

Real Results Pioneers

BASF

We create chemistry

“One harvest a year doesn't give you many opportunities to see what works.”



Invested in potential

After two difficult winters the weather this season has been much kinder, with many crops established early and coming out of the winter bearing promise. CPM checks in with an Essex grower to see how his in-field fungicide trials will inform his decision making this spring.

By Lucy de la Pasture

It may be a grey and dank January morning but it's anything but quiet in the farm office of North Essex farmer Steve Crayston. His phone is red hot as he juggles his time running the family business, which he farms together with his father, uncle and cousin.

Steve farms 1000ha, split between two holdings — one at Hunts Hall in Pebmarsh

and the other 10 miles south in Feering. As well as the more usual arable cropping — winter wheat, winter oilseed rape and spring crops, including maize for a local AD plant — the farms also grow borage and echium, both grown for their oil. Blackcurrants have been historically grown at Feering and more recently this has developed into a propagation enterprise.

Soil types

Steve laughingly says it's the farm's non-farming activities that keeps the business afloat, with many farm buildings now rented out to commercial enterprises, a glamping site and a 8ha fishing lake all contributing to the income.

The two farms both have very variable soil-types, though Feering has more sand and is more consistent, he explains. “At Pebmarsh you'll find a light sandy loam and heavy clay within the same field, so we use a variable seed rate at drilling, putting more seed on the heavier ground.”

Like many farms, the plough has become largely redundant on the Crayston's farms and has been replaced by a range of kit to suit different fields in different seasons. After a stale seedbed to

get an early advantage over blackgrass, the 4m Sumo VersaPlus drill does a lot of the work but has the disadvantage that it's heavy and requires 400hp on the front, he explains.

But the farm has a Triton drill as an alternative, which Steve finds useful for fields which are best drilled later due to blackgrass. It works on the vertical tillage concept, he explains, cutting a slot with a shelf for the seed to sit on and closing it with a sideways movement. To cover all eventualities, third tine drill is mothballed in the shed, just in case...

Cover crops have been dabbled with on the farm but without much success, particularly on the heavy land which Steve found to be colder and wetter in spring where the cover cropping was employed. For this reason he tends to prefer steel over roots and often a subsoiler is utilised in front of spring cropping because the soil on the farm often goes tight after winter rainfall, partly due to some of the soils lacking organic matter content in spite of crop residues being returned each year, he highlights.

Following in the footsteps of the three previous generations of Craystons, Steve ▶



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A real disease threat in 2021 gives a real result

After the difficulties of autumn 2019, getting an autumn crop established in 2020 was the top aim for most growers and Steve's team got Big Broad, his Real Results trial field, drilled with Elicit by the end of September.

The trial set out to look at Revystar XE's performance at different application rates at the T2 timing. It compared the effects of Steve's chosen field treatment — Revystar at 0.8 l/ha plus tebuconazole at 0.25 l/ha — with the fungicide at the BASF recommended rate of 1.0 l/ha.

A further treatment was added to explore how Revystar could be used within a higher input program to push crop potential, adding an extra 0.25 l/ha of foliar nitrogen fertiliser to the BASF recommended treatment.

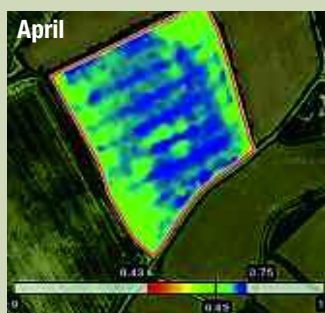
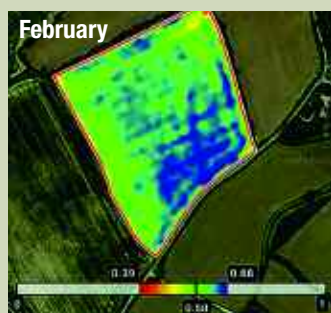
The crop of Elicit followed echium, which Steve believes makes a good entry for a first wheat. "We always find we get a fine tilth following the speciality crops (echium and borage) so the crop established well."

Even so, the weather still had a curve ball to throw at growers, with a period of prolonged cold and dry in early spring which affected both crop and disease development and, consequently, fungicide timings. In Maria's words: "It was complicated."

Septoria development in early spring was slow, meaning crops looked incredibly clean. This lack of perceived septoria also meant that many T1 applications on-farm were reduced (either in product selection or dose). But nature balanced itself eventually and rainfall in May was above average, enabling any septoria that was present in the bottom of the crop to spread up the canopy. It's fair to say that 2021 presented a fair test to fungicide programmes, says Maria.

"The T1 fungicide was certainly difficult last spring — even when we knew crops were at the right development stage for spraying we had to delay because of frosts," agrees Steve.

The Real Results trial looked particularly dismal early on, he recalls. "In April it was bright yellow and stressed — a combination of the effects of the cold, dry weather and



The NDVI images show there was little difference in crop canopy in February and April, but by July the images suggested a larger or greener crop in the Agronomy Max treatment.

fungicide and herbicide tank-mix at T1 as the season compressed."

The crop canopy was assessed using NDVI throughout the spring. Prior to the T2 application, NDVI images showed the field looked fairly even which meant the treatment comparison should be fair and accurate, explains Maria.

"In July, NDVI appeared slightly higher in the Agronomy Max treatment, suggesting a larger or greener crop. This may have been due to the addition of extra T2 fungicide and/or the extra nitrogen applied through the season.

