

Spring 2016

Crop Focus

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How ready are you
to be farming in the future?

Back to the future

Technology to improve your job

Making a return

€100,000+ potential reasons to use fungicides

Resistance value

Can choosing the right variety
reduce fungicide costs?



Future
technology
out in the field



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Why bixafen makes prothioconazole unbeatable



Aviator[®] contains prothioconazole + bixafen. Siltra[®] contains prothioconazole + bixafen. Proline contains prothioconazole. Fandango contains prothioconazole + fluoxastrobin. Prosaro contains prothioconazole + tebuconazole. Aviator, Siltra, Proline, Fandango and Prosaro are all registered Trade Marks of Bayer. Bravo contains chlorothalonil. Plover contains difenoconazole. Amistar contains azoxystrobin. All are registered Trade Marks of Syngenta. Filan contains boscalid. Caryx contains metconazole + mepiquat-chloride. Both are registered Trade Marks of BASF. Kerb contains propyzamide and is a registered Trade Mark of Dow.

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Looking to the
future of

FARMING technology



Farming technology has advanced massively in the past 10 years, but with a wealth of tools and systems available where will technology lead us over the next decade?

From auto-guidance systems, drone mapping and pest / disease forecasting tools to the latest high-yielding, disease-resistant varieties, there are countless examples of how technological advances are shaping a new era in agriculture.

All aim to help growers improve productivity, but with so much available the challenge now and more so in the next 10 years, is deciding how best to use these tools and interpret the data to deliver a tangible farm business benefit.



The biggest change to machinery technology over the next decade is likely to be the integration of precision farming systems as manufacturers move to “semi-automate” field operations, says Dan Halliday, global product manager for precision farming at New Holland.

Alongside auto-guidance and variable rate technology, a number of systems already exist to collect a wealth of machine diagnostics and agronomic data while on the move, so the main development will be how this is analysed, interpreted and presented to improve productivity of operators, machines and crops, he says.

Development of slicker, consumer-styled in-cab displays that allow operators to access all information available will be key

to this, in a similar way to the advances in in-car systems, he says.

A single touch-screen, web-linked device will give operators access to machine critical data, such as fuel use, engine load, diagnostics, etc, together with agronomic data collected from real-time machine-mounted sensors or from other remote sensing (e.g. ground stations, drone mapping) data.

Greater compatibility across systems will be crucial to future success, says Mr Halliday. “The industry as a whole has definitely got better, but there’s definitely more work to be done.”

Better data connectivity, especially in more remote areas, is also required as systems increasingly rely on cloud data storage and instantaneous access to data from a variety of mobile devices, he adds.

Most systems use mobile networks (2G/3G connection) to transfer information, but there is scope for more farms to use private wifi networks or satellite communications as the technology becomes more cost-effective.

The biggest change to machinery technology over the next decade is likely to be the integration of precision farming

Indeed, improvements to mobile phone and internet network coverage could make the biggest difference to many farmers where signal quality is still poor, or non-

existent. With cloud-based data storage becoming the norm, it will allow more farmers to use web applications to remotely access farm management data from a smartphone, tablet or other web-enabled mobile device.

Real-time data recording of field applications and machine use will become more mainstream as technology and mobile coverage improves, hopefully reducing the time spent inputting data in the office.



Specialist services offering remote mapping of fields from the air with a drone (Unmanned Aerial Vehicle) are set to become more widely available over the next decade, driven by advances in sensor technology that allow more variables to be mapped with greater accuracy.

Weed identification and crop disease / stress diagnosis before symptoms become visible are key areas where development is focusing, says Alex Dinsdale of URSULA Agriculture.

The firm is working to expand its black-grass mapping service to other grassweeds such as brome and ryegrass, and is involved in a long-term project to develop a drone-based system of diagnosing *Septoria* in winter wheat. Work in Scotland is also underway to map potato cyst nematode damage in potatoes.

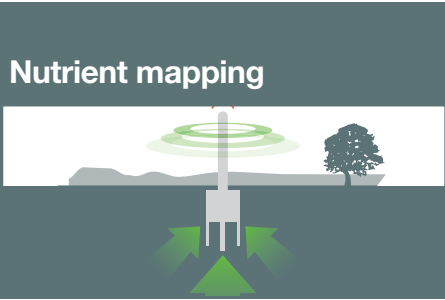
Other areas of sensor technology on the horizon include:

- SAR (Synthetic Aperture Radar) imagery to map crop cover – day or night and through cloud
- Thermal sensors for disease monitoring or to map water stress
- Plane or drone-mounted LIDAR sensors for measuring crop height and biomass
- Satellite mapping could be used more as higher resolution systems develop.

Fera is also developing a drone mapping system that collects aerial imagery in the visible and near infrared spectrum to more accurately identify crop stress. Collecting both types of imagery simultaneously helps spot unhealthy crops before problems are visible to the naked eye.

UAVs could potentially be used to carry other scientific equipment, such as spore and pathogen traps, in the future, Fera adds.

