



**FARMING CONNECT  
PARASITOLOGY PROJECT**

Using faecal egg  
count (FEC)  
information to  
map infection  
of worms.



**DAIRY FERTILITY  
CASE STUDY**

Targeting dairy fertility  
improvements to help  
farmers cut costs and  
boost performance.



# INTRODUCTION



Although the weather over recent months has been favourable, meaning that we were able to turn out the store cattle to pasture on 11th March (*the earliest ever*), I'm very much looking forward to the summer, as are most of you I'm sure, in order to turn out the heifers and their calves!

Due to the fine weather last autumn, the winter was a little shorter here at Cae Haidd, with the cattle being brought in a little later than usual at the end of October. The calving season began

here at the beginning of January, and once again, the collars have been placed on the cattle in order to improve heat detection and to carry out AI. If all goes according to plan, it looks likely that the calving index will have reduced significantly by this year compared to last year.

A few stores were sold at 17 months old at Llanrwst market at the beginning of February – these are usually the youngest/smallest, with the majority being sold off grass in early October. The sheep scanned at a similar level again this year, with the Halfbred ewes scanning at 174%, the Penderyn Welsh at 173% and the Welsh mountain ewes scanning at 145%. The rearing percentage is clearly the important figure and this remains to be seen.

We began feeding silage to the sheep at the beginning of January, and from what I have seen this year as part of the 'Silage Losses' project, we will need to improve the silage feeding system for next year in order to reduce waste. After scanning at the beginning of January, the multiples will be grazed on swedes for a time before being brought in three weeks prior to lambing. Further information about this project can be seen on page six.

In order to make the best possible use of the shed, the Halfbred ewes began lambing on 10th March, followed by the Welsh ewes on 28th March. By using teaser rams, the aim is that the majority of the ewes will lamb during the first rotation, making enough room in the shed to bring in the Welsh ewes as they begin lambing.

Paul Williams - Cae Haidd, Farming Connect Demonstration Farm

## ADVISORY SERVICE

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Visit our website or contact us for more information

<https://businesswales.gov.wales/farmingconnect/advisory-service>

# Farming Connect Parasitology Project

## PARASITE CONTAMINATION MAPPING

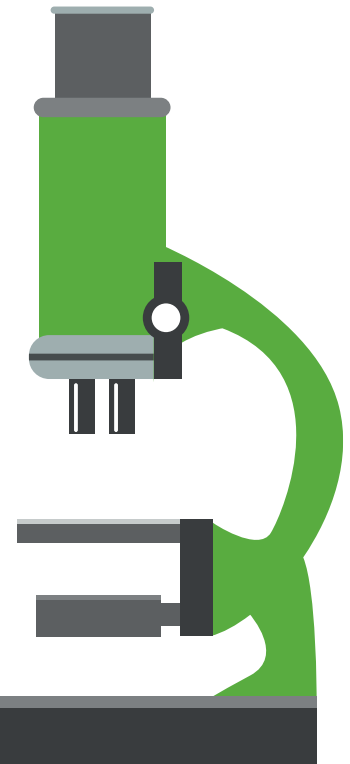
The control of roundworms is threatened by increasing wormer resistance, with recent evidence suggesting that most Welsh farmers are unwittingly using wormers that simply don't work, and many have very few effective wormers left to choose from. This will significantly impact on lamb performance and the industry needs to adopt new strategies to help combat worms.

There will be an increasing need to understand the ever-changing parasite challenge at an individual farm level, with a greater focus on reducing the consumption of parasite larvae on pasture by vulnerable stock, rather than accepting a high worm challenge and relying on treatments.

One of Farming Connects' Focus farms are investigating a novel approach by using faecal egg count (FEC) information to map where high infection of worms are present and implement management which could help lower overall worm burden. Catrin George, who farms Tirlan, Brechfa, Carmarthenshire has already significantly altered the farms worm control strategy over the last 2 years including the adoption of regular FEC, which is also advocated through the SCOPS best practice principles. By using the on farm FECPAKG2 system, Catrin has completed between 50 and 80 tests per year and seen benefits in terms of better targeting treatments and only using effective wormers. The project will further progress this by utilising the FEC Data already collected to map egg contamination. If fields with a high burden are identified the following management strategies could be applied (*where feasible*).

