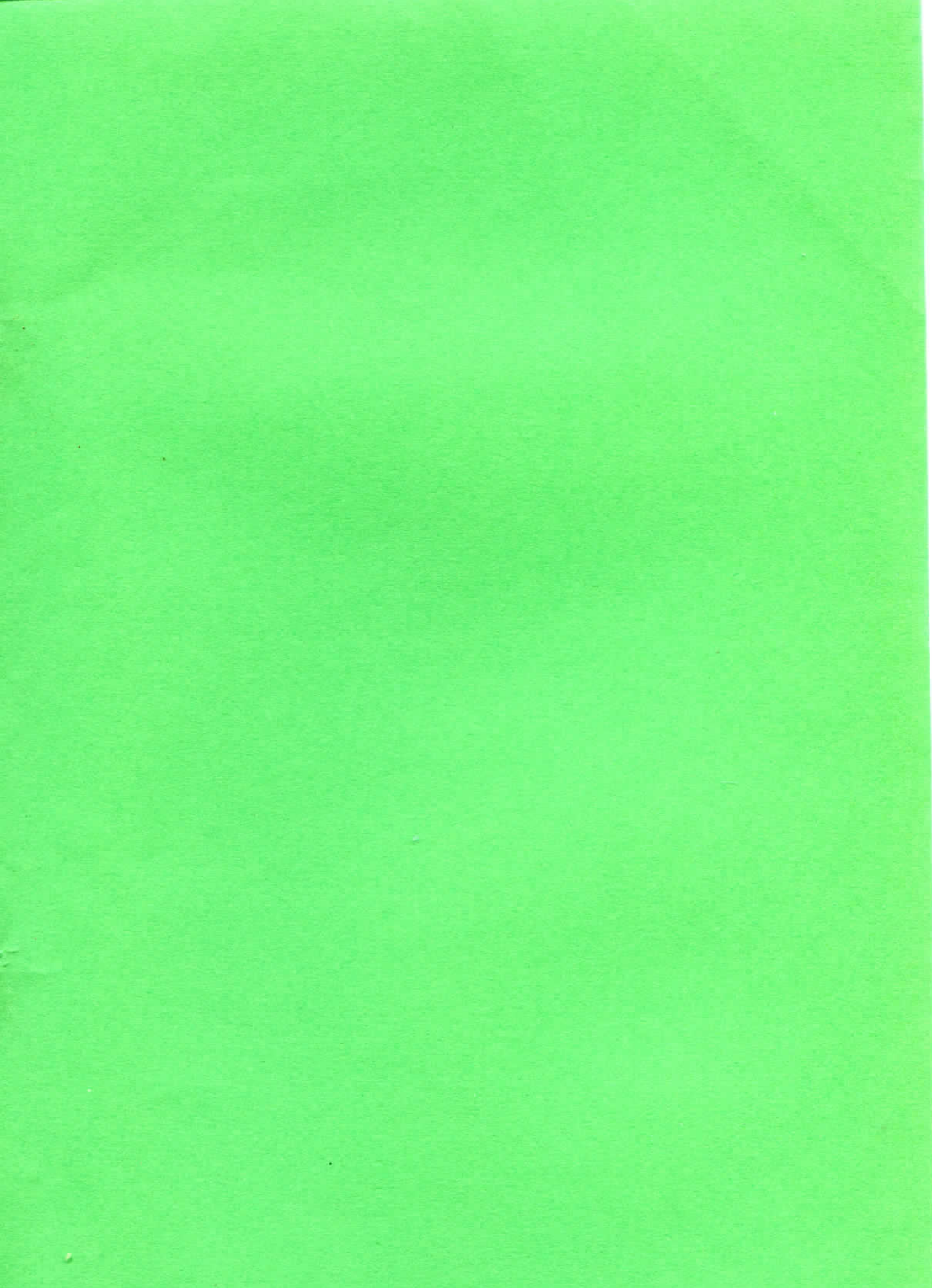


Greensward

1991

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

No. 34



CONTENTS

| | Page |
|---|-------------|
| Foreword | 2 |
| Officials SWSGS & CSGS | 3 |
| Maximizing Grass Utilization (BGS) - D Reid | 5 |
| Grass - P Gordon-Duff-Pennington | 10 |
| Summer Walk on Crichton Royal Farm (SWSGS) - G Tiley | 12 |
| Dairying Without Concentrates (SWSGS) - G Tedstone | 14 |
| Winter Farm Visits to Dumfries (SWSGS) - G Tiley | 17 |
| The Health of the Grazing Animal (CSGS) - D Logue | 19 |
| Beef Deserves Quality Silage (SWSGS) - D Wilkinson | 22 |
| Management Issues in the 1990's (BGS) - WS Jamieson | 24 |
| Aiton's View - D Reid | 27 |
| CSGS Silage Competition 1990-91 | 30 |
| Grassland in the 1990's - J Frame | 33 |
| Forage Conservation Towards 2000 - M E Castle | 35 |
| Isle of Man Highlights - J Harris | 38 |
| SWSGS Silage Competition 1990-91 | 40 |
| Clover for Beef (SWSGS) - D Younie | 47 |
| My Business Strategy for the Nineties (CSGS) - C McCombie | 52 |
| The Special SAC Label - C Mackie | 55 |
| Sward Establishment - J Frame | 58 |
| Environmental Pollution & Pesticides - G Tiley | 60 |
| Spring Farm Visits in Wigtown (SWSGS) - G Tiley | 62 |

FOREWORD

A novel feature of this number of *Greensward* is the introduction of poetry to its pages. At the BGS Annual Dinner in 1990 a former member of the South West Society - Patrick Gordon-Duff-Pennington - was the after-dinner speaker. He concluded his speech with a poem "Grass" dedicated to the late I V Hunt, who was a founder member and Honorary Life Vice-President of the South West Society. As a tribute to Idris I obtained Patrick's kind permission to print the poem in the Journal.

The articles in this Journal cover a wide range of subjects from future trends in grassland management to the continuing topic of environmental pollution. Low-input systems of animal production are receiving considerable attention at present, and in this respect the article on clover for beef is recommended reading.

As the report of the SWSGS Silage Competition suggests, the quality of the silages entered is continuing to increase. In fact, when the results from this Competition were analysed it was found necessary to add another category for silages with D values in excess of 75. Michael Milligan, who was the South West Society champion, submitted a silage with an all-time high D value of 82. I only hope that results like this are not dissuading some farmers from "having a go". Meanwhile, congratulations to the Central Society champions, J Clark & Sons, Dunrod, Inverkip for winning the first prize in the Scottish Regional Silage Competition.

Although it is mentioned in a separate notice, I must record here my personal congratulations to Dr Ron Harkess on being awarded the OBE in the 1991 Honours List. Ron was my predecessor as Journal Editor.

I gratefully acknowledge the continuing assistance of Dr Gordon Tiley, Secretary of the South West Society, in the preparation of this Journal. Thanks are also due to Mrs June Bishop of the Publishing & Visual Presentation Department of the Scottish Agricultural College, Auchincruive for her help.

David Reid - Journal Editor

International Code Number - ISSN- 0017-4092

SOUTH-WEST SCOTLAND GRASSLAND SOCIETY EXECUTIVE COMMITTEE 1990-91

| | |
|-----------------------------------|---|
| Chairman | R I R Evans, Penkiln, Garlieston, Newton Stewart, DG8 8AB |
| Vice-Chairman | J Forrest, Meinfoot, Ecclefechan, Lockerbie, DG11 3JF |
| Past Chairman | J N Watson, 2 Mill Ellers, Dalston, Carlisle, CA5 7QH |
| Secretary | Dr G E D Tiley, The Scottish Agricultural College, Auchincruive, Ayr, KA6 5HW |
| Treasurer | R F Gooding, The Scottish Agricultural College, Auchincruive, Ayr, KA6 5HW |
| Journal Editor | Dr D Reid, 10 Woodend Road, Alloway, Ayr, KA7 4QR |
| Ayrshire Members | R H Dalrymple, Crailoch, Ballantrae, Girvan, KA26 0LW H McKeever, Hillhead, Tarbolton, Mauchline, KA5 5NT N Day, College Office, 20 Miller Road, Ayr, KA7 2BQ |
| Dumfriesshire Members | W T McCombe, Trohoughton, Bankend Road, Dumfries, DG1 4TR R Allbrooke, College Office, St Mary's Industrial Estate, Dumfries, DG1 1DX |
| Kirkcudbrightshire Members | A Irving, Largs, Twynholm, Kirkcudbright, DG6 4NR A Crichton, Killymingan, Kirkgunzeon, Dumfries, DG2 8LE A D Grant, College Office, St Mary's Industrial Estate, Dumfries, DG1 1DX |
| Wigtown Members | D McColm, Cairngarroch, Drummore, Stranraer, DG9 9RB C J McKay, Low Malzie, Wigtown, DG8 9BE S J Donnelly, College Office, 99 George Street, Stranraer, DG9 7JP |
| Co-opted Member | C M McCombie, Central Scotland Grassland Society, University of Stirling, Innovation Park, Stirling, FK9 4NF |

**CENTRAL SCOTLAND GRASSLAND SOCIETY
EXECUTIVE COMMITTEE 1990-91**

| | |
|----------------------|---|
| Chairman | G Hamilton, High Garrion, Larkhall |
| Vice-Chairman | T Brown, Muirhouse, Libberton, Carnwath |
| Past Chairman | W Lawson, Leabrae, Parklea Farm, Carmunnock, Glasgow |
| Secretary | C M McCombie, SAC, Alpha Centre, Stirling University Innovation Park, Hillfoots Road, Stirling, FK9 4NF |
| Treasurer | K Phillips, SAC, 57 High Street, Lanark, ML11 7LF |

Committee Members

| | |
|-------------------------------|---|
| Retire AGM 1991 | W Bankier, Fernieshaw, Cleland, Motherwell G Millar Jnr, Gallamuir, Plean, Stirling C Telfer, North Branchal, Bridge of Weir |
| Retire AGM 1992 | R Miller, Newlands, Uddingston J McFarlane, Boreland, Gartmore, Stirling J Brown, Gaindykehead, By Airdrie |
| Retire AGM 1993 | G Blackhall, Hill of Westerhouse, Carluke J Boyd, Dechmont, Cambuslang R Reid, Glenn Farm, Falkirk |
| College Representative | D Scrimgeour, SAC, 111 Abercorn Street, Paisley, PA3 4AT |
| Co-opted Members | N C Shannon, SAI plc, Whitelees Road, Lanark Dr G E D Tiley, SWSGS, SAC, Auchincruive, Ayr, KA6 5HW I Kerr, Kirklands, Dunsyre, Carnwath W Andrew Jnr, Crossflat, Kilbarchan W Black, Orchard Farm, Bellshill |

MAXIMISING GRASS UTILISATION

THE BRITISH GRASSLAND SOCIETY SUMMER VISIT TO CUMBRIA, 1990

David Reid, Journal Editor

In July 1990 after a gap of 25 years the BGS Summer Meeting once again visited Cumbria - originally the two counties of Cumberland and Westmorland - at the invitation of the Cumbria Grassland Society. Newton Rigg College near Penrith was the base for the meeting, which had the theme "Maximising grass utilisation in changing times". There were about 170 resident and 60 day delegates.

The meeting was opened by the BGS President John Frame and a welcome to Cumbria was given by the Host Vice-President Edwin Bushby. In his introductory talk Michael Boothroyd, Principal of Newton Rigg, said that Cumbria is the second largest county in England with an area of 688,000 ha but a population of only 475,000. It is a county of great contrasts though basically cool, wet and windy. The land climbs from sea level to just under 1000 m with 25% of the county above 300 m. Rainfall ranges from 750 to 4750 mm. There is no Grade 1 land and less than 2% of Grade 2. Grades 3, 4 and 5 occupy 30%, 23% and 45% respectively of the total area. The best land is in the Eden Valley and along the coast.

Grassland covers 90% of the farmed area, and 50% of the total agricultural output comes from 150,000 dairy cows. There are also over 1 million breeding sheep in the county. Tourism is becoming increasingly important with more than 12 million people visiting the Lake District National Park each year.

Bulk fertilizer handling

On the first day the programme began with a visit to the fertilizer plant of Carrs Agriculture Ltd at The Wath, Silloth. Carrs introduced bulk handling of farm fertilizers to Cumbria in 1985. The Dutch system was adopted in which fertilizer is delivered in bulk direct to 10 or 20 ton silos on the farm, so that no on-farm handling equipment is required. A batch blending plant was opened by Carrs in 1986.

This is computer controlled and allows any fertilizer ratio to be produced at the touch of a button to meet farm requirements. Fertilizers can now also be supplied in 500kg bags.

Coastal dairy farms

From the fertilizer plant delegates walked across fields to Hartlaw farmed by the chairman of the Local Organizing Committee, Walton Slack, in partnership with his wife Kathleen and son Malcolm. Walton is also a magistrate and a member of the local Rivers Authority Board.

Hartlaw, which was visited by the Society in 1965, is a typical coastal dairy farm with 102 ha in grass and 19 ha in barley. The dairy herd of 140 pedigree Friesians has an average yield of 6338 l per cow with a concentrate input of 0.18 per l. A low cost system is used in which the cows are fed straights in winter and set stocked in summer. Some of the cows and heifers are put to Blonde d'Aquitane or Limousin. There are about 190 store cattle on the farm and these are sold at 18-20 months of age. A total of 2600 t of silage is made in two pits from three cuts. The stocking rate is 2.79 cows per ha and the margin over purchased feed and fertilizer is £2660 per ha.

A feature of Hartlaw farm is the control system which provides 12 months storage for slurry in a sleeper-sided Irish midden, and prevents contamination of the watercourses. Liquid runs out of 19 mm gaps on three sides and is pumped either to an above-ground store or underground for 400 m to an 8 ha silage field where it is applied by an automatic mobile irrigator.

The next stop was at another farm visited in 1965 namely the exposed dairy unit of Watson Hill, Whangs and Low Walton on the coast at Egremont. Edwin Bushby the Host Vice President for this meeting and a past President of the BGS came here with his father in 1949 and over the years has built up a family unit of about 200 ha. The enterprise was divided between their two sons when Edwin and his wife Edith retired from the partnership in March 1989. William now farms Watson Hill and John farms Whangs and Low Walton.

270 pedigree Holstein cows are milked in two units. The average milk yield per cow is 7450 l with a concentrate input of 0.24 kg per l. The grassland management system has been to cut and graze the dairy cow land and to cut other land three times followed by an autumn grazing.

The youngstock land is not suitable for cutting and has been intensively grazed. The margin over purchase feed and fertilizer in the year before the unit was divided was £910 per ha.

Sheep only

The second day began with a visit to Greenquarries, Rosley which is a Church Commission property just outside a Less Favoured Area, and is farmed by John Hetherington and his sons Michael and Peter. This 199 ha farm is mainly grass and is stocked solely with sheep all 5000 of which are bought in from the harder hills in September/October as ewe lambs. They are set stocked at 25-30 per ha on grass and sold in August/September for breeding.

On the heavy clay soil of this farm with 1020 mm of rain there is no conservation of grass. The system adopted gives financial returns about equal to continuous grain growing with yields of 2 t/ha of barley.