While some farmers may choose to run their own drone and camera, the complexity and cost of advanced sensor technology and the analysis required to interpret the data means most mapping is likely to be done by specialist operators or agronomists.



The John Innes Centre (JIC) is developing a system to measure soil nitrogen supply at three different depths to detect falls in soil nitrogen before deficiency is seen in the plant. This is unlike existing sensors that rely on measuring light reflectance, chlorophyll content or nitrogen levels in leaf sap.

JIC senior scientist Tony Miller says it could be commercially available within two to three years and believes similar sensors are possible for phosphate and potash.

Improvements to camera technology on mobile devices could also pave the way for tools to measure crop growth or detect physiological issues such as nutrient deficiency or water stress from a smartphone picture.



This has been the focus of many agronomy tools and will continue to be in the next decade as technological improvements allow data to be remotely collected from a variety of sources and analysed with sophisticated computer modelling.

Real-time monitoring of pests, disease spores, soil and plant nutrient status and local weather data allows web or app-based decision support tools to be better tailored to field conditions and will give growers more confidence in their accuracy and reliability, says Bayer's Will Charlton.



Advanced warning of potential problems before symptoms are detected in the field reduces the reliance on "fire-fighting" and improves the efficacy of control measures, he says.

A prototype "smart spore trap" being developed by Fera, OptiGene Ltd, The University of Hertfordshire and Bayer, is one such example. The system, being trialled on CropMonitor plots this spring, detects disease spores in the field and combines this information with local weather data in a computer model to produce a disease risk assessment for that site.

It could give up to 28 days' notice of a potential yellow rust infection, and around five days' notice of brown rust due to its shorter latent period, says Fera's Judith Turner. The system is also being developed to detect *Septoria*.



Technological advances within wheat breeding will herald some big changes over the next decade and should help break the yield plateau many European countries have hit over the past 10 years, says Steve Patterson, Bayer's global crop manager for cereals.

He is confident the first full physical map of the wheat genome will be completed within three years, allowing specific traits to be

more quickly identified and incorporated into commercial varieties.

Other technological developments have already helped overcome historical cost constraints of breeding hybrid wheats, which represent a major opportunity for UK growers within a decade, Mr Patterson says. Bayer has invested in a hybrid wheat breeding programme and he believes global yields could be lifted 10-15% over existing open pollinated types.

"Hybrids perform best under stress conditions so the yield benefit may not be as great in the UK due to its favourable climate for growing wheat, but I still expect an increase."

Smart spore traps could give up to 28 days notice of yellow rust infections

But it is the yield stability of hybrids in stress situations that could be the biggest draw to growers, especially those in areas prone to drought stress during the key GS 30-31 and grain fill stages, he says.

"Hybrids have the ability to grow away faster in the autumn, so there may be opportunities for later drilling too."

Hybrid wheat will require a new agronomy blueprint so future varieties are likely to be accompanied by a more sophisticated package of digital agronomy tools and datasets to help growers and agronomists get the most out of them, he says.

A further priority is the need to find new ways of overcoming grassweed resistance, Mr Patterson notes. "At the moment there's no silver bullet coming in the next 10 years, but we will continue to invest in finding something, whether that's new chemistry or non-GM herbicide tolerance."

Key Messages

- Technology to improve yields and efficiency in development
- Real-time monitoring of pest, disease and weeds to improve targeting
- Instant data analysis to improve machinery productivity
- Advances in crop breeding to break yield plateaus

Technology must pay



Philip Coleman
Essex farmer and contractor



Like many growers, Essex tenant farmer and contractor Philip Coleman, recognises the wealth of new technology being developed within agriculture, but insists any investment must deliver a tangible benefit to the business.

It can be difficult to justify the cost of new kit, but as so much now comes with precision farming capabilities as standard, it's driving us further down that route

"There's a lot of good technology out there, but with so much pressure on commodity prices, crop margins, time and resources, any system has to deliver a clear benefit

otherwise you've got to question why you're using it."

Mr Coleman, who farms 485ha in-house, plus harvest and cultivation contracting on a similar amount of land nearby, uses John Deere's auto-guidance on the main tractors and has just started yield mapping on the combine.

"We're not particularly tech-savvy and don't often jump in straight away with new technology. It can be difficult to justify the cost of new kit, but as so much now comes with precision farming capabilities as standard, it's driving us further down that route."

He believes the greatest technological benefits are likely to come from the integration of yield and other forms of mapping with variable rate application technology for seed rates, fertiliser and crop protection products.

Hybrid varieties are also of interest, he says, not least for their potential to deliver more consistent yields in dry seasons.

Azoles Alive & Kicking

Azoles still have plenty to offer when it comes to *Septoria* control, even if their performance is not as good as it was 10 years ago.

Used in mixtures with SDHIs in a protectant situation they can add significantly to disease control, says Bill Clark, commercial technical director of NIAB TAG, who believes that the level of *Septoria* control from azoles has stabilised.

"There was talk in 2014 about triazoles not working on *Septoria*," he recalls. "But this was largely a response to very high disease levels, which give a false impression of how products perform."

