

DRAWESZMERC

JOURNAL OF THE
SOUTH-WEST AND
CENTRAL SCOTLAND
GRASSLAND SOCIETIES



SILVER
JUBILEE
1962-1987

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FOREWORD

The Silver Jubilee year of the South West Scotland Grassland Society will be followed next year by that of the Central Scotland Grassland Society. Members may care to reflect on their herd or flock sizes and fertilizer use some 25 years ago, and indeed on the influences that have required us to run harder over the intervening years. It is doubtful if the quality of life has improved in proportion to the demands presently placed on the managerial skills required to run a farm business.

By the time the membership reads this Jubilee Issue of our Journal, the recently announced General Election will have been won - or lost, depending on the colour of one's politics. Who knows, there may even be a change of face at the top to help agriculture out of its blues. For sure, the colour of our grassland will not change.

Our industry faces a tough challenge in the years ahead and such terms as "over production", "rural diversification" and "alternate enterprises" leads one to speculate as to the crop rotation of the future. Whatever the outcome, efficient grassland farming will continue to have a central role in land use.

One of the founder members of the South West Society, who enthusiastically pursued efficient grassland management practices was Idris Hunt, and it is with sadness that we record his death earlier this year. Those who met him could not be other than affected by his good humour and his absolute belief in the value of well farmed grassland.

For this issue of the Journal your Editor is appreciative of assistance from Dr Gordon Tiley and Dr David Reid, the latter of whom will take on the editorship of the Journal as from this year and we are indebted to Mrs Kathleen Jones, Agronomy, for typing the Journal script. Once again thanks is accorded to our Advertisers, whose continued support is much valued.

Ronald D Harkess
Editor

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D Walsh, Scottish Agricultural Industries,
Whitelees Road, Lanark.

THE SOUTH WEST SCOTLAND GRASSLAND SOCIETY

1962-1987

A MESSAGE FROM THE CHAIRMAN

Mr J M L Milligan, Culvennan, Castle Douglas

It is with great pleasure that I write this introduction to the Jubilee issue of Greensward.

Tremendous changes have taken place in Grassland farming during the 25 years that our Society has been in existence. Changes that were needed, and changes that were helped by the Society.

Grass has a vital part to play in farming in South West Scotland. I believe that our future depends on grass and whether it be grazed or conserved, there is scope for improvement, scope to increase the confidence in grass as a feed, and to benefit from what it can achieve in terms of animal production.

Over the last 25 years the Society has played its part in improvements in grassland management and in the future it can play a further part in encouraging the uptake of new developments. Farmers have been able to learn from guest speakers, and from new techniques, new developments and better management practices demonstrated at open days and at farm walks. It is the spread of such information that has been and will remain so important and so valuable to the Grassland farmer.

Over the years, grass has changed from something that "just grows" to become a crop in its own right, a crop that can be managed to provide a feed of the highest quality for ruminant livestock. The geographical area covered by our Society has witnessed this change, and has seen the four South West counties emerge at the forefront of progressive grassland farming.

Grass will hold a critical place in the difficult economic conditions likely to pertain in the future. The Society, therefore, will continue to provide the help needed. The growing awareness amongst farmers of the Society's value, and the lively interest in its work will sustain activities over the next 25 years.

To further this interest, a grassland management competition which would compliment the silage competition is worthy of consideration. If it did as much for grass growing as the silage competition has done for forage conservation, it would be well worthwhile.

Our Society's aim for the future must be to encourage and sustain confidence in the value of grass and silage as the economic keys to the efficient production of milk and meat from home-grown sources.

The Society is holding a Silver Jubilee dinner and dance at the Hetland Hall Hotel, Carrutherstown, by Dumfries, on 30 October 1987 and I look forward to meeting Members and their wives on that occasion.

OFFICE-BEARERS OF SWSGS - 1962-1987

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1974-1976	Andrew J M Brown, Robertson
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1983-1985	Jim S Watson, Creech
1985-1987	J Michael L Milligan, Culvennan

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1975-1979	John Frame, Auchincruive
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1982-1985	Jim S Chalmers, Auchincruive
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1977-1987	Ronald D Harkess, Auchincruive
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A BRIEF HISTORY OF THE SOUTH WEST SCOTLAND GRASSLAND SOCIETY

Malcolm E Castle, Tobergill, Low Coylton, Ayrshire

At some unknown date in early 1962, the late I V Hunt and the author discussed the idea of forming a local Grassland Society. The suggestion was discussed in more detail with Principal D S Hendrie at the West College and with Dr J A B Smith, the Director of the Hannah Research Institute who both fully supported the idea and agreed to help.

Inaugural Meeting

As a result, and after further discussions, it was decided to hold a grassland demonstration and an inaugural meeting on 14 June 1962. Farmers and other people who were interested in progressive grassland management were invited to attend. The demonstration, entitled "Quality Fodder Production", dealt with improving the feeding value of silage and hay, and was held jointly at the Hannah and at Auchincruive.

After a picnic lunch, the members were addressed by Mr A Watt Taylor, then Chairman of the North of Scotland Grassland Society. A draft Constitution of our present Grassland Society was adopted with enthusiasm, and approximately 180 people signed as founder members. The wording of the Constitution owed much to the care and precision of Principal Hendrie who also chaired this important inaugural meeting. Mr I Jennings, Shiel, New Galloway, was elected Chairman of the Society with I V Hunt and M E Castle as Secretary and Treasurer respectively. Our South West Scotland Grassland Society had been born.

Early Days

The Secretary, with his typical fervour, quickly arranged the first Committee Meeting on 31 July 1962 at the Chairman's home. This was an important meeting for our Society and laid many foundation stones for the future. The Committee, at that date, consisted of the three office bearers and Dr R Laird, Mr R W Montgomerie, Mr W Young, Mr J Biggar, Mr N P Maclaren, Mr I Mitchell, Mr F R Evans,

Mr T McFadzean, Mr J Thorburn, Mr J D Ballantyne, Mr J G Marshall, Mr A Campbell and Principal D S Hendrie. Two further members, Mr A Reid and Mr A E Parkinson, were co-opted in order to have members from all four counties, the College and the Hannah Institute.

The membership list now contained 208 names of which 38 were "technical" members, i.e. non-farming members. The annual subscription was £1, and it was claimed quite truly to be excellent value for money.

Other important decisions made at that time included the number and the type of meetings, and that a Journal should be published. It was agreed and minuted that speakers at meetings and all our activities should be of the highest calibre. This was a wise decision and helped to secure the future success of the infant Society.

The Journal

The first issue of our Journal, containing 40 pages, was published in November 1962, and contained the Constitution, a list of members, a report of the 1962 Summer Meeting of the British Grassland Society (BGS) by John Frame, a research review and some "Echoes from the Past". Our stalwart Secretary acted as Editor, and set the pattern and high standard of production for all future issues.

A list of thirteen other Grassland Societies in the UK was published in the Journal, and it is noteworthy that twelve of them were founded in either 1960 or 1961. Our own local Society was truly in the vanguard of local Grassland Societies and credit must be given to our founders and supporters in 1962.

Journal No. 4 (March 1964) appeared under the new title of "Greensward" and covered the activities and interests of both the South West Scotland Grassland Society and the Central Scotland Grassland Society which was founded on 29 July 1963. This was a sensible and logical arrangement as the two Societies have much in common. The journal is supplied also to the Manx Grassland Society with which we have close contacts. The inclusion of advertisements in "Greensward" from 1972 onwards was due mainly to the initiative of Allan Buchan, our Chairman at that time, and the idea has had many worthwhile advantages.

"Greensward" has always been an excellent publication in which ideas, news and views could be passed from member to member. We have been most fortunate in our Editors: I V Hunt from 1962 to 1975 and Dr R D Harkess from 1976 to 1986. We now welcome Dr D Reid, a founder member of the Society as our new editor in 1987.

Society Objects

The original Constitution stated that the object of the Society was "to further the knowledge of the management and utilization of grassland in all its aspects, and to provide members with opportunities for the interchange of ideas and experiences relating to the art of grassland husbandry". This statement may sound extremely formal but virtually all the many activities of the Society in the last 25 years have fitted into this concept.

"Greensward", already discussed, is a typical example, and our programmes of meetings, discussions, lectures, farm walks and competitions have all fallen within the original objects of the Society.

At an early stage our local Society was affiliated to the British Grassland Society (BGS) which was a wise and sensible step. We in our local Society gained vital links with the main Society, and the BGS obtained valuable contacts with us. With affiliation we all gain something.

In 1986 our Society, in association with our sister Central Scotland Grassland Society, acted as joint hosts to the BGS Summer Tour. Entitled "Scotland goes for grass", the event was voted a particularly successful meeting and many thanks are due to all involved with planning the tour and to the commercial sponsors for their support.

Farm Visits

Throughout its history, our Society has held regular meetings on farms as a method of passing ideas and information on grassland to an ever increasing number of members. For many years, an annual trip either abroad or to another part of the UK was a familiar and valuable part of the programme. Sadly, these visits have declined in recent years. Some notable and

enjoyable visits in the early days were made to Northern Ireland, The Netherlands and Eire. Most parts of Britain were visited also, and many of our members will recall with pleasure the farm visits made in West Wales, Cheshire, Aberdeenshire, North-East England and other grassland areas. On these visits many excellent farms were seen in a relatively short time and much was learnt. In addition, many friendships were made. The enthusiasm of I V Hunt, and his wide circle of grassland contacts, contributed much to the success of these visits. It is a pleasure to note that a valuable trip was made to the Isle of Man in May 1987. Let us hope that there will be many other similar visits in the years ahead.

Visits to farms in our own Society area to inspect the swards, see the livestock and to have a friendly discussion have always been an undoubted success. The one-day spring tours have regularly circulated around the four counties in our Society and have always been well attended. The farms of members of the Committee have tended to be high on our visiting list, but this is a penalty of being on the Committee! Members are deeply indebted to the many host farmers who have so kindly allowed us to visit their farms. The hospitality of the wives and families of our hosts has always been appreciated; indeed, grassland discussions tended to improve with the numerous cups of tea, scones, pancakes and home-made cakes!

In recent years a series of summer evening farm walks within each county has evolved. Local members and their friends have attended these slightly more informal meetings and learnt from discussions within their own area.

Thus, over the years, members of the Society have had a wide choice of visits to farms either locally or much further afield. It is hoped that this important function of our Society will continue.

Evening Meetings

Since the Society was founded, our evening meetings in winter have offered members a wide range of top-class speakers dealing with all aspects of grassland. Eminent grassland farmers from all areas of the UK have spoken at our meetings plus large numbers of technical experts from industry, research institutes, the advisory services, colleges and universities.

Approximately one hundred people have addressed our Society in the last 25 years and some item of value could be learnt from each speaker. All shades of opinion have been expressed from the advocates of high fertilizer use such as Edwin Bushby to the more organic views of Mr S Mayell who farms without any fertilizer nitrogen.

In addition, a balance has always been struck between topics of interest. Sheep, beef, milk, fertilizers, seeds mixtures, drainage, weed control and even irrigation have all been discussed. Over the years, some item of direct importance to every single member has received attention; and all for the modest annual subscription of £5 in 1987.

At recent meetings, panels of experts on one specific topic such as sward renovation have been particularly stimulating and could well be a useful idea for the future. There is a local flavour, a range of views and opportunity for discussion.

Competitions

The major competition within the Society has always been the silage competition which was held for the first time in 1973-74 and won by M Milligan, Culvennan, our present Chairman. It is recorded "that John Watson and Malcolm Castle were responsible for urging the Committee into this venture" (Greensward, No. 17), but the author makes no apologies! The original rules, with emphasis on high feeding value, were drawn up by the above pair plus I V Hunt, R D Harkess, A Campbell and R H Alexander. Silage quality has varied in the different years due to the weather, but in general the quality and the systems of feeding silage have improved vastly since the competition started. However, it is noteworthy that the winning silage in 1973-74 had a D-value of 70.8; some things do not change. The silver rosebowl awarded to the overall winner was purchased for the first competition, and the BP Nutrition Trophy was presented a few years later. Plasti-covers Ltd of Irvine has also generously provided prizes for the silage competition and recently an award has been included for the best big bale silage.

Each year there has been 60 to 80 silage entries in the competition which always culminated in an enjoyable and most worthwhile Silage Meeting for the award of the prizes. Without any doubt, the competition has done much to improve silage quality throughout the south west of Scotland. The excellent silage made at Culvennan over many seasons has clearly influenced many farmers in Kirkcudbrightshire where silage entries in our competition have always been of high quality.

In particular, it was highly rewarding in 1984-85 when the Scottish and the UK National Silage championship was won by J & W Carson, Conchieton. As a result, a well-attended Open Day was held on the farm in July 1985 and a video was made jointly by the Society and SAI plc.

The Hay Competition and the Grassland Ideas Competition have attracted fewer entrants than the silage competition but have added another facet to the activities of the Society. The competition for ideas, originally called the "Innovations Competition", and kindly sponsored by UKF Fertilizers, has attracted some useful and valuable ideas. It is perhaps a compliment to our Society that BGS now have a National Ideas Competition. Without doubt, well-run competitions do much to stimulate interest in grassland topics and should be encouraged by our Society.

Society Sponsorship

Over the years, part of the Society's funds have been used wisely in sponsoring members to travel outside our local area. In particular, the Society has consistently encouraged members to attend BGS meetings, and in return they have given either a verbal or a written report. As a result, good ideas seen and heard in other areas have been passed rapidly to other members of our Society.

Both farmer and technical members of the Society have been sponsored, and if done correctly, can convey considerable benefits to our membership; the idea should continue to be encouraged in the future.

The Future

Although it is pleasant and indeed useful to recall the progress and some of the highlights of our Society during the past 25 years, it is equally important to look to the future. Much of our past success has been due to a combination of devoted and enthusiastic office bearers supported by a loyal and keen Committee and membership. This must continue. There has always been a happy and fruitful relationship between members from farming, commerce, the advisory service and research institutes, and again this must continue if the Society is to prosper and to achieve its original objects. Special mention must be made here of the contributions from The West of Scotland Agricultural College staff which have been a backbone to the Society from its inception. The College Agronomy Department has provided unbroken secretarial, technical and editorial services to the Society since 1962. The Chemistry Analytical Laboratory and local advisers have also given major support, as also have staff from the Hannah. Co-operation between our various types of members must be the pattern for success in the future. We must also encourage new thinking from a generation of younger farmers who are prepared to question ideas from the past and to seek newer truths. There is no room for complacency in the difficult years ahead, and there is still an enormous untapped potential in our grasslands in south west Scotland. Let us all strive to make the next 25 years of our Society an even greater success than the last.

RECENT DEVELOPMENTS IN GRASSLAND PRODUCTION

Dr R J Wilkins

Animal and Grassland Research Institute, North Wyke,
Okehampton, Devon, EX20 2SB

*A meeting of the SWSGS at the Embassy Hotel, Dumfries,
23 October 1986*

Three important aspects of grassland production are discussed using examples, where appropriate, from recent research carried out at the Animal and Grassland Research Institute (AGRI) at North Wyke, in Devon. The production potential of permanent swards is dealt with first, followed by consideration of the use of nitrogen fertilizers, and finally the possibilities for greater reliance on white clover.

Permanent Swards

Despite more than 50% of enclosed grassland in England and Wales being in swards aged above 20 years, there has been little research on the productivity and responses of permanent grassland. Rectification of this deficiency is an important part of the research programme based at North Wyke. A major series of experiments carried out with ADAS on 16 sites in England and Wales is looking at the production of permanent swards in comparison with a reseed of Melle perennial ryegrass at a range of N-fertilizer inputs. Mean results for the first three years given in Table 1 show that although reseeding led to a large increase in yield in the following year, this advantage had been lost by the second year. If allowance is made for the loss in production during reseeding, there has been no overall advantage from reseeding. Experiments with grazing beef cattle at North Wyke also demonstrated the high production potential of permanent swards, which over a four-year period gave beef output only 6% below that from a Melle reseed (no allowance being made for production loss during reseeding).

