadcast and then covered with slurry. For vigour the seed used is a tetraploid ryegrass which is usually established after 8 weeks. However, some failures have been experienced and more work on grass establishment by direct reseeding is required.

Another 51 ha dairy farm was purchased recently without the quota. The new farm has 100 cubicles and a silage pit, and will be used to rear more young stock and to make more and better silage for the dairy cows. Mr Reid concluded that in the past 80 years there has only been one direction to take if a living is to be made for a family - more land and more animals. He doubted if that principle would change in the future.

**C M McCombie**

### **BGS GRASSLAND INNOVATIONS COMPETITION 1990**

At the "Kemira Grassland '90" event held at Stoneleigh, Warwickshire on 23-24 May 1990 another national success was achieved by a member of the South West Scotland Grassland Society. A grassland idea from Brian Walker, Rogermoor, Moffat, representing the SWSGS, was placed second in the BGS Grassland Innovations Competition. Brian's entry was the conversion of a bale trailer to a mobile concentrate feeder, which won him first prize in the SWSGS Ideas Competition in 1987 (see *Greensward* No.31, 1988). Both the national and the local SWSGS competitions receive generous sponsorship from Kemira Fertilisers.

The prize winning display was designed and made by staff of the Scottish Agricultural College, and included a striking wooden model of the feeder made by David Caldwell, Auchincruive.

# ISLE OF MAN HIGHLIGHTS

J Harris, Secretary, Manx Grassland Society

*Adapted from the Manx Grassland Newsletter No,12, 1990*

## **Use of inoculant additives on May silage.**

Of the 31 farmers completing silage making on the Isle of Man in May 1989 15 used inoculants of varying kinds (eg. Supersile, Triple Sile, Lactosile, Silo-Action) and 16 used no additive. The weather was good and the mean cutting date for the inoculant users was 24 May compared with 26 May for those with no additive. The average D value of the two groups varied only slightly being 67.8 with additive and 67.1 without, and ME values of 10.9 and 10.8 respectively. However, fermentations were certainly rather better with the additive as indicated by the average ammonia contents of 6.1 with additive and 7.4 without.

From the results of a feeding experiment with dairy cows at Hillsborough, Northern Ireland Fred Gordon concluded that inoculant silage gave extra performance not from improved analytical quality but from greater intake of silage by the cows. At the end of this trial in which 48 newly calved cows were fed silage over a 3-month period the inoculant silage was giving a daily milk yield of 24.2 kg and the no-additive silage 22.1 kg. The respective silage intakes per day for the two silages were 11.1 kg and 9.9 kg.

## **Having enough silage on the dairy farm**

The dairy costing schemes on the Isle of Man provide an opportunity to check dairy performance against silage quality over the winter in 24 herds. This exercise demonstrates how much difference the quality of the silage has made. Where all the silage made has a D value approaching 70 the monthly performance would be expected to be above target, but this rarely seems to be the case. Many factors could prevent the target being reached, eg. bad feet, mastitis, infertility, etc., but the main factor is probably NOT HAVING PLENTY OF SILAGE.

Often there is "enough" but not PLENTY, so the cows are kept a bit tight, or are brought inside a little late in the year. Alternatively an

attempt is made to satisfy the cows with second quality material, or to feed extra barley as a make up. Certainly, it is better to have plenty of 64D silage than a limited amount of 70D silage.

When planning to have PLENTY of silage one factor to remember is that the second silage cut is the most unreliable of all cuts in the Isle of Man. First-cut silage nearly always lives up to its analysis, but rarely does the second cut perform as indicated by its analysis. The main reason for this is that the cutting time for the second crop often coincides with a drought period. In addition, whereas the grass has been prevented from heading at the first cut, it usually produces a high proportion of stem and head at the second. Second cut silage is often prone to secondary fermentation due to its dry matter content, head content, weather conditions and depth of material ensiled. Thus, if the aim is to make plenty of silage, a greater area of first crop should be cut or its yield per hectare increased.

Two other factors which must be considered to ensure having plenty of silage are the season of calving and the method of feeding.

### **Reseeding 1989**

For one of the first times ever on the Isle of Man grass seeds undersown in cereals tended to be slightly better established in 1989 than those direct sown. Clover contents were also poorer than average in direct reseeded in this drought year. However, the main factor giving better results from undersowing was the poor cereal crops. Straw yields were 30-40% of normal and grain yields 50-60%.

