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# Focus Site Project Review

Gwion Owen  
Hendre Arddwyfaen  
Corwen

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## 1.0 Summary

### 1.1 Farm details

- 300 Stabiliser suckler cows & 3,000 breeding ewes
- All Stabilisers bred pure, spring calving
- Calves creep fed from August and weaned at housing
- Bull calves left entire and finished intensively at 13-14 months. Some have been finished at a finishing unit in Yorkshire.
- Basic silage feeding system, shear grab blocks of silage fed in passage, difficult to restrict intake accurately

#### **Business Objectives:**

- Increase cow numbers – made possible by improving grassland utilisation and reduced winter feed requirements
- Increase performance and efficiency of the cows
- Reduce winter feed costs of the herd
- Make use of technology and breed improvement programme for feed efficiency and rib-eye measurement to achieve top results

### 1.2 Project key objectives

- To evaluate the cost of feeding suckler cows through a winter and to look at ways to reduce this cost
- Evaluate different dry cow diets from a cost perspective and to prevent cows gaining too much body condition.
- Determine the feasibility of introducing straw into the diet
- To monitor cow body condition and metabolic profile to calve at BCS 2.5
- To carry out a cost evaluation of the entire suckler cow enterprise to see if additional savings can be done in other areas.

### 1.3 Project achievements

- SAC Consulting produced an article “Winter dry cow management of suckler cows” for the November/December 2017 edition of the Farming Connect publication.
- Straw (in 2017-18) was shown to not be a cost-effective addition to the dry cow ration
- Gwion was shown that cows can be fed a restricted silage diet and remain content

## 1.4 Project Details

An initial consultation was held with Gavin Hill, SAC Senior Beef Specialist. These discussions centred on the requirements of suckler cows and the options for diluting grass silage with straw to keep the cows more content and rumen working effectively. In addition, the role of utilising body condition was discussed along with more general issues such as reducing cow size.

In the meantime, Menter a Busnes staff had arranged for the silage to be sampled and analysed so accurate rations could be carried out. Analysis was carried out on 11<sup>th</sup> October with the pits resampled again on 22<sup>nd</sup> November.

### Summary of silage analysis

Sample name	Dry Matter %	ME (MJ/kgDM)	CP %
Pit 1*	33.6	9.7	9.9
Pit 2	37.6	10.1	10.2
Pit 1 closed	30.0	10.1	11.2
Pit 2 open	30.6	10.3	14.0
Wet bales	25.7	9.6	10.1
Dry bales	35.0	10.2	11.1

*\*Mineral analysis was also carried out on Pit 1*

It soon became apparent that the cost of straw in 2017-18 was going to be a major prohibitive factor to its purchase and use. It was therefore decided to simply feed a restricted silage diet. The feeding system is not ideal in that it involves placing blocks of silage in the feed passageway, so cows can feed from either side. Once the rations were received the blocks of silage were weighed and only enough silage was dispensed to meet the requirements of the cattle on either side.

Karen Stewart, SAC Nutritionist carried out rations using Feedbyte rationing software. Two rations were carried out on 26<sup>th</sup> October 2017 using a combined analysis from the two silage pits. One ration was for adult cows and one for in calf heifers. Both rations assumed cows were 8 weeks from calving.

### Summary of rations

#### Adult cows

- 630 kg cows, to utilise 0.3kg/hd/day of body condition
- 8 weeks pre calving
- 21 kg fresh silage/hd/day, 7.5 kgDM/hd/day
- ME supplied 74MJ/hd/day
- Intake 76% of maximum predicted DMI
- CP% of diet 10%
- Comment- the above ration is for for cows to lose weight over the housed winter period. Please note it is 75% of the predicted intake so I would say this is the lowest I would go for rumen fill. Cows that are thin/1<sup>st</sup> calvers/older cows should be grouped separately. More weight loss may be required on very fit cows.

## In calf heifers

- 560 kg heifers, no weight change
- 8 weeks pre calving
- 22 kg fresh silage/hd/day, 7.8 kgDM/hd/day
- ME supplied 77.5MJ/hd/day
- Intake is 86.9% of maximum predicted DMI
- CP% of diet 10%
- Comment- I have done the 1<sup>st</sup> calvers ration based on no weight loss, just maintenance. It will depend on cow condition. If they're lean, then some additional feed may be required before Christmas.