Table 1. Herbage production (t DM/ha) from permanent swards and from Melle perennial ryegrass at five rates of N-fertilizer when cut at 4-weekly intervals (16 sites).

	<u>N application (kg/ha)</u>				
	0	150	300	450	900
1984*					
Permanent swards	3.7	6.3	8.2	9.7	9.8
Perennial ryegrass	5.3	8.8	11.7	13.2	14.3
1985					
Permanent swards	5.2	8.1	9.9	10.6	10.2
Perennial ryegrass	3.8	7.4	10.2	11.2	11.2
1986					
Permanent swards	4.0	6.8	8.7	9.1	8.9
Perennial ryegrass	4.2	6.5	9.0	9.8	9.7

* First harvest year for perennial ryegrass

In both instances, the permanent swards used were more than 20 years of age, included a number of grass species and had previously been managed extensively, receiving less than 200 kg N/ha. The pattern of response between sites was markedly similar despite large variation in initial composition with some swards, for instance, containing no perennial ryegrass. Results suggest that there may be little case for the regular reseedling of swards and that reseedling should now be considered only to rectify disaster situations resulting from, for instance, severe poaching damage. More data are, however, required with comparisons between leys some 5-10 years of age with a background of intensive management and more recently reseeded swards.

If a decision is made to reseed, then it is important to use the highly productive varieties that are adapted to the particular situation. Progress is being made by plant breeders in respect of both yield and quality. For instance in NIAB trials, in the second harvest year the late perennial ryegrass variety Condesa has given 9% higher herbage yield than Melle, whilst in experiments at Bronydd Mawr the new WPBS variety Aurora has given lamb production 22% above that from S23.

Nitrogen Fertilizer

Responses to N by grass swards under cutting management have been recognised for many years, with large increases in yield up to 450 kg N/ha on sites with a favourable summer rainfall. An experiment co-ordinated by AGRI, ICI and ADAS has confirmed the general pattern of responses in swards continuously grazed by beef cattle. Averaged over five sites with three years' results per site, the application of 200, 400 and 600 kg N/ha per annum provided 1090, 1400 and 1450 grazing days per hectare respectively. Performance at low N-rates was somewhat better with grazing than with cutting, reflecting benefits from N returned in excreta. The responses to the highest levels of N-application were limited on sites with poor drainage in years with high rainfall. For instance, at North Wyke over a three-year period liveweight gains/ha were similar, with 300 and 450 kg N/ha. Thus to justify N-rates above 300 kg/ha with grazed swards really requires conditions that permit good herbage growth without risk of severe poaching damage.

Table 2. Inputs and outputs of nitrogen (kg N/ha) with ryegrass swards either cut at 4-weekly intervals or rotationally-grazed by beef cattle.

	<u>Nitrogen (kg/ha)</u>	
	Cut	Grazed
	Sward	Sward
Inputs		
Fertilizer N	420	420
Atmospheric N	15	15
	<hr/>	<hr/>
	435	435
Outputs		
Herbage or beef production	300	29
Leaching	33	160
Denitrification	20	40
Ammonia loss	0	120
Storage		
In soil organic matter	70	100
	<hr/>	<hr/>
	423	449

There is increased evidence that high N-applications on grazed swards can lead to high losses of N through leaching. This both represents an unfortunate loss of N from the system and may contribute to pollution of aquifers or watercourses.

Table 2 illustrates the fate of nitrogen in an experiment carried out over several years on a freely-drained soil at Hurley with grazing beef cattle.

There is increasing concern over the rising N levels in watercourses and Table 3 illustrates N-losses through leaching in a number of experiments.

Table 3. Loss of nitrogen to drainage water in experiments at Hurley and North Wyke

	Fertilizer-N (kg N/ha)	N-loss to drainage water (kg N/ha)
Hurley (free-draining soil)		
Perennial ryegrass:		
Cut	420	29
Grazed	420	162
Grass - white clover:		
Cut	0	2
Grazed	0	23
North Wyke (heavy, clay soil)		
Drained:	200	56
	400	188
Undrained:	200	22
	400	62

From these experiments it can be concluded that:

- i) the grazing animal is implicated in high levels of loss (which appear to occur largely from urine and dung patches);
- ii) the losses increase with increase in N-rate;
- iii) losses are reduced on poorly-drained land (in which situation gaseous losses through denitrification are increased).

In order to reduce nitrate losses the following are worthy of consideration:

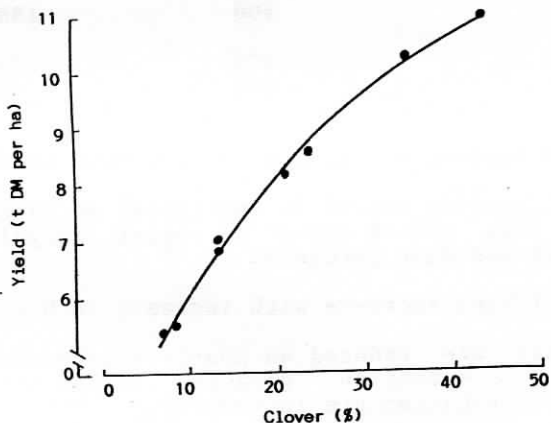
- i) altering pattern of application over the season, with an early date for termination of N-use (perhaps determined by the quantity of mineral N present in the soil in mid-season);
- ii) the integration of conservation with grazing, and particularly taking conservation cuts in autumn, to mop up N that has been returned in excreta during the earlier part of the grazing season.

WHITE CLOVER

The large recent research effort on grass/white clover swards is justified because of the potential offered by such swards to save N-fertilizer, produce high quality animal feed and, as indicated in Table 3, give systems with little nitrate loss to the environment.

It is recognised that a well-established grass/clover sward without N-fertilizer can yield about 80% as much herbage as a pure grass sward with 300-400 kg N-fertilizer/ha. An output level of this order may become increasingly attractive as output constraints are imposed on ruminant production. In order to attain this output, it is necessary to maintain a high content of clover in the sward (Figure 1).

Figure 1. Herbage accumulation from grazed swards receiving no fertilizer-N in relation to mean clover content.



A high clover content is also important for animal production because rates of milk production and liveweight gain increase progressively as clover in the diet increases from 0 to 100%. For example, in an experiment at Hurley the growth rate of lambs was 200 g/d when grazing a sward with 11% of white clover on offer, but 309 g/d with a sward containing 36% white clover.

Guidelines are emerging for obtaining and maintaining clover in swards, and Table 4 is taken from a paper presented by John Frame and Peter Newbould.

Table 4. Management guidelines for white clover.

Seeds	Choose non-aggressive, compatible grasses. Sow 3-4 kg clover seed/ha in the mixture. Use a blend of white clover leaf types.
Establishment	Sow shallow. Soil pH a minimum of 5.5. Satisfactory basic fertility. Preferable to sow directly in spring.
Production	Fertilizer-N strategy of minimal amounts in early season and, possibly, late season. Maintain soil pH, K and P status. Careful herbicide use. Consider irrigation in dry areas.
Utilization	Avoid continuous grazing. Provide clover recovery periods, e.g. periods of rotational grazing or insertion of a conservation cut. Favour the needs of white clover.

It is unlikely, however, that clover-based systems will be able to attain the reliability of systems based on fertilizer-nitrogen. Thus it will be important to have some 'buffering' in the system, such as a reserve of extra silage, or the integration of some areas of grass with high levels of fertilizer-nitrogen together with areas without nitrogen which are dependent on clover for production.

There is increased evidence, however, that even in the current economic situation, production from clover can give returns comparable with those from high-nitrogen systems. Experiments in Northern Ireland showed higher net returns from an 18-month beef system with 50 than with 300 kg N/ha, and good results from such production systems have also been obtained at the North of Scotland College of Agriculture, and at North Wyke.

Table 5 gives information for lowland lamb production, comparing a rotationally-grazed system at North Wyke without fertilizer-N with other lowland flocks in South West England recorded by MLC. The production potential from grass/clover is clearly higher than that attained currently on farms with use of up to 200 kg N/ha, as indicated by high stocking weights and a high proportion of lambs finished off grazing.

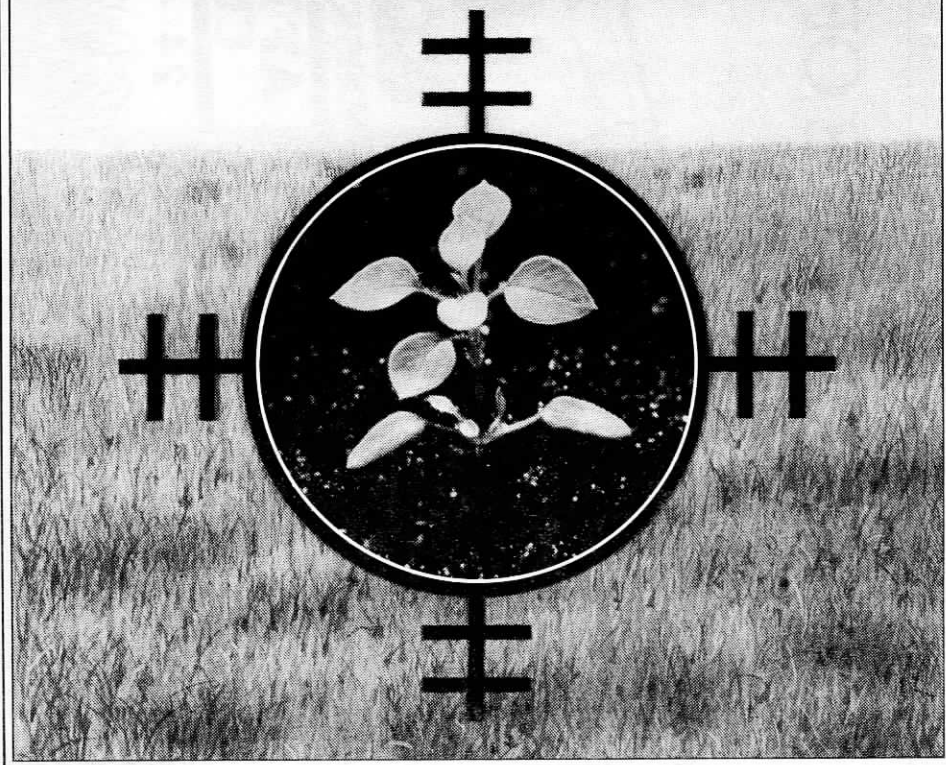
Table 5. Stocking weights and percentage of lambs finished on rotationally-grazed grass/white clover swards at North Wyke compared with lowland flocks recorded by Meat and Livestock Commission.

	Grazing stocking rate (ewes/ha)	Grazing weight (t LW/ha)	N applied (kg N/100 kg LW)	Lambing (%)	Lambs finished (%)
North Wyke					
Grass + Clover	14.8	1.5	0	183	85
Other farms					
Grass + N					
Best *	14.8	1.2	15	147	29
Average	11.0	1.0	12	145	45

* Classified according to stocking rate

There has been much less research done in Britain on the use of grass/clover swards for dairy cows, but work at Johnstown Castle in Ireland has compared a conventional, high-N system with a system using grass/white clover without N for grazing plus about 20% of the area in Italian ryegrass with high-N for silage; production per hectare was reduced by only 12% for the system with high reliance on clover.

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The development of clover-based systems in practical farming situations is a major challenge for the next decade.

Discussion

Nitrogen or Clover. Have farmers been wasting money on too much N fertilizer? Leaching of nitrogen can be as high as 200 kg N per hectare which is not very good business nor is it good for the environment. A lot of N is lost later in the year and N applied in summer or autumn is not used as effectively as that applied in spring.

Clover content in swards - is it measured by mass or percentage ground cover? 40% by weight, and this looks like a very clover dominant sward - something rarely seen in Great Britain. Bloat may occur in cattle but a treatment at £2 per head can give 100 days protection. No bloat problems arise with sheep.

What is the best grazing height for clover? Grazing at 5 to 12 cm had little effect on clover survival but the best annual performance was at a height of 8 cm on a grass/clover sward for beef. With sheep continuously grazed, clover content tended to decline, so rotational grazing with a sward height of 3-6 cm is preferable.

In autumn/early winter, hard grazing helps clover by encouraging the branching of clover stolons in spring as the example below illustrates.

	Clover content (%) July	White Clover Growing points in March
Frequent grazing	38	1550
Grazing normal	31	1280
No winter grazing	11	700

In spring the clover distribution in the sward should be checked. If this is good, the N and grazing regime will not affect the content too badly during that year. If clover is poorly distributed then management must be adjusted to try and retain it.

Type of fertilizer N. Most leaching occurs in autumn/winter rather than in spring. The accumulation of mineral N from animal excreta is largely involved, so type of fertilizer does not have so much impact on leaching.

In spring losses are likely to be higher with ammonium nitrate than with urea or ammonia due to fixation in the soil particles. However, with urea, volatilisation losses can reach 20% (i.e. loss to the air) in damp, hot conditions although some of this loss may be offset by urea's lower denitrification loss (i.e. loss in the soil). On good soils in spring there is little difference between urea and ammonium nitrate. In mid summer there is less denitrification but higher temperatures raise volatilisation losses.

So choose your N on the cost per kg. An N tax or quota would need to be applied throughout EEC to be effective, but there is the outside chance of some form of legislation.

N can be lost by other means - wet soils (poor drainage), heavy rain and surface loss. Up to 60 kg N/ha loss has been recorded by denitrification, i.e. N lost in a gaseous form - not leached to the drains. A split dressing is worth considering in the spring in order to minimise losses.

Role of Clover. Reliance on clover means a short season, so grass is needed. A two-sward system can overcome this, e.g. on early fields use N and forget clover. If clover content is 40% or more in mid/late season it would be in order to apply spring N without unduly depressing the clover. Otherwise, keep N off. The plant breeders are looking for earlier growing clover varieties.

Even with N, clover can be retained by adequate grazing but proper stocking rates are important. It is competition from grass that kills clover, not the applied N. If N is applied to clover it will use the applied N and stop fixing its own supply in the root nodules. However, clover is not so good as grass in taking up N from the soil.

Slot seeding. Introducing clover into an established pasture can be successful. North Wyke at 185 m above sea level has been able to lift clover from 0 to 25% using the Hunter strip seeder. A 1200 mm rainfall

with a good summer distribution has helped. The clover is drilled after the first or second silage cut. After a big crop the sward is open and slower growing and so the clover has a chance to establish. Adequate P and K and slug pellets are required. A low rate of paraquat may be used to check the grass and on/off grazing is helpful during the establishment phase. Reduced competition after seeding is a key for success. By autumn the clover content should be good and so routine grazing during the next year is in order. If the clover is weak, however, do not apply spring N and leave the sward for a silage cut rather than graze it.

In an old sward this technique may be better than ploughing because the release of N in the decaying turf encourages the grass to the detriment of clover. Additionally, clover growth is aided by soil conditions which help a good root structure to develop, so soil compaction should be reduced where possible.

The Slurry Worry. Although N leaching is higher under grazing than under cutting management, it must be remembered that the slurry produced from silage feeding has to be returned to the sward and, if not properly used, can give rise to losses of N. However, good slurry applications at the correct time can offer some control. The application is more even compared to the concentration in dung and urine patches. There is a cost of doing this of course. There is interest now in treating slurry with inhibitors to enable a slow release of N and so reduce losses. So slurry use at present is likely to make cutting as bad as grazing in terms of losses of N, hence all the more reason to look for ways to effectively use slurry and reduce environmental problems.

