

# Real Results Pioneers

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## Innovation at cost

**A keen eye on costs is even more important on smaller farms, but it doesn't have to be at the expense of innovation. CPM visits a farm in Yorkshire to discover more.**

*By Mike Abram*

**Managing costs while still being open to innovation is a balance that's often harder on smaller farms. It's one where Pat Thornton treads carefully on his 150ha of combinable crops, just under 20 miles east of Doncaster.**

Making his own direct drill is a classic example. Having seen the direction of travel with the Sustainable Farming Incentive and some of the stewardship schemes, he saw a need for a piece of kit capable of drilling through crop residues and cover crops but didn't necessarily want to spend tens of thousands of pounds buying a new one.

"It was a good winter project," he explains. "We were trying to be proactive to see whether our soils will work under that system."

A neighbour, who had done something similar, provided the inspiration to modify a bought-in second-hand drill with Seed Hawk tines, he says, using many of his friend's ideas and experiences.

"The cost of the drill was still substantially less than what was on offer via the Countryside Productivity fund and there was no compromise on what was suitable for our soils," he says.

It was used for the first time this autumn with positive results. He has an informal arrangement with two other near neighbours of a similar size, sharing labour and machinery during the season.

### 'Sunshine' drill

That gives him access to a Väderstad disc drill. "It's a fantastic drill, which we will still use, but it's what's often called a sunshine drill. When conditions turn bad, it wants parking and since we're pushed down the route of delayed drilling for blackgrass and there's potential for higher residues, there are limitations to it. So the newly built drill just gives us all another option."

Trying to improve the farm's heavy clay soils has been at the heart of what happens on the farm for many years, he says. "The whole soil health thing hasn't come as a surprise to us — it's always been at the front of our minds in terms of what's below our feet pays the bills with the quality of it."

The farm has incorporated straw since the straw burning ban and uses a lot of sewage sludge to add organic matter. There's been a more recent trend of moving less soil during crop establishment, with direct drilling used for some spring crops.

"If there's an issue with consolidation or compaction, we're not afraid to address that, but we try to do in a minimalist way.

*“Our mantra is only do what's necessary.”*

"Our mantra is only do what's necessary. The key is being able to identify what's necessary, what promotes yield and what's best for the crop — just because you have a direct drill doesn't mean you have to direct drill," he says.

Along with his neighbours, he's been experimenting with over wintered cover crops before spring barley, which is grown partly as a cultural control for blackgrass. "On our soil type there's a limited window of days suitable for drilling in the spring. Throwing cover crops into the equation can potentially leave land very wet and further limit those days.

"Over the past couple of years we've tried different mixes to find the best for our land without creating problems for the rotation with pests and diseases. We limit the economics by sowing seed with an air seeder mounted on an autumn cultivator.

"At the moment we're using mustard, spring beans and barley. We've tried oats in the past, but they've left the land wet. We



*Pat's aim is to keep an eye on the economics, including costs and making sure investments provide a definite return.*

need something that's quite open and the wind can get through to leave the soil pretty dry," he says. "Otherwise you end up spraying it off in November and defeating the object."

But provided they're managed correctly, having something growing over winter helps with soil structure and establishment of the following spring crop, which he direct drills after terminating the cover with glyphosate, he says.

Like most farmers he already has one eye on autumn 2023, with the further loss of Basic Payment Scheme support coupled with high input prices a concern.

The current season is much more promising — with crops with potential for high output, high commodity prices and relatively low input costs after buying nitrogen fertiliser at what now is a good price.

Next year, while he hopes high input prices will continue to be counterbalanced by high commodity prices to produce similar margins, there'll be a void created by the loss of BPS.

His aim is to keep an eye on the economics, including costs and making sure investments provide a definite return. "On a farm of our size, details matter, so you can push every metre as hard as you can."

That desire to work smarter is part of the reason for being involved in a joint project with BASF and Amazone looking at variable rate applications, driven by insight gained from BASF's digital platform xarvio Field Manager.

The platform consolidates up to 15 years of historic satellite-sourced NDVI imagery, creating an average productivity map, called a Powerzone map. Farm data can be overlaid too and, in Pat's case, three years of yield data was used by Field Manager to split one of his wheat fields into five different zones to create a Powerzone map.

