RHWYDWAITH ARDDANGOS DEMONSTRATION NETWORK

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Demonstration Sites

Year 1 Update

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RHWYDWAITH ARDDANGOS DEMONSTRATION NETWORK

FOREWORD

Recent months have proved challenging for all, however, it has become clear during this period that farmers and foresters in Wales are incredibly resilient and remain proactive in improving their businesses throughout difficult periods.

Since 2019, our network of 18 demonstration sites across Wales have been exploring new innovative ways of working, with the shared vision of improving business efficiency and productivity. Projects include a wide range of topics, harnessing new technologies to collect useful data which can help our demonstration farmers make justified management decisions on a daily basis.

This booklet provides an insight into the project work carried out on demonstration sites across Wales during their first year. We hope that this work and the results gained from undertaking these projects will help you make informed changes and improvements to your own business, with the objective of building a profitable and sustainable business with the capability of adapting to change.

Dewi Hughes
Technical Development Manager, Farming Connect

Wern, Y Foel, Welshpool, Powys

OSIAN WILLIAMS AND FAMILY

Wern is a 486 hectare (ha) mixed farm. The poultry enterprise was established in 2011 and houses 32,000 Bovan Brown hens on a multi-tier equipment system.

Aims:

- → Maximise numbers of eggs produced per bird - target of above 340 eggs/bird/flock
- → Maintain low flock mortality rate of between 2.5 - 3.5%
- → Focus on improving water quality and the shed environment

Catherine Price, Farming Connect Technical Officer:

"One of the main reasons Osian makes an excellent demonstration site farmer is his meticulous business and bird management. This allows us to carry out reliable trials and it helps Osian to achieve high performance from his flocks."

Project 1 - Reducing second quality eggs (concluded March 2020)

The project explored how second quality eggs can be reduced. The device used contained multiple sensors that measured the impact of force (G) that an egg experiences during transportation from the nest box to the tray. The exercise demonstrated that, by using a device to identify high impact areas and then making simple adjustments to these areas, considerable financial savings can be made. Adjustments included tightening conveyor belts, altering gradients, inserting plastic crash barriers at specific transfer points and reducing egg belt speed.

Based on an average graded egg price of approximately 86p per dozen, 1% seconds would equate in monetary value to 0.655p/doz. If each bird lays 26 dozen eggs, 1% seconds is equal to 17p per bird, which over a 32,000 bird unit would mean a saving of £5,449.60 per flock. Egg producers with graded second quality eggs at above 5% could particularly benefit from using a device such as this.

Project 2 - Controlling air, litter and water quality to enhance bird health and increase productivity (May 2020 - August 2022)

The aim of the project is to achieve an optimal environment for free-range laying chickens i.e. air, litter and water quality to increase bird health and thus productivity and profitability. A combination approach is being applied to reduce bacterial loading by using non-infective bacteria to improve air, litter and water quality and introducing herbs and vitamins to the bird's diet to enable them to naturally manage red mite infestations and improve egg shell quality. A LoRaWAN sensor system and dashboard measuring ammonia, carbon dioxide, humidity and temperature was installed within the buildings. This will enable the farmer to modulate the delivery of the management plan accordingly.

Between 26 June 2020 and 21 July 2020, ammonia was recorded at between 10-15ppm. One of the project aims is to reduce this to at least 5ppm in the new flock using the automated system. With the new flock being placed in the shed since 10 September 2020, data will continue to be collected and products applied accordingly to achieve optimal environment conditions.

For more information, and for regular updates on project work at Wern, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/wern

Erw Fawr, Llanynghenedl, Anglesey

CEREDIG EVANS AND FAMILY

Ceredig and family manage 192 hectares of predominantly grass along with maize and keep 300 pedigree Holstein cows, which calves all year round (AYR). They supply their milk to Arla.

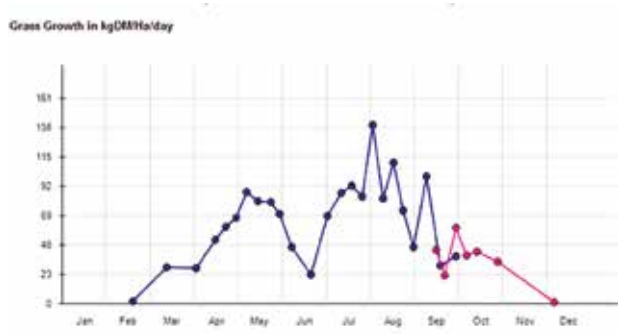
Aims:

- → Maximise litres from forage – aim for 4,000 litres per cow
- → Utilise more grazed grass with a group of in-calf milking cows – aim for 85% utilisation
- → Use grass management software and grass measuring to improve grazing allocation by farm staff
- → Reduce fresh cow problems and lameness through early detection by using the latest in intelligent technology

Project 1 - Increasing milk from grazed grass within an AYR calving herd (concluded October 2020)

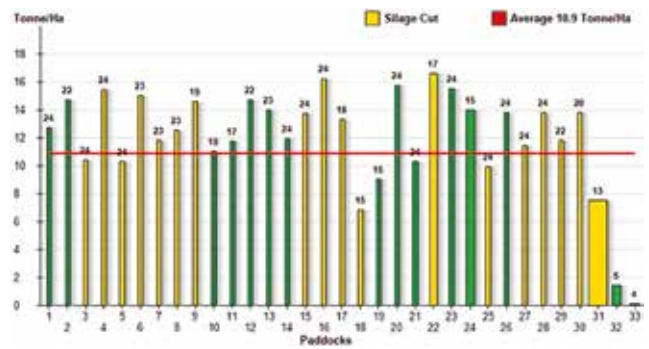
This project focussed on maximising grazing days through earlier turnout, improving utilisation and extending grazing through to the end of October, specifically for the low yielding group of 150 in-calf cows. Managing grass cover and quality throughout the year is key to achieving this and, therefore, knowing what grass growth rates are in relation to the demand will allow for effective feed budgeting.

Graph 1. Daily grass growth kgDM/ha/day from September 2019 (pink) to October 2020 (blue)



Individual paddock performance varied significantly. Some paddocks achieved growth of over 16 tonnes DM/ha and poorer performing paddocks produced under 10 tonnes DM/ha. Assuming the value of a tonne of dry matter (DM) of grazed grass is £60/tonne, the growth difference would be the equivalent of £360/ha.

Graph 2. Average tonnes of grass DM grown and individual paddock performance (18/02/2020 -28/09/2020)



Equally important is the effective utilisation of this additional grown grass. For example, the difference between 60% utilisation and 85% of the average tonnage grown on a similar sized unit to Erw Fawr (54ha) (10.9t DM/ha) is 2.71 tonnes/ha. This equates to a potential £9,244 worth of grazed grass that could be utilised based on the whole grazing platform. Combining increased utilisation and growth could potentially equate financially to £27,117.45 a year.

Project 2 - Use of intelligent technology for early indication of lameness and body condition (Due to start early 2021).

The benefits of intelligent technology will be explored to assist cow management during early lactation using sophisticated software. This will be linked to existing farm CCTV hardware that will measure the biometric parameters of individual cows to identify changes in mobility and body condition. This early warning system will allow for rapid and targeted action through measures such as foot-trimming or nutrition management of individual cows or groups.

Rhys Davies, Technical Officer:

"One of the main reasons Ceredig makes an excellent demonstration site farmer is his fantastic attitude and detail towards the improvement of his cows' performance, especially from forage. The way Ceredig is trying to manage his high yielding herd of Holsteins can offer similar farms a profitable alternative to housing cows all year round."

