THE MAGAZINE FOR FARMING & FORESTRY IN WALES

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Smart Technology
Can Smart Technology improve bird health and performance?

Pasture Grows Beef Profit
How pasture can affect business profitability.

Llywodraeth Cymru
Welsh Government

ISSUE 11 - September/October 2017 | www.gov.wales/farmingconnect

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Farming Connect Demonstration Site

INTRODUCTION

Following a pleasing season with the lamb crop of 2017, both in terms of performance and price, work on the farm of late has been focusing on next year's lambing. All new arrivals, both rams and ewes have had our quarantine treatment, which seems to work well for us with prevention always the main objective here at Plas. Body condition scoring (BCS) of ewes started very early this summer after weaning due to the excellent grass growing season we've had, and managing the fatter ewes was as much of a challenge as the thinner ewes this year. We will replicate the work done with the ewes last season with Farming Connect in terms of analysing the silage, formulating the ration in relation to it and then take blood samples of each mob 3 weeks pre lambing to determine their metabolic profile status in order to give the lambs the best possible start.

The 'Precision Farming' project has shown considerable variations in terms of the nutrient status within our fields, and we will be looking to rectify this over winter and spring using the variable rate technology we've invested in. With margins as tight as ever, it's essential that we make the best use possible of any bought in nutrients.

Finished cattle trade has been steady all summer and hopefully there is an upward trend on the horizon. The work we did to improve ventilation on some of the sheds last spring following a visit by the housing specialist Jamie Robertson has definitely made a big difference. It cost us very little in terms of materials, as we simply opened the ridge with an angle grinder to allow more humid warm air to escape in order to draw more fresh clean air in.

Update from Carwedd Fynydd, September 2017

Emyr Wyn Owen, North Wales Technical Red Meat Officer

Keep informed of the latest developments across the Farming Connect Demonstration network by visiting our website - businesswales.gov.wales/farmingconnect/demonstration-network-blogs

With the drought conditions we saw in early summer followed by rain and mild temperatures, it's been a challenging summer for Welsh farmers. This was the case at our Focus Site Carwedd Fynydd which is comparing growing Robbos fodder beet against Maris Kestrel kale for the farm's suckler cows.

After a difficult start, the fodder beet is now growing well which could be the result of applying farm yard manure to the field prior to sowing. The dry conditions in May-June proved challenging with growth falling behind and thistles encroaching in between spray applications.

1. Fodder Beet 14/07/17

2. Fodder Beet 28/08/17

A fairly conservative growth of 18,000kg DM/ha has been predicted for the Robbos fodder beet due to its challenging start, despite this, crop yield should be around 54,540kgDM, a great achievement for a small area of land. With a daily allocation of 14kgDM/hd for 20 rising 2 year old (R2) breeding heifers and a diet consisting of 60% fodder beet and 40% baled silage, 1.1ha should provide enough forage for a 150 day winter with 52 round bales for supplementation. This then provides the opportunity to feed 500 in lamb ewes for ~70 days pre housing on the remaining 1.93ha. Their daily allocation will be 1.4kg DM/hd per day with 40% of this allocation coming from round bale silage.

Round bale silage placed strategically in the kale to enable grazing from the top of the slope downwards to reduce potential runoff.

8.9ha of Maris Kestrel kale was sown on the 19th of July by broadcasting and heavy rolling following a pass with a rotospike and 6kg/ha of slug pellets were applied to help protect the crop in its first few weeks, but despite this, signs of some insect damage have been seen in parts of the field. Farmer Arthur Williams will now seek advice from Advisory service consultant Charlie Morgan prior to applying any further chemicals to the field. In order to supplement the kale, 140 round bales of silage has been strategically placed in rows to allow cattle to have access to 1 round bale each day so a 50:50 balanced ration will be available at all times during the winter. This will provide winter forage for an estimated 147 days with a 14kgDM/hd allocation for 75 dry suckler cows and a kale crop that will yield 8000kgDM.

Our e-learning interactives cover a wide variety of topics which will help you develop new and existing skills, knowledge and improve working practices within your business.

Visit the Farming Connect website to find an e-learning module on Preparing a winter feed budget that aims to help you better manage your feed over the winter.

businesswales.gov.wales/farmingconnect/forages-and-feeds

Benefits from being a Farming Connect Focus Farm and Discussion Group Member

Catrin George, Tirlan, Brechfa, has been part of an Ewe Nutrition group for the last 3 years. The 6 farms involved have managed and recorded ewe body condition and weights aiming to improve lamb growth rates and output per ewe. At Tirlan, this has resulted in a significant increase in both ewe condition and in lamb weights at 8 weeks and weaning between 2015 and 2017, as shown in the table below. Although 2016 was a very poor spring and early summer which held growth rates back, the group as a whole felt that better ewe condition meant that they were not as badly affected as many other flocks.

TIRLAN LAMB PERFORMANCE

	2015	2016	2017
8 Week weight	16.4	14.3	19.8
Weaning weight	23.2	21.5	27.2
% below target *(15Kgs 8WW)*	32	40.4	16.6
Rearing %	143%	140%	145%
Kgs/ewe at weaning	33.2	28.8	39.4

Another area Catrin has focused on is worm control, an important factor in the improvement of lamb growth rate.

