Reinvigorating Wales’ local Grain Economy

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Date: May 2015
Better Organic Business Links – Gwell Cysylltiadau Busnes Organig

Acknowledgements

The Better Organic Business Links (BOBL) project, run by Organic Centre Wales, is a six year project designed to support the primary producer in Wales and grow the market for Welsh organic produce in a sustainable way.

The aim is to develop markets for organic produce whilst driving innovation and promoting sustainable behaviours at all levels within the supply chain, to increase consumer demand and thence markets for organic produce, especially in the home market, and to ensure that the primary producers are aware of market demands. The project provides valuable market information to primary producers and the organic sector in general.

Delivery of the project is divided into five main areas of work:

- Fostering innovation and improving supply chain linkages
- Consumer information and image development of organic food and farming in Wales
- Market development
- Providing market intelligence to improve the industry's level of understanding of market trends and means of influencing consumer behaviour
- Addressing key structural problems within the sector.

In all elements of the work, the team are focused on building capacity within the organic sector, to ensure that the project leaves a legacy of processors and primary producers with improved business and environmental skills, able to respond to changing market conditions, consumer demands and climate change.

The project is funded under the Rural Development Plan for Wales 2007-2013, through the Welsh Government and the European Agricultural Fund for Rural Development.
Contents
Acknowledgements ........................................................................................................................................... 0
Contents ......................................................................................................................................................... 2
Executive Summary ..................................................................................................................................... 3
1 Introduction .............................................................................................................................................. 4
2 Objectives ............................................................................................................................................... 4
3 Activities .................................................................................................................................................. 6
  3.1 Supporting the Welsh Grain Forum .................................................................................................. 6
  3.2 Promoting Welsh Grain .................................................................................................................... 6
  3.3 Market intelligence ............................................................................................................................ 7
  3.4 Welsh grown malting barley .............................................................................................................. 9
  3.5 Study Tours ....................................................................................................................................... 10
4 Conclusions .............................................................................................................................................. 10
5 Appendices .............................................................................................................................................. 11
  5.1 Appendix I: Making more of Welsh flour. A survey for bakers of bread and patisserie .......... 11
  5.2 Appendix II: Making more of Welsh flour. A survey for bakers of cakes and desserts ............. 14
  5.3 Appendix III: Report on a Study tour to Brittany – Rupert Dunn ............................................. 16
Executive Summary
Historically, Wales had a thriving grain economy. However, the Industrial Revolution, which resulted in powerful steam mills and more efficient transportation made possible by rail; the rise of supermarkets and the centralisation of our food system; changes in consumption patterns and baking techniques; and the concentration of cereal production in the Eastern regions of the UK has meant that milling and malting grain production, and supply chain for processing it, has all but disappeared from Wales.

However, the last 10 or 15 years has seen a reawakening of interest in more traditional, higher quality, artisan grain products. It is this resurgence of interest in traditional products and production that presents opportunities for businesses in Wales; we do have small but vibrant community of artisan brewers and bakers who are interested and excited about working with Welsh grain; there are many microbreweries who would like strengthen the Welsh identities of their beer, and support local, sustainable production systems by using Welsh barley; there are traditional milling operations well placed at add value to Welsh grains; and there are farmers who want to grow for a different market.

This project is about reinvigorating Wales’ local grain economy. It aims to connect grain based businesses in Wales; promote Welsh grain and its products; quantify the current and potential demand for welsh grain from bakers and brewers; assess the potential of a Welsh bred barley variety to increase the proportion of Welsh grain used by brewers; and to learn from other countries with better established local grain economies. Specifically it:

- Helped to establish The Welsh Grain Forum, a community of growers, millers, bakers, maltsters, brewers, thatchers and friends committed to using and promoting Welsh grain, and through whom much of the project was delivered.
- Supported the development of the market for Welsh grain products by funding the preparation of promotional materials and workshops on baking with flour from Welsh grain.
- Undertook market intelligence which established that the current usage of Welsh flour by bakers was low (2.4t/month from 15 respondents), and that a small increase of about 0.4 tones could is expected over the next year or so. However, a lack response to an online survey could indicate that more work is required to promote welsh flour to bakers
- Summarised the available information on ‘Pipkin’, a malting barley variety bred by IBERS in Aberystwyth in 1980’s, but has since been superseded. Welsh brewers and distillers are keen to see the variety brought back into use, but concerns remain about its susceptibility to some key diseases
- Supported study tours to Europe, the lessons from which were shared with the members of the Welsh Grain Forum.