For more information, and for regular updates on project work at Erw Fawr, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/erw-fawr

Graig Olway, Llangeview, Usk

RUSSELL MORGAN AND FAMILY

Graig Olway is a 240 hectare dairy, beef and arable business run by Russell Morgan and family. In 2013, three milking robots were installed for the 170 cow high yielding Holstein herd.

Aims:

- → Foot health in a robotic milking system: alternatives to footbathing. (In a conventional milking system footbathing can easily be done at the exit point but this is not possible in a robotic system)
- → To consider the best and most appropriate ways to improve infrastructure, including slurry and silage storage

Project 1 - Focus on feet: reducing lameness in a robotic milking dairy herd (November 2019 - August 2022)

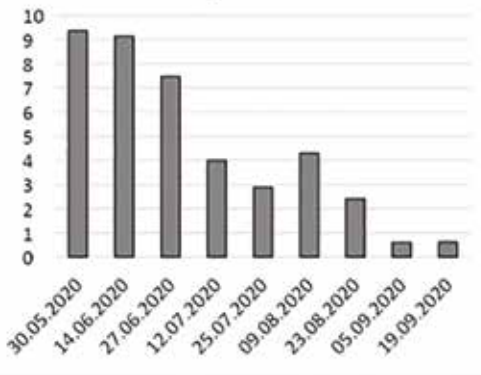
Aims:

- → Reduce lameness % from 39% to less than 10%
- → Reduce % of severely lame cows to 0
- → Introduce a mobility management timetable as part of the farm routine

In January 2020, Sara Pedersen, a specialist in cow foot health, mobility scored the entire dairy herd at Graig Olway. Sara also scored for Digital Dermatitis (DD) at the feed barrier and in the crush. All cows with DD were treated, re-examined for two consecutive days and re-treated where necessary. Sara provided the farm with a six month action plan. This included increasing the number of cows routinely trimmed, increasing frequency of scraping housing out, replacing mattresses and rubber matting around robots and improving biosecurity between groups. Actions are being implemented over varying periods, enabling cost and workload to be spread out.

A team member on the farm has completed a Register of Mobility Scorers (RoMS) course and is now mobility scoring the herd fortnightly prior to foot trimmer visits, allowing early detection of any new lame cases and prompt treatment. All in-calf heifers, cows to be dried off and those 60-90 days in milk are now part of routine trims with new lameness cases and re-checks also presented to the foot trimmer.

% of severely lame cows at Graig Olway



By September 2020, the proportion of severely lame cows had reduced significantly to less than 1%. This was due to a combination of earlier treatment and culling of long-term chronically affected cows. Unfortunately, the overall herd lameness levels have not yet followed the same decline due to a combination of the effects of heat stress and concerns regarding treatment response. Now that the cow comfort issues have been addressed the next steps are to explore mechanical ventilation options ready for next spring/summer and to investigate why cows aren't responding to foot trimming as they would be expected to. When evaluating the financial impact of lameness, Sara Pederson explains that a lame cow costs £1.50/day, and a severely lame cow costs on average £4.50/day. At the start of the project, lameness at Graig Olway was costing £138/day, with the latest mobility scores indicating a cost of £100/day – a saving of £13,870 on an annual basis.

Russell Morgan:

"The lameness project is going well and it's good to go into detail on not only foot health but also cow comfort and the environment; you can't rush the process as it takes time for cows to recover. Working with different individuals with various specialisms has opened my eyes for further improvements."

Project 2 - Technical considerations when improving infrastructure (November 2020 - August 2022)

The second project is in the early stages. Russell aims to increase cow numbers by 50 milking cows plus replacements in the next two years, but the slurry storage capacity may need altering to enable this. Eoin Murphy from ADAS has been running through the considerations and options when increasing slurry storage capacity from water management and location suitability.

For more information, and for regular updates on project work at Graig Olway, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/graig-olway

Nantglas, Talog, Carmarthenshire

IWAN FRANCIS AND FAMILY

Nantglas is a 55 hectare dairy farm run by Iwan Francis. An additional 75ha of off-lying land is rented to support the herd. The grazing platform is 58ha and three 40ha crops of clamp silage are cut annually and an additional 300 big bales of silage are harvested. The herd is a split block calving herd with 100 cows calving in the spring and 100 in the autumn.

Aims:

- → Fertility can be a challenge due to having two calving blocks. Aim to reduce calving period from 12 weeks to 9 weeks.
- → Soil and grassland management: reducing reliance on purchased feeds by improving the performance of the farm's grassland

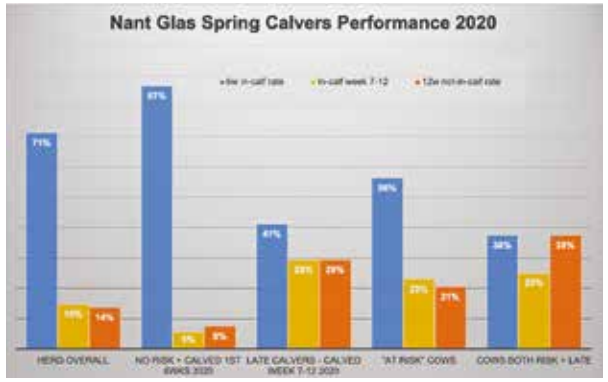
Project 1 - Improving fertility of a split block calving system (January 2020 - August 2022)

Aims:

- → Tighten calving blocks to 90% 6-week calved rate (currently 75%)
- → Getting cows back in-calf earlier to 90% 6-week in-calf rate (currently 75%)
- → Reduce 12 week not-in-calf rate to 10% (currently 14%)

Spring 2020 calving went well for Iwan. 81% of the herd calved within the first six weeks, with only 2% losses over the 12 week calving period. Alta collars were put on the spring calving herd, proving to be a helpful tool in data collection and management such as better targeted fertility treatments. It also allowed for resource efficiency improvement, including labour and AI.

Kate Burnby, a specialist in dairy fertility, put together a mating plan for Nantglas. The first two rounds (AI) of mating went very well, achieving a 71% (target 78%) 6-week in-calf rate. However, after the sixth week when the sweeper bull went in, performance dropped, resulting in a 14% 12-week empty rate, which raised questions. Although, as seen in Graph 1, a significant proportion of the empty cows were cows that were later calving, had calving issues/disease, or over/under conditioned i.e. they were identified as being "at risk". The heifer synchrony worked extremely well with all 29 heifers holding and all bar two due to calve in the first four weeks of calving next spring. This means that Iwan is now on track to calve 100 animals in the first 42 days next spring.



Iwan Francis:

"Achieving a 71% 6-week in-calf rate in the first year of the project shows how small changes make a great difference. Kate has been great to work with, she's introduced me to more performance data, which helps me with my decisions."

Project 2 - Increasing milk from forage (August 2020 - August 2022)

The second project is in two parts; improving silage quality and increasing grass utilisation to 85%. Iwan has been measuring the grazing platform fortnightly and recording on AgriNet, using the information to aid decision making. Independent consultant Nigel Howells will be advising on grazing management, fertiliser and slurry applications, aiming to improve pasture quality. Silage was analysed for quality in September 2020 which showed a large variation in dry matter (DM) %, therefore, Iwan will be working with Silage Solutions to reduce the variation and improve consistency in silage quality.

For more information, and for regular updates on project work at Nantglas, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/nantglas

Mountjoy Farm, Treffgarne, Pembrokeshire

WILL AND HEATHER HANNAH AND FAMILY

Mountjoy is a 186 hectare all grass dairy unit. The herd is made up of 370 mainly New Zealand Friesian dairy cows that calve in the spring.