The FECPAK G2 system has enabled Catrin to monitor worm burdens closely and target treatments accurately, they have also established which drenches are still effective. Due to routinely faecal egg counting (FEC) sheep are being dosed as they are turned out of the lambing shed as opposed to 5-6 weeks post weaning as Catrin identified this is when egg counts are the highest, see graph. This is due to the stress of lambing reducing the immunity of the sheep allowing worms to thrive. Dosing at turnout reduces the amount of eggs being deposited on the fields for lambs to pick later on in the year.

As a Focus farm the project at Tirlan looked at mapping worm burdens on the main grazing fields using the results of FEC. The information allows Catrin to make decisions such as grazing high burden fields with cattle or dry ewes and keep growing lambs on low burden fields. Catrin emphasises that *"this concept is new and unique to every farm, and every year is different therefore close monitoring of FEC will be an ongoing management strategy at Tirlan"*.

For more information, please contact **Menna Williams** on **menna.williams@menterabusnes.co.uk** or **07399 600146**.

Can '**smart**' technology improve bird health and performance?

It is proven that effectively managing environmental conditions reduces the total cost of production. Within many poultry businesses the objective is to provide an environment to maximise flock performance, achieving optimum and uniform growth rates and feed efficiency in meat yield whilst ensuring that bird health and welfare is not compromised.

Wireless equipment is commonly used in day to day life and when used in a poultry unit can be used to aid management decisions. Sensors strategically positioned throughout the poultry building will provide a map which will identify areas of high and low temperature at any given time as well as a range of other information. Available instantly this information can be sent to a mobile phone or a computer, ensuring managers can respond to situations quickly and identify possible signs of illness sooner.

In November, environmental sensors will be installed on a 80,000 bird broiler farm in North Wales. The equipment will be fitted throughout one of the 40,000 bird units and compared against the other 40,000 bird unit on the farm. The project aims to investigate any differences between the systems and record management decisions based on information provided from the wireless sensor system and to identify whether the technology helps improve bird health, welfare and performance.

For more information visit -
https://businesswales.gov.wales/farmingconnect/demonstration-network

Inputting the correct formula into your rising plate meter for Autumn measurements.

One of the main advantages of using a rising plate meter is its relative accuracy and ease of use. The average KgDM/ha reading that is presented on the display is based on assumed Dry Matter (DM) values for grass throughout the growing season. Most plate meters have a default formula which is for measurements during the main growing period from March through to the end of August. However if you wish to continue to measure into the autumn and beginning of winter for extended grazing purposes, it is important that you are aware of the need to adjust your plate meter.

The Dry Matter % can vary throughout the year depending on the weather, soil conditions and also the amount of stem and dead material present in the sward, therefore there is an important seasonal element to consider whilst using your plate meter.

As most rising plate meters are manufactured in New Zealand, the accompanying instruction manual includes formula based on the New Zealand calendar. The UK based formula below can be entered into the plate meter through the custom setting by pressing and holding down the Formula button as seen in the picture.

Sept - Nov	kgDM / ha =	sward ht x 187 + 900
Dec - Feb	kgDM / ha =	sward ht x 194 + 500

(Source: Farming Connect – Calibrating plate meters for better grass measuring)

For further guidance on your own plate meter, please refer to your instruction manual or read the *'Calibrating your plate meter'* Fact Sheet available on the Farming Connect website.

https://businesswales.gov.wales/farmingconnect/sites/farming/files/calibrating_plate_meters_for_better_grass_measuring.pdf

Organic Beef finishing at Rhug Farm Estate

Beef finishing is an industry which often sees a large variation in profitability on many Welsh farms. The 2015/16 Welsh Farm Business Survey shows that the average beef finisher in Wales has a Net Margin of -51.80p/kglw produced, with the top third showing a Net Margin of 28.12p/kglw produced. Factors which contribute to this variation are often out of the farmers control i.e, market volatility and fluctuations in input costs. On the other hand, many other elements such as good animal health and nutrition and most importantly reducing fixed costs are key manageable factors which influence profitability.

For Rhug Estate Farm Manager, Gareth Jones, ensuring that the organic beef finishing enterprise at Rhug is in a strong position looking ahead to life beyond Brexit has prompted an evaluation. After an initial visit from Farming Connect Mentor Meilir Jones, Gop Farm, and beef and sheep consultant Gavin Hill, SRUC, Gareth has highlighted key areas for improvements:

- ➔ Improving daily liveweight gain *(DLWG)*
- ➔ Reducing days to slaughter
- ➔ Reviewing the current finishing ration
- ➔ Investment in EID technology
- ➔ Reviewing the current health plan

Currently DLWG stands at 0.6kg/hd and days on farm is approximately 400 days. By concentrating on increasing DLWG and targeting 0.8-1kg/hd a positive effect in reducing days to slaughter and increased output should be seen. Gavin Hill, SRUC has suggested adding 0.5kg/hd/d of organic soya to the finishing ration which could be a cost effective option in the short term to increase DLWG. Long term options could be growing high protein legumes such as peas/beans as a sustainable source of protein.

Investment in EID will allow monitoring of the new ration's effect on animal performance as well as providing feedback on which cattle are performing best for their system. An integrated EID software system will also allow cattle weights and selection for slaughter to take place without a need for paper records thus cutting down on administration costs and avoiding any mistakes.

The farm's approach to liver fluke management will also be studied as this has been highlighted as an ongoing issue for Rhug. Derogations for treatment and timing will need to be discussed with the farm vet to see where improvements can be made to improve cattle health and welfare as well as performance.