## Lower Melwood Farm, Doncaster 2021 Real Results trials – 17 Acre & Far 14

Treatments	Field treatment (l/ha)	BASF (l/ha)	Farm Agronomy Max (l/ha)
<b>T0 (29 Mar)</b>	Tebuconazole (0.5)	Tebuconazole (0.5)	Tebuconazole (0.5)
<b>19 April</b>			Gramitrel (1.0)
<b>T1 (22 Apr)</b>	Tebuconazole (0.45)	Revystar (0.75)	Tebuconazole (0.45) + Gramitrel (1.0)
<b>T2 (18 May)</b>	Ascra Xpro (1.0)	Revystar (1.0)	Revystar (1.0) + Gramitrel (1.0)
<b>Average yield (t/ha)</b>	12.92	13.37	13.32
<b>Advantage over field treatment (90% confidence (limits))</b>		0.45 t/ha (+/- 1.17)	0.40 t/ha (+/- 1.07)
<b>Thousand grain weight (g)</b>	41.3	40.1	42.0
<b>Specific weight</b>	69.8	68.3	69.7

*LG Sundance following a crop of Oilseed Rape.*

*Revystar XE contains fluxapyroxad+ mefentrifluconazole; Ascra XPro contains bixafen+ fluopyram+ prothioconazole; Gamitrel is a foliar nutrition product.*

The five zones have been drilled at seed rates that vary by 15-20% across the field using tined and disc Amazone drills. This spring in-season biomass data is being used to variably apply nitrogen.

"I see xarvio as a tool to help use inputs professionally — you can use it to put more on the good areas, or more on the poor areas, or what you want to average across the field," says Pat.

"At the moment I'm putting more on the poor areas, and also averaging what we're using. For the nitrogen it's around plus or minus 20% in the five zones. It's baby steps, building trust, although there's a certain air of trepidation, as now every time you fill the hopper it's over a thousand pounds worth — but I have faith in the platform and kit," he says.

A Metos weather station has also been

installed, which works alongside the fungicide decision support from xarvio for disease risk and crop growth forecasting.

Pat grows two wheat varieties on the farm — LG Skyscraper for seed, with the main bulk of the area in Gleam. Local data is important to him making decisions on varietal choice and seeing trials at Rawcliffe Bridge has proved useful, he says.

"We want proven varieties that are tolerant to the conditions around here — so seeing the local data is good. We don't chase that 2% of extra yield for a new variety and tend to stick to varieties that are established, so we already know their strengths, weaknesses and nuances."

Avoiding varieties with Cougar genetics this season was important after resistance to septoria started to break down in those varieties last year, he says. ▶

## New barley product comparison this season

This season's Real Results trial will be in hybrid barley, says Pat. "It's the first time we've grown hybrid barley, and the first time we've grown winter barley for many years.

"We don't grow second wheats because of blackgrass, and we're growing the hybrid barley because of its competitiveness."

The comparison is between Tevos, BASF's new barley-specific fungicide containing fluxapyroxad and pyraclostrobin, and the farm standard Siltra Xpro (bixafen+ prothioconazole), says Aliona Jones, BASF agronomy manager in Yorkshire.

"It fits nicely at T1 in winter barley, giving excellent control of rhynchosporium, net blotch

and it has greening effects."

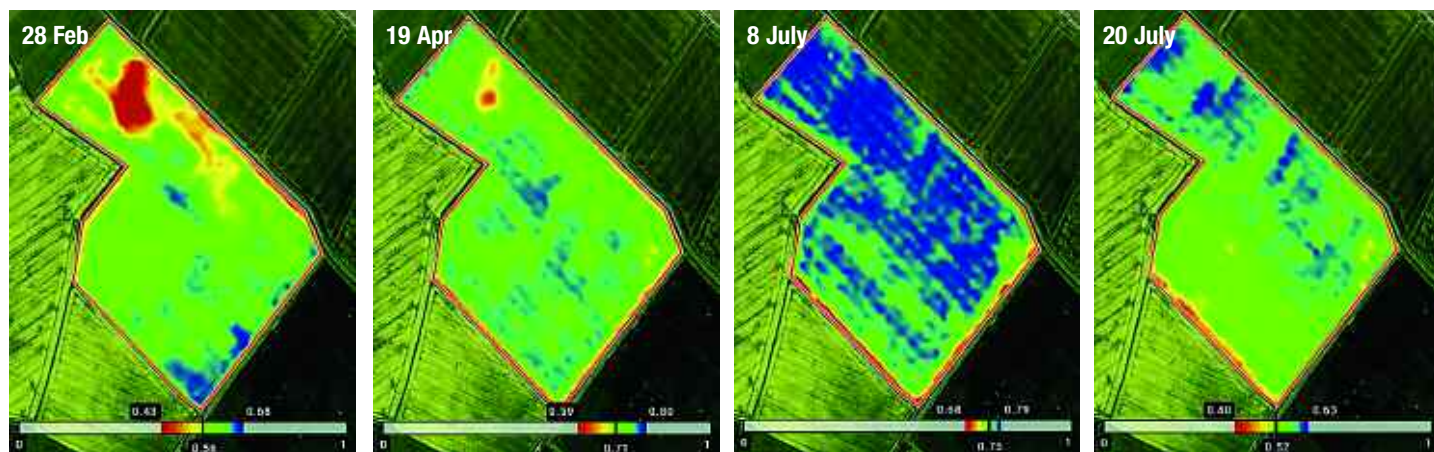
The trials are a good way to try out new chemistry, says Pat. "On a farm of our size we're not always going to be early adopters because there can be an element of risk. The Real Results trials have been a big bonus for our farm by creating a safe learning environment and it's allowed us to try things that ordinarily we'd wait to see how others have got on first.