Will identified the single biggest impact to the business' bottom line could come from driving milk solids output. Increasing the average £SCI (Spring Calving Index) of the herd and raising milk solids to 520kg would improve the bottom line by £24,000 net.

Aims:

→ Genomic testing will help select the best herd replacements to match the requirements of the farm's system, with real gains made by eliminating poor genetics, so that only the very best animals are retained in the herd.

→ Reduce their reliance on bagged nitrogen whilst still growing the same amount of grass through the introduction of more clover into the swards.

Project 1 - Selecting for efficient genetics in a spring calving herd (December 2019 - August 2022)

Ear tissue samples were collected from 95 R2 heifers in December 2019 to produce £SCI.

Priority traits for Will include: • Weighted fat and protein • Positive fertility • Positive locomotion • Body depth and width • Target cow weight of 520-540kg

Heifers bred from grazing New Zealand and Irish Friesian type bulls did not rank as well as hoped, with the in-calf heifer average falling just within the top 25% £SCI for all youngstock in the UK, regardless of system.

Examples of results include:

→ Average TB resistance: 0.066 – ranging across the herd from 2.1 to -1.3; the higher the number, the greater the resistance to TB the animal has.

→ Average £SCI: £115.14 – ranging across the herd from a plus of £233 to minus £12.

The top 25% heifers ranked on milk solids, averaged 24.7kg butterfat and protein (F+P) compared to the bottom 25% who averaged 4.75kg F+P. The majority of these bottom ranked heifers are bred from the farm's own Friesian stock bull. Reliability of these values have increased from 30-33% to 60-69% with the use of genomic testing and against the £SCI base.

There's a difference of 24.7kg total fat and protein expected between the highest and lowest ranked heifer with a 305 day lactation.

Mountjoy is located in a high TB area. The level of TB resistance will also be monitored carefully during this project, particularly those heifers with a higher genomic score. In addition, genomic data will be compared to actual milk recorded production. As part of this project, Will will continue to test new heifers.

Project 2 - Reducing nitrogen input and incorporating more clover into the sward (July 2020 - August 2022)

Measures to increase nitrogen use efficiency will focus on improving natural nitrogen supply by increasing soil nitrogen turnover and clover fixation, adopting best practices for applications of both fertilisers and manures. Paddocks will be monitored through species counts and overseeded with clover if below the required 20+% of clover in the sward.

LoRaWAN – A gateway has been installed on the gable end of the cubicle shed and linked to sensors monitoring temperature and humidity levels. Will is going to use an additional distance sensor installed on the inside lid of their 23,000 litre water storage tank to monitor water volume use over 12 months. He will also be able to access this data via a dashboard so that he can remotely measure usage.

Will Hannah:

"We have really enjoyed the opportunities that being a demonstration site has opened up for us over the past year. The expert advice and Farming Connect support has allowed us to conduct on-farm trials that will hopefully mean we can improve the profitability and sustainability of our business. In turn, hopefully it will allow others to copy the best bits benefiting their businesses too."

For more information, and for regular updates on project work at Mountjoy, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/mountjoy

Bodwi, Mynytho, Pwllheli, Gwynedd

EDWARD, JACKIE AND ELLIS GRIFFITH

Bodwi is a lowland beef and sheep farm, which runs a pedigree Stabiliser herd of 160 cows and 1,150 Suffolk-cross ewes. The total area farmed is 247 hectares.

Aims:

- Compare the profitability of different beef finishing systems
- Explore the merits of cell grazing for beef cattle to sustainably increase production while lowering the costs

Project 1: Revising the bull beef enterprise by exploring the potential benefits of homegrown crops (March 2020 - August 2022)

Aims:

The main aim of the project is to assess the effect of producing homegrown feed on the profitability of the bull beef enterprise, reducing the reliance on bought-in concentrates.

At present, the male calves are reared as bull beef, with a small proportion retained as stock bulls, and the remainder finished at home or sent away to a beef finishing unit. However, the enterprise requires a substantial amount of purchased inputs to finish the bulls at 16 months.

The bull calves were weaned in October 2019. In January 2020, a total of 34 bulls were selected to be finished at home on a diet of ad-lib concentrates and straw, achieving an average daily liveweight gain (DLWG) of 1.9kg from weaning up until the end of April. An additional 40 bulls were sent away to a beef finishing unit and fed on a Total Mixed Ration. At the beef finishing unit, feed intake was weighed daily, with a monthly charge for total feed consumption. In addition to this, a fixed daily charge was applied per head to account for bedding and labour costs. Bull beef liveweight gain (LWG) and cost of production has been quantified for both systems in Table 1, indicating a saving of £0.11/kg LWG from finishing the bull beef from home in comparison with the beef finishing unit.

Figure 1. Spring barley at Bodwi

Table 1: Bull beef liveweight gain and cost of production

Variables	Finished at home	Beef finishing unit
LW (beginning)	403 kg	342 kg
LW (at slaughter)	662 kg	658 kg
Average LWG/head	259 kg	316 kg
Total cost	**£1.62/kg LWG**	**£1.73/kg LWG**

Approximately 11 hectares of spring barley has been sown and harvested. The barley will be treated as Alkagrain to feed over the winter, with a nutritionist's input to determine a suitable finishing diet. The next steps involve evaluating the cost of production of the homegrown feed system over the winter as well as monitoring the bulls' performance.

A second project will be implemented at Bodwi, as a follow-on from the first project. This project will be looking to assess the carbon footprint of the feeding systems compared in the first project – bull beef finished on a) bought-in feed and b) homegrown barley and silage. The environmental impact associated with various feeding options will be quantified. (January 2021 - August 2022)

Edward and Ellis Griffith:

"Being a demonstration site is an excellent opportunity for us to obtain advice on reducing our beef production costs and to see if the changes would also lower the carbon footprint of our suckler herd."

For more information, and for regular updates on project work at Bodwi, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/bodwi

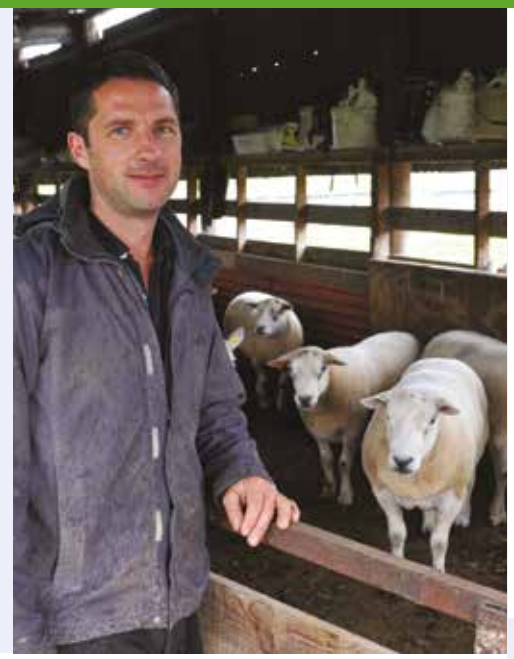
Halghton Hall, Bangor-on-Dee, Wrexham

DAVID LEWIS

Halghton Hall is a lowland beef and sheep farm, which runs a flock of 800 indoor lambing ewes. Charolais and Limousin beef cattle are purchased and finished on grass silage and concentrates at 18-23 months old. The total area farmed is 202 hectares.