Multi species pastures could benefit both livestock and farm soils

Multi species pastures at a Carmarthenshire dairy farm are providing livestock with nutritional benefits not available from grass.

Pantglas at Blaenwaun, near Whitland, is in organic conversion and the farmers, Gary Ehm and Sally Woods, are incorporating plants such as plantain and chicory in their grass reseeds to provide cows with variety.

Their soils are deficient in phosphorous so they are using these plants as a means of addressing this issue and to improve their soils.

"Our next plan is to use these species in the youngstock grazing because they can provide tannins which have potential benefits for reducing worm burdens," said Mr Ehm.

Herbs can provide additional nutritional benefits when consumed by stock, especially in the form of minerals, and this is another reason why these have been included in fresh pastures.

During a Farming Connect open day at Pantglas, Nuffield Scholar Robert Thornhill, who runs a conventional spring-calving dairy herd in Derbyshire discussed his experiments with sowing diverse swards after studying different approaches to forage and grazing techniques for sustainable pasture-based dairying and livestock farming.

"Multi-species pastures can offer additional nutritional benefits above grass-only swards, especially in terms of mineral supply," said Mr Thornhill.

"Their rooting systems are very beneficial to soil structure and health and they have been shown to produce more dry matter than grass and clover swards do in dry conditions."

Mr Thornhill is keen to reduce his reliance on manufactured fertiliser.

"I am a great believer in grazing cows – grass is a highly durable and nutritious product, but the Achilles heel is a dependence on soluble fertilizer."

The biggest challenge of growing alternative species is persistency and their accelerated demise. By year two after planting, Mr Thornhill said there was a noticeable reduction in the chicory in one of his trial leys.

"I anticipated that the plants would come back year after year but there was a marked reduction in the second year, especially in the chicory."

But with a mixed ley, with so many different and overlapping states of vegetation, the opportunity for getting milk and meat production from grazing is extended, Mr Thornhill pointed out.

"Palatability is heavily influenced by what cattle have eaten previously, cows like novelty," said Mr Thornhill.

These plants also replenish the soil with nutrients and improve soil structure.

"They create a symbiosis by working together, for instance some will be fibrous, others tap rooted. All have different

influences underground," Mr Thornhill explained.

The selection of forages should be made carefully and should include modern productive varieties of naturally occurring plants; agricultural seed merchants sell off-the-shelf mixes of diverse swards.

Farmers who are planning to reseed are required to first request an Environmental Impact Assessment (EIA) screening if they are concerned that the existing ley contains less than 25% of improved agricultural species; this is a legal requirement.

Pasture Grows Beef Profit

The amount of pasture utilised, i.e. eaten by an animal, and how grazing is managed has a much greater effect on business profitability than most other factors.

Quality grazing pasture is the cheapest form of feed. However most growing animals at pasture are not fed to their potential which results in lower growth rates and extra costs, like housing cattle for a 2nd winter for example. This is normally due to over grazing, where animals are set-stocked or not moved often enough to allow pasture recovery time.

Grazing management alone has the potential to double the amount of pasture grown and moving stock to a new allocation every 1-3 days to promote re-growth is essential. Installing good fencing and water infrastructure helps simplify the splitting of larger fields and allows a grazing system to be operated with less labour per animal.

This year Precision Grazing has managed two organic beef grazing projects in conjunction with Farming Connect. These projects used the farmer's existing cattle and pasture with only changes to the grazing infrastructure and the management.

In both sites existing fields were divided in half using semi-permanent electric fencing powered by mains or solar energisers. This allowed paddocks to be quickly created using temporary *(polywire)* fences. Prior to turn-out the cattle were introduced to electric fences by erecting a polywire fence in the yard.

Water was provided using a portable trough which connected to strategically installed Kiwitech quick-release hydrants, which ran under the semi-permanent electric fences to supply both sides.

Average cost to set-up was £260-£320/ha which will be returned within 12 months through increase in liveweight production per hectare.

Penrhiw Farm, Ceredigion

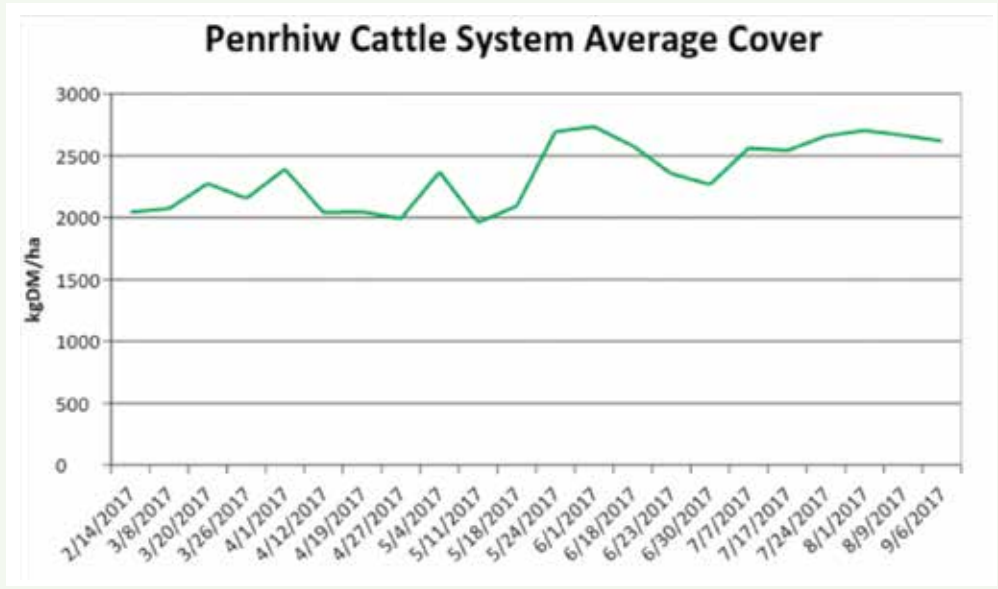
The Cowchers run an organic Stabiliser and Simmental X suckler herd calving in April. A group of 56 yearling steers and heifers were used and grazed as one group on a block of 3 fields totalling 14ha of 5-6 year old grass and clover pasture. Previously cattle were set-stocked with growth rates averaging 0.62kg/day, under this system they have averaged 1kg/day despite being stocked at double the rate!

