

ARABLE FOCUS

THE JOURNAL FOR THE POTATOES, CEREALS & OILSEEDS INDUSTRY



Net closes in on barley blotch

Research reveals the importance
of species-specific diagnosis

TACKLING THE APHID CHALLENGE

AHDB Strategic Potato Farms trial new approaches to control

Fact-finding with field labs

Research-into-practice rules
rewritten by Innovative Farmers

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Welcome

Letters from the AHDB team

Due to Covid-19, people have had to think for the longer term. For Cereals & Oilseeds, the announcement of HB4 wheat's approval in Argentina using modern breeding technology was just that.



The HB4 trait is important in tackling drought, providing drought resistance, and it can produce a yield increase of 20%. It is crucial that such a major exporting country is following the science behind the breeding.

The importance cannot be overstated, for two critical reasons. Firstly, it is a positive signal that plant genetics are vital to sustainability and crop resilience. Secondly, it tackles the world's single biggest yield-limiting factor.

Although as a trait it probably doesn't have relevance to the UK, extreme dry periods are occurring more frequently. From a regulation perspective, it is certainly relevant to the UK through the potential to welcome new breeding techniques.

The intention in Argentina is that HB4 will be grown and marketed for human consumption. This will certainly fuel debate across global supply chains, and their market will depend heavily on consumer acceptance and their perception of benefit.

At the beginning of an undoubtedly challenging year, such a development provides a sense of optimism regarding the discovery of innovative solutions to crop growing.

Paul Temple

AHDB Sector Chair for Cereals & Oilseeds

So much in the world was up in the air as we started to put this edition of Arable Focus together. We're all waiting for life to get back to normal after the coronavirus pandemic, but nobody knows what that new normal will look like. We've all had to adapt to new ways of living and working. Monitor Farm meetings have gone online; conferences are digital; and the vast majority of AHDB staff have been working for you from home for pretty much a whole year.



And then there's Brexit. And the weather – too wet, too dry, too hot, too cold, and more extremes than ever before. 2020 was a year of challenges, but farming has been and always will be resilient. I'm confident that, as an industry, we can continue strong in 2021.

We need to accept the things we can't change, have courage to change what we can, and grow the wisdom to know the difference.

Even though we can't get out to meet you all in person, AHDB is still here for you, with independent, evidence-based information and events to help you and your business thrive.

Please do get in touch with your regional knowledge exchange manager, local board member or other AHDB staff if you have any questions at all.

Sophie Freestone

Editor

Ballot is simple 'Yes' vs 'No' on the levy – make sure you vote

Alison Levett, AHDB Interim Potatoes Chair, tells us about the importance of voting in the upcoming potato ballot.



We are now in the thick of a ballot on a potato levy, and I hope that as you decide which way to vote you have joined the debate and reviewed the information about what would disappear if AHDB Potatoes no longer exists.

The messages I have been hearing from potato levy payers are a desire for us to be more future-focused in the research we undertake; to run fewer programmes of work but do them better, and to increasingly address environmental issues. Many of you also want us to do a better job of communicating the nutritional benefits and the convenience of potatoes to consumers. This is all doable. We also have a strong desire to become more transparent and fair in what we do.

Unbiased research

In this issue of Arable Focus, you will find articles about a new marketing campaign, results from storage and aphid research, and how growers can make savings by using AHDB's *Nutrient Management Guide (RB209)* – it was interesting to note that 76% of potato growers use the guide to design their nutrient plans. And on the subject of agronomy, I was amazed to find out that in the year up to November 2019, potato and stored potato agronomists had recorded 482 BASIS points via AHDB events towards their CPD status. So, despite the uncertainty, AHDB has not taken its foot off the accelerator!

At our Agronomy Week in December, we saw over 2,000 views of the potato sessions outlining our latest research results. The potato industry and especially growers are facing unprecedented levels of pressure, not least from climate change to chemical withdrawals. I know that many levy payers I speak to are keen for the industry to retain the independent, unbiased and in-depth research that the levy provides.

I hope you can sense our commitment to change, and to engage with you, to guide how the levy is spent. A 'Yes' vote for the levy gives us the opportunity to drive reform, but 'No' would call a halt to AHDB Potatoes.



Vote on the future of AHDB Potatoes



Have your voice heard. Should the Potatoes levy continue?

“ A ‘Yes’ is a vote for change and a ‘No’ could see the end of a statutory levy. I encourage you to consider the facts and to use your vote. At a time of immense change, the loss of a central organisation that invests in applied research for the benefit of all would be a considerable loss ”

Nicholas Saphir, AHDB Chair



A ‘Yes’ vote means

- **KEEPING** independent storage research, agronomy and crop protection work
- **MORE levy-payer say** on what we deliver for you and reduced costs
- **NEW proposed changes** to the potato levy system including flood relief on levy payments
- **YOU get to vote** on the levy every five years

A ‘No’ vote

- **STOPS** – £1.8m a year of independent research on storage, agronomy and crop protection
- **STOPS** – Consumer marketing campaigns and export market development
- **STOPS** – Educating 420,000 children a year with Grow Your Own Potatoes
- **STOPS** – SPot Farms, Fight Against Blight and one-to-one store visits

The ballot is open from 17 February to 17 March 2021

ahdb.org.uk/potatoes-vote



Over the hedge

News from across AHDB

On-farm carbon footprinting

AHDB's Farm Excellence network launched its first wave of on-farm carbon footprinting in November 2020. The first cohort of farms consisted of 13 cereal and oilseed growers, 10 beef and lamb producers, 10 milk producers, four pork producers and three potato growers.

Outdoor pigs in the arable rotation

Outdoor pig production can work well in an arable rotation and increase soil health, structure and fertility. Manure often provides a greater mix of nutrients than many manufactured fertilisers, and the benefits to crop yield and soil quality (e.g. organic matter) are well recognised. Look out for webinars, podcasts and news on this subject over the next few months, as we dig deeper into the practicalities of including pigs in the rotation. From soil testing and yield mapping technology to developing farmer/landlord relationships, we want to help you improve efficiency and nutrient management while reducing groundwater pollution and greenhouse gas emissions.

ahdb.org.uk/pork

Monitor Farms embrace digital: The value of virtual

Normally, in this edition we'd have a report on the Monitor Farm conference and the multitude of winter Monitor Farm meetings. Things have been a bit different this year, with weekly 'Monitor Farm Monday' webinars. While it's not the same as a real-live meeting with all the opportunities for conversations, the online Monitor Farm activities have kept momentum, continuity and cohesion going, says South West Knowledge Exchange Manager Philip Dolbear.

Milk Your Moments

With the onset of coronavirus and the closure of the nation's foodservice outlets, the dairy industry came together to find a new home for millions of litres of milk. The £1 million UK-wide Milk Your Moments advertising campaign ran for 12 weeks from mid-May 2020 across national TV advertising, social media and on billboards outside supermarkets. As a result of the campaign, 212,000 households bought liquid milk who would not have otherwise purchased it.

milkyourmoments.co.uk

Sustainable beef on arable units

A project funded by AHDB and led by ADAS aims to investigate the practical economic, environmental and agronomic implications of integrating beef enterprises into arable systems. Reintroducing grazing grass and mixed species leys into the arable rotation can provide many benefits, such as better weed control and improved soil condition for arable farmers; and enterprise expansion for many beef farmers.

More than a bit on the side

AHDB Potatoes ran a £100,000 multi-media campaign to drive extra demand in retail in response to Covid-19. Adverts on TV, outside supermarkets and on social media demonstrated the versatility, convenience and health of potatoes.

lovepotatoes.co.uk

STUDENTS' UNION: New PhDs set to exploit wheat genetics

AHDB's PhD programme lead Amanda Bennett introduces our latest batch of studentship projects.



The latest intake of AHDB Cereals & Oilseeds PhD students hopes to solve big production challenges through better understanding the most powerful molecule in nature – DNA – with three students learning the ropes, exploiting the latest knowledge and technology, and delivering exciting innovations.

Wheat germplasm for enhanced competition against black-grass

Student: Jed Clark, University of Leeds

Highly competitive crops can contribute up to 25% black-grass control. On its own, this is not enough. However, when combined with other non-chemical and chemical control approaches, it all adds up. The trouble is, little is known about this aspect. Barley is more competitive than wheat and some varieties are relatively competitive. However, there have been few controlled experiments to quantify these effects (and to determine how management alters the response). This studentship will start to address this. It will include screens of both elite and diverse wheat varieties to identify promising competitive lines. It will also identify extreme-performing parental lines and produce a plant population to help pinpoint the genetic basis of competitiveness.

Improving integrated pest management of aphid BYDV vectors

Student: Maria Elisa Damascena, Harper Adams University

Some aphids can transmit *Barley yellow dwarf virus* to cereal crops. There is increasing demand for control measures based on integrated pest management (IPM). Crops that are resistant to the virus are an important step forward. However, the exploitation of crop genetics could even help prevent aphids locating crops in the first place. This studentship will investigate why some crops/varieties are more attractive to aphids. It will include studies of the volatile chemicals produced by highly susceptible winter wheat varieties. Through better understanding this phenomenon, it may be possible to develop trap-crop approaches to lure aphids away from precious cash crops.