Aims:

- Improve the specification and marketability of lambs by developing flock genetics
- To explore opportunities for reducing the cost of production without compromising output
- Investigate ways of how to best manage the woodlands and hedgerows at Halghton Hall, recognising their importance in carbon capture and adding value to any timber generated



Project 1: Best practice management for ewe lambs as they rear for the first time and are introduced into the main flock (November 2019 - August 2022)

Aims:

The main aim of the project is to determine the best management practices for ewe lambs as they rear for the first time and are introduced into the main flock. In doing so, the objective is to explore the optimum conception weight and condition for ewe lambs at Halghton Hall.

KPIs:

- Achieve a minimum weight at mating of 60% mature weight
- Achieve a scanning percentage of 115% for ewe lambs
- Achieve a conception rate of >75% of ewe lambs in-lamb
- Achieve a target weight at lambing and as yearlings of 80% of mature weight

The percentage of ewe lambs that are in-lamb at Halghton Hall has averaged at 60% over recent years, but David has a view to increase this percentage over the course of the project. For the first year of the project, the ewe lambs were divided into three groups based on their weights – Group 1) < 41 kg, Group 2) 41-45 kg, and Group 3) > 45 kg. The rams only ran with the ewe lambs for one cycle at tupping, which resulted in an overall average scanning percentage, and ewe lambs in-lamb percentage of 71% and 57% respectively. Results from the first year indicated that weight at tupping can influence the total number of ewe lambs in-lamb, with heavier ewe lambs achieving the highest scanning and ewe lambs in-lamb percentage from the weight groups, as seen in Figure 1.

The ewe lambs performed remarkably well at lambing, with very little issues, and the lambs achieving a daily liveweight gain (DLWG) of over 0.4 kg within the first 40 days post birth. Data from the first year will be used as a benchmark for the next breeding programme.

In September 2020, Aberfield and Mule ewe lambs for year 2 of the project were weighed, averaging 45kg. The rams will run with the ewe lambs for two oestrous cycles this year. The weights of the lambs will be recorded at scanning and lambing data will be collected in the spring. Data on the number of lambs reared will also be recorded.

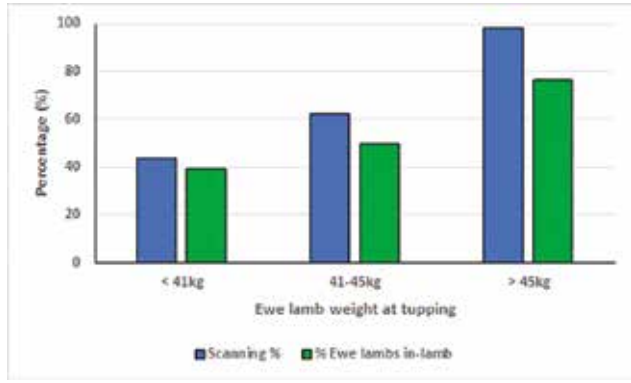


Figure 1. Scanning and percentage of ewe lambs in- lamb

David Lewis:

"To date, data at Halghton Hall has shown clear trends emerging between ewe lamb weights and conception rates. To increase the accuracy of the data set, it is intended that subsequent years will explore individual stock recording and performance. This expansion of recording will enable trends to be established not only for weights but between differing breeds and the effect of lambing ewe lambs in their first year on future performance. Once finalised the data should provide a clear base from which producers can determine whether it's financially beneficial to lamb ewe lambs in their first year."

A second project will be developed at Halghton Hall, exploring the impact of hedgerow restoration and the creation of wildlife corridors on the farm's carbon capture and sequestration levels (to commence in January 2021).

For more information, and for regular updates on project work at Halghton Hall, please visit; https://businesswales.gov.wales/farmingconnect/our-farms/projects/halghton-hall

Moelogan Fawr, Llanrwst, Conwy

LLION AND SIÂN JONES

Moelogan Fawr is a 304 hectare upland beef and sheep farm, which runs a performance recorded Stabiliser beef herd of 100 suckler cows and 39 heifers and a flock of 1,000 Welsh, Cheviot and crossbred ewes.

Aims:

- Increase the efficiency of the business by using technology to determine which animals perform the best in the system and to make decisions based on that data
- Evaluate the costs of other beef finishing systems and consider if any of these might provide a better financial return
- Consider ways of tightening up the calving and lambing periods
- Consider the value of Total Mixed Ration (TMR) in the beef and sheep system

Project 1: Using technology to increase health monitoring - improving calving pattern, conception rates and reducing calving losses (March 2020 - August 2022)

Aims:

The main aim of the project is to reduce the calving period by means of increasing data collection and use of innovative technology, with the following objectives:

- Reducing labour inputs by using technology to improve heat detection
- Reduce the cost of veterinary fertility and health treatments
- Tightening the calving pattern, increasing conception rates

A total of 39 smaXtec rumen boluses were administered to yearling Stabiliser heifers in March 2020. A base station consisting of a trailer, solar power unit and receiver was set-up to gather data from the boluses and upload to the cloud component, sending notifications via a mobile phone app.

Core temperature and activity were recorded, with the insemination window detected via each heifer's peak activity data, allowing for in-house AI at the most appropriate time within the cycle.

Oestrus was detected in 92% of the heifers via both the smaXtec boluses notifications and visual observation. The boluses detected an additional 5% of the heifers that were exhibiting silent heats. The remaining 3% were detected by visual observation alone (Figure 1).

The base station continues to gather health data by monitoring temperature fluctuations and drinking status, leading to early detection of any issues. The technology should also be of assistance during the calving period in the spring, as Llion and Siân will receive direct early calving alerts.

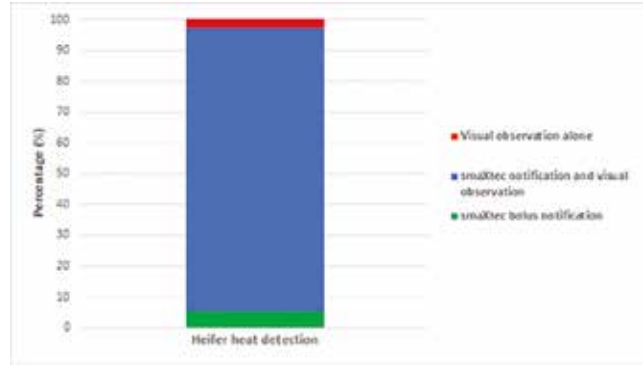


Figure 1. Heifer heat detection record

Llion and Siân Jones:

"Since administrating the boluses to the heifers, it has been interesting to compare smaXtec's heat detection notifications with our visual observations. One challenge was ensuring that the heifers were in close proximity to the base station in order to gather the data. It will be interesting to view the scanning results, and relate them to the data obtained from the boluses."

Project 2: Detailed flock recording to aid selection of future replacements and to make informed breeding decisions

Plans are underway for the second project, (to commence in December 2020), which will focus on monitoring flock performance in order to facilitate breeding decisions for retaining replacements and improve the farm's profit margin. Additionally, discussions are taking place to make use of a LoRaWAN humidity sensor to monitor cattle housing conditions during the winter, which will enable Llion and Siân to modify the in-house environment if required.

For more information, and for regular updates on project work at Moelogan Fawr, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/moelogan-fawr

Pentre Farm, Pentrecelyn, Ruthin, Denbighshire

HUGH JONES

Pentre Farm is a 49 hectare upland farm. The closed flock of 350 ewes is mostly pedigree Lleyn but include 70 Suffolk x Lleyns. Up to 35 beef bull calves are purchased annually at between 4-8 weeks old.

