

# ARABLE FOCUS THE JOURNAL FOR THE CEREALS AND OILSEEDS INDUSTRY

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## How to fortify septoria ratings

A shift in drilling date could help shore up wheat's defences

## BPS Impact Calculator

Prepare for the biggest agricultural policy shift in a generation

## **RELAUNCH:** the next five years of variety trials

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The latest phase of the Recommended Lists (RL)

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# Welcome

#### View from the chair

This summer, I returned to the combine seat and enjoyed every minute of it, despite the weather. I had the chance to visit every square metre and develop the picture generated from a season's field walking.



It allowed for some useful firsthand reflections. From the MF 500 we once used – 10 ft wide, no lights and open to the elements – it is astonishing what today's combines can do.

My musings brought neatly into focus the complexity that surrounds data generated by such equipment and how to process it. It is a fascinating challenge to use information from multiple sources to guide decisions, especially when each season is unique. Getting close to the land helps reveal the problems and possibilities, such as the switching establishment technique.

Learning from experience is valuable. Especially to adapt to different circumstances the industry faces in this new cropping year. Global stocks are failing to match demand, logistics and lack of workers are affecting markets, and raw materials are rapidly rising in cost. So many of the things we have taken for granted are changing, and managing change will define the sector's success.

That success will come through people, the skills they have and how adaptable they are. And how we deal with the massive capital requirement of today's farming. It's an exciting time for everyone farming. The past certainty of how you farmed has gone. It is now about being open to new ways of working.

In addition to on-farm experience, we need to embrace science and its results. The good news is we will have gene-edited trials of wheat in the UK. The approach has already been picked up positively in other parts of the world. The key to sustainability is the development of crop genetics. All those within this field of science must be given every element of support and encouragement. Science is critical to our success, and AHDB plays a central role. On that note, please take a look at our Arable Review 2021–22 – it provides an excellent overview of the breadth and depth of our current research activity.

Finally, this is my last opportunity as chair to thank the many inspiring staff and board members I have had the privilege to work alongside. The guidance, dedication and experience of Martin Grantley-Smith and Rebecca Geraghty have been particularly invaluable to me and I wish Sarah Bell the best as she takes up the role of chair for the Cereals & Oilseeds council.

#### Paul Temple

AHDB Cereals & Oilseeds Sector Chair

View and download the Arable Review 2021–22: ahdb.org.uk/arablereview

# Over the hedge

**News from across AHDB** 

#### Farm Business Review service launched

AHDB's Farm Business Review service, funded by the Defra Future Farming Resilience Fund, is designed to help those most affected by the move away from direct payments. Aimed at beef, sheep, dairy and cereals and oilseeds producers across England, this free and impartial service provides expert advice and an online tool: **ahdb.org.uk/farm-business-review** 

#### AHDB is listening to levy payers

In the spring of 2022, we will ask levy payers to vote on how we invest their levy. The responses will help shape the future of AHDB, in particular the products and services we deliver for our sectors: Beef & Lamb, Cereals & Oilseeds, Dairy and Pork. You will need to register to vote, when the portal opens later this year. For the latest information, visit our website.

#### **Changes to the Farming Rules for Water**

Farming Rules for Water have been in place for over three years and are wide-ranging. Recently the Environment Agency released a regulatory position statement on the Farming Rules for Water. It outlines when organic material can be spread on farmland. Find out more at **ahdb.org.uk/water-regulations** 

#### Ammonia trial to save pig industry £15.3m

The British pig industry is reducing ammonia emissions, according to our monitoring trials. By proving that emissions are being controlled sufficiently, it is estimated that producers and the supply chain will save around £15.3m by reducing the need to invest in buildings and make mitigation payments.

#### **Strategic Dairy Farm expansion**

We now have a network of 21 Strategic Dairy Farms across Great Britain. Representing a mix of all-year-round and block calving systems, they share good practice and provide access to industry expertise and the latest research.

### Four new farmers join the Farm Excellence Programme

Four beef and lamb farms, from across England have joined AHDB's Farm Excellence project. Over the past five years, we've worked with 16 Strategic Farms, which have all had success in implementing best practice, resulting in improved financial performance.

### Monitor Farm meetings return to a normal service

After switching to digital delivery for the last 12 months, our Monitor farm meetings return to a farm-live format from early November.

To search and book your local or regional AHDB events, visit: ahdb.org.uk/events

## Students' Union: the wheat chemicals aphids can't resist

With pesticide options for aphid control waning, an AHDB PhD studentship aims to turn the tables on these damaging pests. Sue Cowgill investigates how the work exploits the power of natural chemicals released by old wheat varieties.