Less favoured area

The next farm visited was Inglewood Edge at Dalston which was purchased by John Hall's grandfather in 1947. The farm is in a Less Favoured Area lying on heavy clay and rising to 305 m with an average rainfall of 1520 mm. This is a livestock rearing farm of 296 ha mainly in permanent pasture.

The beef cattle consist of 360 single suckled cows served mainly to Blonde D'Aquitane and Belgian Blue. Calves are sold as yearlings in the following spring. The sheep flock is made up of 680 Swaledale and 480 Texel cross ewes. Grazing is on a set-stocking system mainly with sheep and cattle mixed.

About 80 ha are mown for first cut silage in mid June, and 40 ha for second cut in early August. The silage fields are renovated as necessary, but there is no regular reseeding policy.

Hill management

On a glorious sunny afternoon the delegates visited and enjoyed tremendous views from the National Trust farm of Glencoyne, Glenridding which is tenanted by George and Norman Wilson. Glencoyne lies on the western shore of Ullswater Lake rising from 150 to 900 m above sea level with a total area of 1820 ha. Only 24 ha of this are meadow land, about 1200 ha are enclosed grazing and the rest open fell. The annual rainfall is 2540 mm.

The stock consist of 3000 ewes, mainly Swaledales with a few Herdwicks, and a suckler herd of 40 Angus/Friesian cross cows. The cows are crossed with a Charolais bull, and the calves are single suckled.

Feed blocks and fertilizers are distributed to the hill and inaccessible areas by helicopter. These areas have been improved and are more efficiently used nowadays. The only forage conserved is hay, which is made on the meadow land.

The principles of good hill management were well demonstrated on Glencoyne with mention made of the problems and the modifications of the farming systems necessary in the Lakeland hills. Tourism has been developed with regular bus loads of overseas visitors being shown the workings of this Lakeland hill farm. George Wilson had many anecdotes to recount relating to this diversification.

Woodland and wildlife conservation

The programme on the third day concentrated on the Eden Valley and began with a visit to the traditional Cumbrian stock-rearing farm of Mr and Mrs Steele Addison. Keld Farm near Appleby consists of 84 ha including 19 ha of woodland at 120 to 150 m above sea level on a heavy clay soil. Mr Addison took over the farm from a tenant in 1988 and has built up the stock numbers to 210 mule ewes and lambs, 35 pedigree Simmental suckler cattle and 60 store beef cattle in July 1990. A low input system of grassland management is used, and 2.5 ha of barley and 2.5 ha of turnips were grown in 1990 to save on bought in feed.

The main purpose of the visit was to see the conservation features of the farm and most of the time was spent walking through the woodland. This consists of 6 ha of oak planted between 1860 and 1900, and 13 ha of mixed woodland planted since 1970. An area of river bank was planted in 1988 to encourage otters, and two ponds were created in 1989. Recent planting work has been done by Mr Addison and family with grants from the Countryside Commission and previously from the Forestry Commission. The woodland areas have created large habitats for wildlife and a variety of birds and wild flowers were seen. Mr Addison aims to continue planting to provide a growing asset for future generations of the family.

Intensive dairying

In the last afternoon of the meeting two intensive dairy farms were visited. The first was Eden View at Kirkby Thore which is farmed by Richard and George Skelton who have many times won the silage competition of the Cumbria Society. Eden View is a 60 ha family dairy unit on sandy loam and is prone to summer drought, so stubble turnips form an important part of the cows' summer diet. Except for the turnips the farm is all in grass and three cuts of silage are taken.

The dairy herd consists of 107 cows and all replacements are bought in. The cows are put to beef bulls and about 50 heifer calves are reared for sale as stores at 18 months. The yield per cow is 6697 l with a margin over feed and fertilizers of £2209 per ha.

The second dairy farm visited was Monks House, Plumpton farmed by Irvine Turnbull. This 162 ha farm is again on a sandy loam with a rainfall of 760 mm at an elevation of 150 m. Grass makes up 134 ha and barley 28 ha. The dairy herd consists of 200 Holstein/Friesian cows with an average yield of 7130 l. The cows are strip grazed and all surplus grass is made into silage. Following two cuts of silage, the cows are set stocked and surplus grass made into a third cut. Cows not used for breeding herd replacements are crossed with a Belgian Blue and all calves are reared for the beef unit. This produces about 100-120 animals sold per year.

At the annual dinner of the Society the speaker was Patrick Gordon-Duff-Pennington, a former member of the SWSGS, who now resides at Muncaster Castle in West Cumbria. Patrick ended his speech with a poem which he had specially written for the occasion and had dedicated to the late I V Hunt. With the kind permission of the poet this poem is presented in full later in the journal.

SOUTH WEST SCOTLAND GRASSLAND SOCIETY

19th ANNUAL SILAGE COMPETITION 1991-92

The South West Society will again run an Annual Silage Competition this year. The marking system will be unchanged, and the pre-judging procedure tested last year will be repeated. Full details of the rules for the Competition will be sent out with the entry forms.

GRASS

Patrick Gordon-Duff-Pennington
Muncaster Castle, Ravenglass, Cumbria

Patrick concluded his speech at the British Grassland Society Dinner in Carlisle on 11 July 1990 with this poem which he wrote specially for the occasion and dedicated to the late I.V Hunt

Grass - the miracle of green that comes each Spring!
For years I sowed my seed
Out of a fiddle, fertiliser out of a sheet,
Proud of a long forgotten knack;
Rhythm of arms and legs across the waiting field
From which I'd lifted centuries of stones,
While children stood with buckets by the dyke,
Waiting to top me up.
Each Spring
My heart was lifted high
To watch the overwintered stirks
Grazing at peace in Maytime
On the evening sward,
Along with ewes I'd sometimes helped to lamb
A month before.

I learnt the value of white clover
Which suited me much better
Than umpteen bags of nitrogen
Whatever Peter MacLaren
The sage of I.C.I. had said!
I learnt September grass was good
For adding weight to cattle,
But by mid-January,
In open spells,
It made one linger much too long
In feeding pregnant ewes.

FORGET SILAGE AND FEED GRASS ALL YEAR ROUND

When you use MAXGRASS you can forget fermentation. Preservation is achieved immediately your grass is cut. This means that the grass is maintained virtually in its natural state.

The feeding value of the grass you take out of the silo will be almost the same as the grass you put in during the Spring and Summer.

So now you can feed grass all year round and know that there's no better or cheaper feed for your stock.

MAXGRASS – the latest product of BP research.



**M
GRASS
X**



BP NUTRITION

Our 500kg

weatherpaK

really

stands

out...

in the sun... rain... sleet... and snow...



The unique design and construction of Kemira WEATHERPAK allows outside storage in any weather conditions for up to 12 months with no risk of deterioration to the fertiliser. This significant advance in fertiliser packaging means valuable inside storage space can be released for other purposes. All Kemira fertilisers, manufactured at their Ince Plant, in Cheshire are available in WEATHERPAK. Kemira WEATHERPAK – an outstanding package for farmers.

KEMIRA ✱
weatherpaK

I still prefer the hay
We used to make in rucks
Before the Highland Show;
But now my children,
Reading of Edwin Bushby's fame,
Have been seduced - no longer know
How to compete with weather
In the way we used to do,
With tripods, forks, and tumbling toms.
They fill their silage pits
With speed and competence,
But never move their hay sufficiently.
They waste too much.
They do not work their seedbeds well enough
And do not keep
Records the way John Frame once taught me to.

I don't think things are what they used to be,
But grass is still the same
And that's what farming's all about -
How to grow more, how to waste less;
How to match sward to grazing stock
And winter keep,
And at the end I tell you,
Taught as I was by I.V. Hunt,
The use and growth of grass
Is going to be the only way
Our agriculture can survive.

With that, ladies and gentlemen,
I raise my glass -
To those who work in far laboratories:
To those who practice and those who have to preach;
Wishing that this green island may remain
The way it has always been,
Thanks to the skill of you, and those like you.
I wish that gap between the scientist and practitioner,
May constantly contract as years pass by,
And standing here tonight,
Looking at all of you,
Well fed on grass fed beef,
I do not have a single doubt -
My wish will be fulfilled.

SUMMER FARM WALK ON CRICHTON ROYAL FARM

*A joint visit of the SWSGS, CSGS and Dumfries
and Galloway FFWAG on 18 July 1990*

This visit was at the invitation of the Scottish Agricultural College Farm Director Dr David Roberts and his staff, and was jointly sponsored by Monsanto (UK) plc and Schering Agriculture. A party of about 40 members was treated to a first-class programme covering the main lines of research and development on the farm.

MMB summer calving project (D Roberts and A Hameleers)

This 3-year project funded by MMB seeks to examine the physical and financial performance of two equivalent dairy herds under contrasting management strategies. The Control herd is buffer fed and receives controlled concentrate feeding, while the management of the Test herd aims at greater utilization of grazed grass with reduced buffer and concentrate feeding. Half of each herd of 60-64 cows will calve in June and July.

The Test herd was grazed on 4 ha in the spring at a sward height of 5.1 cm to allow a greater area of silage with earlier first cut and higher midseason aftermath. The buffer feeding for the Control herd leads to a higher silage yield requirement.

Extensive wild flower pastures (G Fisher)

13 ha of extensive pasture have been established with secondary grasses, clovers, wild flowers and herbs. No inorganic fertilizers are applied to these 'meadows', and two experiments are in progress on them. In the first the effect of slurry applied in January/February is being compared with no slurry. So far the slurry has increased DM yield by 24%, but reduced wildflower content. The second experiment compares two-cut versus one-cut silage regimes, and the former has produced lower DM yields but higher clover and nutritional contents.

Conservation policy on Crichton Royal Farm (D Webster)

A policy of wildlife conservation has been developed since 1985, beginning on a modest scale. A programme of tree planting is underway to replace old and damaged trees, for shelter and for screening buildings. Two areas have been planted with a variety of trees under the Broadleaved Woodland Grant Scheme. In addition, two ponds have been excavated in a wet corner of the farm. The encouragement of wildflowers in pastures and in hedgerows is also part of the policy.

Clover for dairy cattle (G Tiley, D Webster and D Roberts)

On the Acrehead Unit the present comparison is between dairy herds on (a) clover-based swards with no applied nitrogen, and (b) conventional high-nitrogen (350 kg/ha) swards. White clover (varieties Donna, Milkanova, Alice and Menna) was introduced into existing swards by direct drilling in July with an Aitchison drill at 4 kg/ha plus an oat-husk filler. Other areas were conventionally reseeded after ploughing in both autumn and spring. Nitrogen fertilization was discontinued but phosphate, potash and lime were applied.

Management of the swards has aimed at maintaining a clover content of 30% in both cut and grazed swards. Alternate cutting and grazing has not been found necessary with dairy cows. The clover system gave lower silage yields in the first year but higher in the second. Milk yields and financial returns are similar from both units.

The three visiting organizations expressed their warmest thanks to Dr Roberts and his staff for arranging this visit.

G E D Tiley

LUNCHTIME PRESENTATION TO JOHN N WATSON

After lunch at the Nith Hotel, Dumfries during the Summer Visit to Crichton Royal Farm on 18 July 1990 a presentation was made to John Watson, Past Chairman of the SWSGS. Michael Milligan, also a Past Chairman of the SWSGS, presented to John a model of a traditional Ayrshire cow (with horns) to mark his retirement from his post as Farm Manager at the Hannah Research Institute. The gift was made by Border Crafts and donated by past and present members of the Executive Committee. John expressed his delight at receiving this token of appreciation from the Society.

DAIRYING WITHOUT CONCENTRATES

Giles Tedstone

Raby House Farm, Willaston, South Wirral

*A meeting of the SWSGS at the Urr Valley Country House Hotel,
Castle Douglas on 18 October 1990*

The first meeting of the 1990-91 season was sponsored by Caledonian Oil and chaired by Iain Evans. An attentive audience heard Giles Tedstone describe his farming methods in South Wirral. He is one of the top dairy farmers in Britain and a Past President of the British Grassland Society.

Giles has been farming on his own for about 19 years, having previously managed a farm in Staffordshire since 1950. He claimed never to have been a very efficient milk producer in the days when he fed large amounts of concentrates. In an attempt to increase profits by increasing the margin per litre of milk produced he started to dairy without concentrates 5 years ago. At first he was prepared to throw it in if it did not work, but after 5 years he believes that it has been successful. Giles is now semi retired and has left his son David to decide whether to continue the system in the long term.

Raby House Farm consists of 148 ha with a dairy herd of 110 Friesians plus beef and young stock. The average milk yield is 4239 l with no concentrates or supplementary feeds. At present the stocking rate is 2.2 cows per ha but the number of cows is being increased. To allow for this the area of cereal is being reduced from 57 to 36 ha.

Milk production

Giles compared his performance figures for the year ending January 1990 with the averages in the MMB Milk Minder scheme. The average yields per cow were 5604 l in the MMB scheme and 4239 l at Raby House, giving margins over purchased feed on a per cow basis of £815 and £822 respectively and on a per litre basis of 14.6 p and 19.4 p. respectively.

At £776 per cow and £1707 per ha the Milk Minder margins over feed and fertilizer are the same as those at Raby House. He next compared the quality of milk in his no-concentrate system with the MMB national average. In 1988 and 1989 the butter fat contents at Raby House were 0.14 percentage units higher than the MMB averages. The protein average was 0.037 percentage units lower in 1988 and 0.008 percentage units higher in 1989. These quality differences gave an increase in milk price per litre of 0.24 p in 1988 and 0.31 p in 1989.

Problems of no-concentrate system

In the no-concentrate system the cows lose weight in early lactation but gain it later. This was worrying only in the second of the 5 years on the system when the heifers lost more weight than was anticipated. Milk protein and output problems were also experienced in that year. These difficulties were overcome by introducing some easy feed in addition to self feeding at the silo face. Self feeding still provides 75% of the intake.

Over the 5 years without concentrates the breeding and health records have been good. Giles believes that much of this is due to less stress - a very important factor with dairy cows. As a precaution against staggers the morning grazing strip is dusted with minerals in the spring. Some staggers has occurred but the only death from this cause was in 1989. To get the heifers used to the system they are fed a lot of silage when young and also given lots of grazing but no concentrates.

Grassland management

To quote Giles philosophy of grassland management: "Good grass does not grow by accident; it has to be organized. If grazing is short today you slipped up 4 or 5 weeks ago". His rule is to keep on top of the grass. He tries to take all of the first-cut silage quickly from 15 May. When it comes to the second cut, a few fields are cut early and a few later to establish a grazing sequence in case the weather gets dry. Another quote: "You only get out what you put in with silage".

The first grass-clover field at Raby House was sown in 1981 and it still has a good sward with a good clover content. However, heavy crops cannot be obtained from grass-clover swards on this light land over rock. No cases of bloat have occurred on these swards and Giles believes that this is due to ensuring that the cows do not go short of grass. A sequence of 5-6 weeks between grazings is used with clover compared with 3-4 weeks on other swards.

The silage at Raby House is made with a Krone self-loading wagon after wilting. Silage additives and precision choppers have never been used on the farm. Second, third and fourth cut silages are easy fed and the first cut is self fed.