There is a small but growing demand for Welsh grain and its products, serviced by a small but active community of growers and businesses who are in a position to capitalise on this opportunity. The Welsh Grain Forum has an important role in enabling them to work more
effectively toward the common goal of reinvigorating the local grain economy in Wales. At present, the opportunities are perceived to be mainly in the home-baking and microbrewery market. There is interest among professional bakers in Welsh flour which could present significant opportunities in the future, but more work is needed to promote Welsh flour to this group and provide information and training on the products and techniques most suited to Welsh flour. There are also significant opportunities to learn from other countries and cultures where the local grain economy is more developed.

1 Introduction

Historically, Wales had a thriving grain economy. Go back 150 years or so and almost every community had a mill (any building with ‘Felin’ in its name once fulfilled this vital role) and the records from those mills show that grain was grown all over Wales. Beer, too, was brewed by a multitude of local breweries and making ‘small’ (low alcohol) beer was an important way of rendering water drinkable.

Much has changed in the intervening period. The Industrial Revolution ushered in the age of steam, which resulted in powerful steam mills and more efficient transportation was made possible by rail. These changes led to the demise of many local mills, which could not compete with the potency of massive steam powered industrial mills. The latter part of the 20th century also saw the rise of supermarkets and further centralisation of the food system, while CAP reform encouraged specialisation and effectively led to Eastern regions of the UK becoming the focus of cereal production.

Milling and malting grain production, and the supply chain that processes, has all but disappeared from Wales. However, the last 10 or 15 years has seen a reawakening of interest in more traditional, higher quality, artisan grain products. Spurred on by initiatives like the Campaign for Real Bread and the Campaign for Real Ale (CAMRA), there is a small but growing group of consumers who are interested in the different flavours, the provenance and variety of the grain, and the processes by which their bread and beer are made. The growth in microbreweries, for example, over the last 15 year has been striking.

It is this resurgence of interest in traditional products and production that presents opportunities for businesses in Wales; we do have a small but vibrant community of artisan brewers and bakers who are interested and excited about working with Welsh grain; there are many microbreweries who would like strengthen the Welsh identities of their beer, and support local, sustainable production systems by using Welsh barley; there are traditional milling operations well placed to add value to Welsh grains; and there are farmers who want to grow for a different market.

2 Objectives

The project, in its most general terms, is about reinvigorating Wales’ local grain economy. More specifically, it aims to connect grain based businesses in Wales; promote Welsh grain and its products; quantify the current and potential demand for welsh grain from bakers and brewers; assess the potential of a Welsh bred barley variety to increase the
proportion of Welsh grain used by brewers; and to learn from other countries with better established local grain economies
3 Activities

3.1 Supporting the Welsh Grain Forum

The Welsh Grain Forum is a community of growers, millers, bakers, maltsters, brewers, thatchers and friends committed to using and promoting Welsh grain by:

- Developing a network of grain based businesses in Wales to exchange knowledge and information.
- Building fair and equitable relationships between businesses across the whole supply chain.
- Helping businesses to work together to share resources and work cooperatively.
- Promoting quality Welsh grain products to the public.

It provides a structure through which businesses can communicate and cooperate and the vehicle through which much of this project was be delivered. To date it has been an informal network, but it is now in the process of becoming constituted.

It met for the first time in November 2012, and it has continued to do so since, often hosted by one of the members. A website was established as another important ways of communicating, and includes a forum a ‘corn exchange’ where members can trade goods and services and the opportunity for individual members to profile their own businesses. A Facebook page and a Twitter account were set up for communications with the general public.

A brand and promotional materials were developed to help the Forum strengthen its identity and attract new members.

3.2 Promoting Welsh Grain

Developing the market for Welsh grain products was recognised as a priority from the outset. The following steps were taken:

- A recipe booklet for homebakers highlighting the techniques and ingredients most suited to a range of Welsh grains and flours.
- Cooking demonstrations and workshops for families at the RWAS Spring Festival.

These were widely publicised/disseminated at the events themselves and on social media/website.

Social media platforms also have a crucial role in fostering a better understanding and appreciation of Welsh bread, cakes, beer and spirits.
3.3 Assessing the demand for Welsh grain

3.3.1 Milling grain

In addition to the demand from the general public, it was also important to assess the demand from professional bakers and brewers. Online surveys were prepared for bakers of bread and patisserie, and for bakers of cakes and desserts. In-depth interviews were held with 15 businesses who were particularly interested in using more Welsh grain.

