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# Focus Site Project Review

## Oestrous synchronisation in beef cattle

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## 1.0 Summary

### 1.1 Farm details

- 450 acre (180 ha) farm. Farmed by Llyr Hughes and his father Peredur
- 120 suckler cows. Pure and pedigree Limousin plus some graded up from dairy cross cows. Calving in both spring and autumn. Progeny sold as stores or weaned calves. AI programme introduced in 2016 for calving in 2017 and was continued in 2017 for calving in 2018.
- 630 early lambing sheep flock of Suffolk x Mules.
- 65-70 acres/ year of arable cropping- wheat and oats



**Llyr Hughes**

#### **Business Objectives:**

- Increase farm Output by selling heavier calves younger to allow more breeding cows to be kept
- This will allow the overheads incurred by the business to be better utilised.
- Reduce labour workload by tightening calving periods
- Improve management efficiency by having more even batches of calves to manage by age or weight. Also beneficial for selection of breeding heifers.
- Faster genetic gain in the herd as some female progeny would be retained as replacements. Their superior weight gain means that reaching target bulling weights is more achievable and at lower cost.

## 1.2 Project key objectives

- Implement and evaluate an oestrous synchronisation and Artificial Insemination programme on a Welsh suckler beef farm
- Achieve a tighter calving period to better utilise labour
- Evaluate cost/benefit of the system to include labour savings, improved returns and bull replacement and maintenance costs.
- To access higher quality genetics to improve liveweight gains and marketability of the resulting progeny

## 1.3 Project achievements

- Two years of successful synchronisation and AI programme
  - 2016-17 achieved 42 out of 55 in calf- 76.4%
  - 2017-18 achieved 42 out of 51 in calf- 82.3%
- Tighter calving with 75% calving in the first two weeks
  - Higher average weaning/sale weight- estimated at 30 kg worth £72
  - Enables calves to be managed better as a tighter group
  - Allows for better planning of labour, buildings and other resources
  - Allows earlier creep feeding of larger calves
- Open day on May 22<sup>nd</sup>, 2018 to highlight the success of the programme
- Several articles and updates on the project by Farming Connect
- Achievement of higher market prices due to higher quality cattle in addition to weight benefits.

## 1.4 Project Details

### **Pre trial procedures**

While the herd has a good fertility records generally in terms of calves reared and calving pattern any cows that had a history of calving issues or poorer conception rates were not put on the trial. This was to give the best chance of good conception rates. It did, however mean that the other cows that were naturally serviced were not a representative comparison group.

Before synchronisation and AI, the cows were weighed and condition scored and the data recorded using a recording template spreadsheet. Cows that were deemed too lean were not used.

### **Synchronisation programme and AI**

Mike Christie from Lambert, Leonard & May veterinary group was used as the consultant and clinician in year 1 of the trial.

The synchronisation programme comprised of

- Day 1 Insert CIDR & 2.5ml Veterlin
- Day 7 Remove CIDR and inject 2 ml Prelim at 6am
- Day 9 Inject 2.5ml Veterlin at time of first AI
- Day 9 First fixed time AI at 2pm
- Day 10 Second fixed time AI at 12-2pm

Fixed time AI is straightforward and avoids the need for heat detection which is time consuming. Llyr Hughes is qualified to carry out DIY AI and did the AI work himself for repeat inseminations with Genus technicians doing the first, timed AI in 2017. In 2018 Llyr Hughes carried out all the AI himself. The time taken for the synchronisation programme was 12 hours for the first service period. Repeat AI was done by observed heat which is time consuming and it is envisaged that in future natural service would be used for any repeats.

### **Bull used**

The bull used was a Limousin bull Derrygullinane Kingbull. This bull is part of the Genus Limousin bull stud but is owned by Mr Hughes who purchased him in 2016 for 10,800 guineas.

### **Management during the programme**

During the synchronisation and AI phase of the programme the cows were kept in fields close to the steading and handling facilities. This is to facilitate a more efficient routine for any handlings.

The new cattle shed constructed in 2017-18 now has self-locking yokes which has made the tasks even more straightforward. Having excellent handling facilities is important to programmes such as this as the timings are important and there will also be the safety of both livestock and operators to consider.



