

# Demonstration Sites Review 2019



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# Farming Connect... helping you drive your business forward

Whatever the future holds, whatever tomorrow looks like, Farming Connect will support you to help you and your business prosper.

**Registered** businesses can tap into a wide range of support services, guidance and training, tailored to both your personal and business requirements. Many services are fully-funded, others are **subsidised by up to 80%** for eligible businesses.

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- access **business support and technical advice**, tailored to your business needs through our Advisory Service; the Venture programme; succession and planning surgeries as well as sector-specific projects and events
- **benchmark** your performance, set KPIs and work towards progress and growth
- identify areas for improvement and find solutions to problems through our **demonstration site network**; discussion groups; one-to-one **mentoring** and sector-specific **surgeries** and **clinics**
- develop both business and practical skills through our lifelong learning programme which includes **continuing professional development**; accredited short training courses; **e-learning** modules; **animal health** and **welfare training** and **IT** training

- focus on personal development through our action-learning based Agrisgôp groups; the Agri Academy; Management Exchange and study visits
- keep up to date with the latest innovations in technology through industry developments and the latest research projects through our demonstration network

For further information on eligibility criteria and to find out how Farming Connect can support you and your business, visit [www.gov.wales/farmingconnect](http://www.gov.wales/farmingconnect). Alternatively, contact your **local development officer** whose contact details you'll find on our website.

In addition to the Farming Connect Demonstration Network, find out what support is available to you through our...

**Knowledge Exchange Hub** - our interface for sharing best practice between academics, advisory professionals, farmers and foresters

**Agri-Lab** - bringing together forward-thinking individuals who have successfully introduced innovation to their businesses

**European Innovation Partnership (EIP)** - support for projects which demonstrate innovative ways of linking research with farming or forestry practices

# Foreword

Farming Connect's role is to inspire and challenge farmers throughout Wales to achieve the best from their farming systems, to run competitive, resilient and sustainable farm and forestry businesses.



Since 2015, our network of 12 demonstration site farmers, supported by sector-specific industry experts, have been trialling and implementing more efficient and profitable ways of managing their businesses. Selected for their progressive approach and ambition to operate at peak performance levels, their work encompasses many areas of farming ranging from land management and grazing techniques to business management and stocking strategies.

They have learned which systems work well and which do not, implementing new or different approaches to achieve their goals. They are now in a stronger competitive position, better-placed to deal with market volatility, to thrive and prosper.

This booklet provides a snapshot of the work undertaken over the last three years. We hope that you too will be inspired and encouraged as you see what has been achieved by implementing innovative ways of working; introducing new technologies to improve performance and consider how you too can increase the long-term sustainability of your business.

## Dewi Hughes

Technical Development Manager, Farming Connect

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## Farm details



### Irwel, Eirwyn & Heulwen Jones

- **Beef & sheep**
- **344 hectares:** 263 hectares owned, 81 rented plus common grazing
- **81 hectares** woodland

### • Glastir Advanced

- Land rises from **650 feet** to **1,250 feet**
- **Spring** calving
- Heifers sold at **18 months** and male calves at **8-10 months**
- All lambs are **EID tagged** at birth



**940 ewes, 365 ewe lambs**, mostly Tregaron Welsh ewes with some cross-bred ewes



**56 suckler cows**, continental crosses



**4 hectares** of swedes



**7kW hydro** scheme

## Farm objectives

Increase flock to **1,200** ewes with improved lambing performance on a low labour input system



Sell more lambs earlier at **higher weights** to increase grass availability for ewes



Maintain herd of **58-60** suckler cows, rear all replacements and calve at 2 years



Improve **grass growth** and productivity



## Projects

- Comparing costs and effectiveness of finishing lambs on five different regimes
- Rotational grazing at 1,250 feet
- Direct drilling for improved pastures
- Cattle health programme for BVD, Leptospirosis, IBR and Johne's disease
- Physical and financial performance of the cross bred flock v Welsh flock
- Improve ewe barren rate and understand reasons for fertility problems through using MSD Animal Health flock check data and trace element supplementation
- Reducing lamb joint-ill losses



## Project 1: Five options for lamb finishing

Irwel normally finishes 800 lambs on reseed and silage aftermath between September and November.

### Objectives

To evaluate the most cost-effective and efficient lamb finishing system to maximise output and profitability. Irwel also compared the cost-efficiency of finishing lambs to selling them as store lambs.



### What was done

Five groups of 62 lambs with an average weight of 32kg were selected and finished as follows:

1. Forage rape and Italian Ryegrass mix
2. New reseed (a long-term ley sown in May 2015)
3. Mature pasture (grazing a 10 year old ley)
4. Mature pasture with concentrates
5. Housed and fed concentrates (CPI4-16%) and straw

Lambs were weighed every fortnight until fattened. The number of days to finishing, kg of lamb sold/ha, volume of concentrate used along with all costs and return on investment were also recorded.

### Outcomes

The lambs kept indoors and fed creep had the biggest Daily Live Weight Gain (DLWG) and were faster to finish, with a 100% finish rate by the end of the project. However, in terms of margin per lamb, the lambs grazing the new ley outperformed all other groups.

Group	Group gain (total kgs)	Av DLWG (g/day)	Av gain per lamb (kgs in 69 days)	% Lambs finished in 69 days	Total costs £/group	Cost per kg gain (p)	Cost per lamb (£)	Av carcase weight	Total value of kgs gain (£)	Margin over costs/group	Margin/lamb (£)
Old ley	333	94	5.37	56	186.48	56	3.00	17.5	492.90	320.07	5.16
New ley	443	130	7.15	82	213.06	48	3.44	17.3	704.37	491.31	7.92
Creep (at grass)	470.5	154	7.84	90	638.79	136	10.30	17.5	748.01	109.22	1.76
Creep indoors	526.5	229	8.49	100	680.99	121	10.98	16.9	837.14	201.15	3.24
Rape	204.5	53	3.30	29	369.14	180	5.95	16.9	325.16	-43.98	-0.71

The rape group did not perform well due to poor establishment and growth of the rape crop. The use of concentrates, although boosting growth rates in the lambs, lowered the margins both indoors and outdoors.

Finishing on a new ley compared to concentrates resulted in £4.68 per lamb or £2,340 over 500 lambs additional margin

## Project 2: Rotational grazing at 1,250 feet

Rotational grazing is based on the principle of ensuring the grass plant is only grazed once and then allowed rest to re-grow. Normally, an area is grazed for two to three days before moving stock and allowing sufficient time for recovery, typically, 16-24 days.

### Objectives

- To demonstrate that rotational grazing can work on a traditional beef and sheep farm, with improvements in grass utilisation, growth and quality
- To create a blueprint for other farmers considering this approach



### What was done

Irwel set up nine grazing paddocks - six one hectare and three two hectares. The smaller paddocks were grazed for two days, and the larger paddocks for four days before sheep were moved. Dry matter growth and livestock performance were measured.

### Outcomes

The stocking rates on the project area were far higher than normally achieved.

There were a few challenges:

- May grass growth was too high, so two hectares were removed for silage
- Demand exceeded growth with increased grass consumption when lambs were transitioning from milk to forage and higher grass demand in cooler weather
- The two day paddocks were easier to manage and outyielded the four day paddocks
- Grass grew too strong in the four day paddocks leading to a reduction in grass utilisation

Irwel plans to utilise rotational grazing on a larger scale on the farm by reducing the size of the fields and installing fixed water troughs.

### System cost

Fencing (1,000m of 3 wire temporary fencing)	£1,180.00
Energiser	£200.00
Water	£325.00
Design and installation	£700.00
<b>Total cost</b>	<b>£2,405.00</b>
<b>Cost per ha</b>	<b>£205.56</b>

Rotational grazing enabled the stocking rate to increase by **50% to 12 per hectare**





## Farmer Q&A



### **What have you got from being a demonstration site?**

“Being a demonstration site has helped me focus on the areas of the farm that can be improved and enabled me to put my business in a better position to deal with market volatility and be less reliant on subsidies.”

### **What have you learnt from being part of the demonstration network?**

“What I have realised is that there’s no silver bullet to improving productivity at Aberbranddu – it’s about getting all the little things right – from soil structure, to forage quality to animal health. They

are all linked and getting the right practices in place and attention to detail is what will make the farm more resilient going forward.”

### **What has it been like being part of the demonstration network?**

“It’s been an interesting journey and allowed me to prove many of the theories that I was reluctant to try on my own. There have been challenges, for example, with the rape crop, but we have learned from that and are better placed to deal with these challenges going forward. Overall, it’s been an extremely positive experience and has allowed me to focus my thinking on key areas where I can increase the performance of the farm.”

### **How have the projects helped your business?**

“We wanted to try to finish lambs earlier on less ground and to look at the most cost-effective option because that’s the bottom line at the end of the day. The new grazing performed better with the least associated costs and the next best performance was from the concentrates in the sheds, but that was the one with the highest costs. The conclusion that we have come to is that using bought-in concentrate or feed is a last resort and that grazing is the best and first option.”

### **What will you continue to do in the future?**

“Five years from now, I’m hoping to have rotational grazing in place across the farm - whilst individual animal performance hasn’t vastly improved by rotational grazing, it has allowed me to maintain a far higher stocking rate on-farm - and I need to make every hectare of this farm work if we’re to survive post subsidy.”

