

Grain OUTLOOK

THE JOURNAL FOR CEREALS & OILSEEDS

AHDB



Autumn/Winter 18

STERILE BROME: THE SPANNER IN THE WORKS

Why the weed is holding back trade with China

THE REAL-TIME DISEASE REVOLUTION

Detecting diseases before they infect your crops



SHORT-TERM, LONG-TERM UK OUTLOOK

What to watch: demand from livestock and the profitability
of bioethanol production

CONTENTS

3 Letters

4 News in Brief

- 5 Students' Union: Rhizoctonia revealed**
Updates and insight from AHDB-funded student programmes

BUSINESS FOCUS

- 6 Short-term, long-term UK outlook**
What to watch for UK grain

- 8 The future of milling and malting**
Assessing the impact of post-Brexit trade scenarios on milling wheat, malting barley, flour and malt



- 9 The changing retail landscape**
What influences where and how we shop? And what are the opportunities for agriculture?

- 10 Grain marketing strategies – what's the deal?**
A demonstration of the risks and rewards

AGRONOMY

- 12 Real-time disease revolution**
Detecting diseases before they infect crops

- 13 Have you monitored our pest investment?**
AHDB is asking people to complete a short survey to focus investment in IPM



- 14 Erucic acid risks in OSR**
Guidelines to help farmers maintain low levels of erucic acid in their crops

- 16 Give worms a hand**
New guidance to help you identify earthworm populations

FARM EXCELLENCE

- 18 Drawing a line in the soil**
How and why AHDB Strategic Farms use baselining of the farmed environment at the beginning of their journey

- 20 What the world can tell us**
AHDB's Philip Dolbear and Mark Topliff on international benchmarking

- 22 Four farms, four barleys**
The latest from an on-farm barley resilience try-out

EXPORTS

- 25 Filling Moroccan biscuit tins**

AHDB's work to help North African millers understand the benefits of UK wheat

- 26 Sterile brome: the spanner in the works**

UK exporters say strict protocols are holding back trade with China



- 28 Exports hotspots**
If you farm in these areas, are exports an opportunity?

REAPING REWARDS: IN YOUR AREA

- 29 North and Northern Ireland**

- 30 West and Wales**

- 31 South West**

- 32 South East**

- 33 East Anglia**

- 34 East Midlands**

- 35 Scotland**

LETTER FROM THE EDITOR



ELEANOR HOLDSWORTH EDITOR

As I started on this edition back in the summer, some remarkable news came through: 12 young Thai boys and their football coach had been rescued from the depths of a cave system. It was an astounding rescue and the world heaved a sigh of relief.

What's that got to do with farming? Well, when Taunton monitor farmer Richard Payne spoke to us for a harvest podcast, he said: "Not many farms have any fat on them these days. Failure is not an option."

With so many things that could go wrong, the rescue divers in Thailand had contingency plans for every eventuality. What if this equipment breaks? What if this? What if that? Meticulous, detailed planning saved the boys' lives.

If failure isn't an option, then what contingency plans do we as an industry have in place?

This edition of Grain Outlook we've got insight from our researchers, experts and farmers, covering market analysis, agronomy and more, but it's just a small selection of the work we do to help you plan for the future.

As usual, please do get in touch with comments and feedback about what you'd like to see in Grain Outlook.

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VIEW FROM THE CHAIR

PAUL TEMPLE AHDB BOARD MEMBER SECTOR CHAIR FOR CEREALS & OILSEEDS

This year's harvest produced the most varied yield results I've ever known. Following the extreme weather and with so many variables, my yields ranged from very good to very bad. It was for most very easy, early and with good quality for wheat but more variable for spring barley. It's not often I get to drive the combine, but to see 50 per cent variance in yield across one field was fascinating and a real analysis challenge.

The UK was certainly not alone, with much of northern Europe and the Black Sea areas affected. This has resulted in some interesting market dynamics coming into place with a more visual demonstration of volatility finally being noticed in the news as it starts to affect food inflation.

While better prices are good news for cereal producers, they do come with problems for the livestock sector as they have to readjust to the impact of the rising cost of feed. It was particularly heartening to see so many cereal growers allowing straw to be baled in response to the serious forage and straw shortage.

As individuals, we cannot influence the weather or the market. However, as growers, we are the biggest factors in soil management. This season's growing conditions have thrown so many interesting questions and challenges out in regard to soil management. So the Monitor Farm events will offer some great opportunities to get into the regional experience from the year and the benefit of shared knowledge.

Looking at these extreme conditions, one question keeps coming back, what if we have another dry year? AHDB is there to look for the answers, both for and with their levy payers, be it the weather, markets or Brexit.

NEWS IN BRIEF

RECOMMENDED LISTS: LOOKING AHEAD

The Recommended Lists (RL) Look Ahead survey, which gave farmers, agronomists and the wider industry a chance to share their opinion on the RL, closed on 6 August.

The RL board met in late September to discuss the 575 responses to the survey and to decide what action to take next.

AHDB Crop Production Systems Senior Scientist Jenna Watts will present on the results and give some early information on the next steps at the Agronomists' Conference in December. cereals.ahdb.org.uk/varieties

AHDB – HAVE YOUR SAY

Farmers, growers, processors and industry representatives are being asked for their views on the future role and remit of AHDB.

As we leave the EU, there is an opportunity to ensure the sectors that AHDB covers are as competitive as possible. This government-led review, open until midnight on Friday 9 November, will look at AHDB's purpose and priorities, its strengths and where improvements can be made.

For more information and details on how to respond, visit ahdb.org.uk/requestforviews

SUMMER 2019

AHDB will be back at the Cereals Event next year, with a stand right at the heart of the Agronomy Zone. Regional Arable Connections events are also planned for eight locations across the UK during summer 2019 and will focus on variety plots.

cereals.ahdb.org.uk/events

NEWS FROM ACROSS AHDB

FOOD AND FARMING IN THE CLASSROOM

Workload, understaffing and pressure to meet targets are the key challenges faced by teachers, according to AHDB's Teacher Research survey, conducted by YouGov.

The survey of 1,376 practising teachers' needs and priorities was part of the new AHDB Education Strategy and three-year partnership with the British Nutrition Foundation (BNF), to increase children's understanding of where and how their food is grown, reared, processed and produced.

Paul Robertson, AHDB Senior Education Manager, said: "It is really important to understand the needs of teachers so we can provide them with the resources and training they need to deliver food and farming information to children in the classroom."

AHDB is working together with the BNF to reduce duplication and ensure that teachers and their students have access to credible classroom materials and training.

RECORD NUMBERS AT OPEN FARM SUNDAY 2018

The annual LEAF Open Farm Sunday is now more popular

with the public than ever before, with nearly 300,000 people visiting a farm on Sunday 10 June.

A total of 362 farms across the country welcomed visitors to their gates, helping to connect the public with farming and where their food comes from.

Events spanned all shapes, sizes and enterprises; from organised walks for a few local people, to larger events with visitors in the hundreds and thousands – but the popularity of the day was reflected in the average number of visitors to each event, which was 811, the highest on record.

farmsunday.org

NEXT GENERATION

Now in its third year, the AHDB Potatoes Next Generation programme includes business and technical sessions, as well as supply chain visits. The programme aims to develop the future leaders of the potato industry and give them exposure to the wider supply chain.

The current group will complete nine comprehensive business and technical days over the course of the year, giving them an accelerated view of the entire industry and supply chain and an opportunity to build professional relationships for the future.

Visit potatoes.ahdb.org.uk/next-generation for details on applying for the 2019 intake.

HORTICULTURE SPECIALIST JOINS AHDB BOARD

Beginning on 1 November 2018, Hayley Campbell-Gibbons will join the AHDB Board and chair the AHDB Horticulture Sector Board. Hayley brings 15 years' experience in rural affairs, including over a decade as Chief Policy Adviser to the National Farmers' Union (NFU), where she specialised in horticulture from 2011. At 36, Hayley is the youngest ever board member in AHDB's history. horticulture.ahdb.org.uk

PIG INNOVATION GRAND PRIX

Eight European pig producers have been awarded the title of Ambassador following the EU PiG Innovation Group's Grand Prix, for their innovative best practices to address key challenges. The winning producers, including one of AHDB's previous strategic farmers, shared on-farm solutions to key challenges within the themes of health, welfare, precision production and meat quality. eupig.eu/best-practice/2018-grand-prix-winning-best-practices

GRASS AND HERBAL LEYS NETWORK

Most arable farmers who have leys in their rotations use them to improve soil quality and around half use them as a black-grass management tool, according to early results from a grass and herbal leys farm network. The network, launched by ADAS, AHDB and Defra in February 2018, is a partnership between farmers, researchers and industry. adas.uk/services/Grass-and-herbal-leys-farm-network



STUDENTS' UNION: RHIZOCTONIA REVEALED

Jason Pole, AHDB Communications Manager

When the same crop is grown time and time again in a rotation, yield often suffers. Understanding such 'yield declines' has been a source of much interest across the globe, because halting them would boost output from some of the world's most important crops.

Physical and chemical factors certainly play a role in the decline, but biological factors are believed to be particularly significant, especially soil-borne pathogens. Technological advances mean researchers can now screen thousands of root samples relatively easily in the quest to hunt down potential pathogens.