Aims:

- Improve grass quality through rotational grazing
- Consider income streams from woodland
- Investigate opportunities to capitalise on carbon capture

Project 1: Evaluating the effectiveness of chicory in Welsh sheep systems (April 2020 - August 2022)

Aims:

The main aim of the project is to evaluate the effectiveness of the inclusion of chicory into the grazed sward on the diet's nutrient and mineral values, lamb growth rates and internal parasite burdens.

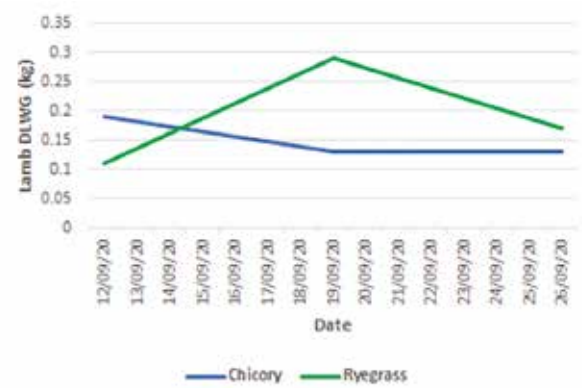
Approximately 1.82 hectares of land has been reseeded with a standard ryegrass-based mixture including clover, and another 1.76 hectares sown with a standard grass mixture including chicory. Following a delayed start due to drought conditions, sward establishment has been rapid with abundant pasture produced by turn out at the end of August (over 4,000kgDM/ha). The average growth after one grazing rotation was 2,700kgDM/ha.

Lambs were grouped to graze both treatments, with both leys sub-divided into paddocks to allow for fresh grazing. Prior to turnout, blood tests were conducted on a sample of the lambs to determine the copper, selenium and cobalt concentrations. Furthermore, faecal egg count (FEC) tests were carried out to monitor internal worm burdens.

Figure 1. Lambs grazing reseed at Pentre Farm.

The lambs have been weighed at regular intervals, with those reaching approximately 40kg liveweight selected to be sold. Preliminary results have indicated an average daily liveweight gain (DLWG) of 0.16kg for the lambs grazing the two treatments (Figure 2). There has been a notable difference in FEC between treatments, with the lambs grazing the chicory recording FECs four times lower (250 epg) than that of the lambs grazing the ryegrass-based ley (1,000 epg). The blood tests indicated that the copper, selenium and cobalt concentrations were satisfactory for the majority of the lambs, with one lamb a fraction low in cobalt and another slightly low in selenium, although insignificant, and therefore no treatment required.

Figure 2. Lamb DLWG from grazing treatments.



Hugh Jones:

"The technical advice, new ideas and being able to bounce my own good or bad ideas with various specialist advisers and Farming Connect staff has been an enormous help for me in moving towards a lower input pasture-based system."

Lamb weights will continue to be monitored in the second growing season. Further blood and FEC testing will also be carried out post grazing to monitor mineral content and internal parasite burden. Further work will be implemented, developing the current paddock system and exploring the opportunities for setting up a specific rotational grazing system to maximise the utilisation of the leys and assess the impact on livestock performance. A second project at Pentre Farm will focus on ewe health and nutrition (due to start in December 2020).

For more information, and for regular updates on project work at Pentre Farm, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/pentre-farm

Dolygarn, Llanbadarn Fynydd, Llandrindod Wells, Powys

JAMES POWELL

Dolygarn is a 182 hectare upland farm farmed by James Powell and his father and uncle, Matthew and Tudor. The grassland farm rises from 1,000 feet to 1,500 feet, running a flock of 1,000 Aberfield and Welsh ewes and a herd of 30 suckler cows.

Aims:

- To understand the symbiosis between plant life, soil life and animal life to improve soils in order to increase the amount of winter fodder grown.
- Consider ways of reducing inputs by growing diverse species.
- Consider ways of subdividing grazing infrastructure to maximise grass utilisation.

James Powell:

"Agriculture's impact on the environment is becoming more and more important, so taking part in this project, and getting the chance to work with experts such as Charlie Morgan will hopefully show how we are being proactive in mitigating environmental impact."

Project 1: Alternative forage options to improve productivity and reduce environmental impact on an upland farm (October 2019 - August 2022)

Aims:

This project aims to investigate alternative wintering crops in comparison to the conventional brassica (stubble turnips or swedes) system to demonstrate the benefits of soil anchorage and nutrient retention potential of a grass-based crop, with the objective of reducing soil and nutrient run-off.

KPIs:

1. Reduce wintering costs
2. Increase quantity and utilisation of grass grown (DM/ha) by 10%
3. Improve finishing weights of lambs by 5% and reduce days to slaughter with improved grazing options

Two adjacent fields were identified for this project and were sown in June 2020. One field (4.45 hectares) was direct drilled with 'Brassica Express' (rape and stubble turnip mix), with the other adjacent field (5.66 hectares) drilled with 'Clampsaver' (rape, Italian ryegrass and berseem clover mix). 35 days after sowing, a 30cm² turf from each crop was collected and a rainfall simulator was used to see how the soil in both cropped fields reacted to rainfall. Results from the rainfall simulators showed that the run-off from the 'Clampsaver' was cleaner and that the soil had better water retention. A random count of worm populations showed this sample to have double the numbers compared to the soil from the 'Brassica Express' field, which indicates a healthy soil environment.

Livestock performance is also closely monitored throughout the duration of the project. 200 lambs (average weight of 39kg) were turned into each trial field at the end of September. With the use of electric fencing, the crops will be strip grazed until the lambs are sold. A cross-section of these lambs will be weighed throughout their duration on both fields to calculate and monitor growth rates, as well as comparing their kill sheets. Ewes will then be used to graze the rest of the crop during the winter months, with their performance (body condition scores and scanning %) also monitored and compared.

A further project (July 2021-2022) will look at the suitability of grass species for a long-term pasture on a challenging upland unit with poorer soil quality and climatic conditions.

For more information, and for regular updates on project work at Dolygarn, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/dolygarn

Cefnllan, Llangammarch Wells, Powys

NEIL DAVIES

Cefnllan is a 105 hectare beef and sheep farm run by Neil Davies and family. A further 93 hectares are rented, as well as grazing rights on the Epynt Mountain. The flock comprises of 2,400 Epynt hardy speckled ewes. Cefnllan is currently transitioning from the traditional suckler cow enterprise to rearing bought-in dairy-beef calves.

Aims:

- → To investigate ways of improving the current rotational grazing system to maximise the value of grass reseeds and to reduce feed costs
- → To increase output per hectare to recoup investment in reseeding
- → To produce more kilogrammes of beef per hectare on a low-cost system by rearing Aberdeen Angus dairy beef cattle on grass
- → To consider different reseeding techniques other than ploughing

The first batch of 100, 3-4 month old Aberdeen Angus cross dairy calves (averaging 140kg weight) arrived at the farm in April 2020. Sarah Morgan, from Precision Grazing, is leading on the project and has designed a subdivision plan for the farm to allow maximum utilisation of grass. Grass measurements using a plate meter are being taken fortnightly during the grass growing season, with the objective of identifying exactly how much grass is available to graze. Average farm cover measured at the end of September 2020 was just over 2,300kgDM/ha. The target is to increase grass (tDM/ha) grown by 3tDM/ha (from around 6tDM/ha to 8-10tDM/ha). As 1tDM of rotationally grazed grass is worth £50/ha on average, growing 3 extra tonnes of grass would equate to £150/ha increased output on farm per year, making the return on investment of implementing fencing and water systems very short. AgriNet and Farmax softwares are being used to help with recording the grass measurements and forward planning. Calves are being weighed monthly to closely monitor daily liveweight gain (DLWG). The calves weighed an average of 245kg in September, therefore gaining an average of 0.9kg/day since arriving on-farm at the end of April. Calf weights and grass growth (throughout the growing season) will continue to be monitored throughout the duration of the project. Farmax has predicted that this change in enterprise could potentially double the kg of beef produced per hectare at Cefnllan.