## Farm details



### Paul & Dwynwen Williams

- **Beef & sheep** (until 2018)
- Beef calf rearing enterprise replaced sheep in **2018**
- **167 hectares:** 121 hectares owned, 6 hectares rented, heft of 40 hectares

- All SDA ranging from **1,100 feet** to **1,300 feet** above sea level
- Most land is in the **Snowdonia National Park**
- **Glastir Advanced** and **Commons**



**542** Welsh and Welsh Half-Bred breeding ewes and **120** ewe-lamb replacements (until 2018)



**41** Limousin x suckler cows



**3-4** hectares of swedes grown annually undersown with wholecrop



**19kW** wind turbine



Plans to convert **3** barns into 'bunk barns'

## Farm objectives

Further improve the suckler enterprise through genetics and technology



Evaluate and develop the sheep enterprise



Improve profitability per hectare whilst minimising costs



Introduce diversified income streams



## Projects

- The use of body condition scoring and grouping of cows and the effect on fertility
- Improving heat detection in the suckler cow herd
- Weighing of calves from birth to sale (new)
- Use of sulphur on grassland swards (new)



## Project 1: Using automated technology to improve heat detection within the suckler herd



Commonly used in the dairy sector, automated heat detection systems have led to far better heat detection, leading to improved calving intervals and tighter calving windows. The technology has yet to be used widely in the beef sector but should yield similar benefits.

### Objectives

To reduce the calving interval at Cae Haidd Ucha and ensure one calf per cow per year.

### What was done

All cows were fitted with a motion sensing collar to track them 24/7 for a 12-week period. Data was collected and Paul was notified automatically via text and email when any cows were in oestrus. Data was analysed every 15 minutes meaning that, in theory, cows were checked four times an hour, so when irregular activity that is representative of a cow in oestrus is detected, the farmer will be notified. Paul was then able to improve the timing of AI and catch any silent heats or irregular heat patterns. He could also pick up any underlying health issues with individual cows.

### Outcomes

Significant progress was made in reducing the calving index of the suckler herd at Cae Haidd Ucha as can be seen in the following table:

	2016	2017	2018 projected	Industry average
Calving interval (days)	401	384	370	426

Another lesson from this project is the need to house first-calvers separately. These cows were bullied whilst part of the main herd resulting in lower feed intake and resulting body condition score.

Using industry figures of **£5/day** reducing the calving interval by 31 days across the 41 cows at Cae Haidd Ucha - a saving of **£6,300**

## Project 2: Round bale sheep feeding study



Many Welsh livestock farmers supplementary feed their outwintered stock with silage fed in ring feeders.

### Objectives

This project examined how much of the bale was wasted during feeding and how silage quality deteriorated over the feeding period.

### What was done

Two groups of animals, matched for stage of pregnancy, breed and liveweight were analysed. Five bales were fed to each group starting in January 2017. Bales were weighed and analysed and samples taken daily from the ring feeder. Wasted silage was removed, weighed and analysed.

### Outcomes

The larger group consumed the bale quicker (4.25 days) than the smaller group (8.25 days) with more wastage in the later days. Financially, with silage costing £120/t DM; the smaller group was wasting £35.45/ bale and the larger group £25.19/ bale. More silage was required to provide the same nutrition leading to higher monetary costs and lower efficiency.

	Group 1: 30 ewes	Group 2: 60 ewes
Silage kg DM wasted	69.38	56.33
% DM wasted	29.54	20.99
Kg DM wasted/ewe	2.31	0.94
Total intake kg/ewe/day	0.69	0.86

### Conclusions:

- Farmers must closely monitor consumption of baled silage from ring feeders
- Bale nutritional quality didn't alter greatly
- New systems need to be considered to reduce losses
- For every £120 spent making silage - £35 is lost

### Options for improved feeding

- Cutting bales in half before feeding
- Feeding in more feeders so all ewes have access
- Chopping the bale before feeding
- Redesigning the ring feeder



## Farmer Q&A

### **Why did you want to be part of the Demonstration Network?**

“I jumped at the opportunity to become a demonstration site farmer because I’m always striving to be the best that I can, and wanted to be challenged to do things better.”

### **What are your thoughts on the projects undertaken and their impact on the farm business?**

“Most of the projects I’ve been involved with were my own ideas and I received expert help in developing the methodology and analysing the results. Take the silage feeding project: I was lucky enough to win the All Wales Silage competition a few years ago and mentioned to the judges that I no longer fed silage in round bale feeders outside because of the waste associated with it. This led to the project happening on-farm. None of us can afford to be losing over 20% of our silage as waste!”

### **Which project do you think you have got the most out of?**

“The project that impressed me most was the use of motion collars on the suckler cows. We made huge strides in performance in terms of calving interval, but also the condition of cows as we could monitor those cows that weren’t spending enough time at the feeding barrier. I was surprised that I was only the second beef farmer in the UK to use the motion collars, but the results speak for themselves. I reduced my calving interval from 401 days to 370 days and it’s practically impossible to improve it further.”

*“As well as improving the output of the farm to secure a financially viable business, I would like to trial and increase my knowledge of future farming techniques, and develop my understanding of up and coming markets.”*



### **Have your objectives changed since becoming part of the Demonstration Network?**

“Things have changed quite a bit at Cae Haidd Ucha since joining the Farming Connect Demonstration Network. The main difference is that we sold sheep in 2018 to focus on beef production. As well as the suckler system we now rear 120 beef x dairy calves per year - utilising the old lambing shed for 10 months of the year rather than an extremely intensive 2 months. Two reasons for this – performance and Brexit. We did improve the performance of the sheep flock at Cae Haidd Ucha but its performance would never match that of our beef enterprise, where we’re constantly in the top third of farms. That coupled with the need to prepare for Brexit meant that we had to focus on the financials - and the return per livestock unit is far better with the calves than it ever was, or could be, with the sheep.”

## Farm details



### Jim & Kate Beavan farm in partnership with Skirrid Farm

- Traditional mixed farm - **beef, sheep & horticulture**
- **202 hectares:** 149 hectares owned, 53 rented

#### • Glastir Advanced

- British Blue-cross Friesian; Aberdeen Angus-cross Friesian; Welsh Black cross and Charolais cross, aged from **10 to 24 months old**
- **Four sows** producing pork for **Beavan Family Butchers**
- Mainly mules crossed with **Texel, Charollais** and **Suffolk rams**



**1,200** breeding ewes plus **60** ewe lambs



Cereal is grown for animal feed - milled and mixed on farm



Crop **10 hectares** spring corn; **12** hectares green crop; **4** hectares maize



Diversification into Kate's Country School



**100** apple trees were planted on the farm last year



Diversified into cider making and re-instating orchards on the farm

## Farm objectives

To make the farms viable, producing quality food



To manage wildlife and be sustainable for the next generation



## Projects

- Viability of small conifer blocks
- Reducing sheep lameness (reduced from 8% to 3% in 18 months)
- Use of faecal egg counts to assess worming requirements
- Producing home-grown protein



## Project 1: Viability of small conifer blocks



### Objectives

To demonstrate the efficient felling and extraction of established conifer blocks and timber production on farm.

### What was done

A small 0.65 hectares conifer shelter belt, planted in the 1960s was felled and extracted using a harvester and forwarder rather than the traditional manual felling techniques. The volume of timber produced, its quality and possible use (e.g. sawlogs, bars, fencing material and woodchip) was recorded as well as the actual cost of felling and extraction.

### Outcomes

From the 300 tonnes of timber felled, 450m<sup>3</sup> of Sitka spruce was produced. A thousand stakes of a value of £1,500 were kept for fencing and Yorkshire boarding and the remainder sold for £6,000. The larch felled was cut into roofing timbers to help repair a stone barn and the oak used to make a cider press with a value of £2,500. The site is being replanted with oak, beech and rowan and re-established as a shelter belt.

This was all achieved from wood that would have otherwise been used as firewood. Impressed, the Beavans are already making plans for further on-farm planking.



The financial viability of small farm woodland blocks can be questionable and dependent on the tree species present, logistical difficulty regarding topography, timber quality and end use. Adding value to on-farm timber and processing a sustainable resource into end products that can be used on farm can contribute to considerable cost savings when implementing specific projects such as renovating old farm buildings or fencing.

The total value of the wood extracted from the shelter belt was **£10,000**

## Project 2: Reducing anthelmintic resistance in the flock



### Objectives

There is growing concern about anthelmintic failure within the Welsh sheep industry as gastrointestinal nematode (GIN) infection in lambs can reduce feed intake, decrease digestive efficiency and lead to ill-thrift and occasional death. The Beavans were keen to reduce their reliance on wormers whilst maintaining good lamb performance.



### What was done

The Beavans, working with guidance from Techion and alongside their local vet, used faecal egg counts (FEC) and fluke coproantigen ELISA tests to ensure an evidence-based treatment of the flock and to check for anthelmintic resistance. Sampling required the collection of faecal matter from a group of sheep and this project focused on testing ewes and lambs during grazing (from six weeks old). Treatment of the flock against worms was assessed according to the FEC results. A FECPAK<sup>G2</sup> on-farm egg counting kit was used alongside a manual egg count system as a control. Egg counts were taken when the sheep were in the yards for drenching and then again 10–14 days later to indicate the percentage reduction.

### Outcomes

Results indicated that the flock has minimal anthelmintic resistance. Ewe FEC showed that the ewes only required treatment with anthelmintics once over the two-year period, reducing costs and the risk of resistance on farm.



## Farmer Q&A



### **How have you benefited from being part of the demonstration network?**

“In the current climate we, like most farms, are struggling. By becoming a Farming Connect demonstration site we’ve taken a step further towards being more efficient and viable and hopefully helped other farmers to do the same.”

### **How have the projects changed your approach?**

“Ewes are fluked and drenched once a year at housing, with FEC and fluke coproantigen ELISA tests ensure evidence-based treatment. We are also currently checking for anthelmintic resistance within the flock.”

### **How have the projects added value into your business?**

“The shelter belt is an unused piece of woodland of little value because it’s come to the end of its days. However, by felling the trees we’ve added extra value with the timber we’re collecting.”

