





27 February 2020

Milling Wheat Conference

In association with **nabim** and incorporating the YEN Wheat Quality Award



CEREALS & OILSEEDS

Chair's Welcome and Introduction

Tim Isaac, Head of Arable Knowledge Exchange, AHDB



Meet the industry...



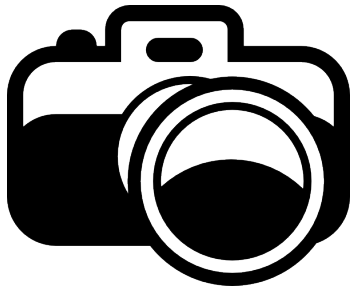
Programme

- 10:10** Milling wheat market update and lessons from the Cereal Quality Survey - James Webster, AHDB
- 10:40** Ergot alkaloids - avoiding a bad trip on new regulations - Joe Brennan, nabim
- 11:00** Panel Q & A session
- 11:15** REFRESHMENT BREAK
- 11:45** YEN Wheat Quality Award *sponsored by nabim*
- 12:45** LUNCH
- 13:45** Optimising milling wheat production: a growers perspective - Andrew Watts, Wallington Farms
- 14:15** The supply chain - Panel discussion
- 15:15** Conference close - Alex Waugh, nabim
- 15:30** DEPART

The 8 key factors of a top performing farm



Housekeeping



@AHDB_Cereals

#MillingWheatConf20

ahdb.org.uk/mwc

Defining the basis for variation in water absorption of UK wheat flours

AHDB Research Project: PR812

Peter R. Shewry¹, Abigail J. Wood,¹ Kirsty Hassall,¹ Liz Howes², Mervin Poole², Paola Tosi³ and Alison Lovegrove¹

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The water absorption (WA) of wheat flour is a major factor affecting breadmaking performance and millers, therefore, process their wheat to achieve the required level. This can normally be achieved by modifying the milling procedure, but recent experience has shown that it is difficult to use this approach to achieve the required level of WA with wheat grown in the UK in some years (such as 2013 and 2014).

The study aimed to:

1. identify factors affecting the WA of wheat grown in the UK, based on comparison with wheat grown in years which exhibited typical (2016, & 2018) and atypically low (2013 and 2014) WA.
2. determine whether fibre composition and properties contributed to variation in WA.
3. determine whether variation in nitrogen fertilisation contributed to variation in WA.

Nitrogen and sulphur fertiliser management to achieve grain protein quality targets of high-yielding winter milling wheat

AHDB Research Project 21140040

The project is led by NIAB and partnered by SRUC, Masstock Arable (UK) Ltd (trading as Agrii), Omex Agriculture Limited, RAGT Seeds, KWS UK Ltd, Allied Technical Centre Ltd (ATC).

The UK flour mills currently process 5 million tonnes of wheat, 85% of which is UK grown (NABIM, 2019). Wheat grown for milling must achieve quality characteristics including Hagberg Falling Number (HFN), specific weight and protein which have a significant role in producing the final flour quality. Data from the British Survey of Fertiliser Practice (BSFP) (Defra, 2018) indicated that the average field application rate of nitrogen on milling wheat in 2018 was 207 kg N/ha, a decrease of 6 kg/ha over 2015. Averaged over 5 years (2014-18), the average field application rate on milling wheat was 208 kg N/ha, compared to 182 kg N/ha for non-milling crops. The difference of 26 kg N/ha is less than the 40 kg N/ha recommended in the current Nutrient Management Guidelines.

Therefore the aim of this project is to update guidance on nitrogen and sulphur fertiliser use for winter milling wheat, to achieve optimum grain quality and milling specifications for a range of varieties, soil types and growing environments.

Milling Wheat Conference

Milling wheat market update and lessons from the Cereal Quality Survey

James Webster, Senior Analyst



What are we going to look at?

- What is going on in the global market?
- A look at CQS and the drivers of quality.
- How has the domestic market fared so far?
- Where next? – a 2020/21 domestic outlook

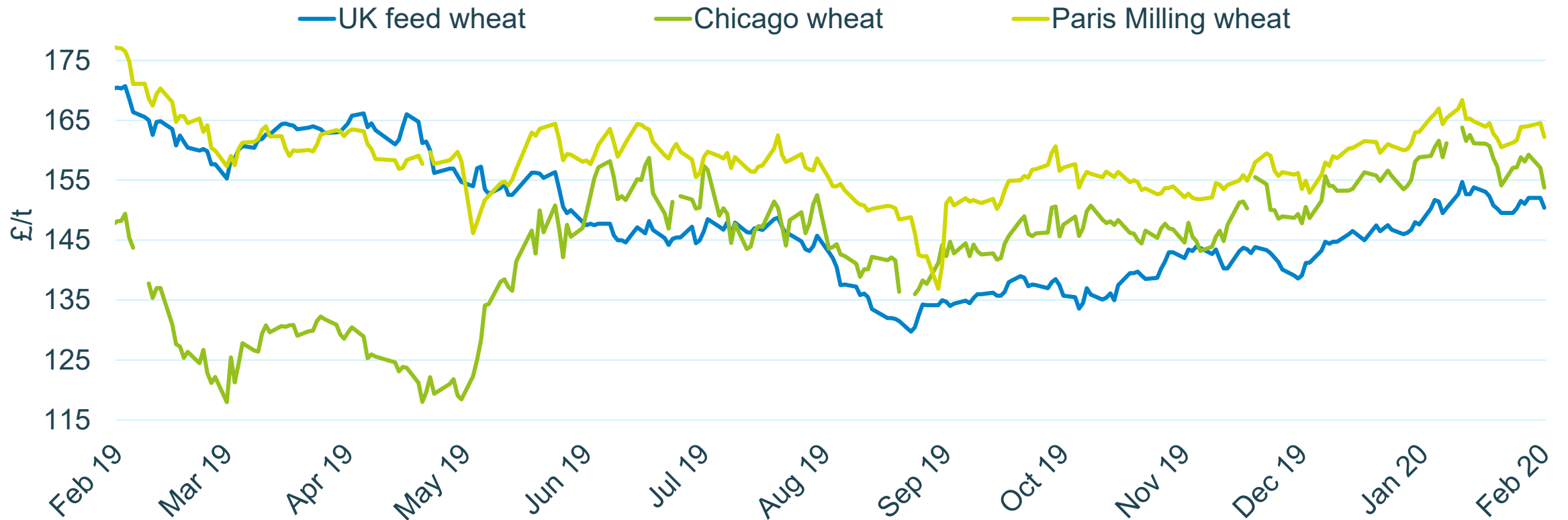
What is going on in the global market?