Neil Davies:

"Being a Farming Connect demonstration site is giving me the opportunity to receive advice from specialist consultants which helps me make informed day to day decisions. By the end of the project, I would like to be totally transitioned from suckler to dairy beef and finishing 150 grass-fed Aberdeen Angus Cattle."

Project 1: Managing the change; sucklers to dairy-beef (November 2019 - August 2022)

Aims:

The aim of the project is to investigate the feasibility of changing from suckler cows to rearing, growing and finishing bought-in Angus cross dairy calves, with the aim to do this on a low-cost grass and forage based system.

KPIs:

1. To increase net production in terms of kg of beef produced per hectare by 50%, from 184kg/ha (sucklers) to 367kg/ha (spring bought calves).
2. To increase annual grass yield (tonnes DM/ha) by 33%, from 5.1 to 6.8.
3. To increase annual grass utilisation by 38% (0.7 tonnes DM/ha)
4. To increase liveweight gain from 0.8 to 1kg/day within the cattle finishing system at grass
5. To improve silage quality from 63 to 70 D value (digestibility value) and aim to achieve 0.8kg daily liveweight gain over the winter within the cattle system and using less concentrates.

Project 2 – Comparing various reseeding methods (August 2020 - August 2021)

A 4.5 hectare field was split into four plots of 1.21 hectares. In September 2020, each plot was reseeded using a different method - Erth disc seeder, He-Va Multiseeder, Aitchison T-Slot Drill, as well as ploughing and cultivating. The four plots will be closely monitored and compared with the aim of identifying the best method suited to Cefnllan, along with the most cost-effective.

A further project, working with Border Software Ltd will use LoRaWAN enabled temperature and humidity sensors to monitor housing conditions for calves during winter. This information will be linked with calves' DLWG and any health issues identified during housing. (October 2020 - March 2021)

For more information, and for regular updates on project work at Cefnllan, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/cefnllan

Hendre Ifan Goch, Glynogwr, Bridgend

RHYS EDWARDS

Hendre Ifan Goch is a 91 hectare hill farm in the South Wales Valleys, and is run by father and son, Russell and Rhys Edwards. The farm, which rises from 600 - 1300 feet, runs 400 Aberfield mules, 200 Welsh mules and 130 replacement ewe lambs.

Aims:

- Investigate what environmental or genetic factors are influential in the incidence of lameness in lambs.
- Explore ways to further reduce the farm's carbon footprint.
- Trial different bedding surfaces with a view to improving flock health.
- Utilising new technologies to improve flock health through gathering and analysing data on growth rates, animal temperature and water intake.

Project 1 – Improving soil and livestock management to improve soil carbon capture, and reduce farm carbon footprint (May 2020 - August 2021)

Aims:

The main aim of this project is to first of all identify the current levels of soil organic matter, soil organic carbon and active soil carbon that's present in the soil (on a t/ha basis). Depending on initial results, the objective is to build soil carbon levels, by various measurements and adjusting management methods accordingly.

KPIs:

1. Increase soil organic matter and soil carbon levels by 1% annually - based on the baseline measurements
2. Improve livestock production and efficiency - improve lamb growth rates by 50g/day
3. Reduce the carbon footprint per kilo of lamb produced annually by 15% - based on the baseline measurement.

Independent grassland consultant, Gareth Davies of Gareth's Grassland Advisory Service Ltd, is leading this project work at Hendre Ifan Goch. Three fields of varied soil type, production and use were identified for the project and soil samples were collected in February 2020. The in-depth soil analysis results showed an average of 11.5% organic matter across the three fields. The overall organic carbon levels in the soils were good, averaging just under 7% across all three fields. However, the active carbon levels were low at an average of 1.6%. This indicated a lack of soil biological activity, which usually suggests issues with habitat. The various management methods (aerating, liming, fertiliser applications etc.) put in place by Gareth will hopefully raise organic matter and active carbon levels in the soils. As a result, it is expected that productivity will increase as a result of better performing soils.

A whole farm carbon audit is also being completed through the Farm Carbon Toolkit. This will highlight key areas where improvements can be made within their farming practices to reduce emissions.

Rhys Edwards:

"As farmers we have a responsibility for reducing greenhouse gas emissions and need to take a longer-term approach to how we farm. By working with Farming Connect and taking account of the bigger environmental picture, we are confident we can move in the right direction."

Project 2 – An integrated approach to managing lameness in sheep (June 2020 - August 2022)

Working with local vet Tom Searle (South Wales Farm Vets) the main aim of this project is to investigate the genetic and environmental factors that influence the outbreaks of lameness in sheep and in particular, incidences of scald in lambs during the grazing season. The correlation between rainfall, temperature, sward height and lameness incidences and prevalence will be examined. Detailed data collection has been occurring throughout the year and a detailed analysis of this data will allow a plan of action to assist with controlling and managing lameness in the flock.

For more information, and for regular updates on project work at Hendre Ifan Goch, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/hendre-ifan-goch

Pantyderi, Boncath, Pembrokeshire

WYN AND EURIG JONES

Pantyderi covers 445 hectares, with a beef enterprise of 80 spring calving suckler cows plus purchased store cattle, finishing 300 cattle annually. The sheep flock consists of 1,500 Texel cross ewes. 60 hectares of barley and wheat are also grown.

Aims:

- Improve precision in land management
- Become more self-sufficient in protein requirements for livestock

Project 1: Soil mapping to enable more precise land management (November 2019 - August 2022)

40 hectares of grassland and 60 hectares of cereal growing land has been scanned and mapped at Pantyderi, creating soil management zones within every field. These zones have been analysed for phosphate (P), potassium (K), magnesium (Mg) and pH as well as laser texture to define soil type. Nutrient management plans have been drawn up for every mapped field which are now being used for variable rate nutrient and lime applications. Maximum use is being made of straw based muck from the beef cattle on the farm for base applications of P and K.

Aims:

The main aim of the project is to explore the use of soil mapping to provide the basis for improved efficiency of input use on arable land growing cereals. The use of soil mapping will also allow for improvements to be made in the efficient use of N, P, K and lime on grassland.

Variable rate lime application

The use of soil mapping has identified a saving in lime applications on both the grassland and arable area by making use of variable rate lime spreading.

Eurig and Wyn Jones:

"Working with Farming Connect has given us an opportunity to increase efficiency and output from our own resources. This will allow us to strengthen the business for the future."

Figure 1: Savings in lime applications using variable rate lime spreading

	Grassland		Arable	
Rate	Flat	Variable	Flat	Variable
Lime (tonnes)	182.1	171.3	170.0	146.0
Cost (£)	5,463	5,139	5,100	4,380

Sowing barley using variable seed rate

Growing a crop of spring barley using variable seed rate has been trialled using the information gathered from the soil mapping. This was done in two adjacent fields. The poorer soil type or problem areas of the field received higher seed rates to potentially even out crop yields across the field (Figure 2). Digital maps were provided to the sowing contractor on an SD card which connects through the tractor GPS system to inform a variable sowing rate drill.

Figure 2: Variable seed rate map for spring barley for two adjacent fields.

Project 2: YEN Grain Nutrient Benchmarking (July 2020 - December 2020)

Grain testing from Yield Enhancement Network (YEN) farmers over the last four years, has revealed that 74% of cereal crops were deficient in at least one nutrient. It is estimated that the average YEN crop would have benefited by at least £500 per field if it had received optimal nutrition. This project will benchmark nutrients in samples of grain from cereal crops at Pantyderi along with samples from another five local farms, plus national samples, to provide feedback on rectifying any deficiencies for growing future crops.