*“Early lambing works for us, catching the Easter trade and utilising home-grown feed. Strip grazing swedes over the winter ensures we have pasture for turnout of ewes and lambs. We’re now looking into home-grown protein to become fully self-sufficient as we’re currently buying it in for mill and mix.”*



## Farm details



### Richard Tudor in partnership with his parents, Tom & Ann

- **Beef & sheep**
- **283** hectares including 162 hectares of hill land
- The farm is between **550 feet** and **1,400 feet**

### • **Glastir Advanced**

- All ewes are lambed indoors in **March**
- All lambs are finished off grass and **sold to Waitrose** from **June to early November**
- **Cows are housed on rubber mats** in a cubicle system, with slatted flooring for muck removal into a gravity flow channel



**1,200** Welsh mule and Texel-cross ewes with **300** ewe lambs



**140** suckler cows based on the Simmental and Saler breed (until 2018)



Clamp silage - **57** hectares first cut in early June and **24** hectares second cut



Plans to diversify into dairy by **2020**. Heifer calves are being reared on-farm in 2019



Self catering apartment



Solar panels

## Farm objectives

To develop the efficiency of the business through best practice and to high ethical standards



To engage more effectively with the end market



## Projects

- Two-step weaning
- The potential for Balansa clover in Wales
- Getting to grips with soil fertility
- Reducing the use of antibiotics at lambing
- Faecal Egg Count (FEC) testing of ewes and lambs



## Project 1: Getting to grips with soil fertility

### Objectives

To demonstrate the importance of more complete soils analysis by giving a detailed break down of key trace elements and the targeting of nutrition to enhance the quality and productivity of grassland.

### What was done

Suitable fields were identified and soil samples sent for detailed analysis. Four different treatments were applied to four blocks at advised rates:

- Granulated lime
- Granulated lime plus boron & zinc
- Calcium sulphate
- Calcium sulphate plus boron & zinc

Soil, root development and grass production were measured. Four blocks were tissue-tested twice during the growing season; this involved the sampling of plant parts to determine their nutrient concentration.

For every **£100** spent on lime, there is a benefit of up to **£700**

### Outcomes

After an unusually dry summer, grass yields were low and uptake of the nutrients applied was very slow. The tests at Llysun showed a deficiency of boron and after Richard applied 0.75kg/ha of boron with fertiliser, boron levels in the grass doubled. Soils at Llysun had an average pH of 5.9 and the farm was not producing to its 10t DM/ha potential. To rectify this, lime is now being applied to 20% of the farm annually. Richard is also addressing compaction in his soils which is reducing performance by around 40% in some fields. To date, 30% of the farm has been aerated using a ballast aerator.



- A chemical soil analysis should consider more than just N, P and K
- A soil assessment should consider all key indicators of a healthy soil, such as calcium and sodium
- Compaction needs to be taken seriously
- Rest periods are key to grassland productivity
- Species diversity needs to be encouraged in grassland leys
- Soil testing and nutrient management plans are available via Farming Connect

## Project 2: The importance of body condition scoring on colostrum quality



### Objectives

To analyse the correlation between body condition scoring and colostrum quality and the impact on disease. Following previous joint-ill outbreaks at Llysun, antibiotic use at lambing had become common practice and was a large contributor to overall farm vet and med costs.

### What was done

Prior to lambing, forage was analysed and ewes grouped according to condition and scanning result. Blood samples were taken from the ewes three weeks before lambing. Good hygiene protocol was followed and all lambs received sufficient colostrum (an immediate 50ml/kg following birth with a total of 200ml/kg within the first 24 hours). Navels were treated at birth and again a few hours later. Lambs were blood sampled at two to five days old and tested for immunoglobulin levels. Lamb growth rates were monitored to evaluate the impact of colostrum quality on lamb performance.

### Outcomes

Most lambs showed good levels of immunoglobulins, and those with lower levels were lambs from ewes with low body condition scores. As a result of this project, only high-risk lambs received antibiotics reducing antibiotic use at lambing by 50%.<sup>1</sup>

- Colostrum quality and quantity is king. Ewes need to be in optimum condition at weaning, tupping and lambing to produce good quality and quantity of colostrum.
- Good biosecurity when sourcing replacements is vital.
- Blood testing increases awareness and management of other diseases.

Ewe body condition score	Level of immunoglobulins (ZST)
2	8.8
2.5	10.0
3	22.6
3.5	25.2
4	32.0

### Levels of immunoglobulins (ZST)

**>14** = adequate colostrum absorption

**5-14** = relative failure of colostrum absorption

**<5** = absolute failure of colostrum absorption

Antibiotic usage was reduced by **50%**



<sup>1</sup> Compared to previous years



## Farmer Q&A



### What are your thoughts on the demonstration network?

"I welcome the opportunity to share any lessons learnt and experiences gained through being a Farming Connect demonstration site. I am eager to demonstrate new technology and management practices."

### What are your objectives?

"I am a big believer in marginal gains through attention to detail; those little things that can be done to gain a few kilograms before sale will inevitably add value and improve returns."

### How have your objectives changed?

"With our grassland management, the farm conversion is taking things to the next level; it is all about marginal gains. If you look at the Wales Farm Business Survey, the top third of producers in every sector have the highest stocking rates; it is a big driver for profitability, and that is where we want to be."

*"Aerated fields show better root penetration and less compaction. The grass roots can now go down further and that can only be beneficial. Although I have never baked a cake I have been advised that the approach used to test a cake to see if it is cooked is similar to that for checking the soil. If you insert a skewer into a cake, it will come out clean when the cake is baked - it won't be sticky. The same is true if you poke a blade or spade into the soil; if soil sticks to it, the ground is not ready to be aerated." - Richard Tudor*



## Farm details



### Richard & Helen Roderick

- **Beef & sheep**
- **263 hectares:** 182 hectares owned, 81 hectares rented
- **32 hectares** woodland

- **Brecon Beacons National Park**
- **Glastir Advanced**
- **Cattle are finished or sold** as stores at Brecon market
- **90% of ewes** lamb between **18 February** and **5 March**



**1,050** sheep,  
mainly Suffolk cross  
mules with some  
Aberfields



**90** Stabiliser  
suckler cows



**22** hectares of cereals  
**4** hectares of fodder beet  
**49** hectares of silage  
**16** hectares of hay



Self-catering  
cottage



**75kW** biomass  
boiler

## Farm objectives

Grow the beef and sheep  
enterprises as stocking rate allows  
(**1,100** sheep, **100** suckler cows)



Focus on grassland management  
and out wintering to increase  
stocking rates and reduce costs



Rectify soil indices to maximise  
grass growth



Use surplus cash to reduce  
borrowings or re-invest to  
maximise return on investment



Reduce production costs  
through improved grassland  
management



## Projects

- Digestate as an agricultural fertiliser
- Using alternative herbs (plantain) for finishing lambs
- Weighing of cattle for performance recording
- Out wintering cattle on fodder beet to reduce production costs
- Rotational grazing to aid grass growth and quality



Project 1: Digestate as an agricultural fertiliser

Objectives

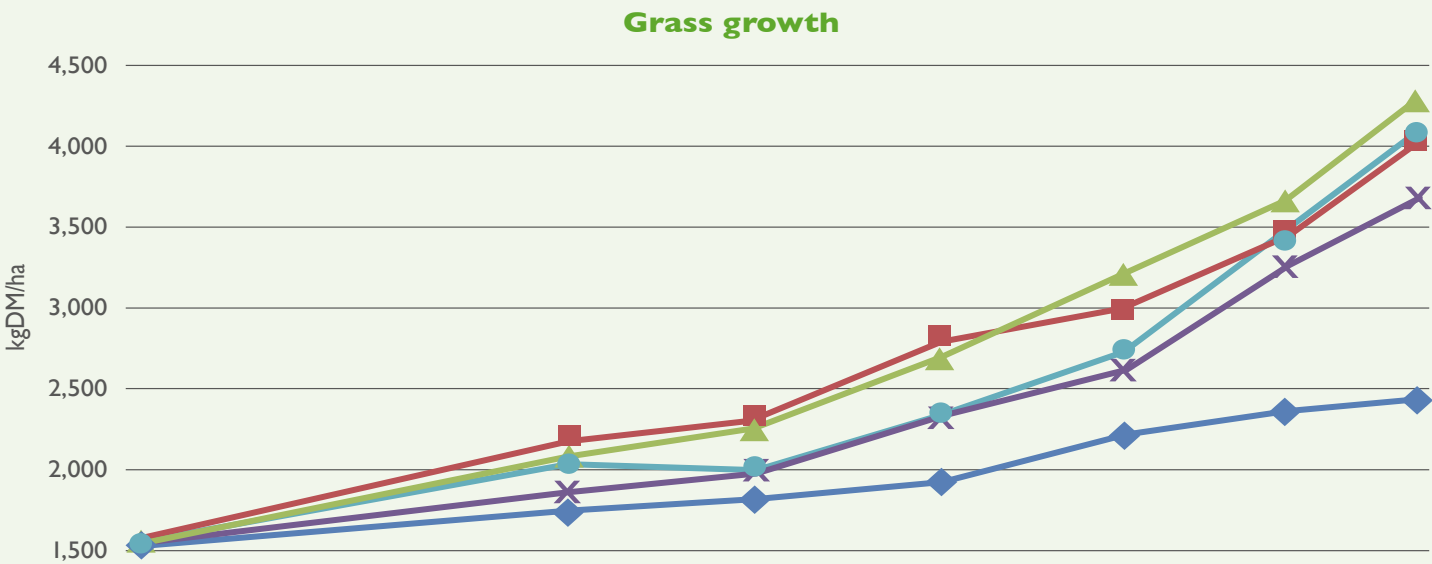
Explore the use of digestate (food origin) as an alternative to compound fertilisers and compare different application methods.

What was done

Digestate came from Bryn Pica AD plant in Aberdare. The nutrient content of the digestate was calculated at 111:20:41. A five hectare field

was split into five even-sized designated plots - one to act as a control with no inputs applied, one treated with compound fertiliser and the others treated with digestate applied by a trailing shoe, splash plate and disc injection. Digestate was applied at a rate of 22.51 t/ha and compound fertiliser at 22.24 t/ha. Grass growth was recorded every week for six weeks. After 35 days, a fresh grass sample was analysed to determine the levels of nitrate available in the grass.