Direct reseeding should always be the prerogative of the winter-barley grower, who has land available in good condition in August. The upland or lowland sheep farmer should also direct sow, because of his ability to manage the young grass with his sheep flock.

On farms relying on cattle, undersowing should be continued or even taken up. Newly established grass on these farms can be a worry because of soft ground conditions, and it is often left too late before grazing or it is cut for silage. Few undersowing farmers realize how much better their grass seeds would be if they went for something less than a full crop of barley.

## Early fertilizer application for silage

Observations were carried out on a Manx farm in 1989 of the effect on grass yields of early fertilizer applications. Two applications were made, the first of 55N 22P 22K and the second 55N 12P 12K. In the early treatment these were applied on 15 February and 15 March, and in the late treatment on 15 March and 28 March respectively. The yields on 16 May from the two treatments in terms of tonnes per ha silage equivalent were 18.8 and 13.8. However, when the crop was harvested on 29 May the difference had disappeared.

## Comparison of methods of silage analysis

Since 1987 an increasing number of analyses have been done for farmers using the Toluene Dry Matter method on the Isle of Man. Results obtained for the same silage by the two methods are compared in the table below.

	Old method	Toluene method
Dry matter	18.5	20.4
Crude protein	10.8	9.8
D value	62.7	65.2
ME	10.0	10.5
Ammonia nitrogen	19.0	19.0

The main differences, which occur fairly consistently, are the higher reading of 2-3 percentage units for D value and 0.5 units for ME in favour of the Toluene method.

## Farm visits of the Manx Grassland Society 1989-90

The Manx Society is exceptionally keen on organizing farm visits and, in addition to reports of visits to four farms on the island, the *Newsletter* contains detailed reports of three "overseas" trips made in 1989-90. From 24-26 October members visited six farms in Cheshire and Derbyshire. On a day trip to Northern Ireland on 23 November ten members visited Hillsborough and a farm at Newtonwards, Co. Down. Then on 26-28 February 1990 seven farms in the North Fylde area of Lancashire were visited.

Of particular interest to members of the SWSGS is the visit of the Manx Society in October 1989 to Austerton Hall, Nantwich, the farm of Clive Gurney, who is to be the judge for the next Silage Competition

of the SWSGS. The Manx Society had previously visited this 45 ha dairy farm with 100 cows in May 1986 (see *Greensward* No.30, page 39), and welcomed the opportunity to see it again at a different time of the year. In the interval Clive had become the winner of the 1989 BGS National Silage Competition.

In 1989 first-cut silage at Austerton Hall was made from 10 to 12 May cutting 34 ha at a target rate of 12 ha per day. Clive specialises in mowing a big area when the grass is as dry as possible since very little wilting is usually experienced. Two mower conditioners are used, each cutting 2.4-3.4 ha per hour, and the grass is lifted by two Jaguar 60 choppers. Starting date depends on a good crop (16 t/ha), dry ground and a good weather forecast. With a fast, dry cut it is feasible to aim for a dry-matter content of 25% and an ME of 11+. In 1989 a strong acid additive was used. Although no slurry was applied to silage fields after mid February, the intensity of the farm meant that grass was never really clean enough to be able to rely on an inoculant additive. In 1989 "Max-grass" was applied at 6 l / t as a trial, and it produced silage with an ME of 11.7, a sugar content of 8-13% and no lactic acid, which the cows found very palatable.

A new development was a 23 m x 15 m slurry store, 3-4.5 m deep, with a ramp down for the "slurry-guzzler", which really made a most efficient job of filling and spreading. Any slurry left after mid February was used in vast quantities for ploughing in before an August reseed.

Austerton Hall is a purely family farm with three times a day milking of the 100 cow herd, which has an average yield of 8000 l. Concentrate use is only about 1.2 tonnes per cow. Silage is buffer fed for most of the summer, a total of about 11 t being self fed behind an electric fence. The emphasis is on high protein (18-20%) concentrates to stimulate silage intake.

Originally the farm carried a "flying herd", but some heifers are now being reared on outside land. A Simmental bull was used on most of the herd. Calving times had also changed from half autumn / half spring in 1986 to a big proportion in June / July to take advantage of the high milk price - hence the emphasis on buffer feeding.