Discussion

Questioned on the length of the grazing season Giles said that the turnout date was usually about 23-25 March. The earliest the cows had gone out was 7 March and the latest 23 April. Until recently the cows were brought in on 5 November, but autumn grazing has now been extended to 18 December. This has been achieved by saving part of the fourth-cut silage area for grazing. Some supplementary silage has also been offered.

The next aim at Raby House is to increase the dry-matter intake of silage. This might be achieved by stopping self feeding and using only easy feed. Giles also suggested that he would perhaps try to increase intake by the use of a silage additive such as molasses. Although the feeding of long silage is known to limit maximum intake he does not intend to change over from the forage box to a precision chopper.

A drum of tractor lubricating oil kindly donated by Caledonian Oil was raffled at the meeting, and the winner was June Randall, adviser for Dumfries and Galloway FFWAG. The vote of thanks to the speaker and to the Caledonian Oil was given by Past Chairman John Watson.

D Reid

CENTRAL SCOTLAND GRASSLAND SOCIETY

13th ANNUAL SILAGE COMPETITION 1991-92

The 13th Annual Silage Competition of the Central Society will be run in 1991-92 with the same prizes as last year. The rules for the competition will be circulated to members with the entry forms.

WINTER FARM VISITS TO DUMFRIES

*Visits of the SWSGS to Trohoughton Farm, Dumfries
and Crichton Royal Farm, Dumfries on 22 November 1990*

Two farms were visited on this interesting winter meeting in Dumfries, and the day was concluded with an evening meeting indoors which is reported in another article. The Society is indebted to Tom McCombe and family and to the Scottish Agricultural College for arranging these visits.

Trohoughton Farm, Dumfries (Tom McCombe and family)

Tom moved from Northern Ireland to Trohoughton in 1977 on a weekend when Dumfries was flooded. At that time the soils on the farm were low in phosphate and potash and required upgrading, and in the low-lying fields the drains needed repairing.

Trohoughton is a lowland grass/arable unit of 97 ha producing beef fattened on silage and barley. Cropping consists of 23 ha of winter barley, 36 ha of winter wheat, 8 ha of winter oats, 22 ha of silage and 8 ha of grazing. In addition, 36 ha of grazing are rented in summer to leave more grass for silage. 219 steers and 58 heifers are bought in as stores mostly in the autumn and spring. The buildings were inexpensive including an old hanger erected in 1960, but there are grain drying and feed-mixing facilities.

Cereals and grass are drilled using a Lely air drill. Winter wheat varieties Avon and Riband had been sown in early October. A crop of naked oats was grown on contract last year, and yielded over 2½ t/ha. Grass is established after harvesting winter grain, and consists of 2-3 year leys containing tetraploids and some Italian ryegrass. The grass rotation is considered too short to be worth including clover in the seeds mixtures. Reseeds are winter grazed with sheep.

Three silage cuts were taken in 1990, and cutting is always done in the afternoon. Extra help is needed at silage time to assist the normal farm labour consisting only of father and son. The grassland is manured with plenty of slurry plus 112 kg/ha of nitrogen as 27:5:5 for the first cut,

and 100 kg/ha as 20:8:12 for each of the second and third cuts. In 1990 the silage was very good quality the first cut having a D-value of 71 and a dry-matter content of 17.4%. The additive used was Safe-Sile applied at a low rate.

Tom considered that the beef trade was fluctuating at present, but was generally profitable though less so than arable crops. He had started some nature conservation work by digging a pond in a wet corner of a field, and had also planted a few trees and hedging.

Crichton Royal Farm, Dumfries (Scottish Agricultural College)

The Bull Beef Unit at the Netherwood Steading, Crichton Royal was visited after Trohoughton, and described by the Farm Manager Dr David Webster and by Elizabeth McKendrick. This Unit is run as an adjunct to the main dairy enterprise, but nevertheless contributes to the overall economy of the farm.

60 Holstein and Friesian cross bulls are housed in a simple building with an Orkney sloping floor which allows the animals to be housed without bedding. A 1 m wide passage has been left at the back of the building to facilitate handling the bulls, and a gate system has been installed to avoid going in among them. Slots have been cut in the asbestos roof with a disc cutter to aid ventilation and to remove ammonia.

Draff was mixed with the silage in the clamp, which reduced dry-matter losses to 12% compared with 25% where draff was stored in a heap. A further reduction in losses of 6% was obtained by adding 15% sugar beet pulp. The aim in the Unit is for good silage, but sometimes quality falls and concentrate is then increased to compensate. Draff is very useful if bulk is lacking when high quality silage is made.

In the discussion it was noted that grass-clover silages had surprisingly low protein contents (10-12%), which was difficult to explain. As the silage was wet in 1990 (16% dry matter), the bulls did not require much water.

G E D Tiley

THE HEALTH OF THE GRAZING ANIMAL

D N Logue

Dairy Herd Health Specialist, SAC, Auchincruive, Ayr

*A meeting of the CSGS in the Cartland Bridge Hotel, Lanark
on 8 November 1990*

Diseases associated with grazing can be conveniently classified into three groups - nutritional imbalances, parasite infestations and infectious diseases.

Nutrition

While there is considerable information about the so-called nutritional requirements of animals the clinical exhibition of a "deficiency disease" is usually brought about by a number of contributory factors acting in concert.

Hypomagnesaemia and its associated condition Grass Tetany is a common problem both in newly turned-out cattle in the spring and in cattle in the autumn. The main components responsible are a low magnesium and high potassium content of the herbage, but in truth the trigger factors for the condition are far from clear. In south-west Scotland at least hypomagnesaemia in the autumn is inextricably linked with Milk Fever. Control measures involve both management decisions and supplementation of the diet.

Trace element deficiencies, in particular copper, cobalt, selenium and iodine, are being increasingly recognised. Ill-thrift is the main symptom of the first three but it is by no means exclusively so. Reduced fertility associated with selenium deficiency has been demonstrated at Crichton Royal Farm. There has also been evidence of iodine deficiency associated with goitre and stillbirth in calves. Finally there is recent information from the Scottish Agricultural College, Auchincruive and from the Animal Diseases Research Association linking such deficiencies with impaired resistance to disease and immune dysfunction. Control again requires a combination of management and supplementation strategies.

At Crichton Royal Farm bloat has not so far been a problem on high clover-content swards. However, vigilance is being maintained because it has created considerable problems elsewhere to such a degree that selection for bloat resistance is being suggested. Similarly, while nitrate/nitrite

poisoning is still a rare phenomenon in Britain compared to, for example, the Netherlands, its presence in the subclinical form associated with abortion cannot be discounted easily. Control is difficult, but it is worth noting that wilting increases nitrate levels in grass - so much for higher dry matter silages.

Parasites

The major internal parasites of the dairy cow and followers are roundworms and lungworms. In addition, fluke is an occasional problem on some farms. Each has its own peculiar life cycle which determines the epidemiology of the disease it causes and so dictates the control measures. Grazing management, good anthelmintics and correct dosing strategies have proven very successful for roundworm and fluke control, but vaccination is still the mode of choice for lungworm since the disease can be devastating in a non-immune herd of milking cows.

Work on dairy farms in south-west Scotland has shown that nuisance flies are of greater importance as a cause of cattle worry than is the case in England. Unfortunately such flies are less responsive to control than biting flies. The three common methods of control are sprays, "spot-on" products and the use of insecticidal tags. Each has its advantages and disadvantages, but all three have their place depending on the balance between ease of application, efficacy and cost.

Infectious disease

Summer mastitis and New Forest disease are closely associated with fly worry, and the organisms causing both these conditions have been isolated from flies by the Scottish Agricultural College at Auchincruive. Thus, fly control is one measure of limiting these problems. Adequate dry cow therapy and the use of teat "covering" has also proved of aid in combating summer mastitis.

Clostridial disease, in particular Black-leg, is more common in the grazing months. The incidence varies with farms, but should it prove a problem vaccination can prevent it. In the UK foul-in-the-foot is more commonly seen in the winter months, but on some units it has caused considerable problems where walkways are poor and conditions damp and wet. Control is by good foot care, adequate dry walkways and regular foot bathing in 5% formalin.

TRIED AND TESTED VARIETIES

Before a variety is included in an SM mixture, it has been thoroughly tested under a combined regime of simulated grazing and cutting, evaluating characteristics such as spring growth, winter hardiness, disease resistance and yield, all of which are vitally important to the final performance of the mixture and in turn livestock performance.

WHOLESEASON PERFORMANCE

SM mixtures are formulated to take account of growth characteristics of different varieties, combining them together in the correct proportions to eliminate troughs in individual variety performance and produce a mixture which performs consistently throughout the year.

MORE PLANTS PER ACRE SOWN

SM's quality standards for germination and purity ensure more viable seed in every bag. SM's guarantee of quality, in conjunction with the seed treatment SAlsar, means more plants per acre sown and thicker swards, more able to respond to grazing and cutting.

THE BENEFIT OF CLOVER

All SM mixtures contain a unique blend of white clover, combining the latest and best varieties in the correct proportions for maximum production, herbage quality and livestock performance.



SCOTLAND'S LEADING
AGRICULTURAL MERCHANT



GRASS SEED
RANGE

**BETTER SEED.
BETTER VALUE.
BETTER ORDER
SOME NOW
FROM SAI.**



TO ORDER NOW CONTACT YOUR SAI SALESMAN
OR *PHONE US FREE ON YOUR LOCAL
0800 NUMBER FOR CUSTOMER SERVICE.

Do You Grow Grass- or Let Grass Grow?

Grow Grass with Hydro's Grassland System

- * The 6:1:1 Ratio of NPK in Extra Grass is ideal for Grazing and First Cut Silage
- * Use N at 2 Units per acre per day of growth and P&K are automatically met
- * It's profitable - giving the best return on investment
- * It has the backing of 30 years of research
- * It's simple to use



**CONTACT YOUR HYDRO MAIN
MERCHANT FOR FURTHER DETAILS**

**HYDRO
FERTILIZERS**

Abortion, stillbirth and Milk Drop Syndrome (MDS) due to *Leptospira hardjo* both commonly occur during the grazing period. The bacteria appear to persist in the kidneys of carrier cows and infect others via the urine. The extent and severity of the Milk Drop Syndrome, abortions or both depend on the pattern of immunity of the herd and the level of challenge. For example, the most dramatic effects of MDS have been described in spring and summer calving herds. Infertility is often associated with such outbreaks since most animals in the affected herds are either in early pregnancy or still being mated. Control and eventual eradication is possible using a combination of vaccination and antibiotic treatment. A specific programme is available from DAFS and MAFF under the Cattle Health Scheme.

ULSTER GRASSLAND SOCIETY SUMMER TOUR 1991

The Summer Tour of the Ulster Society in the county of Fermanagh was attended by 150 members, and the first farm visited was Drummerwinter near Roslea, which is farmed by Louie and Anne Lynch. This 60 ha farm on heavy clay land in a 1070 mm rainfall area is stocked with 75 commercial Friesian cows and followers plus 200 breeding ewes. The average milk yield to 31 March 1991 was 4700 l/cow with a concentrate input of only 0.07 kg/l. The cows are paddock grazed in twenty-one 1 day paddocks each of 0.8 ha, and the heifers are on a leader/follower system with five paddocks each grazed for 4 days. 100 ewes and lambs clean up the paddocks after the cows. Three cuts of silage are taken each season, and the slurry is put on for the second cut.

The Lisgoole Abbey Estate of Mr and Mrs J B McGuckian was next on the tour. This farm consists of 130 ha of top quality grassland, mostly permanent pasture, plus 32 ha of woodland and 8 ha of water. Much of the farm is on heavy clay with some peat. The main enterprises are sucklers, bull beef, pheasants and store lambs. All calves from the 106 sucklers are finished as beef, and an additional 100 stores are bought in. The male calves from the early winter and autumn cows are finished as bull beef at 17 months. Store lambs are a new enterprise, and the plan is to buy in 600 lambs each autumn to finish off grass.

BEEF DESERVES QUALITY SILAGE

Don Wilkinson
Newton Ketton Farm, Brafferton, Darlington

*A meeting of the SWSGS at the Hotel Embassy, Newbridge, Dumfries
on 22 November 1990*

Following the Winter Farm Visits of the SWSGS to Tom McCombe's farm Trohoughton, Dumfries, and the Bull Beef Unit at Crichton Royal Farm, there was an evening meeting at which the speaker was Don Wilkinson from Co. Durham. Don was the winner of the British Grassland Society National Silage Competition in 1990 for the second time, having previously won it in 1987. The meeting was sponsored by Amalgamated Farmers, A F Northern Ltd (Scotland).

Don farms Newton Kelton near Darlington in partnership with his wife, Julie, who is in charge of the calves. The 116 ha farm is on heavy clay in a 610 mm rainfall area, and is based solely on grass and barley for bull beef production. 400 bull calves are bought in monthly batches and sold fat at 14 to 16 months.

3000 t of silage are made annually in five cuts with the farm staff mowing the grass and a contractor forage harvesting and filling the clamps. Cutting dates are about 9 May, 12 June, 16 July, 7 August and 30 October. No additive is used on the silage, and the aim is to make about 300 t each day. The silos are two simple 5.5 m deep earth-wall clamps each holding 1000 t which are left uncovered at night and only sheeted when filling is complete in about 2½ days. Silage effluent is collected and fed to the bulls.

The silage is removed from the clamps with a block cutter and weighed into a feed wagon where it is mixed with milled barley. The cattle are easy-fed in the yards once per day. Feeding is not *ad lib*, but only sufficient silage is offered to last the cattle about 20 hours. Thus, they go hungry for 4-5 hours before being fed again next morning. Don considers that this makes them eat more silage, and the silage on offer is fresher.

Calves are bought at 2-3 weeks old from large dairy farms, always buying black and whites as Don believes he never gets his money back on continental breeds. Warm milk substitute is piped around a converted shed to be fed to the calves twice a day, starting at a rate of 1 l per animal daily and building up to 2 l. The calves are also fed the silage and barley mix, which from 12 weeks of age forms the major part of their ration.

The bulls never graze grass but are fed the silage mix in the yards right through until they are finished at 15 months. Some rearing pellets are added to the mix at first and then fish meal, but all protein supplement is stopped when the bulls reach a liveweight of 350 kg. This system allows almost a doubling of the stocking rate on the farm. Each month about 250 t of silage is used, and sometimes a start is made to feed a silage within 10 days of it being made. As a result over 1000 t of silage has been used by the time the last cut is taken in October. This explains how 3000 t of silage can be accommodated in two 1000 t clamps.

The grassland on the farm has a low legume content due to the late cutting. A total of 347 kg of nitrogen is applied over the five cuts. On this heavy clay soil phosphate is not a problem and only 66 kg is applied annually, but 195 kg of potash is required over the season.

Discussion

Don was asked why he did not use a silage additive. He replied that he had tried an additive at half rate on some very wet silage in 1987, but another silage made with no additive in one day had an ammonia content of only 7. He did not believe that an additive was necessary so long as the silage was made and sealed quickly.