Dr Roger Wilkins is presently President of the British Grassland Society and members are much indebted to him for making a 'day trip' from Devon to Dumfries to address SWSGS at its AGM.

SWSGS SILAGE COMPETITION 1986-87

*A meeting of the SWSGS at the Creebridge House Hotel,
Newton Stewart, 22 January 1987*

Judge: Milburn Jackson, Bowsden Farm, Berwick-upon-Tweed.

Judge's Remarks

After being delayed a week by severe snowfall, the Judge had much enjoyed judging the Silage competition.

He remarked on the tremendously high standard in the analyses. There was overall a great thoroughness and attention to detail in making and feeding though there were differences amongst the entries. The dairy silages were particularly difficult to separate, and the winner was picked on operating efficiency and stockmanship. The close second and third prizewinners had also shown great effort.

The Beef/Sheep entries were also closely judged showing excellent quality of stockmanship and good housing of sheep.

Effluent control was on the whole satisfactory and it was clear that more attention was now being paid to ensure that waterways were not being polluted. However, one farm in the short leet had a penalty point deducted for insufficient care under this item.

The marks awarded are detailed in Tables 1 and 2. Overall winner and Silver Rosebowl champion was Robert Ramsay, Lodge of Kelton, Castle Douglas. Open class runner-up was Robert Lindsay, Overlochridge, Stewarton, who had highest analyses marks. Third, Ian Evans, Penkiln, Garlieston.

In the Beef/Sheep class, the winner was D F Culham Farms, Boreland of Southwick, who also received the BP Nutrition Trophy. Runner-up (for the second year in succession) was James Robertson, Meiklewood, Castle Douglas. D F Culham Farms also won the best big bale prize with a very good analysis.

The Michael Milligan prize for greatest effort and attention to detail was awarded to J D Gibson, Sawerston, Mauchline. Another Ayrshire farmer, J Smith, Kilmaurs Mains, received the best new entrant prize.

Table 1. 1986 Silage Competition - Analyses and Marks.

Rank	Code	% DM	% CP	D Value	Ammonia N		Marks /35
					% Total N	ME	
1	AS 5	21.2	18.9	70.5	5.8	11.3	33.41
2	WS 5	22.1	15.1	70.4	7.4	11.3	29.46
3	WS 1	18.3	17.4	66.9	6.1	10.7	28.07
4	DS 1	19.3	16.9	72.0	10.8	11.5	27.41
5	B *KS 2	43.4	17.6	66.4	10.2	10.6	26.84
6	AS17	22.0	16.4	67.5	9.4	10.8	26.63
7	AS 2	19.5	14.8	68.6	8.6	11.0	25.77
8	KS10	15.8	14.5	71.8	8.6	11.5	25.62
9	KS15	18.8	15.9	68.1	9.3	10.9	25.46
10	KS12	17.3	18.0	67.4	10.4	10.8	25.23
11	KS 7	21.5	13.1	69.2	9.0	11.1	25.22
12	KS 6	18.9	16.9	67.7	10.6	10.8	25.07
13	KS 5	20.1	16.2	66.8	9.5	10.7	24.95
14	T WS 2	45.9	15.7	65.7	9.9	10.5	24.48
15	*KS 1	22.6	13.8	67.2	8.7	10.7	24.44
16	AS 3	18.6	19.8	63.8	8.1	10.2	24.12
17	KS 8	19.6	14.5	67.2	9.2	10.7	23.64
18	AS 4	18.0	18.2	63.2	7.6	10.1	23.62
19	AS 1	23.1	14.4	67.4	11.3	10.8	23.29
20	KS 4	17.8	15.8	65.8	8.6	10.5	23.12
21	AS 7	19.1	14.8	65.3	7.8	10.4	22.91
22	DS 9	19.0	18.1	64.2	10.6	10.3	22.72
23	*KS17	18.3	15.9	65.8	9.6	10.5	22.67
24	*AS 9	20.2	12.9	65.9	7.7	10.5	22.24
25	DS 4	20.7	13.6	66.9	11.0	10.7	21.55
26=	WS 6	22.0	13.2	63.2	6.5	10.1	21.45
26=	KS14	20.5	14.2	62.3	6.0	10.0	21.45
28	KS16	18.6	11.6	68.9	10.5	11.0	21.30
29	*DS10	23.3	14.2	64.2	10.4	10.3	20.65
30	AS 8	22.2	12.1	64.7	8.2	10.3	20.54
31	DS 3	19.8	12.8	66.3	10.0	10.6	20.50
32	*AS 6	21.9	14.5	62.6	8.7	10.0	20.36
33	KS11	19.1	14.5	61.6	6.2	9.9	20.19
34	AS15	20.0	15.3	63.4	10.1	10.1	20.12
35	DS 7	18.0	16.0	65.6	13.2	10.5	19.54
36	KS 3	17.6	13.8	65.3	10.1	10.4	19.32
37	KS13	18.3	15.1	65.2	12.3	10.4	19.11
38=	KS 9	21.0	12.5	62.8	8.1	10.1	18.82
38=	*DS 5	20.2	11.9	64.9	9.6	10.4	18.82
40	T *DS 8	32.8	14.9	63.8	14.0	10.2	18.50
41	AS19	28.5	15.7	59.8	10.6	9.6	18.02
42	DS 2	17.8	21.9	67.3	26.6	10.8	17.70
43	AS18	26.7	15.3	61.0	13.0	9.8	16.90
44	KS18	19.1	14.6	62.2	11.7	10.0	16.49
45	*AS10	16.9	14.9	62.5	12.3	10.0	15.56
46	*DS 6	39.5	10.7	62.7	12.8	10.0	15.46
47	B AS20	21.0	15.4	60.0	12.5	9.6	15.40
48	T AS23	44.3	13.5	59.5	10.8	9.5	15.36
49	T AS14	42.4	10.6	62.5	13.1	10.0	15.02
50	B WS 4	21.6	18.5	59.0	17.0	9.4	13.55
51	AS16	32.3	14.1	59.3	13.8	9.5	13.36
52	B AS21	14.1	22.7	62.0	18.5	9.9	13.20
53	WS 3	15.7	14.1	59.9	12.4	9.6	12.08
54	*AS12	18.3	10.8	59.3	12.4	9.5	10.03
55	AS13	23.8	10.7	58.5	14.8	9.4	9.36
56	AS11	18.7	15.7	60.5	22.2	9.7	9.05
57	*AS22	18.8	15.0	59.1	20.9	9.4	7.00

* Beef/Sheep entry

B = Big Bale entry

T = Tower

Table 2. Short list for Judge's visit (in order of analyses).

<u>Awards</u>	<u>Open Entries</u>	Marks		<u>Total</u>
		Analyses (35)	Inspection (65)	
2nd	R Lindsay, Overlochridge, Stewarton.	33.41	44	77.41
	R D McCreath, Broughton Mains, Whithorn.	29.46	N/A	N/A
3rd	R I R Evans, Penkiln, Garlieston.	28.07	45	73.07
	R H Littlewood, Garloff, Dumfries.	27.41	37	64.41
Milligan Prize	J D Gibson, Sawerston, Mauchline.	26.63	43	69.63
Best New Entrant	J Smith, Kilmaurs Mains, Kilmarnock.	25.77	40	65.77
1st and Silver Rosebowl	R J R Ramsay, Lodge of Kelton, Castle Douglas.	25.62	57	82.62
<u>Awards</u>	<u>Beef/Sheep Entries</u>			
1st and BP Trophy	D F Culham Farms, Boreland of Southwick, Dumfries.	24.44	45	69.44
2nd	G & J Robertson, Meiklewood, Ringford.	22.67	39	61.67
	R Dalrymple, Crailoch, Ballantrae.	22.24	39	61.24
Best Big Bale Entry	D F Culham Farms, Boreland of Southwick, Dumfries.	26.84	N/A	N/A

D S Scrimgeour: Clamp Silage Quality, 1982-86

A summary of the quality in terms of D-value and ammonia-N of all clamp silages entered in the last five annual competitions is given in Table 3. 1986 showed a distinct improvement in D value and ammonia-N level compared with the very poor previous values in 1985. But quality did not reach the 1984 level.

A feature of 1986 was lower quality first cut silage due to cool, wet conditions whereas 2nd and 3rd cuts were better. In some instances the 3rd cut, taken in dry sunny conditions, was the best of all.

Satisfactory fermentations had been obtained as indicated by ammonia-N levels, which were below 10% of total N for almost half the entries.

Table 3. Silage Quality 1982-86

Quality	D-Value	% of total in each group				
		1982	1983	1984	1985	1986
Very good	70	3	0	17	0	7
Good	65-70	39	16	63	48	42
Medium	57-64	56	71	20	45	51
Poor	57	2	13	0	7	0
Mean DM %		23	23	24	20	22
Mean ammonia N (% of total N)		12	12	10	13	11
No. of entries		66	69	77	56	57

D S Scrimgeour: Additive Use, 1986

The range of use of additives on the 57 silages entered in the 1986 competition is indicated in Table 4. All but (18%) of the open (dairy) class silages had been treated with additive whereas less than half of beef/sheep entries were treated.

The acid or acid-formalin types were most popular but there was a marked increase in the use of inoculant types compared with last year. There is a tendency towards the use of safer, less corrosive forms of additive to reduce damage to machinery and hazards to operators.

Table 4. Additive Use 1986.

<u>Additive</u>	<u>Type*</u>	<u>Open Class</u> (45 entries)	<u>Beef/Sheep Class</u> (12 entries)
Add-F	A	11	3
Add-Safe	A/A	5	-
Farmline	A/F	5	-
Clampzynne	I	4	-
Sylade	A/F	3	-
Microsil	I	2	-
Molasses	Sugars	2	-
Scotsil	I	2	-
Ecosyl	I	1	2
Safesile	I	1	-
Sulphuric Acid	A	1	-
No additive used	-	8	7

*A = Acid A/F = Acid/Formalin I = Inoculant A/A = Ammonia-Acid

Prize Winners' Comments

There was considerable interest in the comments made by the prizewinners on how their silage had been made. Robert Ramsay's first cut had been made 10 days later than normal and was of low DM. He used a direct cut system to save on machinery and labour but this leads to an increase in effluent. Cutting and filling were completed very quickly and clamps were sheeted every night and at completion, resulting in no clamp waste whatsoever. Because of quotas, utilisation of silage was being 'stretched'. No barley was fed and a little concentrate was fed in the parlour only.

Robert Lindsay's prizewinning entry with overall best analyses was 3rd cut made in early September, three weeks later than normal. Being self-fed at the clamp, side sheeting was not possible. He stressed the value of good silage in reducing concentrate needs and as a basis for staying in business. He milked three times daily and had a retail milk round.

Ian Evans took his first cut on 1 June earlier than most farms. Speedy cutting and daily sheeting were essential features of his operation.

The high quality big bale silage from Culham Farms Ltd had been made from a late June cut on a field previously grazed in the spring. No additive was used.

The second Beef/Sheep prizewinner, James Robertson used side sheets at the clamp, and found that his ewes liked the silage.

Discussion

After the Judge had talked about his own farming in Northumberland, the discussion centred on the possibility that he would have to give up fattening cattle. The price of Friesian store cattle was too high relative to selling price, and there was no local market for bull beef. Arable crops still paid well but there was a problem of what to do with the labour force in winter and spring if there was no stock.

Sheep could be tried but the changeover would require capital inputs.

Undersowing grass in spring barley was better than direct autumn seeding and grass offered a good break in the cereal rotation. However, he had found that cut grass was depleting soil phosphate and potash levels.

High DM silage was not always necessary though a level as low as 15% was undesirable. The Judge did not use additive but wilted 24-36 hours.

The question of how much it was worth spending on inoculants was raised and also whether inoculants were less effective under wet conditions. The use of inoculants would not guarantee a good result. Sugars were required and a satisfactory DM. A portable saccharometer (sugar meter) was now available as used in sugar cane but this was not very accurate for grass. The Liscombe star system offered a practical guide to potential sugar levels and additive requirements. Sugar levels varied throughout the day and were at maximum in the grass plant at about 2 o'clock in the afternoon. N-levels and other factors e.g. daily and weekly climate, also have a major influence on sugar contents.

Improvements were being made to additives but it was generally agreed that their use was necessary to ensure high quality.

The Judge also remarked on the wide clamps used in south west Scotland, which he felt could lead to increased waste at feeding. He felt that the possibility of narrower clamps was worth looking into.
G E D Tiley.

SWSGS HAY COMPETITION 1986

There were six entries to the 1986 Hay competition organised by the South West Scotland Grassland Society: four field-cured and two cold air blown entries.

The air blown entries scored higher marks than in the field section. The overall winner was I C Gilmour & Sons, Humeston, Maybole. A first prize was also awarded in the field-cured section and this went to H Limond, Drumore, Kirkmichael.

Analyses and marks scored are detailed in Table 5.

Table 5. 1986 Hay Competition.

<u>Results</u>							
<u>Analyses</u>					<u>Marks</u>		
Rank	Code	% DM	% CP	D Value	Analyses Marks/90	Visual Score/10	Total Marks/100
<u>Field-Cured Hays</u>							
1	AH 2	84.9	8.1	65.9	63.45	7	70.45
2	DH 1	80.7	8.9	64.4	59.95	6	65.95
3	AH 3	83.2	16.5	53.7	54.00	5	59.00
4	AH 1	80.5	7.6	61.7	51.85	7	58.85
<u>Cold Air Blown Hays</u>							
1	AH 5	86.6	11.9	71.7	80.10	6	86.10
2	AH 4	84.7	20.9	62.2	71.75	6	77.75

Codes: A = Ayrshire D = Dumfriesshire

First Prize Winner (Overall): I C Gilmour & Sons, Humeston,
Maybole.

Field-Cured Hay Prize: H Limond, Drumore, Kirkmichael.

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MORE PROFIT FROM GRASS

J Hepburn - Senior Seeds Development Officer, SAI Ltd
J Rice - Development Officer, SAI Ltd

A meeting of the CSGS held at the King Robert Hotel, Bannockburn on Wednesday, 19 November 1986

Profit from Grass - J Hepburn

Grass and cereals belong to the same botanical family and whilst a lot of work has been concentrated in achieving improved yields for cereals, the same messages have been lost as far as the grass crop is concerned. Good cereal yields depend on establishing an optimum plant population, and grass is no different. The aim must be to establish 400 plus plants per square metre (40 plants per square foot). However, surveys in Scotland reveal that establishment is nearer 250 plants per square metre. If plant numbers could be increased from 250 to 400 per square metre then it would be possible to achieve a yield increase of some 20% for the same fertiliser inputs. It is, therefore, of paramount importance to achieve a good establishment of grass and get the crop off to a good start.

The basics must be right and these are - good drainage, satisfactory pH, adequate phosphate level and a fine firm seed bed. The main factors affecting establishment are the inherent fertility of the soil, seed bed conditions, weather prevailing at seeding time, date of sowing and where crops are being drilled, the forward speed of the drill. Reducing the forward speed from 6 mph to 4.5 mph can give a much better plant stand because the seed is in the ground at a more even depth, and this is a must for grass seed, whether drilling or broadcasting.

Scottish Agricultural Industries carry out an extensive selection programme in choosing the grass varieties for their blends. Seed is selected on the basis of production, palatability and persistence. There are two main development sites - one at Ingliston, near Edinburgh, which is typical of the lowground situation, and the other at Connachan, Crieff, which is at 300 metres asl and is typically upland. Here much emphasis is put on testing varieties under farm conditions, particularly for persistence in the upland situation.

Varieties

Some of the new varieties introduced in recent years are worthy of note. PRANA (a tetraploid) has extremely high total production and is particularly useful in the early part of the year. FANTOOM tends to be at its best in mid season with lower production in early spring and autumn. TALBOT is a variety with a more even pattern of production without the seasonal peaks characteristic of some other varieties. MAGELLA tends to be slower in the spring, but its mid and late season production are good.