Various aphid species, particularly the bird cherry-oat aphid and grain aphid, transmit yield-robbing *Barley yellow dwarf virus (BYDV)* to cereals. The loss of neonicotinoid insecticide seed treatments combined with moderate levels of pyrethroid insecticide resistance in UK grain aphid populations mean integrated pest management (IPM) is now essential for these pests.



Based at Harper Adams University, the PhD student – Maria Elisa Leandro – has completed the first year of her project. The work delves into the mysterious world of how aphids locate crops. Although partly due to visual cues, aphids also respond to olfactory stimuli – in essence, they can 'smell' certain crops. In fact, it has been known for a long time that aphids prefer to land on some wheat varieties over others.

Almost 50 years ago (1972), the winter wheat variety Maris Huntsman hit the market. It boasted a 20% yield advantage over the previous market leader. It soon became widely grown in the 70s and 80s. However, yield wasn't the only attraction. The Huntsman was hunted – this, now heritage, variety caught the attention of passing aphids. Some believe the variety may release specific semiochemicals – 'semio' derives from the Greek word for 'signal' – irresistible to some aphid species. Certainly, the variety contributed to the severe aphid outbreaks seen at that time. Maria will investigate such signals and how to use them to trick the pest.

In the first year, grain aphid landing preferences have been determined on ancient (e.g. Einkorn), heritage (e.g. Maris Huntsman) and modern wheat varieties (including the BYDV-tolerant wheat, RAGT Wolverine). The tests (see main image) use varieties grown in pots arranged in a circle within a cage. Aphids are then released from the centre of the circle and their spread studied.

The preliminary findings show clear preferences among the aphids, with adults and nymphs found in greater numbers (after seven days) on the ancient and heritage varieties. The modern wheat varieties tested were far less attractive. However, observations suggest that once located by an aphid, the variety has little impact on aphid performance. Similar experiments in 2021 also include bird cherry-oat aphid.

An improved understanding of these chemicals provides the potential to use them against aphids. For example, aphid-attractive trap crop strips could encourage the pests away from cash crops. These molecules could also be used in aphid traps, powering the next generation of monitoring solutions.

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Search for this project – IPM of aphid BYDV vectors (21120186) – at ahdb.org.uk/research



## **RELAUNCH:** The next five years of variety trials

The Recommended Lists (RL) is hardwired into the fabric of cereals and oilseeds production – adding the finishing touches to years of plant-breeding investment. Paul Gosling, who leads the work at AHDB, looks at the latest phase of the variety-trialling project. Variety development is about the survival of the fittest – with each potential commercial variety facing a myriad of hurdles in breeders' tests. Those that make the grade go on to feature in National Lists (NL) trials. Only the ones that emerge from this obtain permission to be marketed in the UK. It is this special pool of varieties that acts as the foundation for recommendation.

Despite the RL's continuous nature, the project requires cycles of significant review and investment by industry. This year, we began the latest (five-year) instalment of the work. As usual, it involves a staggering number and diversity of trials.

#### **RL** project in numbers

Duration	2021–26	
AHDB cost	£8,282,000	
Total value	£22,229,529	
Crop types	11	
Trials	> 400*	
Varieties	> 800*	
Plots	c. 42,000 (RL and NL)*	
*Annual estimates		

The trials help tease apart varietal differences and reveal genetic potential. In addition to fungicide treated and untreated yield trials, the RL also includes naturally infected and artificially inoculated (with selected pathogen isolates) plots to

#### **Evolving system**

deliver robust disease information.

Established over many years, the RL's reputation is built on its independence and robustness. However, while these core elements remain vital, it is essential to evolve the project.

In recent years, in response to user feedback, we launched new and improved digital resources – such as the RL app (pictured) and variety selection tools. We also put more resources into higher priority areas, such as untreated trials.

In response to rapidly evolving pathogen populations, especially wheat rusts, we adapted our analysis of disease data to better account for the emergence and spread of resistance-busting strains. This included the introduction of the wheat yellow rust 'watch list' earlier this year, delivering a way to flag varieties that performed out of line with their published disease resistance rating at some sites.

In late spring, the disease story took an unexpected twist. In the last few years, yellow rust resistance has grabbed the headlines. This year, however, septoria tritici stole the show. Based on multi-gene resistance, septoria ratings are far less likely to fall dramatically compared to the rust equivalents. Still, some genes play a bigger role than others and, if one of them is unpicked by the pathogen, this can result in unexpected disease levels. In-season observations in trials and commercial crops pointed to varieties with Cougar in their parentages, with several Group 3 and some soft Group 4 varieties suffering a decline in resistance. With the picture complex, the full implications of this septoria turbulence will be revealed in the RL 2022/23 (due in December).

At present, we are reassessing lodging resistance too (wheat, barley and oats). This system needs to change. For example, although the field performance of winter barley varieties varies, such variations do not translate into sufficiently different lodging ratings. Our proposed approach will help pull apart these differences and deliver a wider range of ratings.

