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An integrated approach

Technical
Fit for the Future

Adopting integrated pest management (IPM) strategies is steadily becoming a very important part of farm businesses. But what role do genetics and variety choice play in this? *CPM* finds out more.

By Charlotte Cunningham

Though decisions in agriculture have never been based on just one factor, perhaps the true value of integrated pest management (IPM) is only just coming to fruition.

For some time, how we protect crops and the tools we need to grow them has been a dialogue involving just chemistry and genetics and how they can be used together to support each other.

But the reality is that there are a whole host of other factors and elements — like microbes and biostimulants — which can be manipulated and used to influence plant behaviour and performance.

So while farming is moving towards a much more multi-faceted approach — rather than simply operating in a 2D world —

perhaps as an industry, we are only just starting to scratch the surface on an area of great depth.

That said, there have been a number of early adopters — those who have pioneered a shift in thinking to focus on 'the bigger picture', despite it often falling on somewhat deaf ears.

Among those is Environment Crop Management (ECM) managing director Peter Clare, who has headed up this way of thinking for the past 30 years and advocates the benefits of taking an integrated approach when it comes to crop and pest management.

Harming the environment

"When we first started up, it was obvious that farming had to change and our ethos was — and still is — that while a farmer has to produce a profitable crop, it can be done without harming the environment," explains Peter.

"Growers are constantly under pressure to produce more food from less land, but providing an expanding population with enough to eat is a huge challenge.

"How we meet this challenge and at the same time respect biodiversity — while also taking into account climate change — are matters of the utmost importance."

But protecting the environment and using an integrated strategy spans further than just reducing chemicals, in fact, it can be quite the opposite. "ECM agronomists do use conventional chemistry, but this is only done when necessary, instead basing decision-making on the situation as a whole, rather than relying on canned solutions.

"That said, this isn't about removing all chemical usage, but instead, fine-tuning how we can use these tools more effectively. We specifically use an IPM system which effectively balances the requirements of running a profitable business with an environmental approach."

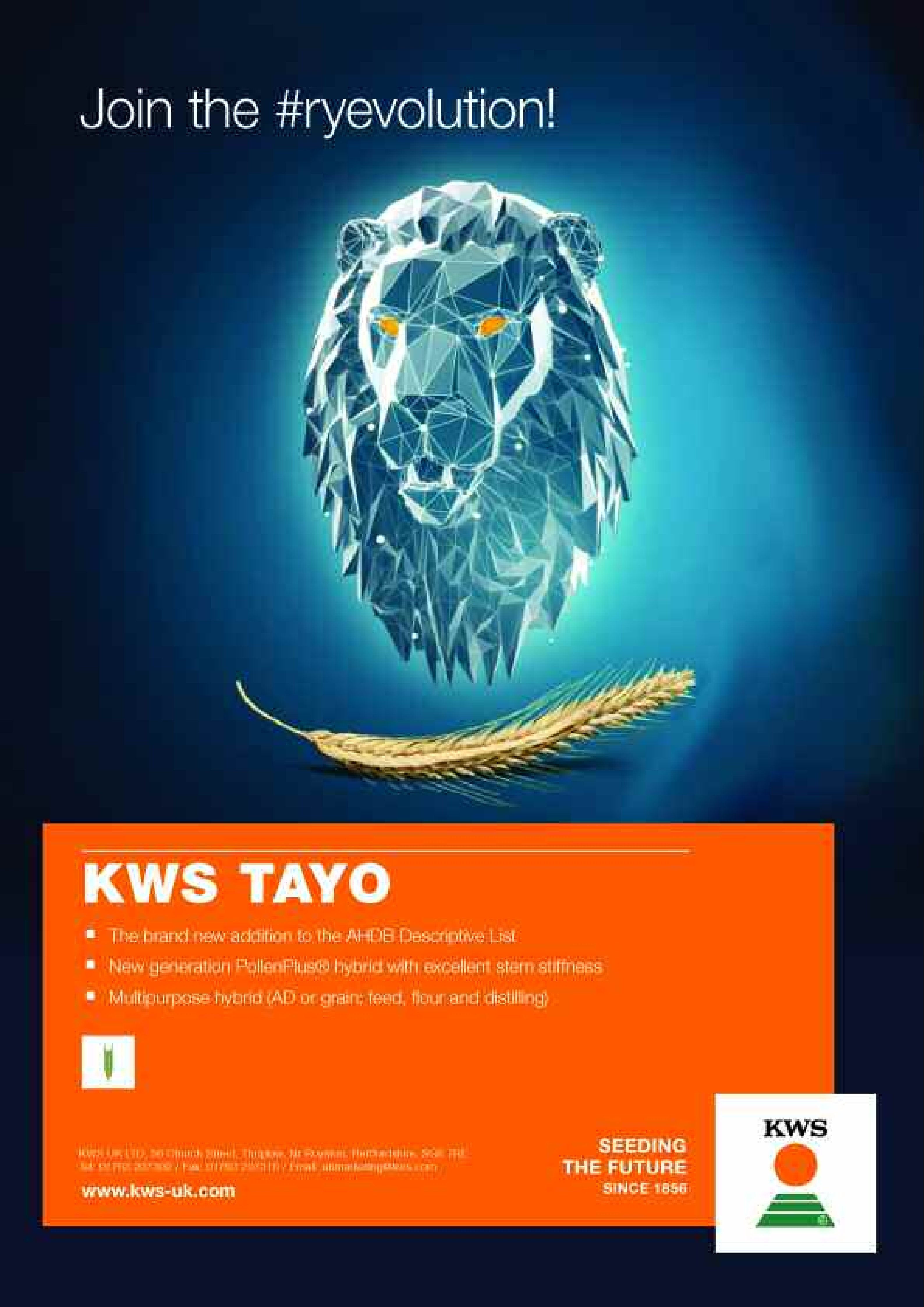
ECM's integrated crop management system takes into consideration the following factors:

- Energy consumption
- Soil management and crop nutrition
- Wildlife and landscape management
- Crop protection
- Monitoring and auditing
- The site location
- Organisation management
- Waste and pollution management
- Crop rotation.

Digging deeper into crop rotation, and more specifically, variety choice, Peter says selecting the right variety can have a huge influence over other factors in the IPM picture. "To make it work on farm, growers require varieties that can handle modern challenges — though these challenges will often be area-specific.

"For example, one of the biggest ▸

Peter Clare is an advocate for producing a profitable crop without harming the environment.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Kirsty Richards says when it comes to variety selection every farm is unique, and this is a crucial factor to consider.

▸ challenges in recent years is the shift in weather patterns. We're based in the North West and for this area, it's crucial for growers to have varieties that can be drilled earlier and are quite tolerant of water logging to avoid the impact of the wetter autumns that have become the norm lately.

"As well as this, the recent hot and dry springs mean that variety has to also be drought-resistant — so it's a really fine act to balance.

From a disease point of view, to reduce reliance on chemistry — to protect both actives and the environment — a variety has to be robust and boast good all-round resistance to key diseases, he adds. "In the North West, septoria is the key priority by far. We're in a very wet part of the country and so rain infection periods are non-stop. For growers in this region, something that has high septoria resistance is going to be a really important part of that ICM strategy — though for others, it may be less of a focus.

KWS Extase is one that could be useful as part of an on-farm IPM strategy – largely due to its good septoria resistance.

"I think it's important to stress again here that this approach isn't in place of chemical solutions — and I think it's fair to say that even the most robust variety won't replace fungicides. However, the reality is that chemical efficacy has reduced due to resistance and discovering new chemistry — and getting it through registration — is a challenge."

Number of elements

Though variety choice can influence a number of elements across the production cycle, Peter warns that there's no quick fix when it comes to IPM. "Because these strategies involve the whole farm and are site-specific, there are no hard and fast rules about how we achieve this.

"Individual farms differ in many ways: location, climate, soil type and cropping pattern, to name a few. Whatever the farm, wherever it is located, planning, taking action and monitoring outcomes are the vital processes of making this system work."

Realising the value of varietal choice is one of the fundamental parts of KWS' Sowing for Peak Performance (SPP) initiative — a movement aimed at pulling out the nuggets of information from a variety and using them to form the basis of a more integrated strategy, explains Kirsty Richards, KWS' cereals product manager. "There are a number of key macro-drivers that are shaping UK production — it's a very different world than it was 10 years ago.