If all these varieties are blended together then you can achieve a more even pattern of production throughout the season and yield can also be improved by up to 10% from the blend compared to the individual variety.

Tetraploids are now becoming much more reliable and definitely worthy of greater consideration than in the past. They now cover the ground better giving tighter swards, are higher yielding and are much more persistent. With more reliable varieties, farmers are gaining wider experience in their use and are learning how to use tetraploidy to maximum effect. The variety CONDESSA is noteworthy in this category.

Successful establishment depends on having reliable seed with a good germination, free from weeds and protected from disease.

Germination and Weeds

At Higher Voluntary Standard (HVS) grass seed can be sold at 75% germination; the equivalent standard in cereals is 90%. At 75% germination up to one quarter of the seed sown may not produce a viable plant which is a big loss to accept. Germination should be quoted when grass seed is sold.

Weeds should be absent as we have plenty of these already! However, it is still possible under the current regulations to sow the equivalent of 5,000 couch grass seeds per hectare.

Plant Health

It is important to maintain a healthy sward after establishment and to protect young plants from attack from fungal disease. All grass seed from SAI has been

seed dressed since 1968 and the question might be asked - why? ADAS have shown that the use of a fungicidal seed dressing is invariably economic. In 1983 the Grassland Research Institute showed that fungicidal treatment increased emergence by between 5% and 30%. Seed dressing is difficult to apply, and done badly will give very poor results, but done correctly will give good protection in the first 6 weeks, which is when most plants are lost.

Fertilising Grass

If the site class is known (likely to be 3-5) and a plant count taken then it is possible to predict production level from a sward. It may be possible to go for 90% of potential production by putting on 60% of fertiliser, whereas 100% production would cost an extra 40% increase in fertiliser inputs. Thus it is important to determine the optimum fertiliser input required rather than the theoretical maximum.

For grazing, phosphate and potash requirements should be satisfied before the end of June and each should be a minimum of 30 kg/ha and in more intensive situations, up to 50 kg/ha. Little and often in the grazing situation is the best adage for applying fertiliser.

In the cutting situation, where two cuts are being taken, aim for 275 kg/ha total nitrogen - 163 kg for first cut and 112 kg for second cut. Total phosphate required will be 60-90 kg/ha depending on phosphate status of the soil with minimum of 125 kg/ha potash and possibly going up to 250 kg/ha.

Direct Drilling

A suitable technique is now being sought to increase plant population in grassland without going to the expense of a complete reseed. A drill developed in New Zealand - the Aitchison - showed promise in trials and where clover was being drilled. This drill gave three times the seed establishment of others. When SAI introduced the drill they envisaged two principle uses - regeneration of silage swards and reseeding avoiding the need to plough, particularly in the upland situation. It was also envisaged that it would be a cheaper method of re-establishing grass than ploughing and reseeding which can cost up to £500/ha.

Having had experience of drilling 4500 ha three situations have been identified where the results were less satisfactory.

1. There must be an element of bare ground to allow new plants to establish. Weed grasses must be removed in order to achieve this.
2. Soil pH in the top 5 cm of soil must be good. Where this is in doubt lime should be applied at 2.5 tonnes/hectare.
3. The drill does not work well in water-logged conditions. In wet conditions establishment can be slow.

Some trial plots laid out at the East College have shown an increase in yield of 3 t/ha DM in a fairly bare sward.

Controlling Grazing Height

The aim must be to control grazing height in order to obtain optimum sward output. Undergrazing can have a bigger effect on production than overgrazing, and if seed heads appear then grazing control has been inadequate and production will be suppressed.

Table 1. Effect of grazing height on liveweight gain of beef cattle

	Overgrazing	Controlled Grazing	Undergrazing
Grass Height	< 5 cm	5-15 cm	> 15 cm
Grazing period:			
10 May-1 July	0.91 kg/day	1.18 kg/day	1.16 kg/day
1 July-15 Sept	0.41 kg/day	1.05 kg/day	0.55 kg/day
Total liveweight gain in season	919 kg	1400 kg	1187 kg

It is also important when cutting grass not to cut too bare. A stubble height of 6 cm rather than 3.5 cm means; quicker regrowth; better moisture retention; less soil contamination; less sward damage; better plant survival and better quantity and quality silage.

Attention to these factors will ensure that better production is achieved from grass and make the grass crop more profitable than a cereal crop.

ICI Grass Planner - J Rice

The idea of Grass Planner is to put the principles of good grassland management into practice. These are brought together in a package to work for the individual farm, and allow for the planning and utilisation of grassland in a methodical fashion. The aim is to plan stocking rates, make more silage, plan which fields to graze and cut, decide how much fertiliser to apply and when it should be put on. Finally, fields which have not performed satisfactorily can be checked.

The speaker demonstrated the use of the Grass Planner chart and how the management plan is drawn up.

Discussion

Rates of sowing grass seeds were questioned as a way of increasing plant population. Mr Hepburn stated that at 30 kg/ha approximately 3000 seeds per square metre were sown and if only 400 plants were established then there was approximately a 90% loss. This was extremely wasteful and there was scope for reducing seeding rates if more care was taken in preparation and sowing of seed. At Ingliston the losses had been reduced to 60%. If this rate was achieved seed rates could be cut to just over 11 kg/ha.

Methods of establishment of grass were discussed particularly the practice of undersowing. The speaker stated that he liked the idea of sowing grass under cereal arable silage. This allows the grass light, and to tiller well in its maiden year which it does not do under a grain crop. Direct sowing and grazing is satisfactory as long as poaching can be controlled.

When asked what he felt farmers did wrong in establishing grass, Mr Hepburn said that seed should be sown at 0.75-1.25 cm - no deeper, no shallower; that the pH should be not less than 6.0 and that there should be good reserves of phosphate. A 'v' Cambridge roller was a good tool giving good consolidation which allowed seed to be sown at even depth. A good cover of seed was achieved when the ground was cross rolled. The main problem with broadcasting seed was that it all landed on the top of the ground, and more seeds were prone to drying out in a dry period. In a moist period broadcasting seed works very well. Cross drilling where properly done was probably the best method giving as high a plant count as any.

The speaker was asked to comment on hybrid ryegrasses and said that they were no more persistent than Italian Ryegrass and in many cases did not give such good dry matter yields. However, there were more promising varieties being looked at with better winter hardiness. The variety POLLY was showing good results in Scotland. I R Fraser.

CENTRAL SCOTLAND GRASSLAND SOCIETY

COMPETITIONS 1987/88

9th ANNUAL SILAGE COMPETITION

The marking and prizes for the 1987/89 Silage Competition will be the same as last year and the rules and entry forms will be circulated to all members.

GRASSLAND INNOVATIONS COMPETITION

This Competition will not be run in 1987/88.

SWSGS - SOUTH WEST GRASS NEWS

A newsletter, GRASS NEWS, has been introduced by the South West Scotland Grassland Society at the request of the Committee.

Topical items of news of current interest to grassland farmers are collected by a farmer committee member in each constituent county. Contributors at present are: Jim Watson (Ayrshire), James Forrest (Dumfries), Ian Campbell and David Houston (Kirkcudbright), Robert McCreath (Wigtown). A research item by Phil Thomas (Hannah) was included in the second issue and the Chairman introduced the first issue.

Any member or organisation wishing to comment or submit an item can do so through the County contributor (above) or the Society's Secretary at Auchincruive.

MEET THE CHAIRMAN

CSGS: Sandy Bankier, Fernieshaw, Cleland, Motherwell

After working on an Ayrshire farm (Kingencleuch, Mauchline), Sandy started farming at Fernieshaw in 1951. From 40 ha then, the area has increased four times to 160 ha, most of which is owned. Earlier mining had left scars on parts of the farm in the shape of bings and workings covering an area of some 20 ha now used as rough grazing. One field dug up for open cast mining, was reinstated in 1986 for farm use.

Fernieshaw is situated at over 200 m with a moderately high rainfall (1250 mm). Spring turnout is normally not until the end of the first week of May and the cows come in during the first week of October. 20 ha spring barley are grown for home use together with about one hectare of potatoes.

A herd of 120 Friesian cows are kept together with 230 young stock including bullocks. A Limousin bull was introduced last year. Bought in lambs are fattened off autumn grass. The sheep grazing greatly improves the grassland and allows better use of the rough areas. Long-term productive mixtures are grown with some tetraploid content to give three silage cuts. The silage is 'self-fed' in winter.

Sandy modestly says his silage making and pasture management are just normal! However, he is well known for his quality silage having won the Central Society's Silage Cup in 1980, 1983 and 1985.

There is an air of tidiness and attention to detail on the farm. This was evident in colour slides shown in the SWSGS 1984 Competition evening where all the cut grass was laid in dead straight lines. Sandy and his two sons, Willie (the oldest) and Alex (the youngest), believe that such matters as this and painting the machinery, greatly help to simplify working and make life more pleasant.

Alex and Willie take turn about with milking each doing one week per fortnight with Dad always present at the morning session. Willie tends to concentrate on the stock but all work and experience is shared to ensure smooth running. A third son opted to serve in the Royal Navy.

Sandy's wife Margaret also helps with the milking and looks after the calves as well as being O/C the farm garden. To keep everyone out of mischief during the winter, the cows are milked three times daily to help meet extra quota which was bought in.

In common with many farms, the appearance and conservation of the countryside is starting to be considered. The field reclaimed from open cast workings is now back into satisfactory grass production, though still to be drained. In addition, 500 trees supplied by the Countryside Trust were planted this spring in suitable places around the farm.

As well as being Chairman of the CSGS and a conscientious committee member, Sandy is an Honorary Trustee of the Airdrie Savings Bank, which is the last independent bank in the country. A spot of golf, clay-pigeon shooting and gardening are among his relaxation activities.

He recently received the honour of Associateship of the Royal Agricultural Society for a two year study and prepared a dissertation on "Making Quality Silage". Our congratulations to Sandy and his family for this honour and best wishes to him as Chairman of the Central Society. G E D Tiley.

ISLE OF MAN HIGHLIGHTS

J Harris
Secretary of the Manx Grassland Society

Adapted from the Manx Grassland Newsletter No. 9, 1987

Four 'overseas' visits have been undertaken by the Society during the past year to Cheshire, Northern Ireland and Anglesey. In addition, Bob Crichton attended the BGS Summer meeting in the west of Scotland. The following are a selection of impressions from these visits.

Cheshire, 10-12 May 1986 **ICI Dairy House**

Two things that particularly interested us on this visit were the separation of solids from liquid in the slurry, and the organic irrigation of the liquid - and the floating magnesium dispenser in the water troughs for the cows. ICI was convinced of the benefit of high protein concentrates to stimulate the intake both of grass and silage by dairy cows.

Clive Gurney, Austerson

This family farm was only 45 ha (sand to clay) in an area producing more milk per hectare than anywhere in Europe. Clive followed suit by having 100 x 8,000 litre cows run as a split herd, calving autumn and early summer, and milked 3 times a day. 1200 tonnes of silage were made by a two man system clearing 10-12 ha/day of 11 ME silage (25% dry matter), using a 2.4 m mower conditioner, Sylade as an additive, and a giant 10 tonne ex-army Muir Hill bucket for the 10 minutes pit work for every 10 loads of grass!!

Grass swards were permanent, mainly S.23 with lots of clover (and a lot of winter kill, especially on the land last grazed by the 170 wintering sheep). Every field had 4-5 applications of slurry.

The midday feed involved in 3 milkings per day (5.30, 3.30 and 10.30), made a tremendous difference to spring calvers which otherwise would not realise their potential. The system gave 20% more yield, but more silage and more water was required.

Clive was a firm believer in stirring up cows in the middle of the day, which his system certainly achieved. Milking took 1½ hours in the 12/12 ACR parlour and a contract milker was employed every other night.

18% protein concentrate was fed, even at grass, to increase forage intake. Cows went through a footbath every day - normally 1% copper sulphate, but occasionally 2% formalin. Cubicles were 2.13 m x 1.22 m with mats. Silage was self-fed, with access to ring feeders for shy cows.

Tom Whalley, Tabley Hall, Knutsford

Tom was winner of the "Tenant Farmer of the Year" competition in 1986. Starting as a cowman, Tom bought 12 ha, then a bit more, and finally became his own boss on 60 ha. The Farmers Weekly described this farm in the 24 October issue thus - "On this farm Mr Whalley and his wife Jean, with one cowman employee, keep 143 Friesian milkers on 57 ha of pasture and over-winter 200 store lambs. A stocking rate of more than a cow to the acre is achieved by buffer feeding".

Four cuts of silage are taken and stock are buffer fed throughout summer, without concentrates. In winter the cows are grouped according to yield and fed silage *ad lib* along with maize gluten and beet pulp at a flat rate depending on silage quality and quantity.

Silage is made by contractor, with a target of 10 t of 67/68D silage per cow. Grass for cutting gets 450 kg/ha of nitrogen annually as a 29:5:5 compound. First-cut material receives 150 kg/ha of nitrogen and the following three cuts 100 kg/ha each. Slurry is applied to the whole area in winter.

Tom does not shut cows in to buffer feed but gives them free access after milking. He is quite prepared to feed freshly made silage - in fact he feeds the ramp from each of his four cuts before the next cut goes in to the silo (60 m x 14 m).

Cheshire, 20-22 October, 1986

Andrew Chadwick, Kinnerton

One of the first men into Holsteins and someone who had zero grazed all cows for the last 30 years.

The 400 cows averaged 6,500 litres on a flat rate concentrate feed of 5.4 kg/day, 1.27-1.42 tonnes/year, and with a £770 margin over concentrates.

When we visited he was cutting 76 mm high swards, and feeding both autumn grass and forage wagon silage (fed once a day). A front mounted drum mower was attached to the Strautmann forage wagons - three wagons could pick up 20-25 ha per day even at silage time.

Northern Ireland, 20 November, 1986

Dairy Unit, Hillsborough

The main points were:

1. Slightly less emphasis on the feeding value of silage effluent - now put at about 0.9 kg cereal equivalent per cow per day.
2. Self-feeding slightly inferior in milk production to trough feeding.
3. Direct cut silage (double chop) gave about 20% more milk output per hectare than wilted precision cut. Unwilted (picked up directly) precision cut gave similar results to double chop.
4. Single variety grasses were widely used - Frances (only) and Morene (only) in 2 particular fields - and this was the usual practice.
5. Concentrate feed levels - August calvers (Step feeding).
 - i) 8 kg for 120 days reducing to 4 kg per day produced 5204 litres of milk and a MOFF of £441.
 - ii) 4 kg for 120 days reducing to 2 kg per day produced 4560 litres of milk and a MOFF of £436.

Both groups ate 9½ tons silage.

6. Concentrate feed levels - October calvers (Flat rate feeding).

Four flat rate levels, 6.4, 4.8, 3.2 and 4.8 reducing to 2 kg per day produced lactation yields of 5781, 5419, 5035 and 5105 litres respectively to give MOFFs of £568, £557, £533 and £547. Silage intake was 9.3-9.6 tonnes per cow.

Beef Unit, Hillsborough

Two cut silage (10 June and 15 August) versus three cut silage (22 May, 6 July and 23 August) for beef cattle indicated that it was more profitable to finish 80 cattle on 3 cut silage than 100 on 2 cut. Cattle on 2 cut silage needed 4.5 kg concentrates to achieve the same gains (1.5 kg/day) as cattle on 3 cut silage with 2.25 kg concentrates. This applied with smaller cattle 400 kg and big cattle 610 kg.

Protein supplements for implanted finishing cattle (420 kg). Barley + soya gave rather higher (+ 4%) liveweight gains than barley alone, and rather less fat in the carcass. Barley + fish meal (to give a 15% protein diet in both cases) gave no more liveweight gain but a leaner carcass.