Questioned on his winning silage in the 1990 competition Don reported that it had an ME of 11.2. However, he said he never got good animal performance from silage until he raised the dry matter content. He believed that it was physically impossible to get dry matter into an animal and to get a good utilization of that dry matter when the silage was wet.

Regarding whole-crop wheat, Don considered that it was not suitable for beef animals because it was too bulky.

G E D Tiley

MANAGEMENT ISSUES FOR THE GRASSLAND FARMER IN THE 1990's

W S Jamieson
Kirkland, Thornhill, Dumfries

The 1990 Winter Meeting of the British Grassland Society held at the Abbey Hotel, Great Malvern on 26 & 27 November 1990

This year the format of the BGS Winter Meeting was changed from a short 1-day meeting in London to 1½ days in the pleasant location of the Abbey Hotel in Malvern. The change was undoubtedly beneficial allowing more topics to be discussed and much more time for informal discussion (i.e. chat, gossip, the real truth). Subjects were dealt with either as ½-hour talks from well-known scientists, advisors and farmers, or as poster presentations summarizing recent experiments. The talks were of variable quality, but the posters were in the main very good.

Avondale Holsteins

Having travelled down with three other cow and grass enthusiasts (R Broatch, J Rome and A Stannett) we took the opportunity before the conference to visit the Avondale herd of Holsteins at Evesham. This is an outstanding herd of very large cows with excellent udders, legs and feet - very well balanced cattle. The herd average is over 8000 kg although a great deal of their diet is grass silage. The cows are comfortably housed in large straw-filled cubicles with a light covering of straw in the passageways - what a pleasant change from slurry. Most impressive were the many daughters of Hanoverhill Starbuck, an expensive AI bull from Canada. Avondale have been selecting bulls and cows for protein percent over the last few years, and it is obviously one of the pacesetting herds in Britain.

The Malvern conference

I do not intend to mention every subject covered during the conference, only those which left an impression deep enough to be recalled as I write this 2 weeks later.

In the first paper of the meeting Dr J Brockman discussed grassland farming in the '90's. He pointed out that environmental and public-relation factors may be as important as farm management and technical factors in making decisions in the future.

Steve Peel indicated that over 40% of the soils in the UK are deficient in phosphate and potash so limiting the effectiveness of nitrogen. Routine

soil analysis is, therefore, important. He also produced evidence to show that only on very poor poached or heavily weed infested swards is reseeding worthwhile if the true cost is admitted.

Two papers from Ireland emphasised the importance of sward height in determining the efficient use of grazing grass. This method is not perfect but better than no measurement at all.

Silage additives

The controversial subject of silage additives was covered comprehensively both in talks and on posters. Malcolm Appelton demonstrated that acids were the most reliable additives on silage for beef cattle. Inoculants as a group had improved over the last 2-3 years and were useful when the sugar levels in the grass were moderate. For dairy cows recent evidence presented by Dr R Steen indicated that inoculants might have a slight advantage over acids in milk solids production even though the chemical analysis of the silage was similar. Work on Maxgrass was not yet comprehensive enough to establish its place as a silage additive, and the same applied to enzyme additives.

Slurry control

Two very good papers were given on aspects of slurry control, one dealing with mechanical aspects and the other with the manurial value and methods of controlling environmental hazards such as smell and leaching. Blowing slurry up into the air is probably one of the easiest ways to spoil good public relations.

Summer calving systems

In the final session of the meeting two farmers described their own systems of summer calving. Richard Snow from Dorset had three herds which were housed from July onwards and fed maize silage. I did not feel this system had much relevance to south-west Scotland. Ken Oliver from Cheshire certainly introduced some wit and a lot of sense into the proceedings as he described his summer calving system. His cows were calved between 25 May and 10 July and were fed 3 kg concentrates, strip grazed, paddock grazed and given a buffer feed of silage. The aim was to produce 65% of the annual quota in the high-priced months. Cows were fed no concentrates after coming indoors and produced an annual yield of about 5000 kg on 400 kg of concentrates.

The concluding paper by Chris Doyle, a management advisor from SAC at Auchincruive, highlighted the main considerations for farmers thinking of moving to summer calving. He produced an excellent summary suggesting that the system did not apply to everyone, especially those locked into a tight autumn (September/October) calving pattern.

Conclusions

As a final comment I thought the presentation of the papers left a little to be desired. There was too much information for the time available and too many "busy" slides. However, I did enjoy the meeting probably as much for talking to fellow enthusiasts as for the actual paper sessions. I would certainly recommend attendance at a BGS Winter Meeting to anyone wishing to become a better grassland farmer. Finally I must thank the South West Scotland Grassland Society for their sponsorship.

RON HARKESS, OBE

It is with great pleasure that the award of the Order of the British Empire to Dr Ron Harkess in the 1991 New Year's Honours List is recorded in this Journal of which he was Editor for 13 years. The award was for services to Scottish agriculture in his post as Technical Secretary to the Scottish Agricultural College at the Headquarters in Perth.

Before his transfer to Perth Ron was a specialist adviser on silage in what was then the Agronomy Department at Auchincruive, and he was a founder member of the South West Scotland Grassland Society. At the SWSGS Silver Jubilee Dinner in 1987 the title of Honorary Life Member and Vice President was conferred on him to mark his many years of devoted service to the Society.

AITON'S VIEW

David Reid, Journal Editor

"Having been bred a Practical Farmer, in Ayrshire, and being an attentive observer, from my youth, of the state of agriculture, as well as an enthusiast in everything which tended to meliorate the soil and improve the condition of Society, nothing could have been more gratifying than the appointment of the Honourable Board of Agriculture, to survey and draw up a report, on the state of husbandry and rural economy of my native county."

So begins William Aiton's report published in 1811 with the title "**General View of the Agriculture of the County of Ayr; with Observations on the Means of its Improvement**". In his earlier years Aiton was a practical farmer, but when he wrote this report he had been a "writer", i.e. a solicitor, in Strathaven for 26 years and during that time "*had been only a spectator or theorist, in farming*". The report is truly encyclopaedic, covering every aspect of early 19th century agriculture in Ayrshire, including climate, soils, estates, buildings, animals and crops. On the title page is the quotation -

Kyle for a Man,
Carrick for a Cow,
Cunningham for Butter and Cheese,
And Galloway for Woo'.

The sections of the report which are probably of greatest interest to the modern grassland farmer in Ayrshire and surrounding counties are those on the Ayrshire cow and its feeding in the early 1800's. At Aiton's time the breed of dairy cows in Ayrshire was just beginning to be known in other parts of Britain, and he claimed that it was the most improved breed to be found in the islands. It appears to have been considered as dual purpose, to be fitted "*almost in every diversity of situation, where grain and grasses can be raised to feed them, for the purpose of the dairy, or for fattening them for beef*". Aiton stated that the breed was "*in great measure the native indigenous breed of the county of Ayr*", but then in slight contradiction wrote of the introduction of Dutch and English cows and bulls. However, in the 18th century the native cattle were mainly black with some white on the face, belly, neck, back or tail, and it was not until about 1780 that the red and white colours appeared. This trend apparently began around Dundonald and Stewarton where the native cows were crossed with Teeswater and other English cattle. By 1811 red and white were the common colours of the dairy cows in Ayrshire though black still prevailed in the rest of Scotland.

According to Aiton, there were no other cows that would yield as much milk as the Ayrshire breed given the same feeding and treatment. An average yield was about 10 Scotch pints per day, but yields of 12 to 14 Scotch pints were not uncommon. One extraordinary animal was said to have given up to 18 Scotch pints, but Aiton suspected that "*there must have been some froth, either in the milk or in the story*". The Scotch pint was approximately equal to 3 Imperial pints so the average yield of these early Ayrshire cows was about 30 Imperial pints or 17 litres per day, and the high yield 54 Imperial pints or 31 litres.

From the time grass growth ceased in the autumn until it began again in May, the food of the Ayrshire dairy stock in the early 19th century was mainly oat straw or, in moorland areas, bog meadow hay. For a few weeks after calving the cows were allowed "*some weak corn and chaff boiled with infusions of hay; and, by way of a luxury, a morsel of ryegrass or lea hay once every day*". Recently introduced was the feeding of a small quantity of turnips in the early winter and of a few potatoes in the spring. Generally, the cows were in a skeletal state by the spring, and Aiton suggested that farmers should provide turnips, potatoes and green feeds. He also mentioned cabbage, rutabaga and malted grain.

Summer feed of dairy stock in Ayrshire was generally pasture, and the cows produced well on this in the best cultivated districts. On the higher ground, however, the quality of the pasture was poor. The dangers both to the grass and the animals of overstocking were appreciated at this early period. "*Grass eaten bare, grows slower than after it gets up its leaves to support itself and screen the ground; and of all things, a dairy cow requires and relishes a full bite*". Aiton also recommended dividing the pasture into fields to be grazed alternately. "*When the cattle roam over the whole every day, they eat the young and slender herbage too bare, and allow that which has risen higher to run to seed. But when the fields are allowed to grow to a certain length, and then completely eaten down, the grass is neither hurt by being kept too low, nor is it allowed to run to seed*".

The number of species used in sown grassland in the early 19th century was very limited. Broad red clover was claimed to be "*by far the richest and most valuable of all the herbage yet in general use*". It was widely sown in Ayrshire, and was used for grazing, cutting, feeding green, or making into hay, but not grown for seed. White clover was used entirely for pasture and was particularly valuable in the latter part of the season. No other legumes were cultivated at this time, and practically the only grass sown was perennial ryegrass. Although this is a native grass it remained unnoticed in Ayrshire until about 1760, and was not in general

use until 1775. After 1780 most tenants' leases bound them to sow ryegrass and clover seeds, and by 1811 ryegrass had come into general use, and had been found "*to be of great utility*". In Aiton's opinion the most valuable grass next to ryegrass and the only other one sown was Yorkshire fog. This was "*much relished by cattle, and very productive of milk and butter....it makes excellent hay*", but nowadays it is considered a weed grass.

On hay making Aiton stated - "*The quality and value of the hay crop, is in the county of Ayr, very much injured by the grass not being cut in due time*". This remains true today for hay and sometimes for silage. He stressed that "*when grass is cut before its seeds are ripened, and carefully dried and preserved, it continues to be sweet, soft and palatable; easy to eat, much relished, easy to digest, and highly nutritious*". Aiton believed that if the hay crop was cut at this stage the aftermath was more valuable, and the grass continued to grow with vigour. On the other hand, he wrote "*Old withered ryegrass, when made into hay, is of very little more value than oat straw*".

Only a small proportion of the total agricultural area of the county of Ayr consisted of meadows at this time and most of them were in the wet and boggy areas. In the moorland districts where there was little arable land, meadows were more common and of greater value, and heavy dressings of dung were applied on them.

Pasture in Ayrshire was of two types "*permanent and occasional*". The permanent or natural pasture was devoted to the feeding and rearing of sheep, which Aiton thought was "*the only mode of occupation to which it is adapted*". Two-thirds to three-quarters of the arable land in the county was in pasture and crop alternately. Most of the pasture was used for dairy stock and work horses, and only a small part for fattening stock. On fields sown down for "*occasional*" pastures, one crop of hay was taken, and then the land was pastured for 4 to 8 years before ploughing up for arable crops again.

CSGS SILAGE COMPETITION 1990-91

*A meeting of the CSGS at the Stuart Hotel, East Kilbride
on 9 January 1991*

Judge : John McLusky, Lee Farm, Roslin, Midlothian

In his opening remarks the chairman George Hamilton thanked SAI plc for sponsoring the Competition and introduced the judge John McLusky, who had enjoyed success in several competitions. The chairman said he had been pleasantly surprised at the enthusiasm and thoroughness with which John had undertaken the judging, and had managed to sustain this throughout the 3 days of visits.

John McLusky likened the difficulties of judging the silages to that of choosing Miss World. The qualities of the entries had been extremely high and only minor details enabled the final placings to be made. Of the twelve farms visited seven were on self feed, three used block cutters and the remaining two mechanical shovels.

All contestants had at least minor problems with shoulder waste, but no contamination was found. At every farm the silage was very uniform with no detectable mould, and all pits had side sheets. Only two of the farms used a double top sheet. The only overheating seen was on the two farms which used mechanical shovels. Effluent control was excellent except on one farm where the problems were to be rectified in the spring. Feeding utilization was impressive with full use being made of the quality silage.

Prizewinners

The varied aspects of the entrants such as farm size, machinery use, rainfall and altitude were considered in awarding the points for each finalist. The marks for the top prizewinners are shown in Table 1. The overall winners this year were J Clark & Sons, Dunrod, Inverkip, who were presented with the SAI Cup, and the runner up was G Orr, Kaemuir, Avonbridge. Third prize was given to W K Carruthers, Netherton, Auchenheth, and fourth to D Lyon, Drumachloy, Rothesay.

Table 1. Final marks for judging and placing.

| | | Production & Inspection | Utilization | Total |
|---|-----------------|--|--------------------|--------------|
| | Analyses | (33) | (32) | (100) |
| | (35) | | | |
| J Clark & Sons Dunrod, Inverkip | 32.58 | 32.5 | 30.9 | 95.98 |
| G Orr Kaemuir, Avonbridge | 33.00 | 30.1 | 31.0 | 94.10 |
| G Lyon, Auchavoulaig, Rothsay | 31.10 | 29.7 | 32.0 | 92.80 |
| W K Carruthers Netherton, Auchenheath | 30.60 | 29.9 | 31.5 | 92.00 |
| D Lyon Drumachloy, Rothsay | 29.93 | 30.7 | 31.3 | 91.93 |
| J Paterson Woodend, Balfron | 25.63 | 31.4 | 31.9 | 88.93 |
| W Millar Newlands, Uddingston | 27.51 | 30.8 | 29.9 | 88.21 |
| J Kerr Kirklands, Dunsyre | 27.03 | 29.5 | 30.5 | 87.03 |
| L Watson Midhill, Elsrickle | 30.75 | 24.6 | 30.7 | 86.05 |
| P Clemson & Sons Skellyton, Larkhall | 23.93 | 30.0 | 31.5 | 85.40 |
| J McFarlane Boreland, Gartmore | 25.23 | 22.9 | 30.5 | 78.63 |
| J Bannatyne Drumalbin, Biggar | 31.33 | 17.0 | 27.0 | 75.33 |

In the Beef and Sheep Class the winner of the first prize and the Hamilton Reco Salver was G Lyon, Auchavoulaig, Rothesay.

The prize for the best new entrant was awarded to L Watson, Midhill, Elsrickle, and C Murray, Inchbelle, Kirkintilloch received the prize for the most improved silage.

Judge's talk

The meeting ended with an illustrated talk by John McLusky on his own farm management. Lee Farm is in a 660 mm rainfall area and has dairying and arable enterprises. The cows are registered with both the Friesian and Holstein Societies and John likes the Holstein for size and efficient utilization of forage. The herd is grazed on 26 ha and is straw bedded using 1.5 t per cow annually.

Three cuts of silage are made and Maxgrass was tried recently as an additive. However, the performance of the cows on Maxgrass silage was disappointing. John's method of avoiding shoulder waste on silage pits is to use sealed plastic bags filled with about 65 kg of sand. These are placed along the shoulders of the pit in a continuous line, and have been successful in eliminating waste.

