

# **G** *reensward*

## **1994**

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

**No. 37**



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## FOREWORD

This is a considerably smaller number of *Greensward* than in recent years, mainly due to the difficulty in persuading members to contribute articles. Any member who has attended a conference or visited a particularly interesting farm should try their hand at writing a report. Don't worry about details such as spelling and grammar - your editor will gladly deal with these. Articles discussing any subject on which a member would like to air his views would also be welcome.

Thinking well ahead, next year is the 50th anniversary of the founding of the British Grassland Society in 1945. This will be celebrated between July 1995 and July 1996. Reports from members of the activities during that year will be sought. Particularly important will be the 50th Anniversary Conference which will take the place of the usual Winter Meeting. This Conference will be held in Harrogate from 4-6 December 1995, and will focus on the framework within which grassland farming will be conducted over the next decade. I hope some of our local Society members will attend and will provide reports for publication in *Greensward*.

I thank Dr Gordon Tiley and Mr Colin McCombie for their assistance in the preparation of this Journal.

David Reid - Journal Editor

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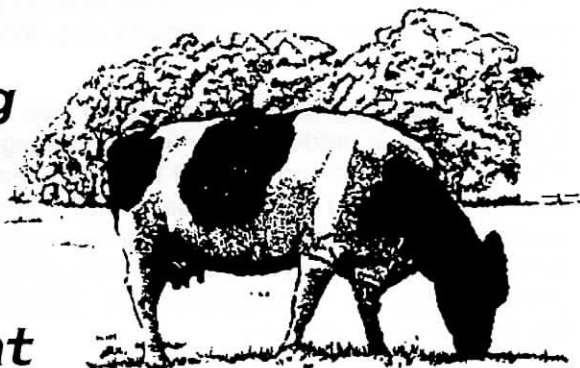
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## **CSGS VISIT TO HARTWOOD RESEARCH STATION OF THE MACAULAY LAND USE RESEARCH INSTITUTE**

The Central Society visited Hartwood Research Station near Shotts in Lanarkshire in January 1993. This station was acquired in 1979 by the Hill Farm Research Institute, now the Macaulay Land Use Research Institute (MLURI), to study various aspects of upland sheep and cattle production. Other land use options, e.g. forestry, have also been examined.

The farm is situated in a former industrial area of coal mining and steel making, which is predominantly a stock rearing area of upland farms. The research station covers 350 ha at an elevation of 150 to 300 m above sea level, and has an annual rainfall of about 1100 mm. The soils are heavy, and with the high rainfall tend to poach. The farm consists of about 200 ha of sown grassland, 28 ha of moorland and another 30 ha of permanent pasture on the lower ground. Woodlands cover a total of 35 ha. Forage rape is also grown on 20 ha.

Livestock, all of which may be used from time to time in various experiments, include 900 Greyface and 140 Blackface ewes and 220 suckler cows (150 Hereford Friesian and 70 Blue Grey). Greyface ewes are crossed with either Suffolk or Texel tups and Blackface ewes with Blackface tups. All cows are mated with Charolais bulls and a Limousin bull is used if heifers require to be mated. Lambing takes place in March and early April and there are three calving periods of about 8 weeks each in autumn, winter and spring.

### **Cattle research**

Beef cattle research is based on weaned calf production from the suckler herd. This is the purpose of the breeding herd of over 200 cows run on the farm. The winter calving group of cattle is used mainly in nutrition work and the cows are individually fed often before and after calving to provide information on cow performance (calf birth weight, milk production, rate of calf growth and return to oestrus), during the inwintering part of the annual cycle.

The spring and autumn calving groups have been used in long term studies to investigate the efficiency of different year round management systems of suckled Charolais cross-calf production from Hereford-Friesian cows. These cattle are group fed in the winter. Silage is the basis of

winter feeding and concentrate supplements are used in nutrition experiments. Hay is fed mainly to young stock. Winter and spring calving take place indoors and autumn calving at grass.

The management of the suckler cows at Hartwood is based on the results from experiments on winter nutrition and summer grazing. It has been shown that production from suckler cows is not adversely affected if a loss of weight and condition takes place down to an acceptable level over the winter period, provided that the animals are able to make maximum use of grass to regain weight and condition during summer grazing. Cows come in at condition score 3 and reduce to score 2 over the winter allowing considerable savings in winter feed costs. Normally both spring and autumn calvers can be overwintered on good quality silage alone. Increases in liveweight and condition score at grass are greatest on swards with a height of about 8 cm. This is achieved by keeping the cows at an overall stocking rate of about 2.25 cow/ha including grazing and silage area. The grass height has been maintained over the season at 8 cm by periodic adjustment of grazing and conservation areas using electric fences. A high level of management skill is required to manipulate this system on a whole field scale. However, the system allows a predictable level of output to be maintained.

### **Sheep system studies**

The sheep system studies were started a number of years ago to evaluate and develop information obtained from more detailed research work into specific components of animal production systems. A whole-system approach enables a picture to develop of how individual components fit into the context of an annual production cycle. For example, how the treatment and performance of a ewe during lactation will affect its reproductive performance and consequently the lambing percentage the following year.

A systems experiment involves measurement of all inputs (i.e. feeds, fertilizers, etc.) and outputs (weaned lambs and surplus grass conserved as silage) to and from the system. All management input is governed by decision rules, which cover items such as the quantity and timing of supplementary feeding, the proportion of the grazed area to be fenced off for conservation, and various other management decisions which have to be made during the production year. A systems experiment normally runs for 3 years in order to allow for the year to year variation in weather conditions.

The last phase of the sheep systems experiment looked at different overall stocking rates (12.5 and 15 ewes/ha), reduced early season stocking rate (6.25 ewes/ha till sward height reached 3.5 cm and 12.5 ewes/ha for the remainder of the season) and different amounts and patterns of fertilizer nitrogen applications. Another experiment investigated reduced early season stocking rates. The comparison was between 15 ewes/ha from turnout and 7.5 ewes/ha from turnout made up to 15 ewes/ha when the sward height reached 3.5 cm. Also being studied was a more flexible approach to nitrogen fertilizer application. Rather than apply fixed amounts on certain dates, the quantity of nitrogen to be applied was determined by using target grass growth rates, available nitrogen content of soil and herbage, and the weather predicted for the near future.

A 3-year experiment was planned to evaluate the rate of clover production in upland sheep production systems by measuring the effects of the annual amount of nitrogen fertilizer applied on grass/clover swards for a range of flock sizes of Greyface ewes, on the individual performance and total output of ewes and lambs. The effects were also to be measured on the amount of winter fodder produced, the amount of supplementary food supplied and the potential lambing rate for the following year.

### **Finishing lambs at pasture**

Most lambs reared on hill and upland farms are currently finished on upland or lowland farms off grass. With the removal of the lamb variable premium farmers may be required to adopt different strategies and be more flexible to changes in market price than at present. More lambs may be finished off grass. This is difficult to achieve off grass alone in the late autumn and early winter because pasture quantity and quality decline over this period and the weather deteriorates. Under such circumstances there may be advantages in feeding supplements to the lambs.

This was examined in an experiment in which two supplements, pelleted dried molassed sugar beet pulp and a proprietary cereal-based supplement were compared with a control treatment in which no supplement was offered. Results showed that lambs grazing swards declining in height in the autumn will grow faster and produce more valuable carcasses both in terms of weight and price per kilogram if offered a supplement than if no supplement is given. The sugar beet pulp supplement gave a slightly higher liveweight gain than the proprietary supplement, but not significantly so. The sugar beet supplement was eaten readily and there was no wastage. The additional value of £2 per

head obtained from animals fed this supplement would have covered its cost.

### **Changes in grazed sown swards under nutritional stress**

Recent research on hill and upland swards grazed by sheep has concentrated on understanding and improving the efficiency of production systems with moderate to high levels of input. Two major areas of research were those concerned with improving the efficiency of the use of nitrogen fertilizer (including work on swards containing white clover), and increasing the utilization of herbage in grazed swards. In grass swards it is possible to predict with some accuracy the effects of nitrogen applications and different levels of utilization on plant dry-matter production and on species composition. However, further studies are required on swards containing white clover. The possibility of overproduction of meat products in the EEC is, however, forcing changes in the agricultural support system, which could lead to a reduction in the fertilizer input on upland sown swards. This will ultimately lead to a decline in the base status of the soils and concomitant changes in the associated vegetation. An experiment was, therefore, designed to measure the influence of different levels of grazing disturbance on floristic composition, soil nutrient status and diet selection by grazing sheep under conditions of nutrient stress. It will be repeated under a range of climatic and edaphic conditions.