- **AVOID GRAZING WITH VULNERABLE STOCK**  
– e.g. growing / fattening lambs
- **CROSS-GRAZE WITH NON-SUSCEPTIBLE STOCK CLASS TO CLEAN UP INFECTIVE LARVAE**  
– e.g. cattle or dry ewes.
- **REST FROM GRAZING**  
– e.g. use for harvesting hay / silage
- **IF RESEEDING – INTRODUCE NOVEL FORAGES WHICH ARE LESS ATTRACTIVE TO INFECTIVE LARVAE**  
– e.g. plantain and chicory.

Catrin has already identified significant contamination by ewes post lambing before they were wormed in late spring. This prompted a change to the timing of the ewe's spring dose which should result in reduced pasture burdens over time. Also, if a particularly high FEC is recorded, she attempts to graze that field with cattle and / or dry ewes next time round before going back in with lambs. More results will be available during the summer with the aim to assess the practicalities and benefits of this approach on farm.



## FINISHING CATTLE AT 18 MONTHS FROM FORAGE

Younger animals are more efficient converters of energy (feed) into meat. Their feed conversion ratio increases with age and weight as more energy is required for maintenance. Finishing cattle earlier (< 18 months) can reduce total feed cost, carbon footprint and importantly provide a more tender and consistent product to the consumer (Law, 2016).

To achieve a target slaughter weight of 600kg by 18 months requires an average DLWG of 1.0kg/day. This is certainly achievable but requires planning and management to provide quality feed and minimise any period when the animal is not growing at the target rate.

Well managed grass is the cheapest type of feed, followed by quality silage (AHDB, 2017). A system which is focused on firstly maximising the use of these will not only achieve DLWG targets but also have a lower cost base and greater gross margin. This is the basis for the project at Farming Connect Demonstration Site, Orsedd Fawr where rotational grazing will be used to help maintain pasture quality.



The graph shows the target growth paths for 16, 18 and 20 month finishing systems. The average growth rates achieved at Orsedd Fawr is also plotted. From birth to weaning at 180 days, Orsedd Fawr achieved a DLWG of 1.16kg, above the target of 1.08kg which provided a buffer against the post weaning check where the DLWG fell to 0.97kg. A further drop in DLWG to 0.56kg occurred due to the removal of concentrates from the diet. This is below the post weaning target of 0.97kg and therefore, to reach the target finish weight of 600kg the average DLWG must now be 1.05kg.

This example shows how important regular weighing, without it this reduction in performance would not have been detected and it now means that action can be taken. With good quality grazing available a proportion of the cattle will be turned-out and offered 10 kg/DM/ha/day to ensure sufficient energy to achieve the target DLWG.

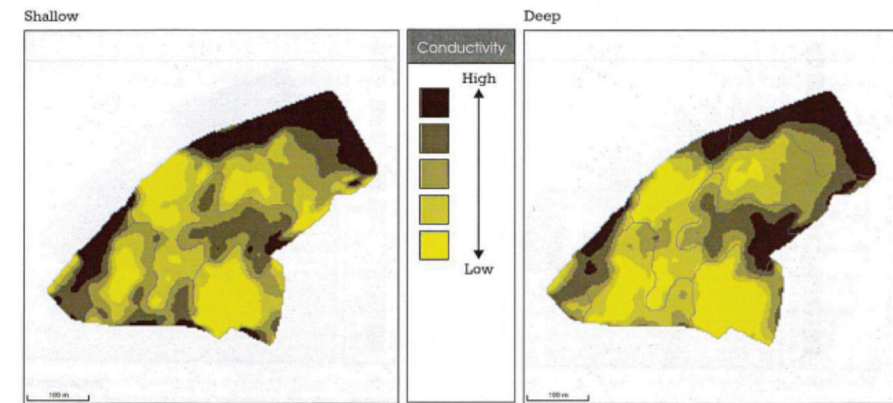
**Law. R. 2016.** Sustainable Beef Production. Online. Available from: [http://www.rothamsted.ac.uk/sites/default/files/groups/Knowledge\\_Exchange\\_and\\_Commercialisation/updates/pdf/3C\\_Ryan%20Law%20-%20Dunbia.pdf](http://www.rothamsted.ac.uk/sites/default/files/groups/Knowledge_Exchange_and_Commercialisation/updates/pdf/3C_Ryan%20Law%20-%20Dunbia.pdf).