**D Reid**



# SLURRY DISPOSAL AND THE PREVENTION OF POLLUTION

*A joint meeting of the SWSGS and the Ayrshire, Arran and Bute FFWAG at Mosside, Dalry and the Hotel de Croft, Dalry on 27 February, 1990*

The February meeting of the SWSGS took a new form this year. Instead of consisting entirely of farm walks, only one farm was visited in the morning and the afternoon was devoted to talks and discussion at the Hotel de Croft. The importance of this topic at the present time ensured a good turnout of both SWSGS and FFWAG members.

## **Mosside, Dalry (Daniel Reid)**

The farm walk was on Daniel Reid's intensive north Ayrshire dairy farm of 142 ha, stocked with 200 dairy cows and 160 followers, all of which are fed silage. With a rainfall of 1524 mm the slurry disposal problem is acute, so Daniel has installed a slurry irrigation system with help from the West of Scotland College. At the time of the visit both of the above-ground slurry towers were full. However, it was hoped that once these were emptied the system would allow the new pumped irrigator sprinkler system to operate satisfactorily.

Slurry is pumped from the towers into a large tanker which is taken on a hard road to points where it is connected to irrigation pipes leading to a large self-moving sprinkler. If this system works successfully, it is planned to install a submersible pump in the tower. The pump would use much less power than a tractor and would be connected to a series of pipes radiating out to the fields. With the high rainfall it is essential to keep vehicles off the land.

## **Farm waste disposal - A Jones**

The first of the afternoon talks was given by A Jones of the West of Scotland College, Auchincruive. Mr Jones discussed both dirty-water handling and pumped piped systems for slurry.

Dirty water can be spread on many more days than slurry, so it is important to keep rain water, dairy and parlour washings out of slurry stores. In addition, large open areas of concrete should if possible be avoided to minimize the quantities of rainfall collected. In lagoon storage, "weeping walls" should be used to separate slurry from thin liquor, which can be easily pumped and spread.

For handling slurry submersible pumps, pipes and irrigator sprinklers are much cheaper than tractors and tankers. A yield depression of 40% has been recorded after tankers have been run over wet land. Even with a piped system maximum storage capacity is required so that the slurry can be applied at the optimum time to give maximum response to the nutrients in the slurry.

### **Farming's contribution to clean rivers - R Kerr**

Mr Kerr of the Clyde River Purification Board, Ayr, discussed new regulations affecting silage and slurry which will come into force in the near future. The exact date has not yet been decided, but from the end of March thirty eight interested bodies will be giving their opinions on the draft proposals.

In the new regulations many areas regarding silage are unclear. For example, bunkers and clamps have not been defined, nor is there mention of the use of earth-walled silos. However, the regulations state that effluent tanks for silos must be pre-formed and have a capacity of 3 cubic metres (=3000 l) for every 100 tonnes of silage. This figure seems suspect for anything but the driest of silage. The cost per cubic metre of tanks of this type is £125 compared with £25 for a precast ring tank. All new silos must be a minimum distance of 10 m from drains and water courses.

The regulations ban the application of slurry between November and March. All towers must have a 305 mm freeboard, and the reception pit must have a 2-day storage capacity. On tanks two stop cocks and a padlock will be required. This regulation will also apply to oil tanks. The minimum storage capacity for slurry will be 6 months, so keeping "dirty water" out will be of utmost importance.

**J N Watson**

### **CENTRAL SCOTLAND GRASSLAND SOCIETY 12th ANNUAL SILAGE COMPETITION 1990-91**

The 12th Annual Silage Competition of the Central Society will be run in 1990-91 with the same prizes as last year. The rules for the competition will be circulated to all members with the entry forms.

