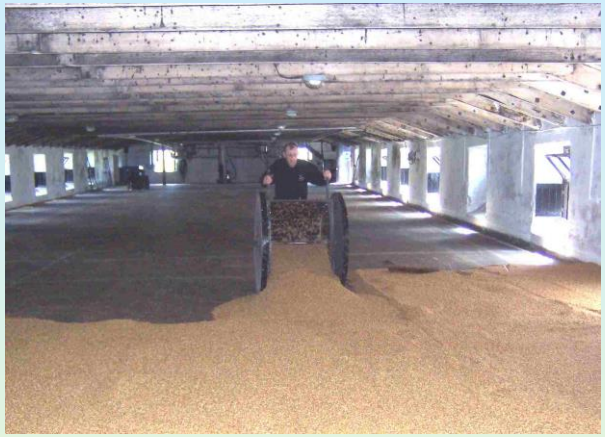
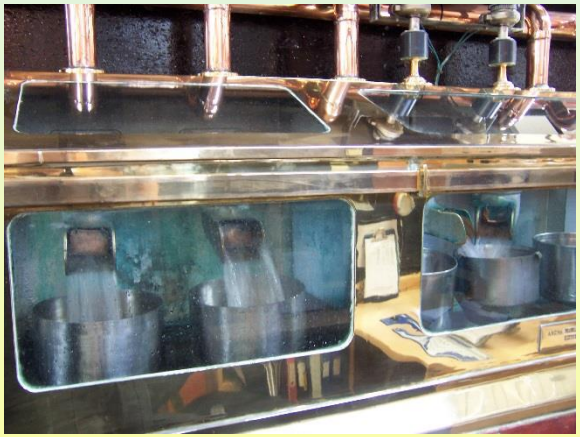
Developing An Orkney Malting Barley Supply Chain With Highland Park Distillery





Northern Cereals

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AGRONOMY INSTITUTE

Northern Periphery and Arctic Programme 2014-2020

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Introduction

- **Presentation will describe:**
  - A collaborative project between the AI, Highland Park Distillery and a small group of local growers to supply locally grown malting barley to develop an “All-Orkney” whisky

- **Important background considerations to this project:**
  - HP has retained its own malting floors
    - Local grain can be malted on site
  - No tradition of growing malting barley in Orkney:
    - Through the 20th C, Orkney farmers concentrated on feed barley
    - Like all other Scottish distilleries HP sourced barley from the main southern suppliers
  - Orkney is about 100 miles further north than other the nearest commercial growers of malting barley:
    - Different soil and growing conditions

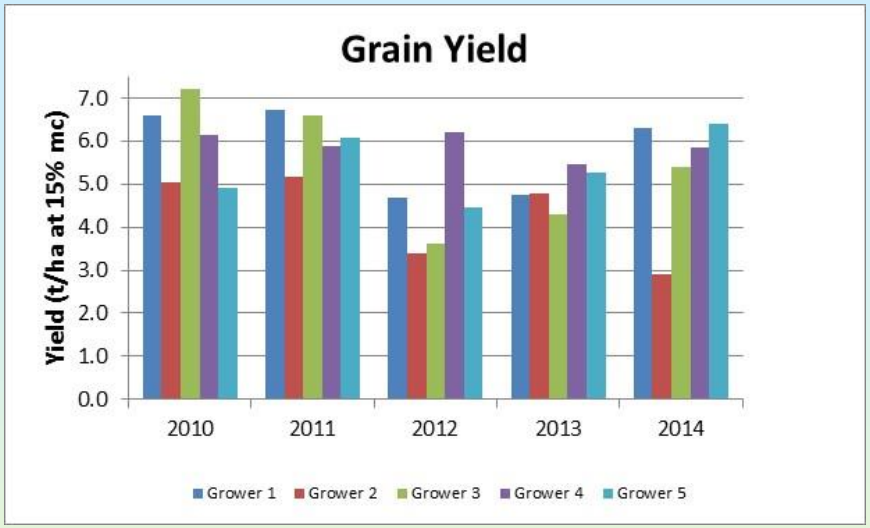
Collaboration Between AI & Highland Park Distillery