Oilseed rape (OSR) is one crop that suffers from yield decline, but results from an AHDB-funded PhD studentship, conducted at Harper Adams University (HAU), have shed light on some interesting soil-borne pathogens associated with this important break crop.

Alex McCormack spent his studentship (2013 to 2017) getting up close to the life beneath OSR fields. HAU had a large set of OSR root samples already, so he did not need to start from scratch.

“As with many pathogens, *R. solani* is highly adaptive and has long-lived survival structures, which makes it fairly robust”

Alex used Next Generation Sequencing (NGS), a novel molecular technique, to examine the fungal species present in the samples and found fungal communities differed surprisingly little. Generalist fungal species, which live on dead or decaying organic matter, dominated. Of the pathogenic species present, the *Rhizoctonia solani* (a damping-off disease) was the most abundant – a finding consistent with studies on OSR and vegetable brassica crops across the world.

R. solani exists in the soil as a complex of 'strains', more commonly known as anastomosis groups (AGs). Alex used another molecular approach, called 'real-time PCR', to look at the type of AGs present and found AG2-1 was the most common (present at 60 per cent of sites tested). Controlled-environment experiments showed, unlike other AGs, that AG2-1 caused significant disease symptoms on young OSR seedlings.

Glasshouse experiments also showed very little AG2-1 inoculum was needed to result in disease and seedling death.

As with many pathogens, *R. solani* is highly adaptive and has long-lived survival structures, which makes it fairly robust. Indeed, results from Alex's molecular tests found that cultural methods – such as rotation length and cultivation approach – had limited impact on the presence of this pathogen.

Although Alex's work did not crack the yield-decline conundrum, it did highlight the need to pay more attention to rhizoctonia and to identify novel cultural and chemical control options.

Partly in response to his findings, AHDB, in conjunction with the UK government's Agri-Tech Catalyst fund, has invested in further research. Due to conclude next year, the project looks at varietal resistance to the disease and low-dose seed treatments.

cereals.ahdb.org.uk/rhizoctonia

SHORT-TERM LONG-TERM UK OUTLOOK

Helen Plant, AHDB Senior Analyst



The hot topic for UK grain in the short term is going to be the supply-to-demand relationship. It's looking like another tight market, with demand creeping close up on supply. We've got two main things to watch: demand from livestock and the profitability of bioethanol production.

“ Between 2008 and 2017, average UK poultry meat consumption rose 23 per cent to 36.3kg per person per year and there's no indication of this trend stopping any time soon **”**

We know it's been a difficult year for our livestock colleagues. The late spring and summer drought meant reduced grass growth and an increased need to supplement feed and depleted stores of silage and hay. Depending on what winter weather is like, there could be even higher demand from the livestock sector through the next few months.

Meanwhile, the UK's love affair with chicken meat continues to grow, which means a greater reliance on wheat rather than other grains. Between 2008 and 2017, average UK poultry meat consumption rose 23 per cent to 36.3kg per person per year and there's no indication of this trend stopping any time soon.

Also, there's uncertainty around bioethanol production. In previous years, the plants have had temporary shutdowns for maintenance or political reasons, but this season the timing and length of any shutdown will be particularly important. Indeed, in September one bioethanol plant ceased production. What affect this will have on overall demand remains to be fully played out.

If demand overall remains high, we will need to import more than we export again. But if the amount of wheat needed by either of these sectors drops dramatically, the trade situation could be more balanced.

Looking longer term, the increased use of wheat for animal feed and by the bioethanol sectors has pushed up total UK wheat usage by approximately 1.6Mt (12 per cent) in the ten seasons since 2008/09.

But as demand increases, we're also seeing wheat areas declining due to the challenges of black-grass and access to adequate pest control. If all these trends continue, we will need UK average yields to increase to maintain supply without increasing imports. But there's debate about whether chasing the highest yield always generates the most profitable return on farm.

Profitability will take on an increasing focus, with indications from the government that in England and Wales, direct payments will be phased out from 2021, though there's potential for other types of payment to increase.

The strength of sterling is going to be another factor. A weaker sterling will insulate us from global markets, but stronger sterling means we'll be more exposed.

In an uncertain future, relationships are going to be even more important than they are now. We know that there's a lot of competition in the retail environment, and consistent supply and quality is getting more attention. As farmers, you need to be talking to buyers to understand what specifications they need and how you can help them.

Overall, it's been a good but variable year for quality, with some high screenings plus challenging N levels on barley. Do you need to talk to the people you supply early on, to avoid penalties and to help things flow smoothly? Ultimately, having strong networks is good for your business.

Long term: know where you want your crops to go. Grow for the market.

We explored this and more at the 2018 Grain Market Outlook Conference. You can find reports and presentations, and get hold of AHDB's market intelligence work at cereals.ahdb.org.uk/markets

THE FUTURE OF MILLING AND MALTING

A new report published by AHDB suggests Brexit will have a considerable impact on the UK's milling industry under a range of trade scenarios, but the malting sector is in a far better position to weather the storm.

The 'what if' analysis was commissioned by AHDB to help millers and maltsters with their business strategies ahead of Brexit.

It also aims to help give insight on long-term implications on planting and highlight potential impacts on grain prices.

The report – Brexit scenarios: Impacts on the UK's milling and malting sectors – assesses the impact of three post-Brexit trade scenarios on supply and demand for milling wheat, malting barley, flour and malt. Firstly, a Free Trade Agreement (FTA) with the EU agreeing zero tariffs; secondly, a unilateral approach where imports are tariff-free but exports are subject to tariffs; and, thirdly, mutual application of World Trade Organisation (WTO) tariffs in the case of a hard Brexit.

UK flour trade is likely to experience significant disruption post-Brexit, even if an FTA is negotiated. This is partly due to UK mills' reliance on global imports of high-quality milling wheat, which may disqualify UK flour from preferential access to the EU market.

This will impact mills on the British mainland if they lose free access to this market via the cross-border trade. By far the biggest impact could be the loss of trade with the Republic of Ireland, which currently receives two thirds of its flour from mainland British mills.

The outlook is more positive for the malting sector. With almost all UK malt currently exported to non-EU countries, trading arrangements with the EU would have little impact.

Brexit may also provide an opportunity for UK growers to displace malting barley imports by growing six-row malting varieties.

Dr Martin Grantley Smith, Strategy Director for AHDB Cereals & Oilseeds, said: "There could be some tough decisions to be made by UK millers and maltsters in the near future depending on how Brexit pans out.

"This is a timely report providing some early warning of how the challenges may play out so that businesses can revisit some of their options for after March 2019.

"Up to now, our trading arrangements with the EU have been of critical importance and this report clearly shows, whatever the outcome of Brexit, business-as-usual is not going to be an option."

To download the report, alongside all AHDB's Brexit tools and resources, visit ahdb.org.uk/brexit

"Up to now, our trading arrangements with the EU have been of critical importance... whatever the outcome of Brexit, business-as-usual is not going to be an option."





THE CHANGING RETAIL LANDSCAPE

Sukhvinder Gill, AHDB Retail Insights team



The UK has gone through enormous structural change over the last decade or so, with digital, e-commerce and technology at the heart of transforming the retail landscape. Additionally, lifestyle changes, coupled with our more fluid attitudes to shopping, have led to some key behavioural shifts around where and how we shop.

There have been many influences on purchasing patterns, including the recession of 2008, the growth of online shopping and an increasing habit for smaller, more frequent grocery shopping. The growth of the hard discounters has led to changes in how the major grocery retailers operate, particularly around promotional strategy, moving to more everyday low pricing. Then, of course, there is the uncertainty around Brexit and the likely implications in terms of prices, due to potentially higher input costs on the back of higher labour and raw material costs. This, coupled with continued pressure on real incomes, is likely to further strengthen the position of the discounters.

While we talk about changing consumer shopping habits and lifestyles, it is important to remember that two customer needs prevail: the need for convenience and value for money.

“Two customer needs prevail: the need for convenience and value for money”

Firstly, convenient location. No matter how well retailers differentiate themselves, access is vital. According to a recent report, just over half (57 per cent) of consumers chose the last store they visited based on its location: no matter how well retailers differentiate themselves, access is vital.

Value perceptions are the second driver of store choice. The introduction of retail operators with several stores initially allowed prices to fall for consumers in comparison with what they were used to with independents, resulting in a highly competitive retail landscape. The 2008 banking crisis challenged retailers further to think of innovative ways to offer value for money. Nearly half (43 per cent) of consumers chose the last store they visited because it saved them money.

This need for ‘value’ has resulted in three key changes in the market over the years: international discounters entered the UK; growth of own label and product tiering; and reliance on promotional mechanics.

The Institute of Grocery Distribution predicts modest grocery market growth

in the next five years of just over £28bn, mostly driven by grocery inflation, which will make it even more important for retailers and suppliers to understand the dynamics and opportunities by channel. Online and discount shopping will account for more than half the increase in market value to 2023, but the outlook for larger stores has improved, with investments in price, range and the customer experience helping them to better defend their market share.

For agriculture, some of the key wins will be around developing products for different occasions, better-targeted messaging and communication around growing trends such as health, the need for diversity and convenience. Supporting shoppers’ ethical credentials, especially with younger consumers, will also be key, so factors such as animal welfare and traceability are likely to become more important, given the increased availability of information and media coverage.