C McCombie

SOUTH WEST SCOTLAND GRASSLAND SOCIETY GRASSLAND ENVIRONMENTAL COMPETITION 1991

The Grassland Environmental Competition is being run again this year. However, the Executive Committee have decided that the judging would be more appropriately carried out during the summer months rather than midwinter as in the last 2 years. The entry date (15 June) will, therefore, be past before this Journal goes to press.

The South West Society was the first local society in the UK to introduce such a competition, and so far only one other - the Ulster Grassland Society - appears to have followed our lead. The objective of the competition is to encourage an increased sympathy for the environment when carrying out grassland management, and it is hoped that many members will be stimulated to enter. The winners will be announced at the Silage Competition Night in January 1992, when the prizes donated by Forum Chemicals will be presented.



GRASS MIXTURES

QUALITY YOU CAN RELY ON

Formulated to meet specific requirements.

- A mixture to suit your needs.

Only prominently rated varieties are used

- Gives you top dry matter performance.

All seed is a minimum of HVS quality

- You know you can rely on it.

Varieties are blended to meet seasonal or nutritional requirements.

- For optimum production of meat or milk per acre.

PLUS

THE "SPECIAL SUREGROW" SEED TREATMENT TO GIVE IMPROVED ESTABLISHED AND HIGHER YIELDS.

For specialist advice or recommendations on your pastures, contact:

Participating Merchant SAC Grass Levy Scheme.

AF Scotland Ltd

Biggar Mill

Port Road, Dalbeattie DG5 4BD

Tel. 0556-610414

Why use Scots?

SCOTS is fully recommended by the three Scottish Colleges.

SCOTS is bred in Scotland for extreme Scottish conditions.
No other timothy with a higher rate than **SCOTS**.

SCOTS stands **severe winter** and weather conditions.

SCOTS topped the list in recent European trials.

Outstanding spring yields make **SCOTS** the first choice of the early timothies.

SCOTS also gives good summer yields and shows good persistency for leys of medium and long term duration.

SCOTS is very palatable, **winter hardy**, persistent, high yielding and reliable.

SCOTS has stood the test of time.

SCOTS TIMOTHY

Tops the list everywhere

STAR FEATURES

- ★ Most winter hardy species
- ★ Two big crops of hay or silage per year
- ★ Extremely long lasting
- ★ Early
- ★ Bred in Scotland for Scotland
- ★ Profitable

Ask for it by name from your merchant



AND REMEMBER THE NAME'S

"SCOTS"

**SCOTS TIMOTHY
SEED GROWERS ASSOCIATION**

Hon. Sec.: R. McFarlane, Mid Lecroft Farm, Bridge of Allan Tel. 0786 833370

**ALWAYS INCLUDE
SCOTS TIMOTHY IN YOUR
GRASS SEED MIXTURE**



QUALITY CAREERS



Biotechnology

Aquaculture

Agricultural Business Management

Food Technology

Poultry Science

Horticulture

Agriculture

Leisure Management

Countryside Recreation and Conservation Management

Rural Resource Management

Mechanisation Planning and Business Management

Details of courses for these careers from:

**Academic Registrar
The Scottish Agricultural College**

**Tel: 0292-520-331
Fax: 0292-521-119**

**FREEPOST
AYR KA6 5HW**

GRASSLAND IN THE 1990'S

John Frame, Ayr

Summary of a talk given to the East of Scotland Grassland Society in January 1991 by Dr Frame soon after his retirement as grassland specialist at the Scottish Agricultural College, Auchincruive

Farmers will have to be "quick on their feet" to respond to the tremendous changes which are foreseen in the nineties. Grassland will settle into four categories -

- (1) Specialist intensive grassland, still with high nitrogen inputs and high stocking rates, as on intensive dairy farms. In this category great care would be required to minimize adversely affecting the environment.
- (2) Less intensive grassland based on grass/clover swards with little or no fertilizer, and permanent pasture with moderate nitrogen inputs, as on sheep and suckler cow enterprises.
- (3) Extensive grassland with large tracts used for rural diversification enterprises such as deer farming and afforestation.
- (4) Grassland transferred to non-agricultural uses such as golf courses and countryside areas for leisure. One authority has suggested that 2 million ha of grassland will be taken out of agriculture by the year 2000.

In the future there will be more emphasis on managing indigenous grazing better rather than attempting wide-scale land improvement. Scotland will remain "silage country", and big bales will make up 20 to 25 % of all the silage made. Guidelines are already available which will ensure top quality clamp and bale silage. The cost and value of silage will be better appreciated, and greater emphasis will be placed on reducing losses. Only additives which have been proved efficient by research and development up to the animal performance stage, will be used.

Turning to grazing it is predicted that there will be greater efforts to achieve early and late bites since grazing is the cheapest method of utilizing grassland. Systems based on sward surface height will come to the fore, and could be adapted to continuous stocking or rotational grazing. With their built-in buffer areas, they will ensure that grazing and conservation are totally integrated.

Another prediction is that farmers will pursue a positive approach to nature conservation and wild life matters and so increase their input into countryside conservation. Grants will be essential here because the low-input/low-output system necessary to promote wildlife will give a lower income than more intensive farming.

Farming activities will be directed increasingly by public concern and desires since government legislation would respond to public influence. Market products will be similarly affected. Environmental matters will continue to influence farming via Government and EEC legislation, again fuelled by public opinion.

Scotland is on the perimeter of Europe and has climatic, soil and topographic disadvantages. Grassland farmers should, therefore, make every possible use of the unique "Scottish system" in which education, research and development and extension/advisory works are vested in the Scottish Agricultural College. Allied to this system are world class research institutes and activities, and many relevant agricultural societies such as the Royal Highland and Agricultural Society. Any grassland farmer who hopes to survive will take advantage of the scientific output and services of these bodies, thus becoming more competitive. This will be increasingly necessary in the future whether viewed against an EEC background or indeed a world scenario given recent GATT negotiations.

SOUTH WEST SCOTLAND GRASSLAND SOCIETY IDEAS COMPETITION 1991-92

After receiving a record number of entries for this Competition 2 years ago, there was a sharp drop in entries last year. However, the Executive Committee have decided to continue the Competition, and seek original ideas or innovations which 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.

FORAGE CONSERVATION TOWARDS 2000

Malcolm Castle
Tobergill, Low Coylton, Ayrshire

The above title was the theme of a highly successful conference held at Braunschweig, Germany in January 1991 and organised by the European Grassland Federation. Approximately 200 scientists, mainly from Europe, attended including members from our own local Grassland Society. Indeed, Scotland was well represented with delegates from all three campuses of the Scottish Agricultural College.

Forage in Europe

The amount of silage made annually in Europe is still increasing and shows little sign of slowing down. Hay production continues to decline but, surprisingly, the output of dried grass is increasing due to a subsidy it receives.

Emphasis is now clearly on low-input systems for animal production. Hence, achieving high quality in all forages is increasingly important. However, forage is still a highly variable product. For example, with the best material, 5000 kg milk per lactation may be obtained, but with poor forage the contribution can be zero. It was also stressed time after time at this conference that farmers, advisors and research workers must become far more aware of the environment. Whatever system of forage conservation is used, we must all ensure that at every stage the methods of making and feeding do not damage any aspects of the environment.

Machinery

The main new idea in forage machinery was a "mat"-making technique designed to increase the rate of wilting of herbage in the field. Briefly, the cut swath was lifted and fed through a maceration device which exerted a high pressure so that the water in the cells was squeezed out. The mashed forage was then compressed into a thin mat and deposited on the stubble to dry naturally. It was claimed that this technique could make wilted silage in a few hours, but the machine looked to be heavy, complex and expensive. Testing will be done in England in 1991, but it would be valuable to see the machine working under the typical wet conditions of south-west Scotland. The idea of a single "computer" on the forage harvester and the baler to measure the moisture content of the forage and to apply automatically the correct amount of additive was discussed. Another suggestion

was the environmentally-friendly system of drying forage with solar-heated air. This involves no pollution, no additives and reduces fuel consumption.

Additives

Although additives are still with us no major advance was reported, but a considerable amount of fundamental work was clearly being done on the fermentation and microbiology of silage. This is vital to the future development of all types of additive, in particular the inoculants. Formic acid and its safer derivatives have the important characteristic of rapidly producing acid conditions in the early stages of fermentation, and these are still the most widely used additives in many countries. Legislation via the EEC on the testing and certification of forage additives has made no progress, but Norway and France now have their own schemes which appear to be working well.

Big-bale silage constitutes approximately 15% of the total silage in the UK, and a Scottish trial indicated the beneficial effects of an additive on this type of silage. Bales made from herbage with a dry-matter content of 31.8% were either untreated or treated with "Add-Safe" (BP Nutrition) at 4.5 litres per tonne. When offered to steers the additive-treated silage gave a higher intake of silage dry matter, and also increased liveweight gain 27%.

In a trial at Auchincruive a biological additive "Sure sile" (Microbial Developments Ltd.) gave higher liveweight gains than an untreated control silage. In another trial "Sure sile" and formic acid gave similar liveweight gains, and it was concluded that the mode of action of biological additives is not clear.

Silage effluent

Effluent is, without any doubt, the main environmental problem arising from silage. So-called "improvements" in silage-making techniques have increased this problem. In theory, the solution is to ensile only herbage with a dry-matter content of 28% or more, but this simple solution is not possible in south-west Scotland. If effluent cannot be avoided, much higher building standards will be required for silos and effluent storage. These buildings will be expensive, and it may be preferable to alter some established silage-making techniques, even if the efficiency of silage making is reduced.

Possible solutions to the effluent problem are to make more big- bale silage; to select additives on the basis of low effluent production; and to use absorbents in the silo. Trials at Auchincruive have shown that sugar-beet pulp and dried distillers grains are promising absorbents, and can halve the peak flow of effluent. Indeed the financial and practical penalties associated with absorbents may have to be tolerated in the future.

The future

The ultimate aim of good forage conservation is to feed the animals more economically, to maintain farm profits and to protect the environment. At present the European farmer is under great pressure from the mounting surplus of food, the high cost of the CAP, imports from Eastern-bloc countries, and the "green" movement. Indeed, it is not impossible that in the near future the use of nitrogen fertilizers could be restricted and silage making could be prohibited in some areas. For environmental reasons the use of old motor tyres on silos is not allowed in some parts of the world. These are all large and real problems which deserve much more investigation and thought.

An important first step is to study the microbiology of silage in much greater detail and to conduct more detailed research on forage machinery. Many of the present ideas and techniques are based on research conducted decades ago, and high losses in the silo still seem to be accepted. Potentially many of these techniques could harm the environment and require further study.

Research into these topics is very expensive and in some countries such as England relatively less cash is being invested in such work. For example, the old Grassland Research Institute at Hurley will be closed down next year. It was suggested that a limited number of "centres of excellence" should be established throughout Europe to conduct forage research of the highest quality. This idea could be preferable to a large number of smaller centres in each country. As one delegate stated "do more research, not so many trials". Perhaps this was the most important statement concerning forage conservation in the entire conference as we look forward to the year 2000.

ISLE OF MAN HIGHLIGHTS

J Harris
Secretary, Manx Grassland Society

Adapted from the Manx Grassland Newsletter No,13, 1991

Autumn Tour of Northern England, 1990

Following silage judging in the Isle of Man by Don Wilkinson, Newton Ketton, Darlington, 23 members of the Society visited several farms in the north of England, starting at Monks House, Penrith. Here Irvine Turnbull farms 162 ha of light land in the Eden Valley with a 760 mm rainfall. Cropping is 134 ha grass and 28 ha cereals. The main enterprise is a dairy herd of 200 cows calved mainly in June and July. The cows are tightly strip-grazed until after the second silage cut, and set stocked thereafter. This leaves the maximum area for first and second cut silage. The average milk yield is 7130 l with concentrate at 0.24 kg/l, and a stocking rate of 2.5 cows per ha.

Village Farm, Bolton-on-Swale is the family farm of Mr A R Booth, and is mostly in long-term leys. Two-thirds of this 76 ha farm is on clay, the rest on sand and gravel, and the rainfall is 635 mm. The aim with the dairy herd of 168 cows is to produce milk profitably from good quality grass and silage. Buffer feeding with silage all the year round allows tighter stocking in the spring to ensure a maximum area for the first silage cut. The average milk yield is 6750 l with concentrate at 0.27 kg/l and a stocking rate of 2.5 cows/ha.

The 178 ha farms of John Kirkup, who is current Chairman of the Durham Grassland Society, was visited next. 170 beef cattle are kept on a straw/cereal/brewers grains system, and 204 dairy cows and followers are carried on 114 ha of grass. The average milk yield is 6000 l with 0.31 kg of concentrate per l.

The Manx Society went on to visit Don Wilkinson's farm at Darlington, which is described elsewhere in this Journal. Holly Moor Farm, near Bishop Auckland followed, where Stuart Heddle farms 40 ha at 260 m with a rainfall of 760 mm. The late-summer calving dairy herd of 85 cows has an average yield of 5600 l, and is housed in cubicles. Grazing is in 2 ha paddocks on a leader/follower system with the high yielders leading. Whole crop wheat silage treated with urea has been introduced recently and dramatically increased butter-fat contents.

Spring tour of Co.Cork, Eire, 1991

The general impression of Ireland gained by the 22 members on this tour was that the countryside was tidy and well farmed, and the grass seemed uniformly good. Much of the country was flat with expanses of peat bog which had been developed. Virtually all the forestry was on reclaimed peat bog rather than on hill land.

A typical dairy farm visited was that of Padraig Walsh near Durrow, where Padraig was away and left two neighbouring farmers to show the party around. Patrick Mulchay's farm at Michelstown is a commercial venison unit - Galtee Deer Care. The deer are of Eastern European type giving 150 kg in 9 months compared with 80 kg in 24 months with Scottish deer. Fat-free meat is produced specifically for the American market at an average ex-farm carcass value of £450.

The 93 ha farm of Michael Dunne at Kilworth was very heavily stocked at 3 livestock units per ha. This herd was top of the Moorepark College's list for efficiency, with 84 cows in the herd averaging 27 l per day. Another amazing organisation was Mitchelstown Creamery which takes 1.8 million litres in April and only 90,000 l in November when most of the staff are paid off for 2 months.

The tour ended at Moorepark Experimental Station where a 28 ha all-grass unit was visited. This carries 75 dairy cows and provides all the grass and silage required. The cows are divided into 25 cow groups receiving varying quantities of concentrates plus silage.

SOUTH WEST SCOTLAND GRASSLAND SOCIETY VICE-PRESIDENTS PRIZE

The first SWSGS Vice-President's Prize for the best Grassland student in the Higher Diploma course in Agriculture at Auchincruive was awarded to Sandra Rutherford at the Annual Prizegiving on 19 October 1990. Sandra, who hails from Aberdeen, received a prize of £25 plus a year's free membership of the Society. This prize is funded by donations from the Honorary Life Vice-Presidents of the Society.