**Self-locking yoke enables easier management**

## **Calving management**

As due dates were known (generally speaking notwithstanding variations in gestation length) it was possible to plan more carefully for calving and to make better use of labour and facilities. As calving progressed calves born to AI became larger and it is felt that inducing these may be an option in future. The bulls ebv's for birth weight, calving ease and gestation length are also below average. This may have been a contributory factor.

An adequate number of calving pens is required when synchronising cattle and it is also important that they are cleaned between cows.

Calves were vigorous at birth and most suckled without assistance. This was the same for the naturally serviced group signifying good management of cow nutrition and body condition resulting in strong vigorous calves and plenty of colostrum.

## **Calf management**

As the calves were born in a tight batch it was possible to keep a close eye on them to pre-empt any health issues that may arise. They were weighed, dehorned and males castrated at 2 weeks of age. Cows were vaccinated for BVD, IBR and drenched. They were turned out when grass was available and ground conditions allowed.

Calves were creep fed from early August to further boost calf growth rates. Creep feeding is a cost-effective method to achieve this as young cattle will have a good feed conversion rate and a financial benefit will be seen in liveweight gain over and above the cost of the feed. In addition, it helps to acclimatise the calf's rumen to hard feeding which will be important post weaning and when sold to another farm. It will also reduce weaning check and should lead to fewer stresses on the calf at weaning which will help to avoid pneumonia.

## **Costs involved**

### **2016-17**

- Vet & drugs           £26.33/cow
- AI costs               £18.00/cow
- Farm labour         £4.30/cow
- Total                   £48.63/cow

### **2017-18**

- Total                   £24/cow (DIY AI, semen owned, farm labour)

Farming Connect estimates that using 2 stock bulls would cost approx.. £63/cow so a saving of £14.37 per cow is achievable (based on year 1 data). In addition, it is estimated that due to the tight, early calving and superior genetics that calves were ca 30kg heavier at weaning which is worth a further £72/calf. The fact that they were this heavy meant they could be sold at weaning so no further costs would be incurred while later born calves may need to be kept for longer, incurring feed and other costs until they reached sale weight- or they would have to be sold at lighter weights.

Note that this is not a true replicated trial as the cows put to AI were carefully selected, in good condition with no previous history of calving issues. In addition, as the AI bull is owned by the farm there are no semen costs. The bull could, in theory, also be used

for natural service so that the genetics are used over most of the herd, reducing the genetic element of the benefit (but without the benefit of the earlier, tighter calvings).

### **Physical results**

#### **2016-17**

- 55 cows AI'd
- 42 held to AI
- 76.4% success rate
- Average weight 294 kg at sale (male and female)
- Av price per head £820 or £2.79/kg

#### **2017-18**

- 51 cows AI'd
- 42 held to AI
- 82.3% success rate
- Steers 330 kg at sale, realising £920 or £2.78/kg
- Heifers ca 280 kg realising £780

## 1.5 Farmer commentary – Llyr Hughes

Selling calves at weaning has been part of the business plan for many years. Calf weight and uniformity is essential at sale day to ensure maximum return and to retain regular customers. Variation in age and size has a significant impact on calf value on sale day, highlighting the importance of consistency and a tight calving pattern.

We therefore feel to maximise productivity from the suckler cow enterprise, synchronisation was the next step to increase calf sales at weaning and providing cow fertility and body condition are well managed for optimum conception rates.

Synchronising also makes the best use of labour and shed space available at specific times of year.

## 2 Business Review

### 2.1 Herd baseline data

No financial benchmarking was carried out during this project.

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

This project has shown that investing in a synchronisation and AI programme can have a significant financial benefit in addition to facilitating more efficient use of labour and resources. However, to achieve these benefits it is accepted that attention to detail is required to succeed and that some investment in equipment and handling facilities may also be required. This increased level of husbandry is a positive factor that could then permeate into other aspects of the business such as grassland and crop management.

Perhaps a more significant factor could be that if more calves can be sold earlier, for example at weaning, then breeding cow numbers can be increased to spread overhead costs and provide increased farm Output. This also fits in with likely future trends in finishing cattle at lighter weights as calves can be sold younger and put on a finishing ration earlier without check, improving the overall efficiency of beef production and reducing the carbon footprint per kg of beef at the same time.

