Northern Cereals: Barley Markets & Some New Products

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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
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 - gluten
- 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
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 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
Examples Of New Barley Products

**Provenance and company collaborations**

- Whisky casks can be used **to add value** to other products

- AI 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.