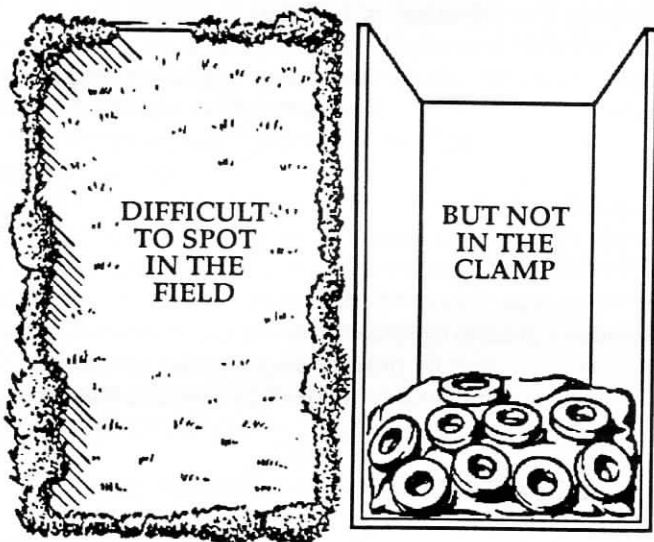
### **SILAGE AWARD FOR COOPON CARSE**

The Live System Scottish Award for the best silage making and utilisation has been won by Wijnand Pon, the Dutch owner of Coopon Carse, Newton Stewart. The farm manager at Coopon Carse is Jan Vos, who is a member of the South West Scotland Grassland Society. This competition was organised by the Scottish MMB's livestock division and Genus Animal Health, and was open to users of the Live System Silage additive.

The winning entry had a dry matter content of 37.2% and a D value of 79.7. Last year was the first time farm manager Jan Vos used the system, and he reported that the 135 high yielding Holstein Friesians had never performed better.

Peter and Alastair McWilliam, Colfin, Stranraer, who are also members of the SWSGS, shared second place in the competition with Graeme and Robert Watson, Nether Cortes, Fraserburgh.

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## **SWSGS SPRING TOUR IN AYRSHIRE 1993**

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

On the spring tour of the South West Society in May 1993 two farms were visited on an extremely wet day - Raith Farm at Prestwick and Langside at Kilmaurs.

### **N J Angus, Raith Farm, Prestwick**

The first visit was to Raith Farm by kind invitation of Mr Angus. Here members were shown round by the dairyman, John Telfer. The main feature of the visit was a large covered dairy shed which had been recently completed, and included a new dirty water/slurry disposal system.

The farm is a 328 ha unit with 140 ha of cereals. 2400 t of silage is made, and the first cut is taken from 80 ha which receives 500 kg nitrogen per ha. The second growth is grazed. 60 ha of grazing land receive 250 kg/ha of ICI Turnout, followed by 250 kg/ha of Nitram in the first week of each of the following three months.

The dairy herd of 180-200 cows is mainly Friesian and about a third Ayrshire, but it is planned to introduce more Holstein blood. The herd average was 5600 l to April 1993, and the margin over concentrates was £937. Bull beef was tried in 1992. Cows were kept in on the morning of the visit due to the wet weather, and had been buffer fed for the previous 2 weeks. However, they were not eating the feed because so much grass was available.

When the silo was visited members questioned the life expectancy of the asphalt floor. It was claimed that with tractor traffic only the asphalt would last 10 years but with cows self feeding its life would be reduced to 5 years. A repair of the asphalt floor took 2 days and cost £6,500, against £15,000 for concrete. The new shed was built because the cubicles in the old one were too small for the bigger cows coming into the herd. The top end of the shed is fitted with special gale breakers which can exclude cold air even on the coldest days. Included in the shed is a modern Alfa Laval milking parlour of triangular shape, and complete with computer control. The shed is not slatted but is cleaned by a chain slurry system. This was installed because the new engineering specifications for underground tanks were so exacting and expensive. There is central drainage for slurry to the new 1,800,000 l tower into which all drainage goes, including washings and disinfectant. As much slurry as possible is disposed of on the 18 ha of setaside on the farm.

In 1993 silage making began on 17 May and lasted for about 10 days. Add-Safe was applied to the first cut. Three cuts are usually taken with the later cuts fed to the young stock. Some wilting is attempted but excessively dry silage is not aimed for because it is believed the cows would eat too much. Slurry is applied to the silage fields immediately after cutting to stimulate regrowth.

After construction of the new shed a spare triangle of land close to nearby cottages was left to plant trees as a screening and landscape feature. A similar area was left at the other end of the shed. A hedge has also been planted along the rear of the shed.

### **John Howie, Langside, Kilmaurs**

Langside was visited in the afternoon on the invitation of Mr Howie. The visit concentrated on the steading and buildings which could be fairly judged as amongst the cleanest and tidiest ever visited by the Society.

The farm covers 120 ha of which 24 ha are in barley. Silage is cut from 52 ha. 8 ha of grass is saved for daytime grazing, and 16 ha for young stock. Reseeding is carried out every 6-7 years, 16 ha being undersown in barley. The farm also includes just over 5 ha of old railway embankment and line. This is useful for overwintering stock and for spreading effluent. Slurry is applied on all fields for first cut silage and also second cut areas if rain is expected. 250 kg/ha of 20:10:10 is applied in late March and 250 kg/ha of Extragrass in the second week of April. The first cut in 1992 was started on 23 May and no silage additive was used that year. Some additives, including Bioform, have been used in the past, but draff is preferred because additives are too expensive.

The silage pit had an old roof which was too low. In addition the walls were cracking. The floor of the silo was constructed of 127 mm of concrete with asphalt applied on top. However, the asphalt had cracked because it was put on top of green concrete. Effluent drainage is by a 50 mm pipe. The silo walls are painted with bitumen which lasts about 5 years.

The dairy herd of 100 Friesian cows is housed in a slatted cubicle house with a slurry pit of 730,000 l capacity. The cubicles are divided by ropes which are tightened once a year and can be cut if a cow gets stuck. Milking is in an Alfa Laval 12/12 parlour which allows the 100-cow herd to be milked in 80 minutes. The dairy buildings were developed 4 years ago. A slatted beef house was built in 1972 and used for stores which are taken to finishing.



## **SWSGS EVENING VISITS TO FARMS IN SUMMER 1993**

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

### **W P Callender & Co, Crofthead, Haugh of Urr - 22 July**

The first evening farm walk in the summer of 1993 was to Crofthead. This is a 256 ha farm, which is mostly in grass. The only cropping is 32 ha of barley. The dairy herd consists of 270 Ayrshires and is being expanded. A new milking parlour had been recently installed.

Environmental improvement of the farm is being undertaken by the planting of trees. A full report of this visit is unfortunately not available, but the Society is indebted to the Callenders for their kind invitation and hospitality.

### **D & A Goldie, Longbridgemuir, Clarencefield, Dumfries - 28 July**

The Goldie family came to the 208 ha farm of Longbridgemuir in 1935. The present family, David Goldie and his three sons, Ian, Alistair and James run three farms - the dairy unit at Longbridgemuir, the nearby beef farm at Aiket and the recently acquired upland and arable unit of Skipmyre at Lochmaben.

The dairy unit at Longbridgemuir was established 10 years ago and now carries 120 dairy cows. The present herd performance is costed by SAC Milk Manager. Winter feeding is based on a home mix of S.B.P., dark grains and grass nuts in the parlour, and silage, maize gluten and soya in the feed passage. The average herd yield is 6600 l, and 1.80 t of concentrate is fed per cow at a concentrate price of £122 per t. The margin over concentrate is £1150.

The beef unit based at Aiket and Longbridgemuir consists of 130 spring calving suckler cows. All male progeny from the dairy and beef herds are finished as bull beef with around 70 suckler bulls and 70 dairy bulls sold at 13 months, averaging around 350 kg deadweight each year. A flock of 400 grey-faced ewes is also carried.

Cropping consists of 18 ha of potatoes (Maris Piper) and 20 ha of spring barley (Chariot and Golf). All the potatoes grown on the farm are certified seed and with the ware fraction are sent for processing into a high quality market. Grain grown on the farm is fed to barley beef bulls.