With a non-implanted cattle (380 kg), which do not convert feed to lean meat so well, barley/soya and barley/fish meal gave exactly the same liveweight gain as barley alone, but fatter carcasses than barley. This result has been repeated over 4 years.

It is concluded that now that hormones have been withdrawn protein supplements are only worth feeding to young cattle (up to 1 year) and here soya gave nearly as good a response as fishmeal.

Grass clover swards versus high nitrogen fertiliser swards indicated that grass + clover + 63 kg/ha N gave 80% of the stock carrying capacity of grass + 414 kg/ha N.

Anglesey, 23-26 February, 1987

Anglesey is a little bigger than the Isle of Man, with lots of rocks but no real mountains, all types of soil from sand to deep loam and peat, and not much in the way of shelter! It did not look great grass country in February, but the reason was not hard to see - 125,000 breeding sheep (Welsh half breeds) and seemingly two-thirds of these lambing in February! There was quite a lot of waste land, much of it improvable. Apparently this is great summer finishing ground, and many preferred to let land at £220/ha for summer use rather than farm it themselves.

The general policy seemed to be to let the sheep have all the grass until well into May, then let cattle take over - the cattle having been kept on a silage-only ration till then.

Iola Owen was a great farmer/innovator who farmed 186 ha with 2,000 ewes - but owned another 186 ha which he rented out at £220/ha summer grazing (and used for sheep in the winter!).

He was best known for his work with sheep breeds. We were shown Charolais and Wiltshire Horns before seeing the breed he had developed - the "Easicare", developed from Wiltshire Horn x Welsh Mountain. He had a flock of 1,000 of these, and was putting the best half to an "Easicare" tup, selling breeding stock at Chelford. The rest were put to the Suffolk, and to the Clun Forest (ewe lambs).

The "Easicare" is a breed that needs no shearing, dagging, crutching or dipping (?) - all resources go to milk and meat, and yet the hair covering keeps lambs hardy at birth. The philosophy behind the new breed was:

- i) wool and wool related problems (dagging, milking problems, fly strike, shearing) take up to 85% of shepherding costs;
- ii) the value of the wool is not enough to compensate for this.

The 1,000 sheep that we saw at Trefri, on blowing sand by the coast, were in good condition, and living off a moderate crop of green turnips, with no concentrates intended before lambing on 1 April.

Wyn Jones, Menai Bridge. Another large farm - 222 ha with 36 ha of cereals, but true to form he sold the grain, just needing the straw! This was again a most impressive unit, the 186 ha carrying 620 ewes.

Lambing (1000 lambs) from 1 February and finishing 330 cattle - mostly Friesians which most of us (!) thought were good types - of which 220 were bought in October at 350-400 g. He grew 6 ha hay for sheep.

No cereal was fed, and cattle were kept in on silage, self-fed mainly in big groups, until well on into May, by which time the pressure was off the grass as the lambs finished. The only time cereal was fed was to tail-end cattle in December.

Fertiliser use was quite heavy: cattle were stocked at 2.5/ha, added or subtracted according to grass growth, and turned out when the grass was 152 mm high.

His 1200 tonnes of silage, cut 11 June after being shut up for 5 weeks won the Anglesey competition in 1986. He used sulphuric acid as an additive, and loaded in with a "Maniscopic" industrial loader which he said also moved 6100 tonnes of muck, fertiliser, grass and corn every year. He put straw under the silage. Recently he built a new outside pit and housed cattle in the old 28 m x 12 m pit. He was feeding 200+ cattle on the one 12 m face.

The British Grassland Society Summer Meeting 1986
West of Scotland - 21-25 July
by Bob Crichton

I enjoy meeting other farmers and visiting other farms and so when the chance came along to join this Summer Meeting I grabbed it. There were 3½ days of visits and each had its Day Chairman who kept the party on schedule.

At the Hill Farming Research Organisation in Lanarkshire, we looked at techniques for maximising lamb/beef output by grazing 3-4 cm for sheep and 8-9 cm for cattle. This was farming at "Brinkmanship" level and farmers were using the advice for closer grazing but preferred to go for a bit more grass when grass growth was slow.

An interesting fact about these visits was that the visitors consisted of farmers, advisers, industry and College staff and there was generally somebody who could answer questions as a specialist in that subject. I was able to pin down a soil chemist about the movement of phosphates and potash in the soil.

The farm visits were to top silage makers and grassland managers with good stock. One of the outstanding visits was to Gilbert Harvey Farms, Biggar. The farm is about 200 ha of upland. It carried 125 suckler cows and fattened the calves produced. His 325 breeding ewes lambed at 180% and he bought store lambs to fatten. He also grew 55 ha of barley. There were some tremendous stock on this farm and it was so well laid out that it was a conservationist's dream with its 6.5 ha of woodland in shelterbelts. If the Manx Grassland Society go up to Lanarkshire this is a good farm to visit.

We had been well dined, the hospitality was tremendous and we had made lots of new friends. I would recommend the Summer Meeting to other farmers and their families.

VISIT TO THE ISLE OF MAN

Jubilee Spring Tour of SWSGS, 12-14 May 1987

A party of 14 members (including 2 wives) represented the SWSGS on its Jubilee Spring Tour to the Isle of Man, 12-14 May 1987. This visit was made at the invitation of the Isle of Man (Manx) Grassland Society who were hosts on the trip.

From the time of take-off at Glasgow Airport until touch down of the return flight by Manx Airlines, this was a tour packed with interest for any grassland practitioner and frequently interspersed with the warm and generous hospitality of the Manx Grassland Society members.

The visit was based at the Villiers Hotel, Douglas, from which travel was by coach, **generously sponsored by Sinclair McGill Seeds Ltd.** The party was accompanied for the whole duration of the visit by John Harris, Secretary of the Manx Grassland Society and Assistant Adviser from the Isle of Man Board of Agriculture based at Knockaloe Experimental Farm, Peel. The great success of the tour was in large measure due to the careful preparation and arrangements made by John Harris coupled with the continuous and absorbing running commentary in the coach. He was ably supported by our enthusiastic diminutive ex-jockey coach driver from Sussex, who ensured there were no dull moments.

An excellent range of farms to visit was chosen giving a broad picture of grassland farming on the Island. One farm selected could not receive the party because his best cows had developed laminitis. A nearby neighbour willingly plugged the gap at very short notice.

Isle of Man Agriculture

The Island is approximately 40 kilometres long by 16 kilometres wide with a maritime climate in which constant wind is a feature. Soils vary from sand to clay with a preponderance of shallow silty soils developed over a slate rocky substratum. The 48550 ha of farm land are divided among 850 farms of which about 500 are full-time businesses.

Farm type is traditionally mixed stock-cropping, but there are some larger units with dairying, beef or sheep. Cereal growing and rotational grass are characteristic. Field boundaries are mainly of raised stone dykes topped with earth in which there is now a widespread colonisation by whins.

Rainfall is very low (508 mm) and unpredictable in some places, averaging around 760-890 mm in most lowland areas, but rising to 1270 mm or more in the mountains and hills. Snowfall is rare. Self-sufficiency is aimed for as all imported goods have an additional sea freight charge. Farmers do not enjoy the benefit of EEC grants but on the other hand have only a 20% Income Tax and other tax advantages.

Owner-occupation of farms has only recently come into vogue and previous insecurity of tenure made for a low level of inputs and disincentive to erect new buildings. All silages are sampled and analysed at Government expense and free advice given.

The Knockaloe Experimental farm at Peel is sited on an ex-POW compound. It is more suited for demonstration rather than experimental work.

Farms visited:

1. Dougie A Duggan, Ballavell Farm, Malew

Ballavell is a 77 ha farm situated on fairly good loam at the south end of the Island close to Ronaldsway Airport. The altitude is approx 60 m and rainfall 890 mm. There are 20 ha barley and 57 ha grass.

The winter barley (var. Igri) seen was very vigorous - considered the best on the Island. It had been drilled on 24 September and a generous amount of FYM had been ploughed under. When ploughing out, this manure layer would be brought back to the surface for better grass establishment.

Grass swards were dense and productive in spite of recent dry weather, and with abundant clover. 250 kg/ha 20/10/10 and 190 kg/ha ammonium nitrate had been applied this spring. The 83 cows were paddock grazed. Strips of plastic were used as insulators on the stobs - these would possibly not work in wetter conditions. Straw was used liberally for bedding the cubicles in a new house erected in 1984.

Dougie uses no additive believing that 'the man in the pit makes the silage'. He has been in the final of the silage competition for the past 10 years and was 3rd in 1984/85. He won the Gerald Moore cup for the best feeding set-up in the same year. Last year he was awarded the Royal Manx Agricultural Society's Lord Raglan prize for the best livestock and cropping farm over 40 ha for the fifth time.

2. Raymond Teare, Colooneys Farm, Cooil

Raymond was current holder for the best feeding set-up in 1986/87 and was a close challenger for the silage cup. Colooneys lies on higher ground west of Douglas with a 1016 mm rainfall on blue clay. It is a dairy unit with 80 cows on 44 ha grass and 9 ha cereals. A Jersey bull had been introduced for all 2 year old heifers to try and raise butterfat content, otherwise a Charolais was used for spring calving.

Concentrate use has been reduced to about 940 kg per cow leading to increased MOC. A home mix (16% protein) based on barley resulted in further savings. Copper deficiency in the stock and ovarian cysts had been cured by using a special iodine - copper mineral mix. 400 kg N/ha were applied to the grazing fields which were set stocked on long-term grass mixtures. The heavy clay caused poaching problems. Grazing was also rented annually.

Silage is self fed and the unit is covered under one roof. An interesting feature was a closed circuit television camera to watch calving.

In discussion, it was noted that stricter regulations on pollution of waterways were being introduced by the Board of Agriculture and Fisheries.

3. Bernard Callow, Ballaherd Farm, Bride

One of the larger farms on the Island, Ballaherd (202 ha) was visited on the second morning of the tour. In spite of being in one of the driest parts (508 mm rainfall) some very good grazed grassland was seen together with large scale (50 ha) lucerne growing. 16 ha kale are also grown, sown late in June to avoid early season drought check. Spring cultivations were found to conserve soil moisture. Silage was fed for 10 months of the year to maintain milk quality for which Bernard had won a prize.

Lucerne (var. Europe) was sown at 17 kg/ha with an addition of 5.6 kg/ha meadow fescue. 20/10/10 is applied to the first cut (late May) at 50 mm height, followed by a potash dressing and slurry. It was essential to rest the crop during September, but it could be grazed by sheep earlier when green, or by cattle after the stems had died back naturally. Some of Bernard's lucerne was over ten years old and he expected a problem of tough old roots when it was ploughed out. Lucerne alone created a black line in the silage pit. Ideally it should be mixed with grass for ensiling. Silage was kept from year to year and some seven years old was seen! Grass mixtures contained tetraploid ryegrass, Italians and cocksfoot.

A Limousin bull was used after Holstein/Friesian AI to calve all cows (100-120) before Christmas. Dutch comfort cubicles were a feature in the buildings.

4. Messrs John and David Huyton, Grenaby, Bride

Brothers John and David Huyton farm Grenaby and West Kimmeragh farms at Bride in a dry (635 mm rainfall) area in the north east of the Island. They were first prize winners in the 1986 Manx silage competition, being holders of the Ellerslie Trophy and were subsequently placed second in the UK Northern Region contest. Their big bale silage also won first prize in the local competition. The visit was a revelation of the quality of grass and stock which could be produced on medium quality soil with unpredictable rainfall.

A flock of 240 ewes, some with Charolais X lambs, was a picture on well grazed permanent grass with plenty of clover. The ewes are wintered and lambed on high quality silage. Over 200 store cattle (Simmental and Charolais crosses) are bought in. Some are finished on silage, others on grass. The cattle at grass were in very good condition with plenty of grass available.

54 of the 118 ha are grown to cereals, mainly wheat and winter barley for seed. Making high quality silage much reduces the concentrate requirement and allows more cereal to be sold. 1986 silages/D values were: 1st cut 67.5, 2nd cut 69.7 with dry matters of 22.5, 38.8% respectively.

At Grenaby a new reseed was seen, containing Melle, Meltra and Contender perennial ryegrass. Use of a crumbler ensured soil consolidation before sowing the seeds at 34 kg/ha from a seed box on a Cambridge roller. The new ley was grazed by sheep and 0/125/125 kg/ha PK had been applied. Shepherd's purse was noticeably abundant but this would disappear after the first silage cut on 1 June.

5. Stephen Martin, Knock-e-Dhooney, Andreas

Knock-e-Dhooney farm, in the dry north is unique in having been with the same family since the 1500s. The present tenancy comes up for review in 2 years. A grass and cereal farm of 80 ha, it is stocked only with sheep - 325 ewes. Towards the shore is a 12,000 year old cliff line rising from a raised beach. The foreshore consists of rough ground infested with rabbits and a rabbit-proof fence had to be installed at the farm perimeter. Mains electric internal fences are used. Plastic covers were necessary to protect the switch from salt spray. An interesting innovation was a plastic tube on the ends of the lower wires to allow disconnection when the grass grew tall.

The attractive and well-managed flock was seen on excellent dense grass swards. The use of silage gives more aftermath grazing, fits into a clean grazing system and is earlier and more reliable. Listeriosis had been experienced in some years but this had been overcome by additional care at silage making.

A 6 years grass - 3 years barley - rape rotation is followed as dictated by the tenancy agreement. The swards were dense (medium and late ryegrasses) with a good clover content and very few weeds. These were established after winter barley. An unforgettable sight was a dense productive pure ryegrass - clover sward which was described as 'just ready for ploughing up!!! - necessary to stick to the cereal-ley rotation.

A historic Viking ship burial site was fenced and preserved on the farm where a Viking, his horse and dog had been interred.

6. Elwood Parsons, Baljean, Laxey

Travelling on the 60 kilometres TT circuit over the hill road, the party stopped close to Snaefell peak and met Elwood Parsons whose father, Ned Parsons, moved there in 1935 and had brought about tremendous improvements in farming and stockmanship on the Island.

A 1012 ha hill area was rented from the Isle of Man Government. This was run in conjunction with 303 ha marginal land, 142 ha rough grazing and 162 ha lowland grass on an adjacent owned farm (Baljean). A further 120 ha was farmed in the north.

There were 2,300 ewes, $\frac{1}{3}$ Swaledale. 1,100 were put to Blue Leicester tups and 1,200 to Swales. After scanning, twin-bearing ewes were kept on the inbye, the remainder going to the hill. 1,500 lambs were fattened off grass and green crop. The 120 ha northern farm was stocked with 180 Spring calving sucklers crossed with Charolais. Labour was two full-time and 2 part-time men. G E D Tiley.

1986 GRASSLAND IDEAS COMPETITION

South West Scotland Grassland Society

Winner 1986: T McCombe, Trohoughton, Dumfries.

Big Bale Handler

Tom McCombe's Grassland Idea was a modification to a rear end digger for holding and lifting big bales. It consists of a fixed channel iron arm and a hinged arm operated by a double-acting hydraulic ram. The ends of the arms are fitted with car wheels with inflated tyres. This allows the bale to be tightly gripped in any direction without damage to the plastic cover.

The modification cost about £250 to construct and it has been used successfully for two years. Tom McCombe received the UKF Tankard for this idea.

As winner of the local Grassland Competition this entry would normally have gone forward to the BGS National Contest which was initiated this year. However, the similarity of design to commercial bale handlers precluded this.

Instead, an idea entered by W P Kerr, Helenton Mains, Symington, for the repair of corroded iron cubicle legs was submitted.