With a forward look at 2020/21



Early signs of large crops giving way to new crop concerns

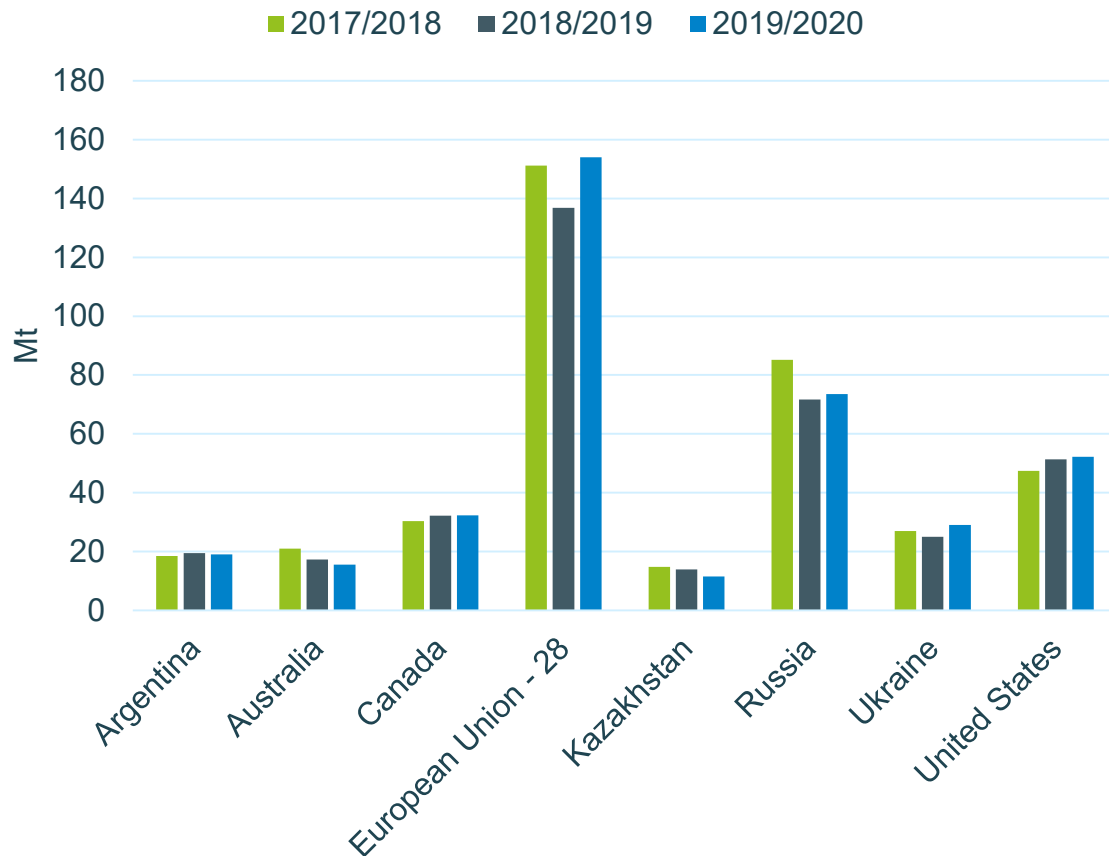
Nearby wheat futures



Source: Refinitiv

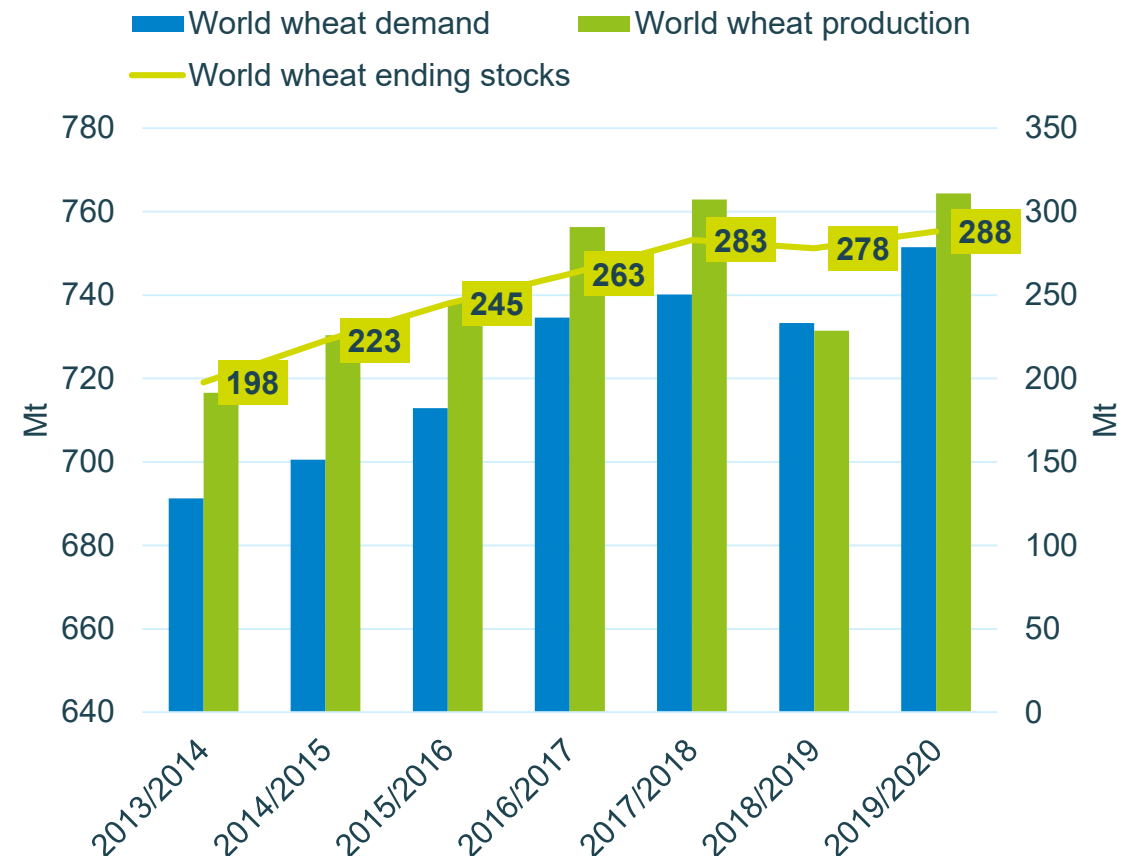
Major exporter production up in 2019/20, stocks grow again

Major exporter wheat production



Source: USDA

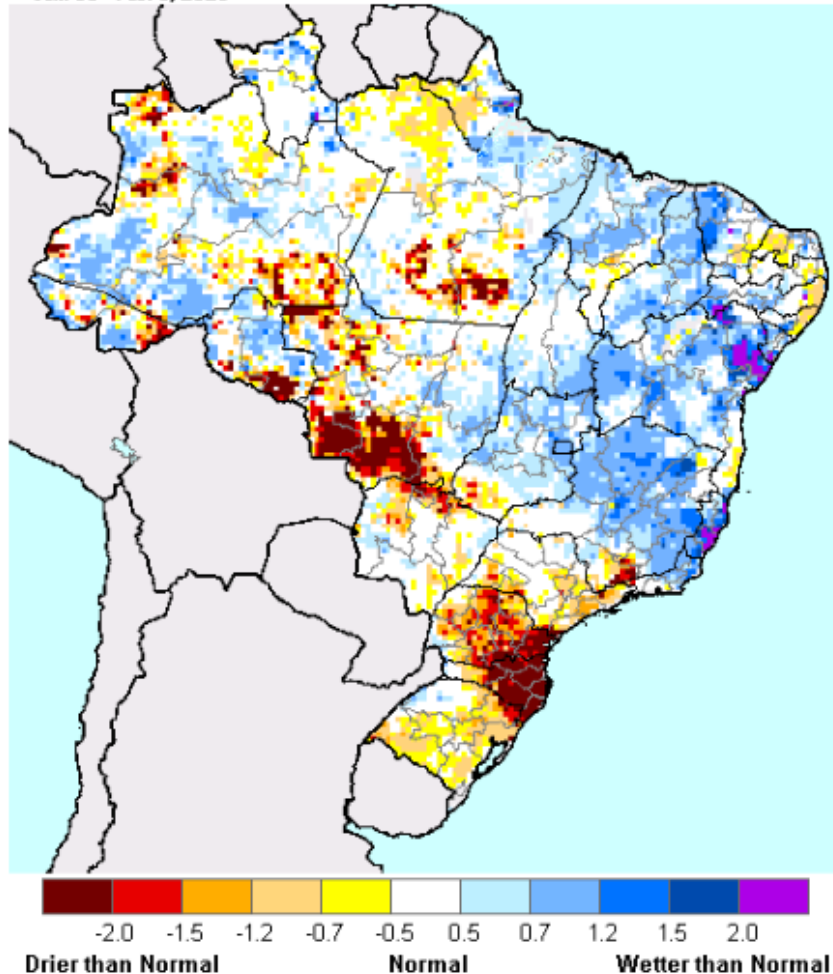
World wheat S&D



Source: USDA

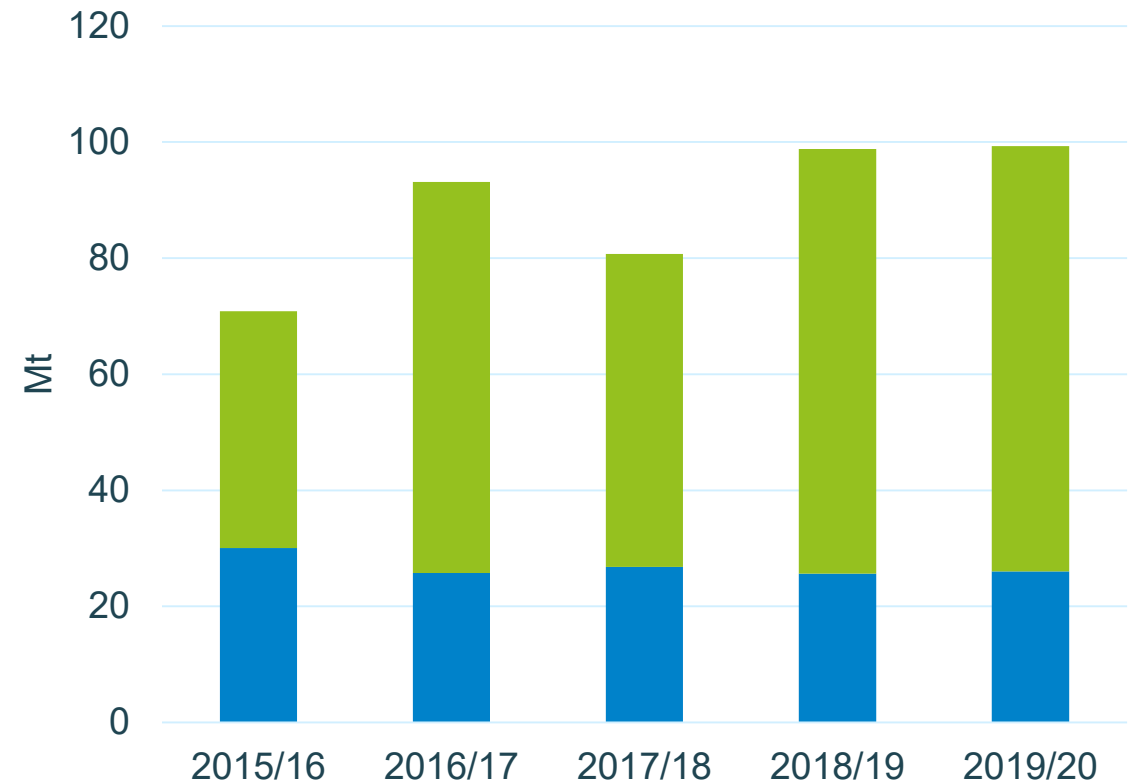
Weather in South America a key watch point

Subsurface Soil Moisture Anomaly (SMAP)
Jan. 30 - Feb. 1, 2020



Brazilian maize production

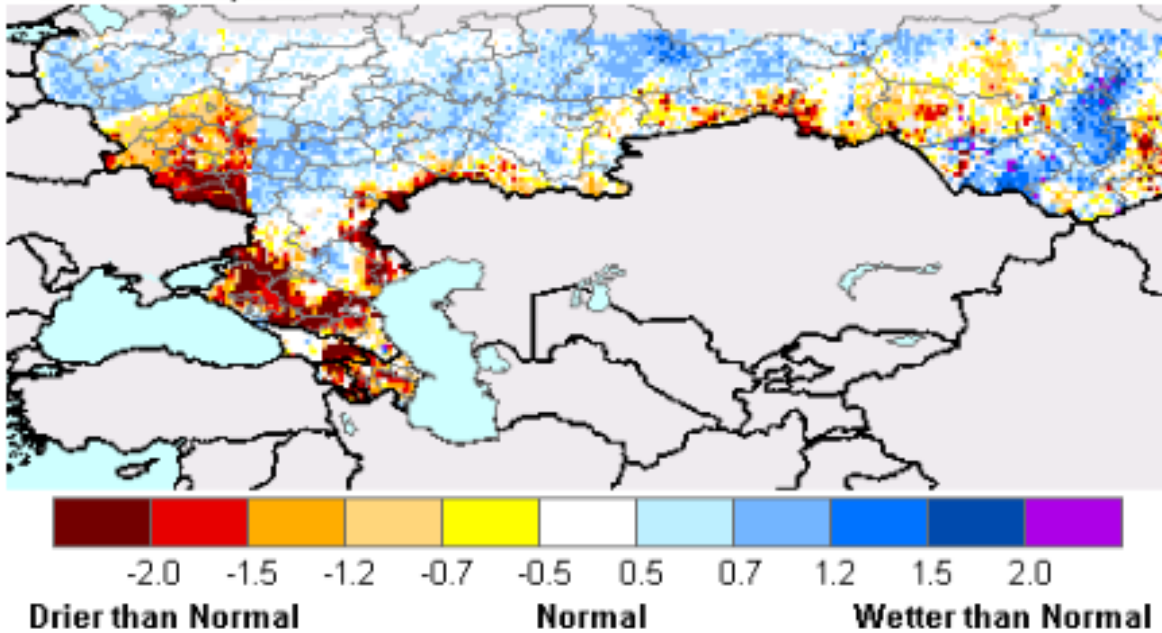
■ First harvest ■ Second harvest



Source: Conab

Russian weather and trade important

Subsurface Soil Moisture Anomaly (SMAP)
Jan. 30 - Feb. 1, 2020



USDA Foreign Agricultural Service
Global Market Analysis
International Production Assessment Division

Source: 2-layer Palmer Soil Moisture Model
(corrected with SMAP imagery)
NASA/GSFC/HSB; USAF 557th WW

Russian milling wheat (FOB, Novorossiysk)

