



RECOMMENDED GRASS & CLOVER VARIETY LISTS

Find out where you can get more information on the best available grass and clover varieties.



DEMONSTRATION NETWORK

GLYNLLIFON

In this issue – Coleg Meirion-Dwyfor Glynllifon discuss their new project - evaluating performance and productivity of Pedigree Welsh and Hybrid pigs.



INTRODUCTION



WELCOME to the fourth issue of Farming Connect's technical publication for farmers and foresters in Wales.

Farmers have been able to capitalise on more favourable conditions this spring to get the harvest season underway and ensure lambs and livestock are growing well. As thoughts turn to improving productivity, we highlight projects from our Demonstration Network, such as using automated technology to improve heat detection within suckler herds. The grazing infrastructure on a dairy Demonstration Farm is being updated to maximise milk from forage and at one of our Innovation Sites, two projects are aiming to boost profitability in pig production and evaluate the performance of pedigree Welsh pigs compared to hybrid breeds.

We hope that our FC technical publication will provide you with a quick overview on technical aspects of these projects, allowing you to access the latest information to benefit your business.

Prof. E. Wynne Jones
Chair of the Farming Connect Strategic Advisory Board.

Farming Connect

- a new, enhanced programme of support
for farmers and foresters in Wales.

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Moor Farm Demo Farm – Grazing Infrastructure

Three important factors affecting the efficiency of grazing infrastructure on dairy farms are well-planned roadways, evenly-sized paddocks and a decent water system.

These were the key messages at an open day at Farming Connect Demonstration Site Moor Farm, near Haverfordwest, Pembrokeshire, where new cow tracks are being installed and the water system upgraded. Host farmer Andrew Rees hopes to improve grass utilisation on the 370-acre farm and increase the grazing period for the spring calving herd of 240 British Friesian cows.

Andrew said: "As the farm and the herd have grown over the years, accessing all of the grazing platform has become more challenging. With more roadways we could get the cows out earlier in the season to optimise grass utilisation."

The existing infrastructure, including all tracks, hedges, fences, drains, poles, water troughs and farmyard boundaries, has been GPS mapped by Irish firm Grasstech, generating an accurate map of each field. Designs for the new infrastructure have been drawn up. "The main points to consider for a project like this is how to best get the cows from the farmyard out to grazing as efficiently as possible, and ensuring the resources are in place for them to make the best use of the grass once they're out there." Bertie Troy, of Grasstech told farmers.

ROADWAYS

Farm tracks should be planned to make cow movement between the parlour and paddocks as efficient as possible. Taking into account a cow's average walking speed of 1.5mph, tracks should encourage cow flow by avoiding sharp turns and be 4-5 metres wide. The tracks should be constructed of at least 9-12 inches of hardcore material and 1.5-2.5 inches of fine material, with any pebbles on the surface layer no more than 5 to 6mm.

Crossfalls between 1:15 and 1:20 are recommended to efficiently remove water from the surface layer and there should be multiple access points off the tracks.

PADDOCKS

Grazing paddocks should be of relatively equal size, with wires running parallel for easier subdivisions. The key to improving grass utilisation is to have an

appropriate stocking rate based on the number of animals divided by the number of hectares available.

"Stocking rates drive decisions when designing infrastructure," added Mr Troy. "The correct rate depends on the amount of grass the farm can grow and the soil type."

To calculate the size of the paddocks, multiply the number of cows (A) by the Dry Matter (DM) allocation per day (B). Divide this by the grass cover in the paddock (C) to determine the size of the paddock. $A \times B / C =$ paddock size in hectares. This is based on a 24 hour allocation. For a 36 hour allocation, multiply by 1.5.

WATER SYSTEM

The final consideration when planning grazing infrastructure is water provision. With a daily demand of 80 litres per cow, 50% of which is consumed within three hours after evening milking, the hourly flow rate required per cow can be calculated: $80 \times 0.5 / 3 = 13$ litres/cow/hour.