A model for wheat cultivars and optimisation for climate scenarios – Sim Farm 2030

Student: Anisa Aubin, University of Sussex

The relatively mature UK trialling system provides the industry with excellent variety performance data. However, there is always a hunger for more – particularly information on performance under specific conditions (e.g. weather and soil). With trial costs high, there is interest in using relatively low-cost models to assess and predict varietal performance. Such computer-based approaches could even help breeders select lines that are most likely to perform well under various climate-change scenarios. This studentship will develop and validate such a model – ‘Sim Farm 2030’. The work will apply cutting-edge machine-learning, data-driven techniques to model the yield of wheat cultivars under various scenarios.

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AHDB CEREALS & OILSEEDS PhDs

To find out more about our PhDs – past and present – simply head to our research page on the AHDB website, check the ‘Cereals & Oilseeds’ sector box, and search for the keyword ‘PhD’.

ahdb.org.uk/research

Net closes in on **BARLEY BLOTCH**

Research reveals the importance of species-specific diagnosis, writes AHDB's Crop Protection Scientist, Catherine Harries.



One of the most intriguing things about barley net blotch is that it is not a disease at all – but diseases. It comes in two key forms and this has implications for management. This article explores research findings that shed light on a disease that can botch both yield and quality.

No matter where you are in the UK, you will find net blotch symptoms in some local barley crops. The good news is that an integrated approach to management can prevent pathogen populations reaching economically damaging levels.

Thankfully, crop management does not require an understanding of the net blotch form present. However, the presence and abundance of each form does have implications for variety and fungicide performance trials. With the net blotch population evolving, it could eventually affect field management strategies, too.

During 2018, researchers grew net blotch isolates on agar-filled petri dishes. One plate stood out. It contained an unusual morphology. Symptoms in infected leaf fragments also revealed a clear-cut difference. Molecular tests established that this isolate represented the spot form of net blotch, caused by *Pyrenophora teres* f. *maculata* (Ptm). Not the net form of net blotch, caused by *P. teres* f. *teres* (Ptt), more typically observed in UK fields.

NIAB's Bart Fraaije, who led the project, turned to Rothamsted Research's archive of spring barley grain samples – which stretch back to 1852 – to retrospectively detect the two forms of net blotch. The analysis identified the relatively common Ptt form 21 times (all since 1890), with Ptm detected just four times (1982, 1995, 2001 and 2012). Both species were only once simultaneously present (2012). Although less common, the presence of Ptm in multiple years showed that the 2018 sample was not a one-off.

“ This research has revealed the importance of species-specific diagnosis ”



Figure 1. Net blotch fungicide sensitivity assays conducted on mycelium plugs. SDHI dose increases from left to right



Figure 2. Net blotch (net form) symptoms on leaf fragments in petri dishes

Net blotch and fungicide sensitivity

The project also examined whether the two net blotch fungi have different levels of fungicide sensitivity. Reduced sensitivity to quinone outside inhibitors (QoI), azoles (DMI) and succinate dehydrogenase inhibitors (SDHI), has been detected in UK net blotch populations in recent years.

It is important to stress that disease control has remained sufficiently reliable. However, several SDH mutations in Europe are associated with a loss of field efficacy, so it is essential to monitor the situation for both net blotch forms.

Fungicide sensitivity assays conducted on mycelium plugs (see main image) showed that the Yorkshire Ptm population was more sensitive to azole and SDHI fungicides, relative to the Ptt populations sampled in four other UK regions. The research team also identified known mutations associated with fungicide insensitivities in the samples (see full report).

Net blotch research

This research has revealed the importance of species-specific diagnosis. The development and use of rapid in-field tests for difficult-to-visually-diagnose diseases, such as net blotch forms and ramularia, could provide a power boost for trials.

For net blotch assessments in variety trials, it is important to understand which species is present, how much is present and, indeed, if there are mixed infections. This is because each net blotch R-gene is likely to deliver varying levels of resistance to each form. Rapid tests will also provide a valuable training tool, helping trial operators fine-tune their disease recognition skills.

When it comes to fungicide sensitivity, monitoring of efficacy is a core part of the AHDB research programme. Our annual fungicide performance update each winter provides a detailed overview of the latest information on efficacy shifts, along with expert opinion on the potential drivers of change.

ahdb.org.uk/netblotch

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IMPROVING NITROGEN APPLICATION ACCURACY

for potato crops

A new protocol for estimating the determinacy of potato varieties is now available as part of the 'AHDB Nutrient Management Guide (RB209)', writes AHDB Resource Management Scientist Alice Sin.



The new protocol will help breeders and those involved in variety development save time and money when producing nitrogen (N) recommendations for new varieties. Growers and agronomists will gain more accurate nitrogen/determinacy groupings for both new and existing cultivars and, therefore, improve the N rates applied to their crop.

A key component of nitrogen fertiliser recommendations as used in *AHDB Nutrient Management Guide (RB209)* is the nitrogen (determinacy) group. These are based on four groups: Group 1 (very determinate) to Group 4 (very indeterminate).

Potato varieties such as Accord, Estima and Innovator are part of Group 1 and they cease leaf production after the first



flowers appear. This is in contrast to varieties classified as Group 4 determinacy. For example, Cara, Markies and Royal continue to produce leaves and flowers until being curtailed by shorter days and frost.

It is essential to know the grouping of your variety to calculate the correct nitrogen recommendations.

Research conducted by AHDB and NIAB, with the help of Greenvale AP and Cygnet PB, has resulted in a new protocol for estimating determinacy. The determinacy of the potato varieties was studied using the following four methods: plant ground cover; main axis nodes; harvest index measure – fresh weight; and harvest index measure – dry weight. In this research, the preferred metric was to count main-axis nodes on the potato plant, since this method is robust, quick, cheap and non-destructive. Highly reliable data was obtained by combining the four methods.

Previous methods determining N rates for different varieties groups relied on carrying out several costly nitrogen response experiments. As a result, many varieties could have actually been misallocated, resulting in applying more or less N than needed.

Some of the previous N rates groupings were based on opinion and casual field observation. We are delighted to now publish a protocol that is evidence-based. This will offer a great help to the whole industry. These updated groupings, including newer varieties from the top 50 varieties grown in GB, will be incorporated in the 2021 revision of the *AHDB Nutrient Management Guide (RB209)* Section 5.

“ It is essential to know the grouping of your variety, to calculate the correct nitrogen recommendations ”

The protocol was trialled by Meijer during the 2020 growing season. Max Tärneberg, Meijer International Product Manager, said: “We have multiple trial sites across the UK with plots containing our entire variety portfolio. We included the node-counting methodology alongside our normal assessments in line with the new protocol. We already had a good understanding of the N groupings of all but our very newest varieties, which helped us to calibrate this new system. It could have huge implications for how we successfully market newer varieties. We could have an N grouping for a variety before it even gets a name!”

Max recognised the need for the new protocol for the potato industry: “In a broader industry sense, this could bring the N groupings of many varieties right up to date. If more accurate N recommendations are more readily available for our industry, then we could be looking at significant savings for growers.”

To further support the industry, the new protocol will be included in the training courses provided by Artis and it will also be discussed during workshops that will be organised at our Strategic Potato (SPot) Farms.

Find details of the new protocol in the 2021 update of the *AHDB Nutrient Management Guide (RB209)*, available at ahdb.org.uk/rb209

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AHDB'S RB209 – THE POWER BEHIND YOUR NUTRIENT MANAGEMENT PLAN

Levy collected from all AHDB sectors funds the *AHDB Nutrient Management Guide (RB209)*. It is used by 76% of potato and horticulture nutrient management plans and by 3,000 FACTS Qualified Advisers each year.

At Bruce Farms in Perthshire, our SPot Scotland Farm between 2016 and 2019, the *Nutrient Management Guide* was used to inform trials on targeted nutrition applications. Farm Manager Kerr Howatson said:

“Our nutrition trials have shown that we can cut our nitrogen use in our Maris Piper crops. By reducing the amount of nitrogen, we have gained better crops, maintained yield and pack, and saved money.”



FACT-FINDING with field labs

Research-into-practice rules rewritten by Innovative Farmers, writes Emily Pope.



Change is an essential part of efficient, productive and sustainable farm businesses. Increasingly, farmers want to test how one way of working compares with another before making a change – and this is where our investment in the Innovative Farmers initiative comes in handy.

This farmer-led network, which tests tools and techniques in a commercial setting, receives tailored support and advice – from initial idea to the interpretation of results. Our investment has helped labs at various stages of development, with a flavour of recent activity provided below.

Atone the brome

Embedded within our brome research programme, participants in this field lab are learning about local brome populations and aim to hit them with field-specific management strategies. With black-grass often stealing the headlines, there is still much to learn about UK weed enemy number two. In particular, these investigations will improve understanding of the distribution and life cycle of brome species. The management approaches developed will use a mix of non-chemical and chemical control to suppress brome populations and protect the long-term efficacy of herbicides.

“ To date, cover crops appear to retain the AD-supplied N, preventing its loss to deeper soil layers ”

Smother with cover

This field lab aims to establish the benefits (and costs) associated with establishing a living mulch alongside the main cash crop in a low-input/no-till system. The approach potentially has several agronomic advantages, including erosion control and improved soil structure, as well as the regulation of pests, diseases and weeds. Seven farms are using a wild white and small-medium leaved clover mix undersown into a winter/spring cereal cash crop. The mulch is knocked back (grazed/topped) before a direct/strip-drilled cereal is planted in the standing clover in the autumn.