All temporary swards are based on tetraploid varieties from Watson Seeds



(East). Reseeding is done as necessary every 6-8 years. A feature of this visit was the excellent permanent grazing swards available to the dairy herd. Silage is made in a conventional clamp. Recently an inoculant additive (Ecosyl) has been used. Although the D values have been disappointing at around 64 and the ammonia contents have been high, a feature of the silage utilisation here has been the very high dry matter intakes achieved by the dairy cows.

A section of 112 ha of rough grazings on Longbridgemuir is designated as an SSSI raised peat bog on the edge of Lochar Moss. The area has been dewatered to a limited extent but essentially it is grazed by suckler cows in accordance with the management prescription, which allows utilization by grazing only in summer (early May to about September). All animals on the peat area are vaccinated against Black Disease and receive a trace element bolus. The cattle are wintered in the beef shed.

### **M Stevenson, Sandyford, Prestwick - 4 August**

Situated at the side of the A77 Ayr-Prestwick by-pass and at the immediate end of Prestwick Airport runway, Sandyford Farm might be thought to be disturbed by noise. Fortunately, however, the stock, apart from young heifers, soon become conditioned to the sound of aircraft except for particularly noisy jets.

The farm consists of 96 ha of good lowland, and is mainly in grass apart from 8 ha of wheat and 20 ha of barley. Sandyford is run in conjunction with 130 ha of grass on two tenanted farms at Ochiltree. There are 160 cows, mainly Ayrshires, with a 1 million litre quota. The breeding policy aims for 50% black and white cows, though the production of Ayrshire breeding stock is a profitable part of the business. There is also a 429 ewe flock which may be enlarged in the future.

All young stock are kept, aiming to replace 20% of the herd each year. 11-14 month bull beef is produced, and is very profitable. As much of the animal feed as possible is produced on the farm.

The first cut of silage is taken from 45 ha and the second from 32 ha. Both cuts are put together in one pit and are mixed when feeding out. 12 ha was shut off for hay in the second week of May, but at the time of the visit only about 2 ha had been made. If not made into hay in the 2 weeks following the visit it was planned to use the rest for big bale silage.

Mr Stevenson has tended to move away from the 250 kg/ha rate of

nitrogen he used on his previous farm at Cooperhill, near Ochiltree. His predecessor at Sandyford was a very able farmer, but used no nitrogen fertilizer. He let 49 ha of grass in its first year for grazing, and his tenant said it was the best grazing he ever had. A trial use of 12:18:18 applied at 188 kg/ha taught Mr Stevenson a lesson in that he had never seen clover grow so well. However, he now uses 20:10:10, but clover plays a very important part in the pasture. The silage fields received 439 kg/ha of 20:10:10 and the grazing fields 314 kg/ha before the end of May, plus plenty of slurry. No further fertilizer dressings were planned for the 1993 season.

36 ha were reseeded in the third week of September and the first week of October 1992, and a tremendous take of clover resulted. However, because of a high incidence of docks in the spring of this year 13 ha had to be sprayed with Docklene but the result was disappointing. The occurrence of docks was attributed to the use of slurry and fertilizer.

Wheat, variety Riband, was sown on 18 October 1992, and was being made into caustic treated whole crop silage using a Keenan wagon. Silage is made in an outside pit. Plans are on hand to build a second pit. For 7 to 10 years the ME of the silage at Sandyford has been above 11. In previous years the additives used have been Add-F and Add-Safe. In 1992 Ecosyl was used and gave a silage with 13% DM and 68D. The silage is fed up the passage, which Mr Stevenson believes can get more potential from the cows.

He thinks black and white cows need more for maintenance. However, the problem with Ayrshires is what to do with the bull calves. He is trying red and white Holsteins from Canada on the Ayrshires, and this breeding line is in demand. By the year 2000 the herd will be black and white and red and white.

Murray Stevenson thoroughly enjoys his farming and cattle breeding. The Society thanks him and his family for a most interesting visit and for their warm hospitality.

### **H R Parker, Inchparks, Stranraer - 11 August**

Inchpark is a tenanted dairy farm run by Hugh and Maureen Parker in association with partners John and Father. They also farm Dalminock and Culhorn. The soil at Inchparks is mainly light with sandy gravel in places and also a peaty area and a till subsoil. In contrast, Culhorn has a heavy wet and difficult soil. Inchparks usually burns in the summer, but not in 1993. This is a Less Favoured Area (LFA) farm, which is now

included in an ESA. There is a moss (peat) area of 3 ha which has a dense natural birch woodland.

The farm has a poultry unit under contract to Ross Breeders, and a new unit is being established at Culhorn. There is a sheep flock at Dalminock, and young stock are kept there and at Culhorn where there is winter accommodation. Some young stock are outwintered at Dalminock and at Inchparks.

The first field inspected during the visit had been treated with glyphosate and reseeded with a clover mixture. Dirty water is piped between May and January.

The dairy herd of 140 cows is mainly spring calving (January to May), but 30 cows are calved in July/August to bolster summer milk and 15 in October. Most of the cows are Friesian, but Holsteins are being tried. AI is used at first followed by a Limousin bull which is kept from the bull-beef enterprise at Culhorn. The aim is to keep Friesians which are small and good grazers. The cows are brought in 2 weeks before calving and kept not too fat. The calves are fed milk for the first 10 days.

The level fields are used for silage and the higher fields are grazed. In the spring 24 ha are grazed and 24 ha are shut up for silage. There is also an area of kale which is strip grazed in the backend by the dry cows together with bale silage. Kale is drilled in May after spraying with glyphosate and cultivating. Weeds were a problem in the autumn of 1992. Since Inchparks is an exposed farm a field is chosen for kale at the rear of the farm where there is some shelter.

In 1993 grass was fertilized on 24 February and again in early April with 110 kg nitrogen /ha. The cows were turned out at the end of March, and the first silage was cut on 11 May. Fertilizer was applied on the silage aftermath. Grazing alternates between two night fields and two day fields which are set stocked and used for 3 days at a time.

Slurry is spread on the grass at Dalminock up to the first silage cut, and also on the kale ground. Hen manure is applied on the grazing fields every 15 months.

A permanent pasture, which was inspected, had become too mature and had to be topped. This field was sprayed with Leyclene to control chickweed. Another field which had been direct reseeded after kale in 1991 was also visited. The usual place in the rotation for reseeding is after the kale. To combat the dock problem on the farm Docklene will be

applied, or Asulox if clover is present.

All of the silage work is done by a contractor. A Kuhn mower is used which is quicker than a mower/conditioner and quarter of the price. The cut grass is turned to increase the dry matter content and to reduce the effluent. The second cut is put on top of the first in the clamp the floor of which is being worn by the cows walking on it. A feeder wagon puts feed into troughs once a day, and it is planned to roof over the trough area.

Over the last 4 years the big bale silage has had a high ME of up to 11, and the Parkers were the winners of the SWSGS prize for big bales in 1992. They aim to get as much energy as possible from the silage, trying to achieve maintenance plus 7 l. Concentrate usage was 0.15 kg per l of milk in 1992, and 0.18 in 1993 when the milk yield averaged 6126 l per cow.