Outcomes



	26 July	11 August	18 August	25 August	1 September	7 September	12 September
Control	1,552	1,756	1,827	1,927	2,215	2,365	2,440
Trailing shoe	1,552	2,177	2,302	2,790	3,002	3,440	4,014
Disc injection	1,552	2,065	2,265	2,715	3,227	3,665	4,295
Splash plate	1,552	1,865	2,015	2,365	2,627	3,265	3,692
Fertiliser	1,552	2,065	1,990	2,327	2,752	3,490	4,084

Digestate was proven to be a viable option for farmers within the catchment area, as it is more economical compared to compound fertiliser. It also helps restore the natural recycling of nutrients and recycles scarce nutrients, such as phosphorous.

By using digestate instead of synthetic fertilisers, the industry can save energy, cut consumption of fossil fuels and reduce its carbon footprint.

£67.01 saving per hectare when digestate used instead of fertiliser - a saving of £1,340.20 for 20 hectares

Cost @ 22.51 tonnes/hectare	Fertiliser	Digestate
N	274 units @ 28.5p each = £78.09	
P	49 units @ 27p each = £13.23	
K	101 units @ 20.5p each = £20.71	
Total cost/hectare	£112.03 (excluding spreading)	£2/tonne = £45.02

## Project 2: Optimising lamb value on plantain



### Objectives

The aim of this project was to evaluate the longevity of plantain as a lamb finishing crop and evaluate its efficiency after three years. A plantain crop was established in 2013 as part of a Farming Connect Farming Innovation Fund trial to examine its potential to improve the efficiency of lamb production through better growth rates and days to finish.

### What was done

A field was split in half with an electric fence and a system of grazing and resting introduced. Average lamb Daily Liveweight Gain (DLWG) was recorded, along with killing-out percentage and grades achieved. Total grazing days per hectare were also recorded and compared to findings from 2014.

Mixture: Roderick Special (Plantain) 14.8kg/hectare

- ABERDAI Trifolium repens 12.5% White clover
- CRUSADER Trifolium repens 12.5% White clover
- CORVUS Trifolium pratense 25% Red clover
- Agric TONIC Plantain Plantago 50%

### Outcomes

Performance on plantain	2014	2016
Average DLWG (g)	223g	246g
Lamb killing-out %	45%	46%
Lamb grades	43% U, 57% R	6% E, 36% U, 58% R, 5% over fat
Total grazing days/hectare	4,201	3,360

Overall, the plantain maintained its performance after three grazing seasons. That said, there was a reduction in the total grazing days as a result of increasing competition from weeds, diseases, pests and grazing livestock. Plantain is a poor competitor and requires careful grazing management to ensure other species don't smother it. It also cannot be ensiled or grazed over winter months. As a result, Richard is unlikely to sow plantain again, as well managed grass and clover swards can provide similar performance with much more flexibility in use.

### Top tip

You have to measure to manage and you learn when things don't work out too



## Farmer Q&A

### How did you benefit from being part of the demonstration network?

“Becoming a demonstration site offered the opportunity to trial different projects across the business enterprises.”

### What have you got out of being part of the demonstration network?

“During this time, I’ve visited different farms and met different farmers, learning from the best and implementing what I can back home. Sharing knowledge with other farmers and being critically challenged by others as to why you do what you do has been very rewarding.”

### How have you found the projects?

“All the projects have been beneficial. In addition to the main projects, we have looked at projects to increase the utilisation of grass through electric fencing, outwintering of cattle on fodder beet and examining whether flock and herd health can be improved through the increased use of vaccines.”

### What interesting thing have you learned from the projects?

“The food waste digestate project showed that if digestate was injected close to the plant roots, the plant grew 5% more grass per hectare than compound fertiliser.”

### What has been the best thing about being part of the Demonstration Network?

“The highlight for us of being a demonstration site has been all the people we have met along the way. We work in a great industry and the support and interest in our farm from fellow farmers has been great.”

*“My top tips for business success are to have a clear long-term vision for the next 20 years and to formulate a solid plan to get there, taking advantage of all opportunities to benefit the business along the way.”*





## Farm details



### Gwyn & Delyth Parry

- **Beef & sheep**
- **283 hectares:** 222 hectares owned, 61 hectares long-term tenancy

- All the farmed land is part of the **Glastir Organic scheme**
- All cattle are finished and sold at **18–22 months** of age
- The cattle are housed from **mid-November to mid-March**
- **Lambing starts** at the beginning of March
- All lambs are fattened and **sold deadweight**



**80** suckler cows,  
mainly Limousin  
cross Stabiliser



**450** ewes, improved  
Welsh (Talybont) and  
**200** ewe lambs



**32–36** hectares of  
silage cut mid-June



**2** holiday cottages



**1** shepherd's hut



Solar PV cells

## Farm objectives

Improve grass utilisation



Maintain farm profitability while  
reducing reliance on subsidies



Secure a viable farming business  
for the next generation



## Projects

- Weighing store cattle at housing and turnout
- Paddock grazing store cattle
- Screening for Johnes and BVD
- Identifying losses during late pregnancy and up to eight weeks post lambing
- Finishing beef from grass at 18 months
- On-farm evaluation of Faecal Coproantigen Test to detect liver fluke in cattle



## Project 1: Finishing beef from grass by 18 months of age

The aim was to optimise cattle output by selling most cattle as finished therefore achieving the organic premium. Mindful of the costs associated with finishing using organic concentrates, it was decided that utilising the farm's grassland through rotational grazing was an opportunity for improving cattle output and the ambitious target of finishing the steers off grass at 18 months of age at >600kg liveweight (LW) was set.

With the cattle usually turned out during the first two weeks of March, the grazing season is typically 225 days long.

### Objectives

Improve grass utilisation, growth and quality through rotational grazing



Target stocking rate ranges from 1,500kg LW/ha at turnout to 2,800kg LW/ha during peak grass growth



DLWG target of >1kg during grazing period from March to October



### What was done

- Initially, 5.3ha was subdivided into 17 paddocks using permanent and temporary electric fencing.
- Predicted dry matter intakes were calculated along with weekly grass measuring to manage the grazing rotation.
- Cattle were moved every two days and weighed following each rotation.

### Outcomes

Not all steers reached the target weight by 18 months of age; just under a third were finished by early October. The drought conditions and consequent poor grass growth affected DLWG. This was an improvement on the year before when liver fluke hindered animal performance, highlighting that animal health is key to herd efficiencies.

Gwyn has now expanded the rotational grazing system to a far greater area of his farm; this has given the family the confidence to expand their herd from 60 to 80 cows.

### Orsedd Fawr herd KPIs for 2017 calf crop

Avg cow weight	652kg
Cow efficiency	38% @ 200 day
DLWG to weaning	1.2kg
DLWG of steers over grazing period	1.09kg
Stocking rate at turnout @ 15/3/18	1,544kgLW/ha
Peak stocking rate @ 7/9/18 *lower than usual due to drought*	2,216kgLW/ha
KgLW/ha produced	788kg

Grass utilisation has improved from **65%** to **80%** by controlled paddock grazing rather than just rotational grazing, equating to a gain of **£226/ha.**

#### Top tip

Regular weighing has highlighted the huge variation within the herd. With three years' data now available, the poor performers are being removed from the system.

*"There is a short window to get the cattle finished on grass so there is no margin for error."*

- Gwyn Parry

	Top 10%	Bottom 10%
Cow efficiency	48%	28%

## Project 2: On-farm evaluation of Faecal Coproantigen Test (FCT) to detect liver fluke in cattle



The project to finish beef from grass by 18 months highlighted that although Faecal Egg Count (FEC) analysis is a useful tool in the detection and treatment of fluke burden, sometimes it may result in misdiagnosis or late diagnosis. Undetected fluke in the cattle post housing in the winter of 2017 was the most likely cause for a reduced DLWG of 0.2kg lower when compared to the same period the previous year.

### Objectives

Correctly detect fluke burden to ensure growth targets met in the grazing timeframe



Accurate diagnosis of liver fluke using the FCT



Detect liver fluke four weeks earlier than FEC analysis



### What was done

Five faecal samples were collected from the group of steers grazing on the rotational system every three weeks from August through to October and analysed for the presence of liver fluke using the Coproantigen and FEC test.

The steers were also individually tested twice during the project.

### Outcomes

Given the very dry summer of 2018, both FEC and FCTs came back negative from August through to October. Two groups tested positive for the FCT in November but remained negative for the FEC test. This indicated that immature fluke was present, but no adults as yet shedding eggs.

Early detection and treatment post housing for winter 2018 has ensured that performance has been maintained with heifers averaging 0.74kg DLWG and steers at 0.94kg DLWG on a diet of high quality silage and 1.2kg of concentrates per head per day.

Undetected fluke burden at Orsedd Fawr across 40 steers equates to £11.66 per day of additional cost through loss of production.



## Farmer Q&A



### **What were your key objectives at the beginning?**

“To improve the business and make it more profitable.”

### **Why did you want to be part of the demonstration network?**

“It was an opportunity to learn more and get more precise information.”

### **Do you have any top tips for other farmers or words of wisdom?**

“Take every opportunity that comes with Farming Connect and you are never too old to learn.”

### **Have your objectives changed?**

“Our objectives remain the same, however, we intend to apply the lessons we have learned from being a demonstration site to further improve our business.”

### **What are your thoughts on the projects undertaken and their impact on the farm business?**

“It has improved the ability to grow more grass through the paddocks system and we are able to keep more stock. Obtaining a Nutrient Management Plan through Farming Connect has been key to this.”

*“We have always turned out early because the land is quite free draining in parts but what has changed is that we can keep more cattle because we are growing more grass with rotational grazing.” - Gwyn Parry*

*“By measuring grass and getting the animals to graze the paddocks more efficiently, we are growing better quality grass and more of it.”  
- Gwyn Parry*

### **Top tip**

Nutrient Management Planning is key to having efficient grassland - it is available through the Farming Connect Advisory Service.