For more information, and for regular updates on project work at Pantyderi, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/pantyderi

Pendre, Llanfihangel-y-Creuddyn, Aberystwyth

TOM AND BETH EVANS AND FAMILY

Pendre is a 24 hectare upland sheep farm, and an additional 61 hectares are rented. The 480-ewe flock is a mixture of Mule crossbreds, improved Welsh Tregaron-type and Welsh Hill Speckled Face ewes. Tom also works off-farm three days a week.

Aims:

- → Maximise grass utilisation
- → Improve lamb survivability in the first 10 days of birth

Project 1: Maximising return from grazed grass (July 2020 - August 2022)

Aims:

The main aim of the project is to reduce the concentrate input and maximize return from grazed grass on the farm. A rotational grazing system has been set up for a mob of 150 –170 early lambing ewes. The overarching target of introducing the rotational grazing system is to improve grass utilisation at Pendre, which will enable the stocking rate to be increased and possibly reduce land rental.

KPIs:

1. Increase kg lambs produced per hectare (ha)
2. Reduce days to slaughter
3. Reduce use of concentrates

Two fields were oversown in September to improve sward quality. One field (which included high dock levels) was oversown with a vigorous mix of hybrid ryegrass and festulolium to boost early season grass growth. Another field was oversown with clover and perennial ryegrass – one half was sown with treated seed (fertiliser and lime coated). A section of this field also included plantain to see if it can be successfully oversown. Germination was slow and fields will now be rested until the spring.

Tom has also signed up to 'Prosper from Pasture', a programme for beef, sheep or dairy farmers who are keen to develop their understanding of grassland management and learn about the latest knowledge and techniques available.

Through this programme, Tom will be required to provide data on grass growth, average grass cover, grass demand and topic related data to the group in order to benchmark and to facilitate discussions on best practice.

Figure 1. Overseeding at Pendre.

Project 2 - Impact of rotational grazing on soil organic matter (November 2020 – August 2022)

A second project is in development at Pendre, which aims to evaluate the benefits of rotationally grazing sheep in comparison to set stocked on soil organic matter content. As well as being a sink for carbon, soil organic matter is also an important driver for fertility as it reduces soil erosion and nutrient losses through leaching. Tom already identifies the benefits of rotational grazing on maximising stocking density and grass utilisation, but is also keen to evaluate the wider benefits.

Tom Evans:

"It is early days on the oversowing project, but I am hopeful that it will improve my leys for turnout. I am also keen to better manage grazing to maximise the stocking here at Pendre."

For more information, and for regular updates on project work at Pendre, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/pendre

Cefngwilgy Fawr, Llanidloes, Powys

GARETH, EDWARD AND KATE JONES

Cefngwilgy Fawr is a 200 hectare upland beef and sheep farm. They farm a herd of 50 suckler cows which consists of Limousin-cross and British Blue-cross cows and a flock of 1,300 Texel-cross, Aberfield-cross, Mule and Speckled Face ewes.

Aims:

- → Gain a better understanding of soils and silage
- → Use technology to establish which animals perform the best and make decisions based on that data to increase business efficiency
- → To consider the value of poultry manure as a fertiliser

Gareth, Edward and Kate Jones:

"Although the clover leys came through a bit patchy at the start due to the dry period, lambs have since performed particularly well from the clover fields."

Project 1: Improving home grown feed value from clovers (November 2019 - August 2022)

Aims:

The main aim of the project is to improve the quality of homegrown feed by introducing white and red clover into the grazing and cutting sward. As a result, the project aims to improve lamb performance. The impact of higher quality forage on lamb finishing weights and days to slaughter will be assessed.

KPIs:

1. Reduce fertiliser applications for each silage crop by 40kgN/ha.
2. To increase clover content in the reseeded fields from <5% to >20%.
3. To reduce the amount of purchased concentrates by 10% (i.e. increase crude protein (CP) of forage on the reseeded fields (5ha) from 12% to 20% due to clover [and yields from 5tDM to 10tDM] – that would equate to an additional 1,400kgCP – being the equivalent of about 3 tonnes of hipro soya or £1,000 worth).
4. To increase the percentage of lambs finished by 1 September by 10%.

Two clover leys were established this spring, a red clover ley and a white clover ley. Establishment was slow and patchy as a result of dry conditions during establishment. Weeds have also been a problem. Thistles have been controlled with weed wiping. Yield measurements through August recorded an average growth of 67kgDM/ha/day on the red clover sward, 61kgDM/ha/day on the white clover and only 34kgDM/ha/day on a standard permanent pasture. Sward separations found 35% of the sward dry matter to be red clover, but in the white clover swards, the clover content was much lower at only 6%. Swards will continue to be assessed and a grazing plan is in place to tighten the stocking density as the farm is generally understocked through the summer.

Figure 1. Red clover ley at Cefngwilgy

Figure 2. White clover ley at Cefngwilgy

For more information, and for regular updates on project work at Cefngwilgy, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/cefngwilgy-fawr

Bryn Farm, Ferwig, Cardigan

HUW AND MEINIR JONES

Bryn is a 101 hectare holding operating as a beef and arable unit. The farm rises to 400 feet and runs 75 suckler cows. The herd is run on a paddock grazing system and 24ha of wheat, oats and barley are grown as feed for their herd.

Aims:

→ Maximise liveweight gain from grass → Improve knowledge on paddock grazing
→ Protect herd health from diseases such as Johne's → Further improve soil health

Project 1: Improving suckler herd and beef enterprise performance: a whole system approach (November 2019 - August 2022)

Aims:

The key aim of this project is to identify key areas for improvement, by monitoring and benchmarking the different elements of the herd at Bryn. Areas explored included calf growth rates and end-product output, cow efficiency, fertility and management.

KPIs:

1. Increase number of calves weaned per 100 cows served from 85% to >90%
2. Aim for each cow to produce a calf that is 50% of her own body weight at weaning
3. Quantify the financial difference between selling cattle as stores versus finishing as bulls

The project identified early on that the suckler herd was performing well at Bryn, with only a few areas where performance could be improved. A focus of this project is to identify the feasibility of finishing bulls versus selling as stores. As the farm is in a high TB risk area, Huw was keen to explore the option of finishing bulls to reduce the risk associated with a positive TB test. 15 bulls were left uncut and introduced to a mix of purchased concentrates, homegrown oats and rolled barley from November 2019.

Compared to the £13,980 these animals would have netted as stores, with the value of straw sold and feed consumed accounted for, an additional £1,600 was captured by rearing them as bulls. At Bryn, bulls received 1.2t/head of feed compared to the industry target of 1.7t/head. This resulted in an average liveweight at slaughter of 620kg and an average carcass weight of 344kg, with a killing-out percentage of 55%. Although these were all slightly lower than industry targets, margins were still positive and 93% of the carcasses met abattoir specifications.

Out of 75 calves born at Bryn this spring, 34 are bulls. Once breeding bulls are removed from the herd, these bulls will be introduced to a homegrown mix of oats and rolled barley. The objective is to maximise feed conversion efficiency as bulls are introduced to creep feed at a younger age. Strategic use of creep at Bryn is estimated to provide an annual gain of +£1,988, taking into account additional weight gain totalling at £1,700 between 34 bulls, as well as £908 saved on housing. This total also takes into account losses of £620 from feeding homegrown rolled barley and oats earlier on.