SWSGS SILAGE COMPETITION 1990-91

A meeting of the SWSGS in Oswald Hall, The Scottish Agricultural College, Auchincruive on 17 January 1991

Judge: Clive Gurney, Austerson Hall, Nantwich, Cheshire

The 1990-91 Competition Night was held in the opulent surroundings of the music room in Oswald Hall at Auchincruive with the Society's Vice-Chairman J Forrest in the chair. For the third year running the Bank of Scotland (Castle Douglas branch) generously sponsored the meeting. This year the silage judge was Clive Gurney of Austerson Hall, Nantwich who was the winner of the 1989 UK National Silage Competition, and a judge in the 1990 National Competition. He brought greetings from the Cheshire Grassland Society of which he is Chairman.

Clive began by remarking on the high standard of all the short listed farms, and on the pride the farmers obviously took in their businesses. He had great difficulty in finding faults. However, shoulder waste was a problem for everyone because of the difficulty of getting the tractor into the corners, particularly with the bulky crops experienced in 1990. To prevent this type of waste Clive recommended placing in the corners small sand bags which follow the silage down as it subsides and eliminate air pockets. Top waste was certainly not a problem and he commended all entrants on the standard of sheeting of their silos. One suggestion he made was that the side sheets should be brought right down underneath the silage to prevent the effluent going through the walls of the silo. The uniformity of the silage was also tremendous, but he did take a few marks off on two farms where there was a little mould under the top sheet. Most farms had used a new top sheet plus last year's one, and held the sheets down with tyres. One farm put pallets instead of tyres on the top, but this gave some waste because the pallets did not go down evenly.

The judge was disappointed with the standard of effluent control on the farms he visited, and urged farmers in south west Scotland to solve their problems before controls were imposed on them by the River Boards. Effluent must not be allowed to get into the burns and rivers. If offenders were tracked down they could be ordered to stop making silage, and fined up to £20,000. Clive felt that although everyone was trying, there was something of a cavalier attitude to effluent control and more care should be taken in collection and disposal.

Many of the farms were using contractors and some of the prices quoted were amazing. There was no way that having one's own equipment could be justified with the low prices on offer. Having your own tackle does allow cutting at the best time, but the price of the machinery and its upkeep puts it out. The feeding efficiency was good and most farms were getting high intakes, but farmers must have the nerve really to challenge the food value of quality silage. After the good summer of 1990 the quantity of silage made was good on all farms, some actually having a surplus.

Before announcing the winners the judge admitted to having some difficulty in judging in the Beef/Sheep Class because too few records were kept on these farms. He recommended that some form of recording should be adopted, e.g. MLC recording, so that the farmer could tell where he was going wrong.

Table 1 shows the marks awarded to the entries on the Judge's short list. For the eighth time in the 18 years of this Competition the first prize in the Dairy Class went to Michael Milligan of Culvennan, Castle Douglas. At 82D this was the best silage he had ever made. Michael was also the overall winner and Silver Rosebowl champion this year. A & W A McWilliam, Colfin, Lochans, Stranraer were awarded the second prize in the Dairy Class, repeating their performance of last year when they also won the prize for the best new entrants. A & I Irving, Largs, Twynholm took the third prize.

H R & C Dalrymple, Crailloch, Ballantrae were winners of the first prize in the Beef/Sheep Class, and received the BP Nutrition Trophy. The prize for the Best Big Bale entry was awarded to dairy farmer W Shuttleworth, Foremannoch, Crocketford Road, Dumfries.

The Michael Milligan Prize for attention to detail went to J Mackie, Dalfibble, Parkgate, and the winner of the best new entrant prize was R Brown, Cowar, Dalbeattie.

R Lindsay, Overlochridge, Stewarton won the prize for the best silage (on analysis marks only) for Ayrshire for the third year in succession. The prize winners in the other counties were J Forrest, Meinfoot, Ecclefechan for Dumfries; J M L Milligan, Culvennan, Castle Douglas for Kirkcudbright; and J & J McColm, Cairngarroch, Drummore for Wigtown.

Cash tokens donated by Plasti-Covers Ltd were awarded to the first and second prize winners in the Dairy Class, to the first prize winner in the Beef/Sheep Class, and to the Big Bale winner.

Table 1 Short list for judges visit (in order of analysis)

| | | Analyses (35) | Marks Inspection (65) | Total |
|----------------------------|---|------------------|-----------------------------|-------|
| Dairy Class | | | | |
| 1st and Rosebowl | J M L Milligan Culvennan, Castle Douglas | 32.60 | 58.00 | 90.60 |
| | J & J McColm Cairngarroch, Drummore | 30.80 | 46.00 | 76.80 |
| 2nd | A & W McWilliam Colfin, Lochans, Stanraer | 30.70 | 49.50 | 80.20 |
| | R Lindsay Overlochridge, Stewarton | 29.75 | 46.50 | 76.25 |
| | R McCreath Broughton, Whithorn | 27.85 | 45.00 | 72.85 |
| Milligan Prize | J Mackie Dalfibble, Parkgate, Dumfries | 27.50 | 47.50 | 75.00 |
| | J McFadzean Towerhill, Kilmaurs | 24.40 | 49.00 | 73.40 |
| 3rd | A & I Irving Largs, Twynholm | 23.05 | 55.00 | 78.05 |
| Beef/Sheep Class | | | | |
| 1st and BP Trophy | R Brown Cowar, Dalbeattie | 25.65 | 46.00 | 71.65 |
| | H R & C Dalrymple Crailoch, Ballantrae | 24.15 | 50.00 | 74.15 |
| | W T McCombe Trohoughton, Dumfries | 24.15 | 47.00 | 71.15 |
| | J Curmack Killymingan, Kirkgunzeon | 23.70 | 45.00 | 68.70 |
| Best Big Bale Entry | | | | |
| | W Shuttleworth Foremannoch Crocketford Road, Dumfries | 21.45 | N/A | N/A |

N Day: Silage Quality and Additive Use 1990

Table 2 shows the results of silage analysis over the 5-year period 1986-1990. 1986 was the last year of the "in vitro" analysis, all later values were produced by the NIR method. There does appear to have been a progressive improvement in quality and, because of the continued increase in the number of silages falling in the "very good" category, a "super" category with D values greater than 75 has been introduced. The "downside" of the results is the dramatic reduction in the number of entries and it is possible that the apparent improvement merely results from the absence of the poorer performers. However, there is no information to support or refute this idea.

Table 2 Silage Quality 1986-90

| Quality | D-Value | % of total in each group | | | | |
|----------------------------------|---------|--------------------------|------|------|------|------|
| | | 1986 | 1987 | 1988 | 1989 | 1990 |
| Super | > 75 | 0 | 3 | 3 | 5 | 8 |
| Very good | 70 - 75 | 7 | 30 | 35 | 55 | 53 |
| Good | 65 - 70 | 42 | 31 | 42 | 29 | 34 |
| Medium | 57 - 65 | 51 | 34 | 20 | 11 | 5 |
| Poor | < 57 | 0 | 2 | 0 | 0 | 0 |
| Mean DM% | | 22 | 22 | 22 | 23 | 22 |
| Mean Ammonia N (% of total N) | | 11 | 9 | 8 | 8 | 8 |
| No. of entries | | 57 | 64 | 66 | 73 | 38 |

Comparing the competition averages with the averages of all silage samples analysed by SAC from south west Scotland this winter, it appears that "better than average" silages were submitted. There was little difference in the average DM values, but the average D value for the competition silages was almost 5 units higher than the average for the area - 71.1 against 66.4 - giving mean ME values of 11.4 and 10.6 respectively. The average CP% for the competition silages was also higher at 16.6 compared with 15.1, but the ammonia value was lower - 7.9 against 9.9. Norman suggested that these comparisons proved that SWSGS membership encourages the production of better silage.

Table 3 shows the range of additives used on the silages entered in the 1990 competition. The proportion of untreated silages had fallen slightly - again perhaps reflecting fewer of the less enthusiastic entrants. Acid additive use remained constant at 26% from 1989 to 1990, but inoculants increased from 31% to 45%. Most of the increase in inoculants was balanced out by the use of acid/formalin mixtures decreasing from 6% in 1989 to zero in 1990.

Table 3 Additive Use 1990

| Type | Additive | Dairy Class (29 entries) | Beef/Sheep Class (9 entries) |
|-------------------|-------------------------|-----------------------------|------------------------------------|
| Acid (10) | Add-SaFe | 3 | - |
| | Add-F | 1 | - |
| | Sulphuric | 3 | - |
| | Grasafe | 1 | - |
| | Maxgrass | 2 | - |
| Enzyme (2) | Axis D780 | 2 | - |
| Inoculant (17) | Ecosyle | 2 | 2 |
| | Super Sile Plus | 3 | 1 |
| | Bio-Ferm | 2 | - |
| | Downland Safe-Sile 4 | - | 1 |
| | Diamond Triplesile-Plus | 1 | - |
| Unnamed inoculant | 5 | - | |
| None (9) | | 4 | 5 |

All the identified inoculants contained *Lactobacillus plantarum*, and most also contained other bacteria and enzymes. D780 was a development material described as an enzyme, but probably contained bacteria also. Although dry-matter content had stayed relatively constant and effluent was always a potential problem, the publicity given to absorbent additives in 1989 seemed to have had no influence on SWSGS members. No one reported using an absorbent in 1990.



OFFICIALLY APPROVED IN IRELAND
BY TEAGASC
FOR SILAGE PRESERVATION

Preserves even in difficult
conditions

Improves digestibility

Reduces spoilage

Safe to handle and non-corrosive

FOR DETAILS AND SUPPLIERS OF THE UK'S TOP SELLING
SILAGE ENHANCER CONTACT:

McCaskie Farm Supplies, Ayr
☎ 0292 260 133

Rickerby, Dumfries
☎ 0387 53328

McCartney-Stewart, Castle Douglas
☎ 0556 2722

or Blyth, Forum Feeds ☎ 0738 39268 or 0737 773711

Dawn has now broken on the silage additive that will lead the field



made up of three components that have been tailored together to meet the demands.

- * ELITE STRAINS OF BACTERIA to rapidly dominate the clamp
- * UNIQUE STIMULANT to help drop the pH even faster
- * UNIQUE ENZYME PACKAGE to guarantee sufficient sugar and can help further in the reduction of effluent

AXpHAST REDUCES NUTRIENT LOSS.
GREATLY REDUCES EFFLUENT FLOW.
INCREASES VOLUNTARY INTAKES and
INCREASES ANIMAL PERFORMANCE.

TURN GRASS FROM

TO GOLD

Axis Agricultural Ltd, 36, High Street, Eccleshall, Stafford ST21 6BZ.
Telephone 0785 850941. Fax 0785 850196.

AXIS AGRICULTURAL LIMITED IS A MEMBER OF THE BIOTAL GROUP OF COMPANIES



Judge's talk

Clive Gurney opened his talk on his farming methods by stating his guiding principle which was - "Animals first, people second, profitability third". In his farming he has had great support from his wife and family, and also from his father. Membership of an ICI Study Group has been an additional help.

Austerson Hall is a 45 ha all-grass dairy farm, which is long and narrow with the stabling in one corner. It is a typical Cheshire dairy farm being absolutely flat and lying on a medium to heavy loam. The average annual rainfall is about 900 mm. The dairy herd consists of 100 Holstein cows with an average yield of almost 8000 litres per cow. Clive aims for heifers calving at 2 years old with a weight of about 500 kg. Up to 12 months the animals are pushed on by feeding silage and cake, but in the second year they get silage only. All animals are weighed monthly. Calves are fed twice a day. When quotas were introduced in 1984 Clive started to use a Simmental bull on 60% of the herd.

The grassland at Austerson Hall consists mainly of late to midseason ryegrasses plus white clover sown at a total rate of 34 kg/ha. In establishing a sward on this land the first priority is drainage using plastic pipes laid diagonally across the original 1856 drains. The soil is very compact so most of the farm has been subsoiled. Under the loam top soil is a sandy clay which acts as a reservoir for water.

The first cut of silage is taken about 10 May using own equipment and wilting for 12 hours. Cutting and grazing are alternated. Clive continues to use acid additives - sulphuric, formic or formalin/acid mixtures. The analyses of the silage made in two recent seasons are given below.

| | 1987 (4 cuts) | 1988 (2 cuts) |
|------------------------------------|---------------|---------------|
| Dry matter (%) | 23.8 | 26.3 |
| Crude protein (%) | 17.9 | 17.2 |
| Ammonia nitrogen (% of total N) | 9.0 | 4.0 |
| ME (MJ / kg DM) | 11.0 | 11.1 |

The cows are stocked at a rate of three per ha and milked three times per day. Of the average yield of 8000 litres per cow 50% is estimated to be contributed by the silage. The margin over feed and fertilizers is about £3000 per ha. The feeding pattern of the dairy cows is -

| | | | |
|-----------------------|----|----|-----|
| Milk yield (kg/day) | 43 | 28 | 16 |
| Silage (kg/day) | 45 | 56 | 66 |
| Concentrates (kg/day) | 16 | 8 | 0.2 |

A 50% pollution grant has been used to install an underground main to take effluent and dirty water to an irrigator. Slurry only goes into a 4.6 m deep concrete lagoon, which provides 4 months storage. This is emptied by a 7500 l Slurry Guzzler which is filled in 1 minute and emptied in 2 minutes. The entire lagoon can be emptied in 2 days.

To practice conservation requires profitable farming and Clive has participated in a number of measures. Almost every field on the farm has a marl pit, and these are dredged out over a 5-year cycle. The pits have been fenced off and the flora and fauna left to develop naturally. Clive has also done some tree and hedge planting. He made a plea to farmers to support their local FFWAG, which he considered an organisation for improving the public image of farming. He stressed that farmers are the "guardians of the countryside", and emphasised the value he placed on enjoying his farming, and providing a quality of life for all the people involved.

Discussion

Questioned on how often he reseeds Clive said that he only did it when he had to, since it takes 2 years to establish a reseed. With good management it should not be necessary to reseed. He always drains before reseeding, and most reseeds have been down for 17 years.

Weed control in reseeds had been improved by grazing the swards with sheep in the autumn. The sheep are kept until the end of January, which produces a good dense sward keeping the weeds out.

Jim Watson proposed the vote of thanks, first to Bill Scott and Stewart McCaskie of the Bank of Scotland for sponsoring the meeting. He also thanked all the providers of prizes and the Society members who acted as preliminary judges of the silages. Finally Jim expressed the gratitude of the Society to Clive Gurney for performing the difficult task of judging the silage competition.

D Reid

CLOVER FOR BEEF : PROFITABILITY AND RELIABILITY

David Younie

The Scottish Agricultural College, Aberdeen

Joint meeting of the SWSGS and the Wigtown Agricultural Discussion Group at the Judge's Keep Hotel, Glenluce on 12 February 1991

The speaker at this well attended meeting was David Younie who is a senior grassland specialist in the Agronomy Department at SAC, Aberdeen. In the chair was Iain Evans, chairman of the SWSGS, and the sponsors were Scottish Agricultural Industries plc, Edinburgh in conjunction with ICI Seeds Ltd. New developments in clover are planned by the companies for 1991.