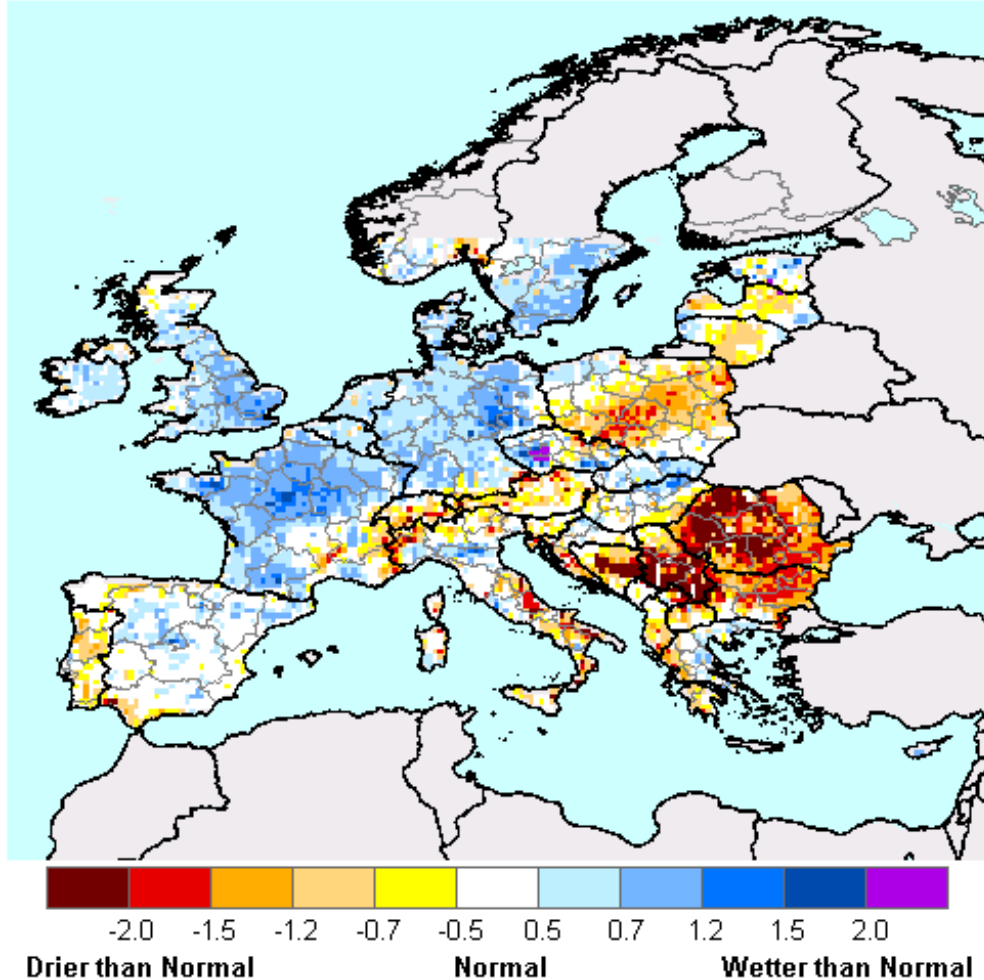


Source: Refinitiv

EU 2020/21 outlook

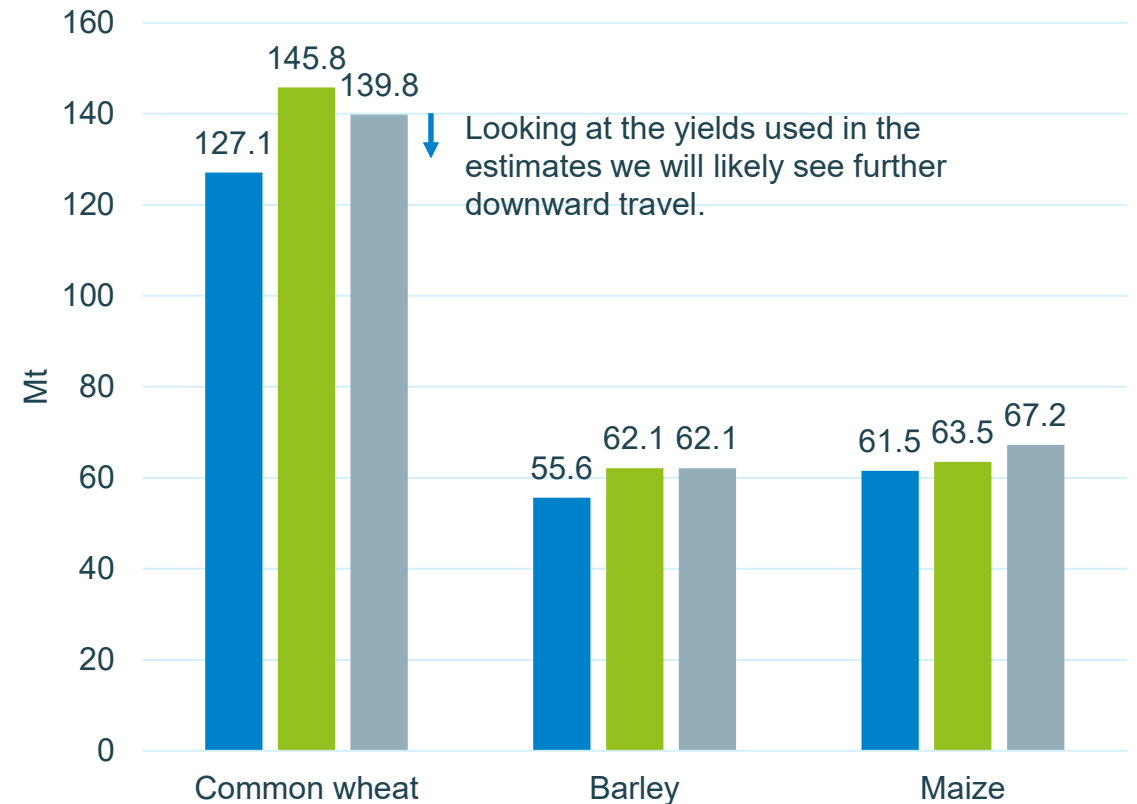
Surface Soil Moisture Anomaly (SMAP)

Jan. 9 - Jan. 11, 2020



EU production of major cereal crops

■ 2018/19 ■ 2019/2020 ■ 2020/21 f'cast



Source: Stratégie Grains

Summary

Large supplies in 2019/20 have given way to new crop concerns, with a smaller wheat area in Europe and the US.

With global winter wheat largely in the ground, we are now very much in a weather market. South American maize and Russian dryness proving pivotal.

With a lack of new drivers, the global market feels largely bearish unless there is a weather event or a shock for spring plantings in Canada, USA or the Black Sea.

A look at Cereal Quality Survey and the drivers of quality



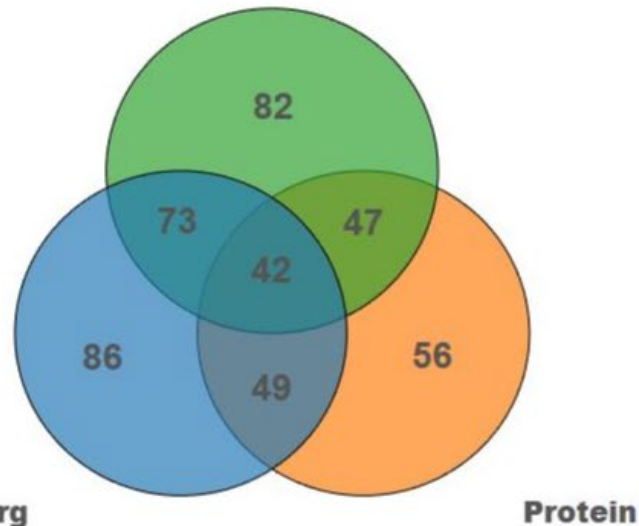
What was the 2019/20 crop like?