Data from the Institute of Grocery Distribution (IGD): ShopperVista, Mission and Channel Choice Report, June 2018

GRAIN MARKETING STRATEGIES – **WHAT'S THE DEAL?**

Vikki Campbell, AHDB Market Specialists Manager – Arable

Each year, AHDB publishes pricing strategies for the new season's crop. How can they help you, the grower, make informed decisions about when and how to sell your grain?



Essentially, grain marketing is about deciding when and how you will take your price. It is likely that you may be marketing multiple crops at any one time, and a one-size-fits-all approach to this marketing may not be the best strategy to maximise your returns.

Grain marketing offers an option to minimise any short-term volatility, but what form should this take? You could forward sell to assure your price. This is relatively straightforward and spreads the risk over time and multiple buyers. However, this method can be riddled with psychology and 'what ifs', such as 'what if the market rises after I've sold?' Alternatively, you might decide to purely average your sales. While this removes any psychology, it is formulaic and does not take into account any market signals.

Or you may choose to market your grain through a pool. While this exports management responsibility to someone else, how do you know if your chosen pool is in tune with what your business wants to achieve?

Over the years, AHDB has compiled a suite of strategies, running them over the marketing season and highlighting their performance and limitations. The role of these strategies is to demonstrate the risks and rewards of different approaches to grain marketing. The strategies for the 2018 crop are due to be launched shortly, so it seems opportune to revisit the 2017 strategies, especially as two new ones were launched in 2017 to take into account the first marketing of a post-Brexit crop. The performance of these strategies has been analysed in AHDB's Grain Market Daily publication and will continue to be until the end of the marketing season. The table highlights the approaches for 2017 and shows their respective advantages and disadvantages.



Strategy	What does it do?	Advantages	Disadvantages
Post-planting averager (PPA)	Sells loads evenly between planting and end of the marketing season	Helps avoid the lowest of the market lows	Limits the ability to capture the market highs
Post-harvest averager	Sells loads evenly between harvest and end of the marketing season	Carries more reward if the market rises	Carries more risk if the market falls
Protected forward	Sells two thirds of the forecast tonnage for a Nov-18 delivery, with a call for half of forecast tonnage	Uses the option as an insurance policy to capitalise on a market rise	Can fail to recoup option cost if not managed appropriately
Stop-loss accumulator	Tracks the market higher, then sells when price moves through a set trigger	Combats the psychology of waiting in a falling market	Will never capture the absolute highs of the market, can limit return on a big drop
Above-average averager	Tracks the average market value with a premium, makes a sale when the price meets it	All but guarantees achieving more than the average	Low volatility – will it reach the premium?
Sold by Brexit	Similar to the PPA, selling everything by 29 March 2019	Mitigates against the uncertainty of Brexit	What if the market booms after Brexit?
Forex trader	Tracks the value of sterling against the dollar, sells if sterling gets stronger by more than 5%	More trade in the currency market	Could prevent the strategy from benefitting on change in fundamentals

To achieve the best value for your crop, three key questions are vital:

- 1) Do you know your market? What is your market looking for? (ie variety, quality, quantity)
- 2) Do you know your margin? This is essential in determining what a 'good price' is
- 3) Do you know your limitations? (eg does storage impact what/when you can sell?)

The decision to market grain should always be a considered one. There are plenty of tools and sources of market information, which if understood and used correctly can help you receive the best return. Design strategies to react to the ever-evolving market, using the latest information. AHDB can be the source of much of this information, through publications such as Grain Market Daily, Market Report and the AHDB Cereals & Oilseeds website.

Grain marketing strategies are individual to the needs of your business and market and can help you maximise your return. Above all, you should ensure you grow and sell to your market, margin and storage requirements.

cereals.ahdb.org.uk/markets

REAL-TIME DISEASE REVOLUTION

Jason Pole, AHDB Communications Manager



A revolution in disease monitoring in agricultural crops is about to take place. Devices have been developed that can detect and alert farmers about the presence of airborne spores, before a disease even gets the chance to infect crops.

One such device, the 'DNA auto spore trap', has been developed as part of a recently completed AHDB project. Led by Rothamsted Research, in collaboration with the Burkard Manufacturing Company, the mains-powered trap processes high volumes of air and can efficiently collect spores as small as 4µm. Once gathered, the spores are forced open to release DNA for identification by a series of 'in-trap' laboratory tests. Information on the presence of spores is then beamed wirelessly to a server, thanks to an internal 4G router.

Jon West, who led the project at Rothamsted Research, said: "This technology is in its infancy, but its

“ This technology is in its infancy, but its potential power is incredible. The trap can test for the presence of up to three different pathogens in the sample each day. Weather data, collected by an on-board meteorological station, can also be sent by text every 10 minutes ”

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Several DNA-based methods to detect airborne spores of key crop pathogens were also developed or improved in the project. The pathogens that cause light leaf spot, sclerotinia stem rot, septoria tritici, rhynchosporium, eyespot and early blight can now be detected in spore traps, portable assay machines and diagnostic laboratories.

The researchers have also developed tests to detect for changes to fungicide insensitivity in the pathogen that causes septoria in wheat. At present, the tests, which identify populations with reduced sensitivity to DMI and SDHI fungicides, can only be used in laboratories.

CROPS MONITORED

When separate teams work on the same technological advance, it can indicate they are on to something big. Of course, all parties may not ultimately bask in glory (remember 'Betamax' and 'VHS'?). But a little competition can be healthy for the market.

The Fera Spore Sentry, which uses similar technology to the 'DNA auto spore trap', has been developed in an unrelated project (not funded by AHDB). The trap is already being deployed across a network set up by the AHDB-supported Crop Health and Protection Centre (CHAP). Eventually, data from such traps could become part of CHAP's CropMonitor service (cropmonitor.co.uk). The trap is also being trialled within the AHDB-supported Hands Free Hectare project cereals.ahdb.org.uk/hfh

HAVE YOU MONITORED OUR PEST INVESTMENT?

Jason Pole, AHDB Communications Manager



More chemistry has fallen foul of the approvals process this year. With some pest targets becoming resistant to what's left and the crop protection pipeline drier than a 2018 summer, it's no wonder interest in integrated pest management (IPM) has piqued. But IPM is a broad church and research funds are limited, so AHDB is asking people to complete a short survey to focus its investment in this area.

The ability to identify pest targets accurately and to know when they have gone, or are likely to go, above economic damage thresholds is at the heart of IPM. In 2014, AHDB published the 'Encyclopaedia of pests and natural enemies in field crops' to help crop walkers identify pests, as well as to inform them about risk factors, life cycle, monitoring, control thresholds, non-chemical control and insecticide-resistance status.

By the time pests have been observed in the field, however, the optimum time to spray could have been missed. This conundrum has fuelled investment in pest forecasts, risk models and monitoring services to provide a 'heads-up' warning of what pest pressures

might lie ahead. Some pest monitoring services, in fact, stretch back decades. The Rothamsted Insect Survey, for example, has tracked aphid migrations, via its UK network of suction traps, for over 50 years.

TIME FOR A REVIEW

Even though some pest monitoring services have been on the scene for longer than many can remember, it is important to review their relevance. Priorities change and new services appear.

The AHDB-supported Crop Health and Protection Centre (CHAP), for example, is 'updating and enhancing' monitoring activity for pests (and diseases) of wheat, barley, oilseed rape and potatoes. CHAP already uses its weather monitoring network, national pest and disease surveillance data and risk models to provide regular updates via cropmonitor.co.uk. Next year, CHAP plans to launch risk forecasting services too – which is likely to form part of a subscription service.

Farmers and growers can also share pest observation data more rapidly than ever before. AHDB Horticulture, for example, has coordinated a network of growers to help monitor diamond-back

moth populations with resistance to pyrethroids. The internet also provides another powerful sharing network. For example, any pest target, preceded by the hashtag symbol '#', can be entered into the search box of Twitter to reveal 'real-time' information on that pest.

With pests being monitored in so many ways, now is a good time to have your say on how AHDB invests in this area.

A hard copy of the AHDB Pest Monitoring Services Survey has been mailed to you with this edition of Grain Outlook. It can also be accessed via cereals.ahdb.org.uk/pestsurvey

RESISTANCE MANAGEMENT INFORMATION UPDATED

The Insecticide Resistance Action Group (IRAG) has updated its guidance. Available from the AHDB website, the updates cover brassica, cereals, oilseed rape and potatoes. A new publication, outlining the general principles of resistance management, has also been issued.

ahdb.org.uk/knowledge-library/IRAG

ERUCIC ACID RISKS IN OSR

Jason Pole, AHDB Communications Manager

Reports by crushers of elevated (higher than expected) levels of erucic acid in double-low oilseed rape (OSR) over the last three years have forged a unique partnership of industry stakeholders to investigate and eliminate the causes.

