Milling Wheat Market Outlook

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Senior Analyst
AHDB/HGCA Market Intelligence

Overview

- The Global Picture
- UK Situation
- Outlook & New Crop Prospects
The Global Picture

Global grain S&D – record breaking production in 2013/14

* estimated, ** forecast

Source: UN’s Food & Agriculture Organisation (FAO)
As a result, prices moved lower – particularly for maize. 

Source: AHDB/HGCA

Global maize S&D – stocks forecast to increase but not out of the woods yet. 

Source: USDA
Global wheat S&D – small recovery in global stocks expected

Source: USDA

Major exporters’ wheat stocks – US ‘cushion’ continues to be depleted

Source: USDA
US total wheat export commitments

(Week 1 = start of June; Week 53 = end of May)

Source: USDA

EU wheat export licenses

(Week 1 = start of July; Week 53 = end of June)

Source: European Commission
UK Situation

UK wheat production & demand - stocks, imports and alternative feed grains important

Source: AHDB/HGCA, Defra
Quality improved compared with last year—**but** by how much?

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Specific weight (kg/hl)</td>
<td>69.6</td>
<td>77.0</td>
<td>77.5</td>
<td>75.1</td>
</tr>
<tr>
<td>Hagberg (s)</td>
<td>237</td>
<td>314</td>
<td>267</td>
<td>259</td>
</tr>
<tr>
<td>Protein (%)</td>
<td>12.5</td>
<td>12.2</td>
<td>11.8</td>
<td>12.1</td>
</tr>
</tbody>
</table>

Source: Cereal Quality Survey, AHDB/HGCA

Quality drives UK milling premiums - 2000-2013

Ex-farm bread milling premium (£/t) vs % of Group 1 samples meeting full spec (13%, 250s, 76Kg/hl)

Source: AHDB/HGCA
England & Wales ex-farm prices
- volatility comes from the feed base

* min. of 13% protein, 250HFN & 76kg/hl
Source: AHDB / HGCA

Relative proportions of home-grown/imported wheat milled

Source: Defra
UK wheat imports and prices

Wheat price (£/tonne)

Imports (100s tonnes)

Outlook & New Crop Prospects

*Canadian No.1 Canada Western Red Spring 13.5%, FOB St Lawrence  
Source: HMR&C, AHDB/HGCA
Wheat S&D outlook

2014 forecast wheat harvest area - year-on-year change

Global wheat harvest area forecast at 224.2 Mha in 2014, 2.5% higher (5.5 Mha) than 2013

Source: International Grains Council
EU wheat areas to remain strong for harvest 2014

Summary

- Prices have declined as global grain supply has rebounded
- Decline in US stocks over recent seasons – a key factor for the global wheat market
- Old crop UK milling premiums are supported by the small 2013 crop but capped by EU price levels
- Limited issues so far for 2014/5 – large production potential
Thank you

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Nitrogen & protein – field and farm variation

Roger Sylvester-Bradley / Richard Weightman
ADAS Head of Crop Performance / ADAS Head of Crop Utilisation

Increasing variation: your options?

- Avoid the risks
- Spread them ... OR ...
- Monitor & Manage them?
**Issues**

- **Yield matters most!**
- **Best nitrogen advice**
  - HGCA Guidelines
- **Evidence of variation ...**
  and how to respond

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**Seasonal trends**

- **Need to re-focus on crop management?**

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![Graph showing Wheat yield, t/ha, Grain protein, %DM, and Applied N, kg/ha over time (1970-2010).]
Explaining nitrogen

Fertiliser N requirement (kg/ha) = Crop N Demand (kg/ha) – SNS (kg/ha)
Fertiliser recovery (%)

HGCA guidelines

Annual N Management Cycle

Steps W: Monitor Success
Steps M-V: Judge Crop N Demand
Steps J-L: Schedule & Adjust N Applications
Steps A-D: Judge Soil N Supply
Steps E-I: Calculate Crop N Requirement
Variation – what to expect

- Between seasons
- Between regions
- Between farms
- Between fields
- Within fields

Seasonal variation – NIR prediction?