"Remember that 50% control in a high disease year can still leave you with 25% *Septoria*, which looks pretty bad. However, in a low disease year, 50% control of a 10% *Septoria* level leaves just 5% disease, which is much better visually."

Lowering the risks

Everyone knows that azoles used alone in an eradicant situation – where disease is already established – will result in very poor control, adds Mr Clark. "And this situation hasn't changed. So it's all about managing risk and adapting your fungicide strategy accordingly."

Jonathan Blake, principal research scientist with ADAS, points out that the two best azoles in terms of *Septoria* control are prothioconazole and epoxiconazole.

"They've been ahead of other azoles for some time now. It's very difficult to separate them in terms of their performance on the disease – especially as they are mostly used in mixtures with SDHIs, where they give very similar results."



Better protection

Last year, the AHDB-funded dose response work showed that prothioconazole performed better in a protectant situation on *Septoria* than epoxiconazole, he says. "We didn't find the same in curative situations, where performance was similar, so it will be interesting to see what this year's results show."

After these two, metconazole comes third. "In a straight comparison with the other azoles for *Septoria* control, it's the best of the rest."

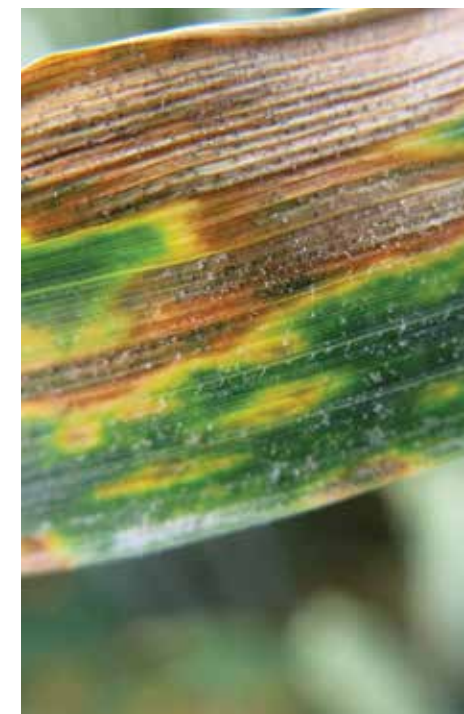
Getting the best from azoles in a *Septoria* situation means using high rates and adding them to other products in mixtures, says Mr Blake.

"If you look at the response curves with azoles, it's clear that the more of an azole you add, the more activity you get."

Mr Clark believes that the days of using an azole plus some chlorothalonil against *Septoria* are largely over. "The azoles need SDHIs alongside them to ensure good control of *Septoria*. In a high disease year, things can go very wrong if there is no SDHI in the mix and the losses can be very high."

One of the difficulties is that you can't predict disease pressure at the time of spraying, he points out.

"Of course, you can get away with azole/chlorothalonil in a low disease year, as the CTL component gives good protection to newly emerged leaves and some re-distribution to emerging leaves. But it's difficult to predict disease pressure at the time of spraying and what's going to happen for the rest of the season."



Deciding which azole to use in a given situation at T1 can be influenced by the need to control other diseases, says Mr Blake.

"They all have activity on other diseases, but they're not equal on them. As a rule of thumb, prothioconazole is the best on eyespot, mildew and *Fusarium*, while epoxiconazole has the advantage on yellow and brown rust."

So there are plenty of situations where it performs very well at T1 when partnered with chlorothalonil

He believes that there are circumstances where an azole plus chlorothalonil will suffice at T1. "In the west, where disease pressure is very high, you will usually get responses to including an SDHI at T1."

"But in the east of the country, where it's drier and disease pressure is lower, there is more room for manoeuvre."

The fact that more resistant varieties are being grown, together with the use of later drilling dates to help with black-grass control, adds to this scope, he notes. "In many situations in 2013 and 2015, an azole plus chlorothalonil at T1 would have been fine. But in the bad year in 2014, it wouldn't have been enough."

"It all comes down to the season, the situation and the variety being grown."



Kerry Maguire, fungicide development manager at Bayer, says independent trials have shown that there are now clear differences between the two top azoles on *Septoria*.

"Prothioconazole seems to be pulling away from epoxiconazole," she says. "The reasons for this aren't clear yet, but there have been advantages observed both in trials and in the field."

That doesn't mean, however, the way it is used should change, she cautions.

"Prothioconazole must continue to be used in mixtures and at a minimum of three-quarters rate. Overall, the situation with the azoles is unchanged, in that they shouldn't be relied on in an eradicant situation."

The other disease strengths of prothioconazole makes it a good product at T1, she notes. "Significantly, it offers the eyespot control that may be needed at this timing."

