

Real Results Pioneers

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We create chemistry

“Everything has to be right.”

Soil focus eases blackgrass burden

Years of experience following regenerative agriculture principles have earned Kent grower Tom Sewell the accolade of Soil Farmer of the Year. *CPM* visits to find out how soil management interacts with blackgrass control.

By Tom Allen-Stevens

Turning up at Warnhams Farm, near Maidstone, Kent, you feel it's a bit of a landmark moment for the Sewell family business. James Rimmer from CCC Agronomy is there for his last meeting on the farm before leaving for Norfolk to join Vegetable Consultancy Services.

Tom Sewell has made the decision to continue with George Hepburn and Mike Harrington of Edaphos providing all agronomy services — up to now it's been shared, with James providing the above-ground advice and George guiding how to optimise growth and goodness below.

What makes the decision all the more

interesting is that Tom has recently received the accolade of Soil Farmer of the Year. This recognises the progress he and his father, Jem, have made moving from minimum cultivations to no-till across the soils that vary from Grade 1 silt, through Grade 2 and 3 medium to heavy free-draining but abrasive soils, to some heavy Weald clay.

Regenerative agriculture

For at least the past five years, which was when *CPM* first visited the farm, the focus has been on regenerative agriculture. Inspired by a Nuffield farming scholarship he was awarded in 2013, Tom recognises it was a novel, but aspirational concept at the time — “to be sustainable is just standing still,” he pointed out in 2016.

So what advice does he have for the many farmers now turning to regenerative agriculture? “It's a journey, and you learn all the way,” he says. “We went fully no-till in 2014, but you can't jump from year one to year seven — it's not just about buying the right drill and changing your rotation. It's about making the progression. That's important because when you're making just one pass through the field to establish a crop, everything has to be right.”

James echoes this view. “Regenerative agriculture is sometimes perceived to be easier, but the detail matters more, not less.”

Joining the discussion is local BASF

agronomy manager Jonnie Dennis. For the past five years, Tom has been one of 50 farmers across the country in BASF's Real Results Circle, carrying out tramline trials with the latest chemistry. This is compared with the farm's standard best practice treatment and the results are put through a fair degree of scientific scrutiny to ensure a result that's 'real'.

This autumn, there's going to be a trial putting the company's new blackgrass herbicide Luximo (cinmethylin) through its paces. Jonnie's come to discuss the trial, and in particular how regenerative agriculture techniques can complement, or potentially conflict, with good blackgrass management.

“We know that achieving the magic



The detail matters more with regenerative agriculture, says James Rimmer, not less.

Trial underway after faltering start

Tom Sewell's Luximo trial was supposed to start a year ago. "We drilled KWS Extase on 20 September, and then it rained before we could apply the pre-em, so we had to abandon the use of Luximo," he reports. The farm-standard treatment was eventually applied post-emergence, but the blackgrass came up "like a lawn" so the field was taken out of production and put into stewardship.

"I blame the cultivations. We created a light tillage to improve surface conditions for the pre-em herbicide, and I think that encouraged the blackgrass and limited our options post drilling once the weather closed in."

Another field has now been ear-marked for the trial, which will be given the farm standard

herbicide treatment, while a couple of tramlines will be treated with Luximo. Blackgrass assessments will be taken at three points through the season by ADAS. In addition, blackgrass patches will be mapped and yield maps from the combine assessed to relate yield to weed density.

Jonnie points out that it will be particularly interesting to see how the different treatments perform based on Tom's soil-focused approach to farming. "We believe Luximo can take your blackgrass control to the next level, but only if you've given the appropriate level of care and detail to every other element of your farming system," he says.

soil health that underpins all of this. Soil management and soil health are the critical bits, and how you implement these on a field-by-field basis."

Tom freely admits he grapples with the grassweed. "We have blackgrass in most fields and it's a serious issue on about 5% of the farm. Generally, we keep on top of it and spray out any areas where it takes over with glyphosate. We'd love to have a zero-tolerance policy but if we did, we'd hardly harvest any crop.