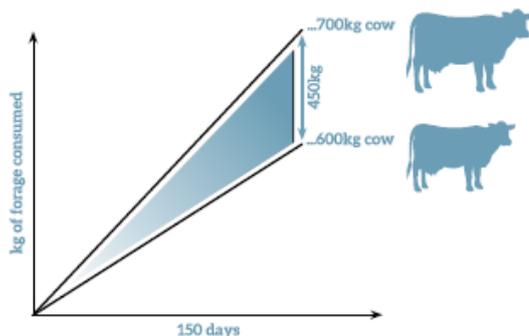
Both these rations are in line with standard industry recommendations for spring calving cows on silage rations.

## Article from Robert Logan in Farming Connect November/December 2017

### Winter dry cow management of suckler cows

With forage and bedding being the two biggest variable costs of suckler cow production, mature cow size, body condition and length of the winter period greatly affect the cost of wintering cattle.

A large 700kg spring calving suckler cow compared to a medium sized 600kg cow over a 150 day winter period may consume an extra 450kg forage per head. At £22/t for clamp silage this equates to a total of £990 for a herd of 100 suckler cows. By targeting a body condition score (BCS) of 3.0 at weaning, a cow can afford to lose 0.5 BCS over the winter period in a controlled manner to calve down at target BCS of 2.5. This would equate to a reduction of 35kgLW or roughly 1,500 MJ of dietary energy by mobilising body fat reserves and consuming a maintenance ration.



There are a number of different options for farmers to consider when formulating a dry cow ration. These can be either a silage, straw or hay based diet but care must be taken to ensure that sufficient effective rumen degradable protein (ERDP) is available to produce sufficient rumen microbial protein. As a general rule rumen microbes will require 9% crude protein per kilogram of dry matter consumed and a good suckler mineral of 100-150g/hd/day.

Table 1. Examples of possible diets

DIET	SILAGE (kg/hd) @ £22/HPW	STRAW (kg/hd) @ £85/HPW	HAY (kg/hd) @ £100/HPW	BARLEY (kg/hd) @ 118/HPW	RAPESEED MEAL (kg/hd) @ £18/HPW	Approximate cost/hd/day
1	17 (restricted)	4.5				75p
2		9.5 (to appetite)		1.0	1.5	£1.23
3			9.5 (to appetite)		0.5	£1.05

Source: AHDB Feeding suckler cows and calves, BRP manual 5 example dry cow diets, based on silage (30% DM) @ 1.06MJ ME/kg DM, straw (6.3MJ ME/kg DM) or hay (8.5MJ ME/kg DM), fed to a 650kg spring-calving suckler cow, eight weeks from calving and losing 0.25kg/day

Knowing the nutritional value of forage fed to cows is key to rationing cows effectively to meet energy and protein requirements, preparing cow condition in advance of calving and potentially reducing feed costs. Focus Farmer Gwion Owen at Hendre Ardwyfaen is interested in looking at ways to efficiently feed and budget his suckler cows once dried off over the winter period.

Beef consultant Robert Logan, SRUC will be working with Gwion and Farming Connect with project updates and news of open events being available on our website over the coming months.

## Winter feeding 2017-18

Cattle were fed according to the rations recommended. Cows remained content despite clearing up their daily silage allocation in a reasonably quick time.

Despite the winter being 7 weeks longer than usual on the farm there were 200 bales, some 120 tonnes plus 80 tonnes of pit silage remaining at the end of the winter. This will prove valuable in the 2018-19 winter as feed stocks have been under pressure this year due to drought.

## Potential increase in cow numbers from same resources

This 200 tonnes of silage remaining in 2018 is enough to feed 45-50 cows for a 200 day winter at the feed rates recommended in the rations calculated earlier. Had the winter been the usual length (ie 7 weeks shorter than it actually was) there would have been a further 300 tonnes of silage remaining. The 500 tonnes of silage in total would

have fed over 100 cows for a 200 day winter. Another way of looking at it is that if cows can survive on 20kg of silage per day instead of 30-35kg if allowed to eat ad lib then at £25/tonne the potential saving for a 200 day winter is somewhere between £50 and £70/cow in silage costs alone.

Further increases in cow numbers can be made from reducing cow size. Typically, every 100kg reduction in cow size can mean around 15% more cattle may be kept. Reducing cow size is already in progress and is already below 600kg.

### **Potential increased Gross Margin from 100 cows**

Using the Wales FAS data for 2017 the average Gross Margin for Upland suckler herds in Wales was £420/cow with top third herds achieving GM's of £598/cow. Therefore, if we take a mid-point of £509/cow the extra 100 cows could achieve an additional farm Gross Margin of £50,900.

This may be an oversimplification of the potential increase. While the farm could produce enough grass and silage for an extra 100 cows we also have to consider the extra overheads, buildings etc required as the farm is not suitable for outwintering and current buildings are limited.