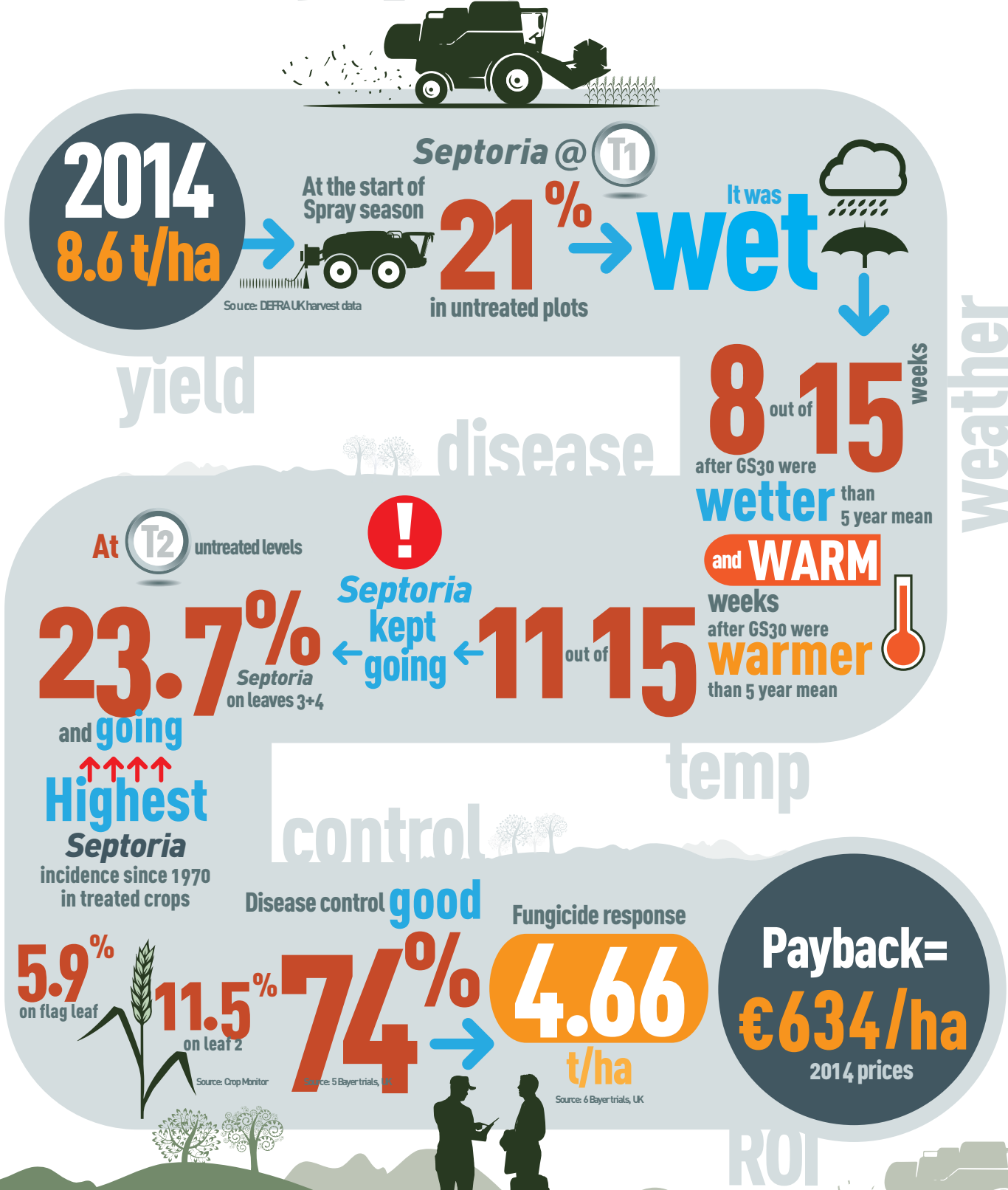
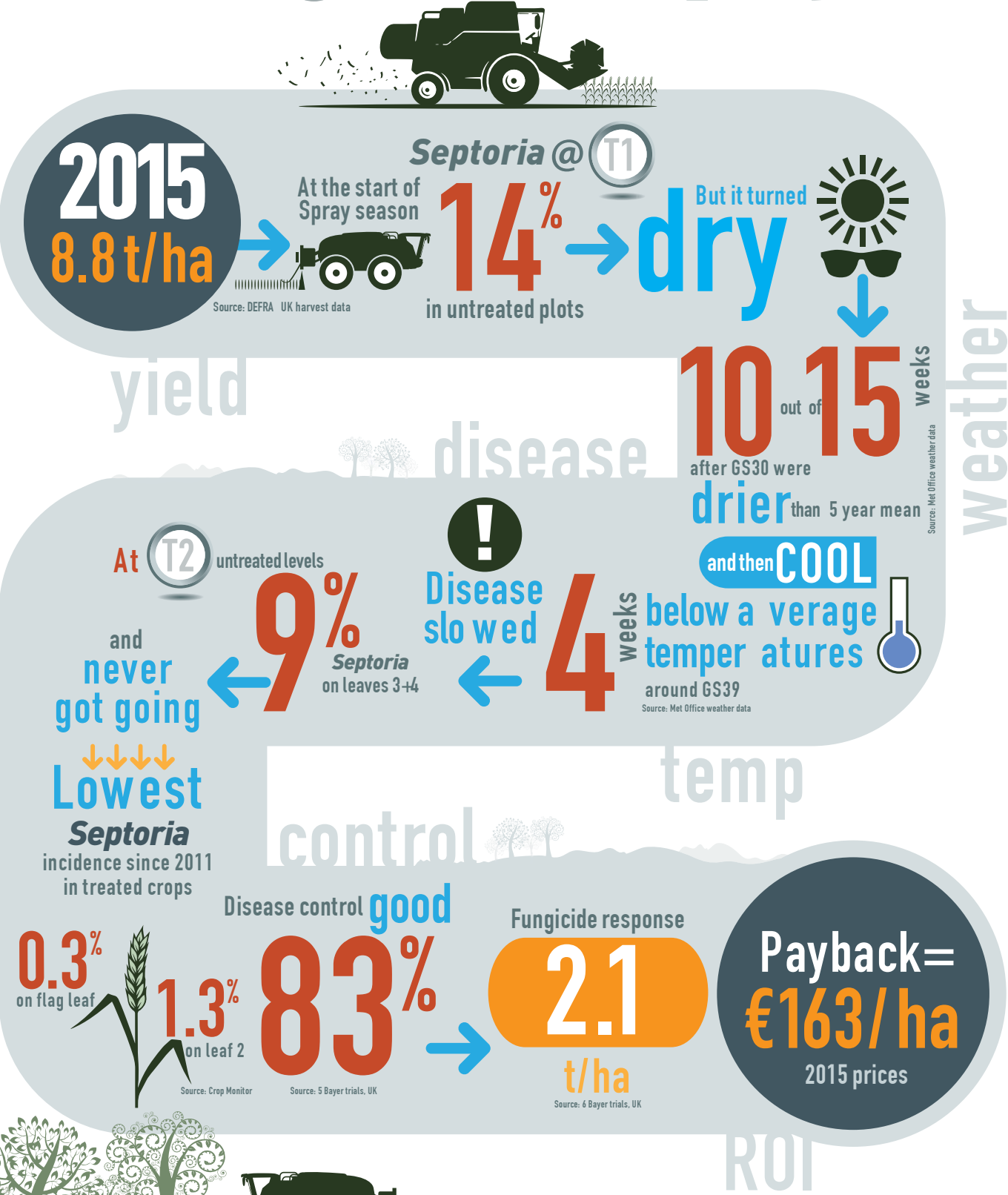
"So there are plenty of situations where it performs very well at T1 when partnered with chlorothalonil. The SDHIs, such as Aviator, can then be kept for use at the later timings."