The response to the online survey (see Appendices I and II) was very low, but the interviews with individual businesses were much more successful. Of the 15 bakers who participated, eight were producing bread only, two bread and patisserie, four cakes and desserts and one pizza. Thirteen gave detailed data which are summarised below in Figure 1. Twelve were small to medium businesses, using between 10 kg and 7.2 tonnes of flour per month. One was a large business using about 60 t per month (data from this business is not presented in Figure 1 because of difficulties of including this information at the same scale). Between them, they used about 74 t of flour, about 72.7 t of which was wheat and the remainder a combination of rye, spelt and barley.

The proportion of Welsh flour used varied between zero and 100% and is indicated in Figure 1. As a rule, smaller bakers used a higher proportion of Welsh flour. One reason for this is that producing fewer loaves means that these bakers can pay closer attention to detail and adapt the process to individual batches of flour, whereas larger operations need a consistency that can be hard to attain under Welsh growing conditions. Many bakers achieve this by mixing Welsh flour in with other flours in varying proportions to achieve this.

Among the respondents, the total Welsh flour usage was about 0.8 tonnes per month. On the basis of plans for development, this demand could grow by about 0.4 tonnes over the next year or so. Twelve of the 15 respondents said that they would like to use more Welsh flour for various reasons including promoting the diversity and resilience of Wales' local food system and using provenance of the flour to strengthen the Welsh identity of products. At present there are barriers to doing so. A lack of consistency in quality and in particular protein content was most frequently cited. The issue of price was also highlighted. Many bakers would find it difficult to justify a premium for Welsh grain, in a highly competitive businesses environment with small margins.

The demand for Welsh flour from Welsh bakers remains small. The poor response to the online survey suggests that there is little latent demand in the industry waiting to be capitalised upon. In order for a substantial increase in demand to be realised, the consistency of Welsh flour, on the one hand, must improve (although there are limitations to what can be achieved under Welsh growing conditions). On the other, a concerted effort needs to be made to raise the profile of Welsh grain, and the products and techniques most appropriate to its use. If these issues were to be addressed, significant progress could be made. If even a small number of medium sized businesses starting including a
proportion of Welsh flour in their mixes the impact on demand, in relative terms, would significant.

In the short term, the opportunities for Welsh grain businesses is likely to lie in the growing homebaking market.

![Figure 1: Monthly flour usage by survey respondents.](image)

### 3.3.2 Malting Grain

We took a similar approach to assessing the demand for Welsh Malting grain. We interviewed 15 businesses (thirteen breweries and two distilleries) who we believed to have an interest in using Welsh grain. Between them they were using nearly 30t of malt per month. At present, none of this was grown in Wales, but two breweries had used Welsh grown malt in the past.
As expected the vast majority (over 99%) was barley. In terms of varieties, Maris Otter was by the most widely used, followed by Propino, Pippel and Crisp. Two specialist lager producers used ‘Weiman’ from Germany. Three had either used in the past, or expressed an interest in using in the future, a Welsh bred variety ‘Pipkin’ (see below for details). Other grains were Rye, wheat and oats.

Just over half would use Welsh grown malt if it was available, mostly because of the provenance and the opportunities to strengthen the Welsh branding but also reduced ‘beer miles’. The overriding concerns were over quality and consistency. Whereas bakers have some scope and flexibility to adjust their techniques to suit the grain, the same not generally true of brewers and distillers. Those that are considering using Welsh grain would do so by creating a new product (and would market as such) rather than substitute the malt in their current recipes. The message is clear: If Welsh grown malt is to be used, it must meet the same standards as that currently in use.

Six of the businesses would be willing to pay a premium of between 10 and 15% from Welsh grown malt.

In summary, there is potential for Welsh grown malt; a significant number of businesses want it, and will pay a premium for it. However, there is little or no room for manoeuvr with respect to adapting brewing and distilling techniques to the grain. In short Welsh grown malt must meet same criteria in terms of quality and consistency as malt from anywhere else.

### 3.4 Welsh grown malting barley

With this in mind we examined the potential of a particular winter malting barley variety, ‘Pipkin’, bred in the 1980s at what is now IBERS near Aberystwyth, and quite widely grown until the mid-1990s, when other varieties superseded it. Several members of the Welsh Grain Forum expressed a particular interest in using it. The variety has been maintained by IBERS (it is currently growing on about 100m² near Aberystwyth), so it would be technically possible to reregister the variety on the conservation list and bring it back into use. However, there was very little readily available information on which to base a decision on this variety; the passage of 20 years since it was last grown commercially, and that fact that much of the data was generated prior the digital revolution, meant that the information was not easily accessible.

