Maximizing grass and forage efficiency

Nether Aden
Climate Change Focus Farm

Notes from the meeting on
31st November 2016

This meeting was the eighth in a series of Climate Change Focus Farm events aiming to increase farm profitability while reducing the carbon emissions from the farm at the same time. Working with hosts David and Nicola Barron, plus industry specialists, the farmer discussion group investigates a range of practical and profitable ideas.

Grazing systems

Tailor your grazing system to suit your requirements

Every farm is different. The possibilities and benefits of paddock grazing were discussed. Host David Barron outlined the options he was focussing on in relation to paddock or rotational grazing and what needed to be planned out for a successful paddock grazing system. Details on infrastructure such as water supply, water trough positioning in the paddocks and how long to allow the cattle to stay on any one paddock were discussed by the farmers present .

There are different grazing systems that farmers can put in place on their farm, depending on which are the most suitable and appropriate to their circumstances. The three grazing systems discussed at the meeting were set stocking, rotational, and paddock. These grazing systems have different DM yield, utilisation, etc. as seen in Table 1.

Table 1: Grazing systems

System	Annual yield (t DM/ha)	Utilisation (%)	Useable yield (t DM/ha)	Percentage increase
Set stocking	8.5	50	4.3	-
Rotational	10.2	65	6.6	56%
Paddock	10.2	80	8.2	92%

Well managed rotational and paddock grazing systems are far superior in terms of dry matter yield and utilisation per hectare compared to set stocking systems (Table 1). Each system has its positives and negatives and every farm will be different in implementing these three different systems. Table 2 outlines some of the Pros and Cons to consider for each system:

Time for a re-seed?

We looked at various re-seeds. Mixes included a dual purpose low clover/ryegrass a medium clover and a high clover mix. All were high sugar varieties.

As highlighted by Andrew Allan from Don Valley seeds, grass yield potential can vary from 5 t/ha of dry matter (DM) on a poor site, to over 12 t/ha DM on good sites with the correct nitrogen applications. Both DM yield and D value has improved over the years, improving the quantity and quality of livestock feed, allowing higher stocking rates and increased growth rates.

Benefits of using white clover in grass mixes and high sugar grasses were brought up by farmers at the meeting. **A 30% white clover sward can provide the equivalent of 150 kg/ha of nitrogen.** White clover is more digestible than perennial ryegrass, higher in protein and will have a higher level of intake. High PRG swards will yield an additional 10kg of grass dry matter per kg of nitrogen used compared to old permanent pasture.

As shown in Table 2, a paddock grazing system is the most efficient and effective grassland management tool available to livestock farmers, but it does require a high degree of management. Paddock grazing produces most grass and the highest quality grass and can be a valuable tool to reduce costs and increase output.

The following actions should be employed if you are thinking of implementing a paddock grazing system on farm.

- Use an IACS map to draw out different paddocks
- Number the paddocks
- Plan out drinking points for the cattle
- Allocate stock to each paddock (min 6 paddocks per group)
- Aim to grow grass in three weeks and eat in 3 days.

Table 2. Grazing systems - pros and cons

Grazing System	Positives	Negatives
Set Stocking	• Low management input. • Low capital costs.	• Poor yield & utilisation of grass. • Management difficulty is sward height & quality. • Weeds can build up.
Rotational	• Extends grazing season. • Allows for surplus grass to be made into silage. • Productivity is higher.	• More fencing and drinkers. • Forage production and utilisation is not optimal if grazed beyond 3 days.
Paddock	• Higher stocking rates. • Can close off paddocks for silage. • Very high nutritional grazing. • Utilisation and grass production is maximised. • Reduces fertiliser inputs	• Grass measuring • High initial costs – fencing, water, etc.

Meeting your cows energy needs

What are the energy requirements of your cows? It will depend on weight of the cow as shown in Table 3:

Table 3. Cattle weight and energy requirements

Weight (Kg)	ME (MJ)
550	60
650	70
750	80
850	90

For a 700 kg cow a typical energy requirement 20 weeks before calving would be 75MJ, At 8 weeks it would be 90MJ and at 2 weeks this would increase to 113MJ.