"We've also just taken on an extra 160ha, increasing our cropped area to 600ha. This adds to the challenge as that land is just starting on its regenerative journey," he notes.

There are three key elements to his system, common with most regen ag farmers:



Blackgrass is present in most fields and it's a serious issue on about 5% of the farm.

1. Minimum soil disturbance
2. Year-round soil cover, and living roots in the ground
3. A diverse crop rotation, including cover crops

It takes a combination of many cultural techniques to tip the battle against blackgrass in your favour, notes Jonnie. He picks out three key pillars of a control programme that's strong against grassweeds:

1. Delayed drilling
2. Good resistance management
3. Effective use of pre-emergence chemistry

So how do these priorities fit together? Use of cover crops is the first issue to come under scrutiny. "The aim with cover crops is to capture the sun's energy and turn it into biomass, into roots which improve the soil — Americans call them soil primers," explains Tom.

"Ideally you want to establish them directly behind the combine — regen ag growers talk about the 15-minute fallow. We don't actually have the resources to be that



Cultivations would destroy the worm channels, inherent structure and mycorrhizal fungi built up over the years.

minimum 97% control of blackgrass is the challenge, and that this comes from a combined approach of chemical and cultural controls," he says. "But there's a focus on

Tips for a soil-led strategy

Soil conditions and an understanding of how blackgrass behaves beneath the surface are crucial to how it develops and competes with the crop above, according to independent soil expert Prof Jenni Dungait. She has the following tips for getting in front of blackgrass in the relatively wet UK climate:

Consider the balance of soil water:air content. Blackgrass likes wet, heavy soil. It can germinate at very low soil-oxygen content and at low temperatures. So alleviating compaction and keeping field drains running are priorities. Building and maintaining soil organic matter (SOM) supports the development of a soil structure that drains more quickly after heavy rain, especially in clay soils where the smaller particles will tend to retain water and are more prone to become anaerobic. SOM increases aggregation and water and air passage through the soil.

Map wetter areas of your field. This will

make a close correlation to where your blackgrass patches are likely to be. It can be done through an electrical conductivity (EC) scan, through infiltration or penetrometer tests or simply through visual inspections — a spade is often the best tool. Variability, even within one field, can be quite significant and should be taken into account.

Think about root competition. Blackgrass tends to outcompete wheat and adapts to wet conditions in a way cereal crops can't, so techniques such as N-placement may help. Research suggests there's a certain degree of root biological warfare that takes place — allelopathy is a plant's use of root exudates, often in partnership with soil microbes, to give it an advantage. There's still much to learn here, but targeted use of cover crops and specific wheat varieties may help.

Share experiences. Every farm is different and effective blackgrass control takes the right



Soil organic matter content helps maintain a good air:water balance, says Jenni Dungait.

combination of many techniques. So no approach should be ruled in or out — a new way of tackling the weed that's shared by one grower could be the start of a new tool in the toolbox for many.

• For more on Luximo, blackgrass and soil advice from top UK experts captured in podcasts and videos, go to the BASF Real Results Virtual Farm www.basfrealresultsfarm.com



Jonnie Dennis believes Luximo can take blackgrass control to the next level for those who have looked after every other element of their farming system.

▶ tight, but it is important to get the crop in early. If I get to September and I haven't planted a cover crop, as has happened in some fields this year with the late harvest, it can be borderline as to whether it's worth it. You'd at least tailor the seed mix — phacelia, vetch and clover are good if you're going in late.

"We aim to drill the cash crop into green, standing crop if we can, especially in spring as a living root ensures the soil doesn't go anaerobic."

But Tom notes that soil improvement is the goal with cover crops and blackgrass control takes a backseat. James points out a healthier soil does improve blackgrass control, but in heavy infestations, cover crops shouldn't form a key control strategy and can even hold back efforts to pull the weed in check.

"You can have problems with shading, and extended germination," says James. "Sometimes it's better to treat the blackgrass itself as the cover crop and we've often established the cover at half the seed rate to ensure an open canopy that glyphosate can penetrate. It also hampers the residual chemistry, especially if you're planting into green, standing cover."