Elevated levels of the compound in rapeseed destined for food and feed markets can result in costly rejections or deductions. With a need for rapid action, the group has issued a set of guidelines to help farmers maintain low levels of the acid in their crops. The guidance is centred on five 'risk points':

- 1) **Seed source:** Farm-saved seed carries a risk as it can become contaminated with seed from volunteers. Erucic acid tests should be conducted on all seed sources before drilling
- 2) **Pre-planting:** After harvest, cultivations should be delayed (ideally, by at least four weeks) to allow OSR volunteers to germinate and be controlled
- 3) **Established crop:** Fields with OSR volunteers and erucic acid-producing weed populations should be identified, as they are at higher risk
- 4) **Harvest:** Poor segregation of crops also increases risk. Double-low OSR must be segregated from HEAR OSR and weed-prone crops at all times
- 5) **Contracts:** It is essential to read and understand any contract before it is signed. Sealed and labelled representative samples of all seed should be retained in case of any dispute

The guidelines contain further information on each risk point, including examples of how risks can be mitigated.

An AHDB-funded research project, due to complete later this year, is using accepted and rejected samples from crusher intake to refine erucic acid testing methodologies and assess the influence of other crop and weed species in close proximity to a double-low crop.

A DNA test is also being developed to analyse leaf samples for genes associated with erucic acid production.

The 'Guidelines to minimise the risk of erucic acid in double-low oilseed rape' and further information on the research project can be accessed via cereals.ahdb.org.uk/ea

ERUCIC ACID FACTS

For rapeseed oil to be used in food products, erucic acid levels must, by law, not exceed five per cent. The current maximum level is set to two per cent in most contracts.

The European Commission plans to lower the legal food standard for erucic acid to two per cent, which may come into force as early as autumn 2018.

With some UK OSR deliveries exceeding both the two and five per cent levels and standards set to become even tighter, the timely publication of these guidelines will help farmers meet standards and avoid penalties and rejections.



The following organisations contributed to the development of the guide:

Agriculture and Horticulture Development Board (AHDB)
Agricultural Industries Confederation (AIC)
The British Society of Plant Breeders (BSPB)
The National Association of Agricultural Contractors (NAAC)
The National Farmers' Union (NFU)
NIAB
The Seed Crushers and Oil Processors Association (SCOPA)

cereals.ahdb.org.uk/ea

UNITED OILSEEDS/AHDB JOINT SEMINAR
21 February 2019
Berkshire

GIVE WORMS A HAND

Jason Pole, AHDB Communications Manager

How to measure the health of a soil is a hotly debated topic. Certainly, it can feel like there are more ways to capture the condition of the earth than the 753 official soil types found across England and Wales.

Without doubt, measurement is a good thing. Testing the physical, chemical and biological properties of soils can reveal how they vary over time. If variation can be linked to changes in productivity, then a valuable picture can be built up to guide soil management decisions.

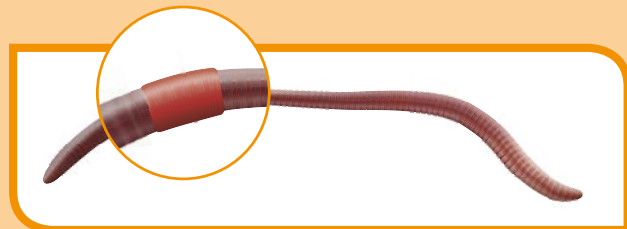
One biological test gaining traction is the measurement of earthworm populations. These tube-shaped soil dwellers engineer the soil environment and are associated with significant benefits to plant productivity.

Although high numbers are a good thing, it's not all about quantity. Quality counts and, hence, should be counted. Up to 10 earthworm species are commonly found in agricultural soils and these can be grouped into three ecological types: epigeic, endogeic and anecic – with each group having a unique and important function. So before you lift a spade and slice the soil's surface, take a look at this guidance to help identify your soil's populations.



AGE DISCRIMINATION

Before worm groups can be identified, it is essential to know the difference between the juveniles and the adults. It's much easier to identify adult worms, so the juveniles need to be discarded from any count. Mature worms can be spotted if there is a clearly developed 'saddle' – which is the reproductive ring (see image). It's important to note that size is not a good guide, as some very small (2cm) adult worms can be found.



Epigeic adults (litter-dwelling earthworms)



Small (<8cm), dark, red-headed, fast-moving worms. These play a key role in carbon cycling and are prey for native birds.

Endogeic adults (topsoil earthworms)



Small to medium, pale-coloured and green worms (not red) that often curl up when handled (green worms may emit a yellow fluid). These play a key role in soil aggregation and nutrient mobilisation. They represent the most common earthworm group found in arable fields.

Anecic adults (deep-burrowing earthworms)



Large size (>8cm), dark red or black-headed worms. These make deep vertical tunnels (up to 2m) and help improve aeration, water infiltration and root development. They forage the soil surface at night and are often found below surface earthworm casts or midden residue piles. Commonly found in grassland, they are often absent from ploughed fields and where there is no surface litter.

60-minute earthworm counts

Spring and autumn are the best times to assess earthworm populations, especially during warm and wet spells. Simply follow these steps:

1. Dig out a soil pit (20cm x 20cm x 20cm) and place soil on a mat
2. Hand-sort the soil, placing each whole earthworm into a container (have a bottle of water handy for cleaning purposes)
3. Count and record the total number of earthworms
4. Separate earthworms into adults and juveniles
5. Return juveniles to the soil pit
6. Count and record the number of each type of adult earthworm
7. Return earthworms to the soil pit and backfill with soil
8. Repeat steps 1–7, until 10 soil pits per field have been assessed (follow a standard W-shape field-sampling pattern)

Strategic Farm East baseline basics

This guidance has been adapted from the AHDB 'How to count earthworms' publication. Co-author Jacqueline Stroud, Rothamsted Research, recently conducted a baseline earthworm survey at AHDB Strategic Farm East.

- Autumn (mid-October) 2017
- 149 hectares
- 9 fields
- 180 soil pits
- 179 soil pits contained earthworms
- 148 to 364 earthworms per typical arable field
- 61 to 84% of populations made up of juveniles
- Endogeic (topsoil) earthworms dominant
- Earthworm number often reduced by more intensive cultivations

Find out more about the Strategic Farm East on pages 18–19.

The AHDB website contains a wealth of GREATsoils information, including the earthworm publication, worm count test video and earthworm recording sheet.

ahdb.org.uk/greatsoils

DRAWING A LINE **IN THE SOIL**

Emily Pope, AHDB Knowledge Transfer Manager



‘You’ve got to measure before you can manage,’ goes the saying. So, the first year of each Strategic Farm project is all about baselining. The aim is to find out the starting point for various aspects of the farmed environment, before any practical changes are made.

“ It could be useful to do earthworm function tests, such as litter cycling, to better understand how the earthworm community is functioning ”

From August 2017 to July 2018, Strategic Farm East host Brian Barker and the rest of the team, working together with researchers, looked at key areas of the farm near Stowmarket, including earthworms, soil structure and drain water.

EARTHWORM SURVEY

Brian and Jackie Stroud from Rothamsted Research carried out earthworm surveys from 1–20 October 2017 and 9–20 April 2018 across nine fields. Although the results showed an excellent distribution of earthworms – 99 per cent of soil pits contained at least one earthworm – the population was dominated by juveniles.

Jackie said: “It is normal to have a large juvenile population as earthworms can take months to a year to mature into adults; however, under poor soil conditions, some adults can revert to juveniles to survive. In this way it could be useful to do earthworm function tests, such as litter cycling, to better understand how the earthworm community is functioning.”

The earthworm community structure varied significantly between different establishment practices: fields that were direct drilled were associated with 1 million

more earthworms per hectare compared with any of the fields established using the plough or strip till drill.

See pages 16–17 for more on counting earthworms.

SOIL STRUCTURE SURVEY

Working with researchers from ADAS to assess the structure of the topsoil, Brian first identified areas of contrasting soil texture using electrical conductivity scanning. Within each sampling area, he then used a penetrometer to identify the range and depth of maximum penetration resistance; then carried out a Visual Soil Assessment (VSA) and Visual Evaluation of Soil Structure (VESS) for the areas with highest, middle and lowest penetration.

Using the VSA, ADAS found that 14 per cent of his field areas were in a good condition, with friable top soil and small-to-medium-sized clods. The worst VSA scores were in winter wheat fields cultivated to depth in 2016 and established in wet conditions in 2017.

The best VESS scores were found in fields under reduced tillage, although many of the ploughed fields also had good scores where cultivations had been carried out in fairly dry conditions.

DRAIN WATER ASSESSMENTS

For the third baseline assessment, Brian took soil samples every fortnight when land drains were running and sent them to Essex & Suffolk Water for analysis.

The analysis indicated that the use of cover crops could mitigate nitrate losses from soil. Brian also found that a well-established winter barley field saw less nitrate loss than a poorly-established second winter wheat field.

Knowing what comes off his land means that Brian is better able to manage this to reduce nitrate leaching over winter, ensure effective uptake of agrochemicals, reduce soil erosion and improve catchment water quality.

During the next five years of the Strategic Farm programme, Brian and his team will continue to monitor these areas as he puts research into practice.

OVER TO YOU...

AHDB and Strategic Farm hosts work together with researchers to develop practical ways for farmers to carry out their own analyses. Try these techniques on your own farm:

- Earthworm count
- Soil Assessment using VESS and VSA
- Nitrate testing



Water samples from field drains

Visit cereals.ahdb.org.uk/strategicfarms for information, Strategic Farm meeting dates and resources.