### TOP AWARD FOR CLED THOMAS

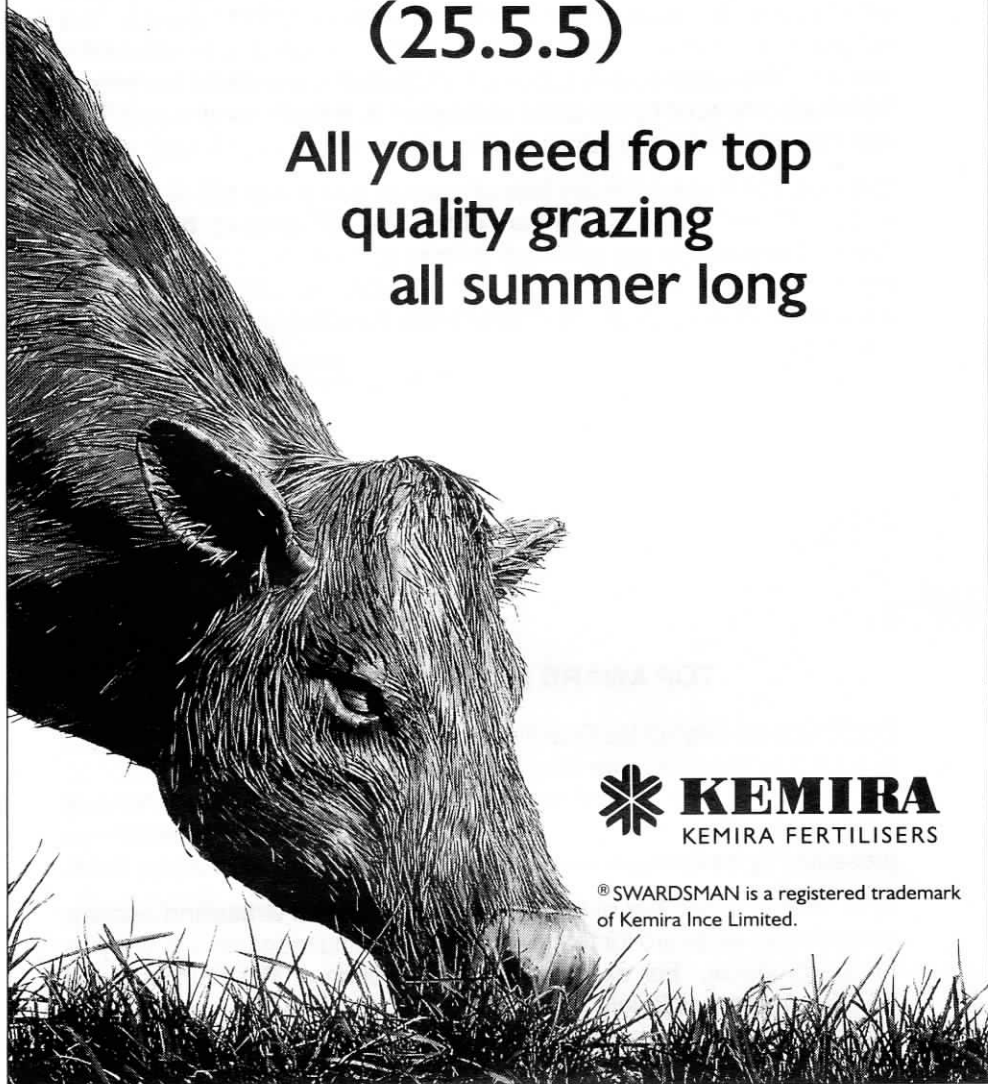
Cled Thomas, head of the Grassland and Ruminant Science Department at SAC Auchincruive, was awarded the 1993 Princess Royal Award by the Royal Association of British Dairy Farmers for "*outstanding achievement for the benefit of the UK dairy industry*". The award was presented by the Princess Royal at Buckingham Palace in February 1994.

Cled, who is a member of the South West Scotland Grassland Society, views this as an award for team work in translating research into benefits for the producer. For example, the introduction of Milk Quotas found SAC's scientists uniquely placed to deliver sound advice on adjusting grassland management for optimum milk production.

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## **MAKING HIGH DRY MATTER SILAGE**

*A meeting of the SWSGS at the Cairndale Hotel,  
Dumfries on 21 October 1993*

This meeting was arranged in association with Bernard Krone (UK) Ltd, and sponsored by the company, which is the fifth largest manufacturer of agricultural machinery in the World. Its main factory is based in north-west Germany 30 miles from the Netherlands. The UK branch of the company has its headquarters in Warwickshire.

Bernard Krone has built up a thriving business in which all the profits are invested back into the company. He recently set up a new £8.5 million paint plant to change the colour of his machines from red to green, due to lead control regulations. Investment is also being made in new buildings to increase the capacity in both grassland machinery and trailers. Bernard Krone sees a future in farming.

Staff from Bernard Krone (UK) Ltd - Terry Chapman, Ronnie Knox and Bill Runciman - together with Allan Beaumont from Carrs of Carlisle, gave a presentation on their trials with the making of high dry matter silage.

High dry matter silage with a DM content of 30% or over eliminates the production of effluent, which is not environmentally friendly. Livestock farmers are obliged to comply with the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991, which lays down specific requirements for the storage of silage effluent. Failure to do so, even if pollution does not occur, breaks the law. In addition, the Environmental Protection Act 1990 provides for penalties up to £20,000 for polluting controlled and any other waterways.

Trials by Bernard Krone (UK) Ltd in association with ADAS have shown that high dry matter silage can be made under British conditions, and thereby avoid prosecution. Other benefits which accrue are higher intakes by the cattle with consequent increases in milk yield. Silage transport costs are also reduced because of the reduced amount of water transported from the field to the pit, and the work of the harvest machinery is made easier.

The case for high dry matter silage as a means of eliminating effluent has long been argued by Ate Bosma, Netherlands Institute of Agricultural Engineering, Wageningen. Mr Bosma's technique was used to make a clamp from 60 ha of first cut Italian ryegrass over 2 days on the Pallinghurst farm of R Harrison & Sons near the Surrey/Sussex border. Jim, Peter

and Jonathan Harrison make 10-12,000 t of silage each year for 800 milking cows on their three farms.

On the Harrison's farm grass cutting was begun at 8.30 am with a front and rear mounted combination of the Krone AFL 242Z and AM242Z mower conditioners giving a 4.8 m cut in one pass plus a single AM242Z mower conditioner following to give an additional swath. As a control, nine swaths in one field were left untreated thereafter. The rest of the grass was twice spread during the day with two 6.4 m wide Krone KW640 tedders to maximize the surface area exposed to the sun and wind for rapid and uniform moisture evaporation. In the late evening the grass was gathered into 3 m wide swaths with a twin rotor 6.6 m wide Krone KS rake ready for picking up the following morning with a forage harvester. This minimized the area of crop exposed to dew or rainfall overnight.

When the grass was harvested starting at 8.30 am next morning, the average dry matter content on the treated area was 30.4 % and on the control area 22.4 %. This technique of rapid field wilting of silage speeds up carting of the crop since the amount of water to be carried is reduced by 10 t/ha. As a result the effluent flow from the clamp is eliminated or reduced, decreasing the risk of heavy fines for pollution. Another advantage is that the sugar content of the crop is concentrated, therefore, an additive may not be required. It has also been found that the growth of *Clostridium* is suppressed leading to an increase in the production of lactic acid in the silage. To achieve these advantages it is important to obtain a weather forecast and pick a good time slot. The crop should be cut when the grass is free from moisture and when the sugar content is high. Field wilting should not be extended beyond 24 hours.

The high dry matter silage system has also been tested on the 76 ha Dancoed Farm of Peter Joules at Pentrecwrt, Llandysul, Dyfed. Mr Joules switched to high dry matter silage in 1992. This was accompanied by an increase in the milk yield from forage to 3558 l/cow compared with 3266 l/cow in 1991 when traditional silage was made. A mower-conditioner is used to cut the grass and then a tedder spreads the swath immediately afterwards. In good weather the crop is tedded twice before rowing up, but under good wilting conditions one tedding is sufficient. In 1992 the dry-matter content of the first cut at Dancoed on 15-19 May was 41.2%, and that of the second cut on 22-25 June was 46.6%. The ME values of the two crops in MJ/kg DM were 11.3 and 11.4 respectively. The only disadvantage of the system mentioned by Mr Joules was that the equipment was expensive, although this can be partly offset by savings

in fuel and labour. There is also a possible risk of soil contamination from tedding.

Besides mowers, mower conditioners, tedders and windrowers, Krone have the largest range of round balers in the world. These balers can be used even when the crop is lumpy, because they chop at the same time. Their large baler is still being tested in South Africa. The square big baler is recommended mainly for straw.

**G E D Tiley**

### **SOUTH WEST SCOTLAND GRASSLAND SOCIETY COMPETITIONS 1994-95**

The 22nd Annual Silage Competition of the South West Society will be run this year, the results being announced at the Competition Night in January 1995. Also on that occasion the winner of the Grassland Environmental Competition 1994 will be presented with the Forum Feeds Environmental Trophy.





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## SOIL COMPACTION AND SLURRY SYSTEMS

*A meeting of the SWSGS in the Royal Hotel, Cumnock  
on 18 November 1993*

This meeting of the Society was sponsored by Hamilton Tractors, Tarbolton and Malgar Slurry Systems. Following a short Annual General Meeting, the main speaker was Jim Douglas of SAC, Scottish Centre of Agricultural Engineering, Bush Estate, Penicuik, who spoke on soil compaction.