The block was rested from January and a group of 20 cattle started grazing in the field with the highest covers of 2300kgDM/ha on 8th March, moving daily into 0.4ha paddocks to avoid poaching. The remaining 36 joined them on the 3rd April, paddock size was increased to 0.9ha or 1/6th of a field, entry covers had increased to 2750kgDMha.

In April the group were moved every 2 days on a 36 day rotation, this rotation length was maintained until June when 20 breeding heifers were removed for AI and 3.6ha was removed for silage, remaining cattle moved to a 30 day rotation.

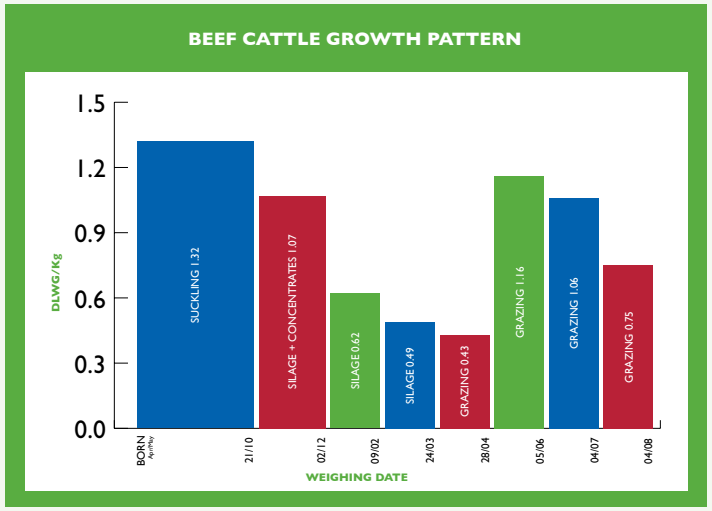
The heifers were re-introduced as a following group, grazing what is left, as they were above target weight. This method compensates for the increased feed demand of the finishing cattle as they get heavier and maximises growth rates.

9 cattle were slaughtered on 18th August averaging 287kgDW at 16 months old and an additional 7 steers were slaughtered on 7th September. These sales have reduced the feed demand and allowed average covers to be increased providing a buffer which, with the sale of additional cattle will help to help extend the grazing period into November.



Orsedd Fawr

Gwyn Parry and family have an organic suckler herd which calve in May. The weights of the calves in 2016 were recorded at weaning and during the housing period to monitor progress against a target of 620kgLW by 18 months. As the chart on page 12 shows, performance to weaning was excellent, concentrate was fed post weaning with silage which achieved over 1kg DLWG. This was withdrawn due to the cost of organic feed and DLWG reduced below target, despite good quality silage. Ideally animals of this age require 12ME silage.



5.29ha block of improved pasture in 4 fields were divided into 17 paddocks and 13 steers were turned out on 24th March to begin the rotation into average covers of 2000kgDM/ha. Turnout was later than desired due to ewes being allowed to graze the block in December. As growth increased an additional 12 steers joined the group and moved every 2 days on a 33 day rotation. Weights were taken monthly and initial weight gain was low whilst the cattle adjust to being outside and their change in diet. This effect was minimised by feeding a forage based diet prior to turnout.

During May DLWG peaked at 1.16kg before reducing to 1.06kg in June, a surplus of feed in late June allowed the introduction of 6 additional cattle taking the stocking rate to 5.6/ha *(2.2/acre)*. Although this reduced average growth to 0.75kg it helped to maintain feed quality and they contributed to the overall production per ha. Once removed, growth increased to 0.95kg into August.

On average cattle have gained 127kgLW/hd to average 516kg in Mid August *(15 months old)*. The 5 lightest cattle were removed for priority feeding to reduce the feed demand and ensure continuous growth at 1kg/day. It is estimated that by 18 months two thirds of the group will have been sold. Focus area for improvement in this system is to make 12ME silage for the housing period post weaning to ensure minimum DLWG of 0.9kg.

SUMMARY

Both projects have demonstrated the gain in cattle DLWG and production per ha. To achieve finished cattle by 16 or 18 months requires an average DLWG of 1.16kg and 1.06kg respectively.

