

Northern Cereals: Barley Markets & Some New Products



Northern Cereals

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Outline Of Presentation

- Historical background
- Drivers for development of recent barley markets
- Main barley markets/uses (nb for more detail see report on cereals web site)
- Examples of some Scottish products

NB Food markets and products will be covered in next presentation

The image shows the cover page of a project report. At the top, there are logos for Northern Cereals, Northern Periphery and Arctic Programme (2014-2020), and the European Union (Investing in your future, European Regional Development Fund). The title of the report is 'Northern Cereals – New Markets for a Changing Environment'. Below the title, the subtitle is 'CURRENT CEREAL GROWING SITUATION IN FIVE NORTHERN REGIONS AND THE POTENTIAL FOR USING LOCAL CEREALS IN FOOD AND DRINK PRODUCTS'. The report is identified as 'A Project Report' and 'Deliverables T1.2.1 and T1.3.1'. There are four small images: a field of barley, a pile of grain, a loaf of bread, and several wooden barrels. The authors are listed as Peter Martin, Olafur Reykdal and Hilde Halland, and the date is March 2016. At the bottom, there are logos for the Agronomy Institute, University of the Highlands and Islands Orkney College, matis, and NIBIO (Norsk Institutt for Bioøkonomi).

Northern Cereals

Northern Periphery and Arctic Programme
2014-2020

EUROPEAN UNION
Investing in your future
European Regional Development Fund

Northern Periphery and Arctic Programme
Northern Cereals – New Markets for a Changing Environment

CURRENT CEREAL GROWING SITUATION IN FIVE NORTHERN REGIONS AND
THE POTENTIAL FOR USING LOCAL CEREALS IN FOOD AND DRINK PRODUCTS

A Project Report

Deliverables T1.2.1 and T1.3.1

By
Peter Martin, Olafur Reykdal and Hilde Halland,
March 2016

AGRONOMY INSTITUTE

University of the Highlands and Islands Orkney College

matis

NIBIO
NORSK INSTITUTT FOR BIOØKONOMI

Historical Background



- Barley - one of the earliest crops domesticated in the Fertile Crescent (c 10,000 BP)
- Probably mainly used for food, feed and malting
 - **Brewing well established in Sumeria by c. 5,000 BP**
- Food uses gradually displaced by wheat:
 - **Better baking quality - gluters**
- But, barley well-adapted to climatic extremes (heat, cold, dryness)
 - **Remained important for food in extreme locations (Himalayas, Ethiopia, N Europe)**
- Took a long time for barley/agriculture to arrive in Northern areas:
 - **Reached Orkney and N Norway in Neolithic times (c. 4,000 BC in Orkney)**
 - **Taken by Norse to Faroes and Iceland**
- Globally, barley is 5th crop for dry biomass production (c 140 M mt):
 - **C 2/3 animal feed; 1/3 malt; 2% human food**

Recent Drivers For Barley Market Development



1. Tourism

- Large, recent expansion of tourism across northern regions
 - E.g. Iceland: c. 100,000 in 1990, 300,000 in 2000 and >1 m by 2015
 - Orkney >200,000 in 2017
- Tourist experience includes:
 - Local F&D; local ingredients, not just made locally
 - Many prepared to pay a premium for this
- Locally grown barley can contribute to this by providing:
 - Feeds for meat and dairy industries
 - Malting barley for brewing and distilling
 - Grains for milling into flour or for inclusion in porridge, stews etc



Recent Drivers For Barley Market Development

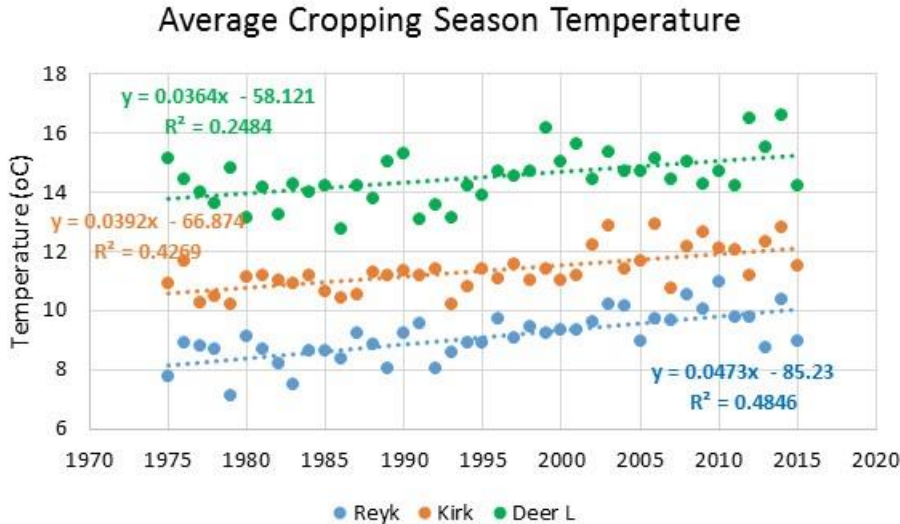


2. High Provenance Food & Drink

- Global interest in F&D products linked to special locations.
- Perception that northern regions are unpolluted and a source of healthy products
- Barley - well adapted for growing in N regions. Can play an important role in facilitating the development of HPF&D across the region
- Increasing demand for high provenance alcoholic beverages
 - **Microbreweries and microdistilleries can be very important:**
 - Small scale
 - Can be established in remoter locations
 - Added benefits of local employment and tourism