Key Messages

- Key azoles still have plenty to offer against *Septoria*
- Prothioconazole separating from epoxiconazole against *Septoria*
- Get the best out of azoles by using high rates (75%+) and mixing with partner products

In a **low** disease year
fungicides pay

In a **high** disease year
they pay more



Protect your investment

WHATEVER the weather

Proline still best T3

Fusarium insurance



It is four years since *Fusarium* incidence was as low as in 2015, but many will remember how quickly fortunes change.

After 2011 came the worst ear blight season on record with CropMonitor's national survey showing 96% of samples and 54% of ears affected in 2012.

Anyone growing wheat destined for human consumption knows how vital protecting crops against mycotoxins is given strict deoxynivalenol (DON) and zearalenone (ZON) limits, but the potential yield penalties from ear blight mean there is a strong case for a robust T3 across many crops.

True *Fusarium* species, principally *F. culmorum* and *F. graminearum*, have been shown to reduce yield by 1% for every 1% ear infection, while *Microdochium* species (*nivale* and *majus*) can cause up to 13% loss in bad seasons, says Fera's Phil Jennings.

"*Fusarium* incidence is almost entirely weather-related. A warm, dry autumn and spring allows inoculum to build-up, while wet, warm, humid weather during flowering causes *Fusarium* to develop. Rain in July or August spreads spores and means toxin is drawn into grain."

Variety resistance has little impact on *Fusarium*, so rotation, cultivation strategy and chemical control remain key, he continues.

"Maize as the previous crop increases risk from wind-borne *F. graminearum* in particular, while minimum tillage also significantly increases *F. graminearum* threat and *Microdochium*, which need light to mature."

Product choice

Experts are clear that prothioconazole, and Proline in particular, remains the best option for *Fusarium* control.

"Alongside *Fusarium*, which will potentially lead to mycotoxin production, it very effectively tops up the T2 spray," says Norfolk agronomist John Purslow.