Herd flow rate per hour: $13 \times$ number of cows (100) = 1,300 litres/hour

Herd flow rate per minute: $13 \times$ number of cows (100) / 60 = 21.6 litres/minute

Having a pump big enough to service the entire water system is the most important consideration, followed by pipe size, then the size of the water troughs. Troughs should be positioned midway along the paddocks and allow 2.5% of the herd to access it at any time. Circular tanks give the maximum rim length for the size of the trough and a looped system offers more consistent pressure and flow.





GLYNLLIFON

Part of the Grŵp Llandrillo-Menai college network, Coleg Meirion-Dwyfor Glynllifon is an agricultural college located on the West Wales coast near Caernarfon. The college runs a mixed livestock system on 300 acres of agricultural land and woodland, and it is now a Farming Connect Innovation Site.

Alongside sheep, beef and dairy enterprises is a 40-sow pig unit, which has recently been the focus of significant investment with new modern housing that is fully insulated and automatically climate controlled, to ensure the pigs perform at optimum capacity throughout the year. It includes slatted floors and innovative automated feeding systems. The new facilities are being stocked with 20 Pedigree Welsh sows and 20 Hybrids.

A long-term Innovation Site project evaluating the performance and productivity of Pedigree Welsh and Hybrid pigs will take place in the new facilities at Glynllifon. With requirements for leaner carcasses and a drive towards intensification in the UK pig industry, the Pedigree Welsh pig breed had to compete with more popular hybrid pigs. As a result, Pedigree Welsh pigs were declared a rare breed in 2005, however numbers have steadily increased as a result of the superior meat quality and taste.

Through continuous recording and data collection, the project aims to identify variations in the performance and productivity between both types, as well as the financial viability of producing Pedigree Welsh pigs in a commercial setting.

Gwawr Hughes, Farming Connect Pig and Poultry Technical Officer is working with Glynllifon College on the project. She said:

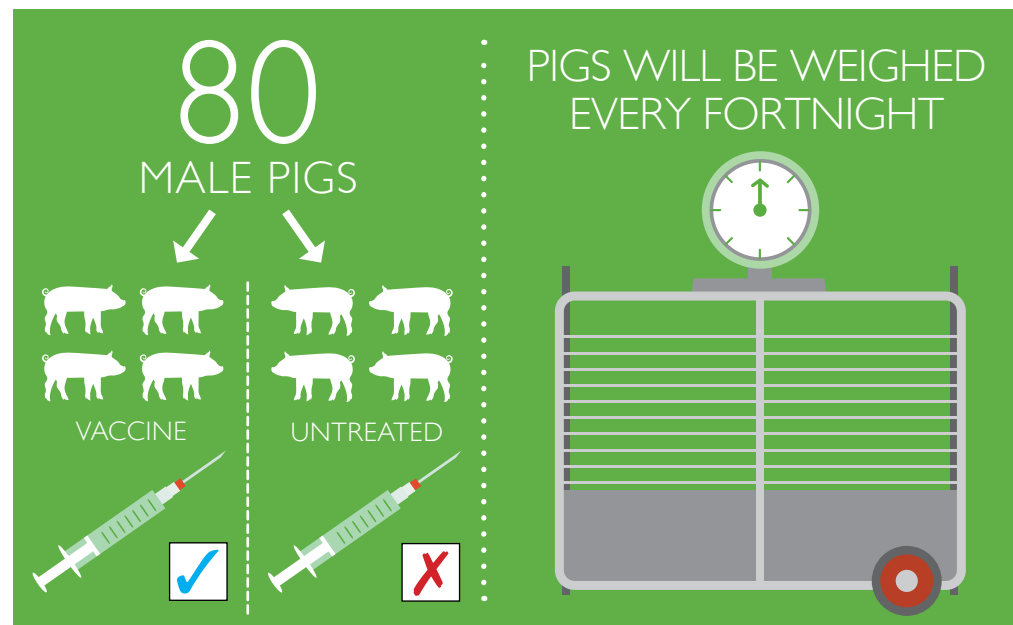
“EID technology will be used to record and collect data on various key parameters in both breeds including pre-weaning performance, liveweight gain and feed conversion efficiency, as well as days to slaughter and carcass weight. Any health issues and farrowing problems will also be noted. In order to determine the production efficiency of both breeds, the cost of production per kilogram deadweight will be calculated for both types.”

