

Number of Arable  
businesses registered:

734

Number of Horticulture  
businesses registered:

306

Demonstration Network

Pantyderi:YEN Grain Nutrient Benchmarking

The Yield Enhancement Network or YEN connects agricultural organisations and farmers who are striving to improve crop yields with the aim of closing the gap between current yields and potential yields. Grain testing of over 900 samples from YEN farmers over the last four years has revealed that 74% of cereal crops were deficient in at least one nutrient. This indicates that despite the best efforts of many growers, nutrition was commonly inhibiting the full potential of their crops.

Samples of grain were submitted for nutrient analysis at harvest 2020 from six fields at Pantyderi demonstration site. To increase the volume of data and facilitate benchmarking against concurrent crops grown in the locality, six fields were also sampled from a further five cereal growers in the area, known as the Pembrokeshire group.

Grain analysis was carried out to provide levels of all 12 essential nutrients. Results were then benchmarked through the YEN Grain Nutrition tool which incorporates results from all YEN grain samples harvested on a national basis.

Headline national results for the 2020 harvest show:

- The most common deficiency noted is phosphorus
- Potassium is less commonly deficient than in past years
- Manganese is more commonly deficient than in past years

The Pembrokeshire group results demonstrated that:

- Nitrogen nutrition is generally too generous and occasionally excessive
- One farm showed low sulphur levels across all fields analysed whereas other farms were satisfactory for sulphur
- Manganese also appeared low on most farms growing barley

Ffosygravel: Comparing the accuracy of grass measuring systems

The focus of this project is to compare the accuracy of two grass measuring systems; plate meter and satellite imagery. A cut and weigh method will also be used monthly to ensure accuracy. We will be subdividing the fields and mapping out the infrastructure for water accessibility and paddock access for easily accessible grazing management at Ffosygravel.

Grass will be measured by satellite imagery, plate meter and cut and weigh to compare accuracy. This will allow us to assess the ability of satellite imagery to increase grass production and grass quality (tDM).

The aim is to achieve at least one more rotation with increased grass utilisation, whilst also ensuring that the last round of grazing allows for a spring wedge for the next turnout in 2022 and a possible earlier turnout.

First measurements by plate meter and satellite imagery was taken on 11 March with Martin, the farmer, and Sarah Morgan of Precision Grazing to plan a spring wedge. Cover measurements:



- Agrinet: 2,140kgDM/ha
  - Ruumi: 2,085kgDM/ha
  - Difference of 55kgDM/ha
- Cows were out grazing on 22 March, earlier than previous years due to Martin understanding the covers. We are aiming for cows to be out grazing earlier next season.

Figure 1: Satellite imagery of Ffosygravel

Erw Fawr: Linking soil and air temperature with grass growth rate

Farming Connect demonstration site Erw Fawr have installed LoRaWAN (Low Range Wireless Access Network) sensors to collect soil temperature data to compare with grass growth rates during the 2021 grazing season. Installed in October 2020, the sensor has been sending temperature readings every 15 minutes via a LoRaWAN gateway installed on one of the cubicle sheds. This data is being interpreted on a bespoke dashboard as a series of graphs and downloadable data sheets.

Data thresholds can be set with an alarm function on a mobile device to notify the farmer of any required actions such as correct timing of fertiliser or the suitability of soil conditions to apply manures. Weekly grass recordings and soil temperature data will be correlated as the growing season continues.

Measuring grass has begun in earnest at Erw Fawr with extended day length and gradually increasing soil temperature driving grass growth, especially in the first round grazed paddocks.

Data can now begin to be correlated to look at the impact of soil temperature on grass growth rates, specifically at Erw Fawr. From data collected by the sensors at the beginning of the project at the end of February 2021, it can be seen that day length and solar absorption also has a key part to play in driving grass growth as only 0.3kgDM/ha/day (minimal) was observed, despite a reasonable soil temperature of 7.63°C, which is normally considered a trigger point for growth.

However, soil temperatures recovered after a cold spell beginning of March 2021 to between 9 -10°C, which has allowed grass to grow well at 35kgDM/ha/day. Looking back at the data in the graphs in figures 2 and 3, it can be possible to pinpoint the optimum time to apply fertiliser by triangulating current growth, soil temperature and light data. Currently, Erw Fawr does not have an external LUX LoRaWAN sensor to complete this triangulation.