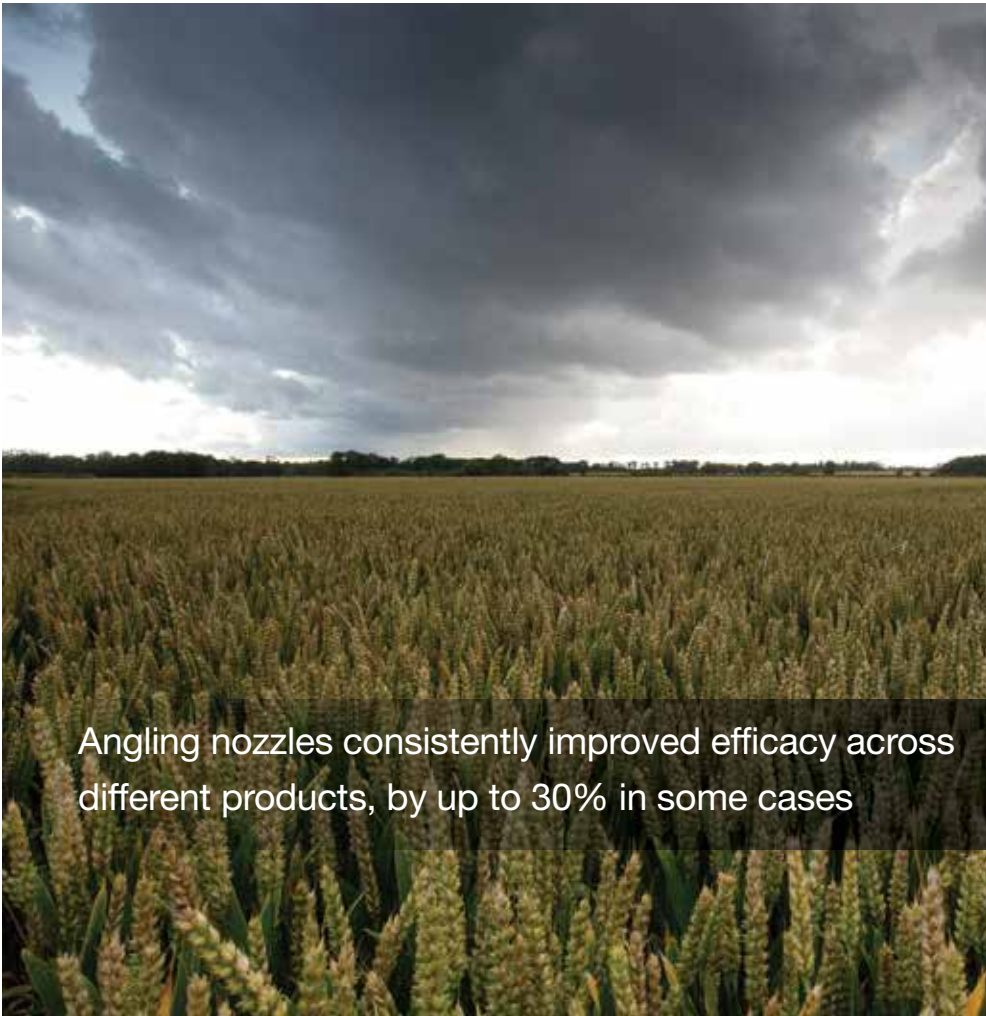
***Fusarium* incidence is almost entirely weather-related. A warm, dry autumn and spring allows inoculum to build-up**

"It may seem overkill in some seasons, but generally a robust T3 is integral to disease and *Fusarium* control and worth the investment. Not using the best product may save a few pounds but if it lets mycotoxin in you could end up with unsaleable grain at harvest."

Dr Jennings says the amount of active ingredient applied is key. He advises at least 150g/ha of prothioconazole, equivalent to Proline at 0.6L/ha.

Co-formulations of epoxiconazole + metconazole are effective against true *Fusarium*, but do not offer *Microdochium* control, while the tebuconazole + prochloraz-based product appears to work against *Microdochium* in the lab, but is yet to prove itself in the field, he notes.

Mr Purslow suggests it may be worth adding tebuconazole to prothioconazole where brown rust is a particular threat.



Angling nozzles consistently improved efficacy across different products, by up to 30% in some cases

Timing

T3 timing is dictated by ear emergence and weather. In most situations sprays should be applied around mid-flowering (GS 61-65), says Dr Jennings. "Flowering lasts five days on average, so going mid-way is generally best as most products offer curative and protectant activity."

Bayer's Tim Nicholson says Proline has the widest application window of all T3 options, which could be invaluable in catchy weather.

For best yield response from ear blight control he recommends applying at GS63-65. Harper Adams University College (HAUC) trials in 2014 found this gave an additional 2.5t/ha over an earlier GS59 timing. "Aim to go once the first anthers are extruded and certainly never before GS59."

Fera and HAUC trials have also shown a benefit from including prothioconazole at T1 to suppress stem-based *Fusarium* and reduce later ear blight and mycotoxins by up to 50%.

"SDHIs don't have much activity on *Fusarium*, so if crops are at risk, including prothioconazole at T1 gives an added advantage," says Dr Jennings.

Prothioconazole at T2 also reduces *Fusarium*, adds Mr Nicholson. Mr Purslow advises T3 sprays should go on as soon as rain is forecast following ear emergence, but can be delayed until mid-flower if conditions are dry.



Angled nozzles

Maximising ear coverage is essential for any T3 application. HAUC and Fera inoculation trials over the past two years have shown good results from using angled (33-degrees) and double-fan nozzles.