The project aims to address any performance shortfalls of the Pedigree Welsh pig and the data collected will provide a foundation for future projects, potentially involving breeding and genetic work.

Running alongside the long-term project is another project analysing the impact of the Improvac vaccine on the welfare, performance and meat quality of entire male pigs. Aggression, mounting and tail biting are a problem in entire male boars after puberty, which can lead to poor welfare standards, as well as carcass damage and condemnations. Boar taint can also be an issue in entire male boars. Boar taint is an offensive odour or taste when cooking or eating pork, which can affect up to 75% of consumers. It is caused by the accumulation of two compounds present in the body fat of male pigs.

Gwawr added: *“As well as minimising the risk of boar taint, producers can capture the performance, health and carcass quality benefits of rearing male pigs as entire boars for a majority of the finishing period.”*

The cost of vaccinating male pigs could be offset by reduced production costs through finishing pigs five to seven days earlier resulting in lower feed costs, improved feed efficiency



and higher daily liveweight gains compared to physically castrated males, as well as improved meat quality.

Each year, 80 male pigs of similar size and weight will be allocated to the project, split into two groups at weaning. One group will be treated with the vaccine at 10 and 16 weeks old, while the second group will be left untreated. Both groups will be fed the same diet and managed in the same manner. All pigs will be weighed every fortnight from 10 through to 20 weeks old in order to monitor liveweight gain. Days to slaughter and carcass weight will also be recorded. Meat eating quality will be analysed at the Food Technology Centre in Llangeferni.

The pigs will be carefully monitored for any aggressive behaviour and any scratches, lesions

or incidences of tail biting will be recorded throughout the project. During the three years of the project, the project aims to identify the potential benefits of utilising the vaccine within pig herds to improve welfare, production efficiency and the meat quality of treated pigs.

The innovation site at Glynllifon aims to provide an innovative setting for pig producers in Wales to visit and learn more about new technologies and innovations available to the industry. Projects with the beef cattle herd will also be hosted at Glynllifon.

Regular updates on this project will be available on our website
www.gov.wales/farmingconnect



Cae Haidd

USING AUTOMATED TECHNOLOGY TO IMPROVE HEAT DETECTION WITHIN THE SUCKLER COW HERD.

With a gross margin of £650 per cow, Cae Haidd's suckler herd is performing well in comparison to the average hill farm suckler herd within the farm business survey which has a gross margin of £350 per cow. Despite this, Paul is well aware that there is room to further improve efficiency and profitability within the system. One Key Performance Indicator (KPI) he was keen to improve was the calving index of his herd, as this is a major driver of profitability within any suckler herd enterprise.

With many factors affecting cow fertility, heat detection was initially chosen by Paul to investigate, using automated technology. All cows were fitted with motion sensor collars which continuously monitored the cow's behaviour. With this particular system, three factors were being measured and monitored; Activity, Feeding Time and Rumination. The onset of heat is predicted when activity increases and feeding time and rumination reduces past a certain threshold for that particular animal. Once the system predicts the onset of heat the farmer is notified via an automated text and e-mail.

'There were some occasions when I felt like a fool calling the AI, as there was no visible signs of the cow on heat. It was a bit of a relief when he assured me that they actually were in heat.' says Paul.

Although the system's primary use is heat detection, the data collected has yielded other useful information for Paul. Following a few days of data collecting, it became obvious that a few animals were not spending as much time feeding and hence ruminating in comparison to the majority of the cows. It became apparent that the BCS of these cows was also lower than the average, so Paul called his local vet to investigate the matter. All the cows were in good health, so bullying was seen as a possible explanation for their behaviour, despite ample trough space in the shed. These animals were then separated from the main group, and overnight their feeding time and rumination almost doubled. This has prompted Paul to change his shed layout slightly for next year to allow him to separate the cows into more groups to achieve a more even BCS across the herd.

Recommended grass and clover variety lists

Grassland reseeding is essential for improving forage quality and helps to maximise the efficiency of fertiliser utilisation. Improved grassland should be reseeded where there is less than 50% sown species in the sward. Selection of grasses and clovers used in the seed mixture depends on the role they will play in the livestock system; a short term silage ley differing significantly from a long term sheep grazing ley. Whatever the purpose of the ley all decisions on variety choice should be driven by information in the Recommended Grass and Clover List for England and Wales published in June 2016. All varieties that appear on this list have been independently tested under rigorous regimes developed in line with government policy on economic and environmentally sustainable agriculture. For farmers in Ireland, Scotland and Northern Ireland there are separate region specific recommended lists.