Other improvement areas include the potential to develop verticillium stem stripe (oilseed rape) and net blotch (spring barley) disease resistance ratings. We are also assessing oilseed rape's resilience against cabbage stem flea beetle larvae.

#### How decisions are made

At the end of each year, the RL is released. It represents the culmination of countless decisions – from the moment a promising line is identified by a breeder to its eventual recommendation. How varieties are trialled and assessed are ultimately the responsibility of the RL Project Board, and its three supporting Crop Committees. These groups also help triage the numerous demands to deliver more through the RL by setting priorities and managing budgets.

This team involves the expertise of numerous stakeholders – from breeders and pathologists to farmers and end-users. As members serve on fixed terms, opportunities arise every year for passionate people to join and get behind the beating heart of variety recommendation.

For complete information on the RL, including Board and Committee opportunities, visit ahdb.org.uk/rl

For further information, contact:

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### ahdb.org.uk/rl

App available on Google Play and App Store



# How to fortify SEPTORIA RATINGS

With septoria tritici disease resistance ratings taking a knock in some winter wheat varieties in 2021, Robert Saville, AHDB Crop Protection Scientist (diseases), examines how a shift in drilling date could help shore up a crop's ability to withstand attack.



At the beginning of June, many crops looked relatively clean. As the 60 entrants in the ADAS/AHDB fungicide margin challenge approached the critical T2 spray timing, the lid appeared to be on winter wheat foliar disease number one – septoria tritici.

In fact, at that time, the ADAS-led team of assessors did not see clear differences between the fungicidetreated and untreated plots, including in septoria-susceptible varieties in the West of England. The dry April appeared to have checked disease progress. Despite rainy spells during May, it was relatively cool, and this helped slow down septoria's pace. However, June turned wetter and warmer, helping the disease take hold on yield forming leaves – especially in more susceptible varieties in higher-risk situations.

Plant breeders work hard to deliver improvements in varietal resistance. However, did you know you can effectively chip off a septoria rating point (or more) as soon as the seed hits the ground? When it comes to drilling early or late, this is what our research clearly shows.

The ADAS-led work investigated the impact of sowing date, seed rate, variety choice and fungicide programme on the severity of septoria and wheat yield. It has long been known that earlier sowings are often associated with higher disease severity during the main yield-forming period, probably because crops are exposed to spores earlier in the season. Through the 25 trials conducted over five growing seasons, the work showed that this diseasepressure effect is consistent. The researchers also developed a model to quantify the impact of drilling date on the septoria disease rating published in the AHDB Recommended Lists (RL). The chart (Figure 1) provides a simple way of looking at the model's output – across late sown (top line – average sowing date 20 October), standard sown (middle line – average sowing date 7 October) and early sown (bottom line – average sowing date 22 September) varieties.

Compared with the RL ratings, on average, early sowing decreased the effective rating by approximately 0.6, whereas late sowing increased the effective rating by approximately 0.6 on the resistance-rating scale. For example, the effective rating for a variety with a RL disease resistance rating of 6 is predicted to be 5.4 and 6.6 for early-sown and late-sown crops, respectively. This information is based on the range of varietal resistance ratings (4.3–7.0) tested in the project. Naturally, the difference will be less for varieties outside of this range.

Sowing-date decisions require a lot of factors to be weighed up, including the disease element. However, this new information will help you quantify





crop-level risks whenever your crop goes in the ground and whatever the published RL rating of the variety.

In recent years, we have promoted how IPM can lead to less intensive fungicide programmes. This activity includes on-farm trials and demonstrations at our Monitor Farm and Strategic Cereal Farms, in addition to the fungicide margin challenge. We plan to build on this effort in 2022, with further information published in the next edition of Arable Focus (spring 2022).

For further information, contact: **Robert Saville** Crop Protection Scientist (Diseases) **robert.saville@ahdb.org.uk** 

Search for this – Combining agronomy, variety and chemistry to maintain control of septoria tritici in wheat (Final Project Report 634) – and the fungicide challenge project at ahdb.org.uk/research

# **RESULTS TO NOURISH** spring barley crops

Whether an old hand or a newcomer to spring barley, it is important to have reliable agronomy information to hand. AHDB's Georgina Key reports on new research findings set to shape RB209's nitrogen recommendations for this crop.

In recent years, numerous pressures on winter crops have led to an explosion in spring barley plantings – rising from just under 700,000 to 1m ha between 2016 and 2020 (although contracting in 2021). Behind this statistic is a raft of new (or returning) farmers to the market. The expansion has also seen the crop march into new territories beyond the traditional light-textured soils, including those with a heavier texture.