## Farm details



### Arwyn Jones in partnership with his mother

- **Beef & sheep**
- **3** full time staff
- **364 hectares:** 170 hectares owned, 194 hectares rented

- Mainly grassland, with **65 hectares** of cereals and **24 hectares** of maize grown annually to finish cattle
- **700 cattle** finished annually, all bought in as stores between **18-22 months**
- **Finishing ration of maize silage**, supplemented with home-grown cereals and purchased protein



Flock of **1,450** sheep  
- **1,100** Suffolk cross  
ewes and **350** mule  
type ewes



Ewes lamb from  
mid-January and ewe  
lambs from mid-March



All lambs are creep fed  
and finished at **21kg**  
deadweight



**12 hectares** of rape and  
stubble turnips are grown  
alongside **5 hectares** of  
red clover

## Farm objectives

Utilise home-grown feed



Intensify the sheep  
enterprise



Reduce antibiotic usage



Improve pasture quality  
during the growing season



Performance record the  
maternal flock



Improve silage quality and  
reduce silage waste



## Projects

- Precision farming and crop monitoring via Normalised Difference Vegetation Index (NDVI) Satellite Imagery
- Reducing antibiotic use at lambing
- Getting to grips with soil fertility



## Project 1: Precision farming and crop monitoring via Normalised Difference Vegetation Index (NDVI) satellite imagery

### Objectives

Demonstrate cutting edge technology and its uses in precision farming to drive efficiency and production in a grass and arable system. This will help maximise outputs from a grass-based system and reduce reliance on bought-in feed.

### What was done

The project involved mapping 40 hectares of mixed arable and grassland with a scanner that measures the electrical conductivity of the soil at depths of 30cm and 90cm to create a map showing the variation of the soils within a field. The field was then split into management zones according to soil variation and each zone will be sampled to determine its nutrient status and soil texture. Nitrogen, potassium, phosphate and pH are the targeted nutrients in the project and according to the analysis, inputs can be applied variably in each zone, to achieve optimum yields for each field.

The project also included the use of the N-min test on fields sown with cereal crops and forage maize. This allowed Arwyn to accurately calculate how much inorganic nitrogen was required throughout the growing season for individual fields.



### Outcomes

The project is ongoing but nutrient and texture results have allowed Arwyn to apply nutrients at variable rates using GPS software to achieve optimum yields and maximum efficiency.

The variability within a field was quite surprising, despite fertilisers being applied uniformly in the past



A reduction in purchased inorganic nitrogen achieved a saving of **£72.13/Ha** which included the cost of the N-min test



The use of this new technology allows crops to be grown as cost effectively as possible, allowing a further reduction to sheep and beef feed costs



## Project 2: Reducing the use of antibiotics at lambing



Overall benefit to the business so far is **£11,800** before any additional feeding costs of the additional lambs

### Objectives

This project is part of a European Innovation Partnership (EIP Wales) project where Arwyn is part of a like-minded group of farmers addressing antibiotic use at lambing. Previous outbreaks of joint ill, watery mouth and coccidiosis meant antibiotic use at lambing was common at Plas, contributing to a significant vet and medicine cost. In order to try to eliminate this practice, this project focused on ewe management.

### What was done

Ewes were blood sampled three weeks before lambing and a metabolic profile created. The metabolic profile gave detailed insight into the condition of the ewes, measuring levels of energy, protein and minerals and enabled adjustment of the diet prior to lambing. Blood samples were also collected from 44 lambs to test for immunoglobulin, an indication of the quality and volume of colostrum absorbed. The lambs were weighed and Faecal Egg Count (FEC) sampled to monitor their worm burden. Another 30 lambs were screened for immunoglobulin levels using a refractometer and up to 10 sick lambs were also sampled for colostrum adsorption levels. Lambs were weighed at birth, eight weeks and at slaughter to evaluate growth rates. Any health issues were recorded.

### Outcomes

- No oral antibiotics used for the lambing period
- Out of 2,000 lambs turned out, only two of them had watery mouth, however these lambs were born to a ewe which was in poor condition
- Overall usage of injectable antibiotics reduced by 75%
- Colostrum monitoring was effective with all lambs showing good levels of immunoglobulin
- Plas has saved approximately £1,600 through using less antibiotics, reduced labour costs by £600 and also has an additional 96 lambs to sell
- Secondary benefits of a lower labour requirement and improved staff morale during the lambing period



## Farmer Q&A



*“The benefits I’ve seen in my flock have been great, and I recommend every other ewe flock farm to benchmark their figures against the Farm Business Survey and look at ways to challenge their own antibiotic usage based on our success.”*

### **Why did you want to be part of the demonstration network?**

“Farming is changing, and now’s a great time to get some expert opinion on the business from a different perspective. Even a 5% improvement in all three enterprises will make a big difference to the business collectively.”

### **What have been the benefits of being part of the demonstration network?**

“The most significant benefit has been in lambing performance. I didn’t expect to see the full range of benefits that came from this project. That said, the initial benchmarking analysis showed that other farms had lower drug usage per lamb than us which in turn gave them a competitive advantage. By slightly changing some of our routines and protocols, not only do we use significantly less antibiotics, but we have also had stronger and healthier lambs. In turn, this has made the lambing period much more enjoyable for everybody with reduced labour requirements and also less overall stress.”

### **What impact has the grazing management project had?**

“On grazing management, I was surprised to see that neighbouring fields (and even in a single field) had so much variation in soil nitrogen levels as a result of past management practices and cropping history. At a cost of £90 per field, the test I used eliminated any guesswork for nitrogen application and helped me grow crops as cost effectively as possible.”

### **What have you got from the projects?**

“Overall, being involved in these projects has been hugely beneficial to the farm business but also to me personally, as I’ve grown in confidence in achieving the best I can on the farm.”

## Farm details



### Rhidian & Elen Glyn - partnership

- **214 hectare** tenanted farm with rented land taken on where possible
- **10 year Farm Business Tenancy** started in 2014

- **114 hectares** unimproved hill, 12 hectares of semi improved, 5 hectares woodland
- **Twins** lambed indoors from **mid-March** and fed grass silage, oats and concentrates
- **Singles** lambed outdoors and fed oats and concentrates
- **Lambs are finished** on grass, rape and turnips and sold locally
- Joined **Glastir Advanced** in January 2017



**1,000** improved  
Welsh ewes



Contract rear dairy  
heifers on a strip  
grazing system



**2-2.4** hectares  
swedes / rape grown  
annually



**6** hectares  
reseeded

## Farm objectives

To contract rear or  
purchase 100-150 dairy  
heifers per annum



To maintain a flock of  
900-1,000 ewes



Maintain a profitable  
farming system by  
maximising the use of grass



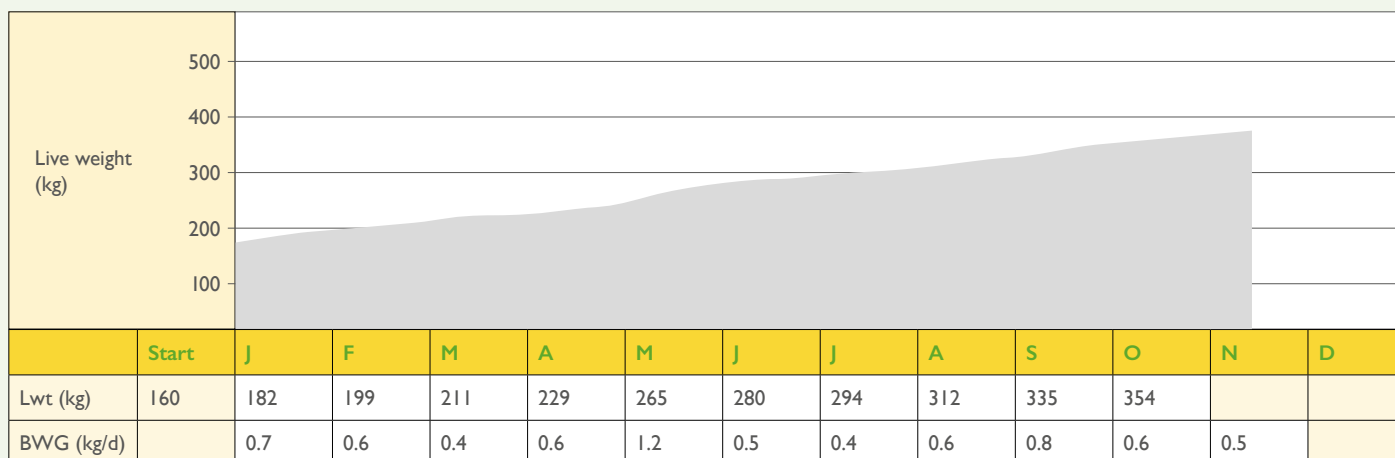
## Projects

- Implementation of the 5-point lameness plan
- Comparing costs of three different ewe wintering systems
- Using body condition scoring and weighing of ewes to increase prolificacy and scanning percentage
- Using different rams on the Welsh ewes to create a crossbred ewe
- Wormer resistance testing and faecal egg counting project
- Use of rotational grazing to increase stocking rate and increase grazing quality



## Live Weight

Rhiwgriafol: Dairy Heifers: 1-Year Heifers, Jan 18 - Dec 18



## Project 1: Increasing Productivity Through TechnoGrazing

Converting an area of the farm that was set stocked to a rotational grazing system to accommodate dairy heifers, and in the process drive grass productivity.

### Objectives

- To increase grass productivity
- To manage grass more effectively throughout the grazing season
- To enable the sheep flock to increase by reducing the area of land allocated to heifers

### What was done

Two fields amounting to 12Ha were split in half using permanent electric fencing then into 16 paddocks using temporary electric fencing. Portable water system was installed using a 25mm MDPE pipe laid on the surface with quick connect hydrants every 100m. These were used to connect a portable "Microtrough" which moved with the cattle.