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THE BRITISH GRASSLAND SOCIETY

Summer Visit to the West of Scotland 21-25 July 1986

The British Grassland Society visited the west of Scotland for their summer meeting at the joint invitation of the Central Scotland and South West Scotland Grassland Societies. The meeting was based at Wolfson Hall, Glasgow, and day trips were arranged to commercial and research farms as detailed below. Host Vice-President was Dr Malcolm Castle. Professor J M M Cunningham was Chairman of the organising committee and David Marshall, Secretary.

Visits were made to:

1. Hartwood Research Station, HFRO, Shotts - to see research and development into more efficient techniques for upland grasslands. Studies on sward height, nitrogen use, sheep diet supplementation and sheep and beef systems.
2. G Harvey, Greenshields, Biggar - to see high quality beef and sheep production from well managed grass on an upland Less Favoured Area. 125 suckler cows, 325 breeding ewes and 800 lambs for fattening were kept on 116 ha of grass with 62 ha barley and roots. Two cuts of silage were taken after sheep grazing until May.
3. J Clark & Sons, Dunrod, Inverkip, Renfrew - to see first class grassland management producing prize winning silage in a very high rainfall area. Dunrod had twice won the Scottish Regional Silage trophy 1981 and 1986 and was a leading competitor in the Central Scotland Grassland Society Competition. The dairy herd (105), mainly Ayrshires, is kept on 40 ha silage, 26 ha permanent grass and 150 ha hill. Careful grassland management ensured maximum longevity of the dense ryegrass swards.
4. A Lyon & Sons, Dumachloy, Rothesay, Isle of Bute - to see dairy beef and sheep farming on permanent and improved hill grassland under the constraints of island agriculture. The results of improving steep and rough hill land to give productive permanent grassland were the highlight of this visit.

5. J Stevenson, Changue, Cumnock - to see efficient dairying and grassland management on cold heavy soils in a moderately high rainfall area. 284 mainly pedigree Ayrshire cows were kept on 176 ha rotational grass. The high milk production (over 7,000 l per cow) was sold through the family retail business which operates in Ayr and the neighbouring area.
6. W Speirs, High Todhill, Fenwick - another top class dairy unit situated in a wet cool area with heavy soils. The effects of severe poaching and 'pugging' by the cows' feet in the previous wet summer of 1985 were dramatically seen in this and the previous farm. An attempt at pasture repair using the 'Aitchison' (New Zealand) direct drill was seen at High Todhill. A typical Ayrshire family farm, this unit made high quality silage.
7. W K Scott, Neilstonside, Neilston, Renfrew - to see specialist dairying on a difficult upland farm affected by exposure, altitude, high rainfall and irregular topography. 98 cows were kept on 68 ha grass plus 34 ha rough grazing. Long term mixtures are used aiming for minimum reseeding. Two cuts of silage were taken.
8. Crichton Royal Farm, West of Scotland Agricultural College, Dumfries - to see dairy development studies relevant to Scotland and the north of England. The farm is on free draining loam soils with a moderately high rainfall, but good summer temperatures which can lead to mid-season drought. A feature of the Crichton work was the Acrehead unit which studied feeding systems on comparable self-contained dairy sub-units operating side-by-side. High and low concentrate feeding was currently under study and a trial comparing clover versus high nitrogen was planned.

A visit was also made to Sinclair Horticulture and Leisure plc's Ryeflats Peat Extraction Unit at Carstairs. The modern peat extraction operation on a raised lowland bog for horticultural purposes was demonstrated. G E D Tiley.

SCOTTISH AGRICULTURAL COLLEGES

History and Function

Scottish Agricultural Colleges (SAC) is a new Company, established to integrate the activities of The East of Scotland College of Agriculture, The North of Scotland College of Agriculture and The West of Scotland Agricultural College, and replaces the informal Council of the Scottish Agricultural Colleges (COSAC).

The Boards of Governors of the three Colleges agreed to the formation of the new Company at a special meeting in April 1986 and SAC was formally registered as a Company Limited by Guarantee in February 1987. Three Governors from each College form the Board of Directors of SAC. The need for the reorganisation followed the very substantial cut-back in Government grant aid to the Colleges, both for the advisory services and for research and development work and the requirement to introduce commercial services.

As from 1 April 1987, the Agriculture Advisory Service and the Veterinary Investigation Service have been regrouped into all-Scotland services each with a Director based at the SAC Headquarters, Cleeve Gardens, Perth. However, the existing College Offices and Veterinary Centres will continue to be a focus for local contact with Colleges and the advisory/veterinary services. The specialist advisory services remain based at the Colleges and are available through the field advisers or by special service arrangements.

The Research and Development activities have been rationalised into 15 Lead Centres, based on Commodity Groups, each with a Leader. Also, twenty scientific discipline co-ordinators are responsible for updating the organisation on developments in their particular field of science.

Education also remains linked to each College and modularisation of diploma courses has been a major undertaking. The Colleges intend to extend their range and style of courses to meet with changing requirements for subjects and adult education.

College Principals will be responsible for specialist advisory, research and development and education functions at their Colleges. Each College remains a registered Company in its own right with a Board of Governors responsible, in conjunction with the main SAC Board, for the overall running of the Colleges.

Lead Centres

Lead Centres provide specialist advisory services and undertake research and development on behalf of DAFS. A wide range of services, including contractual R & D, is available to commercial organisations.

Lead Centre	College	Leader
Dairy	West	Dr J D Leaver
Dairy Technology	West	Dr R J M Crawford
Beef	North	Dr M Kay
Sheep/Goats/Deer	East	Mr T H McClelland
Pigs	North	Dr V Fowler
Poultry	West	Mr P Dun
Animal Waste	West	Dr S Baines
Cereals/Potatoes	East	Dr J C Holmes
Other Arable Crops	North	Mr W G W Paterson
Grassland	West	Dr J Frame
Soils	East	Dr K A Smith
Mechanisation	East	Dr B D Witney
Farm Buildings	North	Dr J M Bruce
Horticulture	East	Mr W Fordyce
Economics	North	Prof K Thomson

Grassland Services

SAC offers two special services to help obtain the best results from grassland.

Grassland Planner: This is a field planner drawn up by the local adviser to suit specific requirements. Recommendations will be provided in the form of an action plan and will cover: Fertiliser rates; Stocking rates; Cutting dates; Grazing systems. A cost estimate related to area grown will be given.

Grassland Manager: An adviser will carry out inspections of swards at the critical management times and give advice on botanical composition, need to reseed, reseeding methods, seed mixtures, weed and pest control measures. Three visits will be made over the growing season. This service complements **Grassland Planner**.

Further information on these and the full range of crop and livestock packages can be obtained from local advisers.

FARMING AT AUCHINCRAIVE: 1950s TO 1980s

**J K S Hall, Scottish Agricultural Colleges,
Agricultural Advisory Service, Miller Road, Ayr**

Looking back over these years, many aspects of grassland management have moulded the progress of increased reliance on grass on the modern intensive lowland stock farms in the west of Scotland. Increased fertiliser use, new types of machinery, larger silos, new and better techniques and aids to making and feeding forage, have interacted to improve efficiency.

Manuring

Prior to 1955, fertiliser applications on grassland included a maximum of 50 kg nitrogen per ha in a season. Over the next 20 years, usage increased to over 300 kg per ha, applied in three or four dressings over the season. Increased fertiliser use on the College Farm was based on the demonstration by the then Grassland Husbandry Department in the Fullarton Park area. The present day application rates of 400 kg/ha of N, 40 kg P₂O₅ and 60 kg K₂O, show how much more intensive grassland use is today.

Each year on the College Farm, the fertiliser programme was based on a budget prepared six months in advance of the growing season, which set an upper limit on fertiliser expenditure. Aided by soil analyses, a scheme of manuring, covering each field and each application, was then worked out to make the most efficient use of the money available and to ensure an orderly sequence of grass for grazing, hay and silage throughout the season. Usually first budgets had to be modified, because there was always the tendency to put on more fertiliser than we could afford! Regular liming was included in the budget. The "manures book" was an important aid to management. In a wet season some of the later applications might not be given, and adjustments were made for slurry applications or other unforeseen circumstances.

Machinery

Over the past 30 years big advances have been made in farm machinery from the reaper with the reciprocating blades, to the flail mower, then turbo mowers of today. The speed of cutting has made a big difference to grass handling. Moving the crop off the field too,

had a major breakthrough in 1957. Prior to this the old green crop loader piled grass onto trailer-loads which were hand-built, and then the loads pulled off by ropes at the pit. The major breakthrough was the forage harvester. In 1957 Auchincruive used one of the first fifty or so imported from America - a Lundell. This had the effect of reducing labour demand, speeding up the operation and at the same time chopping the material. In 1971, the newer precision chop forage harvesters were introduced giving shorter material, more easily compacted in trailer and pit.

Barn Hay Drying

In the period 1959-61, pioneering work was carried out in conjunction with the Electricity Board on the batch drying of hay, using electric fans and heat. This barn dried hay was a superior quality product suitable for high yielding cows, the main disadvantage being the small sizes of the "batches" produced. There followed further research and development of the cold air, storage drying method of barn hay drying, the batches being in the order of 50 tonnes at a time. Four years work resulted in a farm system producing consistently high quality hay, green and free of mould, often made in adverse weather conditions, or in periods when only one or two dry days came at any one time. However, it was not possible to make sufficient amounts of this product to satisfy the needs of ever increasing stock numbers, and also because of the ever decreasing labour available on the farm. The dairy cow feed system was geared to self-feeding, so inevitably silage became the forage base of the diet for the large dairy herd. One aspect of barn hay drying, and silage making too, was that the crop was cut much earlier in the season, and the familiar sound of the corncrake in the Holm fields is now no longer heard. The nesting sites in late hay crops which enabled them to rear a brood, are no longer available.

Ensiling Techniques

Many improvements have gradually been introduced over the years. Additives are nothing new at Auchincruive. In the days of the concrete tower silo, treacle was pumped into the cutter blower, as the grass or arable silage was being fed onto the conveyor. In the days of open pits, treacle went on by watering can with a spoon beside the spout to form a spray! Later, some years no additives were used, then formic acid type additives were used extensively.

Sealing the plastic sheets to the sides of the pits was first practised in 1967 using special adhesives to stick the sheets to the walls. The sheets were kept in contact with the walls and top of the silo by layers of straw bales in covered pits, and tyres in open pits.

Earlier cutting dates have ensured much higher quality of forage, and the use of modern grass varieties and simpler seeds mixtures introduced in the early 1960s, have all helped to improve the quality of forage. Direct cutting and heavy effluent flow gave way to a period when at least 24 hours wilt was the norm. High dry matter content in the pit was the aim - up to 30%, but the pendulum has swung back to nearer the 20% level. Even in the 1950s, effluent caused concern, and trial sumps were built to contain hydrated lime. The hope was the effluent would be neutralised before it reached the then open burn, but this was not successful.

Labour

One of the saddest changes over the last three and a half decades is replacement of men by machines. Prior to the 1960s, in the days of the horse, men were plentiful on the farm, numerous yes, but not well paid! Tidiness and a pride in their work led to a very convivial atmosphere with much social interchange of gossip and fun. The scene today is so different with a man, setting off with tractor and machine to do a lonely job for hours on end! The machines are so very much more sophisticated today than 30 years ago. Compare the modern combine harvester with a horse and box cart! Thus, the farm worker is no longer a skilled artist but a highly qualified technician at the control of extremely expensive equipment - and worth every penny of his weekly wage.

The Dairy Herd

The College Farm Dairy Herd, composed of pedigree British Friesian and Ayrshire cows, has seen many developments over the last decades. The self-contained herd has gradually been improved by careful selection, recording, and use of AI sires. The present average yields of 6,500 litres plus have resulted from changes in system as well as breeding.

During the 1950s, two byres housed the 96 cows, which were fed hay, straw, silage and roots. Concentrates were all home grown, apart from some bought-in protein, and mixed on the farm. Oats, beans, barley, all went into the ration, and cows were fed strictly according to yield as based on weekly milk recording.

The introduction of the magnetic synchro pulse milking machine and pulsator control in 1957 gave a saving of up to one-third in milking time. In 1958 the bulk milk tank was installed together with a milk lift pipe-line. In 1962, self-feed silage, parlour milking and cubicle housing revolutionised the dairy system, resulting in a saving of one man's labour. The College Farm was one of the first units to combine slatted passageways with cubicles, and much work was pioneered in the development of cubicle design and the Auchincruive type cubicle. Expansion of the dairy herd numbers resulted, and today the herd size is double what it used to be. Slatted passageways and slurry holding channels meant new methods of handling animal waste and slurry tankers and roto-spreaders replaced the old dung spreaders.

Cropping

In the 1950s at Auchincruive, crops on the farm were very diverse. Hay and silage, arable silage, wheat, oats, barley, and beans were grown together with roots such as swedes, turnips, mangolds, potatoes and some sugar beet. The combine harvester and grain drying plant for 200 tonnes of cereals was introduced in 1955, six years before the last horse left the farm. During the 1960s more emphasis was put on grass, both hay and silage, roots no longer fitted the system, and the sugar beet factory at Cupar closed. Home mixing continued till the mid 1970s, so grain was grown for stock feed as well as wheat for sale. Dairying, young stock and sheep have replaced the mixed cropping enterprises of past years, and much better use can be made of the great potential Auchincruive has for growing grass.

Today sees fewer men producing three or more times the output of the early years. But you do not get something for nothing in this world and the inputs equally have increased. With present day costs it needs a careful eye on managing the whole farm enterprise. Blending intensive stock and grass management, with efficient use of land, labour and machinery, needs a higher level of expertise than ever before and much can still be learned and done to reduce costs.

Summary of Stock, Crops and Grass at Auchincruive,
1954-1984

Cash Crops (ha)	<u>1954</u>	<u>1984</u>
Sugar Beet	1.6	-
Potatoes	2.0	4.8
Wheat	8.5	3.9
	<u>12.1</u>	<u>8.7</u>
Crops for Stock Feed (ha)		
Barley	-	45.8
Dredge Corn (Oats + Barley)	10.1	-
Oats	8.5	-
Mashlum (Oats + Beans)	11.5	-
Marigolds	2.0	-
Swedes	1.0	1.6
Kale and Rape	1.0	-
Lucerne (Experiment)	0.4	-
	<u>34.5</u>	<u>47.4</u>
Grass (ha)		
Hay	19.2	12.0
Silage	14.8	65.7
Grazing	70.6	65.4
Rough Grazing	19.5	1.6
	<u>124.1</u>	<u>144.7</u>
	<u>170.7</u>	<u>200.8</u>
Stock		
Cattle - Dairy cows	86	197
Bulls	4	2
Dairy Young Stock	118	115
Beef Cattle	31	166
Sheep - Ewes	50	251
Ewe Hoggs	91	117
Rams	2	10
Lambs	91	500
Pigs - Breeding sows and gilts	38	-
Fattening pigs	374	-
Boars	4	-
Horses - Working geldings	5	-

Reclamation and Woodlands

During the 1950s and 1960s, much was done to improve old cut-over woodland, and the drainage in many other fields. Six ha were reclaimed in 1952 by blasting stumps and bulldozer. A further 8 ha were reclaimed by machines in 1962, along with some 6 ha in other parts of the estate. Approximately 32 ha were drained with a full tile system during the 1960s. Roads, fences and gates gradually were completed as the old estate policies became a modern intensively farmed unit.

From 1945 to 1970 land too steep or inaccessible was replanted with woodland compartments. Some of the older beech and oak have been regenerated along the river banks, other areas have been planted with conifers as well as hardwoods. Ash regeneration has been encouraged in one area, as well as plantings of oak, beech, Scots Pine, Douglas Fir, Norway and Sitka Spruce, Japanese Larch, Western Hemlock and Spanish Chestnut. Geans, Rowan and other species all help to give a good variety to provide amenity, shelter and useful timber on the estate. The result today is a pleasing variety of interesting woodland, which also encourages wildlife, both plant and animal, for all to enjoy. Auchincruive has been opened up to members of the Friends of Auchincruive, an Association formed to foster the history and well-being of the estate.