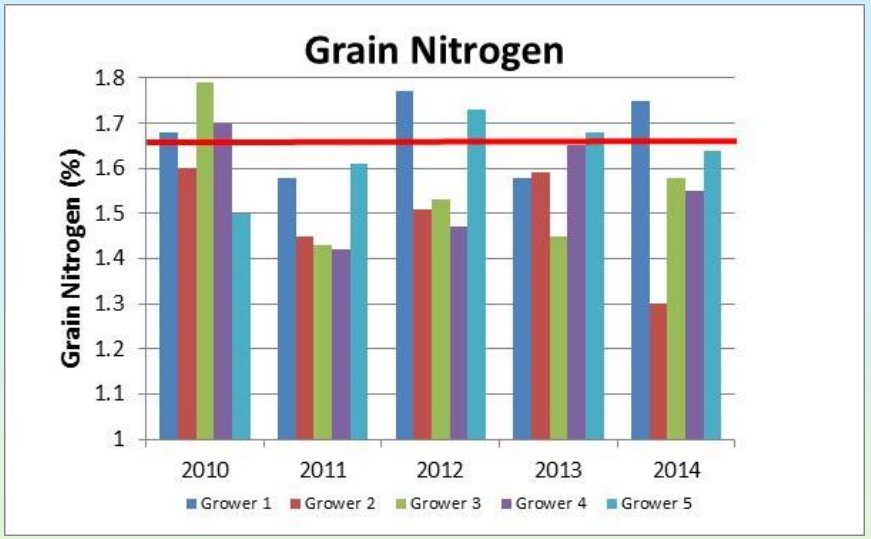
- Agronomy Institute. Opened at Orkney College in 2002. A major aim was to develop new markets for crops.
- Discussions with HP resulted, in 2009, in a feasibility project to investigate the growing of modern malting barley in Orkney with aim of producing an “All-Orkney” whisky.
- 2009 Research Trial:
  - 5 modern malting barley varieties selected by HP
  - Tested in a field trial by AI for yield, disease resistance, earliness
  - Grain samples tested for malting quality
- Main results:
  - Demonstrated that good quality malting barley could be grown successfully in Orkney
  - ‘Tartan’ selected as the best variety
  - From 2010, HP asked AI to develop a supply chain for producing Tartan