Improving *Microdochium* research

Fera and Bayer have collaborated to produce a new method of inoculating trials with *Microdochium*, which could improve research into controlling it, says Dr Jennings.

"We've always struggled to get good results for *Microdochium* even though high levels of inoculum have been introduced to the trial, so we have often had to wait for natural infection.

"But this year we tried different amounts of ground inoculum early in the season, together with inoculum on the ear at different time during flowering and it seems to have worked despite generally low background disease pressure.

"Hopefully this method can be effectively used for inoculating future *Microdochium* trials."

Angling nozzles consistently improved efficacy across different products, by up to 30% in some cases. "It's having an angle that's important, and it doesn't seem to matter whether that's forwards or backwards," says Dr Jennings.

Double-fan nozzles are better at covering the ear than vertical single fans, he adds. In 2015 Fera trials under high inoculum pressure, ear blight infection at GS75 after Proline at 0.6L/ha was less than 2% with double-fan nozzles, compared with just over 4% for singles.

"Selecting the best product is important, but so is the way it is applied," Mr Nicholson says.

Key Messages

- *Fusarium* incidence is weather-related
- Timing (GS63-65) crucial for control
- Proline (0.6L/ha) controls both *Fusarium* and *Microdochium*
- Angling nozzles improves control

The Chinese Conundrum

Barley is making a comeback on some farms, but in a global commodity market, what are its prospects?



If China is buying that gives meaningful support to the price of barley

Barley is a crop regaining a place on many farms. Whether it is because of a need to change rotations because of black-grass in wheat or pest issues in oilseed rape, the three-crop rule, or to help with on-farm logistics, barley – both winter and spring – has been on the up in recent years.

That increasing area combined with record average yields led to the highest barley production for around 20 years in the UK in 2015, says Gary Phillips of ODA, a consultancy business specialising in grain marketing advice.

Globally the world is well supplied with barley with 141.2 million tonnes harvested in 2014 and estimates for the 2015 crop at 144.8 million tonnes.

Supply and demand

With this large global production, prices are currently fluctuating depending on the demand level. EU demand for feed and malting barley is currently not enough to keep a balance on the supply and demand balance sheet.

Pricing has been volatile too, with two factors impacting the barley price in the market, says Mr Phillips.

“If China is buying, and it has been a substantial buyer in recent years, that gives meaningful support to the price of barley in the world. The second situation is the relationship between barley and the price of feed wheat, and that’s the biggest drag on barley price at the moment, there is simply too much wheat in the world.”

Healthy competition?

“The large wheat crop harvested in 2015 and high maize imports into Europe explain the high availability of feed crops, despite poor EU maize production.”

And the malting barley market is really quiet because of the decrease in beer and distillers demand. “Buyers have already bought most of their needs,” he says.

But it has been the Chinese that has driven barley consumption in the EU in the past 18 months as it seeks to import alternative feed crops because its own domestic maize prices are high and it has logistics issues too.

We have to establish ourselves as suppliers to China and they have to be comfortable with using UK barley before that has any impact in the field

European exports to China have supported barley prices by reducing the discount of feed barley compared with feed wheat. And where the French have been selling barley to China, the vacuum left behind has been filled by British barley, explains Mr Phillips.

However, a change in Chinese policy regarding the domestic maize markets has resulted in the reduction of feed crop imports. Since September, the European export pace has decreased and if European exports do not pick up again, the ending stocks for 2015 campaign will grow, he warns.

2016 onwards

Supply could increase further this year, depending on yields, as the first estimates from European analysts suggest that the total European barley area should increase by about 1% in 2016. In the UK, the increase will be even larger with an anticipated rise of 4.6%. Winter barley area is estimated to be down 4% but spring barley plantings will offset this reduction.

The situation with other world producers has to be monitored too. Weather conditions in the key barley growing areas,

politics and economics can have an impact upon import/export dynamics.

Looking further ahead, a promising opportunity for growers within the next 3-5 years is the recent trade deal negotiated between the UK and China which could provide export opportunity initially for 150,000 tonnes of UK barley per year.

China imports around 6 million tonnes of barley, driven by the need to find cheaper feed grains as well as satisfy its growing beer market.

While the UK begins to understand what the Chinese requirements are and how it will use the barley it is likely that to start with exported barley will be feed grade although additional niche markets are being sought out, explains Sarah Mann, exports manager for AHDB.

There are, however, a number of factors to consider that can impact on how much UK barley could go to China including the high existing stocks of domestic corn, the Chinese economy and the other countries with export protocols for China.

“China has imported a lot of barley from France already this season, and we need to look at what is happening to the Australian crop. We also have Argentina who is upping its game in the export arena.

“It is very early days accessing this market as exporters so it will take a few years before we see an impact on the areas grown. We have to establish ourselves as suppliers to China and they have to be comfortable with using UK barley before that has any impact in the field.”

But with the barley acreage increasing, having access to a big market such as China helps and it means that if growers are growing more barley, at least, we are finding places for that barley to go, she adds.