There would need to be additional housing for 100 dry cows over winter and 90-95 youngstock over winter as well (although calves could be sold at weaning before they need housing).

### **Choice of cattle bedding system**

As straw is prohibitively expensive (and is likely to remain so for the foreseeable future) one potential solution would be a slatted shed. The calculations below are for housing/bedding 100 suckler cows and 90 weaned calves either in straw bedded courts, wood fine bedded courts or slatted shed. Central feed passageway as well as outside pass to enable restricted feeding. Building costs have been written off over 25 years at 5% interest. Information from SAC Farm Management Handbook.

	<b>Straw</b>	<b>Wood fines</b>	<b>Slats</b>
Space per head - cows	6.8m <sup>2</sup>	6.8m <sup>2</sup>	2.3m <sup>2</sup>
- calves	4.0 m <sup>2</sup>	4.0 m <sup>2</sup>	1.5 m <sup>2</sup>
Size of shed (4m central feed pass)	52 x 24 m	52m x 24 m	32m x 14m
Cost of bedded shed @ £160/m <sup>2</sup>	£200,000	£200,000	
Cost of slatted shed @ £550/m <sup>2</sup>			£246,400
Annual cost/ breeding cow (@5% over 25 years)	£142	£142	£175
Tonnes bedding required/cow/yr	1	2	0
Cost/tonne	£100	£40	
Cost/cow/yr	£100	£80	
Total cost/cow/yr	£242	£222	£175

***Note these calculations are approximate and will vary depending on actual building specifications and design, work carried out yourself, cost of bedding materials in your area, size of cows etc.***

### **Other factors to consider**

- Need for calving pens in addition to housing space
- Sufficient storage of slurry for 6 months/NVZ areas etc
- Labour for bedding cattle
- Cost of straw bedding equipment
- Costs of mucking out and spreading of FYM & slurry
- Manurial value of slurry, straw FYM and wood fine waste

### **Other overhead factors**

It is likely that the main additional cost would be the building costs/depreciation as it is likely that the existing equipment and labour could absorb the extra workload. However, if we assume a total additional overhead of ca £200/cow then the overall Net Benefit would be around £300/cow for 100 cows.

### **Summary**

- Dry suckler cows can be wintered on a restricted silage diet.
- Enough grass can be grown from the same resources in a normal year to sustain a further 100 cows through a normal winter.
- This could be higher still with smaller cows, reduced sheep numbers, more re-seeding, rotational grazing etc.
- However, to winter more cows more buildings are required. If sheep numbers are reduced are there buildings released that are currently used by sheep?
- Calculations have shown that with a herd performing at a high level (reproductive performance, efficient bull finishing and selling surplus females for breeding) that the extra Gross Margin produced can justify expenditure on cattle buildings with the cost spread over 25 years.
- Slatted buildings will also allow the collection of slurry that can be used as a valuable source of nutrition for growing grass.
- Alternatively, can cattle be wintered off the farm in more favourable conditions such as arable farms with plenty of straw and redundant cattle buildings?
- Full benchmarking of cattle and sheep enterprises along with more detailed resource and investment appraisal needs to be carried out to determine the best balance of cattle to sheep and use of resources/buildings etc to achieve the best profitability, also considering personal objectives and work-life balance.

## 1.5 Farmer commentary – Gwion Owen

Drwy wneud costau gwelir bod o gwmpas 70% o gostau cynhyrchu buches sugno yn cael ei gymeryd gan y fuwch. Felly mae unrhyw beth fedraf i wneud i wella perfformiad hynny yn mynd i effeithio yn sylweddol ar fy musnes. Un or rhai mwyaf or rheinny ydi porthiant y fuwch. Nid oeddwn erioed wedi mesur faint oedd y buchod yn fwyta yn flaenorol ar bwriad oedd gweld faint y gallwn arbed dros y gaeaf drwy wneud gwahanol ddieta i'r buchod. Nid ydi pori cynifer o wartheg allan yn bosib ar y ffarm yma.

Gwyddwn bod buwch 600kg yn bwyta llawer llai na buwch 700kg a bod posib cadw oleiaf 15% yn fwy o fuchod gan fy mod wedi cael y cyfartaledd un fuches i lawr i 584kg yn barod ac mae'r gwahaniaeth yn amlwg. Ond y broblem roeddwn yn gael oedd eu bod yn ennill graen dros y gaeaf drwy fwyta gormod o egni ac felly gyda gormod o raen i loua yn y gwanwyn.