	Penrhiw Farm	Orsedd Fawr
System Area (ha)	13.9	5.29
Number of Paddocks	10/15/20/30	9/17
Stocking Rate hd/ha (hd/acre)	4 (1.62)	4.5 (1.84)
Average Weight at Turn-out (kg)	374	389
Grass Grown (Year to Date) kgDM/ha	8500	7500
Grass Utilised (Year to Date) kgDM/ha	6700	6000
Average DLWG kg	1	0.94
Production (Year to Date) KgLW/ha	744	600
Target Production (kgLW/ha)	850	750

Nutrient Management Planning for horticulture

Caerhys is a mixed organic farm growing vegetables and salads for a box scheme with composted manure from the suckler herd being returned to the growing areas. As part of a Focus Site project looking at improving the efficiency of composting, strategic soil sampling of the growing areas, including two poly-tunnels, was carried out. Results showed:

- ✓ Phosphorus (P) all adequate
- ✓ Potassium (K) 41% of samples low
- ✓ Magnesium levels adequate
- ✓ pH showed 88% samples required lime

Application of lime to any areas below pH6 was highlighted as the first priority, not only to neutralise acidity but also to promote utilisation of other nutrients and bring micronutrients into a more bioavailable form.

Further recommendations included:

- ✓ Additional K needed which would require derogation from the organic certification body
- ✓ Farm yard manure should be returned to fields with the lowest P and K indices
- ✓ Reduce or eliminate manure inputs where P indices are 3 or above
- ✓ No further inputs are required for salads and tomatoes in the polytunnels

Specific recommendations for a brassica growing area are shown in the table.

Field Veg. Brassicas (rec for Swedes) – 25 t/ha (10 t/ac) FYM applied at establishment

Soil Nutrient	Soil Index	Crop Requirement Kg/ha (Units/acre)	Contribution from Manure	Balance to be Supplied
Nitrogen	2	60 (48)	23 (18)	37 (30)
Phosphate	3	0	80 (64)	0
Potash	0	215 (172)	180 (144)	35 (28)

Applying for a derogation from your certification body is recommended to buy in an approved form of potash e.g. sylvinite *(~16% K^2O, 29% Na^2O)*. If approved, 400kg/ha would supply 64kg/ha. The use of Boron *(if approved by your certification body)* could also be considered on this field. The benefits of strategic application of manure using soil analysis information ensures that best use is made of available nutrients in this self-contained system, improving production output, providing cost savings and also safeguarding the environment.

It is recommended that a standard soil analysis should be carried out on 25% of the growing area annually or once every 4 years.

Nutrient Management Planning is available under the Advisory category to all horticulture businesses registered with Farming Connect.

Tackling Liver Fluke on the ground

Liver Fluke has a complex life cycle and is reliant on the mud snail *Galba truncatula* to maintain and multiply the parasite. Whilst these snails are seen in areas of wet habitats such as ponds, stream edges and ditches, not all suitable snail habitats on a farm will be inhabited by snails and only a minority of snails will actually be infected by Liver Fluke.

Farming Connect is working with IBERS, Aberystwyth to help improve habitat detection and to develop grazing plans which avoid high risk habitat at key points during the year.

Technical officers are routinely visiting five sites across Wales and searching high-risk areas of the farm for the presence of the mud snails. Once found, a selection of snails are being collected and sent to IBERS research staff to identify whether they are also infected by the Liver Fluke parasite.

The short term aim is to help identify the level of infection on these individual farms and to work with the farm's vets to better target treatments. Faecal samples are also being collected from any sheep or cattle grazing the area and analysed for the presence of both Liver and Rumen Fluke.

The longer term options for Liver Fluke control include the use of environmental DNA (eDNA) testing. This technology picks up very small amounts of an organism's DNA that is shed into the environment.

An evaluation of how useful the information is to the farmer in addition to the physical examination of habitats for the presence of mud snails and faecal egg counting is an important development stage to ensure that the eDNA tool may be more accessible to farmers across Wales.

Evaluating GPS technology investment for grassland operations

Making sound decisions on the benefit of investing in Global Positioning System (GPS) tractor technology proved a popular topic for discussion at the Agri Lab stand at the Royal Welsh Show. Ian Beecher-Jones, Precision Farming Coach and Mentor was available to give impartial advice on the relevance of investment for farms of all types and scale.

To assess the cost benefit of making an investment, Ian recommended going out with a tape measure and measuring how consistent the width between working tramlines is at present. The more accurate current working practices are, the less cost benefits there will be. Further consideration needs to be given as to how many operations are carried out within a field and if the same tractor is used for all operations.

Regarding an entry level system, Ian highlighted the following:

- ➔ Light bar system in the tractor cab - cost is around £1500 but the driver still needs to steer the tractor and it is an extra instrument to watch as well as machine operation. Accuracy is infectious, so most farmers usually regret not going straight in with the auto steer option.
- ➔ Auto steer systems cost £5-10,000 but most new tractors are "steer ready" from the factory. There are a number of systems, but a popular one is where a motor can be installed on older models around the steering column. This type of system takes pressure off the driver and operations can be done in low light conditions and in darkness.

Both these systems will provide sub-metre accuracy of between 10cm and 1 metre depending on the correction signal the system is using; two-centimetre accuracy can be achieved using Real Time Kinematics (RTK) systems which, in most instances, need local correction masts rather than a satellite based system, but this can only really be justified by larger farming enterprises or where a number of smaller farms collaborate over the cost.