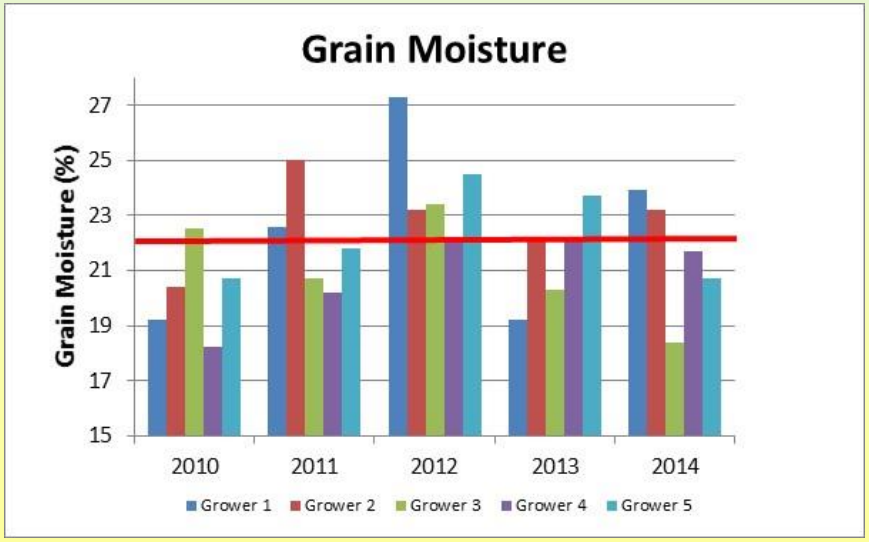
Supply Chain Outline

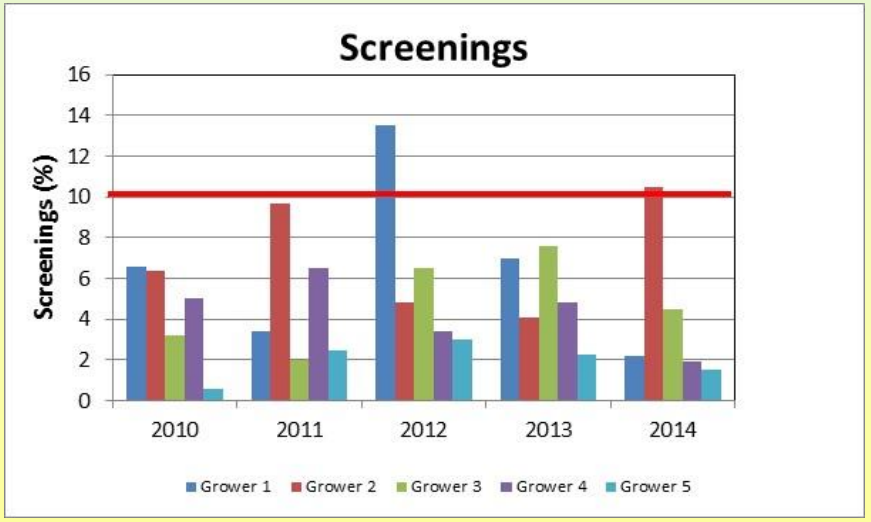
- Supply chain:
  - **4 growers + AI, each growing 2-2.5 ha of Tartan**
  - **Aim to produce 50 t grain annually for malting at HP**
- AI role:
  - **Co-ordinates supply chain**
  - **Provides guidelines to growers**
  - **Dries grain and delivers to HP:**
    - Must have mc <=13%
    - Germination capacity not less than 98%
  - **Collects and analyses data on production and grain quality**
  - **Feedback to growers & HP to improve future quality - open exchange of information. Has helped all improve knowledge of growing malting barley**
- Grain supply contract with each grower:
  - **A basic price/t at 15% mc with premiums and deductions**
  - **Premiums for grain N <1.65% dm**
  - **Deductions for i) grain N > 1.65% dm, ii) mc at harvest >22%, iii) screenings > 10%**