With new spring barley varieties also hitting the AHDB Recommended Lists (RL) each year – altering nutrient-use efficiency dynamics – we commissioned ADAS to lead research to help the AHDB Nutrient management guide (RB209) keep pace with modern production systems. The work featured an impressive array of trials, building on bespoke research experiments conducted as part of the project (2018–20) and a review of other recent experiments (2005–17). With rates, timings, yield and quality in the spotlight, the work represents one of the most significant investments in nutrient management for spring barley for quite some time.

#### Adjusting nitrogen for yield

When it comes to yield, RB209 recommendations are based on a 'typical' yield benchmark of 5.5 t/ha (spring feed barley). Going into the project, it was felt that this yield figure might be a little conservative. Certainly, when yields are pushed, the crop is



capable of going far higher. For example, the five-year (2016–20) yield average in RL trials is 7.5 t/ha.

This project confirmed these suspicions. It followed RB209 recommendations and landed an impressive average yield (selected experiments) of 7.4 t/ha. Although many commercial yields will fall shy of this, it is clear that modern spring barley varieties use nitrogen more efficiently compared to their predecessors.

As RB209 suggests that the recommended nitrogen rate is increased by 20 kg for each additional expected tonne (up to 9 t/ha) above the 5.5 t/ha benchmark, it may overestimate fertiliser nitrogen requirements. In fact, across all experimental datasets, the average recommended nitrogen rate was 165 kg nitrogen/ha. However, the measured average economic optimum nitrogen rate was far lower – just 118 kg nitrogen/ha.

The researchers proposed two solutions to readjust RB209's recommendations. Firstly, to change (increase) the yield adjustment. Secondly, to adopt a method that calculates fertiliser nitrogen requirement based on crop demand and fertiliser recovery. The final report provides the details. However, each option results in similar recommendations at expected yields of 7–8 t/ha.

### Readjusting nitrogen for quality

Attention to detail is essential, especially when it comes to hitting the typical grain nitrogen content specifications required by malting markets – malt distilling (below 1.65%), brewing (1.60–1.85%) and grain distilling (above 1.85%). Hitting specs requires a mix of quality guidance and local experience to strike a balance between pushing yields and keeping grain nitrogen content within tight bands.

Across all experimental datasets, it was found that a reduction in the nitrogen rate of 29 kg nitrogen/ha brought down grain nitrogen content by 0.1%. These results are broadly in line with the current RB209 recommendation (reduction of 30 kg nitrogen/ha). The average grain N% at the nitrogen optimum was 1.7% (currently, RB209 is based on 1.9%), and around two thirds (67%) of crops achieved a grain N% of under 1.8%. Ultimately, historic field grain N% and yield data will help guide decisions on the potential to reduce fertiliser rates.

#### **Nitrogen timing**

Results from 11 nitrogen-timing experiments largely confirmed RB209's recommendations, with all nitrogen applied between drilling and early stem extension (with large timing flexibility in this window). The work also concluded that application of at least 40 kg nitrogen/ha in the seedbed is often beneficial – but should be capped at 40 kg nitrogen/ha, where nitrate-leaching risks are high (e.g. sown before March, grown on a light-sand soil or where high rainfall occurs soon after drilling).

The research also investigated sulphur rates and found that current RB209 recommendations were sufficiently accurate. The research findings will now be reviewed by the UK Partnership for Crop Nutrition – the body responsible for revising RB209. Search for this project – Updating nitrogen and sulphur fertiliser recommendations for spring barley (Final Project Report 635): ahdb.org.uk/research

For further information, contact:

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Resource Management Scientist georgina.key@ahdb.org.uk

To find out more visit: ahdb.org.uk/rb209

# How reliable is **Early Bird Survey** planting data?

With the Early Bird Survey results due in November, growers will get a first look at the potential planted area. Vikki Campbell, from AHDB market intelligence, explains how historical data can be used to assess the robustness of the survey.



#### What is the Early Bird Survey?

Each November, timing with the conclusion of winter drilling, AHDB publishes the Early Bird Survey (EBS) of planting and planting intentions. The survey covers key cereals, oilseeds and other crops – on a national and a regional basis.

It provides the industry with a first look at the potential planted area for the upcoming crop year. The survey results can help shape businesses decisions up and down the cereals and oilseeds supply chain. With the EBS being published around seven months ahead of government figures, it can inform decisions much earlier than would otherwise be possible.

#### How reliable is it?

Carried out since 2005/6, this long-term data set provides an opportunity to analyse the historical robustness of the findings. With the 2021 survey release just around the corner, we are looking at how previous survey results compare against the final figures published in Defra's June Agricultural Survey.

For the key crops, we can look at the average of the previous five seasons and the differences between the EBS results and the final Defra areas (Figure 2). For example, between 2016–19, the EBS has, on average, only been 2.4% different to the final published Defra wheat area.