In grassland operations, installation of GPS guidance allows farmers to work more professionally and efficiently:

- ✓ Reducing the time taken to carry out fertilising, spraying and cultivation tasks
- ✓ Reducing the over application and waste of fertiliser and sprays
- ✓ Providing traceability records of field operations
- ✓ Making it easier to apply fertiliser straight after silaging or haymaking
- ✓ Optimising fertiliser rate across the field by combining with precision soil sampling
- ✓ Facilitating Controlled Traffic Farming to reduce field soil compaction and improve grass yields

Focused feeding leads to reduce feed costs for an upland sheep flock

Reducing the cost of supplementing twin and triplet bearing ewes in the run up to lambing has been the focus of a project on Farming Connect Focus site Hendy Farm.

Hendy is a 400 acre upland sheep and beef farm in mid-Wales and farmed by Agri-academy alumni Keith Williams. The project investigated whether Total Mixed Ration (TMR) feeding of good quality clamp silage plus a protected soya protein product (Sopralin) would meet the needs of twin/triplet bearing ewes. The project was inspired by sheep consultant John Vipond who Keith had heard speaking at a Farming Connect meeting on ewe nutrition.

Previously concentrates were fed to the 885 ewe flock plus in-lamb replacements with a typical use of 23 tonnes per year. Recognising that ewes in late pregnancy need higher levels of protein and energy in their diet, the feeding of soya which is high in by-pass protein as well as energy content has been suggested as a viable means of reducing feed costs whilst meeting ewe requirements. Although this change will cost more on a per tonne basis, the smaller quantities required can lead to considerable savings. Further refinement can be introduced by feeding a 'protected' protein such as Sopralin which is itself derived from soya.

Keith had previously trialled feeding soya in troughs but this was high in labour requirements and led to ewes barging in the pens. The decision was therefore made to invest in a second-hand feeder wagon and to introduce a Total Mixed Ration (TMR) feeding system. Through working with Farming Connect, metabolic and health testing were suggested to ensure that animal performance was maintained or improved as well as to reduce potential costs.

Keith also realised that the benefits of feeding soya or Sopralin can only be fully realised if high quality (above 10.5 ME) silage is fed. In 2016 Keith had cut the silage crop earlier at 5.5 weeks to increase the digestibility and ME content of the crop ahead of the change in feeding system. Forage testing was carried out to finalise the ration formulation and to ensure silage quality.

Project results showed that the diet of high quality silage, Sopralin and minerals met the nutritional requirements of all ewes. In comparison to previous feeding systems, the ewes at Hendy were also more content and rested for longer periods using the TMR system and seemed to push less when fresh forage was supplied each morning. Since ewes were provided with a constant diet there were no large shifts in pH in the gut which can occur with concentrate feeding and avoiding high levels of starch in the diet seemed to help reduce metabolic disorders and prolapses in the flock.

The move to Sopralin led to a total saving of approximately £4,200. This includes the £130 that was spent on mineral supplementation and by using a mixer wagon supplementary feeding only takes 10 minutes per day.

The project also showed the value of the use of metabolic profiling as a spot check on the health status of the flock, particularly as a tool to identify any issues that may not be identifiable by visual or physical observation. Both liver and rumen fluke issues were identified as a result of this testing.

Thinking of trying this on your own farm?

Keith is also a Farming Connect Mentor. To select Keith as your mentor and access up to 22.5 hours of his time contact us today or visit the website.

businesswales.gov.wales/farmingconnect

Measuring ewe winter feed costs leads to cost savings and improved ewe condition

Farming Connect demonstration farm Rhiwgriafol is a 530 acre upland farm near Machynlleth and last winter undertook a comparison of various feeding options for the 900 ewe flock of improved Welsh Mountain ewes. Having recently joined Glastir, restrictions on the winter grazing of the hill land had led to a feed gap. With this in mind, Rhidian wanted to compare both the costs and practicalities of three different feeding systems: concentrates on deferred grazing, tack grazing and for the first time, swedes.

The swede crop

Nine acres of swedes were drilled at 1kg/acre in June following spraying off the grass ley. Ewes began grazing the crop on 1st January, twins remained on the crop until 4th March, three weeks before lambing, when they were fed 400g of an 18% concentrate and given access to high quality spring grass. Singles remained on the crop until just a few days before they were due to lamb and fed 200g of concentrates for the last 10 days. Dry matter yield of the swede crop was in the region of 10t DM/ha (4t/acre).

The tack grazing

425 ewes were out wintered and received grass only and were brought back to Rhiwgriafol for housing, three weeks before lambing.

Deferred grazing and concentrates

A third group consisting of the 205 yearlings were allocated 55 acres of grazing at Rhiwgriafol from 1st January and fed concentrates and silage until housing in mid-March. Ten bales of silages and 27kg of concentrates per ewe *(just over 5 tonnes)* were fed in total. Compared to the ewes on swedes or tack grazing, yearlings were at a lower condition score at lambing.

The results

All three winter feed systems were analysed and, at £8/ewe, the swede crop emerged as the cheapest, compared to £11/ewe for ewes grazing winter tack and £17/ewe for those on silage and concentrates, £7 of which was from concentrates being fed to the ewes. These costs included labour requirements plus an allowance for the rental value of any land used. The figure for the winter tack also included transport to and from the land plus the cost of routine stock checking.