**AHDB. 2017.** Online. Available from: [https://dairy.ahdb.org.uk/technical-information/grassland-management/making-more-from-your-grass/#.WMBWp\\_nyjIU](https://dairy.ahdb.org.uk/technical-information/grassland-management/making-more-from-your-grass/#.WMBWp_nyjIU)

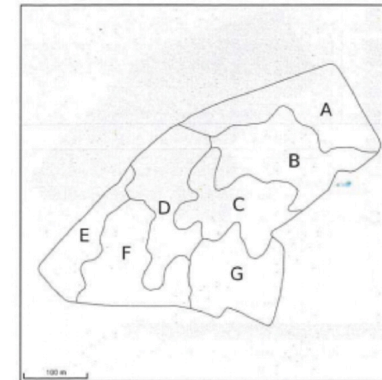
## PRECISION CROP MONITORING

**CUTTING edge technology is being used in a precision farming project at Farming Connect Demonstration Site Plas, Llandegfan, Anglesey with the aim of driving efficiency and production of the farm's grassland and arable crops.**

The project involves mapping 150 acres 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 will then be 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.



Soil Sample Plan



Farmer Arwyn Jones will record all inputs applied on the land and software will calculate outputs in terms of crop, land use and yield, providing an accurate nutrient budget. The amount of actual applied nutrients will be compared to those which would have been applied using a standard field soil analysis for the field as a whole, to see if any savings have been made.

As part of the project, Normalised Difference Vegetation Index (NDVI) satellite imagery will be used to monitor crop performance. This technology currently only provides crop variation within a particular field, rather than actual yield, but it is hoped it will soon be able to calculate tDM/ha. Soil structure is a critical

factor in crop establishment and yield, and satellite imagery is a useful tool in identifying areas of compaction within the field. The software will also produce a detailed Nutrient Management Plan which is a 'live document', taking into account the whole nutrient cycle for a particular field.

More information from this project will be available shortly on our website -

[www.wales.gov/farmingconnect](http://www.wales.gov/farmingconnect)

## ASSESSING BIG BALE FEED-OUT LOSSES

- Cae Haidd, Farming Connect Demonstration Farm Project Winter 2017



Baled silage is known to have lower losses during the production from harvesting in the field through to storage. They are also known to have lower aerobic spoilage losses at feed-out. These factors are all due to the fact that they are rapidly sealed and once open relatively rapidly fed. However, what isn't generally known are the losses during feed-out, predominantly brought about by livestock pulling excess silage from feeders and this subsequently dropping to the ground and being trampled rather than consumed.

The aim of this project was to assess the silage wasted from grass silage bales fed whole from ring feeders in the field to Welsh half bred ewes with approximate live-weights of 65kg. The project ran from early January to the middle of February, the time it took to feed 5 bales of silage to each group.

Two group sizes of sheep, 30 versus 60 pregnant ewes were used simultaneously in adjacent feeding areas on the same farm. Immediately prior to putting the bale in the feeder it was weighed and a core sample taken. Each subsequent day all the silage on the floor outside of the feeder was collected and weighed, this was subsampled and analysed by standard silage NIRs. In addition a daily sample from the bale was taken for

analysis and the bale temperature recorded. Alongside this ambient temperature and rainfall were also recorded daily.