Having even batches of calves has significant management advantages all the way from birth to sale. Any treatments are more tailored to an even sized batch while grouping for sale is easier. In addition, heifer replacements will be more even and can be chosen from early born calves, which will make it easier to reach bulling weights and keep the herd fertility and calving pattern tighter in future.

There are also benefits in terms of Biosecurity as fewer bull purchases are required and also for genetic improvement as the bulls available by AI are generally of a much higher standard than a farm of this size could purchase. In this case though, the bull was owned by the business as part of the pedigree Limousin side of the business. Having fewer bulls on farm will also have potential Health and Safety benefits.



### 3 Project Review

#### 3.1 SWOT analysis

|                      |  |
|----------------------|--|
| <b>STRENGTHS</b>     | <ul style="list-style-type: none"><li>• Innovative approach to breeding management</li><li>• Capitalise on existing high-quality genetics available</li><li>• Can increase farm Output by breeding more cattle for sale also of higher quality</li><li>• Improved Biosecurity</li></ul>  |
| <b>WEAKNESSES</b>    | <ul style="list-style-type: none"><li>• Some investment required in facilities – this should always be evaluated in the usual way taking into account cost-benefit, improvements to efficiency and Health &amp; Safe</li></ul>   |
| <b>OPPORTUNITIES</b> | <ul style="list-style-type: none"><li>• Roll out over whole herd, increase stock numbers, increase farm GM and spread overheads</li><li>• Similarly improve Biosecurity further by reducing the need for live bull purchases</li><li>• Links with finishers or regular buyers to further achieve efficiencies in the beef production chain</li></ul> |
| <b>THREATS</b>       | <ul style="list-style-type: none"><li>• Brexit and uncertainty for livestock production</li><li>• Extreme weather events affecting the synchronisation programme</li></ul>   |

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

From a KT perspective this project has proved useful already in terms of farm open day and articles etc. Many Welsh livestock farm businesses will benefit from the findings of the project. The principles, techniques and equipment are available to all suckler producers.

Other farmers could benefit using the techniques outlined in this project. Often small suckler herds will have more bull power than the size of the herd will dictate. Bulls also often need to be “jack of all trades”, ie used for all purposes while in reality the requirements for maternal bulls (for breeding replacements) and terminal bulls are different. Using Synchro & AI is an easy and cost-effective way to get around these issues.

From an environmental point of view keeping more stock and producing more kg of meat will reduce the carbon footprint per kg produced. For the farmer though, the main issue will be to increase Output and make the existing overheads work harder.

#### 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 success of the project has resulted in the business being more profitable due to increased farm output without a significant increase in overheads. The investment has shown a positive annual return and payback will be rapid. 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 show a saving of £14.37/cow compared to having another bull which translates to £1437 in a 100 cow herd. In addition the improved weight and quality of the resultant progeny is estimated to be a further £72/calf -30 kg @ £2.40/kg- in this case though the calves have realised £2.78/kg which could increase this benefit further to over £80/hd.

### 4.2 Impact on wider industry

There is currently much interest in improving suckler cow efficiency and returns. Keeping several bulls in herds of under 100 is a significant cost to the industry which could be reduced by adopting an AI programme.

### 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 Fferam Gyd will have reduced its impact on the climate.

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

Improving handling facilities which are required for this type of work will improve the Health & Welfare of the animals. In addition having stock that can be managed in tighter management groups by age, weight or category (both calves and breeding cows) their nutrition and welfare will be enhanced.

### **Future Generations**

The financial benefits outlined earlier make this type of work beneficial and more attractive to younger farmers and new entrants.

### **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.

### **Health & Safety**

The reduction in bulls on farm and associated handling, swapping around etc will improve H&S issues. In addition improving handling facilities to facilitate this type of work will have benefits beyond the synchronisation and AI work.

## **5 Project Team**

Llyr & Peredur Hughes, participating farmers

Emyr Owen & Gwawr Hughes, Farming Connect/Menter a Busnes

Mike Christie, Lambert, Leonard & May Veterinary group