High quality specification

Specific weight ≥ 76 kg/hl, Protein $\geq 13.0\%$, HFN ≥ 250 s

2019 Final results

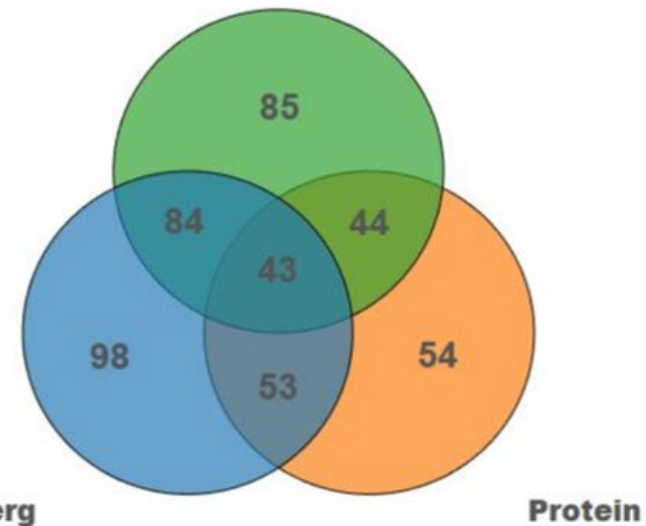
Specific weight



Hagberg
Sample: 4452

2018 Final results

Specific weight

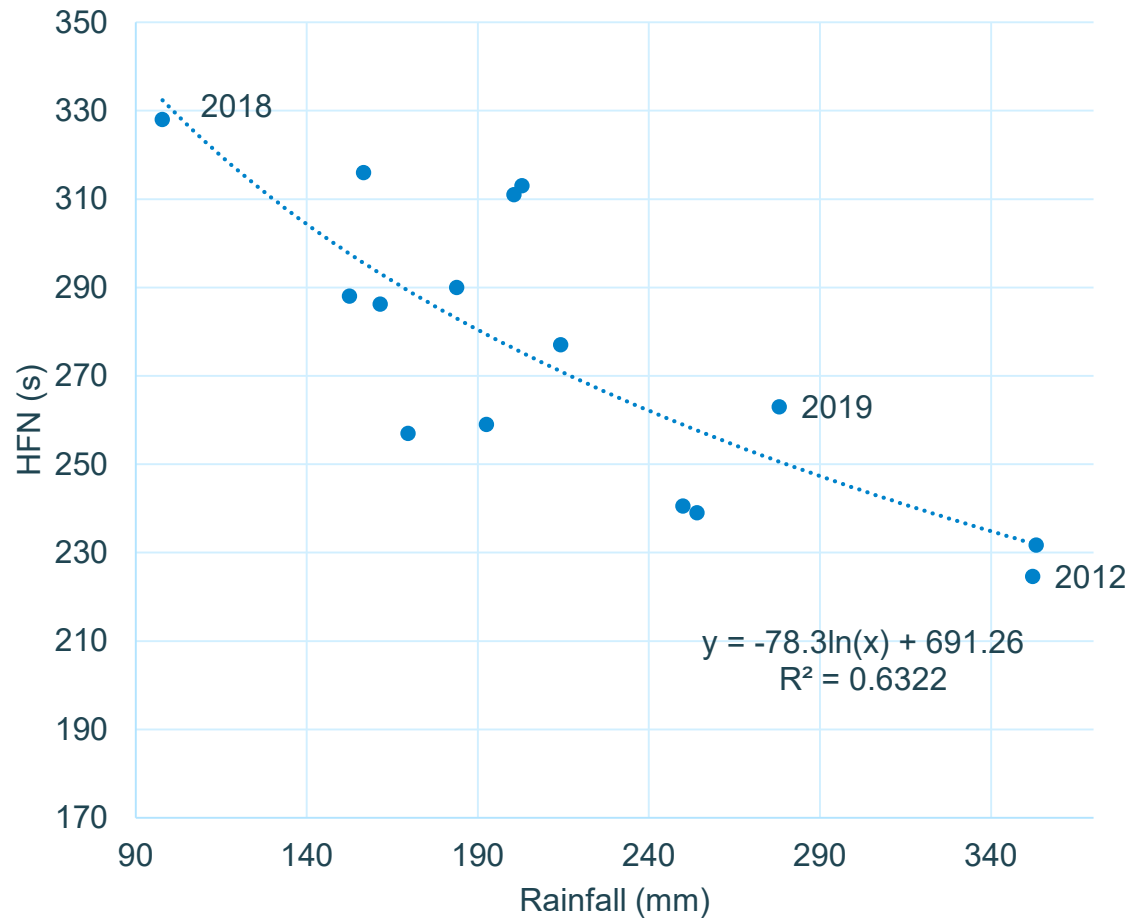


Hagberg
Sample: 7918

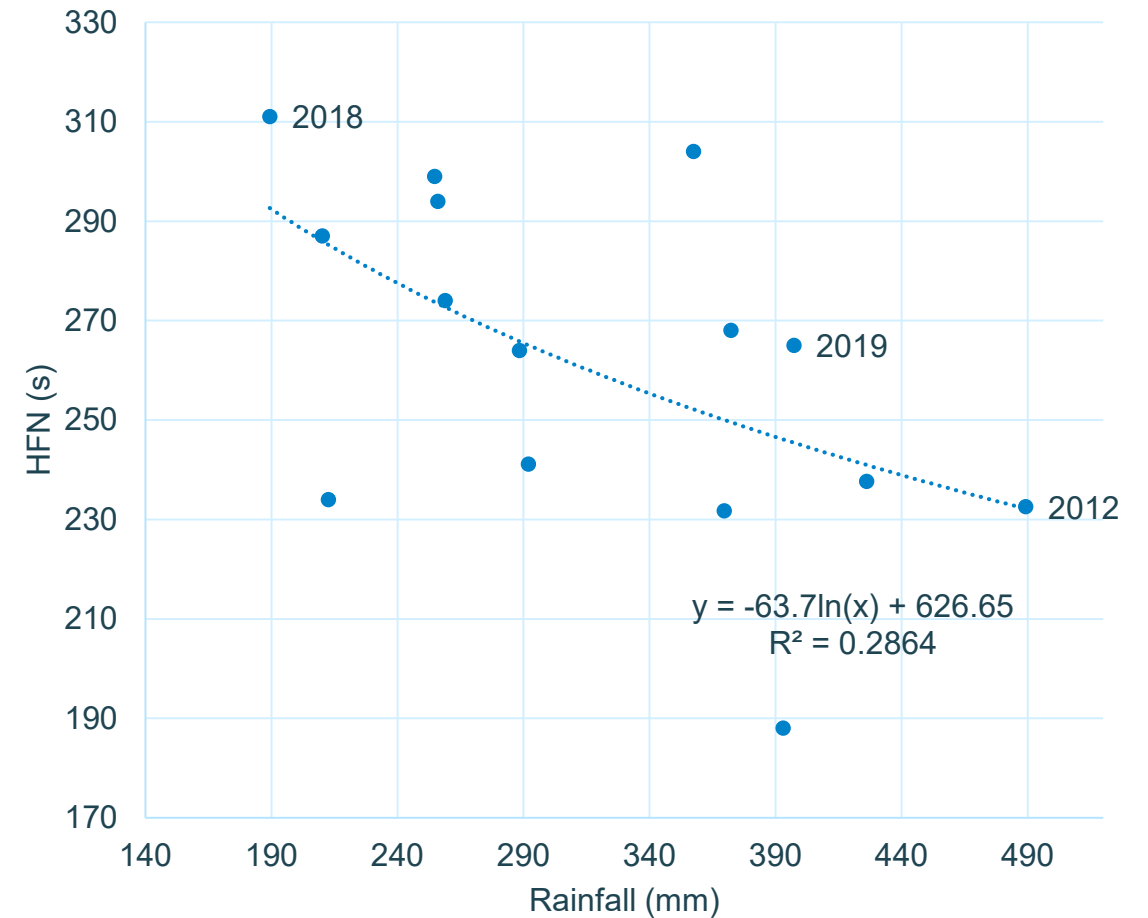
Protein

What is the impact of rainfall on HFN numbers

Midlands summer rainfall to HFN

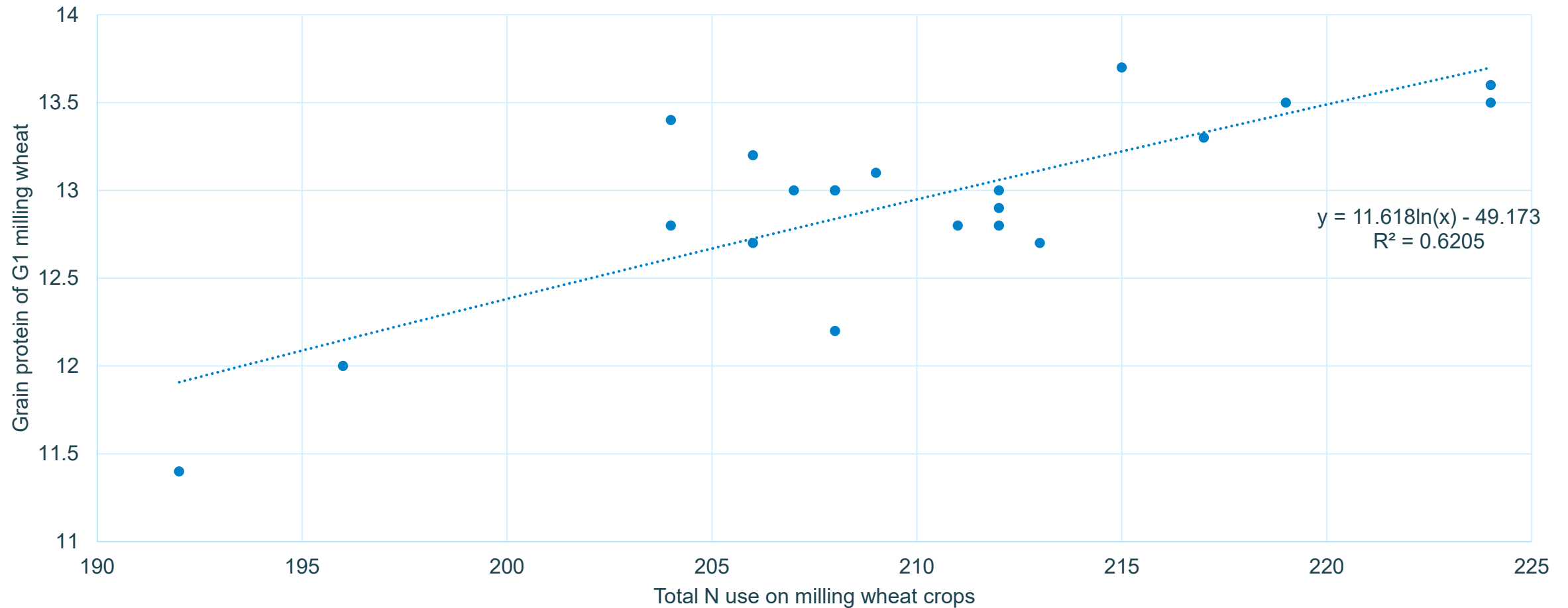


Northern Summer rainfall to HFN



Relationship between nitrogen and grain protein in group 1 samples

Effect of nitrogen use on milling wheat grain protein



Where next?

A look back on 2019/20 and a 2020/21 outlook



How does the balance sheet look for the rest of this season?

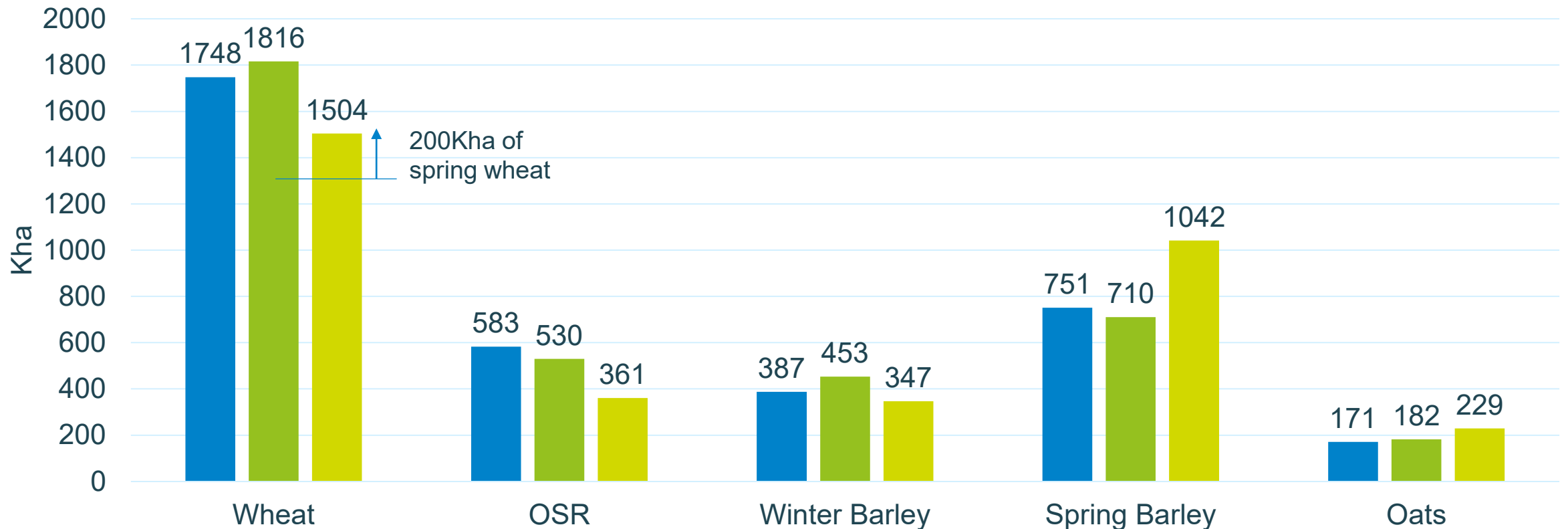


Thousand Tonnes	2018/19	2019/20
OPENING STOCKS	1,718	1,911
PRODUCTION	13,555	16,000
IMPORTS	1,858	1,017
TOTAL AVAILABILITY	17,131	18,928
HUMAN AND INDUSTRIAL CONSUMPTION	6,976	6,776
ANIMAL FEED	7,403	7,245
SEED AND OTHER	349	362
TOTAL DOMESTIC CONSUMPTION	14,728	14,383
BALANCE	2,403	4,545
EXPORTS	358	1,344
COMMERCIAL ENDING STOCKS	1,911	3,201
OPERATING STOCKS	1,550	1,600
FREE STOCKS	361	1,601
SURPLUS FOR FREE STOCK OR EXPORT	720	2,945