The early results show that the small group of sheep took approximately 8 days to consume an entire bale whereas the large group took between 4-5 days. However, in terms of silage wasted 17.32% of the silage in the bale was wasted in the first 2 days with the 60 ewe group, compared to 10.88% with the 30 ewe group. However, the bales being consumed by the small group did show evidence of heating after 4-5 days which could affect feed value, with the large group there was much less evidence of silage heating. Whilst there are no obvious differences in the Digestibility or ME content between the silage bale and the wasted silage, there is evidence of some difference in the protein content with the waste silage in the large group having a slightly higher protein content than the silage being fed, whereas early indications are there are no differences in protein content of waste silage and silage to be eaten in the small group.

All these results are preliminary at this stage and will be reported fully on completion of the feeding and full data analysis, but the results so far are of huge importance and will warrant further studies to understand and provide solutions to the problem.

## DAIRY FERTILITY CASE STUDY - Targeting dairy fertility improvements help farmers cut costs and boost performance

TARGETING improvements in fertility performance has helped members of a Farming Connect Dairy Discussion group save money, increase milk production and reduce inefficiencies. One member has saved more than £50,000 a year just by reducing the calving interval of his herd.

The group in South East Wales meets regularly to monitor their herd fertility performance against a range of key performance indicators (KPI) and targets, including calving interval, 100 day in-calf rate, inter-service interval ratio and percentage of the herd served by 65 days.

*"Improving herd fertility is beneficial on just about every dairy unit but improvements take time to be delivered,"* says dairy consultant Dr Tom Chamberlain, who works with the group. *"The most important KPI is the calving interval. The financial benefit of reducing the calving interval is around £3 per cow per day, so a 20 day reduction on a 100 cow unit is worth £6,000 – mainly through having more milk to sell,"* said Dr Chamberlain.

Since November 2014, the average calving interval for the 12 member farms has decreased by eight days, which represents a saving of £24 per cow. Ross Edwards, of New Dairy Farm, Newport, has reduced his calving interval by 33 days from 430 to 397 days. With an average herd size of 578 cows during the monitoring period, this represents a saving of £57,222.

Ross wanted to improve the fertility of his herd following an issue with poor semen quality. *"That really highlighted the importance of fertility on overall herd performance,"* he said.

Ross has also cut the percentage of cows in the herd with a calving interval of more than 480 days from 21.3% to 12.2% and increased the percentage of the herd served by 65 days to 59%. He is targeting a calving interval of less than 380 days this year.

To read the full article please visit the Farming Connect website - [www.gov.wales/farmingconnect](http://www.gov.wales/farmingconnect)





# Farming Connect Staff Leadership and management project

## WHAT?

Dairy herd managers and farmers have always been very good at managing their cows and upskilling where necessary to improve cow comfort and farm productivity. However as many increase herd size and also the number of full and part time labour that often needs to mirror this increase, recruiting and managing the human element can sometimes be just as tricky.

## WHY?

Marian Mawr in Dyserth is one such farm that is currently undertaking a Farming Connect project looking into strategies and ways to further improve and professionalise human working relationships on medium and large scale dairy farms.

## WHO?

Along with farmer Aled Morris and his family there are four full time and four part time staff members currently operating the 400 cow all

year round unit. The team are working closely with Heather Wildman from Saviour Associates to develop protocols, job descriptions and other workable human resource practices that will help to recruit, develop and retain farm staff.

## HOW?

Monday morning team meetings have already been adopted to plan the week ahead and to discuss any issues in a more inclusive and effective setting. Additionally designated job titles such as youngstock manager and assistant herdsman have also been appointed to allow the employee ownership and responsibility of a particular aspect of the business. A new farm employee handbook is also being developed and other protocols are to be phased in throughout the next year of the project. A review of these implemented measures will be regularly undertaken and the impacts will be shared during open days and smaller scale discussion meetings from summer 2017 onwards.