Larval lunches

Managed defoliation of oilseed rape over the winter period can significantly reduce cabbage stem flea beetle larvae numbers, according to our research. The results from this field lab will support the development of recommendations for this technique, whether grazed by sheep or mechanically topped.

Nitro-genius approaches for AD

Running since 2016, this lab investigates how best to stabilise nitrogen levels following an anaerobic digestate (AD) application. Each field lab has four plots: no cover crop and no AD (control), cover crop with no AD, no cover crop with AD, and cover crop with AD. To date, cover crops appear to retain the AD-supplied N, preventing its loss to deeper soil layers.

The beast of both worlds

There are potential benefits to both arable and livestock enterprises of incorporating animals within the rotation. By following an agreed protocol, the three farms in this lab (Cambridgeshire, Norfolk and Staffordshire) hope to identify the best cover-crop systems for overwinter grazing. Through careful tracking of costs and benefits – to the arable system (crops and soil) and livestock enterprise – the host farmers will identify the right cover crop species and grazing approach for their farms.

Salty solutions for potato production

In the driest regions of the UK, such as Holbeach Marsh, keeping potato crops sufficiently irrigated is a particular challenge. As groundwater reserves deplete (accelerated by climate change), the irrigation source becomes increasingly brackish. This field lab sees grower members of Nene Potato Ltd. push their crops with saltier water. The use of drip irrigation in the trials is particularly critical. Not only more efficient, this H₂O trickle is more likely to avoid problems commonly associated with overhead drenches (e.g. leaf scorch).

Cultivating nematode traps

The potato industry needs alternative options – beyond nematicides – to control potato cyst nematodes (PCN). Chemical control may provide a quick fix, but it is not a sustainable solution and can be hazardous – to both the operator and the environment. This field lab sees grower members of the Shropshire Potato Growers Discussion Group grow related solanaceous plant species known to suppress nematode multiplication. A particular focus is learning how to cultivate these species between cash crops to maximise the pest-suppression effect.

Submitting an idea for a field lab

Ideas for field labs come from a range of sources. Although Innovative Farmers actively forms farmer groups, ideas can also be submitted by any grower or farmer. For information on field labs, including the application process, visit: ahdb.org.uk/innovative-farmers-field-labs

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The power of grain nutrient analysis

Use grain offtake information to fine-tune nutrient management, writes AHDB's Sajjad Awan.



Sajjad Awan
Resource Management Scientist

Since the 2020 edition, the *AHDB Nutrient management guide (RB209)* has encouraged routine analysis of grain samples for specific nutrients (especially phosphorus), in addition to soil analysis. Arguably, the most accurate way to assess crop nutrient capture and offtake, the results will help you refine management plans.

Roger Sylvester-Bradley (ADAS) recently delivered an AHDB webinar on the topic. He explained how to carry out, analyse and use the results of grain analysis. The presentation led to a healthy debate, with just a few of the questions and answers outlined in this article.

SAMPLING GRAIN AFTER COMBINING

Ensure samples are representative of the field/zone.

1. If there is no risk of injury, take a sample as the grain trailer is tipped – two half-cupfuls from each trailer.
2. Put samples from each individual field/zone in a labelled bucket and mix thoroughly.
3. Take 200 g of the mixed grain sample and put into a clearly labelled plastic bag (field/zone, name/code and date).
4. Repeat steps 1–3 for each field/zone.
5. Send samples to the laboratory for analysis (follow their guidance).



What is the best way to sample grain?

It makes sense to harvest, sample and analyse field zones (e.g. soil management zones) separately. If this can't be done with the combine, the next best thing is to use a handheld sample harvester (which costs around £500). The more samples taken from a zone, the more representative the sample will be.

Where is analysis done and how much does it cost?

Although grain analysis is relatively new, it follows similar methods to tissue analysis, offered by most agricultural labs. Several labs already offer grain analysis at a cost of about £30 per sample. Grain analysis may also be included with some advisory service packages.

How does grain nutrient analysis relate to soil and leaf analysis?

Soil analysis results can help predict crop nutrient availability. Grain analysis can provide estimates of crop capture and use. Where soil supply is sufficient but uptake is inefficient, it is particularly important to identify the reasons. Adding more of the deficient nutrient will not improve the situation. Inefficient uptake, despite reasonable supply, may be due to multiple causes, including poor rooting, waterlogging, suboptimal soil moisture and weed competition. It has yet to be determined how tissue analysis fits into the story.

What are critical thresholds for grain nutrients?

Put simply, grain should ideally be above the critical thresholds (CTs) for nutrient content (in grain dry matter – DM). Set for many cereal nutrients, some CTs are more reliable. However, CTs are improving all the time, following greater adoption of the technique.

Are results corrected to account for yield variation?

No. High-yielding crops tend to grow more biomass and require more nutrients. Yield variation is often extreme. For example, the variation among Yield Enhancement Network (YEN) crops ranges from around 6–16 t/ha. Hundreds of factors affect yields. Apart from the huge impact of weather, the main factors for variation have been defined as: farm, previous crop, soil type, fertiliser/manure use and variety (listed in order of importance). Associations between grain yield and grain nutrients are frequently too small to detect robustly. However, the persistent differences between farms are particularly interesting. This may point to the importance of some aspects of management not formally recognised – 'attention to detail' is often suggested.

Further information

The AHDB website includes further information on grain nutrient analysis, including the full webinar Q&As. The online pages cover benchmarking, including how to compare results with other years and fields – be they yours or those of another farmer. Knowledge is power. However, it pays to be patient when it comes to nutrient management and to avoid impulsive decisions. It is best to use results from routine analysis to build up a picture of individual farms/fields/zones over several years.

ahdb.org.uk/grain-nutrient-analysis

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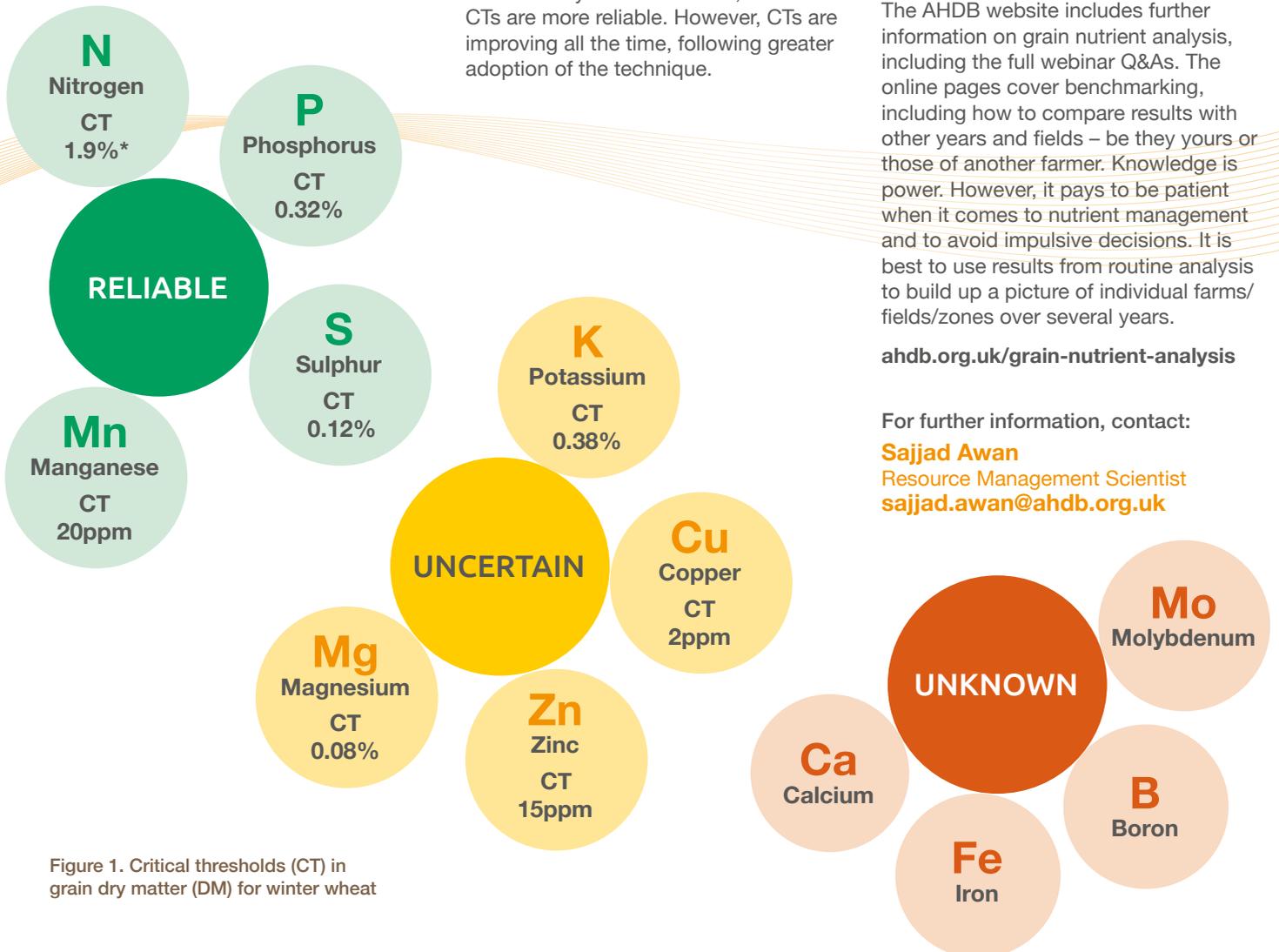


Figure 1. Critical thresholds (CT) in grain dry matter (DM) for winter wheat

POTATO STORAGE: Five questions to ask

The 2020/21 potato storage season is proving to be one of the most challenging yet for the potato industry, writes Adrian Cunnington, AHDB Head of Crop Storage Research.