WHAT THE WORLD CAN TELL US

**Philip Dolbear, AHDB Knowledge Exchange Manager
and Mark Topliff, AHDB Lead Analyst**



During the last 60 years in the UK, we've slipped into a farming system which, in many cases, is unlikely to be financially sustainable without support. The current level of support is under review; we're facing a changing climate; we're losing much of the chemical artillery; and pressure to protect the natural environment increases every year.

On many farms in the UK, if you exclude any support payments, total costs exceed revenue. Although we're getting relatively high yields, we're often not seeing the benefits reflected in net margins.

Why? Enter: international benchmarking

Last year, AHDB joined a network run through agri benchmark in Germany, which compares data coming from typical farms in countries around the world producing cash crops. The data in this network means that we can compare costs across a number of different countries, sectors and parameters.

There's a whole raft of financial and physical factors we can look at: yields; nitrogen usage; soil type; number of crop protection applications; cost per tonne; cost per hectare; breakdown of operational costs and more.

We can compare and contrast many parameters to find out whether we are outperforming our competitors in similar climates.

Early analysis of the wheat data raises some vital questions

In the UK, our labour and machinery costs per hectare are higher than France, Russia, the US, Ukraine, Argentina and Australia, and that's probably our most significant challenge. Is our obsession with yield and our reliance on the Basic Payment Scheme (BPS) to blame? Or are we simply investing too much in kit?

It's a balancing act, to some extent. Could we aim for slightly lower yields in order to lower costs and improve margins? Or should we be removing the consistently poor-yielding areas from production?

Using international benchmarking data, we'll be able to learn from other countries' experiences, especially those with the same climate and scale as the UK. We can dig down into the differences between the countries and why they exist. And, perhaps more vitally, we can look at skills, techniques and systems that are giving farmers in other countries success.

There might be something that we could change to improve our margins, even if it's not improving yield. For example, Australian wheat really suffers from climate volatility, but they are still producing a margin over costs when you look at their five-year averages.

Most of all, it seems we've got to change mindset. Is the BPS affecting the way we approach our businesses?

International benchmarking is becoming more important since Brexit reared its head. We need to know our competitive advantage and understand where the UK sits on the world stage.

A final word: rule nothing in or out

Be aware that yield is not everything. Start with a blank canvas.

To find out more about international benchmarking, get involved with your local Arable Business Group using AHDB's Farmbench and look out for reports from the Monitor Farm conference.

cereals.ahdb.org.uk/ABG





FARMERS
WEEKLY

SOILS IN PRACTICE



Best practice boosting soil fertility

8 NOVEMBER 2018 | EUSTON ESTATES, SUFFOLK

Soil is an absolutely fundamental consideration for every farmer. Attend Soils in Practice 2018 to learn from experts on the topics of measuring a 'healthy soil', compaction, soil management techniques, cover crops, organic matter and much more.



To find out more and register visit: fwi.co.uk/soilsinpractice

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FOUR FARMS, FOUR BARLEYS



In the last edition of Grain Outlook (summer 2018), we reported on a Monitor Farm investigation into how heritage or non-UK spring barley varieties compare to on-farm standards, under very different conditions around the UK.

The four varieties in question were Golden Promise, Fairing, Anneli and Brage, and the four farms doing the try-out were in Shetland, Cornwall, Hampshire and Northern Ireland. Each variety was compared to a spring barley variety typically grown (the control). All the barley grown went to feed.

Local weather patterns and soil conditions can be seen on AHDB's WeatherHub – cereals.ahdb.org.uk/weatherhub

Jason Pole, AHDB Communications Manager, said: "Only varieties with a good 'balance of features' make it on the Recommended Lists (RL). These try-outs provide a simple way to look at a broader stock of varieties. Conducted in a challenging season, some of the strengths and weaknesses of the underpinning genetics have been revealed."

Throughout the season, many of the farmers shared updates on social media or at Monitor Farm meetings, documenting the ups and downs of the year. Here's what they said at the end of harvest:

RICHARD ORR, MEADOW FARM, DOWNPATRICK, NORTHERN IRELAND

The four varieties eventually established well, but the extremely dry weather took its toll. Between drilling on 22 April and the start of July, we had only 18mm rain – we'd usually get three or four times that. So it's hard to compare on a five-year average with our usual variety, Planet.

We harvested on 17 August and the Brage did exceedingly well, yielding 8.03t/ha, which was the best out of the four try-outs and better than the Planet, which did around 5.56t/ha. Neither the Brage nor the Anneli lost their tillers in the poor weather, which helped with the yield.

But it's important to bear in mind the end market. So although this year the Golden Promise here didn't yield as high as the other varieties, if we compared the yield and price per tonne and if we had an end market, it would be a very attractive option.

Although it was a low year for disease pressure, our plot of Fairing showed more signs of disease than the others, so I'd probably worry about growing it in a year when the pressure was high.

It's very interesting to compare the different traits in each variety, seeing them side by

side in the field. Farm try-outs like this are very worthwhile – trial and error is the best way to learn.

HOWARD EMMETT, TREGAIREWOON FARM, CORNWALL

All four varieties were quite easy to manage because of the season we had. They were planted and managed as per our usual regime; sown at a rate of 180kg/ha, with two fungicide treatments and no plant growth regulator (PGR). We saw little disease.

In hindsight, we should have used PGRs. But when we were at application time we'd had no rain and the crop wasn't very high, so we didn't think there was much of a risk. However, our Golden Promise plot lodged badly and we didn't see the yields we might otherwise have done.

We harvested mid-August and, compared with the rest of the farm, yields were OK. Our control variety, Sienna, did 6.91t/ha. The others were Golden Promise, 7.06t/ha; Fairing, 6.69t/ha; Anneli, 6.32t/ha; Brage, 5.58t/ha.

It was interesting to do this try-out and as a Monitor Farm host I think it's important to do these experiments. At our meetings in the winter we'll be able to discuss the results in more detail and look at samples too. Definitely a worthy exercise!

KIRSTY AND AIMEE BUDGE, BIGTON FARM, SHETLAND*

The season for us was unusual, with very low rainfall and low wind speed. This made for low disease pressure – clearly visible on our control variety, Waggon, which received no fungicide application yet was clean.

Our yields, all for 15 per cent moisture content, were: Fairing, 5.25t/ha; Brage, 4.95t/ha; Anneli, 4.82t/ha; Golden Promise, 4.35t/ha. At the time of writing, we hadn't yet baled the straw, but it was looking like Anneli had the best straw yield. Waggon yielded 4.66t/ha.

All of the varieties had similar disease pressure to Waggon, although the Golden Promise showed susceptibility to mildew. The try-out varieties got fungicide, which Waggon did not, and they got more fertiliser.

Waggon had the best resilience to the weather, followed by Fairing, Brage, then Anneli which had started to lodge, and Golden Promise had the worse resilience to weather. The Brage had started to lodge, but it stood well for the heavy head and taller straw compared with the other varieties. Golden Promise was lodged, but this could have been cut a week earlier, so that might be the effect of our management rather than the variety.

The only unusual thing was that Fairing was slow to germinate but tillered well and caught up with the rest of the varieties.

I think we would grow all the varieties again – apart from Golden Promise – as they have the potential to give us a good return, as long as the seed was not more expensive than our usual Waggon. It was interesting to see the different characteristics of the varieties, but it was an unusual year weather-wise, so we will not be basing our full barley strategy on these results.

DAVID MILLER, WHEATSHEAF FARMING, HAMPSHIRE

For the try-out field, our control was Propino. Interestingly, there was a lot less disease on the four heritage/foreign varieties than the rest of the field, although they all received the same treatment.

I think it's confirmed what we already thought about these alternative varieties: they're a good option for managing disease pressures, and it's made us think about the valuable genetics in the heritage varieties.

I'm also fairly convinced that the older varieties rooted better as they withstood the drought better than the newer ones.

Our five-year yield averages for spring barley are usually around 7.00t/ha, although the last two years in our area have been difficult. In this try-out, our yields were: Anneli, 6.69t/ha; Brage, 6.30t/ha; Golden Promise, 6.14t/ha; Fairing, 5.85t/ha.

cereals.ahdb.org.uk/monitorfarms

It is important not to make conclusions on results from individual sites or individual years. Five-year averages should be used, as they provide a much better guide to variety performance.

*The Shetland Monitor Farm is one of nine Monitor Farms in Scotland as part of a joint initiative by Quality Meat Scotland (QMS) and AHDB Cereals & Oilseeds with funding from the Scottish Government.