105 yearling dairy heifers spent between one and a half and three days per paddock depending on desired rotation length to match the pasture growth rates.

## Outcomes

Pasture was consistently grazed down to 1400kgDM/Ha for the first two rotations starting 10 March 2018. In May and June, when there was a surplus of pasture, the target was increased to 1700kgDM/Ha. This meant heifer intake was increased and speed of re-growth improved as well as conserving more soil moisture.

The turnout weight was 210kg with a peak Daily Live Weight Gain (DLWG) of 1.2kg in May; the DLWG was impacted during the drier summer months but increased again in September.

Rhidian intends to introduce TechnoGrazing onto his Ffridd (semi improved land) and will use rotational grazing principles across his whole farm in 2019.

The 12Ha block achieved production of **1,066kg LW/Ha**; this is two and half times higher than the historical farm average.

### Top tip

Rotational grazing is a proven way of increasing pasture growth and utilisation by **50%** compared to set-stocking.

## Project 2: Comparing wintering options



### Objectives

To demonstrate the practicalities and financial impact of an outwintering system based on swedes in comparison to a housed system and sending ewes on winter keep (tack).

### What was done

Swedes were planted and crop yields monitored. Ewes were randomly split into three groups, with the first group strip grazing the swedes from January until being moved onto grass three weeks before lambing. The second group was set stocked and offered baled silage and concentrates. The third group was sent to winter grazing (with no supplements) in October and returned to the farm for lambing. Ewe performance was monitored through body condition scoring, assessing the general health of the flock and lambing data. All input costs of both enterprises were recorded.

### Outcomes

All three systems were analysed in terms of costs:

These costs included labour requirements plus an allowance for the rental value of any land used. On average, ewes on a grass and concentrates diet were below target body condition score (at 2 to 2.5 (below target)) whilst the ewes on swedes and tack were at an ideal score of 3-3.5.

The ewes coming back from winter tack were in overall better condition. Rhidian will continue to grow swedes to be fed up to lambing, although he will also tack more ewes away from the farm for the winter to allow better grass at turnout.

*“The swede crop fed the ewes at 5p / day, compared to a housing cost of 15p/day. Saving 10p per ewe for 90 days on 250 animals quickly added up.”*

Crop	Cost (£) per ewe
Swedes	8
Tack	11
Set stocked (silage and concentrates)	17



## Farmer Q&A

### Why did you want to be part of the demonstration network?

“Being a Farming Connect demonstration site offered me access to top industry information and advice from likeminded farmers. This helped us achieve our goal of increasing the sustainability of the farm.”

### What has been one of the main benefits?

“I’d been looking into the main factors that influenced the profits and efficiency of the business pre-project, and one that stood out was lameness. Because of the project, the flock now has less than 1% lameness, making treating sheep much easier and increasing flock efficiency.”

### What other projects have you been involved in?

“The rotational grazing project has enabled me to increase the farm’s stocking levels as well as improve grass management. A combination of rotational grazing, measuring grass with a plate meter and using Farmax software has allowed me to plan ahead, minimising the cost of nitrogen fertiliser and supplements. Through this, I’ve also had early warning that I was going to run out of pasture last summer. I weaned early, put the ewes on maintenance feed and grazed a proportion of silage ground. Regular measuring of pasture covers won’t change the weather, but detecting a potential feed deficit early gives me more options on how to deal with it.”



## Learnings

- Rhidian aims to produce larger framed lambs from a hill-based system which will be more marketable in the future.
- The input of advice and Rhidian’s enthusiasm to take ideas on board have been beneficial to the farm business.
- Rhidian will continue to lamb later (late March), utilise swedes, and to tack 500 ewes away on grazing. This enables considerable savings on concentrates.

## Farm details



**Jack Lydiate in partnership with his parents John & Lynne**

- **Organic sheep** farm
- **Lamb indoors** from **mid-March**, with ewes fed baled silage and concentrates
- **All lambs sold** as stores in **October**

- **202 hectares;** 76 hectares of improved land, 65 hectares of enclosed hill and 61 hectares of woodland
- **Glastir Entry**
- Low stocking rate of **4.6 ewes/Ha**
- Cattle tack in summer



**350** improved Welsh and **150** crossbred ewes with **130** replacements



**24** hectares of grass cut for baled silage annually with under half the bales sold



**61** hectares of woodland planted under the Glastir Woodland Creation scheme



Herd of **10** suckler cows introduced in **2018**

## Key objectives

Maintain off-farm income and look at other enterprises



Increase ewe numbers to **550-600**



Improve lamb rearing % and carcase size



Plant a further **18** hectares of woodland during **2018/2019**



## Projects

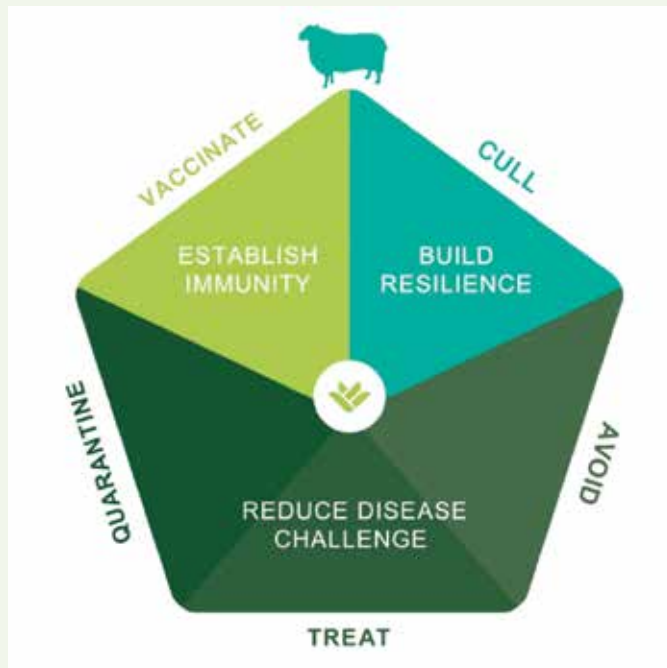
- Reduce lameness levels by implementing 5-point lameness plan
- Improve scanning results by targeting ewe body condition score and stricter culling
- Appropriate liver fluke treatments at different times of the year
- Reseeding with new grass varieties and trialling legumes
- Delayed lambing to better match grass growth
- Vaccination to improve scanning results
- Introduce crossbred rams to increase size of ewe lamb replacements
- Reduced winter feed costs by focusing on silage quality and testing samples pre-feeding
- Wormer resistance testing and faecal egg counting to justify which wormers to use



## Project 1: The use of the 5-point plan for treating lameness

### Objectives

Jack wanted to address flock productivity with a particular emphasis on lameness. By implementing the 5-point lameness plan, with support from his vet, significant improvements were made.



### What was done

A whole-flock lameness reduction plan was put in place using the principles of the 5-point plan. Levels and severity of lameness in the flock were monitored over a 12 month period and a sample of ewes individually examined and scored for the presence of disease. This took place prior to tupping and was repeated again at the end of the project. A monthly visit monitored flock lameness levels; recorded whole flock antibiotic use and any footbathing carried out. At the same time, ewes identified with lameness were culled. Jack's vet examined any lame sheep and prescribed an appropriate treatment. Affected ewes were treated early and isolated until cured. Ewes repeatedly affected (>2 treatments in a year) were culled post-tupping.

### Outcomes

Lameness levels	% of flock
Start of project	>10%
After 1 month	<10%
After 2 months	5%
After 12 months	<1%

A combination of reducing lameness and more thorough intervention by body condition scoring has helped to improve the flock's performance



All breeding ewes are now vaccinated with Footvax to keep lameness levels low



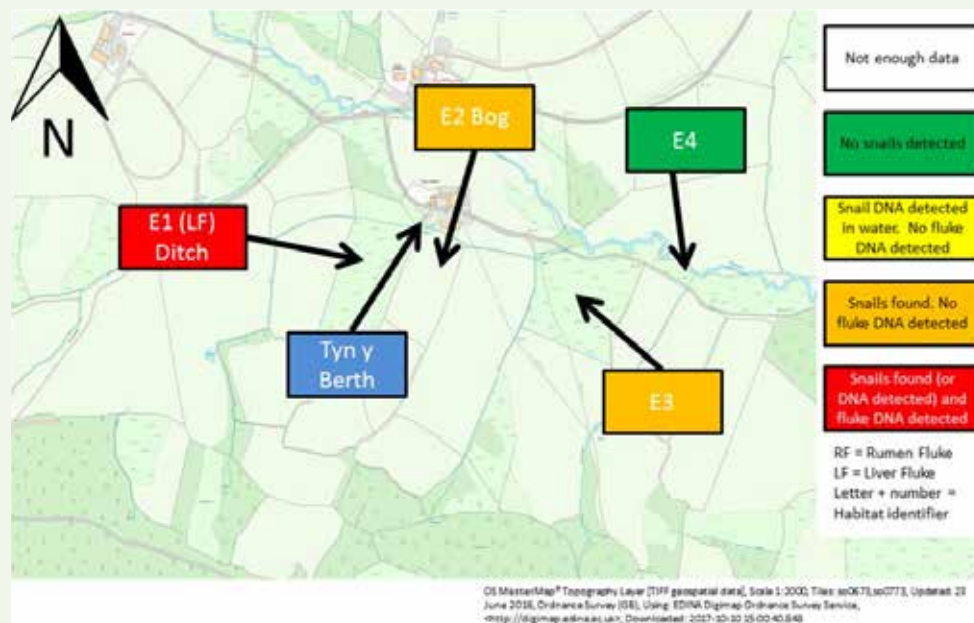
### Top tip

By implementing the 5-point plan, lameness can be reduced within a relatively short time frame

## Project 2: Detection of the fluke infection status of on-farm snail habitats as a tool to manage liver fluke

### Objectives

Liver fluke has been a problem affecting ewe and lamb performance at Tynyberth. Jack was keen to identify the level of infection on individual fields and tailor grazing management with the hope of reducing fluke.