Gobeithiwn o wneud y prosiect wybod faint yn union oeddwn angen o wahanol gnydau i wneud y diet rhataf dros y gaeaf i fodloni gofynion y fuwch. Yn anffodus roedd gwellt yn codi yn ei bris a phenderfynnais ddefnyddio seilwair yn unig

Ar ol profi ansawdd y seilwair gwelais nad oedd y fuwch angen fawr ddim o seilwair fel egni. Cyn lleied fel fy mod gan ofn y byddair buchod yn breffu ac yn aniddig drwy'r dydd a nos. Ond o wneud y prosiect yma sylweddolais fod y fuwch yn fodlon ar hyd yn oed llai na beth neillteuwyd iddi. Roedd gennyf 200 o fyrnnau mawr dros ben ac oddeut 80t o seilwair wrth gefn ar ol 7 wythnos yn fwy o aeaf.

Yn dilyn sychder haf 2018 a lefel porthiant is gallaf fynd ymalen i'r gaeaf yn hyderus o gadw'r fuwch ar lai na beth fyddwn wedi disgwyl yn y blynyddoedd blaenorol.

Fy ngobaith i'r dyfodol ydi dewis geneteg fydd yn bwydo yn fwy effeithlon eto i wneud ar lai o fwyd nar fuwch 600 kg gyffredin.

### **Translation**

Through carrying out costings it was apparent that 70% of the costs of keeping a suckler cow herd were borne by the cow herself. Therefore, anything that I can do to improve performance will have a significant impact on my business. One of the biggest issues is feeding the cow herself. I had never before measured how much the cows were eating and one of the main objectives was to see how much could be saved by feeding a different ration to the cows. Outwintering cattle is not possible on this farm so we are limited to a housed winter, feeding predominantly silage.

I knew that a 700 kg cow eats a lot more than a 600 kg cow and that it should be possible to keep 15% more cows if they are smaller. I have already reduced the average cow size to 584kg and the difference is obvious. The main problem was that they would put on weight in winter by eating too much silage and the resultant increase in body condition meant they were potentially going to be calving difficulties in spring.

What was required of the project was to determine how much of various feeds I needed to make the dry cow diet cheaper yet still satisfy the nutritional requirements of the cow. Unfortunately, the cost of straw was increasing so I decided to feed a silage only diet.

After analysing the quality of the silage, I realised that the cows needed a lot less than previously fed to meet their energy requirements. So much less, in fact, that I was worried that they would be noisy and unsettled day and night! However, having done this

project it has shown me that the cows were content with what they had been allocated. In the spring of 2018 I still had 200 bales of silage left along with 80 tonnes of silage in the pit, despite the winter being 7 weeks longer than average.

After the dry summer of 2018 and the reduced levels of silage that has been made I am confident that I can now keep the cows on a lot less than I would usually feed them. In future I hope to use genetic improvements to further improve feed efficiency of the 600kg suckler cow.

## 2 Business Review

### 2.1 Herd baseline data

No benchmarking was carried out during the course of this project. However, Gwion does keep his own detailed physical and financial benchmarks on a spreadsheet.

### 2.2 Potential impact of the project on the business

This project has highlighted the fact that to be viable, suckler herds need to be fertile and producing a high number of calves reared per cow. In addition having an efficient, intensive finishing system is a good use of resources and allows the full efficiency of these cattle to be realised along with exposure to the finished cattle trade.

The ability to restrict winter feeding to what the cattle require as opposed to what they will eat can potentially save over £50/cow/year. While in an ideal world cows would be fed a bulky forage such as straw to fill them up it is recognised that straw is increasingly likely to be expensive so feeding a stemmy, poorer quality, bulky cut silage may be the only cost-effective option.

It has been shown that the business could keep an extra 100 cows using the same grassland and silage resources. This could be even higher if cow size was reduced, sheep numbers were reduced etc. With current, estimated production levels and GM/cow it would be cost effective to erect a slatted building for 100 cows and their progeny. However, this would need funding initially and more detailed analysis needs to be carried out.

Nevertheless, an extra 100 cows could provide an extra net margin of around £30,000 per year representing a good return on investment in additional buildings. A further option would be to winter cattle elsewhere where there are surplus buildings and abundant feed supply such as straw or waste products. However, while these arrangements often look very good on paper there are logistical or management issues that make them difficult to implement.