“ It’s now more important than ever to take an integrated approach to store management by considering all of the pieces in the puzzle ”



Here are the top five things to check:

1. What is my customer expecting?

The most important thing when dealing with changes to process, is to communicate with your customers. Due to delays in announcements from Europe on temporary maximum residue levels (tMRLs), many buyers took early action setting their own policies on residue levels and product choice. But everyone has been on a learning curve this season, so there will be a need to maintain dialogue with customers to maintain awareness and maximise flexibility to market, in relation to store performance. It is also worth making contact with regular customers, even if future trade is likely to be on the free-buy market.

2. Have I checked disease and defects levels?

After another wet harvest, rots and tuber blight can cause havoc in stores if not managed carefully. Equally, blemish diseases can lead to a reduction in the value of your crop. It is, therefore, important to assess for all diseases and defects, particularly if some are specifically mentioned in your supplier contract. Regular checks on temperature, moisture and airflow are important. Simply walking into a store and using your nose to sniff out potential developing problems is a renowned and effective monitoring technique!

Sutton Bridge Crop Storage Research offers online disease and defect guidance, and a free-to-call phone number to help you diagnose any problems and inform your next steps. See ahdb.org.uk/disease-defects or call the Storage Advice Line on **0800 028 2111**.

3. Do I know my sprout suppressants?

As it is now illegal to use CIPC as a sprout suppressant, an increased number of growers applied maleic hydrazide (MH) products during the growing season to secure some residual sprout control. Other than MH, alternatives include ethylene and spearmint oil, both of which will need a more

detailed approach to managing the store environment than was perhaps afforded or needed by CIPC. It's now more important than ever to take an integrated approach to store management by considering all of the pieces in the puzzle – from genetic traits of varieties such as long natural dormancy, to store management, to keep volatile alternative suppressants active within the store.

You can find tips, results and recordings of webinars from the first two years of our research projects into CIPC alternatives at our storage hub ahdb.org.uk/storage-hub

4. Do I know my costs?

Not only will most alternatives to CIPC need more of a store manager's time to manage, they will often incur higher costs. The financial risks associated with use of CIPC were very low. But, from now on, whatever sprout control approach is chosen and whether you're storing for the fresh or processing market, the financial risks are likely to be higher.

Most of the chemistry costs upwards of £3/tonne and multiple applications will likely increase this figure; and that doesn't include another £2/tonne spent on MH. Don't forget to account for weight loss and outgrades in your storage costs, along with depreciation on capital investment and the cost of financing the store and the crop as a whole.

5. Have I taken advantage of free support?

Through our Storage Network service, independent experts made over 100 store visits in 2020. While we cannot conduct visits during lockdown, you can add yourself to a waiting list. Your Storage Network Partner will help to get you up to speed with your individual storage arrangements to maximise the performance and cost-effectiveness of your store. And it costs nothing: the visit is free of charge for all levy payers. We also have a free storage advice phone line (0800 02 82 111), while research results and recordings of events can be found at ahdb.org.uk/storage-hub

What growers say about levy-funded storage research and advice

"Having made changes this season, it does give me a lot of confidence about what AHDB's storage team is doing. We've got some experts there who will give us the right information. As potato growers and levy payers, we've got to take that advice; we've got to use it. If we don't, then we're standing still when we've got to get better."

Mark Means, J.S. Means Ltd, Terrington Marsh, King's Lynn, Norfolk

"Our Storage Network visit was very useful. Having an independent professional in my own store, I got some good tips on improving airflow to help sprout suppressants work at their best."

Tom McFarlane, Farm Manager of Bannister Farms, Lincolnshire

REMEMBER

AHDB's team at Sutton Bridge Crop Storage Research is here to support you through these changes.

Storage advice is available from our free-of-charge Storage Advice Line **0800 028 2111** and from our Storage Network.

To book your 1:1 store visit, call **01406 359419**.

What's the future for OSR?

AHDB's Senior Market Specialist Manager, Vikki Campbell, looks ahead at the prospects facing UK oilseed rape.



Over the past few years, UK rapeseed production has been decreasing. Pest pressure, application restrictions and challenging weather have all played their part and, reportedly, many growers are moving away from the crop, deeming it unprofitable.

So what could the future be for UK rapeseed?

Home-grown supply

The AHDB Early Bird Survey points to yet another year of area reduction for OSR, back 18% on last season's challenged crop. Even if the strong yields of 2016/17 were reached, the UK would still only be looking at a c.1.2 Mt crop. As a proxy, the import/export balance historically swung around the 2 Mt level when UK rapeseed production ranged from 1.8–2.4 Mt. If the UK produced less than this, then it became necessary to import; the reverse being true in production years of 2 Mt+. To try to offset some reduction in rapeseed production in recent years, demand has moved more to soya bean imports to plug some of the gap.

Since 2019, the UK has been a net importer of rapeseed. While the EU has historically satiated most domestic demand, last year we saw the export pace of Ukrainian OSR to the UK ramp up significantly. With many of the key European rapeseed-growing areas also suffering the same climatic challenges in 2019/20, tight European supply necessitated sourcing outside the bloc.

Ukrainian rapeseed is grown primarily as a cash crop, with little domestic requirement for it. Last season saw record Ukrainian exports, at 2.89 Mt. The vast majority of this was destined for the EU.





This season, we have already seen a strong start out of the blocks from Ukraine. During the July–October period, 162 kt of Ukrainian OSR was shipped to the UK, accounting for 83% of all British rapeseed imports. This already represents 34% more than all Ukrainian rapeseed imports from last season. Before Christmas, the Ukrainian ministry confirmed that they had no plans to restrict exports either, unlike neighbouring Russia. However, with a reduced area for the 2021/22 marketing year, and still much of the growing season ahead to dictate yield, the volume of exportable surplus for the next marketing year remains distinctly uncertain.

The reliance on Ukrainian rapeseed is despite tariff-free access to and from the EU. It comes down to the fundamental of supply. Much like the UK, the torrid 2019/20 season saw EU-28 production cut to 17.2 Mt – below 20 Mt for the first time since 2012. This season, the tightness may well continue. Despite small increases in German and some Eastern European area, decreases in the UK and France are outweighing any significant rise.

Price

Soya beans, the driver of oilseed complex prices, have been in a bullish mood for some time. Well-documented Chinese purchasing appetite and, more recently, concerns over dry weather affecting South American supply, have added support to the complex.

On a domestic front, this has helped support rapeseed prices. The cost of importing Ukrainian rapeseed has increased with the global rise, raising the import parity of the domestic crop.

However, this support is not guaranteed. Should China reduce its presence in the market, or rains save the South American crop, the resulting increase in global supply will likely offer a bearish feel to the entire oilseed complex.

So, what could this mean for the viability of growing rapeseed in the UK?

Despite current supported prices, increased costs may not always ensure profitable returns on the crop. While there are key agronomic reasons for including OSR in your rotation, including as a precursor to wheat, there needs to

be a wider consideration of the value of the crop.

As ever, it is essential to know your cost of production, including both fixed and variable costs, and advisable to have a marketing strategy aiming to manage volatility. Only then can a true assessment be made of potential financial returns against an increased risk of growing rapeseed.

However, should a less supportive global market begin to prevail, alongside the continued expense of pest damage with further weather issues, we may well see the area-declining pattern continue.

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Figure 1. 2020 soya increases supporting the wider complex

Source: CBOT, Euronext, AHDB



Does it make financial sense to grow OSR?

Mark Topliff, AHDB Farm Economics Lead Analyst, looks at oilseed rape financial benchmarks, income drivers and opportunities for making a profit from the crop.



The area planted to oilseed rape (OSR) in Britain has continued to decline, thanks to pest and weather pressures. However, OSR can play a vital role in many rotations and few alternative break crops exist that have such a beneficial effect, good market opportunities or can be grown widely or consistently in the UK.

We examined the farm business performance data in Farmbench from the 2017–2019 harvest years for conventional winter-sown OSR and concluded that:

- Achieving a positive return with winter OSR has become more difficult
- The top 25% of farmers have still been able to get a reasonable return and not necessarily by getting the highest yields
- A positive return can be achieved from lower yields if the costs per hectare can be kept low (£900–£1,000/ha)



Farmbench benchmarks

The following shows the three-year average results for harvests 2017–2019 as recorded in Farmbench.