David first reminded the audience of the main advantages of the clover plant, namely, that the bacteria in nodules on its roots fixed nitrogen and supplied it to the sward; and that pure clover provided a better diet for the animal than did pure grass. He believed that the younger generation had difficulty in accepting that clover was the mainspring of a forage system for almost 200 years up to the second World War. In recent years a small amount of clover has been included in most seeds mixtures as 'conscience' clover but little advantage has been derived from it. Because of surplus production intensive fertilization of grass has become less attractive and interest in clover is increasing.

Although much research has been done on clover in the last 10-15 years, this has consisted mainly of small-plot experiments and indoor feeding trials. Can the information so obtained be put into commercial practice ? This question was the starting point of the work in Aberdeen, where in 1983 two units were set up on similar soil types to carry out comparisons in terms of beef production.

Swards were sown on both units with seeds mixtures containing ryegrass and timothy plus Milkanova white clover. The clover was sown at 2 kg/ha on one unit and at 4 kg/ha on the other. From 1984 to 1986 the comparison was between high nitrogen intensive grass management on the first unit and clover with some nitrogen on the second. Since 1987 the clover unit has been managed organically.

Friesian steers are bought in September/October and managed on an 18-month beef system to be sold the next winter between December and March at 460 kg. In May/June silage is made from two-thirds of the grassland on both units and the remainder is grazed at a target grazing height of 7 cm. At the second silage cut two-thirds of the total area is grazed and one-third cut. From then until October all the grass is used for grazing, at a target height of 8 cm. The overall stocking rate is 3.6 animals/ha on the clover unit and 4.3 on the intensive. The aim is to offer the same amount of herbage per animal on both units. In the winter period all animals are fed silage *ad lib*.

Nitrogen is applied at 270 kg/ha on the intensive unit. In the first 3 years the only nitrogen applied on the clover unit was at 260 kg/ha on the one-third of the grassland grazed in the first growth, and none was applied on the rest. Since 1987 farmyard manure has been applied on the silage area. The aim is to stimulate as much clover in the sward as possible. Over the 6 years there has been 30 to 40% of clover dry matter in the swards on the clover/organic unit and 2 to 10% on the intensive unit. On the former there was a sudden drop in the clover content to 20% in 1990, which was attributed to over grazing with sheep in the autumn of 1989.

On both units the animals are turned out at the same time in early May. Cages are used to measure the quantity of herbage available, and this has varied considerably from year to year. However, the intensive swards have, on average, given twice the yield in the May/June period, although there has always been enough grass for the steers on the clover/organic swards.

In the first silage cuts the swards on the clover unit have given an average of 5.8 t dry matter per ha, which is 18% less the swards on the intensive unit. It has been found essential to use an additive on the silage from the clover unit. In the first 3 years Add-F was applied, but since the organic system was adopted molasses has been used, running it on to the swath in the field.

The number of cattle grazing days per ha has been 18-20% lower on the clover unit than on the intensive unit. In the early part of the season the mean weight of stocking (i.e.the weight of animals grazing per ha) on the former was 3.3 t/ha compared with 4.0 t/ha on the latter. Daily liveweight gain during the winter feeding period was 0.95 kg/head on the clover silage against 0.82 kg on the high-nitrogen

silage, and this difference has been consistent over the years. Since the changeover to the organic system the animals on this unit have been fed minerals or seaweed meal. No consistent difference in liveweight gain per head has been noted between the two units during the summer grazing period.

From turnout to slaughter there was 15-18% less liveweight gain on the clover unit than on the intensive. Clover was estimated to be equivalent to a total application of 180 kg nitrogen per ha on a conventional system. In the first year of the investigation one animal was lost with bloat on the clover swards, but subsequently Bloat Guard was used on a routine basis. The sward is always grazed tightly to avert bloat.

Some of the financial results, averaged over the first 5 years, are shown below.

| | Low input | High input |
|------------------------------------|------------|------------|
| Overall stocking rate (animals/ha) | 3.57 | 4.33 |
| Output (£/head) | 346 | 344 |
| Variable costs (£/head) | <u>154</u> | <u>172</u> |
| Gross margin (£/head) | 192 | 172 |
| (£/ha) | 683 | 744 |
| Fixed costs (£/head) | <u>99</u> | <u>95</u> |
| Net margin (£/head) | 93 | 77 |
| (£/ha) | 332 | 333 |

No soluble nitrogen, phosphate or potash has been applied on the clover unit since 1986. Only dung and urine have been used. Animals on the organic unit have not been wormed for the last 3-4 years, but no problems have arisen. The individual animal performance on the organic system has been virtually the same as on the intensive high-nitrogen system. However, animals from the former have sold at an average of £2.28 per kg dead weight against £1.96 from the latter at the same carcass weight. Overall, the profitability from the organic system has been higher both on a per head and a per ha basis, and this advantage still holds if the organic premium is taken off.

David concluded that there is ample potential for relying on clover in the north east, though it may not do so well in those areas where there is less sunshine. Clover does best on well drained soils on south facing slopes in areas with favourable climate.

Discussion

The discussion was opened by **John Bax**, animal production specialist at the Acrehead Unit, Crichton Royal, who spoke about clover for dairy cows. He pointed out that very few dairy farmers in Scotland rely on clover only, probably only a few in Wigtownshire who farm on the Ramsey system. This is because of the convenience of nitrogen fertilizers and of the aim for high yields. Things are now changing rapidly, and work on clover for the dairy cow began at Crichton Royal in 1987 when a dairy system based on clover was planned.

The first problem was to get clover into the swards so that the whole unit was converted ready to start the project in the spring of 1988. On half of the swards the existing herbage was sprayed with paraquat at a rate of 1.4 l/ha which did not actually kill the grass. An Aitchison drill was then used to direct drill white clover seed at 4 kg/ha. Within 3 weeks the grass had recovered, and there was a very good germination of clover along the slots. The rest of the unit was ploughed and reseeded conventionally. Clover has been established in about 14 fields with no problems so far, good germination having been obtained with both autumn and spring sowings.

Clover silage has now been successfully made for three seasons. Additives used have been sulphuric acid, Add-F, Add-Safe, Ecosyle, and Maxgrass. In 1991 the choice is between Add-Safe and Ecosyle. Regrowths have been consistently slower on the clover swards.

No nitrogen fertilizer is applied on the clover unit - reliance is placed entirely on clover and slurry (equivalent to 80 kg nitrogen / ha). The clover silage has had much the same ME as the high nitrogen silage - 11.0 to 11.3, but the crude protein content has been low. This is attributed to taking very high yields - in 1990 the yield from the clover swards was 5.9 t dry matter / ha compared with 5.6 t/ha from the high nitrogen swards. In previous years the first cut was taken between 21 and 28 May, but in 1991 it was planned to cut about 16 May in an attempt to get a higher protein and ME. The reduction in yield will be offset by a surplus of silage from 1990. The expected output from the clover unit was about 75% of that from the high-nitrogen unit, but in the 3 years it has actually been 82, 81 and 96%. Extra area was allocated but the yields have caught up.

Wintering sheep has some advantages in the system. However, since they come from a hill farm they have to be kept on the units until the end of February, though ideally they should come off at the New Year.

Questioned on the dangers of chickweed developing in the clover reseed, John Bax replied that application of the half-rate of paraquat on a dense sward killed most of the weeds and resulted in a vigorous growth of clover and grass. On more open silage swards the grass could swamp the clover. Asulox is safe to use on docks in a clover sward but most other dock herbicides will kill the clover.

Both speakers were asked about the potash status of the clover swards in their projects. At Crichton Royal most of the fields in the clover unit were potash deficient despite the annual application of 120 kg potash per ha, plus heavy slurry dressings in the years before the project began. They were running into potash deficiency on the gravelly soils at Aberdeen under both the organic and the high nitrogen systems. There was a problem finding a form of potash which was acceptable under the organic standards.

David Younie considered that the best clover establishment was obtained from direct sowing, but not in the backend when clover plants were lost by frost heaving. Good establishment was also got by sowing under arable silage. Rotational grazing increases the clover content of the sward. Application of nitrogen in the spring reduces it, because the grass shades out the buds from the clover stolons.

No solution has yet been found to the problem of worms in the cattle on the organic system at Aberdeen. Anthelmintics had to be used in 1990 although this is against the organic standards.

On the Crichton Royal project bloat was no problem in the first 2 years when the cows were grazed at a high stocking rate. However, at the lower rate applied in the 3rd year utilization was poorer and bloat occurred. The problem was solved by giving Bloat Guard in 1 kg of concentrate fed at grass. No concentrate will be fed at grass in 1991 so there is a problem how to administer the Bloat Guard.

Billy Miller, Chairman of the Wigtown Agricultural Discussion Group proposed the vote of thanks to the speaker and the sponsors.

D Reid

"MY BUSINESS STRATEGY FOR THE NINETIES"

*A panel meeting of the CSGS at the Newhouse Hotel
on 20 February 1991*

D Baillie, Calla Farm, Carnwath

The stock on Calla Farm consists of 320 suckler cows with Limousin x Friesian calves kept as replacements. Limousin bulls are used over most of the herd. There is also a sheep flock of 600 pure Blackface ewes and 100 Blue de Maine ewes. All the lambs are finished on the farm, and a further 300-400 lambs are bought in for finishing on turnips.

Silage fields receive 126 kg of nitrogen per ha in early spring. They are then grazed by ewes and twin lambs until May when a 20:10:10 fertilizer is applied at 500 kg/ha. Normally only one silage crop is cut but in a bad year two may be taken.

A large sum is received in subsidies, but what is the future of this business without subsidies? Diversification was tried 3 years ago by forming an Angora company, but an investment of several thousand pounds resulted in expensive dog meat. Other diversifications such as tourists based on farm buildings and Christmas-tree production were considered but rejected since other farmers had already been well established elsewhere.

A nearby farm has recently been purchased by non farmers from the proceeds of a house sale in the south of England. The purchasers immediately applied for planning permission for a golf course.

Mr Baillie's aim is to utilise existing farm assets fully and to keep the overdraft as small as possible.

J H Griffies, Clydeside Farm, Biggar

Mr Griffies was born in Wrexham, and started farming on a 1.6 ha dairy farm. He then moved to a 28 ha beef and sheep farm carrying 140 Limousins. He now farms Clydeside, which covers 114 ha and is stocked with 300 pedigree Holsteins, 60 pedigree Texel ewes and 700 lambs bought in for finishing. Initially, 200 dairy cows were milked with an average yield of 4500 l, but now 120 are milked three times a day and have a herd average over 8000 l. The concentrate fed to the cows is home mixed and contains maize gluten, beet pulp and dark grains which are bought when available at a low price. All heifer calves are reared, and a proprietary cake is bought in for them.

Grazing for the dairy cows receives 2.5 kg nitrogen per ha per day, and a 20:10:10 fertilizer is applied on the silage fields at 628 kg/ha. The cropping sequence is grass - turnips - barley - reseed, and the mixture used consists of perennial ryegrass, timothy and white clover.

Mr Griffies is breeding to increase size of cow in addition to correctness. If size is not also taken into account then the breed will become smaller. Bigger udders require longer legs.

He plans to reduce the overdraft by selling 120 pedigree cows this year. These will be replaced with 120 heifers, and the extra quota may be leased out. In future, care will be taken that borrowings do not exceed what inflated interest payments require.

Clydeside Farm is beside a river, and with tighter pollution control in the future extreme care will be necessary with the slurry silage system. A straw bedded system for the dairy cows is under consideration. An additional expense will be paying for the disposal of dead stock.

Mr Griffies suggested that over production would result in sheep, cereal and other quotas being introduced. If sexing of semen is available in the future he will use it to obtain heifers from the best dairy cows using the best bulls. Embryo transplants of 3/4 Limousin would be placed in the poorer cows.

Mr R Carruth, High Auchensale Farm, Kilbarchan

High Auchensale is an all-grass farm of 100 ha carrying 135 dairy cows of whom 40-50 are Ayrshires and the remainder Friesian/Holstein. 50 cows and heifers are sold each autumn. A few Texel sheep are also stocked. Mr Carruth's ideal cow would be 35% Friesian / 65% Holstein, of medium size and with a large back. It should have a milk yield of 5500-5600 l using 1.1-1.2 t of cake.

Perennial ryegrass S23 still performs very well in the swards. A 25:5:5 fertilizer is applied at 188 kg /ha on the grazing fields. Silage fields receive slurry at 22500 l/ha plus a 25:5:5 fertilizer at 250 kg/ha for the first cut, and a 20:5:14 fertilizer at 250 kg/ha for the second cut.



Local Advice from

SCHERING

Agriculture



For a full field walking service and expert
crop protection advice in your area,
contact:

Derek Robertson
Newton Stewart 3392

Green Science in Action

Schering Agriculture is a trading style of Schering Agrochemicals
Limited, a subsidiary of Schering AG West Germany



SCHERING
Agriculture

A Sign of
CONFIDENCE



The Scottish
Agricultural
College

You and your Merchant are
Supporting the SAC

Grass Recommended List

When buying your grass seed look for the special SAC sign ... the sign that ensures your seed supplier has access to up-to-date information on all grass varieties. That means he can sell and you can buy ... *with confidence.*

THE SPECIAL SAC LABEL

Charlie Mackie

Agronomy Department, The Scottish Agricultural College, Aberdeen

"Brand-marked" grass and clover is available from seeds merchants who are participating in a scheme to help finance the Scottish Agricultural College's list of recommended varieties. Only these merchants have access to the detailed up-to-date information on new varieties so vital in ensuring that farmers in Scotland get the best grasses and clovers suitable for Scottish conditions.

The testing of grasses and clovers for Scottish conditions started on a coordinated basis in the mid '50s and in 1959 the Scottish Recommended List of Grasses and Clovers was published. The plots sown in spring 1991 will be the first to be funded directly by the industry following the Barnes Report and the withdrawal of Government funding.

The fact that the Recommended List has become a valued document for farmers and the seed trade in Scotland has meant that when the Government funding was withdrawn, the question asked was not "should there be a Recommended List?" but "how can the Recommended List be funded?".

Great credit is due to the NFU for Scotland and the seed trade organisations (SSNTA, UKASTA and FAC) for agreeing to a scheme which involves a contribution of 2 pence on every kilo of grass and clover seed sold being returned to SAC to finance the Recommended List Trials.

At the launch of the scheme in January 1991, Sandy Mole, Vice President of the NFUS said; "This has the wholehearted support of the Grazing Livestock Sectors". The response from the seed trade in Scotland has been excellent. By April 1991, forty-three companies had joined the scheme, accounting for over 90% of estimated seed sales. The contribution from farmers of about 74 pence a hectare is small in relation to the total cost of reseeding, and because grass is normally down for several years, the annual charge is further reduced.

Currently in the trials at SAC there are almost 200 new varieties under test. Only a small proportion will make it to the Recommended List.

The varieties that do make it have greater persistence, improved winter hardiness and disease resistance and higher yield potential. In the last 20 years, yield gains are estimated at about 15%. Over a 30-year period, persistence, as measured by per cent ground cover, has more than doubled.

In current trials, the variation from the best to the worst varieties can exceed 2 t dry matter (DM) per ha. The best outyielded the average by about 1 t/ha. Such improvements are difficult to quantify in cash terms but 1 t DM/ha can be equivalent to an extra 60 cow grazing days or 4 t of silage worth £69-80. However, if increased yield is not the aim, the new varieties allow output to be maintained with lower inputs, i.e. production is more efficient.