Final grain protein

Ear N% at milky ripe
Predicting grain protein

- Ear NIR can help
  - Improves on farm skill

- Crop sampling can never be precise
  - Remote sensing may eventually prove best

- Predictions from crop sampling are best averaged over fields and farms

Farm variation

Example:
MALNA Project
Fengrain & Camgrain
19 milling wheat growers

LINK Project LK0990 ‘MALNA’
Grain protein by farm

Grain protein %: trial areas within ~2 fields per farm in each of 2007, 2008 & 2009

Implicit N errors, kg/ha

+120
+60
0
-60
-120

Farms: in order of average grain protein

Grain protein by farm

Fengrain

Camgrain

Farm variation

Farm averages: each over two fields in each of 3 seasons

Grain protein (%DM)

Grain yield by quadrat (t/ha @ 85% DM)
Conclusions from MALNA

- Significant farm-to-farm variation in protein
  - Consistent across seasons & fields

- Some farms may be getting N use consistently ‘wrong’
  - How can they check?
    …Lodging, yellowing & poor yields … only helpful if very wrong
    …Soil mineral N tests … onerous, expensive & imprecise ?
    …Grain Protein … best routine measure .. but crude

- The best check on N rates may be direct testing
  - Perhaps using tramline comparisons & yield monitors?

In-field variation:
Yield, N requirements & Protein

Chessboard trial

normal N trial

Auto-N Project  2010-2014  LINK project LK09134, HGCA project RD-2008-3350

Flawborough, Nottinghamshire UK 2010
**Chessboard trials**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>2011</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>2012</td>
<td><img src="image3.png" alt="Image" /></td>
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</tbody>
</table>

**Intra-field variation in ‘optimal’ yield**

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>2011</td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>2012</td>
<td><img src="image6.png" alt="Image" /></td>
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</tbody>
</table>
Protein variation with optimum N for yield

2010
- 2.4% - 10.6 - 13%
- 9.5 - 13%

2011
- 5% - 6.6 - 11.6%
- 7% - 9 - 16%

2012
- 3.7% - 12.8 - 16.5%
- 3.5% - 9.5 - 13%
- 5% - 11 - 16%

Lessons from chessboard trials

- High intra-field variation
  - In ALL components of N Optimum
    - Including fertiliser recovery and grain protein
    - BUT yield tends to be correlated with SNS

- Problems with Plot Trials
  - Concern about previous plot-based research

- Potential value in precision farming...
  - Only way of assessing soil type effects
  - Enables on-farm testing

Auto-N LINK project LK09134
New project using on-farm testing

Uses yield mapping to make tramline comparisons

Summary

Potential to increase yield
- But this will require new approaches
- High yields will require more N

Some variation may be consistent
- Expect big variation, within field, farm-to-farm, and season to season
- Errors in N-use are often undetected

On-farm monitoring will help
- … and so will collaboration!
Thank you
What’s in the back of your barn?

Shaun Taylor
Head of Technical, Rank Hovis Ltd

- A look back at recent challenges for farmers and millers
- Costs of production and premiums
- What millers mean by quality and how quality varies
- Understanding what you have and preserving its value
- Mapping quality
- Using HACCP to control issues that may lower quality
Wheat and mill distribution
nabim - who are we?

• 30 member companies operating 51 mills – virtually all UK flour milling industry
• Members range from the biggest companies to small stone mills
• 4.1 million tonnes of flour, from 5.1 million tonnes wheat
• Average flour production per mill = 81,000 tonnes/year
• Flour imports and exports are both usually small – 1-2% of total production

UK Flour production (2012/13 est.)

<table>
<thead>
<tr>
<th>Total flour production</th>
<th>5,121,000 tonnes</th>
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<tbody>
<tr>
<td>White breadmaking</td>
<td>49.4%</td>
</tr>
<tr>
<td>Brown breadmaking</td>
<td>1.9%</td>
</tr>
<tr>
<td>Wholemeal breadmaking</td>
<td>6.2%</td>
</tr>
<tr>
<td>Biscuit</td>
<td>10.9%</td>
</tr>
<tr>
<td>Cake</td>
<td>2.2%</td>
</tr>
<tr>
<td>Pre-packed household</td>
<td>2.7%</td>
</tr>
<tr>
<td>Food ingredients</td>
<td>3.6%</td>
</tr>
<tr>
<td>Starch &amp; other</td>
<td>23.2%</td>
</tr>
</tbody>
</table>
Harvest 2012

Farmer issues:
- Excess rain
- Insufficient sunlight
- Low yields
- Higher claims
- Low specific weights

Miller issues:
- Low specific weights
- Slow intake
- Increased cleaning
- Reduced milling capacity
- Poor flour colour, reduced baking quality
- Increased wheatfeed production

Harvest 2013

Farmer issues:
- Wet crop establishment
- Lack of some seed types
- Wet cold winter
- Cold until mid-June
- Very hot clear dry July
- Below average yields

Miller issues:
- Average quality in most respects
- Hard starch, difficult to damage
- Smallish crop
- More spring wheats
Milling wheat premiums

Average premium over period was approx. £23/tonne

So, what is quality?
Quality?