Early bird survey showing huge drop in winter wheat production

UK cropping areas with 2020 intentions

■ 2018 ■ 2019 ■ 2020 EBS



Source: Defra, AHDB

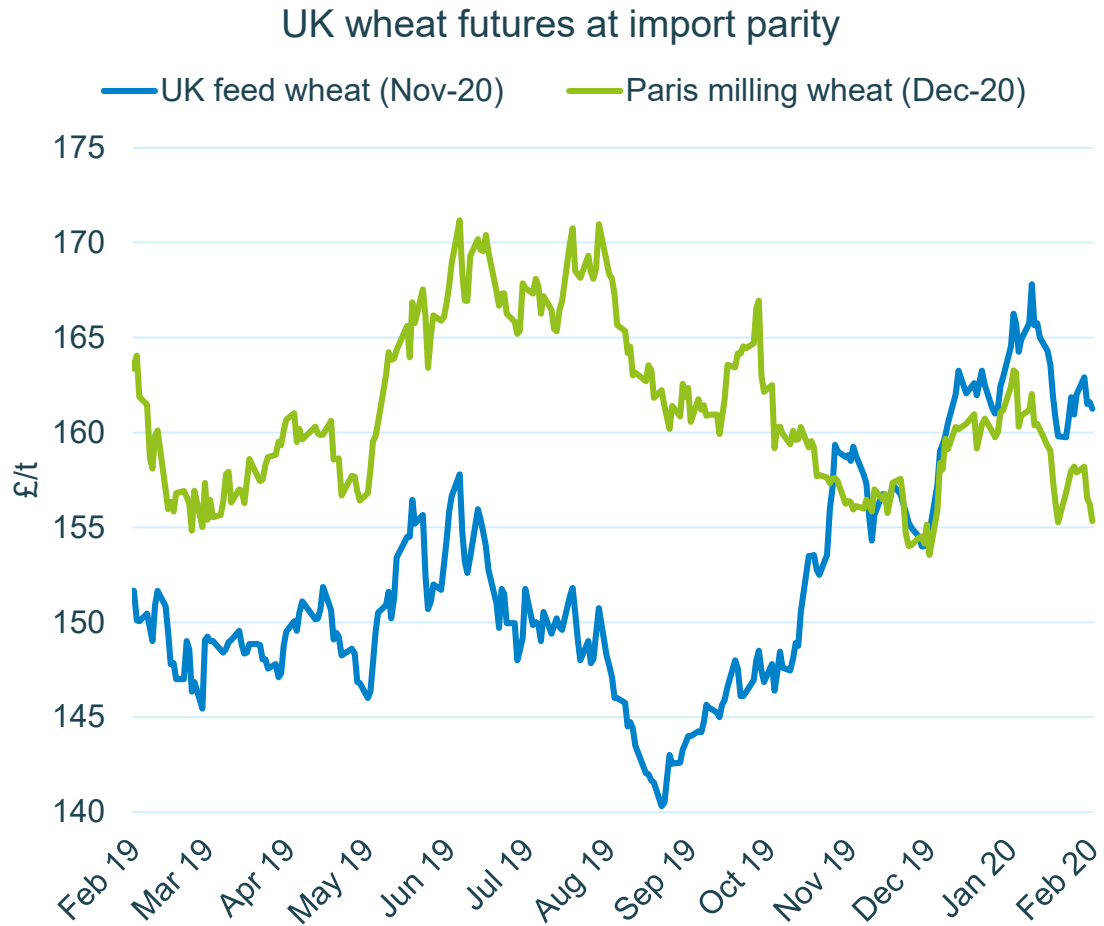
What does the UK balance sheet look like for next season?

Thousand Tonnes	2018/19	2019/20	2020/21
OPENING STOCKS	1,718	1,911	3,201
PRODUCTION	13,555	16,000	11,000
IMPORTS	1,858	1,017	1,750
TOTAL AVAILABILITY	17,131	18,928	15,951
HUMAN AND INDUSTRIAL CONSUMPTION	6,976	6,776	6,750
ANIMAL FEED	7,403	7,245	7,000
SEED AND OTHER	349	362	362
TOTAL DOMESTIC CONSUMPTION	14,728	14,383	14,112
BALANCE	2,403	4,545	1,839
EXPORTS	358	1,344	200
COMMERCIAL ENDING STOCKS	1,911	3,201	1,639
OPERATING STOCKS	1,550	1,600	1,600
FREE STOCKS	361	1,601	39
SURPLUS FOR FREE STOCK OR EXPORT	720	2,945	239

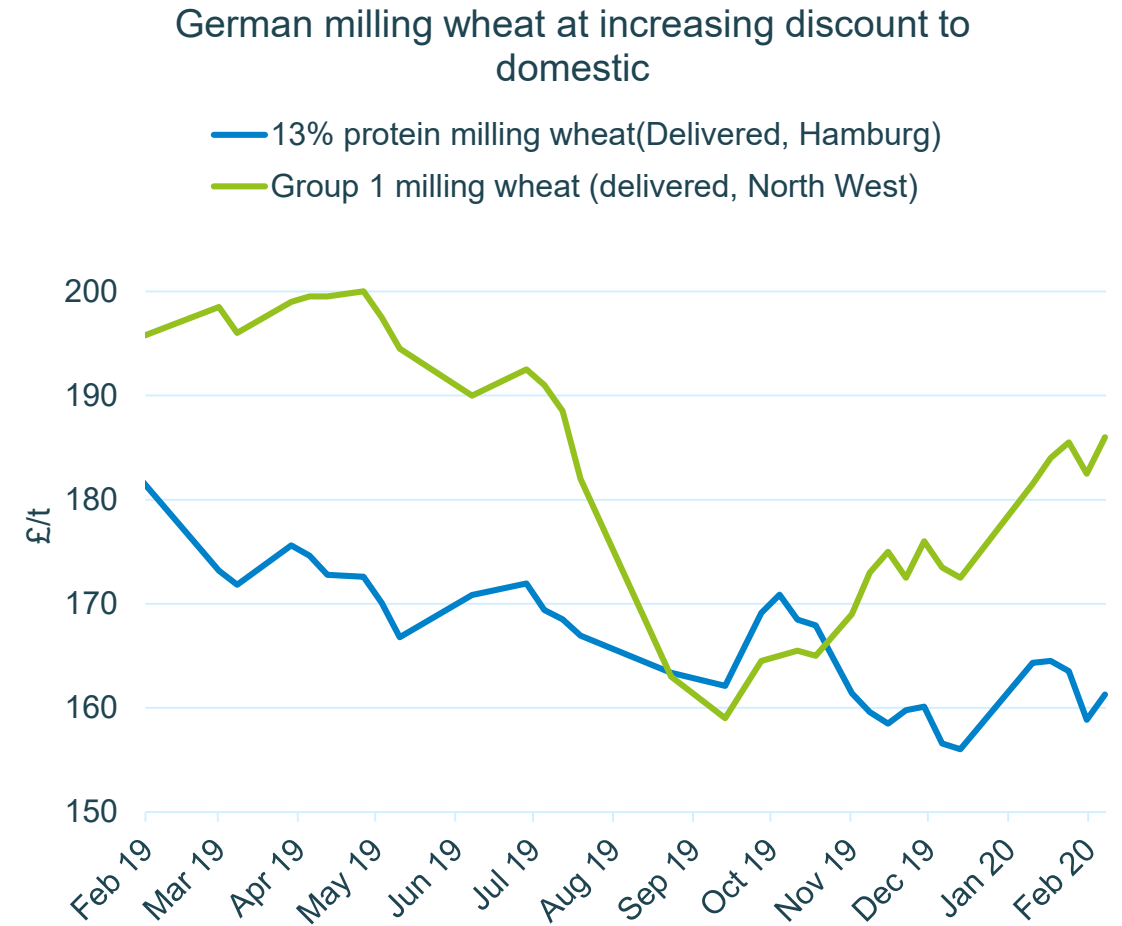
Indicative milling wheat balance sheet

Thousand tonnes	2018/19	2019/20	2020/21
OPENING STOCKS	400	591	848
USABLE PRODUCTION	4334	5089	2714
IMPORTS	663	639	1628
TOTAL AVAILABILITY	5397	5728	4790
MILLING WHEAT USAGE	4806	4730	4790
OF WHICH HOME GROWN	4143	4091	3562
BALANCE	591	998	400
EXPORTS	0	150	0
COMMERCIAL END OF SEASON STOCKS	591	848	400
OPERATING STOCKS	400	400	400
SURPLUS FOR FREE STOCK OR EXPORT	191	598	0

Domestic market sitting at import parity



Source: Refinitiv



Source; Refinitiv, AHDB

Summary

Large domestic crop in 2019/20, but with a drastically smaller crop now expected for 2020/21 what was an exportable surplus has now become carryout stocks.

The market has moved up to import parity. We are at a point where even with a tight outlook for next season, we will be dependent on either a drastic weakening of currency or a global supply and demand shift to move prices higher.

There are some big question marks hanging over the head of the milling wheat market at the moment. Unknown quality and quantity are making pricing very difficult. Import parity will need watching very closely as it will cap the domestic market.

Thank You

James.Webster@ahdb.org.uk
@James_R_Webster



A vibrant landscape of a green field at sunset. A path leads from the foreground towards the horizon where the sun is setting, casting a warm glow. The sky is filled with colorful clouds. The text is overlaid in the center of the image.