The speaker described how tractor and implement wheels affect the structure of the soil and also the yields of grass, and he referred to trials being carried out with the aim of reducing the damage. This work has been done in the east of Scotland under a rainfall of about 890 mm.

When the soil does not have sufficient strength to support a load it becomes compacted, losing its pore spaces, which are important for rooting and also for drainage. An 8 t tractor can compact a soil to such an extent that it loses all its pore spaces. This can be seen on wet silage fields which rapidly become rutted. In contrast to the soil of grazed grassland, many silage fields are already compacted due to large amounts of wheeling.

In experimental work to minimise the amount of damage one obvious solution tried was to change the tyres on tractors and implements to larger, low pressure tyres which reduce the pressure on the soil. Treatments applied in the spring of 1987 showed marked drain lines and wheel tracks where conventional tyres were used, and uniform growth with reduced pressure tyres and on zero traffic control plots. The annual yields of grass were considerably reduced by wheeling with conventional tyres compared with zero traffic. Some increase in yield was obtained by using low pressure tyres but not up to the level from the zero traffic plots.

With the higher rainfall conditions in Ireland there are often severe problems of getting onto the land with trailers. Trials have been conducted there with tractor wheels fitted to the trailers and also double wheels. These changes have helped, but costs have been increased, particularly because double axles and wider gateways were also required.

Work has been started at SAC on the environmental aspects of slurry application. Where slurry is applied on the soil surface ammonia and other nutrients can be lost. It has been shown that these losses are

greater where the soil has been compacted. If the soil is maintained in a good structure the slurry will penetrate more easily and it will be more efficiently utilised leading to better grass growth.

On conventional traffic plots slurry remains on the surface longer and atmospheric losses of nutrients can occur. Where there is no traffic, slurry disappears from the surface immediately after application. The penetration of slurry into a compacted soil can be improved by slotting the soil surface. The recovery of fertilizer nitrogen is also reduced by soil compaction. However, the loss here is smaller than from slurry application.

### Discussion

The discussion was opened by **R Wilson** of Malgar Slurry Systems, who announced that his company was now offering low ground pressure tyres. These are made from British material at a cost of about £2500, and can be supplied in any tyre size required. Malgar have cooperated with SAC in trials on the injection of slurry into grass. It is likely that injection will be important in the future because of restrictions on the odour arising from slurry application.

**David Laird**, a local contractor from Cumnock also contributed to the discussion, and described the system he uses. He required a self-propelled machine at as low a cost as possible, and decided to use low-pressure tyres. Massey Ferguson and other tractors with wide wheels were tried. The problem has now been solved by fitting low-pressure tyre on lorry axles, which allow earlier application of slurry. One problem mentioned in the discussion was that slurry lying on the surface could lead to shallow rooting of grasses. It was suggested that the use of a slotter would encourage the grasses to root more deeply.

The financial gains to be derived from the use of low pressure tyre systems depend on the value placed on grass. If this is taken as the value of hay, it was suggested that an extra 1.5 t of grass DM at the first cut could pay for the tyres used on 40-50 ha of grass in the first year. The expense could also be recouped by obtaining the same yield of grass with a reduced nitrogen application where low-pressure tyres were used.

The demand for low-pressure equipment could increase after 1998 when regulations dealing with the application of human sewage will be introduced. Here there could be an additional problem of lead pollution.

**G E D Tiley**



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## CSGS SILAGE COMPETITION 1993-94

*A meeting of the CSGS in January 1994*

### **Judge: W Bankier, Fernieshaw, Clelland**

In his opening remarks Mr Bankier said he had been reluctant to undertake the difficult task of judging. However, he had enjoyed visiting the finalists' units, and thanked the Society for the invitation. The Judge then commented on points of interest which he had noted at the farms visited, and his comments are summarized below.

At Kirklands, Muirhouse the silage clamp had a high face with the second cut loaded on top of the first. Here draff and potatoes were included with the grass in the silage.

The silage at Nether Affleck was fed down the passage with a converted dung spreader. The pit had a very tidy face with no waste.

The 220 cows on the two units at Over Dalsersf were fed a complete diet using a Keenan wagon. Dunrod used an easy-feed trailer which was parked on concrete.

Cows were milked three-times a day at Langton where the existing cubicles had been converted. The cows took readily to the new mushroom-type cubicles which seemed an excellent idea.

The silage pit at Glen again had a high face. A Keenan wagon was used for feeding, and two different silage additives had been used.

At Westwoodlane big-bale silage was fed to bullocks in a ring feeder. The 2500 high-quality big bales made annually at Woodburn were fed to bull beef and other cattle. Good liveweight gains were obtained at Mid Cambushinnie where the big bales were fed to Charolais and Limousin cows.

The Judge concluded by stressing the importance of sheeting silage pits. He believed that side sheets with double top sheets should be used to eliminate side and top waste, particularly for competition purposes.

**Table 1.** Final marks for analysis and for placing by the judge

	Marks		Total (100)
	Analyses (35)	Inspection (65)	
J P Baird, Nether Affleck, Lanark	29.34	62.5	91.84
J Clark & Son, Dunrod, Inverkip	31.64	60.0	91.64
M Mauchlin, Ben Challum, Crieff	30.18	61.0	91.18
J Brisbane, Westwoodlane, Stirling	28.93	62.0	90.93
M Lyle, Mid Cambushinnie, Dunblane	26.41	63.0	89.41
G Kerr, Kirklands, Dunsyre	31.28	57.0	88.28
R Reid, Glen Farm, Falkirk	29.99	55.5	85.49
R Baillie, Over Dalsersf, Larkhall	24.68	59.0	83.68
J & A Warnock, Langton, East Calder	28.58	54.0	82.58
T Brown, Muirhouse, Carnwarth	22.40	55.5	77.90

### Prizewinners

The marks for the top entrants in the Competition are shown in Table 1. The prizes were presented by Chris Toten of HF Seeds. George Hamilton presented the Hamilton Reco Salver to the best beef and sheep entry. The overall winner was J P Baird, Nether Affleck, Lanark, who was presented with the HF Seeds Cup. J Clark & Son, Dunrod, Inverkip won the second prize. Third and fourth prizes went to J Brisbane, Westwoodlane, Stirling and M Lyle, Mid Cumbushinnie, Dunblane respectively. The prize for the Best Beef and Sheep silage was won by M Mauchlin, Ben Challum, Crieff, who was presented with the Hamilton Reco Salver. Mr Mauchlin also won the prize for the Best Big-Bale Silage. The prize for the Best New Entrant was awarded to J & A Warnock, Langton, East Calder.

### New silage analysis methods

Following the prizegiving Dr Nick Offer, who is a Nutrition Specialist in the Department of Biochemical Sciences at Auchincruive, described the new methods of feed analyses being developed and how they could improve the calculation of rations and feed plans. A major limitation to

progress is the imprecision of advisory descriptions of the cow and her feed. The new rationing methods call for more feed information which is not available to the adviser. A particular difficulty has been the inability to describe the feeding value of silage which is a highly variable material. To improve this situation more accurate predictions of the intake and nutritive value of silage must be obtained. The two key techniques being used at SAC are Near-Infrared Spectroscopy, and Automated Electrometric Titration. Following progress of research at SAC over the last 6 years the latter method is now being applied in advisory work. A description of the new method and its application can be found in *Greensward* No.36 (1993).

**C McCombie**

**CENTRAL SCOTLAND GRASSLAND SOCIETY  
16th ANNUAL SILAGE COMPETITION 1994-95**

The 16th Annual Silage Competition of the Central Society will be run in 1994-95 with the same prizes as in previous years. The rules will be circulated to members with the entry forms.

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## **SWSGS SILAGE COMPETITION 1993-94**

*A meeting of the SWSGS in the Creebridge House Hotel,  
Newton Stewart on 13 January 1994*

### **Judge: Richard Skelton, Eden View, Kirkby Thore, Penrith**

The Society's 21st Silage Competition was opened by the Chairman, John Marshall. He first acknowledged the sponsors who gave so much support to the running of the competitions. Particular thanks were due to the Bank of Scotland, Forum Feeds, Kemira and Plasti-Covers. SAC were also thanked for providing copies of the chemical analyses of the silages.

The Chairman introduced Richard Skelton, who he said was a very good silage judge and also a very good footballer. Richard and his father George are keen silage competitors in the local Cumbria Grassland Society and have been the Society champions three times. George was to have attended this meeting but was in Australia at the time.