Supply Chain Performance

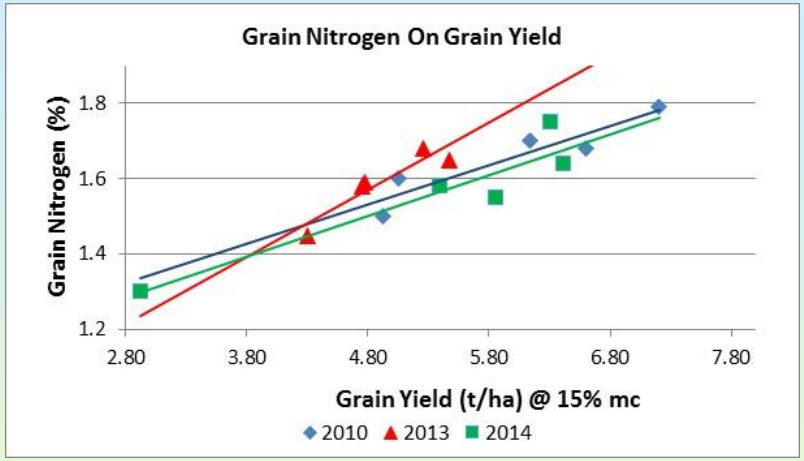


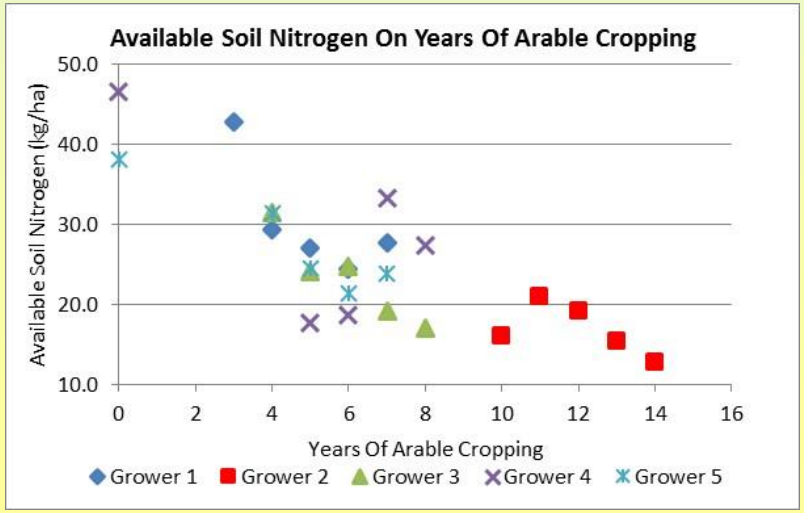






Grain Yield And Grain Nitrogen



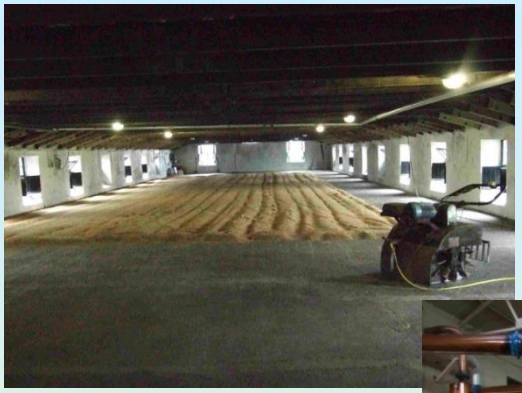


- **Grower payments mainly determined by grain yield and grain nitrogen (premium or deduction)**
- **But, in several years, grain nitrogen and grain yield have been correlated with each other:**
  - **High yields associated with high grain N**
  - **Low yields associated with low grain N**
- **Analysis of supply chain data has shown that with the current grain supply contract, growers payments are highest if they achieve just below 1.65% grain N:**
  - **Do not aim for max yield – risks high grain N and price penalty**
  - **Do not target very low grain N – price does not compensate for yield loss**
- **Grain nitrogen is affected by:**
  1. **The amount of nitrogen fertiliser applied,**
  2. **The amount of available soil nitrogen (ASN).**
- **On heavier soils, especially, care is needed not to apply too much fertiliser N and obtain high grain N. Less of a risk on sandy soils.**
- **ASN is highest in the first years after a field comes out of grass but then decreases as the years of arable cropping increase.**
  - **Can be difficult to achieve low grain N in fields newly out of grass. For low grain N, it may be easiest to use fields which have been at least 2-3 years in arable cropping**

Maintaining ‘Tartan’

- Seed of ‘Tartan’ ceased to be available from 2013. Since then each grower has maintained his own line as farm-saved seed.
- Care is needed to maintain its purity.
  - **Need a clear demarcation between ‘Tartan’ and any other variety.**
  - **Need for roguing to remove volunteers**
  - **Important that machinery is cleaned of seed of other varieties before planting, combining and drying.**
  - **Beware of Bere!**
- Each year ca 0.5 t of grain from each farmer’s batch of Tartan is held back and sent to McCreath, Simpson & Prentice for safe storage, cleaning and dressing before it is returned as seed
- A reserve of 0.5 t of grain from each farmer is held at MSP in case of crop failure.

Summary Of Benefits



- Long-term collaboration between HP, the AI and local growers has yielded several mutual benefits:
  - HP has obtained a supply of locally grown modern malting barley allowing it to lay down an annual stock of spirit for a future release of a very high value “All-Orkney” single malt whisky.
  - Orkney growers and the AI have obtained a new source of income
  - Benefits also trickle down to others in the agricultural sector (especially contractors)
  - A new commercial crop (malting barley) has been introduced to Orkney – the most northerly modern malting barley grown in Scotland.

Acknowledgements

- Funding Support
  - The HI Links programme contributed funding towards the initial feasibility project.