**‘Inspiring our farmers, growers
and industry to succeed in a
rapidly changing world’**

Milling Wheat Conference 2020

Ergot alkaloids – Avoiding a bad trip on new regulations

Joe Brennan – Policy & Research Officer, nabim



“A bad trip”

Trip 1

- “To make a mistake”, as in “trip up”



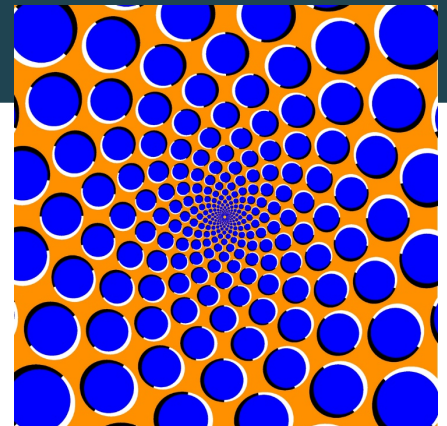
Trip 2

- “A journey in which you go somewhere, usually for a short time, and come back again”



Trip 3

- “An experience in which someone sees, hears, or feels things that do not exist as a result of taking a drug”



In this presentation:

- Disease history and overview
- Risk factors and management
- The new regulations and their effect
- How the industry has worked to minimise the impact of the new regulations

Disease history - ergotism

- Earliest recorded example of mycotoxosis
- Caused by ingestion of ergot alkaloids within ergot sclerotia
- Cause of Saint Anthony's fire / *ignis sacer*
 - Hallucinations, spasms, gangrene and often death
- Linked to significant historical events
 - Witch trials / werewolf hysteria
 - "Dancing plagues"
 - General ergotism outbreaks



Disease overview – ergot in the field

- Fungal disease caused by *Claviceps purpurea*
- Spores infect floret of flowering grass or cereal
- Spores proliferate into fungal structures. Honeydew produced containing many more spores.
- Ergot sclerotium develops. Contains dormant fungus which can germinate and release spores.
- Sclerotia are viable in the soil for up to one year.



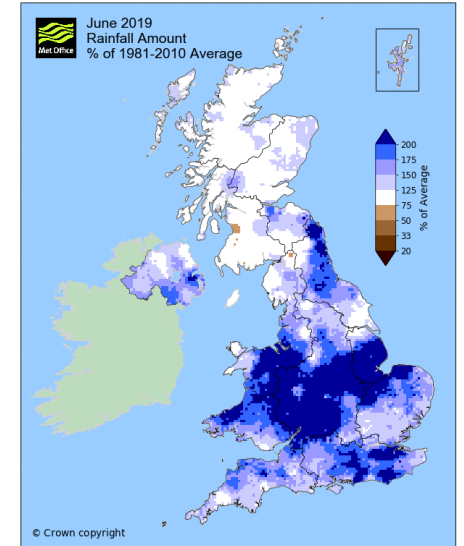
Credit: Dr Anna Gordon - NIAB



Credit: Dr Anna Gordon - NIAB

Risk factors

- Weather conditions favouring ergot are not fully understood
 - Cold winter followed by wet summer - possible
 - Wet weather at flowering - likely
- Spring wheat varieties more susceptible – flowering period and/or more open flower structure
- Do not appear to be significant varietal differences
- Some grassweeds are excellent ergot hosts: ryegrass and blackgrass



Management

- No chemistry to directly tackle ergot infections
- No varieties with resistance to infection, but spring wheats more susceptible than winter
- Control of grassweeds is key
- Sow uninfected seed, free from sclerotia to reduce levels in soil
- Late flowering grass margins reduces inoculum that could infect crop
- Ploughing to at least 5cm



Ergot regulations

Current

- 0.05% w/w limit on ergot sclerotia in cereals
- No maximum limits on ergot alkaloids

Upcoming

- **0.02%** w/w limit on ergot sclerotia in cereals
- Strict maximum limits on ergot alkaloids in processed cereal products
- Likely apply from July 2020 2021 – affect 2020 2021 harvest

Ergot regulations - what will the effect be

- Many UK mills already operate to a lower limit for ergot (0.01% or zero tolerance)
- Expect more mills to operate to these stricter levels
- Evidence indicates that even at 0.02% ergot sclerotia, alkaloid content of the grain too high to ensure compliance with processed product levels
- One sclerotia contains on average 1,800,000ppb ergot alkaloids
- Maximum limit for white flour is 100ppb



Ergot regulations - what will the effect be

- Farmers need to consider ergot as a serious compliance issue
- If grain is contaminated, it should be cleaned before delivery to a mill
- Otherwise there is a **high risk of rejection**
- Handling grain containing sclerotia increases the general ergot alkaloid content of the grain
- Clean the grain as early as possible to reduce sclerotia breakage and further mycotoxin contamination



Ergot regulations - what will the effect be

- Presence of ergot sclerotia is best indicator of alkaloid contamination
- If sclerotia are present, the grain is contaminated
- Important to understand the tolerances of your local markets
- A rapid test is available for ergot alkaloids



Ergot regulations – how did we get here?

1) European Food Safety Authority (EFSA), risk assessment



2) DG Sante considers ergot alkaloid exposure deemed to be too high for certain groups



3) Industry asked to gather data on levels in cereals and processed cereal products



4) Maximum levels proposed by DG Sante



5) Years of debate and further data gathering by industry



6) Maximum levels agreed and voted on by EC



Ergot regulations – how did we get here?

- DG Sante, the European food safety legislator, led the work
- The proposals are not always practical
- AHDB, **nabim** and others in supply chain argue for an approach that provide food safety AND are workable
- Significant research cost before you can even develop an argument



Ergot regulations – original proposals

- Original proposals would have resulted in significant compliance cost across the supply chain, product waste and loss of market for UK milling wheat

Commodity	Proposed maximum level (ppb)	% UK flour that would potentially not meet limits	Volume of potentially non-compliant flour (tonnes)	Wheat equivalent (tonnes)
Flour	50	10%	410,000	480,000

Ergot regulations – end result

- Five years of:
 - Data collection in grains and processed products (AHDB and industry)
 - Industry studies
 - AHDB funded research studies: Contaminants Monitoring Project
 - Close work with European counterparts

Commodity	Maximum level (ppb)	% UK flour that would potentially not meet limits	Volume of potentially non-compliant flour (tonnes)	Wheat equivalent (tonnes)
White flour	100	3%	115,000	140,000
Wholemeal flour	150	5%	10,000	10,000

Future regulation

- Uncertain what future regulatory approach UK will adopt, but it is likely that we align with the EU - who will continue to set strict mycotoxin limits
- EU potentially setting MLs for T2-HT2 and revisiting levels for other mycotoxins
- Industry is taking similar approach that was adopted for ergot – **food safety key, but practicality needed**
- Data is key to getting your foot in the door
- Industry needs to work together to collect data and develop consistent arguments

Key messages

- Growers must treat ergot as a serious compliance issue
- Follow agronomic guidance to minimise on-farm risk
- Clean grain contaminated with ergot sclerotia as early as possible to minimize contamination
- Understand the tolerances of your customers
- Significant body of industry work to ensure mycotoxin regulation is practical



A vibrant landscape of a green field at sunset. A path leads from the foreground towards the horizon where the sun is setting, creating a warm glow. The sky is filled with colorful clouds. The text is overlaid in the center of the image.

**‘Inspiring our farmers, growers
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Refreshment break

Prompt return 11.45

cereals.ahdb.org.uk/mwc



YEN Wheat Quality Award

sponsored by nabim





Introduction to the Yield Enhancement Network

Sarah Clarke

Crop Physiologist, ADAS



CEREALS & OILSEEDS



2012



2015



2017



2017



2018



2020



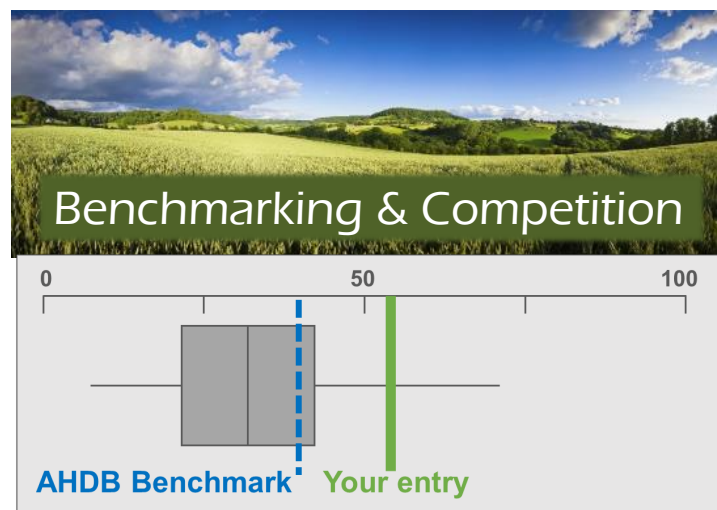
2020

... to develop the confidence to do better than 'best practice'

Sharing



Measuring



Analysis & Discussion

entry	YEN ID	Variety	Yield t/ha @85% DM	Protein @ 100% DM	Specific Weight	HFN	Combine Grain Moisture %	TGW @ 15%MC received	Impurities as received	5-bright & bold, or shrivelled & All data present	Protein yield
40	CF01512	Crusoe	11.78	13.57	80.1	362	14.2	45.60	0.37040412	50 Complete	1.358764
15	CF01297	KWS Zyatt	10.29	13.69	79.6	302	14.7	51.09	0.167115903	50 Complete	1.197281
13	CF01278	KWS Siskin	12.71	11.82	79.5	365	13.9	52.04	0.219308036	50 Complete	1.276974
27	CF01444RFS	Skyfall	8.73	13.21	79.1	403	17	54.33	0.191841235	50 Complete	0.980248
3	CF01219P0	Crusoe	10.50	13.94	78.7	345	13.8	47.71	0.182770664	50 Complete	1.244145
5	CF01231VCS	Crusoe	13.56	14.67	78.4	400	15.1	49.05	0.178675645	49.5 Complete	1.690864
30	CF01466	KWS Zyatt	10.39	13.26	78.4	371	15.4	51.27	0.094954128	50 Complete	1.170841
32	CF01477	KWS Zyatt	9.70	12.41	78.2	353	14.4	51.39	0.276376147	50 Complete	1.023235
19	CF01372	KWS Zyatt	9.57	12.69	78.1	401	13.5	49.58	0.172963896	50 Complete	1.032719
14	CF01286	Skyfall	10.68	11.77	78.1	399					1.068821
9	CF01210	Zyatt	11.04	13.53		295					1.209352
22	CF01199	Zyatt				68					0.935508
7	CF01242	Zyatt				90					1.472228
21	CF01398	Blair				64					1.016794
12	CF01376	Skyfall				67					1.385412
37	CF01506	Blair				378					1.39
42	CF01522RFS					77.2	13.4	50.40	0.23908247	50 Complete	1.170877
39	CF01510					77.1	14.8	49.59	0.179451418	49 Complete	1.293478
43	CF01534	Skyfall				712	13.9	44.13	0.239675797	50 Complete	1.04524
6	CF01231VCS	Crusoe				300	15.5	46.50	0.178827945	50 Complete	1.827373
11	CF01267	KWS Zyatt				282	14.5	55.74	0.265125765	50 Complete	1.296127
10	CF01263	KWS Zyatt	8.97			261	15.3	50.51	0.200471698	50 Complete	0.950914
38	CF01509	Crusoe	11.43			224	14.1	45.56	0.202143951	50 Complete	1.520127
31	CF01473	KWS Zyatt	11.66	13.18	76.6	283	15.5	50.16	0.142175986	50 Complete	1.306199
25	CF01407	Crusoe	11.52	14.18	76.5	344	12	37.05	0.276970954	50 Complete	1.388829
20	CF01382	Skyfall	9.52	11.94	76.4	362	14.9	47.35	0.219004065	50 Complete	0.966438
23	CF01402VCS	KWS Firefly	13.01	11.59	76.4	268	10.9	52.45	0.144243494	50 Complete	1.281446
24	CF01402VCS	KWS Firefly	12.81	12.13	76.3	308	10.9	49.51	0.283691406	50 Complete	1.2026
35	CF01506	Crusoe	10.82	13.88	76.3	284	15.5	44.83	0.311347808	50 Complete	1.276662
36	CF01507	KWS Zyatt	11.06	13.63	76.2	308	16.5	50.70	0.20046729	50 Complete	1.281533
41	CF01514	KWS Zyatt	10.83	12.16	76.1	311	16.5	51.76	0.251733333	50 Complete	1.11979
16	CF01398	Skyfall	11.13	11.02	76	357	15.3		0.363631843	50 Some data missing	1.72372