### What was done

By working with experts from IBERS, Jack is now tackling liver fluke control through improving habitat detection and developing grazing plans that avoid high risk habitat at key points in the year.

The project identified:

- Specific locations on-farm where the mud snail could be found
- Whether any mud snails were infected with liver or rumen fluke
- How the presence of mud snails or fluke species varied over the summer and autumn

### Outcomes

At Tynyberth, fluke species were found in Faecal Egg Count (FEC) sampling and fluke snails were found within the majority of habitats. Large numbers of snails were found over August/September sampling which is typical of that time of year and at the farm's altitude. The majority of habitats sampled were wet, boggy

areas with running water. These features provide habitat for high snail numbers across all seasons, with it being likely that infection risk is present from early on in the grazing season in some habitats on the farm. However, actual fluke incidence within livestock was relatively low, as indicated in the sample results. The presence of liver fluke in the habitat has resulted in Jack adjusting his management strategy by planting woodland on the worst affected areas of the farm.

### Tynyberth liver and rumen fluke results

Sample	Visit	Eggs/g Liver Fluke	Eggs/g Rumen Fluke
E1	May/June	0	0
E3	May/June	0	0
E4	May/June	2	0
E cattle	May/June	0	0
E2 sheep	July	0	0
E2 cattle	July	0	0
E4	July	0	1
E2 + E3 sheep	August/September	1	0
E2 + E3 cattle	August/September	0	0
E4	August/September	0	0



## Farmer Q&A

### Would you recommend being part of the demonstration network?

“Yes, the experience has improved my business immensely. I feel very fortunate to have been selected as a demonstration site following other engagement with Farming Connect including the Agri Academy.”

### What have you done differently?

“In the current uncertain economic climate, we’ve had to examine every element of our business in great detail. It has been informative and beneficial to work with our vets and other experts on various projects.”

### What did you get out of the projects?

“I was aware that fluke was not only present but increasing, and I was surprised at the areas where snail presence was found. I’m now keen to continually monitor to ensure more targeted treatments.”

### What have you changed as a result of the project?

“For some of the worst infected areas, I’ve put management strategies in place that will reduce the likelihood of livestock grazing infected pastures. One of these is planting woodland as an alternative means of income on those infected pastures.”

### Do you have any top tips?

“Implementing strategies to tackle fluke in the long term, whilst working around fluke in the short term, can ensure that actionable practices are implemented to overcome the financial burden caused by the parasite.”

*“Farming is an ever-changing industry, now more than ever. Knowledge development and sharing can offer significant potential to our business and to Welsh farmers in general. Farming Connect has offered me the opportunity to engage with experts and specialists which has benefited our farm but has also reached a wider audience through sharing knowledge and the application of innovation and technology.”*



## Farm details



### Aled Morris

- **Dairy**
- **376 hectares:** 237 hectares owned, 139 hectares rented
- **162 hectares** grassland, 40 hectares for grazing with the remainder used for silage

- **Five full-time** and **two part-time** workers
- **Cows fed a TMR ration** based on grass silage and maize
- **Muller Wiseman** contract
- **2.17 LSU/Ha**



**450** Holstein cows  
averaging **9,500** litres



**2** hectares maize  
**24** hectares winter wheat  
**12** hectares spring barley  
for feed



**10** hectares fodder  
beet grown for  
winter feed



Wind turbine to  
supply renewable  
energy

## Farm objectives

To improve efficiencies and  
increase profitability



Demonstrate how important  
people and management skills  
are for a profitable business



Help to take the industry  
forward and become more  
competitive



## Projects

- Management and leadership
- Increasing yields from grazed grass
- Using genomic selection to improve calf rearing efficiency
- Nutrient Management Plan (NMP)



## Project 1: Management and leadership

### Objectives

To ensure that staff are retained and remained motivated, Aled wanted to implement a management process to support and improve his management and leadership skills while also enhancing staff commitment to the business.

### What was done

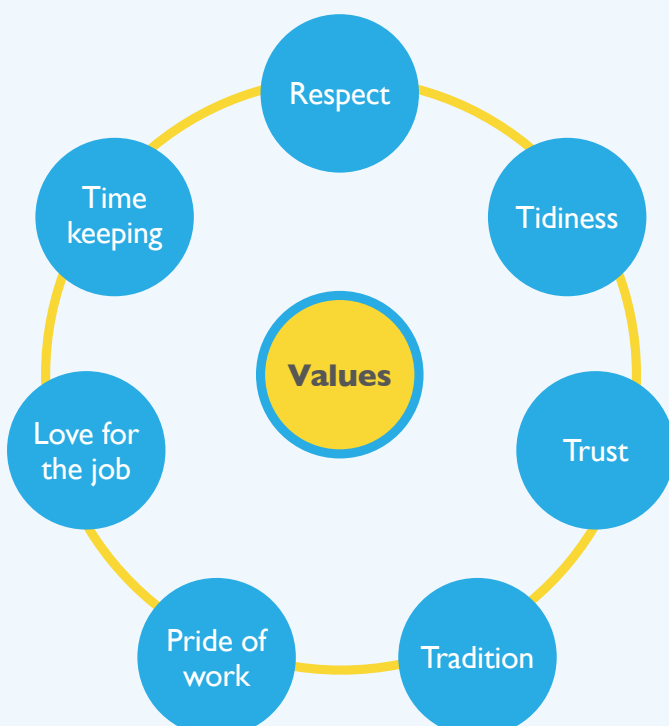
A 360° view of the whole team was undertaken to ascertain 'contentment'. The review is now replicated annually. Meetings were held with all members of the team and support provided to all farm workers during the first year. Protocols, job descriptions, a farm vision and values document were developed to help recruit, develop and retain farm staff.

Monday morning team meetings are held to plan the week ahead and to discuss any concerns. Designated job titles e.g. youngstock manager, assistant herdsman, etc have been created to allow employee ownership and responsibility. A new farm employee handbook is also being developed.



### Outcomes

- Great success for the business but hard to quantify financial benefits
- Technical performance levels have improved
- No staff turnover and overall staff morale and communication have improved significantly



- All staff members now aware of the vision, goals and KPIs of the business
- Improved team cohesion
- Staff have greater responsibility and decision making responsibilities for their area of the business
- Better communication by everyone in the business meaning that everyone involved in the business is aware of what is happening and what is planned
- Less pressure on Aled for day to day tasks as a result of delegating more

*"I would recommend this process to any farm business which has employees or is wishing to grow their businesses and create an effective team."*

## Project 2: Using genomic selection to improve productivity



### Objectives

- Use genomic testing to pick the most productive and profitable animals from the herd for further rearing as replacements
- Improve animal lifetime productivity through better use of herd genetic data
- Improve business resilience through better bred animals

### What was done

Heifer calves were genomically tested and the resulting genotype sent to the Genetic Evaluation Centre for production, health, fitness and fertility traits. Data was also collected in a heifer rearing cost calculator to allow comparison.

### Outcomes

A positive Profitable Lifetime Index (PLI) was seen for all but one of the animals. Overall average results show a group of calves that should develop into profitable cows producing milk with moderate yields, components and low cell counts and heifers that should get back in-calf relatively easily. There was a range of £235 between the highest indexing calf (£380 PLI) and the lowest (£45 PLI) and a large range in kg milk yield and components %.

Trait	Average GPTA of 2016 tested heifers
GPLI (Genomic PLI)	£189
Fertility Index	+4.8
Lifespan	0.2
Kg Milk	123kg
Kg Fat	5.6kg
Kg Protein	4.8kg
Fat %	0.01%
Protein %	0.01%
SCC Index	-6.2

The first batch of heifers that were genomically tested have now calved down and been milk recorded. The highest £PLI calves have become the heifers that have calved down first, suggesting that the high £PLI group were more fertile as heifers and more productive post 24 months of age. However, this is only a small snapshot, and more detailed analysis of completed lactations and data from the other heifers is needed, and this will be made available on the Farming Connect website.

**Before using genomic selection, it's vital that the farm has a clear breeding goal and strategy.**



## Farmer Q&A

### What have you learned from being part of the demonstration network?

“By becoming a Farming Connect demonstration site, I gained more time to look at the business side of things by improving efficiencies”

### What have the greatest benefits of being a demonstration site been?

“The staff leadership and management project has started to bear fruit as our farm staff are far more aware of the herd key performance indicators (KPIs) and are gaining in confidence through the new role specifications and communication structure that we have in place.”

*“By staff members having responsibility for dedicated tasks, this has then taken pressure off me allowing me to focus with more clarity on direction and giving me time to plan the business growth and strategy whilst ensuring the team is working together at all times.”*

### What have you changed?

“Historically, I never communicated fully to the team where the business was heading, what we as a family were trying to achieve, and what their roles were in that plan. Giving staff their own area of responsibility and delegating to allow accountability, whilst always communicating changes to the team as a whole rather than as individuals, has reduced friction amongst the team.”

### What did you learn from the projects?

“It’s an economic disadvantage to breed from an animal with a negative PLI. If you do keep her in the herd, put her onto a beef animal, but don’t breed your replacements from her. Genomics gives us information that we’ve had no chance of knowing in the past. If you have negative PLI animals, why would you keep them in the herd if they aren’t going to make you any money?”