Source: NMR Genetracker



## GENOMIC TESTING AT MARIAN MAWR

As part of the Farming Connect demonstration site network, Marian Mawr undertook genomic testing of their whole crop of 2016 heifer calves. Small ear tissue samples of newborn heifer calves were taken at tagging.

## Results

Overall average results displayed in the table below show a group of calves who will develop into profitable cows producing milk with moderate yields, components and low cell counts and who get back in-calf relatively easily. There is a large range in profitable lifetime index (£PLI) of £235 between the highest indexing calf (tag 3292 with £380 Genomic Profitable Lifetime Index) and the lowest (tag 3307 with £45 GPLI). There is also a large range in kg Milk yield and components %.

TRAIT	Average GPTA (Genomic Predicted Transmitting Abilities) of 2016 tested heifers at Marian Mawr
GPLI (Genomic Profitable Lifetime Index)	£189
Fertility Index	+4.8
Lifespan	0.2
Kg Milk	123kg
Kg Fat	5.6kg
Kg Prot	4.8kg
Fat %	0.01%
Prot%	0.01%
SCC Index	-6.2

## What decisions can be made from your returned results?

Before utilising the data collected it is important that the herd has a clear breeding goal and a strategy in place. This could be based on various factors including type of contract (e.g. volume or component based), feeding regime, housing restrictions (e.g. cubicle size), personal breed and type preference, marketing (regular surplus sales).

### Possible options can include the following:

1. Sale of heifer - sale of surplus lower genetic merit animals can significantly reduce the rearing costs of the herd.
2. Flushing Embryos from elite high ranking heifers - significantly increase the genetic progress and also offers sales opportunities
3. Use of heifer as embryo recipient – increasing the number of high genetic merit calves born
4. Beef insemination of low genetic merit heifer - significantly increasing value of male calves
5. Selective mating of sire to complement or correct any strengths and weaknesses in GPTA - enabling the breeder to select a suitable sire to complement the heifer's strengths and weaknesses.

## PRECISION FARMING CAN HELP IMPROVE BUSINESS PERFORMANCE

IMPROVING the accuracy of farm operations through precision farming can be beneficial to the efficiency and profitability of businesses when appropriate technologies are applied. While some precision farming tools require significant investment, there are simple techniques that people can use to help improve crop growth and yield.



The three main areas of precision farming are tractor and machinery control, targeting agronomy and data management. Improving field management accuracy by utilising technology such as GPS devices and variable rate application sensors on tractors and machines helps reduce overlap when working and maximises time efficiency. However, simply measuring the width of field tramlines and implements will help improve accuracy by working off actual measurements rather than estimates.

*“Precision farming is useful to help improve the profitability of your business, the timeliness and accuracy of operation and the environmental impact of crop production. A good place to start is to work out how accurate you are now before making any investment. Then you can choose the most appropriate technology that will help you do a better job,”* Independent Precision Farming Consultant Ian Beecher-Jones told farmers at a joint event hosted by Farming Connect and AHDB Cereals & Oilseeds.

Targeting agronomy involves understanding soil variations within a field. Soil texture mapping and sensors that test nutrient status help create zones within a field where seed rates or input application can be varied according to what is needed.

The ability to manage the data received from precision farming equipment is crucial in order to successfully and accurately apply that knowledge in the field. Mr Beecher-Jones urged people to keep things simple, creating a ‘digital farm’ that accurately reflects the physical farm and by having one place where information is collected and stored. Over time multi-layered information about the farm will be created to help farmers see where further improvements can be made.



## In demand: Welsh grown hops

The popularity of craft beer and micro-brewing has grown phenomenally over recent years - there are now well over 1,000 microbreweries in the UK, the highest figure for more than 70 years, with the number of breweries in operation almost double that of a decade ago. Despite this boom, the vast majority of Britain’s hop production is still concentrated in two traditional growing areas, the Midlands and South East England.