Moving forward

With a potential saving in the region of £8,000 if applied to the whole flock, Rhidian has doubled the acreage put down to swedes and will continue to measure the costs of winter feeding and closely monitor ewe health and performance.

A full report will be available on the Farming Connect website soon.

businesswales.gov.wales/farmingconnect

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08456 000 813

- Farming Connect Management Exchange this year selected twelve focused, ambitious individuals to learn about new and improved ways of working in the farming or forestry sectors.
- Alwyn Phillips visited two Scandinavian countries to broaden his knowledge, technical ability and management expertise to provide new developmental opportunities at both a personal and business level.

Scandinavian methods of artificially inseminating ewes

SWEDEN & DENMARK

MAY 2017

This study aimed to

1. Identify differences in the approaches used for cervical artificial insemination (AI) in Denmark and Sweden compared to the UK
2. Learn about breeder attitudes to the use of AI in sheep
3. Highlight changes that could be implemented to enhance cervical AI programmes in Wales

In Wales, most ewes are inseminated laparoscopically (Lap AI) which is carried out by a qualified veterinary surgeon. Lap AI offers the best conception rates which vary from 60% to 80%, or by 90% if using fresh semen.
Lap AI is an invasive procedure and there are risks to be considered, especially as the breeders select their very best ewes for insemination.

To justify the high costs of Lap AI *(Vet visit fee £125, sponges and PMSG £3.75/ewe, Lap AI £12-£15/ewe, semen handling £20/batch and the cost of semen)* high conception rates which are then converted into a high number of lambs born are essential.

An alternate is intravaginal insemination (Cervical AI). This does not require a vet and fresh semen from a stock ram is used. It carries the same synchronisation programme costs as Lap AI but without the cost of frozen semen. Cervical insemination conception rates using fresh semen vary from 50% to 70%. Frozen semen trials carried out in the UK have resulted in very disappointing conception rates varying from 5% to 30%.

In all Scandinavian countries Lap AI is illegal and only Sweden allows the use of sponges and PMSG. Norway does not even allow farmers to use vasectomised rams to detect natural oestrus. Due to these legal restrictions, the Scandinavian countries have developed a method of cervical insemination of sheep using frozen semen out of necessity. Currently, the leaders in cervical insemination using frozen semen are to be found in Norway. It is carried out by farmers themselves and is called a "shot in the dark". They are now regularly achieving conception rates between 60 to 70% on thousands of ewes. That is comparable to Lap AI results without the risks, the costs and the interference of PMSG. Swedish and Danish sheep farmers have been practicing the Norwegian method quite successfully for a number of years.

Alwyn visited 6 farms during his six day visit to Sweden and Denmark and travelled nearly 200 miles.

'My visit to Sweden and Denmark has been enjoyable, informative and intense. The people I met were very open in sharing their expertise, their successes, but just as important what they learned from failures'

He firmly believes that all lamb producers and breeders must look at everything and anything that will reduce cost of production and increase competitiveness in a global market.

Alwyn's full report can be found on our website - *businesswales.gov.wales/farmingconnect/management-exchange*

The next application window for the Management Exchange will open in June 2018.

How to select the right legal framework for your Joint Venture

To request a copy of the new **Venture Handbook** which provides more information on the legal frameworks listed above or for more information on Venture contact the **Farming Connect Service Centre - 08456 000 813**