#### MARKETS



Figure 2: EBS historically been a robust predictor - particularly for wheat

This analysis includes the outlier of the 2019/20 season, where many growers planting intentions changed at the mercy of weather conditions. With the differential ranging between -8.4% and 0%, it was the outlying 2019/20 season that caused the stretch in this variability. Given that many growers were forced to change their planting and planting intentions, many having to rip out crops and go again, a degree of flux is perhaps unsurprising in this season.

Similar patterns ring true for other combinable crops. The winter barley difference ranged between 0.8–6.1% between 2016–2019. However, with winter barley cropping intentions last season (2020) severely weather-disrupted, the final Defra June figure came in 35 kha less than the area originally intended, a difference of -11.3% to the original EBS forecast.

Given the smaller area planted to oats, there is a larger swing in the percentage difference figure. In 2017, 31 kha more oats were planted according to Defra than the 130 kha forecast in the EBS. In this season, the difference suggested that the total oat area benefited from the general upward trend for spring crops. However, in Scotland, reduced wheat plantings were likely a key factor. As the oat area is relatively small in comparison to that for other crops, estimations should be treated with additional caution.

With poor establishment in the dry autumn, followed by cabbage stem flea beetle damage, the oilseed rape area in England reduced to the lowest level since 2003 in 2018/19. Damaged oilseed rape crops, in many circumstances, were replaced with other cereal options. This largely resulted in the difference seen between the EBS and Defra June survey results.

#### What are the limitations?

Generally, in the more 'normal' growing seasons, between 2016–19, the EBS is a robust measure of planting and planting intentions. However, there are limitations to this. Given that it includes planting intentions, primarily for spring crops, there is an opportunity for these to change. In addition, due to the timing of the survey, there is still much of the growing season ahead for the crop to potentially be adversely affected by pest or weather damage. These damaging factors can play a significant role in the final area recorded of the season, as exampled by 2019/20.

Conversely, it also highlights how growers' decisions are often forced to change, particularly if conditions mean that the intended crop becomes unviable. This shows the adaptability of the industry to be able to flex to external forces should the need arise.

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Access the 2021 Early Bird Survey (due November) for a first look at what UK national and regional plantings and planting intentions could be for crops for the 2021/22 marketing year: ahdb.org.uk/early-bird-survey

# Have you weighed up the **EXPORT OPPORTUNITY?**

With planting decisions for next year looming, growers may need to consider any potential export market opportunities. Dorit Cohen, AHDB Exports Marketing Manager, delivers the latest market picture.



There is a core market overseas for UK-grown quality wheat. To help growers exploit export opportunities, AHDB has developed the uks soft biscuit wheat (Group 3 varieties) and ukp bread wheat (Group 1 and 2 varieties) classifications. These help overseas buyers, who may be unfamiliar with UK varieties, to understand the qualities that the grain possesses.

Overseas buyers commonly use the Chopin Alveograph test to measure the baking strength and extensibility of the dough (P/L and L values). Whereas **ukp** faces stiff competition from many other origins, millers in Portugal, Spain and North Africa value the extensibility of **uks** wheat and appreciate its long L value. Its low P/L value and excellent elasticity – not easily sourced from other origins – makes **uks** wheat ideal for many types of biscuits and baked goods. As such, the UK has a competitive advantage over other origins, and UK wheat continues to be pivotal in these markets. For example, although a niche market, the UK has been a consistent and reliable supplier of **uks** wheat to the Iberian Peninsula for over 20 years.

The Recommended Lists 2021/22 boasts some excellent Group 3 varieties that fulfil overseas millers' requirements with P/L values of 0.3 and under – KWS Firefly and Elicit. New varieties on the horizon for this season with low P/L values include LG Illuminate and LG Quasar. Another promising variety, Merit, boasts a P/L of 0.2, ideal for one of Spain's top milling companies and a regular recipient of **uks** wheat for certain types of Spanish bread. With around a 10% decrease in the Spanish soft wheat crop this season, Spanish millers will eagerly be looking to the UK to source their biscuit and niche bread requirements. Due to terrains unsuitable for biscuit-wheat production in Portugal and Morocco, there is a constant requirement for biscuit-wheat imports, for which the UK has traditionally been a steady supplier.

The planting season 2022/23 is fast approaching, and it is a good opportunity to consider export opportunities. With this in mind, talk with merchants and agronomists about the potential and the most appropriate varieties to consider.

To find out more visit: ahdb.org.uk/cereal-exports

For further information, contact: **Dorit Cohen** Export Marketing Executive (International) **dorit.cohen@ahdb.org.uk** 



# AHDB Cost Management Hub at CropTec 2021

Visit our stand at CropTec for a new and exciting seminar discussion. Our farm economics analysts will provide unmissable insight into reducing unit costs of production, new technology and cutting-edge agronomy.