**BRITISH GRASSLAND SOCIETY/  
MEAT AND LIVESTOCK COMMISSION  
GRASS TO MEAT AWARDS MAY 1990**

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*The Grass to Meat Awards are sponsored by the BGS and the MLC to draw attention to grassland farmers who are outstandingly efficient in beef and lamb production. Britain is divided into eight areas for the purposes of the Awards and farms are considered on a geographical basis, allowing for the natural differences in season and location. Four awards are presented annually, alternating between the areas. Scotland did not feature this year, but Mr G Fitzsimon, Tregallon, Dumfries was the Scottish area winner last year. Honorary Vice-President of the SWSGS and President of the BGS, Dr John Frame, presented the awards at the Butcher's Hall, London on 4 May 1990, and his remarks at the ceremony are summarized below.*

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It was a great pleasure for me to congratulate the four worthy regional winners and to present their well-earned awards - the Cloven-Hoof trophies. Each winner also received an invitation to attend the BGS Summer Meeting in Cumbria from 8-12 July. This was the eleventh year of this successful competition, which marks a close and good relationship between the BGS and MLC.

It gave me particular pleasure because I recently assisted at the 11th BGS National Silage Competition of which the overall winner for the second time was the partnership of Don and Julie Wilkinson, County Durham. They have an annual throughput of 400 head of bull beef, fed mainly on grass silage. Their achievement illustrates, as do the Grass to Meat Awards, that well-managed grassland can play a vital role in profitable meat production.

A study of the enterprise data for the winners (see Appendix), provides ample evidence of top quality stockmanship, emphasis on efficient grassland production and utilization, and business acumen. The winners of such competitions set the targets for others to aim at.

In this era of embracing all that is 'green' we should be proud of our most natural of resources - grass, which is the renewable foundation feed of the ruminant production industry. The prosperity of most of our rural area hinges upon the annual output of grassland and we neglect the efficiency of its use at our peril.

We have attained high standards in grazing and silage management in this country, and the BGS and MLC have outstanding records in grassland developments and advances. However, we cannot rest on our laurels. Market-led meat products, consumer-orientated quality criteria and production methods which are sympathetic to animal welfare and friendly to the environment are today's challenges and opportunities, which call for swift reaction.

In addition, 1992 draws ever closer, and there will be dramatic intensification of competitive pressure from EEC countries. The economic isolation of the western grassland areas will increase when the 'Chunnel' opens in 1993. There could also be further competition to meet as eastern European countries develop their farming technology and seek to penetrate our consumer markets. Trade liberalization is also the order of the future in global terms.

As we enter the nineties the BGS will not shirk from the challenge of improving standards of British grassmanship - by adapting Society activities, by introducing innovative ideas, by forward planning, by setting up special working groups and by strengthening its links with local grassland societies, now 71 in number and with 12000 members. To me the SWSGS is one of the brightest jewels in the BGS crown.

An R & D committee of the BGS has an important role to act as a catalyst in trying to attract resources for essential grassland investigations. This is necessary to offset the withdrawal of government R & D funding for projects perceived as close to commercial application and exploitation. Thus, there has been a significant loss of existing projects and the final cutbacks are due in March 1991.

Limited funding has come from organizations such as the MLC, but mainly for areas close to the animal product or beyond the farm gate. It has proved difficult to attract adequate resources for the less glamorous but vital areas of grassland R & D, which cannot be identified with specific animal species or products, e.g. grazing efficiency, poaching by stock, wheel compaction of soil, systems evaluation of forage legumes, and evaluation of herbage varieties.

The argument for funding such projects is not simply because of the withdrawal of government support or because of job losses but the avoidance of blunting British grassland agriculture's competitive edge in the future. The BGS supports a national strategy involving the



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farming community and ancillary industries, in which funding and the necessary R & D are coordinated, rather than done on an 'ad hoc' basis. This would ensure that the continuum of basic-strategic-applied-development work which has underpinned Britain's grassland farming and animal production in the past is not lost. If parts of the continuum are lost this will delight our European and other competitors, many of whom are intensifying their grassland R & D in anticipation of 1992.