THE BENEFITS OF SHARING EXPERIENCE: MONITOR FARMS 2017-18

2566

Total Monitor
Farm participants



KEY CROPS

WHEAT
BARLEY
OILSEEDS
OATS



78

 meetings
in a year

The Monitor Farm group:

- 64% Local Farmers
- 11% Agronomists
- 9% Monitor Farm hosts and steering group
- 5% Trade and processors
- 11% Other



2/3

 attendees travel
20 miles or less

Benefits of the Monitor Farm programme:



- A good use of time: **95%**
- Meeting topics relevant to my business: **92%**
- A valuable opportunity to share experience and openly discuss issues in a non-commercial environment: **90%**

Monitor Farm helped me:



- Improve my technical knowledge: **81%**
- Identify ways to improve my business: **78%**
- Improve my business decision-making: **67%**

The **3** MOST IMPORTANT aspects of the programme



- Locally relevant
- Independent
- Farmer-led agenda

Major improvements made on farms include:

- Benchmarking costs
- Increased attention to detail
- Monitoring soil health
- Widened rotation



FILLING MOROCCAN BISCUIT TINS

Dorit Cohen, AHDB Export Marketing Executive

Millers and bakers from eight private companies, who together control approximately 70 per cent of Morocco's wheat imports, sampled UK flour at a baking workshop in Casablanca in June.



This baking workshop event is part of AHDB Exports' broad effort to maintain market share of **uks** biscuit-grade wheat in the Moroccan market. Morocco relies on imports for its 50,000 tonne requirement for this grade wheat as there is no domestic production of biscuit wheat.

The aim of the workshop was to demonstrate the suitability of **uks** for a range of biscuits and baked goods, with food technicians from Campden BRI on hand to advise delegates on how to get the best possible results when using **uks** varieties.

uks wheat is already widely known in the Moroccan market, even among millers who have never used it. Word of mouth plays a key role, with many hearing positive feedback from existing **uks** users and millers.

One of the baking workshop attendees, Youness Taoussi, said: "I'm very impressed by the traceability and assurance schemes in the UK and the rigours of UK wheat production. It's clear that food safety is very important in the UK."

Excellent results were obtained for chocolate chip cookies, widely consumed by the higher-income population. A soft extensible flour is required and **uks** flour was found to be ideal.

In Morocco, the main suppliers of biscuit wheat are the US and, to a lesser extent, the UK, supplying Soft Red Wheat (SRW) and **uks** respectively. Buying choices are ultimately determined by price, however, and small quantities of French biscuit wheat are also sometimes imported if it is highly competitive on price.

The long storage period for imported soft wheat (five to six months) either at port or in store in Morocco means that a low moisture content (under 14 per cent) is preferred. While **uks** wheat is often favoured over American SRW or French biscuit wheat because of its low P/L value and excellent elasticity, the higher moisture content is sometimes a concern to millers.


Biscuit consumption in Morocco is increasing and demand for biscuit wheat imports is likely to increase with the emergence of more biscuit factories in Morocco. Multi-layer wafers, Oreo-type biscuits and soft chocolate cookies are in the most demand among consumers in Morocco.

The UK has been a regular supplier of wheat to Morocco, with a ten-year average volume of 31Kt and a trade value of more than £5 million (2007/08–2016/17).*

With the recent launch of new **uks** varieties, if market and trade conditions are favourable, the UK is ready to continue its good relationship with Morocco.



* Source: IHS Maritime & Trade
— Global Trade Atlas © – HMRC



“ Having learnt about the good quality of UK wheat and barley following our meetings with UK industry representatives, establishing a trading relationship with the UK is important, so we can have more multiple-origins choices and reduce the need to rely on our current suppliers ”

STERILE BROME: **THE SPANNER** **IN THE WORKS**



Screening UK sterile brome for herbicide resistance. Some UK populations are now reported as being less sensitive to glyphosate.

Last December, sterile brome was rated as the second most problematic grass weed in the UK, after black-grass.

Big, bad sterile brome causes headaches around the country, but not just for farmers.

An unexpected impact of brome's perceived rise in prevalence has been on our ability to export to China.

In 2015, after years of work, AHDB successfully negotiated a protocol allowing the UK to export barley to China – a business which could be worth over £20m a year.

Fast-forward to 2018, and the level of exports hasn't been as enthusiastic as the industry might have hoped. What happened? Sterile brome.

The trade protocol specifies a zero tolerance for the weed, but UK exporters say the strict rules are holding trade back.

The wording of the barley protocol, as it is, stipulates that any consignment of barley should be 'free from quarantine pests and weeds'. While UK exporters have integrated pest management systems in place to minimise pests and weeds, striving for zero and actually removing everything would be a struggle.

Given that a shipment of barley could be rejected should the merest trace of sterile brome be found, it is currently very difficult for exporters to comply with the protocol.

AHDB Exports is now working with the Chinese plant health authorities (GACC) in Beijing to try to agree an accepted tolerance level for sterile brome seeds present in shipments of barley, in order to facilitate trade between the UK and China.

It's now down to the UK and AHDB to present scientific justification to the Chinese authorities as to the need for a sterile brome tolerance level, rather than a zero-presence policy.

The opportunity for UK cereal exports to China, despite these technical difficulties, looks promising at the moment.

The International Grains Council is projecting that China will import 8.8Mt of barley in the 2018/19 season, up from the previous four-year average of 7Mt. Around three quarters of these imports are for feed, and one quarter for malting.

Australia is China's main supplier, with the remainder sourced from France and Canada for both malting and feed. Ukraine is also an important supplier of feed barley.

Gloria Wu, Import/Export Commercial manager at Shenzhen Four Gardener Grain, said: "Having learnt about the good quality of UK wheat and barley following our meetings with UK industry representatives, establishing a trading relationship with the UK is important, so we can have more multiple-origins choices and reduce the need to rely on our current suppliers."

With drought reigning in Australia at the moment, Chinese buyers are looking elsewhere for their barley supplies. Could the UK help fill the gap?



EXPORTS HOTSPOTS

Growers within 80 miles of a port are ideally located to supply the export market.* With opportunities for all grains in EU and non-EU countries, your local market could be anywhere in the world.

Step-by-step guide to growing milling wheat for exports

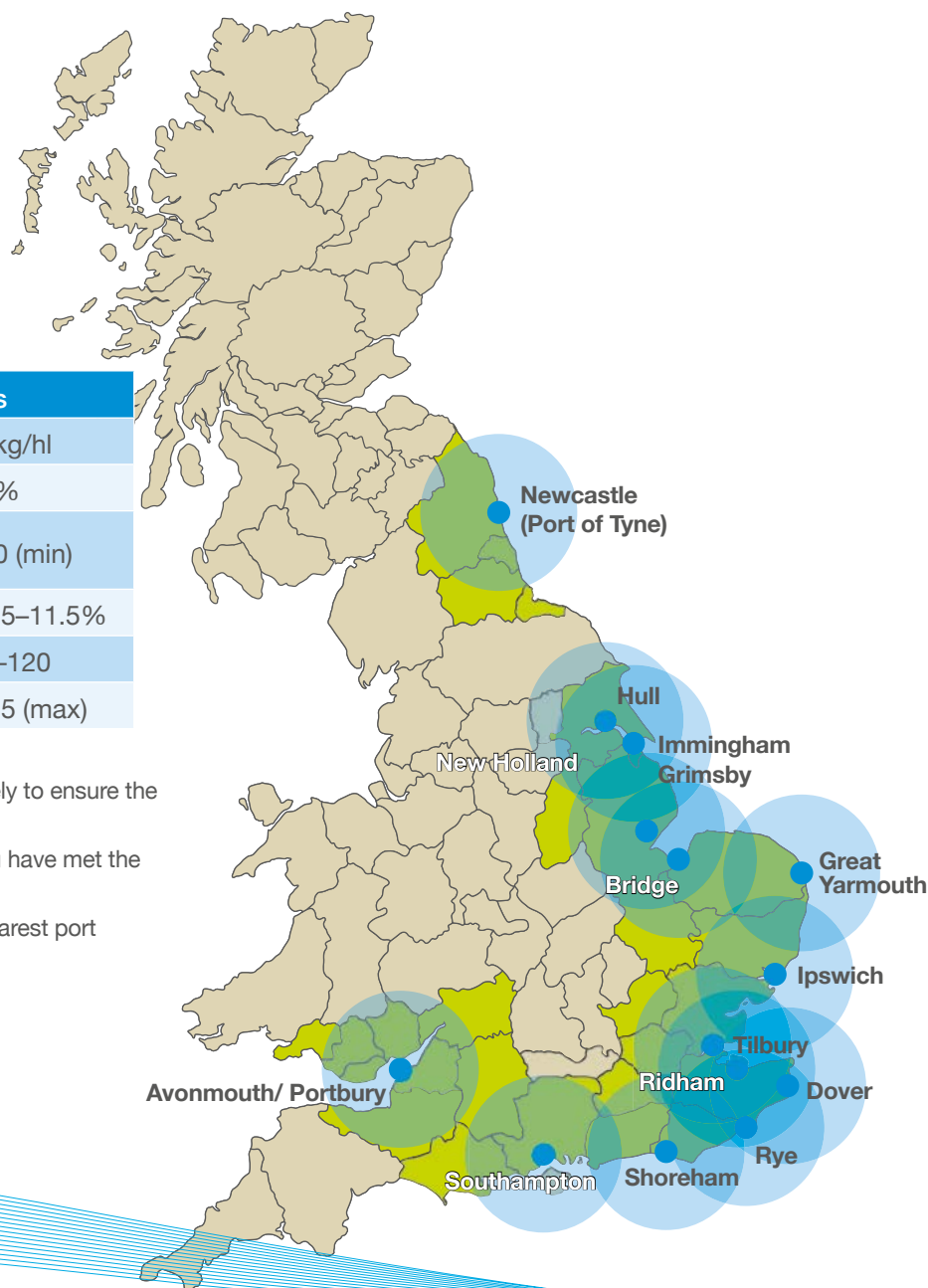
1. Selection: choose a **ukp** or **uks** variety which will grow well on your farm
2. Testing: test your grain to ensure it meets the right specification at harvest

Typical export specifications

	ukp	uks
Specific weight	76kg/hl	75kg/hl
Target moisture	14%	14%
Hagberg Falling Number (s)	250 (min)	220 (min)
Protein	11–13%	10.5–11.5%
W	170 (min)	70–120
P/L	0.9 (max)	0.55 (max)

3. Storage: store your grain for export separately to ensure the integrity of the **ukp** and **uks** classifications
4. Marketing: ensure your merchant knows you have met the export specification
5. Loading: consider the distance from your nearest port

For further information on export varieties, visit cereals.ahdb.org.uk/exports



*IQUBE, 2013/14

REAPING REWARDS: IN YOUR AREA

North and Northern Ireland

Judith Stafford, Knowledge Exchange Manager
judith.stafford@ahdb.org.uk 07891 556623



BECOMING MORE EFFICIENT AND RESILIENT

AHDB's first Monitor Farm host in Northern Ireland, Richard Orr, is continually trying to make his business more efficient and resilient to cope with the unexpected.