Register for the event today: croptecshow.com



### AGRILEADER

# Putting people at the HEART OF THE FARM BUSINESS

Izak van Heerden, Senior Knowledge Exchange Manager – Business, Insights and Skills, explains how the AgriLeader programme aims to help keep your team trained and motivated.



A task-orientated approach, with attention to detail, is often a key to farm-business success. However, investigations as part of our AgriLeader programme found that very few (0.37%) farm businesses invested in formal Leadership and Management Development (LMD) training each year.

The AgriLeader 2030 'Bridging the Gap' report identified this as a constraint in the progression of farm businesses. For a thriving and progressive farm-business sector, LMD is not only essential but needs to be targeted at all levels to ensure a steady supply of effective managers and business owners in the industry.

**66** The Agrileader event delivered an excellent debate with knowledgeable panellists covering trends – the changes in consumer buying habits over last 12 months are fascinating

Nick Bumford Guiting Manor Farms Ltd., Gloucestershire The good news is that AHDB AgriLeader is here to help. Recently, we have expanded the programme too, extending beyond top-level business owners and managers. Whether you are the owner of a large arable enterprise, a small family farm, or just starting your management journey, we can support you every step of the way – whatever the challenges you might face.

The latest phase of the programme addresses major challenges and trends (identified in the report):

- Increased use and importance of technology and digitisation
- Population growth and increased demand for food
- A need to balance production and the delivery of environmental goods and services
- Changes to the marketplace and support payments
- Social change and rise of the 'concerned' consumer

The new tiered offering builds on AgriLeader's three areas of leadership – leading self, leading people and leading business.

In particular, the improved programme puts more emphasis on understanding people's behaviour and how to influence it. This aspect is a challenge for all businesses and wider society. However, it is essential to tackle it head on – the effective management of behavioural traits can really make a big difference to your farm's bottom line.

#### Get involved

The AgriLeader community is growing. It is an open platform, delivering a variety of tools and resources. However, it relies on its members to shape the development of the initiative. In particular, the community provides a forum for regular, open and honest feedback. It also identifies critical topics to address in future activities. We recommend that members commit at least one hour a week – although the more you invest, the more you will gain in return.

The networking opportunities are a particular strength of AgriLeader – no matter where you are in your farm-management career. Regular events, which are at AgriLeader's core, aim to help you be the best leader you can be.

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#### AGRILEADER ON THE WEB

- Information on AgriLeader events
- Sign up to The Leader our regular e-newsletter
- The latest podcasts, videos and guidance on business and leadership
- Access inspirational speakers via our bimonthly 'Talking Leaders' initiative
- Download the AgriLeader 2030: Bridging the Gap report

ahdb.org.uk/agrileader

## Planning for PAYMENT POLICY CHANGE

The Basic Payment Scheme (BPS) is due to be phased out in England by 2028. David Swales, AHDB Head of Strategic Insight, discusses the biggest agricultural policy shift in a generation, including how your soils will deliver income.

Based on farm business survey data (2019/20), it is estimated, on average, that the BPS contributed around 60% of UK farm net income. Although there is a lot of variability associated with this average, it demonstrates the significant reliance on BPS.



#### **Income impact**

As it is important to assess the potential impact of payment changes on your farm business, we have published a simple BPS Impact Calculator (**bic.ahdb.org.uk/calculator**). It is part of our Farm Business Review service, which is designed to support your farm business through this period of change.

Using this calculator, the example (see Figure 3) illustrates what payment reductions look like over the next seven years at a 375 ha arable farm (based on a 2019/20 BPS income of £81,550).



Figure 3. Example BPS reduction estimates (2020–28) for a 375 ha arable farm

For much of 2020 and 2021, market prices have been buoyant, including arable commodities. However, with volatility in the market and input prices increasing, it is important not to rely on high prices and prepare for the lows.

#### New payment systems

There are new payment opportunities to help mitigate the reduction of BPS payments. This year, Defra announced the first payments under the Sustainable Farming Incentive (SFI). It is the first of a host of new environmental and public-good-based schemes.

Initially, there are four core 'standards' available, depending on the farm sector and business circumstances. Each standard has three levels – introductory, intermediate, and advanced – with payments made on a per-hectare basis. Naturally, more actions are required to secure the higher the payment levels. For arable farmers, the primary standard is the 'Arable and horticultural soils standard', with further details presented in the table.

#### Farm Business Review service

It is important to talk through options to help minimise the farm-business impact. Use your full network – talk with family members, farm staff and advisers, financial experts and the AHDB Knowledge Exchange team.