What Do Millers Mean By Quality?

Analytical Specification

Wheat Variety Selection
Growing/ Harvest Conditions & Management
Storage Conditions & Management

Consistency
Performance in Application

FOOD SAFETY
Our quality requirements – ‘headlines’

For bread-making (Group 1 varieties)

• Protein 13% (12.5% for medium quality)
• HFN 250 seconds
• Specific weight 76kg/hl
• Moisture - maximum normally 15%
• Performance in application and consistency

Our quality requirements – ‘headlines’

For biscuits (Group 3 varieties)

• Protein 10.7%
• HFN 180 seconds
• Specific weight 74kg/hl
• Rheology is important - lower resistance and extensible
• Performance in application and consistency
### Elements influencing milling wheat quality

<table>
<thead>
<tr>
<th>Element</th>
<th>Analytical Specification</th>
<th>Performance in Application</th>
<th>Consistency</th>
<th>Food Safety</th>
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<tbody>
<tr>
<td>Variety selection</td>
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### Growing/Harvest Conditions & Management

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**Elements influencing milling wheat quality**

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<th>Food Safety</th>
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<tbody>
<tr>
<td>Good store management</td>
<td>⭐</td>
<td>⭐</td>
<td>⭐⭐⭐⭐⭐</td>
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</tbody>
</table>
High quality bread specification
(13% protein, HFN 250s, SpW 76kg/hl)

Medium quality bread specification
(Protein 12.5%, HFN 180s, SpW 74.0kg/hl)
Biscuit wheat quality (Group 3)
Protein >=10.7%, SpW >=74Kg/hl, HFN =180s

Protein distributions

Intake protein data from a large flour mill based on 7,080 samples for 2012 and 34,700 samples in 2013.

All other results samples were outside this range.
Mapping nitrogen

Satellite based Biomass maps vs variable N

So, do you map quality?

If you can map crop mass and variable N applications, what next?

Yield can be mapped so why not sample (at harvest) to map quality?

Can quality data (for each field) be ‘built’ over the years?
Store sampling, Church Farm
### Store sampling, Church Farm

<table>
<thead>
<tr>
<th>Moisture</th>
<th>Protein</th>
<th>Specific weight</th>
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</thead>
<tbody>
<tr>
<td>15.2%</td>
<td>14.2%</td>
<td>79.5</td>
</tr>
<tr>
<td>15.1%</td>
<td>14.2%</td>
<td>80.8</td>
</tr>
<tr>
<td>15.5%</td>
<td>13.0%</td>
<td>81.1</td>
</tr>
</tbody>
</table>

- **Moisture**
- **Protein**
- **Specific weight**

### Store sampling, Other Farm

- **Protein levels in each lot with premium equivalent**
  - Average protein across store = 12.65%
  - Equivalent to £52,000 premium value

- **Without mixing loss of premium would be £4,300**

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<thead>
<tr>
<th>Moisture</th>
<th>Protein</th>
<th>Specific weight</th>
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<tbody>
<tr>
<td>13.8%</td>
<td>11.8%</td>
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<td>80.8</td>
</tr>
<tr>
<td>13.4%</td>
<td>12.4%</td>
<td>81.1</td>
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</tbody>
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- **Moisture**
- **Protein**
- **Specific weight**

- **Store**
  - 1,600 tonnes in store
  - Sampled in 100 tonne lots
  - Assumed premium of £35/tonne
HACCP
(Hazard Analysis and Critical control Point)

A system which identifies, evaluates and controls hazards significant for food and feed safety.

Adopted by the food and feed industry as the most effective means of controlling food-borne safety issues.

Can be used at all stages of the supply chain from grower to final product use.

Helps meet market place demands and expectations for safe food.

HACCP in the mill
Applying HACCP on the farm

- Identifying all food safety issues.
- Minimising all factors that can impact on quality.
- Optimising the harvest strategy.
- Drying, storage and loading all have HACCP guides (see HGCA Grain storage guide).
Key points

- Each year presents different challenges and opportunities for farmers and millers.
- Optimising premiums is key to improving the economics of milling wheat.
- Quality is about analytical specification, consistency, performance in application AND food safety.
- It’s understanding what you have and preserving its value.
- Can we apply soil mapping to mapping and managing grain quality?
- HACCP is a tool to prevent intake rejections, and make the supply chain more acceptable to the consumer.

Thank you