The Grassland Development Centre at IBERS summarised all known information. In terms of agronomy the variety has some important strengths including: good malting potential; an ability to grow relatively well on less fertile, heavier soils; and good resistance to net blotch. Weaknesses on the other hand are: lower yield potential; weak straw making it susceptible to lodging; and susceptibility to some important diseases including mildew, scald (Rhynchosporium) and barley mild mosaic virus. With respect to organic and low input systems, disease susceptibility is clearly a concern. However, the low/ no N inputs may mean that lodging is less likely to be a problem. Also, the more modern varieties require high N inputs to realise their yield potential, so under organic systems, the differential between them and Pipkin is likely to be smaller. In terms of malting, figures for nitrogen content were not available, but Penlon Brewery have successfully produced a
quality beer from Pipkin grown near Aberystwyth, which suggests that the specifications can be met. However, Pipkin tends to produce a higher proportion of smaller grains than other varieties currently in use, which can lead to uneven germination during the malting process.

The brewers and distillers in the group are keen to see this part of the project develop. However, growers are still considering whether they would support a move in this direction. Many would like to grow it, but there are concerns of scald and mildew resistance. At the time of writing the jury is still out.

3.5 Study Tours

The study tours were all about learning from other countries and cultures where the local grain economy is somewhat stronger than it is in Wales. The BOBL project paid 50% of the travel costs for one member of the Welsh Grain Forum to visit Brittany.

Rupert Dunn of Tir o'r Torth in Pembrokeshire visited Nicolas Supiot in Brittany, one of the most famous peasant bakers in France. He has been growing and processing his own grain. The main learning points included:

- Wheat production on small scale, including techniques and small scale machinery
- Harvesting and preparing for processing
- Baking techniques suitable for flour from heritage varieties
- Oven construction

Read his full report in Appendix III.

4 Conclusions

There is a small but growing demand for Welsh grain and its products and there is a small but active community of growers and businesses who are in a position to capitalise on this opportunity. The Welsh Grain Forum has an important role in enabling them to work more effectively toward the common goal of reinvigorating the local grain economy in Wales. At present, the opportunities are perceived to be in the home-baking and microbrewery market. There is interest among professional bakers in Welsh flour which could present significant opportunities in the future, but more work is needed to promote Welsh flour to this group and provide information and training on the products and techniques most suited to Welsh flour.

Microbreweries are also interested, but in contrast to bakers who can overcome the challenges by changing their techniques and recipes, they have less flexibility to use grain with wider quality specifications. If the volumes of Welsh grain malting grain are to increase, challenges will have to be met by growers more than processors.
5 Appendices

5.1 Appendix I: Making more of Welsh flour. A survey for bakers of bread and patisserie

1) Your contact details
Your data will not be shared with 3rd parties. If you prefer to complete the questionnaire anonymously, please do. We ask for these details so we can contact you for points of clarification or further information, build a picture of where the demand for Welsh flour is likely to come from and to keep you informed of activities and opportunities within the Welsh Grain Forum.

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<th>Name of Business:</th>
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<td>Contact name:</td>
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<td>Email:</td>
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<td>Website:</td>
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2) Your products
How much of the following do you produce each month?

<table>
<thead>
<tr>
<th>Product</th>
<th>Number per month</th>
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<tr>
<td>Bread (loaves)</td>
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<td>Patisserie</td>
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<td>Other (specify)</td>
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If you prefer not to provide exact figures please indicate a range in the table below.

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3) Your flour usage
How much flour from each of the following grains do you use each month?

<table>
<thead>
<tr>
<th>Usage (Kg/ Month)</th>
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<td>Wheat</td>
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<td>Rye</td>
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<td>Spelt</td>
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4) Using Welsh flour

<table>
<thead>
<tr>
<th>How much Welsh flour do you use now?</th>
<th>% of total usage</th>
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<tr>
<td>Would you like to use more if was possible?</td>
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How important is/ would using Welsh flour be to you:

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<tr>
<th>Very</th>
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<td>Fairly</td>
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<tr>
<td>Not at all</td>
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Please tell us why?