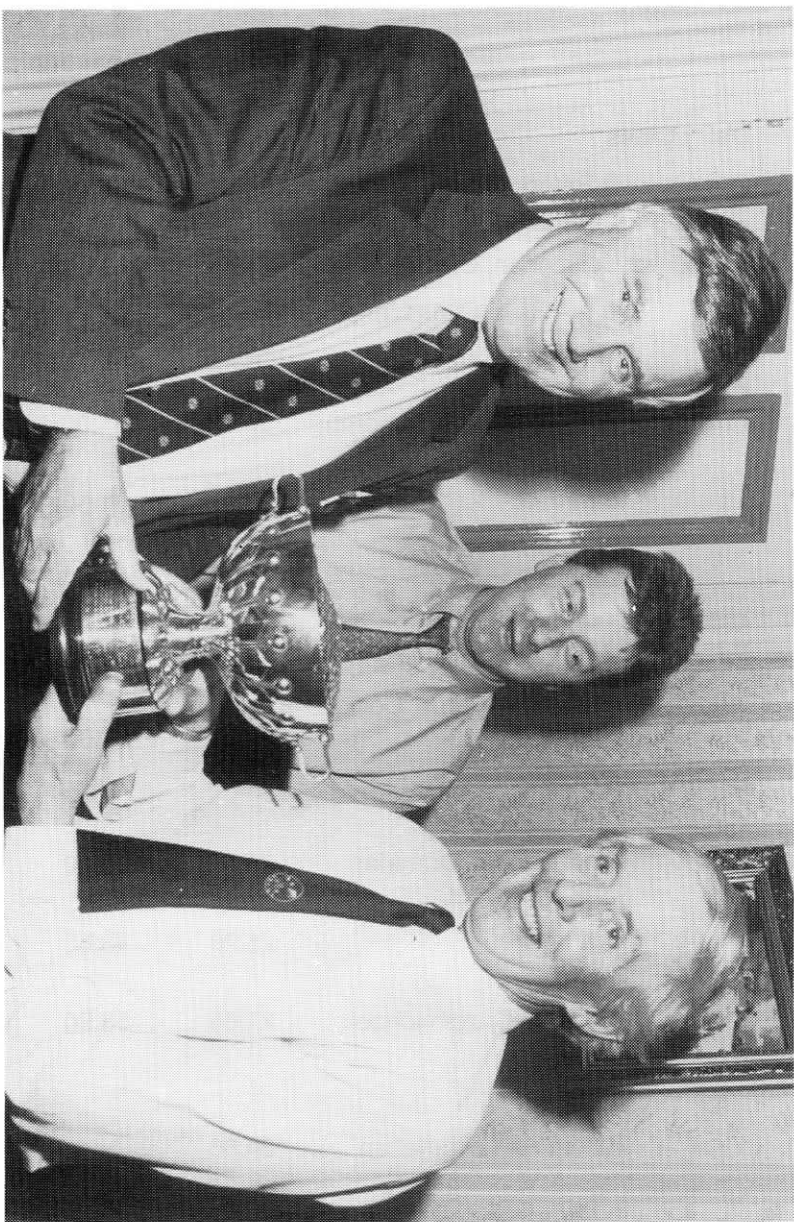
Richard said he was honoured to be asked to judge in south-west Scotland where some of the best grassland and stock farms were. He had been much impressed with the quality of the land on his judging tour, and apologised to Alec Reid for not being able to visit Arran due to the rough weather. He had enjoyed judging, and had been well looked after.

In a short talk about Eden View Richard said that his father George started with a traditional sheep and dairying enterprise 31 years ago. He turned completely to dairying with cubicles after about 9 years. George is now retired and Richard manages the farm, on which there is a flying herd with no followers. This is because land is very dear to rent or buy in the area. Quota has been bought for 120 cows on 53 ha. A complete diet consisting of caustic-treated wheat and soya is fed with a beet concentrate. A sideline on the farm is the bed and breakfast business which is kept very busy due to the proximity of the A66. Farmers visit Eden View from all over the world.

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

		Analyses (35)	Marks Inspection (65)	Total (100)
<b>Dairy Class</b>				
2nd	R Paton, Torr, Auchencairn	31.88	65.00	96.88
1st and Rosebowl	J M L Milligan Culvennan, Castle Douglas	31.45	65.50	96.95
	A & A Reid, Clauchlands, Lamlash	30.71	N/A*	N/A
Kemira Prize	J Mackie Waterside Mains, Thornhill	30.28	51.00	81.28
	H R Parker, Inchparks, Stranraer	29.97	51.50	81.47
	W Sloan, Ryemuir, Lochmaben	29.41	54.00	83.41
Milligan Prize	J Hodge Bogwood, Mauchline	28.66	63.50	92.16
3rd	A & W A Williams, Colfin, Lochans	27.28	67.50	94.78
<b>Beef/Sheep Class</b>				
1st and BP Trophy	W T McCombie Trohoughton, Dumfries	25.68	65.00	90.68
	A J Steel, Kirkwood, Lochmaben	25.23	43.00	68.23
	J Nelson Cogarth, Crossmichael	21.65	53.50	75.15
<b>Best Big Bale Entry</b>				
	A J Steel Kirkwood, Lochmaben	24.86	N/A	N/A

\* Not inspected due to storm



SWSGS Silage Champion 1993, Michael Milligan, receives the Society Rosebowl from Bill Scott, Manager of the Bank of Scotland, Castle Douglas, with Silage Judge, Richard Skelton.

Table 1 shows the marks awarded to the entries on the Judge's short list. J M L Milligan, Culvennan, Castle Douglas was awarded the first prize in the Dairy Class and was also the overall champion and recipient of the Silver Rose Bowl. Second prize in this class went to R Paton, Torr, Auchencairn, and the third to A & W A McWilliam, Colfin, Stranraer, who were in the same position last year.

The first prizewinner in the Beef/Sheep Class was W T McCombe, Trohoughton, Dumfries, who received the BP Nutrition Trophy. A J Steel, Kirkwood, Lochmaben took the prize for the Best Big Bale Entry. The Michael Milligan Prize for attention to detail was presented to J Hodge, Bogwood, Mauchline, and the Kemira Prize for the best new entrant was awarded to J Mackie, Waterside Mains, Thornhill.

The prizewinners for the best silages (on analysis marks only) in the four counties were A & A Reid, Clauchlands, Lamdash, once again for Ayrshire; R Marchant, Barony College, Dumfries for Dumfries; R Paton, Torr, Auchencairn for Kirkcudbright; and H R Parker, Inchparks, Stranraer for Wigtown.

Plasti-Covers Silage Prizes of £50 cash tokens were awarded to the first and second prizewinners in the Dairy Class, and the first prizewinners in the Beef and Round Bale Classes.

### **S Donnelly: Silage Quality 1993**

Most organisations are using very similar techniques for silage analyses, so there should be a broad correlation between the results from different sources. In 1993 a correction was applied to the dry matter and crude protein figures to give a modified ME, which tended to be higher than in previous years.

In the Milk Manager results for Wigtown the average dry matter content of the silages was down to 20 in 1993 compared with 24 in 1992. The pH figures were similar in the 2 years, but the ammonia nitrogen contents were lower in 1993 with an average of 5.5 against 9 in 1992. This was possibly due to more additive being used in 1993. The crude protein contents were similar in the 2 years - 10.4 in 1993 and 10.7 in 1992. The 1993 silages were feeding fairly well, and the second cut silages had been good.

In the Competition there were 192 entries, with 154 in the Dairy Class. The average dry matter content here was 23 compared with 24 in the previous year, due to the wetter weather in 1993. The crude protein

content averaged 14 with an ammonia nitrogen of 6.1 - down from 9 in 1992, again probably the result of higher additive use. On average the D value and ME were similar in the two years, being 70 and 11.2 respectively in 1993.

G E D Tiley

### **GRASSLAND IDEAS COMPETITION 1993**

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

Winner 1993: Donald McColm, Cairngarroch, Drummore

#### **Use of old fire brigade hose to seal the edges of an indoor silage clamp**

Roofed silage clamps are restricted in height and accessibility for the mechanical delivery of sand bags, etc. to seal the clamp edges. Used fire hose is available from fire brigades at approximately £20 per 25 m roll. This is rolled out around the edges of the clamp. Both ends are suspended from the roof, and the hose then filled with water from a tap hose plugged into the fire hose by means of reducing couplings. The fire hose forms a continuous seal around the edge fitting the contours of the clamp and forming a good contact. The central area of the clamp is covered with tyres as usual. As the silage is used, water is released from the near end of the hose which is progressively rolled up.