"It's a bit like building our own drill — we see what's going on and take it all in, but it's what is economic for us and least risk. Thankfully the Real Results trials have allowed us to try new products."



*The farm is growing hybrid barley for its competitiveness against blackgrass.*





In July, NDVI appeared slightly higher in the two Agronomy Max tramlines, but the narrow NDVI range at the time shows that this was a very subtle difference.

► “Gleam is a good allrounder — it has a decent standing ability and looks after itself in terms of disease,” he says. “We did see a little bit of juvenile yellow rust in it early last season, but we soon got it under control with tebuconazole. But we haven’t seen any this year so we won’t be using a T0.”

In his BASF Real Results fungicide trial, his chosen field treatment has been an initial T0 of tebuconazole on LG Sundance wheat, which has excellent septoria and yellow rust resistance, with another low input choice at T1 of 0.45 l/ha of tebuconazole, followed by 1.0 l/ha Ascrea XPro at T2.

“Using the xarvio Field Manager disease monitoring gave me confidence that there wasn’t a high disease pressure in the dry weather, and it was just to keep the bottom clean and an opportunity to exploit the variety’s genetics,” he recalls.

The BASF treatment was a higher input of two sprays of Revystar (mefentrifluconazole+ fluxapyroxad) at 0.75 l/ha at T1 followed by 1.0 l/ha at T2. A third tramline treatment compared tebuconazole at T1, Revystar at T2 with added Gramitrel — a Yara micronutrient mix — at both timings.

Initially after the dry period, Pat says he didn’t visually see much difference between the treatments, but after the rain in May he initially saw an element of greening in the tramlines treated with the Gramitel, and then later in the season as disease started to come in, the Revystar came into its own. “You could definitely see marked differences where it was applied.”

Assessments in mid-July suggested the tramlines treated with Revystar retained more green leaf area than the farm standard, with a statistically significant difference observed on leaf three, and similar trends on the two upper leaves.

That led to higher yields in both tramlines — an extra 0.40t/ha in the tramline with one Revystar plus micronutrient, and 0.45t/ha

where two Revystar treatments were applied.

“Sundance is one of the least responsive varieties, so it was good to see that keeping the crop healthy and disease out did have an effect despite its good disease resistance. I don’t know what would have happened if it had been a responsive variety,” says Pat.

## Harvesting sunshine

“We harvest sunshine. If you read the YEN reports, there’s so much that is out of our hands when it comes to where yield comes from, but if you’re maximising those solar panels [leaves] to maximise sunshine, to put it into yield, you want to be using the best product out there. The trial showed in this scenario it was Revystar.”

ADAS Agronomics analysis, which cleans the data to remove headlands, anomalous combine runs where the header was either not full or spanned two treatment areas, wheelings and locally extreme data points, wasn’t able to confirm these differences

were statistically significant.

However, this evidence, alongside the performance of Revystar elsewhere on the farm has encouraged Pat to use the product at T1 this season. “We’ve learned enough from the Real Results work, AHDB and NIAB-TAG trials that it’s a wise place to spend our money and get a return on investment.”

Neither Gleam nor Skyscraper are quite as disease resistant, while physical conditions this season are more conducive to higher disease pressure, he adds. “We’ve had some rain, and there’s a microclimate in the crops. They aren’t thick but are lush, well-established, and full of potential. It’s a different year and much easier to justify inputs with the commodity prices.”

He sold a proportion of his wheat forward before the war in Ukraine for around £230/t to help cover the cost of his purchased nitrogen. “If you know there’s a margin that covers your costs, and cost of living, there’s a case for selling,” he says. ■

## The Real Results Circle

BASF’s Real Results Circle farmer-led trials are now in their sixth 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.

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