Until February 2022, cereal and grazing livestock producers in England can also benefit from a free and impartial one-to-one consultation with an experienced farm adviser. The consultations, designed to discuss your options and the support available, are funded by the Defra Future Farming Resilience Fund.

As well as shifting domestic policy, the global trading environment is also changing. Following the UK exit from the EU, the Government is signing new Free Trade Agreements with trading partners. The changing dynamics may deliver extra competition, but there will also be opportunities, which must be considered too.

For further information, contact:

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#### FUTURE-PROOF YOUR FARM BUSINESS

- Assess impact
- Consider income
- Talk and explore

To register interest in the Farm Business Review, sign up at: ahdb.org.uk/farm-business-review

For the latest on trade and policy, visit: ahdb.org.uk/trade-and-policy

Level	Payment	Actions
Introductory	£26	Complete a basic soil assessment Green cover over winter (5% area) Increase soil organic matter (10% area)
Intermediate	£41	Complete a basic soil assessment Green cover over winter (10% area) Increase soil organic matter (15% area) Use no, low or min tillage techniques (25% area)
Advanced	£60	Complete a basic soil assessment Green cover over winter (15% area) Increase soil organic matter (20% area) Use no, low or min tillage techniques (25% area) Create a soil management plan

Arable and horticultural soils standard payments per hectare, per year

# From herbicide resistance to trade concerns, **UK farmers are not alone**

Mark Topliff, AHDB Lead Analyst – Farm Economics, puts the three hottest topics from the 2021 international agri benchmark conference in a UK context.

#### **Agronomic challenges**

Across the USA, Brazil, Canada, Australia and Europe, herbicide resistance has accelerated over the last 40 years. Globally, there is known resistance to 21 of 30 herbicide modes of action and 164 herbicides\*. The impact is staggering. Brazil, for example, has 47 resistant weed species. In Brazilian soybean production alone, the resistance impact is estimated at 1.7 billion US\$ annually, with additional control costs between 10–50 US\$/ha. The USA has even more herbicide-resistant weeds (120 species).

Compared to the global situation, herbicide resistance is not as severe in the UK (18 resistant weeds have been reported). Despite UK productivity levels, resistance still has a major impact and the global situation must accelerate the adoption of best resistance management practice.

The USA, Canada and Europe confirmed the global-issue status of nutrient pollution. Soluble phosphorus run-off from farms contributes to algal blooms in North America's Great Lakes and hypoxia dead zones in the Gulf of Mexico. Ohio State University (OSU) is looking at solutions, including the creation of phosphorus-filtering wetlands. Where fertiliser (other than manure) is applied to more than 50 acres, certification is also required – with a requirement to take a two to three-hour nutrient management refresher class every three years. As new UK policies seek to drive better environmental protection practice, it is important to research the impact on crop production – from a productivity and cost point of view. UK-based research is essential, but lessons can be gleaned from global efforts too. We all want to keep fertiliser in the soil where crops can use it, only applying what is needed and place it with precision for efficient crop growth.

#### **Gene-edited vs GM crops**

Bayer and agri benchmark described the gene-editing technique. It can deactivate an unfavourable characteristic, enable a beneficial characteristic or directly insert a desired trait into a crop. It only exploits genes from the same species – marking it apart from genetically modified (GM) techniques, which often use genes from other species.

However, a global debate rumbles on – should gene editing be governed by the same legal status as GMOs? While the world muses, China and the USA have taken the lead on market-oriented applications – dominated by cereal and oil crop varieties. Legal definitions will inevitably be established. However, a varied global interpretation has the potential to set up significant trade conflicts.

Recently, the UK Government altered its position, which, in the first instance, will encourage UK-based R&D. As with other technologies, it will not be a substitute for good agronomy. However, greater freedom (compared to GMOs) to develop and market gene-edited varieties will potentially deliver powerful new traits to UK varieties rapidly.

#### Farm to Fork Strategy

Yelto Zimmer, agri benchmark, explored the proposed Farm to Fork Strategy that aims to reduce EU greenhouse gas (GHG) emissions by at least 50% (compared to 1990 levels), deliver 50% lower nutrient losses, reduce use and risk from crop protection products by 50% by 2030. It also aims to increase the share of organically managed land to 25% of the total in the same timeframe.

He felt there was scope to increase crop nutrient use efficiency (NUE), with bigger wins potentially coming from manure, rather than mineral fertiliser, efficiencies. Yelto also highlighted a lack of empirical evidence that crop protection products affect biodiversity losses. He also cited a lack of benchmarks against which to measure proposed improvements as a major concern. The drive to increase the organic area may also trigger an undesirable impact on land-use change – by far the most important source of GHG emissions from crop production.