Old lay-flat irrigation tubing could possibly be substituted for the fire hose, but has not been tried. Fire hose has been in use for one year, with one, two or nil pipes being tried. Two pipes were no better than one which completely eliminated shoulder waste.

Mr McColm was presented with a tankard donated by Kemira Fertilisers, and could be eligible for the national BGS Innovations Competition which is held every 3 years.

## **GRASSLAND ENVIRONMENTAL COMPETITION SOUTH WEST SCOTLAND 1993**

The results of the SWSGS 1993 Grassland Environmental Competition were announced at the Competition Night held at the Creebridge Hotel, Newton Stewart on 13 January 1994. The judging panel for this competition consisted of David Webster, SAC, Crichton Royal Farm, who was last year's winner, and Gillian McKnight, FWAG Advisor, Strathclyde Green Belt, who is based at the Paisley SAC office. Gillian was unable to attend the meeting and sent her apologies, so David Webster summarized the 2 day's judging and presented the prizes.

The first prize and the Forum Feeds Environmental Trophy was awarded to Maggie and Bob Lee, Barfil Farm, Crocketford Road, Dumfries. The second prizewinner was Nick van Zwanenberg, Barloco, Dundrennan.

All four entrants in the 1993 Competition were in the general area of Auchencairn south east of Castle Douglas. Conservation and care of the countryside occupied an important place in the thinking on all four farms. There was a genuine and clear cut aim to make the surrounding countryside a more attractive place to live. The degree of enthusiasm was high on all the farms and frequently conservation measures had been undertaken without grant aid, simply because the incumbent owner wanted to do it. In the event judging between the four proved very difficult, and placings could have easily been interchanged.

Farm conservation measures noted on entrants farms included:-

- (1) Well managed hedges. The judges commented that these could possibly make better habitats for wildlife if they were not quite so tidy.
- (2) Attractively landscaped ponds with groups of trees to encourage game.
- (3) Conservation of 16th century buildings to the benefit of amenity and historical interest.
- (4) Good commercial woodland management, which also aimed to preserve a good habitat for game and wildlife and associated flora. For example, an old oakwood had been fenced off to encourage natural regeneration.
- (5) Maintenance and management of traditional dykes which gave effective stock control and also looked very attractive in the countryside.

(6) Conservation of rare breeds of sheep and also use of traditional Shire horses, for example in grass harrowing, which helped to preserve the natural structure of the soil.

A vote of thanks was proposed to David Webster and Gillian McKnight for judging this Competition, and the sponsorship of Forum Feeds was gratefully acknowledged.

### **SOUTH WEST SCOTLAND GRASSLAND SOCIETY VICE-PRESIDENTS PRIZE - 1993**

This prize is awarded to the best Grassland student on the Higher National courses in Agriculture and Agricultural Science at SAC Auchincruive. At the prize-giving ceremony in October 1993 the Vice-Presidents Prize was awarded to Mr Huw Powell. Huw was brought up on a 29 ha dairy farm in North Wales. The prize of £25 plus a year's free membership of the Society is funded by donations from the Honorary Vice-Presidents of the Society.

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## SCOTTISH REGIONAL SILAGE COMPETITION

Michael Milligan of Culvenan, Castle Douglas won the Scottish Regional Silage Competition in 1994 for the fifth time in the 16 years of the Competition. He was presented with the BGS Scottish Region Cup at the awards presentation ceremony in London on March 25 1994. This was the tenth time in the 16 years that the Scottish Region Cup has been won by a member of the South West Scotland Grassland Society.

Runners up in the Scottish competition were D & J McCluskey of Lea Farm, Roslin, Midlothian, also former Scottish winners.

The winning silage from the 243 ha Culvenan farm had a D value of 78.3, an ME of 12.5, a crude protein content of 15.7% and an ammonia nitrogen content of 5%. The dry-matter content was 22.2% and the pH 3.7. Michael aims to produce a silage with an ME of between 11.5 and 12, and a D value of at least 75. Only with such a silage can he achieve the required performance from the dairy herd of 110 cows at Culvenan. The herd average is 6300 l with a concentrate input of only 0.39 kg/l. The concentrate is fed at a flat rate of 1.5 kg twice a day for the first 100 days of the lactation. Draff is also fed, and after a total feed cost of 5.5p for silage, concentrate and draff the remaining margin is 17p per litre.

3500 t of silage are made annually at Culvenan, taking the first cut in mid May. The herbage is cut with a 2.74 m mower conditioner, and wilted before collecting with a precision chop forage harvester. Michael considers that an additive is a vital ingredient in making good silage. Another important step in the process is the covering of the clamp every night. No set number of cuts is taken each season, the tendency being to cut surplus grass, and to rotate fields which have been cut for the first crop with others which have been grazed first. Michael is also economical with fertilizer application never applying more than 100 kg of nitrogen per ha. In addition, no slurry is applied on silage fields.

## WHOLE CROP SILAGE

*A talk at a meeting of the CSGS*

The speaker at this meeting of the CSGS was Dr J Hill of the Grassland and Ruminant Science Department, SAC, Auchincruive.

Whole crop silage was first made in the early 1970's. The crop is swathed using either an O.S.R Swather or a disc mower, and harvested with a conventional forage harvester or a self-propelled machine. When harvested the wheat grains should be watery ripe, whereas barley should be cut at the hard-dough stage. The crop is stored in the same way as grass silage, and the pit should be rolled and sheeted.

Dr Hill quoted the results from trials comparing the effects of various cutting machines on the grain and ear losses in whole crop wheat cut at 35% dry matter. A finger bar mower and an O.S.R Swather gave the lowest estimated losses at 60 and 67 kg/ha respectively, and the greatest from a disc mower at 402 kg/ha. The average grain yield at this dry-matter content was 730 kg/ha.

The treatment of whole crop silage with urea has problems, one of which is that the urea must be bought in as an 80% solution. Fertilizer urea cannot be used for this purpose as it contains heavy metals which are toxic. Urea treated whole wheat silage has a pH of 8.6 and when fed with acid-treated silage gives a total feed with a pH of 6.0-6.5.

The application of the enzyme additive CLZ on whole crop silage with a dry-matter content of 43% had little effect on pH, crude protein and VFA contents. However, it increased soluble carbohydrates from 43 to 87 g/kg DM, and ammonia nitrogen from 79 to 94 g/kg DM. In contrast, the enzyme additive FSO2 slightly depressed the lactate content and increased the carbohydrate content to 120 g/kg DM. It also slightly increased the ammonia nitrogen content.

**C McCombie**

## WINTER FARM VISIT IN DUMFRIES

*A visit of the SWSGS to Lochhill, New Abbey on 8 February 1994  
by kind permission of James Kingan & Sons Ltd.*

On a wet day in February the Society was treated to an unusual winter farm visit, which combined three very good beef-finishing units with two industrial enterprises producing feed compounds and sawn timber.

John Kingan, a former member of the Society, described the history and present organisation of the firm. This is an excellent example of a family-run local business with a current payroll of 72 employees. Mr Kingan emphasised that there were outstanding industrial relations and many employees had long-service records. The company had recently been awarded a British Standards certificate, BS5750, for the quality of its products.

The firm began in 1860 when great-grandfather James Kingan took the tenancy of Shambellie estate sawmill near New Abbey which, in those days, was powered by a waterwheel. By the 1870s his 17-year-old son had taken over the tenancy of Lochhill and Gateside Farms on the other side of the village. Again using water power he began milling his own grain as well as that of his neighbours and thus the animal-feeding manufacturing operation was born.

The business grew rapidly and a schooner, the *General Havelock*, was purchased. From the turn of the century this ship brought raw materials to the Bog Quay, near New Abbey from as far afield as Liverpool and Cumbria. The schooner also carried timber for use in the coal and iron mines in the West Cumberland area. These mines were big customers of the Kingan family business. The *General Havelock* was used by the company until the 1930s when road transport began to take over. A sign of the introduction of new technology came in 1932 when a purpose-built grain mill was erected at Lochhill with a diesel engine powering the equipment. On the timber side of the business a few years later the round wood started to be hauled in by tractors and trailers rather than the traditional horse and pole wagon.