Huw Jones:

"Our first year as a Farming Connect demonstration site has focused my attention on producing the best grass from our grazing platform, as well as making improvements to our outwintering system to ease management and prevent soil damage. Taking advantage of expert guidance has allowed us to compare beef finishing versus selling store cattle, by using key performance indicators to compare profitability and allow for flexibility in future decision making."

A second project focusing on the sustainability of a mixed farming enterprise will be implemented at Bryn in early 2021.

For more information, and for regular updates on project work at Bryn, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/bryn

Fferm Rhiwaedog, Rhosygwaliau, Bala

EMYR, ALED AND DYLAN JONES

Rhiwaedog is a 142 hectare upland beef and sheep farm, with a further 121ha rented on a nearby holding. The suckler herd consists of 70 Welsh Black cattle and 1,500 ewes are also run at the farm.

Aims:

- To compare different techniques for fattening lambs such as fattening on reseeds or stubble turnips
- To investigate how to reduce winter feed costs in the cattle enterprise, by growing wholecrop and high protein silages
- To depend less on bought-in feed by making better use of grass

Project 1: Improving efficiency from grass (February 2020 - August 2022)

Aims:
The main aim of the project is to improve the productivity and efficiency from grass on an upland farm.

KPIs:

1. Reduce amount of purchased concentrates by a minimum of 40%
2. Increase grass yields by a minimum of 15%
3. Increase clover content in the sward by 20%

A trial was conducted during spring 2020 focusing on the benefits of using standard versus protected urea. The outcome of this trial concluded that using protected urea this spring led to an estimated 30% increased grass growth (2,100kgDM/ha from standard urea versus 2,800kgDM/ha from protected urea). An additional 700kgDM/ha equates to a financial worth of £42/ha (based on an average grass value of £60/tDM). 4 weeks post urea application:

Figure 1. Protected urea - sward height 31cm

Figure 2. Standard urea - sward height 23cm

Another element of the project compared grass silage yields from plots treated with ammonium nitrate versus protected urea. Grass yield from the plot treated with protected urea was 4,120kgDM/ha, whilst yield from the plot treated with ammonium nitrate was 5,050kgDM/ha. It was determined that using protected urea on silage crops reduced grass growth by around 20%, which was most likely due to prolonged dry conditions breaking down the protective layer on the protected urea.

A multispecies ley was also established in July and germination was assessed in early August. After an initial short graze in August to encourage tillering and control the annual weeds, the first full graze began in mid-September. The lambs are being block grazed and weights monitored. Herbage samples have also been taken to assess quality and mineral levels.

Project 2 - Evaluating the benefits of heat detection technology to provide gains in suckler cow fertility (April 2020 - August 2022)

Aims: This project aims to improve conception rates within the suckler herd and tighten the calving interval.

KPIs:

1. To tighten the calving periods into two blocks of eight weeks (February-March and May-June).
2. To reduce calving interval to 'one live calf' per 365-375 days.

Moocall HEAT collars were deployed on two fertility tested bulls and these successfully detected which cows had been observed bulling. In general, cows have become pregnant promptly and those calving later have been brought forward where possible into the block calving period. Decisions remain to be made as to what to do with cows calving very late this year. It could take some years to bring them gradually back into line with the rest of the herd using a synchronisation programme. Alternatively, some of these cows may need to be culled.

Aled Jones:

"The Moocall HEAT collars have been a great asset this year to help tighten the calving pattern. Strip grazing the herbal leys on a 4-5 day move has also certainly improved lamb performance."

For more information, and for regular updates on project work at Rhiwaedog, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/fferm-rhiwaedog

Glanmynys, Llandovery, Carmarthenshire

PEREDUR OWEN AND CARINE KIDD

Glanmynys is a 202-hectare beef and sheep unit farmed by owner, Carine Kidd, and her share farming partner, Peredur Owen. The farm supports a flock of 1,000 Aberfield, Welsh and Easycare ewes, as well as 240 crossbred ewe lambs. As a part of an integrated supply chain, the farm also finishes 110 Angus cattle.

Aims:

- → To optimise liveweight gain from forage.
- → To consider which approaches are most effective for rectifying trace element shortfalls in our soils.
- → To utilise EID for monitoring cattle performance to streamline our system and to reduce reaction times to any performance and health problems.
- → To investigate the value of growing forage crops as break crops and to consider which perform best in terms of yield and cattle and lamb performance.

Project 1 - Sheep health, performance and grassland management (October 2019 - August 2022)

Aims:

The main aim of the project is to improve flock efficiency by closely monitoring flock health and performance. The project also aims to focus on improving productivity from grass, by regularly measuring growth and quality of swards and increasing utilisation.

KPIs:

1. Reduce variable costs (p/kg) from £47 per ewe to £42 per ewe.
2. Improve lamb daily liveweight gain from 270g to 300g.
3. Reduce average days to slaughter from 164 days to 150 days

Progress:

In March 2020, project specialist Joseph Angell (Wern Vets), visited Glanmynys to carry out pre-lambing body condition scoring, metabolic profiling, check feed rations and undertake trace element profiling. Body condition scoring results showed that ewes were slightly leaner than expected at an average body condition score of 2. Results of the metabolic profiling test carried out showed normal levels of protein and Beta hydroxybutyrate (B-OHB) in the blood of all ewe groups.

Based on the results of metabolic profiling tests and body condition scoring, the supplementary feeding of ewes was recommended. Ewes were also blood tested to determine trace element levels. Copper and selenium levels were adequate, as was cobalt, however some ewes demonstrated levels which were above average suggesting an oversupply, therefore there is potential to improve efficiency and lower costs from supplying less cobalt. On average, zinc concentrations in the blood were marginally low. Pre-tupping supplementation should be considered in the future.

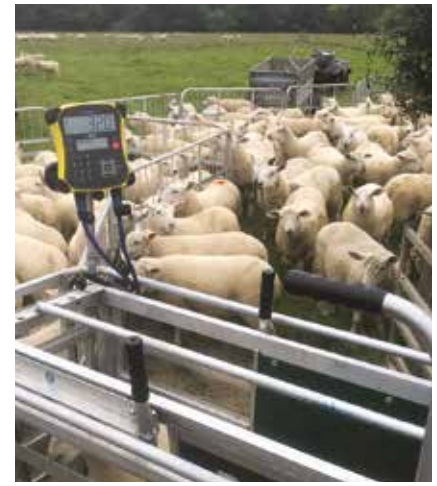


Figure 1. Monitoring using EID at Glanmynys.

The majority of ewes lambed outdoors during April. Lambs were weaned at an average weight of 27kg at 12 weeks of age. On average, ewe body condition score post weaning was 2. Although lambs were vaccinated against orf and clostridial diseases, orf and pneumonia have been an issue. Smart Shot was given to the lambs in the spring, and blood results in August show that they all have satisfactory trace element concentrations, with an increase in vitamin B12 levels since it was administered.

A post-weaning/pre-tupping investigation involving blood sampling ewes for trace elements was performed during August. Results showed that no copper supplementation was required, however, supplementation with selenium in bolus form was recommended pre-tupping. Moving forward, the project will focus on ewe body condition at tupping. The project will also focus more on improving productivity from grass, which will be achieved by maximising utilisation.

Peredur Owen and Carine Kidd:

"Targeted measurements, alongside expert advice, is allowing us to plan ahead and move forward with confidence. The process of gathering and analysing data emphasises the need to keep questioning, measuring and listening to the data."

For more information, and for regular updates on project work at Glanmynys, please visit https://businesswales.gov.wales/farmingconnect/our-farms/projects/glanmynys

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