The testing of varieties on the recommended list for England and Wales is funded by the British Society of Plant Breeders (BSPB), The Agriculture and Horticulture Development Board (AHDB) and Hybu Cig Cymru – Meat Promotion Wales (HCC). The recommended list provides detailed information on the characteristics and performance of each variety, such as seasonal yields, quality and heading dates. The grass lists include early, intermediate

and late heading dates for diploid and tetraploid varieties. The yield data for conservation and grazing during the growing season is expressed as a percentage of the average of the grass varieties on the recommended list. White clover varieties are described according to leaf size and assessed under hard or light defoliation for spring and autumn ground cover. This is to ensure that superior varieties are not overlooked due to inappropriate management for their leaf size and growth habit.

The Recommended List for England and Wales is available on line at <http://www.britishgrassland.com/page/recommended-grass-and-clover-lists>. This includes a farmer handbook and a version with more technical detail for merchants. AHDB host an interactive facility on their website allowing comparison of varieties. <http://dairy.ahdb.org.uk/technical-information/grassland-management/recommended-grass-and-clover-list>

With an estimated cost of £450/ha to reseed grassland it is important to take advantage of the benefits from the best available grass and clover varieties. Seed selection should be based on information from recommended lists and unless there are good reasons (for example organic seed of some varieties may not be available) all varieties in grassland seed mixtures should appear on the grass and clover recommended lists.



Whitecastle Vineyard, Abergavenny



Maengwynedd Log Cabins, Llanrhaeadr ym Mochnant

Diversification Open Evenings

A series of on-farm events have provided a range of innovative diversification ideas which could increase the resilience of farm and forestry businesses.

With all sectors of agriculture experiencing difficulties, diversification not only offers an alternative revenue stream, but also a way of increasing the profitability and sustainability of an existing business. Renewable energy has been a popular diversification option in recent years, but as feed-in tariffs have decreased other avenues have gained prominence such as in the leisure and tourism sector and eco-tourism where alternative energy is used to power tourist facilities on-farm, along with tapping into markets for food and drink products.

Jeremy Bowen-Rees, of Landsker Business Solutions was one of the speakers at the events, which promoted best practice in establishing a successful diversification.

"A lot of people jump into diversification without fully considering the many things they need to do to make an informed decision about what will work," says Mr Bowen-Rees.

"Sometimes people make major mistakes that not only compromise what they are doing in order to establish the diversification project, but

that can also have an impact on the core farm business as well."

"These events were an opportunity for people to acquire some guidance to help them make an informed decision and were also relevant for those who have diversified already to share their experiences and best practice with others, learning from people who have successfully diversified their own businesses."

Attendees were encouraged to develop a strategic business plan and use the existing skills and strengths of people within a business to add longevity and value to a diversification project. Market research and trialling ideas are also key to a successful start-up.

The events took place at Maes Farm, Maengwynedd, Llanrhaeadr ym Mochnant, where the family farm has diversified into hydroelectric, biomass and wooden holiday cabins, and at Whitecastle Vineyard, Llanvetherine, Abergavenny, where Robb and Nicola Merchant have diversified their smallholding into an award-winning vineyard.

Technical Officers

There are eight technical officers providing sector specific expertise in the development and implementation of trials for Farming Connect's network of innovation, demonstration and focus sites and other Knowledge Transfer activities. Each issue will focus on a different technical officer.



Gwawr Llewelyn Hughes - Pigs and Poultry Technical Officer

Gwawr was born and raised on the family beef and sheep hill farm in Snowdonia, but now lives with her partner and young son on the Lley Peninsula. Gwawr excelled in Young Farmers' stockjudging competitions representing Eryri and also keeps her own prize-winning flock of

pedigree Black Welsh Mountain sheep, which she breeds for showing at agricultural shows in the summer and at society sales in the autumn.