The awareness and publicity about the rural scene, conservation of wildlife, and the broad-leaved woodlands policy, must all be acknowledged in the future. There is room for it all, so long as moderation prevails and a positive attitude is taken by farmers and everyone else concerned.

The farming system at Auchincruive today is the result of much thought and steady improvement over the years. Like all farming systems, change cannot happen overnight. However, to survive, the industry cannot stand still but must constantly look down new avenues of progress in order to meet the economic pressures of today and the changing times ahead.

COMPETITIONS 1987-88

SOUTH WEST SCOTLAND GRASSLAND SOCIETY

15TH ANNUAL SILAGE COMPETITION

The 15th Annual silage competition of the South West Society will be run with no change to the marking and judging system. There will be a continuing emphasis in judging with regard to feeding efficiency and on proper arrangements for the control and collection of effluent.

The prize for the best big bale/silage (based on analysis only) is a cash token kindly donated by Plasti-Covers Ltd (Irvine).

A new infra-red method of forage analysis is being introduced by the Scottish Agricultural Colleges which will give results more speedily and efficiently. This technique gives comparable values to previously used methods. The competition entry fee may be increased slightly to cover any increase in laboratory charges.

Detailed rules and entry forms will be circulated to all Members.

GRASSLAND IDEAS COMPETITION

This competition covers a wide range of possible ideas or innovations which may have been thought out by individuals on their own farms. These can be 'gadgets' or home-designed modifications to machines, gates, or equipment or alternatively, ideas on systems, crops or stock management, which have been used on a farm to try and improve efficiency or management.

Entry is free and forms will be circulated with the silage competition forms.

The BGS introduced a National Ideas competition in 1986 based on the original scheme used by the South West Scotland Grassland Society. Each local Society in Britain can put forward an entry and the winner will receive a £300 prize, sponsored by UKF Fertilisers.

HAY COMPETITION

The Executive Committee have decided to no longer run this competition due to lack of support.

NEW

Add-safe

THE SAFER SILAGE ADDITIVE

THE ADVANCED FORMULATION OF THE TRIED AND TESTED ADD-F

Add-safe has all the proven silage preservation benefits of Add-F. Plus additional control of clostridia and secondary fermentation. All in a safer-to-handle form.

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also continuing to be available:

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Silaform – for silage preservation with protein protection.

THE CENTRAL SCOTLAND GRASSLAND SOCIETY

SILAGE COMPETITION 1986-87

*A meeting of the CSGS held in the Stuart Hotel,
East Kilbride, on 9 January 1987*

Judge: Mr K Nichol, Hospitalshields Farm, St Cyrus

The Judge opened his remarks by saying how good it was to meet people as enthusiastic about silage. He had been most impressed with the standard of silages entered and explained that it was only small points of detail which separated the silages he had seen.

The main criticism was on the subject of surface waste. This was present on a number of pits but was something which could be eliminated given careful management. Rapid filling of pits and, as a consequence, lack of consolidation, could be contributing to this problem, said Mr Nichol. He recommended double sheeting pits, using the old sheet and shoulder sheets below a new top sheet. Having sheeted the pit, the covers should be weighted down immediately and, whatever material was used, should cover the top of the pit completely.

In addition to surface waste, another area where marks were lost resulted from inadequately lining the walls of sleeper built pits. This lack of lining contributed to the amounts of waste present at the sides.

Effluent control had been good in the silage clamps visited and collection provisions generally were adequate.

One of the areas of greatest difference between farms was in the utilisation of the silage. Silage was not used to its full potential by some and this was shown up on the dairy farms by the large differences which existed in the quantity of concentrates fed for a given output of milk.

Mr Nichol concluded his remarks by saying how much he had enjoyed judging the competition, as it had given him an opportunity to meet so many farmers dedicated to the art of silage making.

Table 1 presents the full list of entries and Table 2 shows the inspection marks and final totals awarded to the short listed entries.

From Table 3 it can be seen that silage dry matter (%) peaked in the early eighties. Currently there is much less emphasis placed upon wilting. Most competition entrants are now wilting for only about 12 hours and nobody on the short list said they planned to wilt for more than 24 hours.

The trend in crude protein levels over the years of the competition has been downward. The high crude protein levels in the early years of the competition may have been due to split dressing of nitrogen in the hope of boosting protein level. The declining trend in crude protein is matched by the decline in silage ammonia nitrogen levels although improved techniques are also likely to have aided this desirable change.

The average 'D' value of all silages entered for the competition has been improving over the years. 1981 and 1983 were low sunlight years and the average D value in 1985 was due to poorer second cut silages. The quality of all silages entered has improved from the first year of the competition. It is now unusual for a poor silage (below 57 'D' value) to be entered and the number of silages falling into the medium quality category (57 to 64 'D' value) is declining in favour of the number in the 64 to 70 'D' value bracket.

The Judge presented the prizes, the winning entry being that from Mr Jim Clark & Sons, Dunrod, who received the SAI Trophy. The runner-up was Messrs T & B Wilson, Bishopbrae. The Hamilton Reco Salver for the winning beef/sheep entry went to R & M Young, St John's Kirk, who also won third place overall. Other prizes were won by Mr J M Telfer, High Branchal, Messrs A & D Allison, Heads Inn and Mr A Barr, Heatheryhall. K Phillips.

Table 1. 1986-87 Silage Competition - Analyses and Marks.

Rank	Code	Analyses		D Value	Ammonia N as % Total N	Marks (out of 35)
		DM (g/kg)	CP (g/kg)			
1	CP34	216	154	69.1	90	28.10
2	CP41	206	147	67.6	69	17.41
3	CP42	235	171	64.2	67	26.79
4	CP43	212	139	68.9	98	26.04
5	CL18*	306	150	64.6	70	25.75
6	CL32*	268	190	66.2	121	25.52
7	CP14*	254	128	67.6	96	25.02
8	CL24	183	139	67.6	76	25.02
9	CL19*	215	156	65.1	81	24.95
10	CS 5	196	137	69.3	107	24.82
11	CL26	199	178	65.9	110	24.40
12	CS 2*	254	101	68.0	87	24.12
13	CS 4	226	146	66.1	106	23.47
14	CP27	229	141	65.1	99	22.73
15	CL37	237	144	67.4	137	22.42
16	CL22*	246	140	63.4	87	22.34
17	CP39*	274	129	64.7	96	22.20
18	CP21	212	165	64.0	111	22.05
19	CL 7*	144	193	62.9	90	21.70
20	CS 9	252	134	64.8	109	21.63
21	CL12	201	173	65.1	133	21.49
22	CL13*	198	183	63.7	130	20.70
23	CS35	230	131	65.9	127	20.57
24	CS30	192	141	65.4	114	20.46
25	CL 6*	212	152	64.0	129	19.71
26	CL25	186	200	65.7	162	19.54
27	CS 1	187	125	66.8	125	19.53
28	CP20	251	120	62.9	100	19.40
29	CL10	203	199	63.7	153	18.71
30	CL36*	248	118	62.0	96	18.62
31	CS 3*	269	85	61.3	72	18.54
32	CP33	232	142	61.8	112	18.54
33	CL38	172	168	64.4	139	18.48
34	CL11	192	165	63.9	145	18.28
35	CL17*	235	146	60.1	106	17.70
36	CS40	198	122	63.1	108	17.51
37	CS 8	197	122	60.2	77	17.04
38	CL29	220	132	61.3	125	15.95
39	CP28*	212	132	63.0	151	15.37
40	CL31*	185	158	59.7	146	13.12
41	CP16	201	162	61.7	208	11.90
42	CP15	156	166	62.7	251	11.65
43	CL23	164	152	59.0	240	6.90

* Beef/Sheep entry

Table 2. Short list for Judge's visit

Awards	Farm	Analysis (35)	Inspection (65)	Total (100)
1st and SAI Cup	Messrs J Clark & Sons, Dunrod, Inverkip	26.04	63	89.04
2nd	Messrs T & B Wilson, Bishopbrae, Bathgate	24.82	61	85.82
3rd	*Messrs R & M Young, St John's Kirk, Symington	25.75	59	84.75
4th	Mr J M Telfer, High Branchal, Bridge of Weir	28.10	56	84.10
	Messrs W S Millar & Son, Newlands, Uddingston	25.02	58	83.02
	Mr W K Carruthers, Netherton, Auchenheth	24.40	58	82.40
	Messrs R Howie, Drumfork, Helensburgh	27.41	53	80.41
	Lord Maclay, Milton Farm, Kilmacolm	25.02	54	79.02
	Mr A Orr, Boagstown, Avonbridge	23.47	55	78.47
	Mr J Hamilton, Headsmuir, Carluke	25.52	49	74.52

*also 1st Beef/Sheep and Hamilton Reco Salver

Other Prizes (by analysis only)

Best New Entrant: Messrs A & D Allison, Heads Inn, Carnwath
Most Improved Silage: Mr A Barr, Heatheryball Farm, Thankerton

Table 3. Mean silage analysis for Silage Competition 1979-1986

Year	Numbers entered	% DM	% Crude protein	D value	Ammonia N as % of total N
1979	33	20.8	17.0	61.8	18.9
1980	37	21.6	15.7	61.3	16.3
1981	53	22.6	13.8	60.1	14.0
1982	59	26.6	14.6	63.6	13.6
1983	53	24.0	14.6	61.5	11.3
1984	40	23.5	15.7	66.3	11.6
1985	49	20.4	15.9	64.3	12.9
1986	43	21.6	14.8	64.4	11.8

GRASS RESEEDING

PANEL NIGHT

*A meeting of the South West Scotland
Grassland Society at the Lochside House Hotel,
New Cumnock, 13 November, 1986*

A panel of four speakers, two farmers, a contractor and a chemical firm representative described methods of reseedling with particular reference to their experiences in 1986.

George Hood, Spilmersford Mains, Pencaitland, East Lothian

A guest from the East of Scotland Grassland Society, George Hood, farms 150 hectares mixed arable/beef at 92 m in East Lothian.

Cropping in 1986: winter wheat 72 ha, winter barley 24 ha, oil seed rape 32 ha, peas 10 ha, with 10 ha grass for silage. A further 34 ha is rented, 24 for grazing (clean grazing) and 10 for additional silage. The variety Plaisant was grown to produce barley for malting. Rainfall is approx 500-620 mm per annum. Winter barley served as an entry for grass and oil seed rape.

In summer, 150 bullocks of various breeds are grazed. 320 cattle are wintered, half of which are fattened on silage and barley, with additional molasses to maintain high intake levels. The remaining 160 cattle graze the undersown grass and receive pea straw, potatoes and barley before being sold as forward stores in April.

Grass establishment: After ploughing, furrow pressing and cultivations, seeding was from a box fitted to the roller. This was better than the previous drilling method. Final rolling was with a very light Cambridge roller, adapted for anti-clogging. Wind blowing of the soil is reduced by the hedges. A two-year Italian/Perennial ryegrass mixture (S McGill 'Bonus' - 67% Italian) was sown at 36 kg/ha. Establishment was slower than after drilling but eventually better and more leafier than one-year mixtures.

Silage is cut by a 3 metre John Deere mower/conditioner shared with a neighbour and precision chopped (100 hp tractor). Though used for 15 years, additives are not considered necessary now because of the much greater speed of filling.

Maurice McClure, Church Street, Kirkcolm, Stranraer

Maurice is a contractor from Stranraer with a lot of experience in reseeding and direct drilling of grass. In 1986 he was one of the first farmers in the west of Scotland to purchase the Matco ZRS 200 direct drill. This machine was designed especially for direct drilling grass into existing swards, manufactured in Germany but based on a British design.

Self-revolving serrated wheels cut a slot 18 mm wide at 100 mm spacing into which grass seeds and fertiliser are sown.

After using the Moore Uni drill for many years this was found too heavy and gave way to a Bettinson triple disc, with a 175 mm spacing. This has been moderately successful when drilling into grass treated with paraquat, especially on stony land.

This year the Matco drill was used mostly for patching damaged grass fields. Best results were achieved where sheep were grazed. Fields left for silage produced too dense a shade for the establishing grass.

Direct drilling could not be guaranteed and was not successful where trash such as silage or straw had been left lying. Results were improved by raking this off, but absolutely bare soil gave the best conditions. Perennial weeds should be sprayed out.

The Matco had been successful for repairing a damaged sward at Auchincruive when compared with the Moore and Aitchison direct drills. Where conditions are correct, direct drills have a place. Next year the Matco would be tried with kale and also on grass fields sprayed with Nortron.

Tom McCreath, Garlieston Home Farm, Garlieston

Tom advocates more traditional reseeding methods and places emphasis on the value of clover.

Many ways of reseeding had been tried e.g. bare sown and trampled in by cattle, autumn plough and reseed, undersowing oats, beans or root crops. On balance simple undersowing to barley was found best.

Where higher nitrogen and winter crops were used, sow-outs would have to follow winter barley or be direct sown in spring.

Undersowing was carried out in a field out of swedes which had a bank of phosphate and had been limed. Slurry was applied in winter on grass to be ploughed out for barley to raise potash. After spring ploughing the field was rolled, cultivated and sown to barley. Grass is sown by spinner with a wide harrow, followed by rolling. Herbicide is sprayed as soon as clover was in the trifoliolate leaf stage.

Care is taken not to allow the barley to go flat. In seasons when the grass grew above the barley the combine knives were sharpened and straw removed as silage. Slurry or dung was applied, or 375 kg compound per hectare and then grazed lightly by calves.

Mixtures used were: 11 kg per hectare Italian for overwintering stock; 22 kg Italian for a 1 year ley or 36 kg/ha for a reseed, which includes 2 kg white and 2 kg red clover.

Semi-permanent grass is only resown if docks or other weeds became excessive.

Simon Stell, (Monsanto Ltd), Dunfermline

Simon briefly described the Monsanto recommendation for pre-silage cut use of glyphosate ('Roundup') as a means of controlling built-up infestations of perennial weeds. The main use was in old grassland being either direct reseeded, pioneer cropped or for stitching-in grass. The reasons for reseeding were outlined. A survey had shown that 70% of UK grassland contained less than 30% of sown species. The perennial ryegrass component gave highest total and seasonal yields and greatest response to nitrogen. Broad-leaved weeds in particular were a reason for reseeding.

The results of a trial in Cheshire were presented showing an additional benefit over cultivation and reseeded by using pre-cut Roundup. Benefits were observed in DM production, stocking rate, milk yields, liveweight gains and a longer growing season. In financial terms this was equivalent to an extra £35/ha gross return. The benefits were greater in the second year after reseeded.

Discussion

The lively discussion ranged over a number of aspects raised by the Panel.

A pertinent question was "Did the young reseeded pastures give extra production?". Some leys over 20 years old near the steading with a dense grass population were highly productive. George Hood was convinced in his arable/grass intensive system requiring maximum farm production, that reseeded was worthwhile. A possible idea to cut machinery costs would be to share a large tractor which could work 24 hours a day. High yields of barley (over 10 t/ha with variety Plaisant) were possible and in the future more cereal might be grown to keep more stock, at the expense of grass acreage.

Undersown barley and arable silage were managed so as not to damage the grass e.g. at combining. Oats/peas/barley was successful, yielding 45-50 t/ha wet at 25% DM and could be made into big bales. Pure oats could be used but pure barley was not favoured for feeding to cows. Late cut arable silage had not damaged the undersown grass.

The question of when reseeded became necessary was raised. Some farmers tended to reseed before it was necessary. However, high weed contents and bare patches were clear indicators for action. Reseeded also gave the opportunity of feeding impoverished soils through the incorporation of ploughed-in FYM or slurry. The importance of phosphate and good drainage was stressed.