5) Your baking techniques

Certain baking techniques, like slow fermentation and sourdough, are generally more appropriate for welsh flour. Which baking techniques do you use now?

| 'No-time dough/ Chorley wood process |  |
Do you have any plans to introduce new products/techniques, or would you consider doing so. Yes/No. If yes, please specify.

6) Would you like to find out more about using Welsh flour? Yes/No

7) Would you be willing to take part in an interview (less than 30 mins) to talk about the issues and opportunities around using Welsh flour? Yes/No

Thank you for your time.
5.2 Appendix II: Making more of Welsh flour. A survey for bakers of cakes and desserts

1) Your contact details

Your data will be held in strict confidence. If you prefer to complete the questionnaire anonymously, please do. We ask for these details so we can contact you for points of clarification, build of a picture of where the demand for Welsh flour is likely to come from and to keep you informed of activities and opportunities.

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How important is/ would using Welsh flour be to you:

| Very | | |
|------|---|
| Fairly | | |
| Not at all | | |

Please tell us why

5) Would you like to **find out more** about using Welsh Flour? Yes/No

6) Would you be willing to **take part in an interview** (less than 30 mins) to talk about the issues and opportunities for using more Welsh flour? Yes/ No

Thank you for your time.
5.3 Appendix III: Report on a Study tour to Brittany – Rupert Dunn

Report from Paysanne Boulanger course with Nicolas Supiot in Brittany
March 23-27th 2015
Rupert Dunn

This is a brief report before I write up something more comprehensive.

![Image](image-url)

Nicolas Supiot is one of the most famous peasant bakers in France. In fact he coined the phrase ‘peasant’ almost 20 years ago and brought it back from a derogatory word. Nicolas has been growing his own grain, processing milling and baking only by hand (in a dough trough) for the last 20 years. This is what is means to be a peasant baker, to use only your own flour.

If you speak French, watch this video for a good introduction
[xurl]
https://www.youtube.com/watch?v=8B_7AFYmkYo

Nicolas home and bakery is close to the farm, which is owned by an association and of which he and his wife Laetitia are tenants.
[xurl]
https://lesjardinsdesiloe.wordpress.com

At the farm the have 20 or so ‘Bret’ cows, which apparently originated from Wales. They are similar to the size of Dexters. The farmhouse dates back to the 6th Century.

I attended this five-day course, which Nicolas holds twice a year for people wishing to set up their own peasant bakeries. I was part of a group of twelve which also included Ben Mckinnon, founder of E5 bakehouse in Hackney
http://e5bakehouse.com/ They have recently purchased a mill at the bakery and five hectares of land two hours from London.

During the course Nicolas expounded on 20 years of experience. He shared his considerable experience and knowledge in the areas of:

- Wheat and its relationship to the land and humans.
- His production methods, how he grows
- Harvesting and preparing for processing
- Demonstrated all his farm machinery and processing kit
- Baking and leavens. Making a leaven, working with different flours by hand, baking in a wood fired oven and oven construction.

The key things I learned was:

It is possible! Like Nicolas said ‘we did not know it was not possible so we did it’.

**The land**

Nicolas grows many other crops in with his wheat, including lupin, clover, fava beans (which he feeds to the animals) and *Camelina (false flax)* and *Nigella*. He makes oil from the latter two. Nigella oil seems to be a health wonder, it has a very interesting flavor.

All of these plants work well together without competing with the wheat, they also work well with the land.

Nicolas approach to farming is not so much to follow a strict rotation, but to read the land, to see what weeds grow tells him the state of the land.

As a general rule, he plants a good diversity of plants in the land, as this is best for the long term health of the soil.

He grows a mix of seven varieties of wheat ‘Ble du Redon’, all of them local to Brittany.

Nicolas puts at least some of his straw back on the land, building soil carbon which aid the retention of nutrients. He talked allot about ‘thermo lactic’ chemistry in the soil as very important. I need to find out more on this! Essentially Nicolas fosters a soil which is rich in micronutrients and healthy bacteria.

**Machinery**

He ploughs with an Ecodyne which does not plough more than 5cm in depth, leaving subsoil and any microrizhal fungi intact.
Nicolas also has a range of grain cleaning and processing kit, including two cleaners, a polisher, dryer (which he does not use). I have pictures/film of some on operation. They are all older bits of kit, the new build cleaners are designed for bigger tonnage.

He also demonstrated his mill, the Moulan Astrie made in Brittany. Its an electric powered stone mill. Nicolas mills once a week as he said that many of the minerals in the flour only last up to two weeks.
The bread is the best I have eaten!