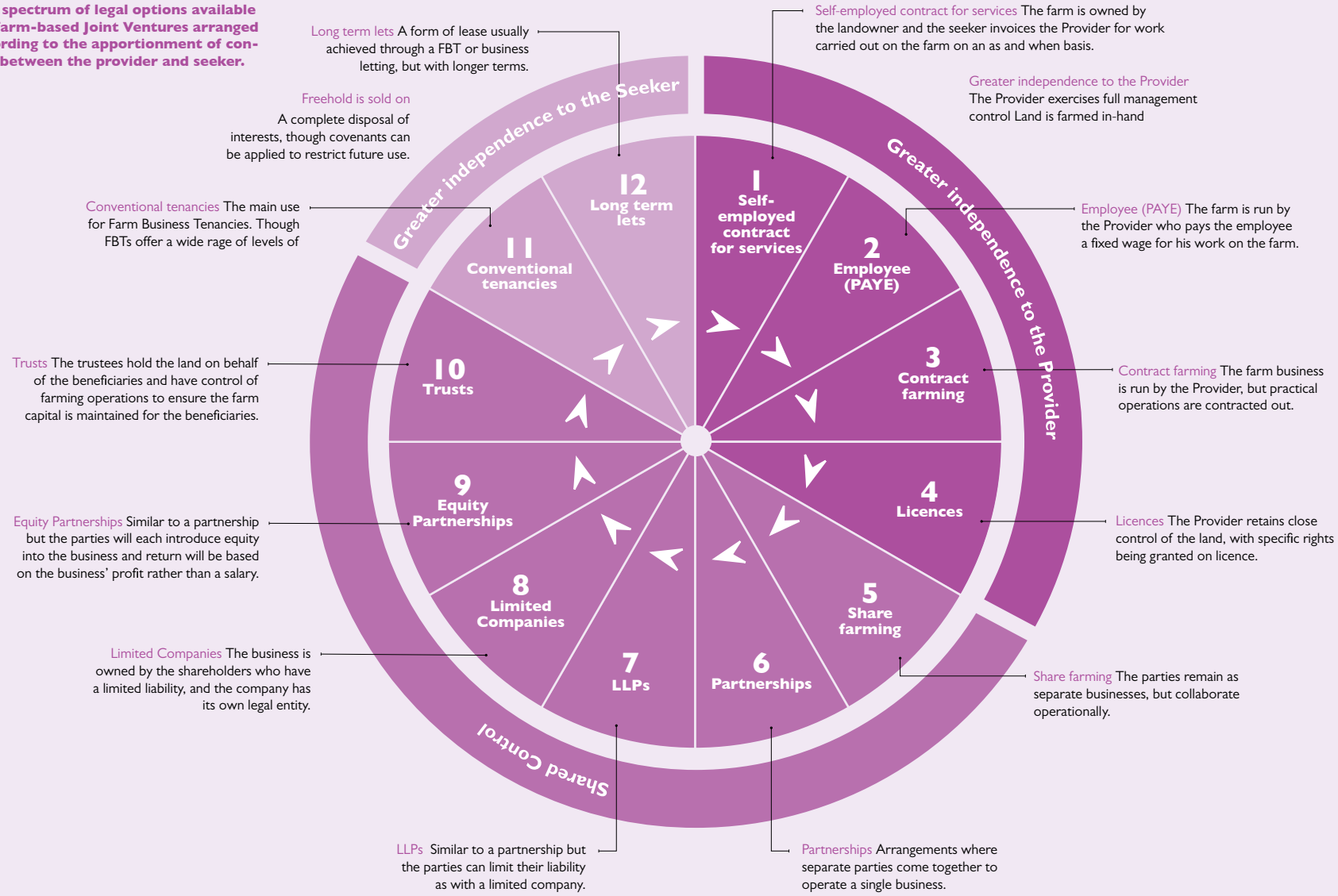
The spectrum of legal options

In broad terms, the legal options for joint ventures exist along a spectrum of control: from providers *(landowners)* retaining full control at one end, to seekers *(new entrants)* taking progressively more control towards the other end, as illustrated In the chart. An effective way of homing in on the sort of agreement that might work for you is to locate where you think the terms of your business relationship sit on this spectrum.

If you can get this far before briefing your lawyers, then you are more likely to get a legal framework which serves your purposes. You are also likely to save money: the clearer the brief, the more cost-effective the legal process will be.

Various types of legal agreements are available, giving different degrees of control to the provider and seeker. At one extreme, the land would be farmed in-hand giving the owner total command over management and business decisions, performing most of the farming operations directly and carrying the full financial risk. At the other, the owner might sell the land, handing it over to someone else. Between these two lie a number of options that might suit different circumstances.

The spectrum of legal options available for farm-based Joint Ventures arranged according to the apportionment of control between the provider and seeker.



Events Timetable

DATE	EVENT	VENUE	CONTACT
23/10/17	Planning your Personal Development	Abergavenny	08456 000 813 farmingconnect@menterabusnes.co.uk
24/10/17	Woodland management and adding value to improve environmental and economic performance of the farm business	Llandwrog	**Geraint Jones** 07398 178 698 geraint.jones@menterabusnes.co.uk
24/10/17	Planning your Personal Development	Pembrokshire	08456 000 813 farmingconnect@menterabusnes.co.uk
24/10/17 19:30-21:30	Maintaining health and efficiency in the suckler herd	Caersws	**Menna Williams** 07399 600 146 menna.williams@menterabusnes.co.uk
25/10/17	Living off 10 acres	Llanarthne	**Sian Tandy** 01970 631 404 sian.tandy@menterabusnes.co.uk
26/10/17		Machynlleth	
26/10/17	Planning Surgery	Mynwy	**Gwenan Jones** 01970 636 296 gwenan.jones@menterabusnes.co.uk
26/10/17 13:00-16:00	Establishment and management of apple Orchards for cider production	Abergavenny	**Geraint Jones** 07398 178 698 geraint.jones@menterabusnes.co.uk
06/11/17	Living off 10 acres	Llanrwst	**Sian Tandy** 01970 631 404 sian.tandy@menterabusnes.co.uk
08/11/17	Marketing and Diversification Surgery	Gower	**Gwenan Jones** 01970 636 296 gwenan.jones@menterabusnes.co.uk
21/11/17		Aberaeron	
06/12/17		Welshpool	
17/01/18		Monmouth	
07/11/17 19:00	Anaerobic Digestion - a route for poultry manure?	Newtown	**Jodie Roberts** 07898 996 841 jodie.roberts@menterabusnes.co.uk
05/12/17 19:00	Vaccinating to increase profitability of your poultry unit	Welshpool	
07/11/17	Calf to Calving *(Joint event with AHDB)*	Pwllheli	**Rhys Davies** 07985 379 880 rhys.davies@menterabusnes.co.uk
09/11/17 19:30-21:00	Benchmarking Sukler Cows - Steven Sandison	Welshpool	**Sian Tandy** 01970 631 404 sian.tandy@menterabusnes.co.uk
10/11/17 19:30-21:00		Tregaron	
13/11/17 19:30-21:00		Powys	
13/11/17 19:30-21:00		Pencoed	
20/11/17	Plant handling, storage and hedgerow planting best practice	Glynllifon College	08456 000 813 farmingconnect@menterabusnes.co.uk
23/11/17		Monmouth	
24/11/17		Carmarthenshire	

Full location details to be confirmed at time of booking.