This is a point that Jonnie stresses. "Residual herbicides are soil-acting and best results are achieved when the pre-em application hits the ground evenly."

Crop competition is another aspect where you sense what's best for blackgrass control isn't always where the regen ag enthusiast is heading. "If you have too wide a row-spacing, you're letting in too much light — 25cm is a maximum for me," says James.

Tom has a 4.8m Cross Slot drill on 23cm spacing and has recently purchased a Horsch Sprinter with Bourgault Versatile Opener System (VOS) tips at 25cm spacing. "I think 23-25cm spacing is the ideal for most crops. Since I'm not disturbing the soil in between the rows, less blackgrass germinates, but it's not black-and-white," he accepts.

There's a red line when it comes to cultivations, however. "Tillage is a no-no for

me," says Tom. "Every time we've carried out any cultivations we've regretted it. I accept that sometimes the best choice for blackgrass is to plough, but in regen ag terms, that's a complete reset that puts you back to year one."

Tom puts significant value on the worm channels, inherent structure and mycorrhizal fungi he's built up over the years that he believes are destroyed through cultivations. "We bought the Horsch drill to raise our output and give us a tine option. But I'm wondering whether it's a backward step as it tends to boil the soil in front of the tine, while the Cross Slot is true minimum disturbance. The Horsch also pulls up rocks, which are a problem in some of our soils."

Respect the soil

Jonnie notes that ploughing can be the most effective way to bury a bad blackgrass problem in a particular year. "But the plough must be set correctly, and you should respect the soil structure — take care not to put in a plough pan. Then keep the seed buried — don't bring it up in the following year."

But all are agreed on one area of blackgrass control that shouldn't be compromised: drilling date. Jonnie explains that delaying until mid-October allows a wide window for blackgrass to chit which can be sprayed off with glyphosate, and also means the crop is drilled into moist soils in which the pre-em herbicide is far more effective.

While barley establishment starts for Tom around 21 September and the cleanest wheat fields are drilled at the end of the month, any fields with blackgrass are pushed towards the end of October. "On a no-till system you farm what's in front of you,

and you're always guided by what's right for the soil. I like to get drilling done by half-term week, and that's generally a cut-off," he says.

"Historically we haven't had much success with spring crops, but recently oats have performed well — in one block we put in cover crops that were grazed by sheep then followed by spring barley. Winter beans followed this and the blackgrass came through. But where we put winter wheat followed by spring oats there was barely a blackgrass plant."

It's clear that for Tom the soil comes first. Blackgrass is a priority, but he feels more than half the battle's won if the soil's maintained in a good state. "The key to success with regenerative agriculture is not to throw your brain away — stick to good farming principles, farm what's in front of you and focus on what you're aiming to achieve. Spend more time thinking and learning and less time on a tractor," he concludes.

And for Jonnie, it's much the same with blackgrass. "Much of what you do to improve your soil has benefits for blackgrass control. It's essential to get everything right at the point you drill, then the last bit is the chemistry." ■



A dense cover crop can result in problems with shading, and extended germination of blackgrass.

The Real Results Circle

BASF's Real Results Circle farmer-led trials are now in their fifth year. The initiative is focused on working with 50 farmers to conduct field-scale trials on their own farms using their own kit and management systems. The trials are all assessed using ADAS' Agronomics tool which delivers statistical confidence to tramline, or field-wide treatment comparisons — an important part of Real Results.

In this series we follow the journey, thinking and results from farmers involved in the programme. The features also look at some in-depth related topics, such as SDHI performance and data capture and use.

We want farmers to share

their knowledge and conduct on-farm trials. By coming together to face challenges as one, we can find out what really works and shape the future of UK agriculture.

To keep in touch with the progress of these growers and the trials, go to www.basfrealresults.co.uk or scan the QR code to visit the all-new, cereal fungicide virtual trial, offering a 360° map to compare plots.