If the EU goes ahead with its proposals, it may become misaligned with non-EU trading partner strategies, including the UK. Once again, this could lead to trade conflicts.

#### **KEY CONFERENCE POINTS**

'agri benchmark' is an an international network of farmers, consultants and researchers.

- Globally, herbicide resistance affects 21 of 30 modes of action and 164 herbicides\*
- Black Sea winter wheat production will help drive global wheat price in 2021/22 (source: Rabobank)
- China's feed-grain demand may more than double its imports in 2020/21, increasing further by 2025/26
- China and the USA lead the way on market-oriented genome editing applications – dominated by cereal and oil plant varieties
- EU Farm to Fork Strategy proposes to increase the share of organically managed land to 25% of the total by 2030

\*Herbicide resistance source weedscience.org

For further information, contact: **Mark Topliff** AHDB Lead Analyst – Farm Economics mark.topliff@ahdb.org.uk

# An appetite for aphids: The natural enemies feasting on our foes

Emily Pope investigates the impact of non-crop habitats on natural enemy populations at our Strategic Cereal Farms.



The toolbox of conventional pesticides is decreasing. So, an important element of any IPM strategy is to conserve the natural enemies of pests. Trials at two Strategic Cereal Farms are testing how flower and grass margins can help boost beneficial organisms, keep pest populations down and reduce the need for chemical control.

The field-scale trials use three fields at each farm.

#### Field 1

1

2

A farm standard used as the control against which to compare the other fields.

#### Field 2

Features flowering/grass habitats at the edge of the field.

#### Field 3

Features flowering/grass habitats at the edge and within the field.

Note: Natural enemies are also called beneficial insects/organisms or predators.

#### **Flower power**

At Strategic Cereal Farm East, the flower and grass species were recorded at nine assessment points along each of the strips. Using a 0.25 m<sup>2</sup> quadrat, the team from NIAB counted the number of plants and grass-weed tillers. Ryegrass made up the greatest percentage of the species found because the field was in herbage ryegrass the year before. Other species included oxeye daisy, wild carrot and musk mallow.

Dr Aoife O' Driscoll from NIAB said: "We monitored the fields for the whole season, and there has been no movement of any of these species into the field. The crop has been clean. There are big differences in the structure of the margins. The differences in species are highly visual, varying in time and space."

#### Natural enemy activity

Aphid bait cards and visual assessments are used to monitor the number of natural enemies (including ladybirds, lacewing larvae, and hoverfly larvae). Live aphids are attached to bait cards and placed next to water traps.

In June, aphids were common across all fields. By July, differences in the fields with margins were recorded, with many spider webs detected on wheat heads and lower down the crop.

At the Strategic Cereal Farm West, the abundance of aphids was low. A visual inspection of tillers at GS60 indicated aphids were well below the treatment threshold. However, the aphids on the bait cards were predated in all fields, meaning natural enemies were active. The strips supported a greater diversity and abundance of natural enemies, including hoverfly larvae and parasitoid wasps. The strips in the middle of the field were effective at drawing natural enemies further into the crop.

It's not only the aphids to contend with. Dr Mark Ramsden, ADAS, said: "Slugs appeared to benefit from the floral strips. However, they also promoted the beneficial ground beetles that helped control them. Additionally, slugs didn't appear in the crop next to the strips, and numbers were below the treatment thresholds."

#### Farm-scale findings

At Strategic Cereal Farm West, the use of strips appeared to have had an impact on the farm scale. The diversity and abundance of natural enemies increased, in part, because of the floral strips. This is not surprising, as most natural enemies can move further than the distance between fields.

Improving the long-term resilience of the natural enemy community across the farm will minimise the frequency of economic thresholds being exceeded. The natural enemy population will be better equipped to respond to pest infestations and reduce population growth.

For further information, contact: Emily Pope Emily Pope, Senior Knowledge

Transfer Manager emily.pope@ahdb.org.uk

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Follow the Strategic Cereal Farm story at: ahdb.org.uk/strategic-cereal-farms

## **FARM BUSINESS** REVIEW



# Prepare your business for the post-BPS world

66 A lot of farmers are unsure how they will recoup the losses presented by the move away from direct payments.

AHDB's Farm Business Review is fantastic, helping to identify specific areas which need work for your business to succeed and thrive during the next challenging few years. **99** Peter Shallcross, Wiltshire

## Potential impact of reduced BPS payments using the BPS Impact Calculator



Example of reduction in BPS 2020-2028\*

- Free one-to-one advice from an approved consultant
- Access to our Farm Business Review tool, including the BPS Impact Calculator
- Peer support from like-minded farmers

\*Illustrative figures based on a 220 ha (544 acre) cereal farm claiming non-SDA entitlements at  $\pounds 233/ha$ 

### Sign up: ahdb.org.uk/farm-business-review