For more information on ODA visit www.odaconnect.co.uk



The trend in worldwide beer consumption is expected to increase in the coming years, principally driven by Asia and particularly China. But while emerging market growth is strong, there is a contrast with the markets of East and Western Europe and North America which have reached maturity and are struggling for growth and declining. Consumer tastes in these areas are becoming more eclectic, so people are switching from beer to other drinks such as wine, spirits and cider perry, explains Jeremy Cunningham of Euromonitor.

“There has been a rise in the craft beer market reflecting consumer desire for greater taste and heritage, yet it is quite a niche market and in volume terms, it is not yet significant in many markets, although growing rapidly.”

However, there are opportunities further afield such as China which is forecast to become the biggest market for stout within the next 4-5 years, he adds.

The story is similar for Scotch whisky, with emerging markets good for growth as the drink is seen as aspirational, while the mature markets, including the UK, are seeing a decline in sales. South America has been the main growth area with Mexico a key market and strong growth is expected in Africa, while exports to Russia are likely to fall steeply due to the economy, he concludes.

Key Messages

- UK barley production increasing
- Global market well-supplied
- Feed wheat dragging down barley price
- China trade deal could be positive



Having two of the strongest barley active ingredients in one product gives Siltra the edge in the very competitive barley fungicides market, according to crop experts.

From an efficacy point of view, the combination of bixafen and prothioconazole is hard to beat, says Dr Neil Havis, senior pathologist at SRUC, who has been leading research work on *Ramularia* as well as conducting trials on fungicide performance.

“Prothioconazole has given good results in barley ever since its introduction and continues to do so,” he reports. “But there’s no doubt that we’ve seen a step up in fungicide performance since the SDHIs came along.”

While there is less differentiation between the different SDHI actives in barley than there is in wheat, the AHDB-funded fungicide dose response work shows that bixafen is one of the leading contenders, with good activity against *Ramularia*, *Rhynchosporium* and net blotch, he notes.

“The same work also shows that most of the SDHI co-formulations for barley are performing well and producing good yield responses,” he notes. “So their introduction has been very positive news for barley growers.”

Another compelling reason for switching to one of these products is that over-reliance on any one active ingredient should be avoided. “It’s important to make good use of the SDHI co-formulations in disease control programmes. They are a means of introducing an anti-resistance strategy and protecting the chemistry that we have.”

The AHDB-funded fungicide dose response work shows that bixafen is one of the leading contenders, with good activity against *Ramularia*, *Rhynchosporium* and net blotch

As far as Siltra is concerned, it has particular strengths on *Ramularia* and *Rhynchosporium*, as well as offering protectant activity against net blotch, he

says. “In 2014, when there were some serious outbreaks of net blotch, it was advantageous to have Siltra in the fungicide programme.”

There are also practical benefits from using Siltra for barley disease control, believes Velcourt’s technical director Keith Norman.

“It’s a one product application, which removes the need for tank-mixing,” he says. “The well-balanced formulation means that it can be used with confidence, bringing peace of mind at a very busy time of the year.”

Furthermore, the rate of Siltra can be adjusted according to what the season brings. “If it’s wet, then we would plan to use 0.8L/ha. In a dry year, that can be reduced to 0.6L/ha.”

The persistency of the fungicide is a further advantage, he notes. “It means that in a low pressure season we can use a single application of 0.8L/ha in spring barley, timed at GS33. It does as good a job as two applications.”

Mr Norman believes that Siltra has made a significant difference to *Rhynchosporium* control at the farm level. “That’s been the big step on. But it controls other diseases as well, such as *Ramularia* and net blotch. We already have the means to control rusts and mildew in barley.”

Will Charlton of Bayer points to the consistency of Siltra’s performance over the last four years. “Since its launch, growers have encountered some very different seasons in terms of disease pressure, but the best yield responses have always been recorded where the programme is based on Siltra.”

The well-balanced formulation means that it can be used with confidence, bringing peace of mind at a very busy time of the year

The extra activity provided by bixafen has given better performance than prothioconazole on its own, even though the azole is still working very well in barley, he adds.

“That’s even the case in a low disease year, due to the greening effect of the SDHI component.”

Not surprisingly, high potential sites have shown the most benefit. “The typical on-farm use is 0.6L/ha, but it is very flexible on rate.”

Two applications, made at T1 and T2, will cover most barley diseases. “In a high *Ramularia* situation, we recommend adding chlorothalonil to Siltra at the T2 timing.”

Key Messages

- Combination of bixafen and prothioconazole can't be beaten
- Siltra strong against *Rhynchosporium*, *Ramularia* and net blotch
- Consistent performance across different seasons



Visit www.bayercropscience.ie for more advice on effective disease controls for your wheat, barley and OSR crops and information to help you make informed decisions on product choice.



Use plant protection products safely. Always read the label and product information before use. Pay attention to the risk indicators and follow the safety precautions on the label. Bayer Freephone: 1800 818 534. www.bayercropscience.ie © Bayer CropScience Limited 2016.
Triple rinse containers at time of use, puncture and invert to dry.