**John Frame**

## APPENDIX

**North Region Winner** H W Richardson & Son, The Reenes, Hexham, Northumberland

Herd Data (average of last 2 years) for hill suckler herd

No. of cows	55
Breed of cows	Hereford x Friesian
Breed of bull	Charolais, Limousin
% of calves reared	93
Daily liveweight gain (kg)	1.05
Stocking rate (cows/ha)	1.1
N fertilizer use (kg/ha)	18
Gross margin (£/cow)	309
Gross margin (£/ha)	340

**Welsh Winner** J H A Price & Sons, Newton and Goat House Farms, Presteigne

Flock Data (average of last 2 years) for upland sheep flock

No. of ewes	394
Type of ewes	Beulah, Welsh Mule and British Milksh sheep x Beulah
Type of ram	Texel
Lambs reared per ewe	1.50
Summer stocking rate (ewes/ha)	16.0
Lamb liveweight produced (kg/ha)	733
Liveweight stocked (kg/ha)	1236
Nitrogen use (kg/ha)	56
Lamb sales (£/ewe)	63.29
Grass and forage cost (£/ewe)	3.02
Total variable costs (£/ewe)	10.00
Gross margin (£/ewe)	59.26
Gross margin (£/ha)	821

**South-East Region Winner** Mr S R Hart, Hammonds Farm, Reading, Berks

Flock Data (average of last 2 years) for lowland sheep flock

No. of ewes	1356
Type of ewes	Hartline
Type of ram	Hartline
Lambs reared per ewe	1.93
Summer stocking rate (ewes/ha)	12.2
Lamb liveweight produced (kg/ha)	740
Liveweight stocked (kg/ha)	1677
Nitrogen use (kg/ha)	171
Lamb sales (£/ewe)	74.16
Grass and forage cost (£/ewe)	8.14
Total variable costs (£/ewe)	23.70
Gross margin (£/ewe)	55.68
Gross margin (£/ha)	588

**East Region Winner** G Watchorn & Son, Grange Farm, Oakham, Leics

Flock Data (average of last 2 years) for lowland sheep flock

No. of ewes	544
Type of ewes	Mixed Crossbreds
Type of ram	Suffolk
Lambs reared per ewe	1.50
Summer stocking rate (ewes/ha)	19.0
Lamb liveweight produced (kg/ha)	850
Liveweight stocked (kg/ha)	1973
Nitrogen use (kg/ha)	93
Grass and forage cost (£/ewe)	1.79
Total variable costs (£/ewe)	20.74
Gross margin (£/ewe)	47.33
Gross margin (£/ha)	895



# **ROUNDUP AND STING : ESSENTIAL TOOLS FOR THE GRASSLAND FARMER**

**Simon Stell, Monsanto Agricultural Company**

I would be surprised if, in 1990, there was any farmer who had not already used Roundup herbicide and obtained the benefits of long term weed control and an efficient grass take in a subsequent reseed. However, Roundup has come down in price by almost a third in real terms in the last year or so and can now be considered an essential tool for managing the farm, not a luxury item. Whether the plan is to reseed or to destroy old grass containing docks, etc., Roundup has a vital part to play in obtaining the best take of grass or other crop.

The pre-silage / pre-graze method of applying Roundup, which has been proven over 6 years of commercial usage, gives three key benefits:-

- (1) It allows docks, couch and other pasture weeds to be sprayed at the optimum stage for best results.
- (2) It provides the earliest possible entry into the following crop or reseed for timely establishment.
- (3) It maximizes the use of the grass growth, i.e. no waste.

The safety aspects of spraying Roundup onto silage or hay crops are important. Exhaustive studies have confirmed the complete safety to stock of feeding fodder treated with Roundup. Further work has shown that the quality of silage or hay is not affected by Roundup treatment - in fact monitoring a number of such silage samples in Scotland over 6 years has shown a benefit in terms of slightly higher D value compared with untreated silages.

Where paraquat might have been used to burn off grass with minimal regrowth, there is now a cost-effective alternative in the herbicide Sting. This is based on glyphosate and requires only 2.5-5 cm of fresh growth to effectively kill grass. Recent trials have shown that Sting is superior to paraquat in controlling ryegrass. Ploughing or cultivations can commence 24 hours after spraying since Sting will be fully translocated to the roots by then and the grass will be dying.

In conclusion, because of recent price reductions, Roundup and Sting need no longer be considered luxury items - more as essential tools to allow the grassland farmer to maximize his productivity.

# BGS NATIONAL SILAGE COMPETITION 1990

The BGS National Silage Competition run in association with ICI Fertilizers, ADAS and SAC was won this year by husband and wife partnership Don and Julie Wilkinson who farm at Newton Ketton, Brafferton, Near Darlington, Co Durham. The Wilkinsons produce bull beef, and this was the second time they have received the Nitram Trophy, having won it before in 1987. The runner-up was dairy farmer Philip Berrisford of Dairy House Farm, Brereton, Sandbach, Cheshire. Professor Phil Thomas of the West of Scotland College presented the awards.