	Top 25%	Middle 50%	Bottom 25%
Yield (t/ha)	4.10	3.58	3.00
Crop income ¹ (£/ha)	1,425	1,227	997
Variable costs (£/ha)	414	436	463
Gross margin (£/ha)	1,011	791	534
Overheads (£/ha)	609	721	882
Total cost of production (£/ha)	1,023	1,157	1,346
Net margin (£/ha) ²	402	69	-348

¹ Income from the crop only excludes subsidies

² Performance groups ranked by net margin results

Between the top 25% of farmers and the rest, the difference in net margin was about 60% due to higher income and 40% due to lower costs. So was yield or price the main influence on income?

Is it all about yield?

Yields have declined for all performance groups in the last three years, with the bottom 25% group reducing the most. Also, average net margins have declined for all performance groups.

The middle 50% reported a £200/ha net margin in 2017 but a £11/ha loss in 2019. In 2019, approximately half of the OSR crops made a positive net margin (over two-thirds in 2017). The majority of crops achieving a positive net margin had yielded more than 3 t/ha.

However, there were many OSR crops which, despite yielding more than 3 t/ha, still made a loss. In contrast, there were a small number that yielded less than 3 t/ha, which reported a positive margin.

Looking at prices received over the three years, they were relatively stable in comparison to yield. Prices between the top and bottom groups differed by only about 4%.

In comparison, yields between the best and worst performance groups varied by about a third. So, in terms of OSR income, yield had the greater impact on income.

Trends in cost of production

Generally, costs per hectare rose in the three years 2017–2019.

- Seeds, fertiliser, herbicides and insecticides all increased in cost
- Fungicide costs fell
- Fixed costs (overheads) increased in 2018 but fell in 2019
- Labour fell by £40/ha over the three years

In 2019, total costs of production for the top 25% of farmers was £1,060/ha, 11% lower than the middle group. Total costs includes all cash costs of production plus machinery and buildings depreciation, a value of unpaid labour, the rental value of owned land and finance charges.

Yield versus cost of production

So what do the Farmbench results tell us about the cost of production needed to achieve a positive margin at a certain yield?

The table below provides a benchmark of the average cost of production from those crops that made a positive net margin in the three years, at different yield levels.

Yield (t/ha)	Total cost of production (£/ha)	Variable costs (£/ha)	Overheads (£/ha)
2.5–2.9	902	370	532
3.0–3.4	1,008	397	611
3.5–3.9	1,100	425	675
4.0–4.4	1,134	434	700
4.5–4.9	1,224	446	778
5.0–5.4	1,320	451	869

* Total costs includes all cash costs of production plus machinery and buildings depreciation, a value of unpaid labour, the rental value of owned land and finance charges

At the lower yields (2.5–3.5 t/ha), margins will tend to also be lower. These figures may provide some guidance of what level of costs to budget for. Achieving a cost of production of £900–£1,000/ha could increase the chance of generating some profit.

Hopefully, these figures will provide some reassurance for those who want to improve their OSR margins.

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ABOUT THE FIGURES

- Farmbench results based on harvests 2017, 2018 and 2019
- OSR figures for conventional winter sown excluding any seed, HEAR or hybrid variety crops
- Benchmarks are ranked on full economic net margin

PRE-PLANTING TRENDS FOR POTATOES

Vikki Campbell reviews, and sheds some light on, the coming 12 months for the potato sector.

As we move towards the planting window for the 2021 season, it is timely to review how the sector has changed over the seasons. An understanding of how different sectors are moving, alongside which varieties are becoming more, or less, prevalent, may assist in planting decisions still to be made for the season ahead.

Last season's area decline driven by fall in processing sector

Last season, GB recorded one of the lowest potato areas on record, back 2.3% from 2019. This decline was predominantly driven by the processing sector, although the area for fresh bagging also fell.

Given the timing of the first national lockdown last year, many growers would have already made their planting decisions, or begun the process. Some were able to make alternative choices, with the closure of foodservice and hospitality hitting these two sectors particularly hard (Figure 1).

The area for pre-pack potatoes increased, following two years of decline – the increase in retail sales, with consumers spending more time at home, potentially driving some of this behaviour. During the peak of the first lockdown, some packing specifications were loosened slightly, allowing for the repurposing of some processing material.

However, since then, some foodservice outlets have been able to operate in a coronavirus-safe fashion, predominantly through takeaway and collection services through subsequent lockdowns.

With the coronavirus vaccines being rolled out across the country, we could be forgiven for garnering a rosier outlook for the foodservice and hospitality sector than the year just passed. However, any return to 'normality' is sure to be some time off yet, so we can expect various restrictions being placed on public movement for the coming months.

Maris Piper remains 'top of the pots'

Maris Piper remained the country's most popular variety in 2020, although c.2 kha less was planted, compared with the previous season. The 13.9 kha was the lowest Maris Piper area recorded since the survey began, back in 2010. The decline was most pronounced for English Maris Piper, whose markets are split between the processing and the packing sector. Scottish Maris Piper, more typically used for packing markets, saw less downwards movement.

Markies remained the second most popular variety. However, Melody and Taurus switched places, occupying third and fourth place respectively, while Maris Peer fell from last season's fifth, to be replaced with Sagitta.

Similar to previous seasons, the top 10 most popular varieties accounted for over 40% of total GB planted area.

Processing area records a sharp downturn

The processing sector recorded the largest decline in 2020, back 7.1% from 2019 – lockdown measures affecting key markets undoubtedly impacting this. Within this, contracted area fell 6.4% and free-buy (which only accounts for 4.4% of processing area) by 20.3%. Conversely, pre-pack area increased last year, although this was driven by contracted area. Free-buy area was also back for the pre-pack sector by 4.1%, resulting in free-buy planted area reducing to 29.2% of the total.

	2019 (ha)	2020 (ha)	Change (%)
Pre-pack	43,622	44,318	1.6
Contract	30,137	31,386	4.1
Free-buy	13,485	12,932	-4.1
Processing	37,477	34,802	-7.1
Contract	35,565	33,279	-6.4
Free-buy	1,912	1,523	-20.3

What next for seed potatoes?

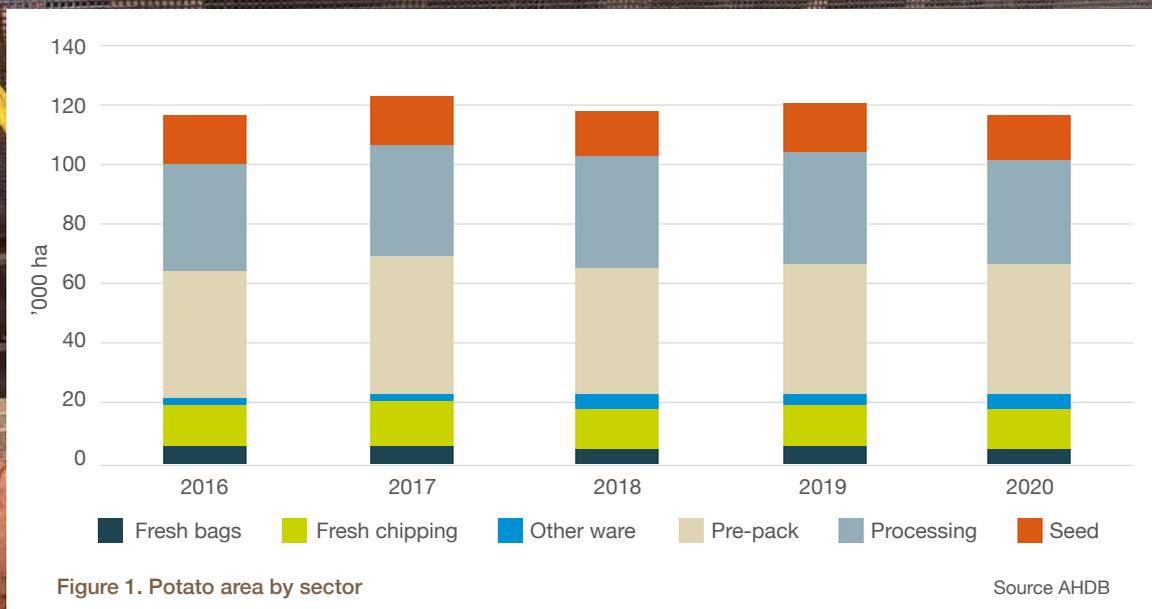
Following the signing of the EU-UK Trade and Cooperation Agreement (TCA) on Christmas Eve, tariff- and quota-free access will now be allowed between the EU and UK. However, this is not the same as operating as a single market, and in the early days of the post-Brexit era, we see the trade friction that can be caused, e.g. through additional physical checks, export health certificates, labelling requirements, etc. This will likely become smoother in the months ahead.

However, more specifically to the potato industry, third-country equivalence has not been granted for seed potatoes, effectively halting their access to EU markets. Scotland, the key region for UK seed potatoes for export, has reportedly shipped 95% of this marketing year's exports already.

While negotiations are still ongoing to allow this prohibition to be lifted, concerns remain as to whether they will be concluded prior to this year's crop being ready for export. Therefore, this uncertainty could well play into planted area, with end markets being far from certain at this stage.

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What does trade look like under the new **UK-EU TRADE DEAL?**

With the UK signing a trade deal with EU, Patrick Hughes, AHDB Head of Export Trade Development for Potatoes and Dorit Cohen, AHDB Assistant Manager – Exports Cereals, Potatoes & Red Meat, reflect on mixed fortunes.