Spring growth over drain lines was frequently better. The requirements for good soil tilth, minimum depth of seed cover, rolling and soil temperature in establishment were mentioned. G E D Tiley.

KNOW THE FACTS - REAP THE PROFITS

George Blackhall, Hill of Westerhouse, Carluke
John Rome, Ingliston, Irongray, Dumfries

*A meeting of the CSGS held at the Stuart Hotel,
East Kilbride, on 26 February 1987*

George Blackhall - Financial Control

The aim of farmers at the moment must be to survive. To do this farmers not only compete with others in the EEC but also with their immediate neighbours. Good financial records improve the chances of survival, in that there will be opportunities in future and those with the necessary data are going to be best placed to exploit these chances.

At present farm businesses may be divided into three categories:

1. Fairly free of financial problems;
2. Only minor financial problems;
3. Financial problems with no farming solution.

This position is not static. As long as output levels are restrained, then substantial profit margins can be eroded over a few years by increasing costs. This means that even a business free of financial problems at present cannot think itself safe. It is the gradual slide in profits which catches people out. Overdrafts can accelerate rapidly and in this situation not spending is not a solution, only a short-term measure.

Planning for Survival

Every farm business is individual, so it is not possible to make simple management decisions that will correct everything, based upon copying neighbours. Different farms have different requirements which may not be initially obvious. For example, the difference between a business faced with no rent or interest charges compared with one with a combined charge equal to £135 per hectare.

The relationship between a specific business situation and what should be done to survive is complex. In planning it is vital to know what is happening to variable costs and what the other costs are. For this purpose an Account produced for tax purposes is useless as many items are lumped together making it impossible to determine the strengths and weaknesses of the business.

Cash Flow

The best place to begin planning is with a Cash Flow as this can give an immediate view of trends. Preparation of a cash flow makes management easier. A business with 8 different outputs and 22 inputs has 360 different monthly figures over a 12 month period. Nobody can keep a mental check on all of these. The figures produced are not just pounds sterling, they reflect everything that has gone on in the business. To the initiated they are like a photograph of a bull in a breeding magazine, they say something about the quality and effectiveness.

Taking Advantage

The present situation of farming will sort itself out after a fashion. It is important to identify the advantages present within a business so that when changes occur it has an edge and is able to exploit the situation to its advantage. It is important for farmers to take an interest in the finances of their business as this will put them a step ahead of their neighbours. Turning their back on these matters and not positively managing the business will leave them handicapped in the race for survival.

All Work

Farming people work hard but are they getting anywhere for the effort they put in? It could be a case of 'All work and no plan makes Jack a lot worse off than he might have been'.

John Rome - The Value of Good Records

Farming 400 hectares with 290 dairy cows in 2 herds, 150 suckler cows, 200 bull beef and 49 hectares of barley, demands good and simple financial control techniques. These must give the manager the ability to identify what's happening quickly.

Mr Rome explained that his enthusiasm for records started during his student days when discussing the farm with his father. It was apparent that without records it was like flying blind. Records are akin to the control instruments on a plane, giving detail of direction, altitude, fuel level etc. A farm manager is the pilot of a moving, ever changing entity. He can only make sound decisions based on facts. Often simple records and procedures are perfectly adequate to control any scale of business.

At Ingliston, barn records helped allocate the major variable cost input (concentrate feed) to individual enterprises. Cost control was initiated by daily verification and coding of incoming invoices to their respective sources. Thereafter, it was a simple fortnightly task to prepare the column type analysis of incomes/costs and get monthly/annual totals and monitoring. The aim was to deal with "paper" as few times as possible, but extract maximum benefit from the information involved.

The need for an initial plan for future actions was considered essential and this then provided the benchwork to assess progress. Consideration of how to use gross margin costings and their inadequacies were discussed and the possibility of treating grass as an enterprise in its own right outlined.

During discussion time, the need to carefully interpret data was explained and it became apparent that entrepreneurial flare (or gut feeling) was still a part of Mr Rome's approach. However, risk was reduced because the use of records and actual information allowed decisions to be assessed on quantified calculations, not just guesses. K Phillips and D Marshall.

FARMING AND THE ENVIRONMENT

Jonathan Porritt
Director, Friends of the Earth Ltd, London

*Joint meeting with Centre of Management,
West of Scotland Branch at the Ernespie House Hotel,
Castle Douglas, 12 February 1987*

From the old caricatured images of ex-hippies or middle class meddling 'townies' confronting reckless profiteering farmers caring only about their bank balances, environmentalists and farmers were now trying to seek common ground and to work together on problems affecting the countryside and wildlife.

A recent government package Alternative Land Use and the Rural Economy (ALEA) affected farming interests, with provision for relaxed planning controls, increased support for woodlands, extension of Environmentally Sensitive Areas (ESAs) and grants for ancillary businesses.

Misgivings could be raised over these proposals e.g. reduction of subsidies, reducing production from the best land to combat surpluses and the risk of discordant developments in the countryside. In short there could be a lack of balance between the proposed developments and conservation.

What are the basic principles of any new 'Green' approach?

- We cannot continue with surpluses, which are both an embarrassment to farmers and an aggravation to the taxpayer.
- It is desirable to retain the farming population.
- The countryside must be protected.
- Reduce subsidies and redirect them into uses in harmony with the environment.
- Seek alternative land uses.

This approach would be better for farmers and the environment, aiming for greater self-reliance through mixed farms in smaller units with low inputs. The alternative would be to continue with fewer farms which would become larger and more intensive.

Increasingly more acres would be taken out of agriculture and more farmers marginalised. This would lead to a smaller number of farms continuing in full-time agriculture with the majority requiring other work to supplement part-time food production.

Hitherto, governments had given little or no encouragement to research studies into low input farming systems. Low inputs would give some farmers the opportunity to maintain equivalent incomes. There was a growing market for organic produce. Transition grants should be instituted during the change from conventional methods. Livestock rearing should become more extensive. The markets would respond and the result would be more farmers farming more harmoniously with the earth and not milking its resources. The amalgamation of holdings was regrettable as a system benefitting a small minority of farmers (as in East Anglia) could not go on. The emphasis on subsidies should change from one of price support to that which favoured environmental aspects e.g. in ESAs, broad-leaved woodlands.

Widescale conifer planting is insensitive to the environment and even greater support for broad-leaved trees should be given. The concept of ESAs could lead to 'ghettoisation' of conservation in the country. One area could be considered sensitive, another not, in an arbitrary fashion.

Co-ordination of land use planning and involvement of the farmer in shaping the countryside would maintain the farmer in a central position, so allowing all interested in the countryside to work together.

Discussion

A lengthy discussion ranged over political changes required to change agricultural methods, technical and economic requirements and public aspirations.

There was general agreement as to the need to reduce surpluses but changes were required in the support structure from the EEC through member governments.

The local NFUS could play a part through lobbying, group meetings and letter writing. Wide-ranging imposition of quotas was not an answer.

Present-day economic forces had pushed farmers to become continually more intensive. It was suggested that to try and reverse this trend and revert to more extensive methods would result in a fall of total income available to the farming community, and also eventually to agriculturally dependent industries.

Mr Porritt did not believe this would necessarily be so as a premium would be placed on certain farm products and inputs would be reduced. To counter this trend the Government would be urged to make a more vigorous attempt to instigate genuine research into organic and low input farming. Secondly, to keep farm units in production may require a gradual change to part-time farming, as seen in many countries on the Continent.

The transition from intensive to extensive types of farming - de-intensification or disengaging from the treadmill of intensification - would not be painless. Much of south west Scotland was already engaged in low input and extensive farming such as beef and sheep systems. Reduced use of nitrogen, pesticides, and adoption of traditional rotations to control weeds were essential features of ecologically sustainable farming. New crops such as biomass or energy-producing crops were possible.

The point was made that most conservation organisations originated from people living in degraded city environments. Greater consideration for people would ensue from less intensive methods. Increased access and education of the public, reducing unemployment, possibly by making small holdings available to young people, and maintenance of countryside amenity were also discussed.

In conclusion, it was felt that lines of communication had been opened up between Friends of the Earth and friends from the Earth i.e. the farmers, and that further progress was possible along the theme of working together in the countryside.

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WINTER FARM VISITS TO WIGTOWN

*A visit of the SWSGS to Craiglawn Mains and
Low Malzie, Kirkcowan, 19 February 1987*

Two farm visits to the Kirkcowan area near Newton Stewart, Wigtown, were arranged by the local sub-committee.

Morning Craiglawn Mains, Kirkcowan (Gladstone family)

Craiglawn Mains (320 ha) is the home farm of Craiglawn Estate, which has been in the Gladstone family since 1744. 200 suckler cows and 260 BF and cross ewes are kept on an all-grass system, with 48 ha cut for silage. Drainage and grassland improvements have led to improved stock performance.

The interest of the farm walk was greatly enhanced by the conservation improvements being undertaken. The 80 ha of broad-leaved woodlands are reaching maturity. Some clear-felling and replanting has taken place and a discussion centred on the problems of tree establishment. Clean weeding, by hand or herbicide, around each tree were most important. The use of stakes and tree shelters also helps - at a cost of about £1 per tree. A rough grass area had also been planted to hardwoods. The payment of £125/ha per year was considered insufficient to replace farming except on the worst land.

The final stages of construction of a trout pond in a natural setting were seen. A return on investment (no grant) was anticipated from the sale of permits to anglers.

The obvious interest of Andrew and his family in both farming and conservation made this a most enjoyable farm visit. The Society is most grateful to the Gladstone family for permitting this visit.

Afternoon Low Malzie (McKay family)

Low Malzie is a 110 ha lowland dairy farm a few miles south of Craiglawn. The farm is mainly grass with 42 ha cut twice for silage.

6 ha barley are grown for undersowing and 4-6 ha of kale. The kale is direct drilled after first cut silage which is treated with pre-harvest glyphosate. The soil is difficult in places and long-term grass mixtures are sown and managed for maximum length of life, to avoid reseeding. Some patching of grass was done following the 1985 wet summer. Clover had also been broadcast before spreading slurry, with some success.

The herd of 150 pedigree Friesians attracted a good deal of interest. The buildings also presented a well thought out arrangement. Winter feeding and rations mixing were discussed.

The Society wishes to thank the McKay family for providing an interesting afternoon visit.
G E D Tiley.

RETIREMENT

Professor Ian Cunningham retires from the Principalship of the West College at the end of August 1987. Perhaps 'retired' is not the best word in this instance as judging from his continuing commitments with the Macaulay Land Use Research Institute, the Farm Animal Welfare council, the Countryside Commission, AFRC Council, Institute for Grassland and Animal Production and more recently the National Trust for Scotland, Ian is going to be busier than ever!

Both Grassland Societies are truly indebted to the encouragement and support received from the Principal and the West College Board over the years and Professor Cunningham chaired the planning group for the highly acclaimed visit by the British Grassland Society to the west of Scotland last year. Ian Cunningham's sharp mind, good humour and sound counsel will be missed by us all.

To Ian and Nancy Cunningham we wish a long and happy retirement in Peeblesshire.

SPRING VISIT TO KIRKCUDBRIGHT

*A visit of the CSGS to Grange Farm, Castle Douglas,
and Crochmore, Crocketford, on 14 May 1987*

Grange (James and Donald Biggar)

Run in conjunction with Chapelton and Corbieton the unit extends to some 400 ha. The farm of Glenlair (182 ha) about 10 kilometres away has been acquired more recently. Cropping is 40 ha barley and 12 ha oats, with the remainder of the farm in grass. About 80 ha of silage are cut annually with 12 ha of arable silage grown which is undersown to establish new leys. Silage ground receives 126 kg/ha N for first cut plus slurry with 100 kg/ha N being applied in compound form for second cut.

A total of 300 suckler cows are kept, 200 being spring calving and 100 being autumn calving. Together with the purchased store calves, around 500 cattle are finished annually. Within the suckler cow herd there are 25 Pedigree Galloways, 60 Shorthorns and 50 Herefords. The remainder are home bred blue-grey types with the Charolais bull being used as the terminal sire. There is a flock of 450 Greyface ewes and 300 Blackface ewes with all lambs finished off grass.

Members were given the chance to see the excellent stockmanship which goes into producing the pedigree cattle. Many interesting ideas were also picked up on building design particularly in relation to ventilation, and of particular interest were the feed bunkers constructed round the outside of the buildings thus eliminating the central feed passage.

Crochmore (Douglas and Robert Kerr)

Extending to some 425 ha Crochmore is now run together with Merkland Wells, Under the Brae and the more recently acquired New Farm. A further 60 ha are rented annually. It is an all grass unit with about 15 ha direct re-seeded each year. Around 140 ha are cut to produce around 5,000 tonnes of silage for all classes of stock. First cut silage receives 150 kg/ha nitrogen in compound form along with slurry. Second cut received about 140 kg/ha nitrogen again in compound form.

Dairy cows are set stocked at just over 5/ha with grazing ground receiving 440 kg/ha nitrogen.

There are three dairy herds totalling 460 cows, with the herd at Merkland Wells put to the Holstein bull to produce all dairy herd replacements required for the units. The herd at Crochmore and New Farm are put to the beef bull with all stock taken through to finishing. Holstein bull calves are finished on a bull beef system.

In addition to the dairy cattle and associated followers, a flock of 400 Greyface ewes is also run with lambs being finished off grass.

Current dairy herd performance:

	Number	Yield per Cow (litres)	Margin over Concentrates per Cow (£)
Crochmore	175	6,200	760
Merkland Wells	125	7,000	830
New Farm	160	5,000	600

Members were able to see how existing buildings had been converted and adapted for both dairy cows and young stock. Much of the investment in the unit has been ploughed into drainage and improved grassland followed by stock, with investment in machinery and buildings assuming less importance. This has made a very successful recipe for a profitable farming business.

Members express their sincere thanks to both the Biggar and Kerr families for a most interesting and informative day, and for the excellent hospitality given to them. I R Fraser.

CONSERVATION VISIT TO DUMFRIESSHIRE

A joint visit of SWSGS with the West of Scotland branch of the Farm Management Association to Kirkhouse, Kirkbean, on 12 February 1987.

This visit was primarily to see items of conservation interest on this dairy, beef, sheep and cropping farm south of Dumfries. A quarter of the total 160 ha was under barley, with 5 ha potatoes. The remainder of the farm was down to grass for grazing and silage.

John McMyn is Chairman of the local Dumfries & Galloway Farming and Forestry Wildlife Advisory Group (FFWAG). Some conservation work had already been undertaken but recently a plan had been drawn up after the local FFWAG Farm Conservation Adviser, June Randell, had surveyed the farm from the conservation angle.

Hedgerows had become gappy and damaged by vehicles and also by salt from the roads. Some positive hedge management and replanting had been started, though fenced protection was necessary initially. Similarly ditchside willow trees had become overgrown and required trimming together with planting of other species, when a fence would also be required.

The value of wildlife 'corridors' was demonstrated i.e. allowing hedgerows to inter-connect between wildlife features such as copses, woods or ponds.

Rejuvenation of woodland areas due for felling or recently felled was planned. Some return was possible from firewood, posts or timber, though sawyers normally required minimum size lots. The new Forestry Commission Broadleaved Scheme was elaborated by Mr Kilbirnie from the local Forestry Commission office. Grants were dependent on reasonable establishment and appropriate maintenance.

A field corner of little use to farming was shown recently planted to a range of shrubs and trees. Weed control and fencing were essential for such areas. The problems of tree establishment on a dry gravelly slope were also seen.

Finally, a problem wet area in a grass field was seasonally water-logged. However, it was not wet enough to make a permanent pond nor dry enough to support pasture. Control of the water-level would be required here before the area could be of value to either farming or wildlife.

The Society thanks the McMyn family, June Randell, Mr Kilbirnie and the Farm Management Association for being able to participate in this well attended and absorbing farm walk. G E D Tiley.

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