Gwawr graduated from Aberystwyth University with a BSc honours degree in Agriculture and Countryside Management in 2012.

After completing her degree, Gwawr began working for Farming Connect as a Knowledge Transfer Officer; travelling across Wales and producing technical reports based on expert advice. Gwawr has also worked as an Agriculture Co-ordinator for Farming Connect.

Gwawr was recently appointed as the Technical Officer for pigs and poultry, and is keen to deliver the latest information and recommendations to both sectors.

Gwawr's areas of expertise:

- Improve productivity efficiency whilst maintaining a high level of health and welfare
- Increase financial returns by making small changes to current systems
- Increase resilience in both sectors
- Expand the industries in Wales by showcasing what they have to offer as an alternative income stream to other farmers

Farming Connect at the Royal Welsh Show

This year, Farming Connect will have a bigger presence than ever at the Royal Welsh Show, providing even more opportunities for people to learn more about the services on offer.

A brand new feature for the 2016 Royal Welsh Show is the Agri-Lab exhibition. Situated on the balcony in the Meirionnydd Sheep Building, it will showcase the latest farming and forestry innovations that could transform the way people work in the future.

Among the ground-breaking innovations to feature at the exhibition in the show will be the world's first edible silage wrap and the latest advances in milking robotics.

The innovations on display are some of the first to be identified as technologies that could have a major impact on agriculture and forestry in the future by the Agri-Lab forum, which is made up of pioneering Welsh farmers and foresters. The Agri-Lab also undertakes activities



that demonstrate latest innovation in practice on farms and in forests and disseminate knowledge on latest technological advances.

Also for the first time this year, Farming Connect will have a presence in the forestry section, letting foresters, farmers and woodland owners know about the benefits and opportunities available to them. Farming Connect Forestry Technical Officer Geraint Jones and the team will be on hand to discuss integrating woodland management in farm businesses, which can benefit agricultural environmental performance. Available support to manage and improve woodland through practical management can also be identified.

At the Lantra Building, there will be a chance to speak to Farming Connect staff about the full range of services available, from the knowledge transfer programme and the demonstration network, to the advisory service and lifelong learning and development programme. People can also register or re-register their businesses in order to access all Farming Connect services here.

During the show, there will also be more details about the European Innovation Partnership Wales (EIP) and the new Management Exchange programme.



Royal Welsh Show 18 -21 July 2016

Gates open from 8:00am

Royal Welsh Showground
Llanelwedd, Builth Wells
Powys, LD2 3SY

EVENTS

BUSINESS REVIEW SURGERIES

Developing, implementing and evaluating plans for your business with an experienced business consultant to help expand and strengthen your business. If you have written your own business plan, the Business Review surgery can be used to verify and approve the business plan in order to access technical advice under our Advisory Service.

Surgeries take place between **9am** and **5pm** - booking is essential.

DATE	LOCATION <i>(location details confirmed with appointment)</i>
05/09/2016	Monmouth
08/09/2016	Llandrindod Wells
08/09/2016	Carmarthen
13/09/2016	Porthmadog
28/09/2016	St Asaph

SUCCESSION SURGERIES

To help farm and forestry families learn more about the issues involved in succession planning. Surgeries take place between **9am** and **5pm** - booking is essential.

DATE	LOCATION <i>(location details confirmed with appointment)</i>
22/08/2016	Machynlleth
09/09/2016	Pembroke Dock
22/09/2016	Brecon
22/09/2016	Llanrwst

PLANNING SURGERIES

This surgery includes an hour appointment with an experienced planning consultant who will offer you advice on any ideas or renovation plans you may have.

Surgeries take place between **9am** and **5pm** - booking is essential.

DATE	LOCATION <i>(location details confirmed with appointment)</i>
14/09/2016	Newtown
15/09/2016	Mold

IT SURGERIES

At the IT Surgery, you will receive a one-to-one appointment with an experienced IT mentor and have support on how to enhance your IT skills.

Surgeries take place between **9am** and **5pm** - booking is essential.

DATE	LOCATION <i>(location details confirmed with appointment)</i>
23/08/2016	Lampeter
21/09/2016	Usk

For further information, contact **Mali Griffith - 01248 660074 - mali.griffith@menterabusnes.co.uk**