"For the last 15 months, every month the weather has been opposite to what we want," Richard said.

AHDB WeatherHub shows that this year Northern Ireland had more dry days between May and June than ever recorded. There were 45 dry days in this period and the longest dry spell was 19 days.

The unpredictable weather encouraged Richard to look at alternatives to spring barley in his rotation as he noticed it performed inconsistently: "It's either very profitable or a really poor crop," he said. After hearing that rye performed more consistently in different weather conditions, he decided to give it a go.

Although the dry weather meant that he yielded only 30t/ha in fresh weight, rather than the 38t/ha he'd anticipated, Richard still got a small return on the crop. "You can't base a judgement on one year, so I will try it again," he said.

All of the rye was pre-sold to a local anaerobic digestion (AD) plant, and as a supplier Richard was offered first refusal of digestate. He gladly accepted, as good soil health and structure is one of his main strategies for coping with varied weather. Richard said: "I try to get the soil in the best condition possible so it can withstand weather extremes, be it drought or excess rainfall."



Richard's soil management plan also includes using cover crops and minimal cultivations across the farm business. He has noticed improved soil structure since using a one-pass system for potatoes. Every eight years, land goes back into grass for five years.

For more information and to keep up to date with Richard's journey, visit cereals.ahdb.org.uk/downpatrick

DATES FOR YOUR DIARY

Agronomy 2019

- 12 February 2019, Northallerton
cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- Warrington: 6 November 2018
- Saltburn: 8 November 2018
- Downpatrick: 27 November 2018
- Warrington: 13 December 2018
- Saltburn: 13 December 2018
- Downpatrick: 8 January 2019
- Saltburn: 17 January 2019
- Warrington: 23 January 2019
- Downpatrick: 19 February 2019
- Saltburn: 28 February 2019
- Downpatrick: 5 March 2019
- Warrington: 7 March 2019

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REAPING REWARDS: IN YOUR AREA

West and Wales

Richard Meredith, Knowledge Exchange Manager
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CAN ESTABLISHMENT COSTS BE REDUCED WITHOUT COMPROMISING YIELD?

For the past two years, Herefordshire Monitor Farm host Russell Price has done oilseed rape establishment demonstrations which seemed to show direct-drill crops performing fractionally better than those conventionally drilled. Since then, he's been further investigating how to reduce his establishment costs without compromising his crop yield or profitability.

Over the 2017/18 season, Russell compared six establishment methods for a crop of Sundance wheat at his farm near Ledbury. The crop was drilled on 12 October 2017 into medium-heavy clay loam. The field average was 11.56t/ha. Russell applied 240kg/ha nitrogen and 5t/ha turkey litter.

Russell said: "My main conclusion is that it is not all just about the drill: you need to have the correct machinery in your armoury to allow the drill to work to its best advantage. You cannot simply buy a direct drill and expect it to perform miracles: you need two or three years of planning to get you there."

Find out more about the Monitor Farm at cereals.ahdb.org.uk/hereford2017

Primary cultivator	Secondary cultivator	Labour	Cost	Yield
Plough	Disc drill	0.75hours /ha	£122 /ha	12.25
Trio cultivator	Combination drill	0.7 hours /ha	£129 /ha	11.97
Stubble cultivator	Direct drill	0.35hours /ha	£85 /ha	11.76
Plough	Combination drill	0.96 hours /ha	£135 /ha	11.71
Stubble cultivator	Strip till drill	0.4 hours /ha	£90 /ha	11.46
Trio cultivator	Disc drill	0.5hours /ha	£115 /ha	11.11

DATES FOR YOUR DIARY

Agronomy 2019

- 5 February 2019, Malvern
- 12 February 2019, Cowbridge

cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- Pembrokeshire: 7 November 2018
- Hereford: 14 November 2018
- Bridgnorth: 21 November 2018
- Pembrokeshire: 5 December 2018
- Hereford: 12 December 2018
- Pembrokeshire: 9 January 2019
- Hereford: 16 January 2019
- Bridgnorth: 23 January 2019
- Pembrokeshire: 6 February 2019
- Hereford: 13 February 2019
- Bridgnorth: 20 February 2019

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REAPING REWARDS: IN YOUR AREA

South West

Philip Dolbear, Knowledge Exchange Manager
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MORE FROM LESS?

Truro monitor farmer Howard Emmett has been using cost of production figures generated from AHDB Farmbench to evaluate the profitability of his arable rotation and reconsider his future strategy.



Spring crops play an important part in Howard's rotation for many reasons, including weed control and labour and machinery resource management. However, there are parts of the farm where profitable spring cropping is challenging, due to gradient and soil type. The drought conditions of 2018 further compounded this.

Spring barley and oilseed rape are generating gross margins barely adequate to cover the business' fixed costs (spring barley averaging 6t/ha and oilseed rape 2.7t/ha, with prices of circa £130/t–£150/t and £300/t, respectively). This is despite Howard's own labour and machinery, which, although providing plenty of capacity, is owned and well depreciated.

With a double spring cropping break, the gross margin generated over two years is just over £1,000/ha. Working with Becky Hughes, Cornish FWAG adviser, Howard has therefore been contemplating growing low-input spring barley (assume two thirds gross margin), attracting £266/ha on the Mid-Tier Stewardship Scheme and then following this with the overwintered stubble option, £436/ha. This would remove the more unreliable spring OSR from the rotation and give a good early entry (1 August) back into winter cropping.

It is estimated that this will generate a similar but more reliable and less risky gross margin over the two years but enable fixed-cost savings (given family labour and owned machinery) to boost net margin in the period. One concern is the cost of the clean-up operation after the stubble period. Another is that the prospects for spring crop arable margins along with straw income are now better and more competitive. However, the alternative option is still a consideration for Howard, which could help negate the loss of BPS and take the pressure off his time at peak workload periods.

Find out more at cereals.ahdb.org.uk/truro

DATES FOR YOUR DIARY

Agronomy 2019

- 27 February 2019, Swindon
cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- Truro: 1 November 2018
- Malmesbury: 5 November 2018
- Blandford: 7 November 2018
- Taunton: 13 November 2018
- Malmesbury: 3 December 2018
- Blandford: 11 December 2018
- Taunton: 12 December 2018
- Truro: 13 December 2018
- Malmesbury: 5 February 2019
- Blandford: 6 February 2019
- Truro: 7 February 2019
- Taunton: 13 February 2019
- Malmesbury: 4 March 2019
- Blandford: 6 March 2019
- Truro: 7 March 2019
- Taunton: 13 March 2019

cereals.ahdb.org.uk/monitorfarms

REAPING REWARDS: IN YOUR AREA

South East

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CALCULATING THE COST OF CONTRACT DRYING

Petworth Monitor Farm host, Mark Chandler, has just completed his third harvest contract drying. In 2016, he bought a new grain dryer for his own crops and those he contract farms. Before he made the purchase, he carefully worked out the advantages that this would add both to him and his business. It was a 'calculated risk'.



A calculated risk is about knowing the probability of success together with the potential consequences associated with it being successful or not. You have to do your homework – you have to know business costs, objectives and goals.

Exhausted from working 24 hours a day during harvest, Mark knew he had to do something to improve his quality of life and stay safe. He costed out various possibilities, including holding bins, third-party options and purchasing a new dryer as a 25-year investment.

He decided that purchasing a self-filling, self-emptying dryer would be best for his business in the long term. The dryer is automated so can work 24 hours a day: it can cope with a much higher grain flow with less labour. Mark said: "We grow Group 1 wheat, so drying is important for quality – having a dryer means I don't have to pay for haulage costs and neither do the other farmers in the area."

He factors in the total acreage going through the machine and charges each contractor a flat rate, including himself. He then charges a fee for every percentage dried.

Even after a particularly dry season, Mark isn't regretting his decision. "I've not really had an income from it this year because it's been so dry, but I know it will balance with other years."