Figure 2. Dual temperature sensor fitted to a paddock post

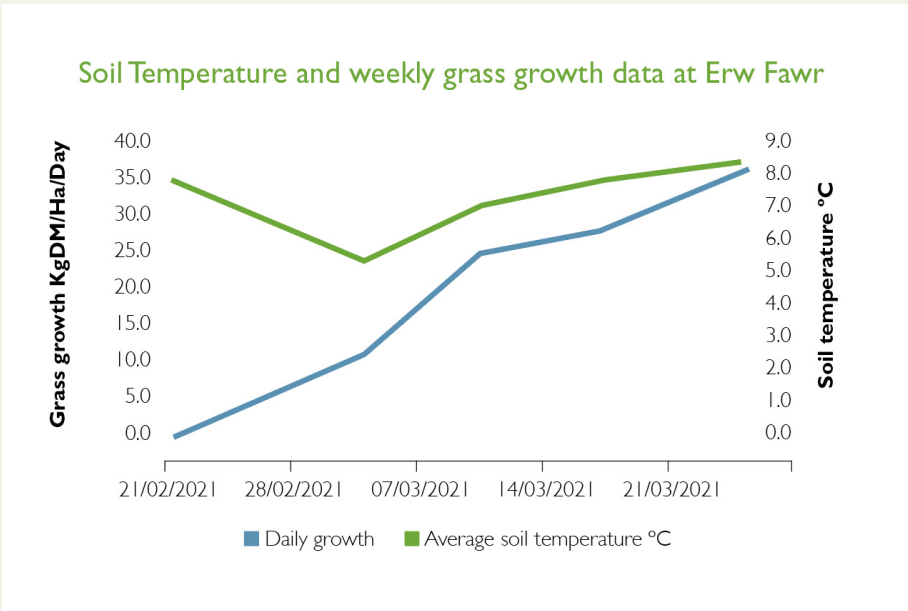


Figure 3. Grass growth and soil temperature at Erw Fawr during March 2021

Knowledge Exchange Hub

-  AIR POLLUTION: REDUCING AMMONIA EMISSIONS FROM AGRICULTURE BY ADAPTING FERTILISER STORAGE AND LAND APPLICATION TECHNIQUES
-  CAN CLOVER CUT CARBON: LEGUMES AND NITROGEN USE ON FARMS
-  DUNG, DRUGS AND DISEASE: THE INTERACTION BETWEEN DUNG BEETLES AND FARMING



38

WEBINARS HELD

with



1,472

VIEWERS

Examples of webinars held include:

19/01/2021: Making the most of red clover

Helen Mathieu from Germinal explained the benefits of using red clover as a livestock forage. In this webinar, information was shared on how to successfully establish it and how to maintain its productivity within a rotation.



59

BUSINESSES ATTENDED THIS WEBINAR

15/02/2021: Plants for bees

Lynfa Davies gave an insight into plants through the different seasons that are important to honey bees. Honey bees require forage throughout the active season to ensure they can build up enough stores for the winter and supply a honey crop.



8

BUSINESSES ATTENDED THIS WEBINAR

Advisory Service



53 individuals received one-to-one support through the Land Categories of the Advisory Service during this period.



130 groups received support through the Land Categories of the Advisory Service during this period.

Discussion Groups

North Wales Dairy Discussion Group – Control of Agricultural Pollution

The discussion group met to discuss the new Control of Agricultural Pollution regulations likely to come into force in April 2021 in Wales. Infrastructure specialist Keith Owen (Environmental Consultant and Director of Kebek Ltd) was invited to discuss the group members current facilities and to look at what action they needed to take (if any), to conform to the new regulations.

Keith's discussion topics included:

Pollution control



SSAFO/NVZ compliance



Slurry storage design



Manure management



Planning permission



Building design and diversification



Farm building design/refurbishment



Keith went on to talk about Welsh Government support currently available as capital grants, specifically the Farm Business Grant – Yard Covering and the Sustainable Production Grant (SPG), as options to fund the upgrading of facilities.

Most group members were booked onto the upcoming Farming Connect SPG webinar to learn more about what the grant entailed.

Keith's key take home message was not to panic, as most of these regulations existed previously under the SSAFO. Changes will be phased-in, giving farms some time to prepare.



EIP Wales



22

APPROVED LAND BASED PROJECTS WORKING

with



65

FARMERS AND FORESTERS



Establishing trees in dense bracken

Two farmers in mid Wales are investigating different cultivation techniques to prepare planting sites for trees in areas dominated by bracken. Several issues have been highlighted including the safety aspect of working on slopes and the short window for suitable planting conditions after bracken has died back enough to make hazards such as rocks visible but before the ground becomes too wet.

The project is investigating different cultivation techniques to clear bracken such as a Robocut machine which has a cultivator attachment and a mini digger with a rotovator attachment. Both machines are more suited to working on slopes because they are smaller but they are still not suited to extreme conditions. Lower tech options are also being investigated including strimming and trampling.

The species of tree could also have an effect and after one year of monitoring differences are being seen in the survival of different species during the early establishment phase. Birch and rowan saplings have experienced 5% losses compared to 10% for Sitka spruce. But for oak, the losses climbed to 25%. Continued monitoring will assess whether this is due to planting conditions or other environmental factors.



Figure 4. The Robocut remote controlled machine cultivating the plot ready for planting trees

Figure 5. Mini diggers at work – one with a bucket and the other with a rotovator attachment

E-learning

Some of the e-learning courses completed within this period include:

GRAZING MANAGEMENT



IMPROVING SOIL HEALTH



TREE ID



WEED CONTROL



Click [here](#) to visit the website.

Training

Courses	Number of individuals trained during this period
Chainsaw Maintenance & Cross-Cutting	11
Level 2 Award in Safe Use of Pesticides (PA1) & Safe Application of Pesticides (PA2)	6
Level 2 Award in Safe Use of Pesticides (PA1) & Safe Use of Pesticides (PA6)	4
Rough Terrain Telescopic Lift Truck	3
Soil Quality (BASIS)	3



Cronfa Annwylfodol Ewrop ar gyfer Datblygu Gwledig

European Agricultural Fund for Rural Development

Europe Investing in Rural Areas



Llywodraeth Cymru

Welsh Government

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