## **Judges' comments**

The national judges remarked that grass production from some swards was limited by inadequate phosphate and potash applications. They also suggested that where farm resources were limited, fast silage making could be achieved by using a contractor and thereby improving silage quality.

For environmental and safety reasons it was recommended that silos should have walls of sufficient strength to cope with the larger quantities of silage being made. On some farms effluent collection facilities were found wanting. Good results were always associated with efficient covering of the silo with plastic sheeting firmly and evenly weighted down, especially at the sides.

The main point arising from the judges' appraisal of silage feeding was that good quality silage was not always used to its full potential. They also suggested that where high levels of silage were being fed the associated supplements did not have a high enough protein content.

## **Extracts from President John Frame's remarks**

Over the last 25 years the quantity of silage made in the UK has increased annually by about 1.5 million tonnes on a fresh weight basis or by 0.3 million tonnes of dry matter. Currently about 40 million tonnes fresh is made each year. This is equivalent to 8 million tonnes of dry matter, which is three times the amount of hay made. Silage quality has also improved and it can now be offered to appetite rather than restricted as before. Nevertheless, the theoretical potential of silage has not yet been reached due to problems associated with voluntary intake and nutrient utilization. Researchers are still striving

to solve these, but advances are being made in the characterization of individual nutrients and in achieving correction of deficiencies or imbalances by target supplementation.

This competition, the eleventh in the series, has played an important part in upgrading the role of silage. The winners are the pacemakers for others to follow. Competitions have long been a feature of British farming, and have undoubtedly aided advances in all branches of agriculture in the past. It is illuminating and humbling to scan old publications and see that one's bright ideas have sometimes been recorded before. For example, over 100 years ago (1886 to be precise) the results of silo and silage stack competitions (probably the first in the UK) were published, together with the judges' remarks, in the *Journal of the Royal Agricultural Society of England*. Some of the comments would not be out of place today : -

'The crops, however, ought to be cut just before they are ripe'.

'The golden rule in silage making is - look after the consolidation of the sides, and the centre will look after itself'.

'Chaffing (chopping) enables consolidation and reduces the quantity of air and consequently the amount of oxidation'.

'The chief advantages of silage making against hay making is its comparative independence of the weather; that the fodder is handled while green, without any risk of the tender and nutritious leaves being lost on the ground as in hay making; that the resulting silage is succulent and palatable; and that on purely grazing farms it is now possible to obtain a portion of the grass crop for winter use in such a state as to equal the effect of summer-fed grass'.

Finally, although there had to be a 'first among equals' all the regional finalists were winners in this premier silage competition - the big one ! - in the UK.

## SPRING FARM VISIT IN THE STEWARTRY

*A joint visit of the SWSGS and Dumfries and Galloway FFWAG to Barnbarroch, Kippford, Dalbeattie on 15 May 1990*

By the kind invitation of Mr Derek Roan about 40 members of the SWSGS and Dumfries and Galloway FFWAG enjoyed an interesting evening walk on Barnbarroch. In 1989 Derek won first prize for the best combination of commercial farming with conservation of the environment in the first SWSGS Grassland Environmental Competition. This was also the first such competition in Scotland and probably in the UK. The farm walk was introduced by Mr Andrew Campbell, who is chairman of the Dumfries and Galloway FFWAG. Helping Derek with the commentary were Miss June Randell, local FFWAG adviser, Mr Vincent Fleming of the Nature Conservancy Council and Miss Mandie Currie, SAC Edinburgh. The meeting was generously sponsored by Forum Feeds represented at the visit by Mr Blyth Thomson.

### **The farming enterprise**

Barnbarroch is an all-grass farm of 120 ha beautifully situated overlooking the Urr estuary, and it has been farmed by Derek's family since 1895. The farm lies within the Stewartry Environmentally Sensitive Area (ESA). Derek has been in the scheme since 1988. Rough grazing covers 40 ha of the farm, and the 80 ha of long-term arable grassland include typical Stewartry rock outcrops. Two or three cuts of silage are taken each year on 32 ha, and 5 ha are cut for hay.