In 1946 the company as it is known today was formed, when brothers John of Ashcroft and James of Laneside made the business a limited company. They named it James Kingan and Sons after their father who started the company. At about this time the present senior directors, Ian and James Kingan, became involved in the business, and they saw it continue to expand over the next few years.

In 1955 a purpose-built grain drying plant was first installed and, as animal nutrition developed, the need to build a pelleting plant became apparent. This was installed adjacent to the original building at Lochhill in 1961. Meanwhile, the sawmill, which had been powered by steam, was electrified, and a treatment plant for the preservation of timber was installed. However, the demand for mining timber gradually declined and the production of pallets became a major part of the business. There is also a local agricultural market for fencing, buildings and general farm timbers.

The Society's visit was first to the feed mill which is managed by son Russell, and members were shown how custom-designed rations could be made up at short notice. The whole process from delivery of the constituents at one end of the production line to bagging at the other end was demonstrated. Feeds are supplied to farmers within a 30-mile radius of New Abbey, and occasionally further afield.

A brief visit was made to the two commercial beef units at Overton and Lochhill before lunching at the Criffel Inn in New Abbey. After lunch there was a short tour of the sawmill on the outskirts of the village. Here again the operation of the complete production line was demonstrated by the manager, son David. Soft wood timbers are trimmed and partially debarked to produce a waste by-product used for mulch, etc. The trimmed logs are then cut to length and square trimmed before being sliced lengthwise. Offcuts are used for small size lengths where possible.

Pallet manufacture is one of the main outlets and the final cut is for pallet segments. The mechanised block cutter for the pallet blocks is a fascinating but simple piece of machinery. Stobs, posts and similar timber are also produced. These are subjected to the 'Cellcure' process in pressure tanks. The numerous band saws in use in the factory are all maintained and sharpened in the factory's own workshops by experienced operators.

The final visit of the day was to the beef unit at West Preston where there is a large herd of finishing beef animals. These are all bought in personally by James Kingan and fed on silage and concentrates by the resident stockman. A home-made wheeled applicator for the rapid and even distribution of dry feed was seen in operation.

The quality of the stock, 1200 in all, and the quiet efficiency of the industrial units were unforgettable features of this excellent winter farm visit. The thanks of the Society are extended to James Kingan, his sons and staff.

# HERE'S A THOUGHT

## **FACT**

Home produced raw materials for livestock feeds are the best available.

## **FACT**

Most are pelleted at source - distillery, flour mill, sugar factory, maltings and others.

## **THE GOOD IDEA**

So why not encourage these primary manufacturers to make a smaller harder pellet and supply them with a vitamin/mineral premix to incorporate?

## **THEN**

Simply mix, balance, screen and blow onto farm.

## **AND**

Provide the farmer with a copy of the formulation and a fixed price winter contract.

## **THE RESULT?**

A nutritionally superior feed. And - because there's no need for additional grinding, steam conditioning, re-pelleting and cooling - a saving of £20 per tonne.

So why hasn't anyone thought of this before?

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## BGS NATIONAL SILAGE COMPETITION 1994

For the fourth year in succession the winner of this competition came from Wales, the Kemira Star Trophy being presented to John Davies, Tynloff, Silian, Lampeter, Dyfed. The runner-up was David Manning of R J Manning and Son, New Cross Farm, Edwin Ralph, Bromyard, Hereford.

This year's national judges were Roger Cheshier of Kemira Fertilisers, Dr Bruce Cottrill, ADAS, and Philip Stephenson, the Dyfed dairy farmer who won the 1993 competition. Out of a total of 1200 entrants throughout the UK, nine regional finalists were chosen and visited by the national judges. The fresh silage sample taken from the current clamp was analysed by the SAC. The Scottish Regional finalist for the fifth time in the 16 years of the competition was Michael Milligan of Culvennan, Castle Douglas.

The champions, John and Mair Davies, farm in partnership at Tynloff, which has been in the Davies family for 400 years. Retired father Sam and John are past BGS national and regional silage champions, and John was also the 1990 Dairy Farmer and Farmer of the Year.

Most of the land at Tynloff lies at about 183-213 m above sea level, and the rainfall averages 1520 mm. The dairy herd consists of 64 Holstein Friesians and 58 followers. More than 4000 litres of the herd average yield of 6845 litres comes from forage. Concentrate is fed at a rate of 0.20 kg/litre of milk produced, and the margin over purchased feed is £1234 per cow. A sheep flock of 90 ewes is carried on 41 ha of long-term perennial ryegrass pastures.

Three cuts of silage are taken each year, the first being self-fed to the dairy herd with baled hay on free offer. The annual nitrogen application on silage fields is 313 kg/ha. Grazed pastures are block grazed using an electric fence which is moved twice daily, and the annual nitrogen application here is 350 kg/ha.

The runners-up in the competition have lived at New Cross Farm for 40 years. Roland and Anne Manning are now retired, and son David farms with his wife Elizabeth. New Cross covers 122 ha at an elevation of 170 m above sea level, and has an average rainfall of 712 mm.

The dairy herd at New Cross has an average milk yield of 6379 litres per cow. Concentrate is fed at a rate of 0.23 kg per litre of milk, and the margin over purchased feed is £1031 per cow.

The finalists were presented with their awards by Ed Gallagher, chief executive of the National Rivers Authority, at the Royal Festival Hall, London on March 25 1994. The competition is organized by the British Grassland Society in association with Kemira Fertilisers, ADAS and SAC.

### **SPONSORS**

The following organisations are thanked for sponsoring the activities of the South West Scotland Grassland Society during 1993-94.

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# THE REAL FACTS!

Despite what others would have you believe – YES there is a scheme to monitor the quality of silage inoculants –

ADAS run it AXpHAST PROFILE II belongs to it

**FACT**

Results in 1993 showed Biotal's product averaged over 130% of the specification level in ADAS tests

**FACT**

Many additive companies refrain from joining the scheme

**FACT**

REST ASSURED AXpHAST PROFILE II IS QUALITY ASSURED



**FACT**

A patented enzyme formulation to give 3% sugars

**FACT**

Specific yeast and mould inhibitor

**FACT**

Improved stability

**FACT**

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## AGRICULTURAL QUALIFICATIONS UPDATE

Over recent years changes in national awarding bodies from SANCAD to SCOTVEC along with the imposition of SCOTVEC modules and units have meant that agriculture students have graduated from SAC Auchincruive with a range of possible qualifications. These have included SDA, OSDA, HSDA, HDA or DA based on continuous assessment and final examinations, and latterly HNDA and HNCA based on SCOTVEC units or a SAC Diploma based on SCOTVEC units and modules. It is little wonder that some farmers, parents or potential students are confused. Let me try to clarify the position regarding straight Agriculture courses offered currently at SAC Auchincruive.

**SAC Diploma in Agriculture** - This course includes a 1 year pre-entry farm practical followed by 2 academic years. During the first academic year, students would undertake a course of SCOTVEC modules. Successful students would then progress to a second year during which they undertake a course of SCOTVEC Higher National units. The first of these years would include a number of practical skills based on modules. Students who successfully complete the second year of the course and do not progress to the Higher National Diploma course will receive a Higher National Certificate in addition to their SAC Diploma.

The preferred minimum entry requirements for the SAC Diploma are four Standard Grades at 3 or above in English, Arithmetic or Mathematics and a Science subject.

**Higher National Diploma in Agriculture** - This course includes a 1 year pre-entry farm practical followed by 2 academic years. During both academic years students would undertake a course of SCOTVEC Higher National units.

The preferred minimum entry requirements for the Higher National Diploma in Agriculture are two Higher Grade passes at C or above, one of which should be in a Science subject, plus three other passes at Standard Grade (3) or above. Alternatively, students with a good pass at the end of Higher National Certificate year (year two of the SAC Diploma) may gain entry to the second year of the Higher National Diploma.

**Bachelor of Technology in Food Production and Land Use** - This is a 3 years Ordinary or 4 years Honours Agriculture degree course validated by SAC and the University of Glasgow, and taught wholly at SAC Auchincruive.

Preferred minimum entry requirements are three Higher grade passes (BCC), preferably including Chemistry and two from Biology, Mathematics and Physics, along with two other passes at Higher grade or Standard or Ordinary grade. If Mathematics is not offered at Higher grade then it must be offered at Standard or Ordinary grade. English at Standard or Ordinary grade will also be required. Students with good passes at HND level may be considered for progression to the third year of this course.

**R F Gooding**

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