Condition scoring

It is important to condition score cows at key times during the year, at weaning, 60 – 90 days before calving and at calving. **Condition scoring goes from 1 – 5 scale 1 being thin and 5 very fat. The targets for a spring calving** suckler cow are illustrated in table 4.

Condition score should vary throughout the year with the targets for a spring calving suckler cow shown in table 4. Body condition scores should be recorded at housing and the cows grouped accordingly. An example of the feed requirements for cows in different condition are shown in Table 5.

Table 4. Condition score targets

Spring Calving suckler cow	Condition score Target
At Calving	2.5
Going to grass	2.0+
At Breeding	2.0 – 2.5
At Housing	3.0+

Table 5. Feed requirements to influence daily weight gain/loss

	Fat - 650kg cow To lose 0.5kg/day	Normal - 650kg No loss or gain	Thin - 650kg cow To gain 0.5kg/day
Silage	15	25	32
Straw	5	4	3
Barley	-	-	1
Minerals	0.15	0.15	0.15

Ultimately having cows in the correct condition score going into the calving period will leave the farmer with reduced calving difficulties, less stress and more time to manage other things on the farm. If the cows are either too fat of too thin this can lead to calving problems, low birth rates for calves, lower milk yield and result in the farmer having a more stressful calving period.

Assessing beef (and farm) efficiency with a carbon audit

If you don't measure something how do you manage it? A carbon audit is another way to look at the efficiency of your farm business, highlighting which inefficiencies and waste can be reduced to increase output and profitability. The type of information needed for your carbon audit is summarised in Table 6. Funding is available to support a the production of a carbon audit - see www.fas.scot/carbon-audits/

Table 6. Example of information needed to produce your farm carbon footprint

Land	Livestock	Waste and Energy
• Famed land and crops. • Fertiliser applied to crops. • Type & quantity of organic manure • Quantity of lime applied. • Crop yields. • Crop sold./fed to livestock. • Quantity of sprays applied to crops.	• Average numbers./weights • Numbers sold and purchased. • Sale weight and KO%. • Calving percentage • Average live weight gain (Kg/hd/day). • housed/grazing. • Type of housing.	• Amount of red diesel used. • White diesel used. • Electricity used. • Quantity of renewable energy produced and consumed on farm. • Waste plastic produced on farm. • Water used on farm.

Growing/finishing feeding

Research carried out by EBLEX/SRUC looked at the performance of bulls from 10 – 12 months and steers 15 – 17 months on the same finishing diet of 50% forage and 50% concentrates ad lib for 8 weeks (Table 7).

Table 8 outlines the lifetime performance of the cattle on the study.

As can be seen, the yearling bulls are far more efficient, finishing 10 months earlier than the steers. This therefore allowed for an increased number of cows on this farm, a higher number of heifer replacements and less conserved silage consumed. **It also reduced the carbon footprint of the farm used in the trial with a 60% reduction in total methane production per kg carcase weight produced.**

Table 7. Comparison of bulls and steers used in the EBLEX/SRUC trial

	Bulls	Steers
Average live weight (Kg)	578	591
Intake (DM Kg/day)	12.8	12.81
Fat depth	5.2	7.4
LWG (Kg/day)	1.84	1.47
FCR (Kg DMI/Kg LWG)	7.1	8.8
Feed Costs (£/Kg LWG)	£1.08	£1.35

Table 8. Lifetime performance of bulls and steers used in the EBLEX/SRUC trial

	Yearling bull	Steers
Live weight @ slaughter	636	630
Daily LWG (kg/day)	1.50	0.84
Feed DM consumed	1890	4230
Cold carcass	350kg	340kg
Age – months	13	23
Age – days	395	699
KO%	55%	54%
Feed costs	£312	£423
Other Variable costs	£79	£140
Fixed cost	£70	£334
Total costs	**£461**	**£858**

There are nine climate change focus farms in Scotland. Keep up to date with their activities at

www.farmingforabetterclimate.org

Meetings are free to attend and all farmers are welcome.

Contact farm facilitator alan.bruce@sac.co.uk or 01888 563 333 for more information on the Nether Aden discussion group.

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