**A report for the Cywain food group in 2015 highlighted the following facts:**

- 88 microbreweries in Wales
- 82% interested in buying Welsh hops
- more than 50% of breweries willing to pay a premium for Welsh hops

Hops require good soils and a mild maritime climate with even rainfall throughout the year. There has been a particular focus on the research and development of new hop varieties over the last 20 years increasing the number of commercially grown varieties from 13 to 27. British hop varieties have been bred for disease resistance, and the low trellis growing system, which is more cost effective, was developed in the UK and is being emulated all over the world.

Farming Connect will be offering fact finding events on growing hops this summer. Also, joining an Agrisgôp group will allow you to explore options for diversification within a group of like-minded individuals.

## EVENTS

DATE	EVENT	TIME	VENUE	CONTACT
18/04/17	Staff management - <i>Attracting and retaining good people</i>	19:30 - 21:30	The Coldra Court Newport, NP18 1HQ	<b>Jamie McCoy</b> 07985 379819 jamie.mccoy@menterabusnes.co.uk
19/04/17	Staff management - <i>Attracting and retaining good people</i>	11:00 - 14:30	The Forge, St Clears, Carmarthen, SA33 4NA	<b>Jamie McCoy</b> 07985 379819 jamie.mccoy@menterabusnes.co.uk
19/04/17	Staff management - <i>Attracting and retaining good people</i>	19:30 - 21:30	Cleddau Bridge Hotel, Pembroke Dock, SA72 6EG	<b>Jamie McCoy</b> 07985 379819 jamie.mccoy@menterabusnes.co.uk
26/04/17	Innovation in Farm Security	11:00 - 14:00	Trawscoed Farm, Aberystwyth, SY23 4LL	<b>Jamie McCoy</b> 07985 379819 jamie.mccoy@menterabusnes.co.uk
03/05/17	Precision Farming, Drones and Robots	19:30 - 21:30	Pavilion, Haverfordwest SA62 4BW	<b>Delana Davies</b> 07811 261628 delana.davies@menterabusnes.co.uk
03/05/17 <i>Morning &amp; Afternoon session</i>	Rush Control and Weed wiper Demo	10:00 - 12:30 13:00 - 15:30	Tynyberth, Abbeycwmhir, Llandrindod Wells, LD1 6PU	<b>Catherine Nakielny</b> 07985 379890 catherine.nakielny@menterabusnes.co.uk
04/05/17	Grassland farm walk and Parasite control in growing lambs	16:00- 18:00	Great Tre-rhew Farm, Abergavenny, NP7 8RA	<b>Menna Williams</b> 07399 600146 menna.williams@menterabusnes.co.uk
09/05/17	Managing grass for silage. <i>Charlie Morgan and Dave Davies</i>	11:00 - 14:00	Gower Golf Club, Cefn Golau, Gowerton, Three Crosses SA4 3HS	<b>Jamie McCoy</b> 07985 379819 jamie.mccoy@menterabusnes.co.uk
12/05/17 <i>Morning &amp; Afternoon session</i>	Rush Control and Weed Wiper Demonstration	10:00 - 12:30 13:00 - 15:30	Aberbranddu, Cwrt y Cadno, Pumsaint, Llanwrda, SA19 8YE	<b>Menna Williams</b> 07399 600146 menna.williams@menterabusnes.co.uk
20-21/ 05/17	RWAS Spring Festival - Pig Demonstrations with Bob Stevenson	11:00 - 14:00	Royal Welsh Showground, Builth Wells, LD2 3SY	<b>Gwawr Hughes</b> 07896 996841 gwawr.hughes@menterabusnes.co.uk
24/05/17	Grassland management and grazing infrastructure on upland farms	14:00 - 16:30	Bodrach, Carmel, Llanrwst, Conwy, LL260NY	<b>Emyr Owen</b> 07415 757461 emyr.owen@menterabusnes.co.uk
25/05/17	Using genomic carcase traits and myostatin in beef breeding	11:00 - 14:00	Glangwden, Caersws, SY17 5PX	<b>Delana Davies</b> 07811 261628 delana.davies@menterabusnes.co.uk