"This includes aspects such as loss of chemistry, a growing pest tolerance and resistance to actives, climate change, increasingly strict environmental controls and political and market volatility.

"As such, we've been focusing on breeding varieties which can help tackle these challenges head on and to enable growers to maximise their farm's potential."

Echoing Peter's views, Kirsty says when it comes to variety selection every farm is unique, and this is a crucial factor to consider. "Every farm business has differing goals and we appreciate that variety choice is a very personal topic. But, it's a simple truth that 80% of your crops potential is in-built in the seed that you drill."

And those functional traits offered by different varieties can have a bigger impact on the bottom line than growers think, warns Kirsty. "Physical savings can come via time management, machine hours, fungicides, herbicides, insecticides and diesel. And there are plenty of benefits for growers too, ranging from better plant health to a reduced carbon footprint."

Looking at the varieties in the KWS portfolio, KWS Extase is one that could be useful as part of an on-farm IPM strategy — largely due to its good septoria resistance, she adds. "In our view, KWS Extase offers security in the field, the potential for structured fungicide savings in certain situations and the potential to reduce spray passes.

"But that doesn't mean chemistry is unnecessary. And taking that one step further, it's not just about what you're putting on, but also the opportunities you have to do so," she points out.

"And this is another area in which genetics are going to be incredibly important for giving growers flexibility."

To put this into perspective, KWS looked at weather station data for the East Mids and assessed the number of spray/no spray days (wind over 10mph) across a 21-day period in Apr-May — that crucial T1 timing. "Based purely on wind speed — not taking into account rain or days that you can't get on the land because of the rain — there was an average spraying opportunity of just 56%," says Kirsty.

"A variety like KWS Extase could be a really important tool in this situation to give growers inherent robustness over a time period where they could otherwise face limited protection.

"While it's hard to put a price or a figure on this, it's a real saving in terms of peace of mind and giving you the opportunity for your genetics and chemistry to work in harmony — which is a crucial part of that integrated approach."

As the industry begins to navigate its way in a post-CTL world — alongside the threat of reduced curative activity — again, this is where genetics can come in to provide growers with a little bit of 'wiggle room' in terms of what septoria ratings can offer, she adds. "Spray day delays can worsen this, so having that varietal resistance, as seen within Extase, can effectively buy you that resistance."

Group 4 hard wheat KWS Cranium is another in the KWS line up that could be of

KWS Cranium has shown consistency in the later drilled window.

KWS Cranium's yellow rust score is of significance.

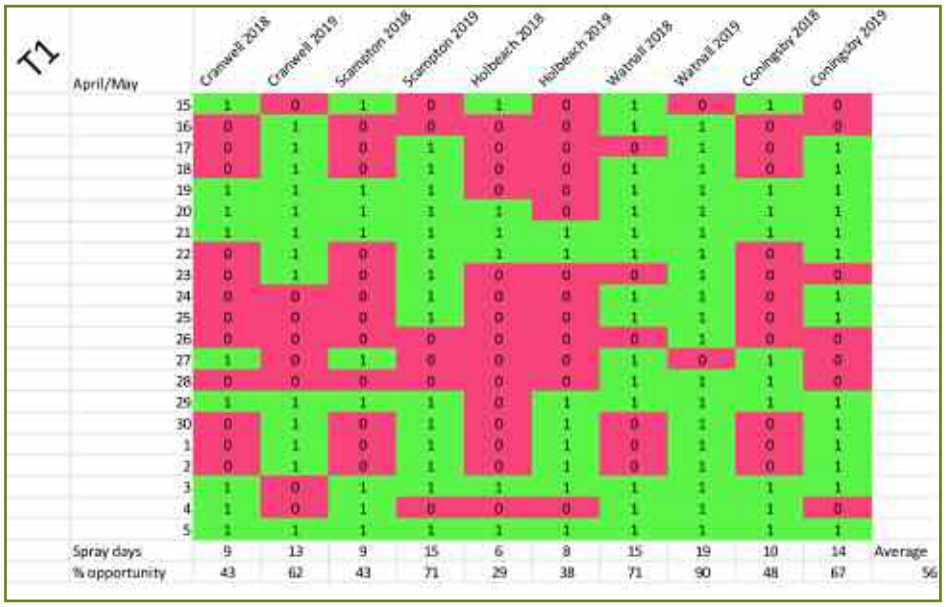
interest for growers looking to adopt a more integrated approach. "As well as excellent yield performance in multiple positions and locations (light land, first cereal and second cereal), KWS Cranium boasts good yellow rust and orange wheat blossom midge resistance, which is pretty unique in the feed sector. As well as this, it also boasts the highest straw stiffness rating on the RL," explains Kirsty.