Patrick Hughes



Dorit Cohen

Trade deal done but potato export challenges remain

As the dust settles on the Brexit trade deal, the potato sector is coming to terms with its mixed fortunes.

The news that ware potatoes were awarded third country listed status was essential for continued trade into the EU and Northern Ireland.

This essentially means that the European Commission will recognise the UK's regulatory, supervisory and enforcement regime as equivalent to its own. Essential new administration and inspection procedures will be required, but this is a small sacrifice for continued access to key markets in the EU and Northern Ireland.

Unfortunately, the EU also confirmed they will not accept the case for a permanent change to the prohibition on seed potatoes. The resulting split between the UK and EU on these rules means that, in addition to the EU exports, the movement of seed potatoes from Great Britain to Northern Ireland is also prohibited.

Further collaborative action over the coming weeks and months will endeavour to request of EU officials that GB seed exporters have the ability to complete the 2020/21 export season in line with the UK Government's extended derogation on EU seed import, which is in place until 30 June 2021. Thereafter, future access to the EU market would be required for

GB growers, breeders and trade to continue to plan ahead with confidence.

While Brexit has taken up a lot of business attention, exports continued to non-EU destinations, with over 70,000 tonnes exported by the end of December 2020. The seed sector was also buoyed by the recent trade deals with Egypt and Morocco, resulting in the continued trade with these important export markets.

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UK ready to compete on global market for EU trade

UK cereal exporters can begin 2021 with a positive start under the new EU-UK Trade and Cooperation Agreement (EU-UK TCA). This new Brexit deal allows the prospect of unfettered trading – the threat of tariffs removed. Bilateral trade between the UK and EU will be duty-free and quota-free, provided the relevant origin rules are satisfied.

While it may not be perfect – exporters will still need to prepare for non-tariff barriers, such as increased controls and the need to comply with rules of origin – efforts have been concentrated on ensuring that the free movement of physical goods will continue as normal.

The EU-UK TCA is, in many ways, a classic EU free trade agreement, with certain important facilitations for traders and producers.

The EU has long been a key customer of UK cereals, taking in at least 60% of UK wheat, barley and oats each year, with a trade value that was worth over £300m

in 2019/20. For traditional EU markets such as Spain, Portugal and the Netherlands, the UK has been a reliable source of cereals for many years. The versatility and consistency of UK cereals is highly valued.

Indeed, UK milling wheat, especially UK biscuit wheat, is much sought after by Portuguese and Spanish millers due to its high-quality characteristics that no other origin can easily match. Likewise, UK malting barley is highly sought after for its excellent quality among EU maltsters, given that UK malting barley is known to produce the world's finest beers and whiskies.

The zero-tariff and zero-quota access to EU markets is a welcome relief for EU recipients of UK cereals and UK cereal exporters should now expect to see renewed interest for UK malting barley, feed barley and oats this season.

According to HMRC data, wheat exports until the end of October 2020 reached approximately 40,000 tonnes, barley

exports totalled approximately 460,000 and oats exports were at around 16,000. Most of this grain has been shipped to EU destinations. This reinforces the importance of securing a healthy trade deal that is mutually beneficial to both UK grain traders and European customers of UK grain.

Given the low domestic wheat crop this season, UK wheat exports will not increase in volume until September 2021. However, with a surplus for exports or free stock of 2.2 Mt of barley and approximately 100,000 tonnes of oats available for export this season, this trade agreement will ensure that the UK will continue to compete in EU markets unrestrained.

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You ask the questions: **YOUR AHDB BOARD**

Pembrokeshire Monitor Farm host Tom Rees interviewed new AHDB Cereals & Oilseeds board member David Bell, to find out more about the role board members play.

Tom: I'm the Monitor Farm host for Pembrokeshire, West Wales. We're a fairly traditional mixed farm but we're getting more specialised in arable cropping. We're experts in wet weather!

David: I'm a mixed farmer in East Fife, overlooking St Andrews. We're also a mixed farm, with beef suckler, cereals and potatoes, with some environmental schemes. I joined the AHDB Cereals & Oilseeds Board in April 2020.

Tom: Why did you want to be on the AHDB Board?

David: I'd say youth! But I've now been joined by a younger board member and he's got me on a few years. I'm here to represent levy payers. I speak to other levy payers through my various other activities and I feed that back. We have to be connected and know what's wanted.

I also wanted to join to engage and give back. AHDB gave me so much with the Monitor Farm in Fife [David was on the steering group] and they made me into a better grower, a better farmer, and, dare I say, a better person. Being part of the AHDB Board, hopefully, I can give some of this back, and encourage and empower other levy payers to do better.

Tom: Would you be able to explain to me what the board actually does and how it benefits us as a Monitor Farm group and all other levy payers together?

David: It's a big question! The board for cereals and oilseeds is made up of growers, producers, maltsters, processors, agronomists, animal feed merchants – representing all stakeholders in the UK cereals and oilseeds sector. There's a vast array of experience and we come together and look at the strategy of how to go forward.

We feed in levy-payer feedback to the board and we then change the priorities of where the levy goes – market

“ Being part of the AHDB Board, hopefully, I can give back, and encourage and empower other levy payers to do better ”



intelligence, export, research, knowledge exchange, and markets. We have to decide where that money goes and how best to direct it, to give the best benefit to the UK levy payer.

Our cereals and oilseeds board is led by Paul Temple. It's both his knowledge and the diversity on the Board that gives it its strength.

Tom: Do you feel that AHDB is delivering good value for money for the levy payer at the moment?

David: Similar to you, Tom, I engage with AHDB and I get a lot out of it. I read their publications, from the Horizons series on what's going to happen with Brexit, to the market intelligence side of things, fertiliser intelligence for buying your inputs; and the research to know what's coming. I sit on the Barley Recommended Lists committee. The Recommended Lists is the largest research programme that AHDB funds at an eye-watering £1.5 million a year. The work that goes into the Lists is phenomenal and it is such a valuable cornerstone of IPM. I know this because I've been part of it. I think it's fantastic value for money.

I think we're pretty bad at singing our praises and telling you what you get, because there's quite a lot AHDB does that we're just used to having every day.

Tom: Where do you think AHDB needs to focus in the next five years?

Left: David Bell, the new AHDB Cereals & Oilseeds Board member

Right: Tom Rees, Monitor Farm host with his dog Pip

David: We need to look ahead of what's happening tomorrow or next year and be further down the line, to be able to have knowledge ready to give growers. We need to look at the different political scenarios, before they happen – so that our farmers, growers and levy payers have some information to make the transition easier.

Tom: Do you feel AHDB should be doing more to market UK produce?

David: Cereals and oilseeds are a bulk commodity and we don't have the export volume to gain export power. But what we do have is quality, and part of AHDB's role is the **ukp** and **uks** export wheats, for example. Bakers aren't used to baking with UK wheat so we do baking workshops abroad and we give out market information. We use the Recommended Lists for that too, to show our customers outwith the UK what we produce and how it fits into their market requirements.

Tom: Thank you, David.

David: Thank you, Tom. I don't think we have anything to hide from levy payers: we should be transparent. I passionately feel that, as the Board, we're here to represent levy payers, so if you have any questions, then just ask.

For details of all the AHDB Cereals & Oilseeds board members and minutes of meetings, visit ahdb.org.uk/cereals-board





New campaign to champion the jacket spud

Nicola Dodd heads up AHDB's latest potato promotional work.



AHDB will focus on the vast armoury of the humble baked potato for its new campaign, 'The New Packed Lunch', launching in February 2021.

Consumers will be reminded of the unique versatility that jacket potatoes bring, fulfilling the needs of the rise in demand for a hot filling lunch.

The £150,000 campaign follows on from this summer's £100,000 campaign, which focused on inspiring those at home to add a potato-based meal to their weekly repertoire. More than 1.3 million viewers saw 'Bud the spud' flaunt how potatoes are 'more than a bit on the side'.

'The New Packed Lunch' campaign is to place the baked potato at the fore in fulfilling the need for a hot filling lunch, which has seen an increase in demand following the year with many working from home. An online advert will show the ease and speed of microwaved and oven-baked jacket potatoes, all finished with a multitude of toppings to please any consumer.

Social influencers will also chip in to help share the ample nutritional, cost and versatility benefits of baked potatoes, including the parenting networking site BritMums. They will be encouraged to share practical tips, tricks and recipes to inspire other parents to cook baked potatoes.

Jacket potatoes can be paired with almost anything to fulfil the needs of almost any consumer group. From left-overs, classic cheese and beans, to fresh salads or roasted veggies. Their versatility also provides easy meal solutions for households of any size.

So why specifically a hot filling lunch? This year's pandemic has caused extensive changes to everyday life, and the closure of foodservice has led to huge changes within consumer buying behaviours.



“ We feel the jacket potato ticks so many boxes. It is a key hot lunch option, has broad audience appeal, is low cost, convenient and versatile ”

Such change has included a rise in in-home dining, with retail volume sales of total potato products increasing 10% over the past year, and 11% for fresh potatoes.* With such behavioural changes coming to the fore, in September 2020 the market research group Kantar embarked on a detailed analysis of their data, to understand new shopper and consumer trends.