YENs would not exist without their sponsors



nabim short-list

5 kg
grain sample



2019 YEN Quality Contest – 43 Group 1 entries



Parameters	Limit	Range
— Variety	Crusoe Illustrious Skyfall Zyatt	
— Yield, t/ha		8.5 – 14.5
-6 Moisture, %	<16%	10.9 – 22.4
— TGW, g		37 – 58
— Impurities		all good
— Brightness		all good
-17 Protein, %	>13%	10.6 – 15.7
-2 Hagberg, s	>250	224 – 409
-8 Specific wt, kg/hl	>76	68 – 84
-11 Protein yield, t/ha		0.94 – 1.83
	shortlist:	1.28 – 1.46



225 kg/ha grain N



Milling & Baking tests on 10 shortlisted samples

■ Cleaned wheat: grain re-analysis

- Moisture, Protein %, Specific weight, Hagberg Falling Number
- SKCS Hardness Index, & Flour extraction rate %

■ Flour analysis

- Water absorption (% @ 14% moisture)

■ Dough analysis

- Extensograph: Resistance (BU), Extensibility (cm), & R/E
- Farinograph: Stability (mins)

■ Baking analysis

- Loaf volume (cm³) & Overall quality (good, moderate, poor)
- Crumb Colour (white, creamy, dull), Texture (fine to coarse) & Structure (resilient to weak)



YEN Reports – Wheat Quality



Entrant's Report Milling Wheat Quality Award Harvest 2019

[Name] Field / Site: Mosley
YEN Field ID: CF00000 Sponsors/Supporter: [Sponsor name]
Region: [Region name] Variety: KWS Zyatt
Primary contact email:
Sponsor/Supporter email:
Additional supporter email:

The 2019 YEN Wheat Quality competition saw completed entries from 43 fields.

Congratulations for entering the 2019 Milling Wheat Quality Competition

- ❑ Average grain yield for all Group 1 varieties entered in the YEN 2019 was 11.1 t/ha and average grain protein yield was 1.2 t/ha.
- ❑ Your entry yielded 12.6t/ha grain and 1.5t/ha of grain protein, which ranked 7th for protein yield within all YEN Group 1 entries.
- ❑ Your entry was included amongst the 10 entries shortlisted by the milling industry for rheology and baking tests this year.

This report provides results for your entry, summarises the procedures used to determine the YEN Wheat Quality Awards, and shows results for the complete shortlist.



The YEN Wheat Quality Award is sponsored and organised by **nabim**.
With thanks to the milling industry for the analysis of entries.

1

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SHORT-LISTING & QUALITY TESTING METHODOLOGY

All YEN entries of UK-grown **nabim** Group 1 varieties were entered in the YEN Wheat Quality competition. The growers of these entries were sent a large sample container to fill with the grain required (5kg) for rheology and baking tests. As with all YEN entries, yields were determined and verified, and grain was tested for specific weight and protein concentration. In addition, samples of YEN Wheat Quality entries were sent for Hagberg Falling Number (HFN) determination and assessments were made of grain appearance and presence of impurities. Grain protein yield was calculated. Entries that did not include verified yields, lacked grain analytical data or did not provide enough grain **were** not included. In total there were 43 entries but five of these lacked essential data, so were not included.

The remaining 38 entries were initially sifted according to the grain quality criteria of 13.0% protein, 76.0 kg/hl specific weight and 250s HFN. 17 entries did not meet these criteria and were not progressed to the second stage of the competition. Most entries scored well in terms of grain appearance and the presence of **impurities** so this was not a factor in sifting.

The remaining 21 entries **were** ranked by protein yield (t/ha) and the top ten were selected for the final shortlist. These ten entries were cleaned and reanalysed for grain quality parameters in a wheat testing laboratory prior to small-scale milling. Samples of the milled flour were tested for dough quality and were also test baked using the Chorleywood Breadmaking Process (CBP), specifically the '800g open top recipe'. This is a common breadmaking recipe used to assess Group 1 wheats.

All shortlisted entries were assessed by considering a balance of features including: the grain yield, the protein yield, and the quality of the flour and the baked bread. The results for all finalists can be seen in Table 1. Images of the baked loaves and the bakers' commentary can be seen in Table 2.

WINNING ENTRIES

First place (CF01216 KWS Zyatt) - This entry had the second highest yield (12.6 t/ha) and the second highest protein yield (1.48 t/ha) on the shortlist. The grain and dough quality were excellent and whilst the flour water absorption was low, this was a general feature of most entries this season. The overall baking quality was good, with good loaf volume and crumb structure. Overall, not only did this entry yield well, but high quality was seen in the grain through to the final loaf.

Second place (CF01508 RGT Illustrious) - This entry had the lowest yield of those shortlisted (11.0 t/ha) but the fifth highest protein yield (1.33 t/ha). The grain analytical quality was excellent, and the flour and dough quality were good, although gluten resistance was higher than optimum. However, the baking quality was good, with a large loaf volume. Overall, whilst this entry was not the highest yielding, its protein yield and baking quality were sufficient to secure it second place.

Third place (CF01272 KWS Zyatt) - This entry had the fifth highest yield of the finalists (11.7 t/ha) and the seventh highest protein yield (1.31 t/ha). Its grain quality was excellent and whilst the grain hardness was low, this was a general feature of Group 1 crops in 2019. The dough quality was good, although gluten extensibility was higher than the optimum. Whilst this entry was lower yielding than others on the shortlist, its baking quality was good, with a fine white breadcrumb seen in tests.

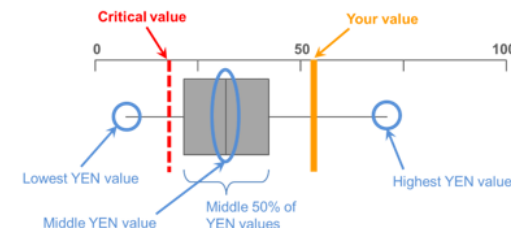
Other finalists - Whilst the yield and protein yields of all ten finalists were high this year, significant variations in gluten quality and baking performance were seen. The 2019 wheat crop was generally softer milling than normal so the lower water absorptions of the flours were not unexpected and could be seen as a feature across all finalists. A number of entries had gluten resistance levels that were too low (CF01407, CF01512 and CF01267) resulting in poorer quality loaves, typically with coarseness and weakness seen in the breadcrumb. Some entries showed a low gluten extensibility (CF01480, CF01473 and CF01507) and their baking performance also suffered, displaying slight weakness in the breadcrumb.

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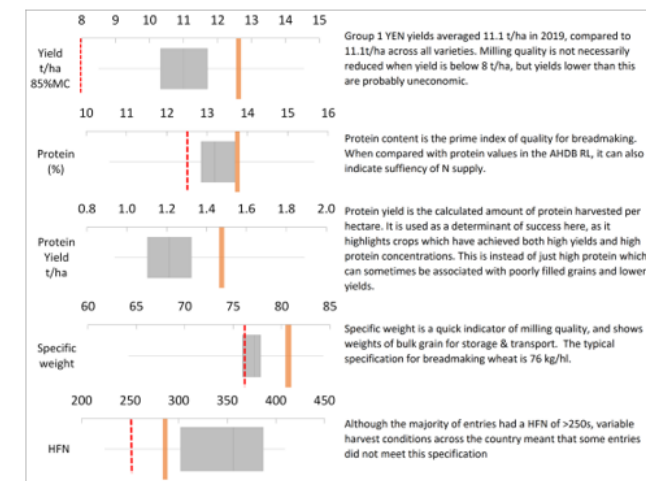
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MILLING QUALITY RESULTS

The results for this and all other entries in the YEN Wheat Quality Competition 2019 are summarised below in box and whisker charts. The charts include critical or threshold values, if appropriate. The key to the charts is as follows:



The 'whiskers' show the range of values from all YEN Wheat Quality Award entries in 2019 and the box shows the middle half of these values, with a line for the mid-value. The orange line shows the value for this entry and the red dashed line is a limit beyond which milling quality is reduced.



Group 1 YEN yields averaged 11.1 t/ha in 2019, compared to 11.1t/ha across all varieties. Milling quality is not necessarily reduced when yield is below 8 t/ha, but yields lower than this are probably uneconomic.

Protein content is the prime index of quality for breadmaking. When compared with protein values in the AHDB RI, it can also indicate sufficiency of N supply.

Protein yield is the calculated amount of protein harvested per hectare. It is used as a determinant of success here, as it highlights crops which have achieved both high yields and high protein concentrations. This is instead of just high protein which can sometimes be associated with poorly filled grains and lower yields.

Specific weight is a quick indicator of milling quality, and shows weights of bulk grain for storage & transport. The typical specification for breadmaking wheat is 76 kg/hl.