Last year, everything Mark dried was about 22 per cent moisture. "But it's hard to judge it based on one season," he said.

Buying the dryer meant Mark tightened his belt, reallocating money that would have been spent on replacing machinery. "It's made me re-evaluate my machinery replacement policy – we have been replacing too soon."

Keeping his machinery longer has meant Mark improved his depreciation costs.

Costing out various options gave Mark confidence in his investment. He was able to make his business more efficient and increase the capacity to cope with two combines running simultaneously without creating a bottleneck at the drying stage.

Assessing business costs is an important discussion in Monitor Farm meetings.

For more information, visit
cereals.ahdb.org.uk/monitorfarms

DATES FOR YOUR DIARY

Agronomy 2019

- **27 February 2019, Swindon**
cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- **Basingstoke: 31 October 2018**
- **Sittingbourne: 13 November 2018**
- **Basingstoke: 27 November 2018**
- **Petworth: 6 December 2018**
- **Sittingbourne: 11 December 2018**
- **Basingstoke: 16 December 2018**
- **Petworth: 24 January 2019**
- **Sittingbourne: 29 January 2019**
- **Sittingbourne: 19 February 2019**
- **Basingstoke: 27 February 2019**
- **Petworth: 28 February 2019**

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REAPING REWARDS: IN YOUR AREA

East Anglia

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LABOUR AND MACHINERY: BALANCING COST AND BENEFIT

Simon Brock, Dereham Monitor Farm host, has used the results of a Monitor Farm labour and machinery review to analyse his costs in a new light. Simon is responsible for 966ha of arable



cropping at Swanton Morley Farms. The farm runs a long rotation on the sandy clay soils which includes wheat, barley, oilseed rape, beans and sugar beet.

The review for Swanton Morley Farms showed that, at £430/ha, Simon's arable labour and machinery costs were close to the whole Monitor Farm average of £424/ha.

Simon is able to keep his costs down with a horsepower per hectare figure of 1.41HP/ha – much lower than the Monitor Farm average of 2.08HP/ha. He puts this low figure down to his simple cultivation system, meaning he only needs two main tractors: one for the cultivator and one for the drill. This, along with a balance of winter and spring cropping and simple OSR establishment with a flatlift subsoiler, has meant that there are no large peaks for horsepower requirement across the year.

One of the review's key recommendations for improvement was to consider the labour profile and to 'maximise the productivity of all staff'.

Simon said: "I always knew my labour costs were too high. However, one of our employees has recently retired, which has reduced our full-time farm staff from three to two and has brought our costs in line."

New for this year, Simon has a local agricultural student helping out for two days a week and during harvest.

"This worked well for the student as they have gained a lot of practical farm experience, while we have had the benefit of training them to our standard and being able to employ them in our busy season."

Join us at our Monitor Farm meetings in East Anglia over the winter to look in more detail at the review results and do the calculations for your own business.

Find out more at cereals.ahdb.org.uk/dereham

DATES FOR YOUR DIARY

Agronomy 2019

- 7 February 2019, Bury St Edmunds

cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- Chelmsford: 9 November 2018
- Duxford: 16 November 2018
- Dereham: 27 November 2018
- Chelmsford: 14 December 2018
- Duxford: 17 December 2018
- Dereham: 18 December 2018
- Chelmsford: 11 January 2019
- Duxford: 18 January 2019
- Dereham: 22 January 2019
- Chelmsford: 8 February 2019
- Duxford: 15 February 2019
- Dereham: 5 March 2019

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REAPING REWARDS: IN YOUR AREA

East Midlands

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NO TILL: EVOLUTION, NOT REVOLUTION

With an increased interest in no-till and low-disturbance crop establishment, can we afford to do it for the right reasons?

Back in the 1970s, no-till drilling was adopted for purely economic reasons, principally driven by the oil crises of '73 and '79. After a study trip to Finland, I noticed that margins are so tight there that no-till is a necessity rather than a management choice.

Reducing passes reduces costs, but those costs savings can be lost by the desire to purchase a very expensive drill and tractor to perform the task.

At the Newark Monitor Farm, John Miller is considering just that. With a range of soils, from clay to riverbed silts, could John adopt a system of establishment that copes with all soil types in a range of conditions with only one pass? The no-till evangelists would say you can. But the farm needs to remain viable.

In Finland, no-till drills use a simple feed mechanism to keep the purchase price down and are built to work in both no-till and cultivated ground. No need for two drills – disc and tine based – just the one drill for all situations. If a tine is needed, a separate operation is carried out at a more appropriate time. These drills are not available in the UK. Should they be? Is the original objective to save money by system change rather than turn over more money?

A conventional linkage-mounted 3-metre seed drill costs between £12,000 and £15,000. A typical 3-metre no-till drill available in the UK can cost £30,000 to over £50,000 and beyond. So some hard-line calculations are needed to ensure the change is for the right reasons. Only you can make that decision to reduce cultivation passes without harming yield to such a point that you are now losing money. It is a balancing act and always will be.

Signing up to AHDB's benchmarking service Farmbench is a great first step. Get your cost of production and gross margin understood, and then join a benchmarking group. It's a case of evolution rather than revolution on the farm. No-till farming could still be the preferred option, but at least you've entered the system with your financial eyes open.

Find out more at cereals.ahdb.org.uk/newark



DATES FOR YOUR DIARY

Agronomy 2019

- 15 January 2019, Lincoln
cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- Newark: 9 November 2018
- Brigg: 15 November 2018
- Northampton: 27 November 2018
- Newark: 12 December 2018
- Northampton: 18 December 2018
- Brigg: 20 December 2018
- Newark: 16 January 2019
- Northampton: 22 January 2019
- Brigg: 24 January 2019
- Newark: 13 February 2019
- Northampton: 19 February 2019
- Brigg: 21 February 2019

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REAPING REWARDS: IN YOUR AREA

Scotland

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MAKING THE MOST OF A MIXED FARM



The need to maximise the return from a finite area of land has long been an issue for farmers across the UK, and it's one challenge that our Angus Monitor Farm has embraced wholeheartedly.

Mill of Inverarity is run by husband-and-wife team Rob and Alison Stodart, with their two sons Rory and Tom. The Stodarts farm 358ha over two separate units and their enterprises include cereals, suckler cows and sheep.

Over the past two years, the family has almost doubled their sheep numbers on-farm (from 400 to 700) and they have had to get creative to feed their growing stock without decreasing their cereal area or renting pasture. This resulted in undersowing various grass mixes with spring barley to see which would still

result in a strong spring barley yield while producing enough grass to feed sheep over winter.

Rob Stodart explained: "It is all about making the most of our resources. We're a classic mixed farm. We have livestock and arable and only so much land and we do not want to see it sitting unproductive for half the year."

Seven separate grass treatments were sown just days after the spring barley was drilled, including three different seed rates of Italian Ryegrass Meribel (at 5.6kg/ha, 8.4kg/ha, 11.2kg/ha), two types of perennial ryegrass, as well as distinct sections of Timothy and Cocksfoot grass. The final zone comprised the control, which was just spring barley with no grass undersown.

Across all seven plots, there was a spring barley yield reduction of between 0 and 0.94t/ha when compared with the control. The Italian Ryegrasses saw the greatest decrease in yield, yet gave the greatest grazing time, while the Timothy and Cocksfoot barely affected the barley yield thanks to poor grass growth.

The alternative to undersowing spring barley with grass and grazing after

harvest for the Stodarts would be to rent grazing from neighbouring farmers at a rate of around £0.45/head/week. When the costs of the undersown system were compared with renting grazing land, it was found that the Italian Ryegrass, despite the increased cost, provided the largest amount of grazing for the ewe flock.

Rory said: "While we have decreased the spring barley yield, we have saved money through gaining the extra grazing space. The area also qualifies for EFA payments and I'd far rather use the land productively than let it lie fallow."

"Not only that, but I think next time we plant spring barley on that land we will see an improvement in yield, due to the additional nitrogen the sheep manure will have supplied."

The experiment has been such a success that the family have undersown with Meribel again this year and plan to continue to do so.

Mill of Inverarity is part of the Monitor Farm Scotland initiative, managed by Quality Meat Scotland (QMS) and AHDB Cereals & Oilseeds.

DATES FOR YOUR DIARY

Agronomy 2019

- Scottish Borders: 8 January 2019
- Perthshire: 10 January 2019
- Aberdeenshire: 15 January 2019
- Inverness-shire: 17 January 2019

cereals.ahdb.org.uk/agronomy2019

Monitor Farm meetings:

- Angus Monitor Farm: 1 November 2018
- Lochaber Monitor Farm: 1 November 2018
- Borders Monitor Farm: 7 November 2018
- Morayshire Monitor Farm: 4 December 2018
- Sutherland Monitor Farm: 4 December 2018
- Angus Monitor Farm: 13 December 2018

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AHDB Agronomists' Conference 2018

4 and 5 December, Kettering



A conference designed to make people think a little differently about agronomy.

The 2018 event features speakers on cereals, oilseeds and potato production and also field vegetables, peas and beans.

1-day ticket: £49 + VAT

2-day ticket: £89 + VAT

All ticket options include refreshments, lunch and dinner.

Booking and information

cereals.ahdb.org.uk/agconf events@ahdb.org.uk

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