And aside from disease resistance, KWS Cranium has shown consistency in performance across the mainstream and later drilling windows. "In the field this translates to a higher yield percentage compared with the next best late driller on the RL — LG Prince," explains Kirsty. "From surveys we've done, we've seen that 67% of farmers still plan to drill their wheats in the later slot, so a variety like KWS Cranium allows growers to satisfying other IPM priorities — like weed control — but just helps squeeze out that extra bit of yield."

While again, it's hard to quantify consistency, trials have shown KWS Cranium to have far less yield deviation from its ranking, proving how reliable it is, she adds. "When we don't know what the weather is going to throw at us, if there is a variety that has continually performed well in the face of huge inconsistency, that can only be a good thing."

On the disease front, KWS Cranium's yellow rust score (8) is of significance. "Yellow rust is most important in the East, though we know infection can occur all across the UK, and yield losses of anywhere between 40-50% can often occur in untreated susceptible wheat varieties.

"We know the chemical options are reducing and require protecting if we want to keep them in the armoury, so again, the genetic resistance is going to be key here and KWS Cranium is a real step up."



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One aspect to note within this is that KWS Cranium has both adult and seedling resistance — a feature not many varieties on the RL can lay claim to — but why is this important? "Some varieties have good YR resistance, but actually, that only kicks in when the plant becomes an adult — meaning there's potentially a long chunk of that plants life when it is not protected.

"If we then take into consideration that many growers sway towards that later drilling window, you just can't afford to wait for adult resistance to kick in. A variety that's belt and braces from seedling right the way through to adult is going to give you that ultimate flexibility and savings — both from a time and a chemistry point of view.

"That said, it's not necessarily about cutting fungicide inputs, but about getting the most from them and thinking about how we can use genetics to work alongside them, hand-in-hand. From an IPM point of view, it's more favourable to get genetics to do the heavy-lifting."

KWS Cranium is also substantially stiffer strawed than the best feed varieties on the RL, adds Kirsty. "This reduces the need for PGRs, again adding to cost and labour savings, as well as giving growers that all important flexibility. What's more, less inputs mean less travelling and often less damage to soils.

"For us, it's all about being strategic with your variety choice and trying to pre-empt potential issues before the seed is even in the ground. That way, growers can use functional traits to put themselves in the best position to tackle issues head on, whether that be the weather, reduced chemical efficacy or even just a lack of time.

"All of this contributes to that greater picture of integrated cropping and management, which we believe is going to become a fundamental part of farm businesses in the not-too-distant future.

"And while the message of using genetics to protect chemistry has been heard loud and clear, an integrated approach is also vital to protect the genetics too — rather than the industry finding itself in a similar situation as it has due to over-reliance on chemicals. "It's not about using one tool over another, but in fact, about using everything strategically to protect all elements of the crop production cycle," concludes Kirsty. ■

Fit for the Future

In this series of articles, *CPM* has teamed up for the fourth year with KWS to explore how the wheat market may evolve, and profile growers set to deliver ongoing profitability.

The aim is to focus on the unique factors affecting variety performance, to optimise this and maximise return on investment. It highlights the value plant genetics can now play in variety selection as many factors are heavily influenced and even fixed by variety choice.

KWS is a leading breeder of cereals, oilseeds, sugar beet and maize. As a family-owned business, it is truly independent and entirely focussed on promoting success through the continual improvement of varieties with higher yields, strong disease and pest resistance, and excellent grain quality. We're committed to your future just as much as you are.