*“The benefits of the weekly meeting have been great for team cohesion as well as working efficiencies. Everyone hears any announcements at the same time, and everyone is aware of what is planned for the week in terms of any business changes, rotas, meetings or crop and stock activities. Everyone then has a chance to discuss any areas or items required, such as chemicals, medicines, machinery parts and other products.”*

## Farm details



### Andrew Rees & family

- **Dairy**
- **162 hectares:** 113 hectares for grazing the milking herd and youngstock, 49 hectares for silage and grazing calves

- **Spring block calving** on an extended New Zealand-style grazing system
- **Some bull calves** raised as dairy bulls and others reared as steers and sold as stores at **18-20 months**
- **Dairy grazing platform** grass measured and recorded weekly averaging **14.7t DM/Ha** using **300kg nitrogen/Ha**



All silage ground reseeded in the last seven years with **10%** of land reseeded annually



Grazing ground is a mixture of young leys and permanent pasture



**295** British Friesian cows plus followers with average annual production at **6,400** litres per cow

## Farm objectives

Improve profitability and business resilience



Continue to develop infrastructure, the use of technology and innovation where returns justify the investment



To act on benchmarking information for the benefit of the business



Further develop the production of grass - turning grass into income



Target of **500kg** of milk solids from one tonne of concentrate



## Projects

- Improving herd health
- Grazing infrastructure
- Welsh Pasture Project



## Project 1: Improving herd health



### Objectives

To improve herd and youngstock health status and explore the potential financial benefits of achieving high herd health status certification in terms of improved productivity and value.

### What was done

Herd health status was measured and benchmarked using both blood sampling and milk sampling to identify prevalence of BVD, Johne's disease, Infectious Bovine Rhinotracheitis (IBR) and Leptospirosis. The farm policy towards vaccination and biosecurity protocols was reviewed and best practice followed.



### Outcomes

- A Johne's monitoring programme was developed, examining herd history to identify any animals related to positive cows
- Calves born to cows identified as Johne's risk cows were isolated early to ensure no contamination between the 'clean' stock and snatched calves
- At calving, calf rearing protocols were adjusted to ensure best practice, including use of colostrometers to test colostrum quality before the calf's first feed
- Calving index: the calving index is around 370-380 days
- BVD vaccination carried out every April along with tag and test of youngstock
- Herd is run as a closed herd

## Project 2: Grazing infrastructure



### Objectives

Improve grazing infrastructure and demonstrate the importance of setting up for success, increasing grazing period and reduced sward damage. Targeting increased grass yields and utilisation, and higher milk from forage, while at the same time reducing lameness in the herd.

### What was done

The grazing platform was GPS mapped and a plan drawn up for where to ideally place tracks and water provision for the grazing system. Cow track design considered the track materials, drainage and shape to reduce incidence of lameness in the herd and increase longevity of the infrastructure. The location of tracks was calculated to ensure even paddock size for successful grass budgeting. Multiple paddock entrance and exit designs were incorporated to allow improved access to grazing areas with the view to reducing sward and soil damage and an extended grazing season. Automatic latches were installed on gates, opening them via a timer, allowing the cows to return to the parlour independently. Cow walking time was analysed, alongside man-hours required with and without the auto gates and cases of lameness.

### Outcomes

Cows transitioned to the Battlatch automatic gate routine very easily, returning to the parlour independently in the mornings. This saved 20 minutes a day of the morning milker's time following cows from the field to the parlour. Whilst difficult to value time, a saving of 20 mins/day at £10/hr equates to **a saving of £1,216 annually**, and payback on the initial investment within weeks.

*"Having accurate measurements of every field will help us to allocate grass more effectively to improve utilisation."*

Three important factors affecting the efficiency of grazing infrastructure on dairy farms are:

- well-planned roadways
- evenly-sized paddocks
- a decent, clean water supply



## Farmer Q&A

### How have the projects improved your business?

“The herd has been growing and while we can only graze for as long as conditions enable us to during the year, accessing an extra grazing block means we will no longer be overstocked on the other paddocks, so more of the cows can stay out for longer. Every day saved on housing the cows and feeding them inside is a big cost saving for the business.”

### How has being a demonstration site helped you achieve your objectives?

“We are looking to make more land easily accessible for the cows throughout the year, particularly a 15 hectare block which is difficult to access in wet weather. New tracks have given us the option of taking a more direct route and crossing the road a bit less and the cows can graze the grass for longer during the day.”

### How have you gained from the projects?

“The auto-latch gives me a good head start on the day, saving time sat on the bike, burning fuel and rushing the slower cows. Extra time in the morning means I can have a coffee, plan my day, and still start milking on time. It also means we keep to a timetable on farm, because at milking time the cows are coming ready or not!”



*“By becoming a Farming Connect demonstration site, I have been able to improve the profitability of the farm long-term, ensuring the business keeps abreast of new industry developments and responsive to market conditions.”*



## Farm details



**Geraint Thomas in partnership with his parents**

- **Dairy**
- **142 hectares:** 125 hectares owned, 17 hectares rented on a long-term basis

- **Mainly grass** with 6 hectares spring barley grown annually
- **Gwynnog herd** of Holstein and Ayrshire cows with followers
- **TMR ration** - home grown silage and concentrates and bought in crimped maize
- **Muller Wiseman** liquid contract
- **430-day** calving interval



**165** pedigree cows



Tack sheep grazed over **winter**



**Six** hectares of spring barley clamp silage

## Farm objectives

Use management accounts to monitor against budget



Use income over feed costs to aid management decisions



Monitor 21 day pregnancy rate to aid fertility analysis



Reduce cost of production



Use technology to improve herd performance



## Projects

- Improving fertility of the dairy herd
- Reducing the routine use of antibiotics by utilising selective dry cow therapy
- Adapt farm buildings for effective calf rearing (Positive Pressure Air Tube Ventilation)
- Colostrum management for better calf health
- Demonstrating how genomic testing can be used in a commercial dairy farm
- Improve grassland management and grass budgeting without compromising yields in high-yielding dairy herd



## Project 1: Improving fertility

### Objectives

To overcome sub-optimal fertility results at Tyreglwys.

### What was done

Genus ABS implemented a Reproductive Management System (RMS) on the farm. Tail chalk was applied to all cows, and a specialist technician identified any cows on heat which were then served. All records were kept on DairyComp 305 software.

### Outcomes

Heat detection increased significantly with RMS due to the combined effect of having a dedicated heat detection specialist and the use of tail chalk.

	Prior to RMS	With RMS
Heat detection %	48	61
21 day pregnancy rate %	10	19
Conception rate %	20	34
Pregnancy hard count	47	86
Average days to 1st service	70	68
Average days to conception	153	149
% pregnant at 100 days	20	55
% pregnant at 150 days	35	72
% not pregnant at 200 days	40	15



In some cases, an increase in heat detection rate leads to a reduction in the conception rate, as more marginal heats are served, reducing conception. However, in this project, the conception rate also increased. This led to the farm's 21 day pregnancy rate almost doubling - from 10% to 19%.

The improvements in fertility are estimated to have led to a net gain of £25,000 for the business, with the additional cost of the fertility service reducing this additional profit to £20,200, or £125/cow.

Outsourcing cattle breeding to a specialist contractor has increased conception rate by 10%



Heat detection rate has improved as a contractor is chalking and observing cows 365 days a year



## Project 2: Selective Dry Cow Therapy



### Objectives

To reduce the routine use of antibiotics, specifically, dry cow therapy tubes, by identifying cows that do not require antibiotic treatment at drying off and treating them with teat sealant. In the past, every cow at Tyreglwys has been double-tubed, using antibiotics and teat sealant at drying off - costing £14/cow.

### What was done

NMR records were used to select cows that would be given teat sealant only. The criteria for this was agreed by Geraint and his vet, selecting cows that in the three monthly milk recording results prior to drying off:

- had a cell count of less than 120,000; and
- had no cases of mastitis.

Strict hygiene protocols were followed to ensure that no bacteria were trapped in the udder by the teat sealant. In the following lactation, cell counts and milk quality were monitored carefully.

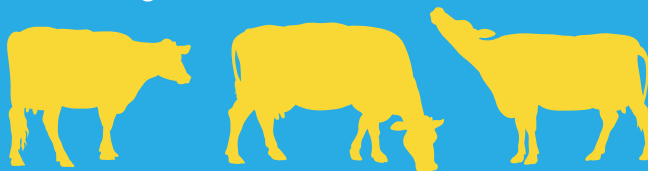
### Outcomes

Eighty percent of the herd were eligible for drying off without antibiotic use, generating a cost saving of £7.40/cow, or £977 for the whole herd. Milk quality and udder health monitoring of these cows is ongoing. As well as a cost saving, milk could be reintroduced to the bulk tank sooner after calving and there was less risk of exposing calves to antibiotics in their colostrum, which can lead to antimicrobial resistance.

Cost saving of **£7.40/cow**



Cost saving of **£977** for the whole herd



Using teat sealant only at drying off saved **£7.40/cow** saving **£740** over a herd of a **100** cows



## Farmer Q&A

### What were your objectives?

“Originally, the aim was to focus on grassland management, but I wanted to look at animal health and welfare issues as a priority.”

### Why did you want to be part of the demonstration network?

“I ultimately wanted to be part of the demonstration network to improve my business. I’m in my third year now and have learnt so much during that time. Some projects have finished and others are still in motion, but it’s the constant learning that has really surprised me.”

### What have you learned?

“I’d tried the RMS system before and had some success, but nothing compared to what we achieved on the fertility project. It goes to show the benefit of having someone whose specific role it is to manage fertility, rather than being dragged to other routine jobs on the farm.”

### What changes have been made?

“The Selective Dry Cow Therapy project shows that things are constantly evolving. Historic advice was to treat each cow with an antibiotic, but with the data and information we have now, we can be more selective, which is better for the cow, the wallet and the environment.”

### Are there any projects you are looking forward to?

“Some of the projects have had to go on hold as we tackle the scourge that is bovine TB. That said, I’m really excited to see the results of the projects on calf housing and calving cameras. Initial anecdotal evidence is very promising.”



*“Being a demonstration site has allowed me to try new things sooner than I would have on my own. I’ve also had excellent support and advice along the way that has eased the journey. I’d advise any farmer to take up these opportunities in the future - you’re never too old to learn!”*





For more information about the demonstration network and sites, visit the Farming Connect website: **[www.gov.wales/farmingconnect](http://www.gov.wales/farmingconnect)** or for specific enquiries, contact the Service Centre on **08456 000 813**.