Nicola Dodd, who leads on the campaign, said: “Historically, consumers were segmented by things like gender, age, or household structure. However, detailed segmentation by Kantar and AHDB has shown that it’s more effective to segment by other means, such as their attitudes and behaviours to food. For example, some people are eager to try new recipes and cuisines, whereas others are more convenience seekers, who want meals to be quick and easy.”

In addition, segmentation analysis allows the breakdown of different types of meals, and Kantar revealed that this year has brought a substantial increase in the need for a ‘hot filling lunch’ now that more people are working from home.

Strategy director Rob Clayton said: “Our growers have had a challenging year, with the entire supply chain having to adapt to the changing demand market. We hope the campaign bridges the gap, in some way, between the surplus of fresh potatoes sitting in storage and the growing need for healthy, quality, versatile and cheap meals.

“We feel the jacket potato ticks so many boxes. It is a key hot lunch option, has broad audience appeal, is low cost, convenient and versatile, allows us to flex the content to target our key groups

and ensures the campaign stays relevant across the fresh, chilled and frozen categories. We are excited to deliver as much as we can for our levy payers, using this detailed consumer analysis.”

For more campaign-specific information, an array of downloadable assets and links to our social media channels, visit ahdb.org.uk/the-new-packed-lunch

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TACKLING THE APHID CHALLENGE

Two 2020 AHDB Strategic Potato (SPot) Farms have been trialling different ways of controlling the pest, writes Antonia Walker, AHDB Senior Knowledge Transfer Manager – Potatoes



Exciting results are coming in on the trials undertaken on aphid control in seed potatoes at the AHDB Potatoes' SPot Farm East, James Foskett Farms, according to potato agronomist Graham Tomalin of VCS Potatoes.

Plot trials involving eleven different treatments were set up to explore efficacy in preventing transmission of non-persistent virus, with results compared against a current standard insecticide programme and an untreated control.

The treatments included mineral oils, novel insecticides and adjuvants.

Graham said: "2020 saw high aphid pressure in East Anglia and at times the AHDB yellow water traps indicated five times the average virus pressure than the long-term average in East Anglia. This is an area of great concern, particularly for seed growers."

The peach-potato aphid (*Myzus persicae*) was one of the principal species caught in the area, and is a significant problem because of its insensitivity to insecticides such as pyrethroids.



“If we can succeed in reducing the virus load, there will be a massive benefit for seed potato growers, and ware growers will also benefit”

“We have observed increasing incidence of virus vectored into the seed crops, particularly PVYO and PVYN, and this has been putting seed potato growers under pressure.

“For the experiments, we used Pre-Basic seed stock with 0% virus,” he explained. “As we needed a source of virus, infector stock was planted close by, but not adjacent to, these plots so we could judge the level of infection with the different treatments.”

Some of the treatments were applied every three to four days, while others were at seven-day intervals.

“If we can succeed in reducing the virus load, there will be a massive benefit for seed potato growers, and ware growers will also benefit.”

Results of the trials were reported at AHDB SPot Results week and are available on the AHDB website.

Now that efficacy results are in, cost-benefit analysis will be done on all the treatment programmes. In addition, the effects of repeated mineral oil-based applications on tuber fresh weight yield will be compared with the current standard insecticide programme.

Mike Shapland, Farms Manager at James Foskett Farm, said: “We recognise that, as seed potato growers in East Anglia, virus is usually our biggest challenge.

“We strive to obtain the highest quality input stocks to give us a clean start but achieving really good isolation from potential sources of virus is extremely difficult.

“So this trial is especially valuable in assessing the efficacy of different regimes in a very high pressure season.”



IPM potential for virus-vectoring aphid pests

Innovative trials at the AHDB SPot Farm Scotland, Montrose-based Milton of Mathers Farm, have been exploring how to address the increasing threat of aphid-vectored virus.

Alternative practices following IPM techniques have been assessed for efficacy; looking at spring barley sown around headlands and boundaries, and wildflowers along tramlines of seed potato fields.

Jim Reid of Milton of Mathers Farm, said: “The incidence of aphid-vectored virus tends to be higher around the field edge or next to blank separation beds.

“Previous work has indicated that if aphids land in the cereal first, they purge or clean their stylet of virus on the cereal crop before flying into the potatoes.

“So these trials looked at how well planting a cereal crop around the boundary and a cover crop in the blanks between the beds might work.”

Eric Anderson of Scottish Agronomy, who led the trials, explained that, in addition to reducing the number of aphids attracted to the crops, planting wildflowers in tramlines also provides habitats for their natural enemies, such as hoverflies, ladybirds, lacewings and parasitic wasps.

Eric said: “Knowing how to maximise benefits from predators will play a crucial role in a future with fewer conventional products available and aphids with reduced sensitivity to insecticides.

“This is a win-win scenario as it aligns with likely future Scottish Government requirements for biodiversity enhancement, as well as providing effective IPM.”

Jim agrees, and believes that a rethink on both ends of the growing season is needed because speed and efficacy of desiccation is also important to reducing virus incidence.

“The sector is working together to find solutions.”

The results of these trials looking at aphid and virus control were shared at the AHDB SPot results week. Recordings are available at ahdb.org.uk/strategic-potato-farms

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Prevent, detect, control

As if the harvest 2020 season wasn't a challenge enough, 36 farmers took on the extra test of pitting themselves against each other, and ADAS experts, to be crowned the winner of the Wheat Fungicide Margin Challenge, writes AHDB Knowledge Transfer Officer, Natalie Gilbert.



The ADAS and AHDB challenge encourages farmers to develop crop management strategies that maximise gross margins rather than just yield alone.

The Challenge

A replicated plot trial was set up in a grower's field in each of three regions across England and Wales. Entrants were responsible for deciding, prior to each application, their preferred fungicide strategy, which was then applied to their plots. ADAS sent regular updates on the crop, applied each of the fungicide programmes, assessed the plots for disease and harvested each plot with a plot combine to calculate yield. This approach meant that the results could be compared accurately and fairly.



West and Wales winner, Mark Wood, with his dog Bovril

Three AHDB Cereals & Oilseeds Monitor Farms hosted the 2020 challenge, one in each of the West, East and South West, following the success of a single site challenge in Hereford in 2019. Each site hosted 12 AHDB-supported entries. Entries consisted mainly of current Monitor Farmers, Steering Group members or Arable Business Group members from each region.

Winners

The winners in each region were those with the highest margin over fungicide programme costs on winter wheat:

- **Mark Wood** (West and Wales): £1,320/ha from 8.6 t/ha
- **Andrew Bott** (East Anglia): £1,753/ha from 11.4 t/ha
- **Jonathan and Philip Dolbear** (South West): £1,367/ha from 8.9 t/ha

Margins

Across all of the entrants, the best margins were achieved with low-to-moderate fungicide inputs, both by product and number of applications. The average spend on fungicides was less than in 2019.

Margins were calculated based on the average grain price between 1 January and 1 August 2020 and fungicide costs sourced by ADAS. An application cost of £14/ha was included per application, to reflect the average cost per farm of applying the fungicide.

Season

Chloe Morgan, ADAS Arable Crop Pathologist, said: "The harvest 2020 season was exceptional. It started with very wet conditions at sowing, which made it difficult to establish a wheat crop, and then it went very dry in the spring."

In April, the three sites each received between 20–30 mm of rainfall in total. In May, average rainfall at all three sites was less than 10 mm, which was less than 20% of the MET Office long-term average.



“ In 2020, those who were bold enough to cut programmes to match the conditions and disease pressure came out on top ”

Chloe added: “Septoria was not a major problem this spring, as May rainfall is really key for it to splash up the canopy onto the top three yield-forming leaves. The very dry May meant any septoria stayed down at the base of the crop. With average rainfall in June, there was an increase in septoria up the canopy resulting in a late epidemic of septoria just when the crop was starting to senesce, so the trials only showed a small yield benefit from fungicides controlling septoria.

“This meant in 2020 those who were bold enough to cut programmes to match the conditions and disease pressure came out on top. Although this is easily done with hindsight, it is much more difficult during the season when future conditions are uncertain.”

Discussing the results

Mark Wood, AHDB Board member and former Monitor Farm host, said: “I’m a tight Yorkshireman and I don’t always think it’s all about straight cutting on inputs. What is also important is justifying them and making that bit of money stretch as far as possible. I go back to varieties, drilling date and the weather, building up the picture in my head all the way along.”

Strategic Cereal Farm East host, Brian Barker discussed the pressures of risk management: “Variety is the biggest building block, it’s how you spread your bets that allows you to be brave.”

The top three in each region were:

West and Wales

1. Mark Wood
2. Rob Fox
3. Martin Williams

East Anglia

1. Andrew Bott
2. Tom Pearson
3. Andy Pettitt

South West

1. Jonathan and Philip Dolbear
2. Rob Addicott
3. Ben Jeans and Rhys Evans

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Learning from experience



Emily Pope, AHDB Senior Knowledge Transfer Manager, reviews some of the key results from Strategic Cereal Farm activity for harvest 2020

American Novelist Willa Cather once wrote: “There are some things you learn best in calm, and some in storm.” What have our Strategic Cereal Farm hosts learned from the calms and storms of 2020?