Recent Drivers For Barley Market Development

3. Climate Change



- Effects of CC include markedly warmer cropping seasons across most of N Atlantic region
 - **Almost 2.0° C increase over 40 yrs in Reykjavik**
- Barley can now be grown further north than previously
 - **Dramatic example of Iceland – about 100 ha of barley in early 1990s; reached 4,500 ha in 2012**
- See project publication:
 - ***“Recent warming across the North Atlantic region may be contributing to an expansion in barley cultivation”***. Climatic Change (2017) 145:351-365



Recent Drivers For Barley Market Development

4. Locally Adapted Varieties

- In spite of warmer growing seasons resulting from CC, still significant challenges to growing barley in N regions, especially:
 - **Short, cool growing season**
 - **High rainfall (esp at harvest)**
- Specially adapted barley varieties required for such conditions:
 - **In some areas old varieties/landraces revived (e.g. Bere in Orkney)**
 - **New varieties developed in Iceland, Norway, Sweden and Finland**



Recent Drivers For Barley Market Development

5. Health benefits of barley

- Mainly applies to food uses!
- Modern life-styles and diets linked to a range of disease conditions in Western society:
 - **Cardiovascular Disease (CVD)**
 - **Type-2 diabetes**
 - **Colorectal cancer**
 - **Obesity**
- Although not a panacea for these conditions, barley foods can have a role in managing/combating them because of:
 - **High fibre content**
 - **Soluble fibre (β -glucan) and antioxidants**
 - **Low Glycaemic Index foods**
 - **Rich in several minerals and vitamins**



Main Barley Uses / Markets - Summary



- Farm
 - Feed (Silage / Grain)
 - Bedding (straw)
 - Seed
- Malt
 - Brewing
 - Distilling
- Food
 - Flour/meal
 - Grain

Main Barley Uses / Markets – On Farm



- With 2/3 barley used for feed, greater on-farm use is likely to be biggest new barley market
- Silage. Important where growing conditions marginal and harvesting grain is difficult:
 - **Whole crop is cut before grain is mature and ensiled**
- Wet grain harvesting. Grain can be harvested for feed at a high moisture and treated with a preservative.
- Where grain can be harvested for drying, it could be kept for own seed or grown for certified seed.
 - **Can give significant savings in cost of production**

Main Barley Uses / Markets – Malt



- Locally grown barley normally needs malting for use by breweries/distilleries
- In some areas, sending grain away for malting may be feasible
- Most northern areas are a long way from malting facilities
- Floor malting may be a solution, although very labour intensive
 - **Project provided 8 placements at Highland Park Distillery for SME partners to learn about floor malting**
- Could be commercial opportunities for producers of Northern malts

Examples Of New Barley Beverage Products

Bere whiskies – combine high provenance with an ancient barley



- Bere
 - An ancient type of Scottish barley
 - Until mid-19 C widely used for brewing and distilling
 - By 21st C, very little Bere grown; none used for brewing or distilling

From 2005, collaboration between AI and Bruichladdich Distillery on Islay to revive use of Bere for whisky production

- About 50 t grain grown annually in Orkney
- Annual distillation of each crop on Islay

- Bere whiskies released since 2014 as separate vintages
 - Small volume, but global product sold through international airports



Examples Of New Barley Beverage Products



Raasay

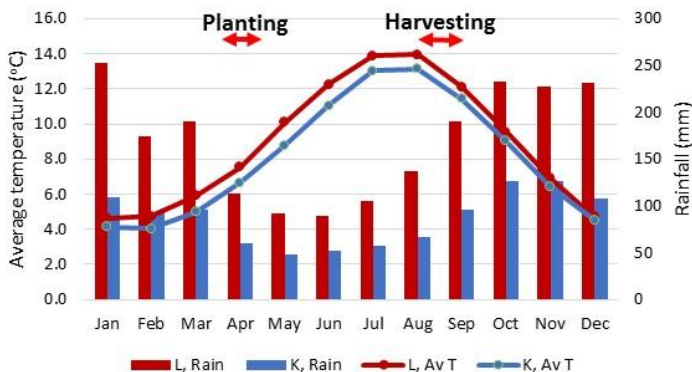


Raasay whiskies – will combine high provenance and local barley

- Raasay Distillery – opened 2017
 - The first (legal!) distillery on Inner Hebridean island of Raasay
 - Location will guarantee unique whiskies
 - An aspiration to use some locally grown barley
 - Barley not grown on Raasay for grain in living memory
 - High Sept rainfall presents a major challenge for harvesting

- Feasibility study (2017/18):
 - Testing early planting and early maturing N European varieties to try to ensure an August harvest
 - If successful, next stage will be to develop a supply chain

Temperature and rainfall data for Skye (L) and Orkney (K)



Examples Of New Barley Products



Provenance and company collaborations

- Whisky casks can be used **to add value** to other products
- All sourced Arran Bere whisky casks for Swannay Brewery and Orkney Wine Company to produce cask matured products:
 - Orkney Porter
 - Fruit wine liqueurs
- Bruichladdich Bere whisky casks used for maturing Orkney Craft Vinegar



Summary

- Barley is well-suited to growing in Northern areas to support production of high provenance food and drink products
- Many recent drivers which make it an appropriate time to encourage greater barley production for a wide range of end-uses
- On-farm uses, especially animal feed, are likely to be very important
- Small-scale end-users in more remote locations can strengthen rural economies
- Some high value products also have potential for export