### 3 Project Review

#### 3.1 SWOT analysis

<b>STRENGTHS</b>	<ul style="list-style-type: none"><li>• Fertile, high performing suckler cows and efficient bull finishing system</li><li>• Farmer is receptive to new ideas and for grass-based systems and is now comfortable with feeding restricted silage diets to dry suckler cows</li><li>• Farmer is keen to make the business more resilient by finding the right enterprise balance to make best use of resources and optimise profit while achieving a good work life balance</li><li>•</li></ul>
<b>WEAKNESSES</b>	<ul style="list-style-type: none"><li>• The farm is not suitable for outwintering so cattle have to be housed in winter.</li></ul>
<b>OPPORTUNITIES</b>	<ul style="list-style-type: none"><li>• Reduce sheep, increase cows to achieve a better enterprise balance</li><li>• Assess options to erect slatted sheds to allow more cows to be wintered</li><li>• Look at alternative wintering options off the farm</li></ul>
<b>THREATS</b>	<ul style="list-style-type: none"><li>• Brexit and uncertainty for livestock production</li><li>• Extreme weather events affecting ground conditions</li></ul>

#### 3.2 Benefits for other Welsh sheep/beef businesses

Recognising that cows can be kept content on a restricted silage diet has implications for the whole beef industry. However, achieving this in practice may require investment in feeding methods and design of pens and feed barriers etc as all cows must be able to feed at the same time.

Keeping suckler cows that are highly fertile, of small to medium body weight and that can still produce a product that is in demand and meets market specification also is applicable to the entire industry. Often beef farmers are too focussed on producing high value store cattle that come at low reproductive performance and high cost that also leaves little margin for the finisher.

In high rainfall areas where outwintering is difficult or not possible the project has highlighted that investment in newer buildings or alternative, off farm wintering may be options that merit further consideration.

From an environmental point of view keeping more stock and producing more kg of meat per hectare will reduce the carbon footprint per kg produced.

### 3.3 Alignment with sheep/beef sectors strategic goals

This work contributes to the Welsh Red Meat Industry's Strategic Action Plan 2015-2020; specifically, in relation to-

- ***The Strategic Priority “Improve production efficiency (thereby increasing quality supply) whilst maintaining the environment and landscape of Wales”***
- ***Strategic Objective 2- “Increase the contribution of the Welsh red meat sector to Welsh Agricultural Output”- specifically Actions***
  - ***“Develop new business-focussed programmes to improve the management, efficiency and profitability of Welsh red meat businesses”***
  - ***“Establish mechanisms that will maximise outputs from grass based systems and reduce reliance on bought in (imported) feed”.***
  - **Inform/educate the industry about cost saving and conservation, energy and water efficiency, ways to reduce waste and ways to improve knowledge, openness and transparency**
  - **Deliver new technology transfer activities that can demonstrate practical industry solutions to encourage uptake of new technology**
  - **Deliver knowledge transfer activities that promote innovation and encourage the uptake of best practice**

The project has resulted in the business being more potentially more profitable due to the reduced winter-feeding costs and the possibility of keeping many more cows from the same grassland resources. The business will have a reduced carbon footprint per kg of beef produced and will be more resilient to withstand the effects of an uncertain political climate.

## 4 Impact on the industry

### 4.1 Impact on individual business

The figures calculated earlier show that, in time, an extra 100 cows could be kept realising an extra net margin of ca £30,000 to the business. This is after the extra overhead costs of erecting new buildings for wintering stock. However, there may be options to modify existing buildings or wintering off farm that would be more cost effective and would merit further consideration.

### 4.2 Impact on wider industry

This project has shown the potential on this farm and there is no reason why many other livestock farm businesses can also benefit from this knowledge.

### **4.3 Impact on Welsh Government's cross cutting and priority themes**

#### **Climate change**

The UK government is legally required to reduce greenhouse gas emissions across agriculture by 80% of the 1990 levels, by 2050 (there is also an interim reduction target of 11% by 2020). Agriculture has to play a key role in achieving these reductions. A Carbon footprint calculation has not been done yet. However, by increasing farm output Hendre Arrddwyfaen will have reduced its impact on the climate.

#### **Animal Health and Welfare (AHW)**

Restricting silage will prevent cows becoming too fit at calving which will reduce calving difficulties and lead to lower calf mortality. When beef calves die they are often replaced by a dairy bred calf which is a potential source of disease that can have a major impact on the health status of the suckler herd.

#### **Future Generations**

This knowledge will allow farms to be more productive per hectare so less land is required for a business to be viable. This will make it easier for young farmers to start their own farming enterprises.

#### **The Natural Environment**

This system could allow higher production from the best land on a farm while more marginal areas can be used for environmental measures.

#### **Tackling Poverty**

By farms being more profitable, typically the additional monies are then reinvested back into the business. This results in more money being spent in the locality with suppliers to the business, resulting in continuation of job retention in local communities.

## **5 Project Team**

Gwion Owen

Gavin Hill, Karen Stewart and Robert Kogan, SAC Consulting.

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