The dairy herd consists of 90 Holstein-Friesians, and three-quarters of the cows are bred pure through AI, the rest being crossed with Limousin. All calves are reared and most are sold as stores. Herd replacements are reared on another farm in which Derek is a partner. A herd of 25 sucklers was recently introduced, and these are also crossed with Limousin. There are about 150 young beef stock on the farm. The sheep flock consists of 140 greyface ewes and 40 hoggs. The ewes are crossed to Charollais rams, and lambs are sold fat off the farm.

A burn running under the farm steading poses an effluent problem. To prevent silage effluent getting into this burn perforated pipe has been laid in the earth bank of the silo, draining into the slurry tank under a slatted shed. As an added precaution perforated pipe is also

laid down the sides of the silo before it is filled. Parlour washings run into the tank in the slatted shed. The cubicle shed is built into the rock at the top of the steading, and a slurry tank in the corner of this can be emptied into the pit in the lower slatted shed.

### **Conservation projects**

Derek stressed that he had no large conservation projects on Barnbarroch, only small areas which had been fitted into the commercial farming pattern. An example was a small mixed tree plantation on a slope above the cubicle shed. This was planted about 2 years ago to blend with mature woodland above, with the help of a 50% grant for planting and fencing from the Countryside Commission for Scotland. Oak and copper beech were planted at the top, with other smaller native species such as cherry, rowan and maple further down. Nearest the building are shrubs such as hazel, which could be cut back if necessary and allowed to regrow. All the trees are planted in tubes, at a cost of £1 for tree, tube and stake. A row of Cupressus had also been planted on the earth bank of the silo.

Members next visited an area of whins and grass which had been fenced off under the ESA scheme. No fertilizers or sprays are applied in this area but grazing is allowed and indeed encouraged to preserve the grassland flora. Ewes and lambs are put here after lambing. Staff from the Macaulay Land Use Research Institute are annually monitoring the whins under these controlled grazing conditions for 6 years. If fertilizers are applied to the natural Galloway grassland on knolls and hollows species of wild plants are reduced, but without fertilizers there is a much greater diversity of sedges and other species. One rare Galloway species to be found here is the **Whorled Caraway** (*Carum verticillatum*). Grazing is essential to encourage species diversity, and to keep out tussocks and ragwort.

### **Dykes and hedges**

Under the 5-year ESA agreement a farmer is paid to farm to conserve the landscape, wildlife and historic interest of the area. No restrictions are imposed on most of the farm, and farming can be continued as before on the improved areas. Rebuilding of dykes is another project which is grant aided in the ESA, though Derek has always tried to improve his dykes. However, increased demand has now made it difficult to get good dykers. Grants are also available for hedge renovation, and members inspected an old hedge which had been cut

back to stumps to encourage natural regrowth. Young hawthorns had been planted between the stumps to thicken the hedge up more quickly.

### **Arable grassland**

On the way back to the steading some of the silage fields down near river level were seen. A urea-based fertilizer is used for the first growth on these fields, but not for later cuts in case the weather gets too dry. Derek includes clover in all his seeds mixtures, but does not place much reliance on it as most of his arable grassland receives heavy dressings of nitrogen fertilizer and slurry.

The evening concluded with an excellent tea with home baking provided by Mrs Roan. The vote of thanks was given by Mr Ian Evans, Chairman of the SWSGS, who expressed the appreciation of the Society and the local FFWAG to Mr and Mrs Roan for their hospitality. He also thanked June Randell, Vincent Fleming and Mandie Currie for contributing to the success of the evening, and Mr Blyth Thomson of Forum Feeds for generous sponsorship.

**D Reid**

## **SOUTH WEST SCOTLAND GRASSLAND SOCIETY GRASSLAND ENVIRONMENTAL COMPETITION 1990-91**

The Grassland Environmental Competition introduced last year by the SWSGS was a great success, and was followed by a memorable visit to the farm of the first prize winner - Derek Roan, Barnbarroch, Kippford, Dalbeattie - in May 1990. This competition, which is unique among the grassland societies in Scotland and probably in the UK also, will be continued in 1990-91. The objective is to encourage an increased sympathy for the environment when carrying out grassland management. Entry is free and forms will be circulated with the silage competition forms. A short leet will be selected for final judging.

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