Greater emphasis is now being placed on improving grass quality and a recent advance is the introduction of new varieties with higher magnesium contents. To date most breeders have concentrated on the ryegrasses, the species that dominates our sown mixtures, but white clover breeding is increasing in importance in response to its potential for reducing inputs. The benefits are large with new varieties of clover showing yield advantages of 30% or more over some of the older but still widely used varieties.

The advantages of testing grasses and clovers to produce the Scottish Recommended List are clear. The cost of 2 pence per kilo of seed or about 74 pence per ha is tiny in relation to the benefits. When buying your seeds mixture, ensure that your merchant has access to the latest information on varieties. Look for the special SAC label on the bag of seed and ask your merchant to show you whether varieties in his mixture are on the Scottish Recommended List of Grasses and Clovers.

ULSTER COUNTRYSIDE MANAGEMENT COMPETITION

The Ulster Grassland Society in conjunction with the Fermanagh Grassland Club have introduced a new competition with similar aims to the SWSGS Grassland Environmental Competition. The objective of the Countryside Management Competition is to demonstrate that farmers, through their farming practices, have been conscious of the countryside and are farming in sympathy with its needs.

GRASSLAND ENVIRONMENTAL COMPETITION 1990-91

South West Scotland Grassland Society

Forum Feeds generously sponsored the second SWSGS Grassland Environmental Competition, the results of which were announced at the Competition Night of the Society in Oswald Hall, Auchincruive on 17 January 1991. The competition aims to encourage an increased sympathy for the environment when managing grassland, but also looks for other environmental improvements such as pond construction and hedge and dyke reconstruction. Farms entered in the competition are examined for their standards of commercial farming and of nature conservation, and the degree to which these two aspects are coordinated.

The judges of this Competition were last year's winner, Derek Roan, Barnbarroch, Kippford, Dalbeattie, and Carol Russell, adviser for the Central Scotland FFWAG. Derek judged the farming aspects of the entries and Carol the conservation aspects.

Only two prizes were awarded this year. The first prize of a tankard and £100 cash voucher from Forum Feeds was presented to Andrew Campbell, Cuil, Castle Douglas. Andrew demonstrated a high standard of grassland management together with a close coordination with nature conservation. He had obviously taken the benefit of advice from FFWAG and acted on the plan provided.

Second prize, by a narrow margin, went to H R & C Dalrymple, Crailoch, Ballantrae, who received a £50 cash voucher. The standard of grassland management on this farm was also high. In addition, great sympathy for the environment was demonstrated, with attention paid to nature conservation particularly towards woodland. However, the judges suggested that more native species might be used in the new plantings.

The Society is grateful to Derek Roan and Carol Russell for judging the Competition, and to Mr Blyth Thomson of Forum Feeds for sponsorship.

D Reid

SWARD ESTABLISHMENT

John Frame, Ayr

*An extract from a series of lectures given by
Dr Frame on a recent visit to Czechoslovakia*

The foundation of a productive sward is laid in its seeding year, so the aim is to provide the right conditions for seed germination, seedling growth and development of a dense sward canopy. Soil drainage, soil cultivations, fertilizer - especially phosphate - and lime inputs all require attention to ensure good seedbed conditions. Conventional cultivations, including ploughing, give the best results but "chemical ploughing" and rotovation are alternatives where conditions for ploughing are difficult. Direct sowing is better than sowing under a cover crop, drilling gives better results than broadcasting, and sowing in spring or later summer is better than in dry midsummer.

Management of reseed

Post-sowing grazings should be of short duration, defoliating growths of 8-12 cm down to 3-6 cm, by sheep or young cattle which cause less trampling damage to the establishing sward than heavier livestock. However, on coarse-textured soils the trampling will aid soil consolidation and the anchorage of seedling roots. Grazing will also control annual weeds although topping can be used.

If a herbicide is thought necessary, e.g. against chickweed, the grass and clover seedlings must be sufficiently developed to tolerate the spraying. 'Clover-safe' herbicides are available. Problem perennial weeds such as docks are best dealt with before sowing. Grazing is better than cutting for hay or silage in the establishment and first harvest years since it will stimulate a dense, well-tillered sward.

Rejuvenation and renovation

As an alternative to complete seeding the sward may be rejuvenated or renovated. These are usually cheaper than conventional sowing but the rate of improvement is slower. Rejuvenation aims at reversing deterioration and gradually improving the existing sward. This is done by better grazing procedures to avoid over- or under-grazing; amelioration of poor drainage conditions; alleviating soil acidity or nutrient shortage; and controlling weeds and pests.

Sward renovation includes the above corrective factors if necessary, and also the introduction of seed of recommended grass and clover varieties by various techniques. On an open sward simple surface seeding is possible particularly in wet environments. The old sward can be cut down, severely grazed or burned to reduce the existing vegetative cover. Animals can be used to trample in the sown seed.

Shallow rotavation, discing or harrowing are suitable methods for preparing swards for partial reseeding. Spike rotavation has proved particularly successful even on dense, old swards. The greater the improvement in sward composition the more attention must be paid to maintaining it by liming, fertilizer use and good grazing management. Where an old sward has developed a surface 'mat' of undecomposed organic material, e.g. on acidic peaty soils, 'pioneer' cropping with fodder turnips prior to sowing the grass seeds is worthwhile.

Direct drilling

Direct drilling (sod or slot seeding) introduces improved species by cutting spaced slits or creating narrow cultivated strips. Band spraying of a grass suppressant, e.g. glyphosate, to kill the existing sward, or total spraying, e.g. with a low dose of paraquat, to check but not to kill it are needed on dense swards. Alternatively, previous heavy silage cropping will thin out the sward making it suitable for drilling.

The main guide lines determining success in direct drilling are: minimize competition from the existing sward prior to drilling either by defoliation or chemical treatment; drill when soil conditions are suitable and there is a likelihood of rainfall to promote seed germination and establishment; choose correct drill for the conditions; choose aggressive and creeping varieties of species for introduction; place the fertilizer - especially the soluble phosphate, at least until after establishment, so as to assist the seedlings but not the old sward; control grazing after drilling to reduce competition from the existing sward but not overgraze the developing sown species.

ENVIRONMENTAL POLLUTION AND PESTICIDES - NEW REGULATIONS TO COME

G E D Tiley

Secretary, South West Scotland Grassland Society

On a recent visit to the Netherlands it was emphasised that the problems of pollution were becoming acute in that country of very intensive farming. Due to land shortage and cheapness of concentrate feeds, animal stocking rates per hectare are very high, leading to a copious production of slurry (especially from pigs) and very real problems of disposal.

Extremely high rates of nitrogen fertilizer usage have created problems of leaching into the watercourses which in the Netherlands surround almost every field. Added to this is the need to conserve the few areas of diverse wild flower meadows still remaining, and also to encourage low input grassland wherever possible. This is becoming increasingly difficult due to the high nitrogen loading (50-80 kg/ha) from the atmosphere.

Restrictions

Already slurry spreading on land is prohibited in the winter months, October to March, to reduce runoff and leaching. A proposal is under discussion to restrict nitrogen applications to a minimum distance of 10 m from any watercourse. Since the fields in the Netherlands are small and bounded by waterways, this would greatly reduce output.

Government support is being sought to double the area of low input grassland in an attempt to replace former species-rich areas. Research is in progress at Wageningen but it is uncertain to what extent the compensation scheme for extensification would be taken up by farmers. Organic farming still makes up only a tiny percentage of agriculture in the Netherlands, though as in the UK, supermarkets each have an organic produce section.

The milk quota system seems to be working well in the Netherlands. However, a new problem of phosphate leaching into water has arisen. Previously phosphate was considered to be relatively immobile in the soil. Continuous slurry application is now causing soluble phosphate to leach into the watercourses. An EEC restriction on phosphates is thought likely to come in the near future.

Atrazine-based herbicides

Another regulation likely to be introduced next year in the Netherlands is a ban on the use of atrazine-based herbicides. This will have the greatest impact on maize growing which is widespread in the Netherlands. A ban on these herbicides will have a minor effect in Scotland, though in the south west interest in maize is increasing as more cold tolerant varieties are being introduced. It is unfortunate that such an effective group of herbicides has the undesirable side effect of entering water systems.

SPONSORS

The following organisations are thanked for sponsoring the South-West Scotland Grassland Society during 1990-91.

AF Northern Limited (Scotland)

Ayrshire, Arran & Bute FFWAG

Bank of Scotland, Castle Douglas

Caledonian Oil Company, Edinburgh

Dumfries & Galloway FFWAG

Forum Feeds, Perth

ICI Seeds UK Limited, Edinburgh

Kemira Fertilisers Limited, Dumfries

Monsanto (UK) plc

Plasti-Covers Limited, Irvine

Scottish Agricultural Industries plc, Dumfries

Schering Agriculture Limited

The Scottish Agricultural College

SPRING FARM VISITS IN WIGTOWN

Visits of the SWSGS to Cairngarroch and Several, Drummore, Stranraer on 7 May 1991

Cairngarroch, Drummore (Donald McColem)

Cairngarroch is situated on the eastern side of the Mull of Galloway and runs down to the sea in two places. The soils are mostly sandy and liable to dry out in the summer. Irrigation is possible from a small storage pond, but the water supply is sufficient for only 10 ha. Donald said there had been many changes since the Society visited the farm 25 years ago. In 1917 his grandfather was tenant on Cairngarroch which was subsequently farmed by Donald's father. 12 years ago he joined as partner with his father who retired a year ago. Donald now farms in partnership with his wife Karen.

The farm covers 63 ha, with 55 ha in rotational grass which is cut and grazed alternately. Additional cropping consists of 5 ha of potatoes, some under polythene, and 3 ha of fodder beet. The normal density of stocking of the 100 Friesian/ Holstein cows in the spring is about 12 per ha, but owing to the cold late spring this year they were struggling at 5 cows per ha. Cows are turned out by day at the end of March and also at night on 20 April. During the past winter the cows were milked three times a day from December to March to fulfill quota. Milk yields fell on returning to twice daily. All cows are calved in the spring. The herd is being upgraded to Holstein and calves at 2 years old. An Angus bull is also used and a Limousin bull is shared.

Donald has been a leading entrant in recent SWSGS Silage Competitions, and he was the champion in 1989 - the first ever in Wigtown. In addition, he was Wigtown county prizewinner in 1990. The silage operation is now fully contracted having been partially contracted for a trial period, but the potato work competed with the silage at the end of May. An inoculant has been used for 4 years after it was found the cows stopped eating silage when they reached that treated with acid. First cut was on 18 May in 1989 and 16 May in 1990, but will be later this year. The contractor starts here first then moves up the peninsula. Effluent is collected into the slurry system since it is not suitable for the potato crop.

The milking parlour was constructed in 1966 and out-of-parlour feeders were installed in 1978 to ensure that the cows had sufficient cake. The cubicles were originally built for Ayrshires and had to be widened. An interesting feature in the cubicles was the sand bedding, also used at Several, which is freely available from local pits.

All the grazing fields receive 69 kg/ha of 27:5:5 on 4 March and again at the end of March. Silage fields get 138-144 kg/ha of nitrogen for the first cut. The second growths from these fields are grazed. Grazing fields receive another 112 kg/ha of nitrogen for the second silage cut. Magnesian limestone is applied at 3.8 t/ha every 2 years.

Reseeding was once done every 5-6 years but now only when necessary. Roundup is used if perennial weeds are present. Legumex X and spot spraying is used on the reseeded. A cutting/grazing mixture is sown which contains 25% tetraploids. Clover was used but became dominant in dry summers even with the high nitrogen dressings applied.

Early potatoes are grown in rotation with fodder beet or with Italian ryegrass. Less stony fields are selected to allow bed formation for use with polythene. This year the sheet was applied on 20 March and removed 12 days later at a cost of about £600 per ha. Disposal is a problem as it has to be removed by hand at a rate of about 0.8 ha per day and cannot be burned. On 7 May the shaws were about 30 cm tall compared with 5-6 cm on a crop which had not been protected. Cool nights had induced yellowing of the growing tips. The beds were formed by planting a third row in the furrow between two rows. The bed system retains more water.

3 ha of fodder beet were sown at the end of April at 111,200 plants per ha in 51 cm rows. Growing cost was £247 per ha including the expensive pre-emergence sprays and harvesting costs. Fertilizer application was 750 kg/ha of 22:11:11 plus slurry. The field was sprayed with Roundup in September and ploughed just before planting.

Several, Drummore (Brian Ramage)

Brian has been another top silage maker in the SWSGS Competition, having won the Wigtown county prize and the Michael Milligan Award in 1989. The high yielding milking herd of 110 cows has been gradually upgraded from Ayrshires to Friesian/Holsteins.

Several is at a higher altitude (76-137 m) and on a far more exposed part of the Mull than Cairngarroch. Soils are also much heavier and wetter and tend to poaching and compaction. Thus, all 80 ha of the farm is in grass, 11 ha being old permanent grass. The Ramages moved from Fife in 1972, and purchased the farm in 1984.

The first building visited was originally a silage pit but had been converted to an easy-feed house because the walls had deteriorated.

Calves are housed down one side of the building, and the other half consists of cubicle bedded with sand. This is found to keep the cows clean. Previously straw and mats were used and these led to mastitis.

The present silage pit is earth walled with a plastic lining, and the effluent is diverted to slats. A new 18 m diameter slurry storage tank with a capacity of 909,200 l has been in use since November, being emptied with a vacuum pipe line which allows recirculation. Water is pumped by a dirty-water pump to a separate tank. Sluices are padlocked at the base of the storage tank.

In the grazing fields the cows had been stocked at seven per ha, but the slow growth of grass this spring had made it necessary to extend the area, and a further extension might be required. On 7 May there were 104 cows in the herd, 73% of which were in calf at first service.

Travelling up the hill on trailers arranged by Donald McColm and Brian Ramage demonstrated to members the problems of silage making on this farm. All grass cut has to come down the hill which in wet weather causes severe tracking of the sward still evident from last year. Compaction of the end rigs can be helped by subsoiling. The silage crop on Several is cut by the contractor after cutting at Cairngarroch. The target date for this year was 20 May, but a delay of a week looked likely. At the top of the hill a 32 ha field has been created by removing internal dykes because the contractor did not like getting too close to the dykes and left a large area uncut.

The grass swards at Several contain timothy and clover, and on 7 May grass growth was pale with purple leaf tips due to the recent cold weather. A flock of geese had eaten down a reseed in February.

The Society wishes to thank Donald McColm and Brian Ramage for the arrangements and the success of this event.

G E D Tiley

ADVERTISERS

The continued support from Advertisers is gratefully acknowledged and members are asked to mention *Greensward* when replying to or seeking information on the products advertised.

AF Northern Limited (Scotland)

Axis Agricultural Limited

BP Nutrition (UK) Limited

Forum Chemicals Limited

Hydro Fertilisers Limited

Kemira Fertilisers Limited

Schering Agricultural Limited

Scots Timothy Seed Growers Limited

Scottish Agricultural Industries PLC

The Scottish Agricultural College