Although the majority of entries had a HFN of >250s, variable harvest conditions across the country meant that some entries did not meet this specification

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Thank you

Sarah Clarke

Crop Physiologist, ADAS

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CEREALS & OILSEEDS

Presentation of Awards

George Mason, Heygates Ltd and Chair of nabim Wheat Committee



Winner Introductions



Lunch

Prompt return 13:45

ahdb.org.uk/mwc

AHDB Milling Wheat Conference

27th February 2020



A Growers Perspective

Andrew Watts
Wallington Farms



Changing Times



Andrew Watts

- 29 years in Hertfordshire
- Manager Wallington Farms
- Various roles within NFU
- Chair EU Seeds Advisory group
- Organic product regulation
- Son who also farms in NZ
- Daughter lives and works in London



Wallington Farms

- Family business now in 4th generation (originated south of Glasgow late 1800s)
- Wide range of soils
- Diverse operations
- Growing for local markets
- Environmental programmes



Cropping

‘Normal’ Year

- Wheat 980ha
- W Barley 330ha
- OSR 200ha
- Beans 200ha
- Peas 120ha
- S Barley 200ha
- S Wheat 50ha
- Oats 180ha

This year

- Wheat 723ha
- W Barley 257ha
- OSR 140ha (+60 failed)
- Beans 226ha *
- Peas 181ha **
- S Barley 153ha
- S Wheat 400ha *
- Oats 180ha

*Subject to conditions

** 60ha extra sub for osr

Crop Marketing

- Every crop is grown with a market in mind
- Not the most productive land
- Close proximity to consumers
- Importance of premium
- Variety selection
- Consumer trends
- Niche varieties



Crop Rotation

- Importance of having a sound rotation as part of IPM
- Flexible tillage system , from ploughing to direct drilling
- A 'clean' start for wheat crops essential – weed, pest and disease
- A quality crop starts from the moment it is put on a plan

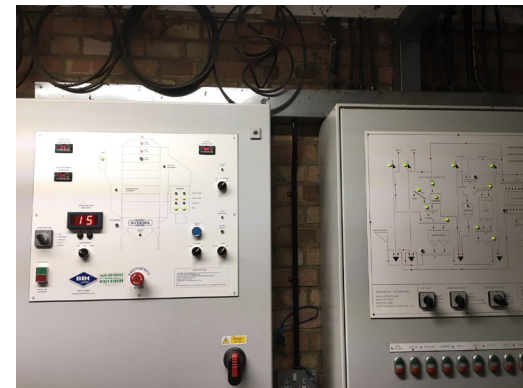
The growing crop

- History
- A good start (!)
- Nutrition – soil type has impact
- Weed control – what matters
- Disease – late fungicides
- Late N ?



Harvest

- Planning the campaign
- Storage – what and where
- Harvest logistics
- Drying capacity
- Early analysis
- Marketing dialogue
- Flexible approach



Moving to market

- Accurate analysis
- Working with merchant
- Parcel matching
- A living crop – inherent variability
- Consistency of delivery
- Monitoring delivery performance

TP Ref:	WALL002	Linked:	<input checked="" type="radio"/> Both <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Reverse Date
Name:	Wallington Farms	Allocated:	<input type="radio"/> Both <input type="radio"/> Yes <input type="radio"/> No	<input type="radio"/> Search Key
Buyer:		Quality Assured:	<input checked="" type="radio"/> Both <input type="radio"/> Yes <input type="radio"/> No	<input type="checkbox"/> All Analysis
Team:				

Main Group Description	Reference	Trading Pair	Sample Date	Area	Crop Year	Quality Ref.	Varieties	Locality	Moisture %	Specific Gravity	Hagberg	Protein %	Screening %
Feed Wheat	SS10824	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 6, LHS	12.60	76.10	275.00	11.53	2.32
Feed Wheat	SS10825	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 6, Middle	13.60	76.10	258.00	11.51	2.34
Feed Wheat	SS10826	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 6, RHS	13.80	76.60	282.00	11.65	2.63
Milling Wheat	SS10822	WALL002	19/09/19	Hertfordshire	2019	20436	Mulka	Store 5, Bay 1	14.30	78.90	401.00	12.93	1.10
Milling Wheat	SS10823	WALL002	19/09/19	Hertfordshire	2019	20436	Mulka	Store 5, Bay 2	15.00	79.00	317.00	12.72	3.24
Milling Wheat	SS10827	WALL002	19/09/19	Hertfordshire	2019	20436	Crusoe	Store 8, LHS	12.20	78.40	282.00	12.76	3.45
Milling Wheat	SS10828	WALL002	19/09/19	Hertfordshire	2019	20436	Crusoe	Store 8, Middle	13.10	76.70	318.00	12.67	1.48
Milling Wheat	SS10829	WALL002	19/09/19	Hertfordshire	2019	20436	Crusoe	Store 8, RHS	13.30	76.60	209.00	12.04	2.76
Milling Wheat	SS10847	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - RHS - B.1	12.90	77.60	271.00	11.69	1.44
Milling Wheat	SS10848	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - RHS - B.2	12.00	75.70	320.00	11.06	2.49
Milling Wheat	SS10849	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - RHS - B.3	12.70	76.70	316.00	11.15	2.96
Milling Wheat	SS10850	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - RHS - B.4	12.30	76.20	249.00	11.16	1.71
Milling Wheat	SS10851	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - RHS - B.5	12.60	75.50	276.00	11.32	2.94
Milling Wheat	SS10852	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - LHS - B.1	13.10	77.40	304.00	11.00	0.85
Milling Wheat	SS10853	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - LHS - B.2					
Milling Wheat	SS10854	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - LHS - B.3	12.70	77.10	291.00	11.58	1.96
Milling Wheat	SS10855	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - LHS - B.4	12.60	75.30	314.00	10.71	1.75
Milling Wheat	SS10856	WALL002	19/09/19	Hertfordshire	2019	20436	Barrel	Store 4 - LHS - B.5	12.80	75.40	282.00	11.55	2.49



Farm consultancy (n)
[fahrm kuh n-suhl-tn-see]

The professional activity of getting
farmers to pay you for information they
already know.....

Impact of this season on wheat

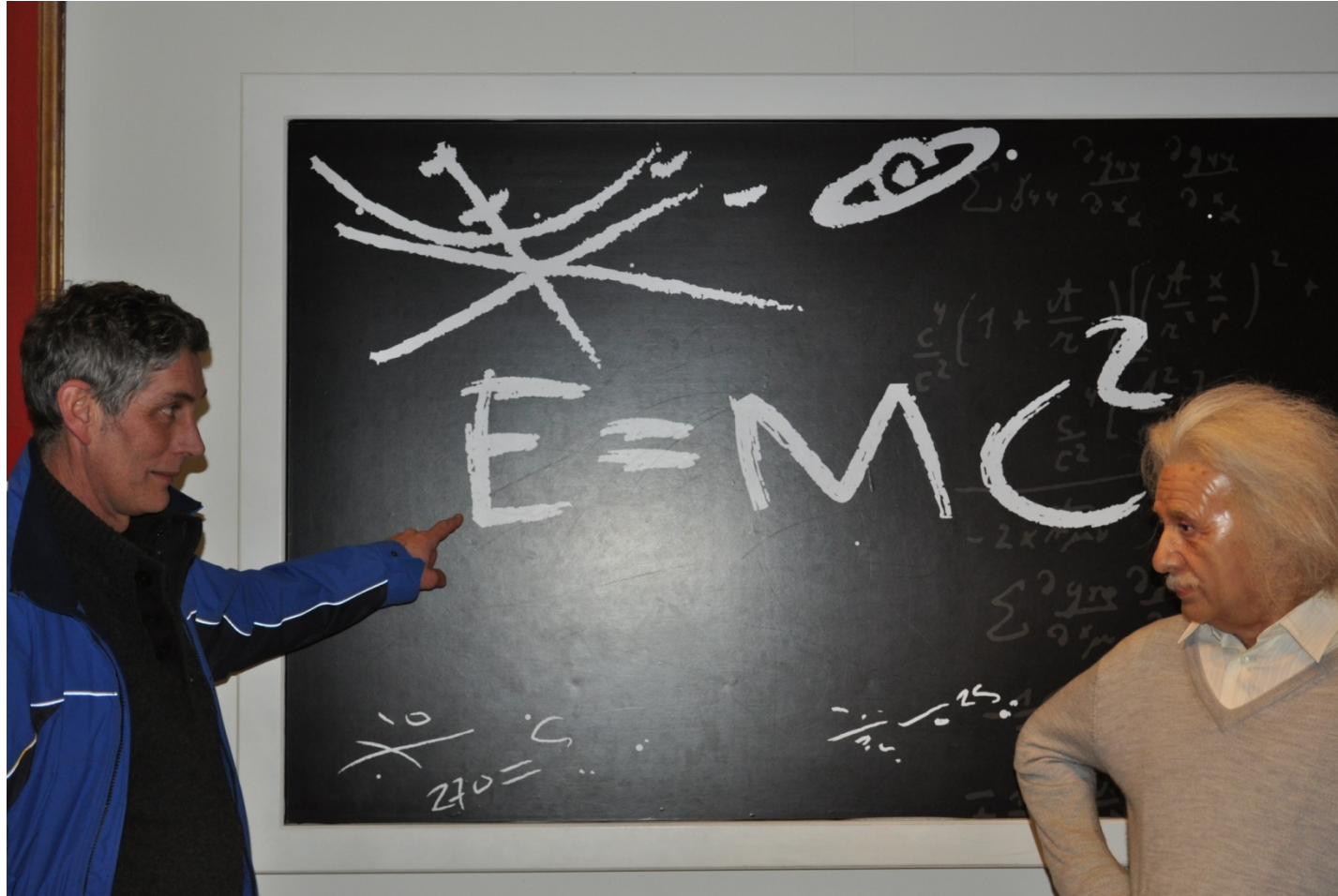
- Distorted cropping programme
- 1st wheat on heavy land is main casualty
- On farm and nationally –(national crop -25%?)
- ‘Normal year’ circa 9200t wheat –
- 20% gp1. 50% gp3. 30% gp2/4
- This year 8,000t ? (at best?)
- 40% gp1. 35% gp3 25% gp2/4
- Hides increase in overall wheat area

The Future?

- Political uncertainty
- Business resilience
- Crop Systems
- Crop Rotation
- Consumer demand
- Adapting to a changing world !
- Everyone's an expert!!



A science based approach



The environment and farming





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- @hertsfarming
- 07779 329581



The Supply Chain – Panel Discussion

Mark Dodds, Andrew Watts, Alan King & George Mason



Mark Dodds

KWS



Alan King

Camgrain



George Mason

Heygates



Closing Comments

Alex Waugh, Director General, nabim



Conference Close

Tim Isaac, Head of Arable Knowledge Exchange, AHDB



Summer Events

- Arable Connections *Variety demonstrations*
- Industry Events: Cereals and Groundswell
- Monitor & Strategic Farm Summer Meetings

Thank you and safe journey home!

ahdb.org.uk/mwc



Useful links



AHDB Milling wheat research, Horizon reports
www.ahdb.org.uk

Market Information
cereals.ahdb.org.uk/markets

Recommended List Information
cereals.ahdb.org.uk/varieties

Export Information
cereals.ahdb.org.uk/exports

Milling Wheat Conference
cereals.ahdb.org.uk/mwc

nabim www.nabim.org.uk

YEN www.yen.adas.co.uk

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