Rob Fox, Strategic Cereal Farm West, said: “It was a difficult year for us and we only managed to get a fraction of our winter crops planted. Wheat did just under 6 t/ha, which is some of the worst we have had here.

“Every cloud has a silver lining, and for harvest 2020 the dry spring resulted in low disease pressure and reduced input requirements.

“Because the bulk of our crop didn’t go in until between February and April, we were spending less on fertiliser and herbicides because they were late- or spring-drilled crops.”

Managed lower inputs

The managed lower input trial at Strategic Cereal Farm East showed that in a low disease-pressure season there is little benefit from increasing inputs. While there was a small yield response to increasing fungicide spend on varieties with higher resistance ratings, the highest net margin of £106/ha was achieved under a low input programme. Even on susceptible varieties, there was only a small improvement in net margin between the low and high input regimes.

Looking ahead to harvest 2021, Strategic Cereal Farm Scotland’s lead researcher, Fiona Burnett, said: “Start with the preventative parts of integrated pest management (IPM). We know the very regular regional problems, and farmers and agronomists have the historic knowledge of what is relatively normal on farm. When it comes to making a decision in spring, you’ve already got the knowledge of what the winter was like, whether disease was in the crop, whether it was early drilled

or was a weaker variety. Review and monitor decisions on inputs as you go, to reflect the way the season develops.”

Pests and natural enemies

Field-specific management options are key for all aspects of IPM. Results from the assessment of grass and flower strips at Strategic Cereal Farms East and West revealed that the abundance of invertebrate pests and beneficials species varied in every field.

Large differences were found between contrasting habitat types. Group 1 ground beetles were found in all fields, though the highest numbers were recorded in a field next to well-established, undisturbed areas of non-crop habitat. The greatest number of Group 3 ground beetles, such as the seed-eating *Amara ovata*, were recorded in the meadow. In the cover crop and fallow land, there were plenty of Group 4 and Group 6 ground beetles. Group 4 beetles include *Notiophilus biguttatus*, *Bembidion lampros* and *Leistus fulvibarbis* species. Group 6 ground beetles consume a range of eggs and small insects, and can make important contributions to pest suppression.

Mark Ramsden, ADAS Crop Scientist and project lead for the harvest 2020 pest and natural enemies’ assessments, said: “The dense habitat and associated prey within the cover crops may provide beneficial habitat to promote these predator species. Surrounding habitats, underlying conditions and existing management practices all need to be taken into account.”

Cover crops

In addition to being an important habitat for beneficial insects, cover crops can contribute to improving the environmental credentials of your farm. Results from Strategic Cereal Farm East showed that a well-established cover

crop is effective in improving water quality by bringing nitrate concentrations in drainage water below 50 mg/l.

While cover crops have their advantages, they don’t come without some drawbacks.

The trials at the farm, which compared establishment systems with and without cover crops, showed that spring barley crop yields were reduced by about 2 t/ha following cover crops.

Brian Barker, Strategic Cereal Farm East host, said: “We had a very wet winter and a very dry spring, which hit the barley quite hard. In the ploughed treatment, we had done so much work to get the cover crop established, that when we planted the spring barley the soil was very hard. It had baked solid and we lost a lot of the seed to slugs and pigeons. Where we hadn’t disturbed the soil to establish the cover crops, we had an increase in earthworm numbers.

“We have to look at cover crops within the farming system and see whether they are providing a benefit in terms of economics, biodiversity or soil health.”

Striking the balance

All of the trials at Strategic Cereal Farms are analysed using AHDB Farmbench. But interpreting the results of on-farm trials is often more nuanced, as Brian explained: “If you’re looking at it from a financial point of view, cover crops had a negative effect. If you’re looking at it from an environmental, biodiversity and long-term soil health angle, it is actually better to have a cover crop.”

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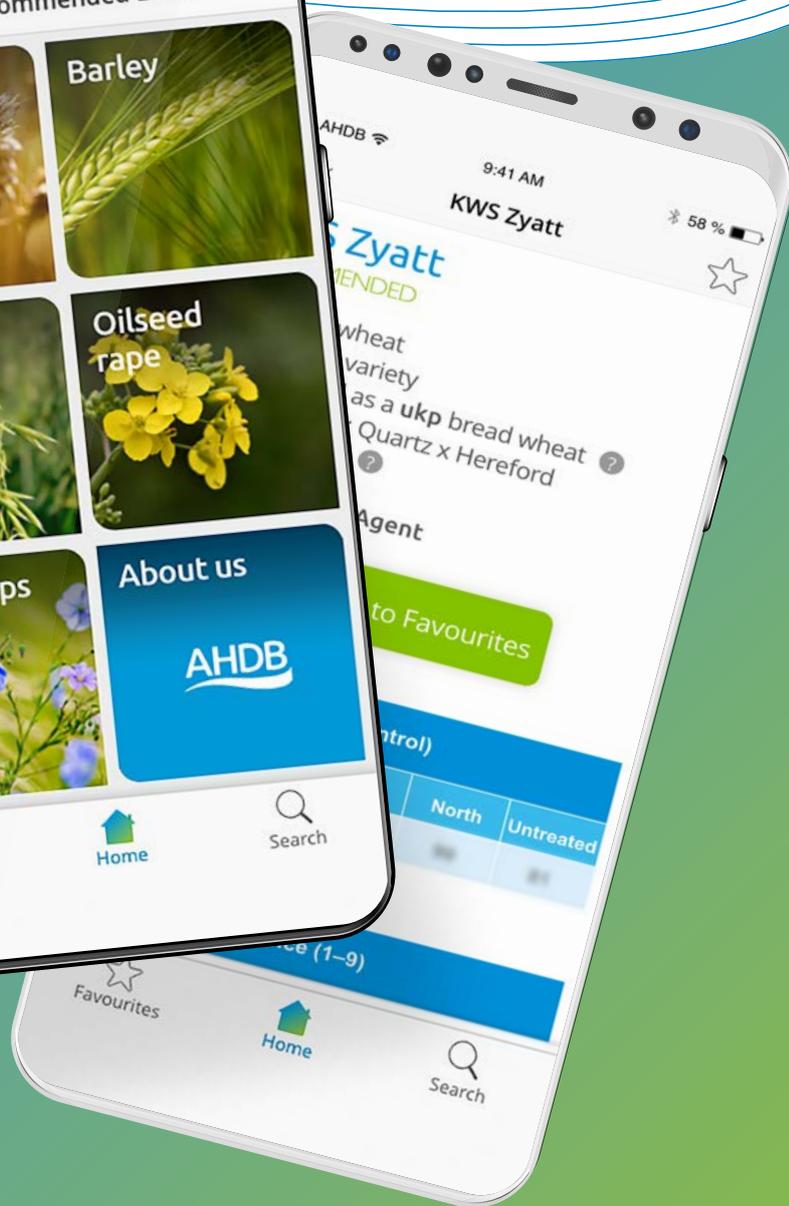
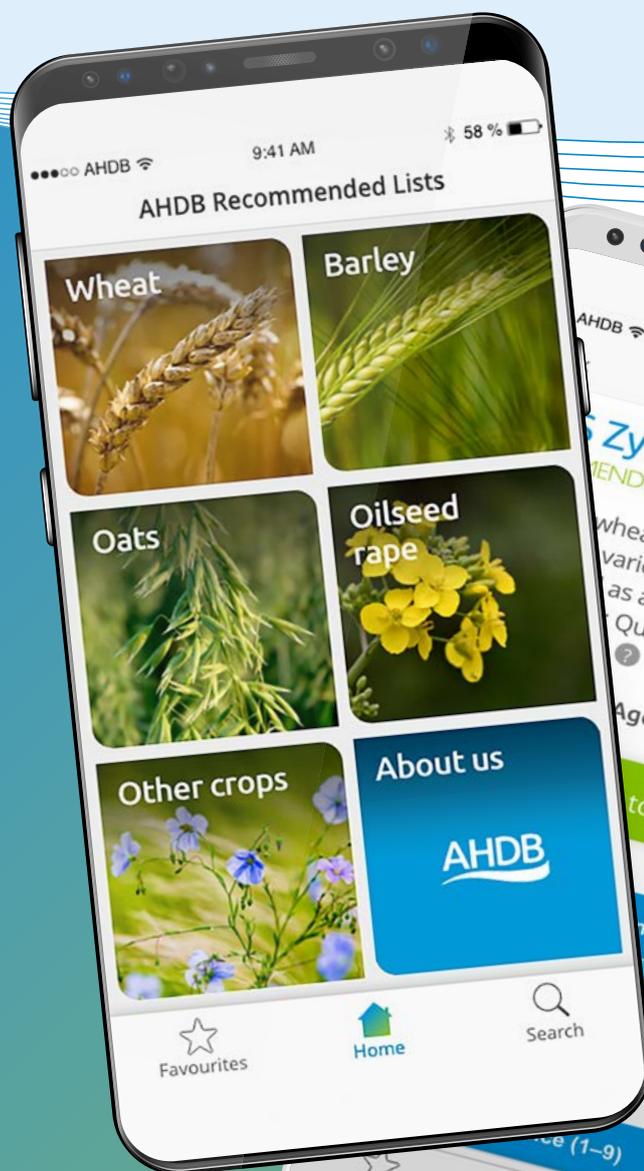
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