"The Agronomy Max treatment was slightly taller than the other treatments, presumably due to the extra nitrogen, but the difference was subtle because the use of a spinning disc spreader didn't allow sharp edges to the tramlines where the extra nitrogen was applied," explains Maria.

Disease was assessed in the Real Results trial on 7 July at GS73. Septoria was present on all leaf layers, but only the flag leaves retained enough green leaf area (GLA) to allow an accurate assessment of severity. However, there were no significant differences in disease

severity or GLA between treatments.

The yield data was analysed using the ADAS Agronomics approach, putting the results through a fair bit of scrutiny to ensure the results were 'real'.

The average measured yield of the field treatment was 12.89t/ha, according to yield map data, which is likely to be a little higher than the true average due the exclusion of headlands and wheelings from the analysis, explains Maria. But the all-important question is how did the higher rate of Revystar fare against the farm standard?

"The modelled effect using Agronomics was that it increased yield by 0.60t/ha relative to the standard field treatment. Where extra nitrogen was applied in the Agronomy Max treatment, the yield increase was 0.11t/ha, with the ADAS statistical model indicating that yield differences of this size could have been due to other sources of variation (e.g. soil differences)."

So the differences between treatments were not 'statistically significant' by conventional criteria; in this dataset, the yield differences would need to exceed 0.66t/ha to be deemed 'statistically significant' at the

90% confidence level.

But even though the results were just a whisker away from a statistically significant result, it's reassured Steve that he's using the right chemistry to protect his yields at T2. But rates still need to add up when it comes to margin over input costs.

"The higher rate Revystar did give a higher yield and even just doing a rough calculation, the extra spend on fungicide has produced an extra £110 in yield."

The trial set out to look at the farm standard rate of Revystar XE at T2 versus the BASF recommended rate, with a further treatment investigating extra foliar nitrogen as well.



Hunts Hall, Pebmarsh 2021 Real Results trials – Big Broad field

Treatments	Field treatment	BASF	Farm Agronomy Max
T0 (31 Mar)		Cortez (0.5)	
T1 (27 April)		Revystar® XE (0.75)	
T2 (28 May)	Revystar® XE (0.8) + Teb (0.25)	Revystar® XE (1.0)	Revystar® XE (1.0) + Teb (0.25) + PolyN Plus (0.25)
T3 (23 Jun)		Prosaro (0.75) + Comet (0.25)	
Tota N (kg/ha)	225	225	258



Maria Tzortzi says there's a benefit to both azoles and SDHIs from using Revystar XE strategically at the T2 timing.

► says that he still feels like a relatively new entrant to farming in spite of having grown up on the farm. "One harvest a year doesn't give you many opportunities to see what works. Joining the Real Results circle has given me an opportunity to try new things, see what other people are doing and see if I can do things better."

As Steve takes another phone call Maria Tzortzi, BASF agronomy manager, picks up the story. "We're always keen to work with growers who'd like to test chemistry on their farm and that's how I met Steve — he had a Caryx (metconazole+ mepiquat chloride) trial in a field of OSR."

Seeing his enthusiasm for innovation, Maria invited Steve to become one of the 50 farmers that form the Real Results Circle. Last year he harvested his first Real Results field-scale trial (see panel) which was set up to look at different rates of Revystar XE (fluxapyroxad+ mefenftrifluconazole) at the T2 timing and the effect of extra foliar nitrogen.

The fungicide approach on the farm is very much governed by varietal choice and crop potential, with an investment in newer chemistry order of the day in situations where Steve considers it worthwhile — he points out that good looking crops need looking after even if that means using more expensive chemistry.

And variable soils can mean variable yields – last year the farms averaged 8.5t/ha for his Group 2 and 3 winter wheats, with a range of 6t/ha to 12t/ha across both holdings. So some considerable thought goes into any pesticide or fertiliser applications to make sure Steve's aim of maximum yield from minimum input is achieved.

The standard farm fungicide programme begins with a T0 spray, predominantly to keep on top of any yellow rust on the crop. "Last year we still had some epoxiconazole to use up but this year we will have to use tebuconazole instead," he says.

T1 sprays may make use of Ascra XPro (bixafen+ fluopyram+ prothioconazole), with folpet taking the place of the multi-site Bravo (chlorothalonil). Currently T2 is the timing when he will make strategic use of Revystar, an approach which the Real Results trial last year backed up, and this may be followed with a T3 of Comet (pyraclostrobin) plus Prosaro (prothioconazole+ tebuconazole), if required.

Maria is pretty happy with his approach. "Using Revystar when it's most needed at T2 will help take the pressure off prothioconazole and SDHIs, so there's a benefit to both mode of action groups from using it in this way," she explains.

Nitrogen strategy

Steve is of the same opinion and believes that it's important to try and protect fungicide modes of action to spread risk and make their useful life longer.

As part of the Real Results trial, one of the treatments investigated was pushing crop performance by applying extra nitrogen but the yield effects weren't a significant improvement on the farm standard regime trialled. Asked whether this would influence his nitrogen policy this year and perhaps give him confidence to hold back, Steve says it'll be very much 'business' as usual.

"I won't be holding back on nitrogen this year as I bought the majority of our requirements early through a buying group. But we have switched to liquid nitrogen at Feering so it will be interesting to see how that goes. It's a bit of a balancing act as crops may be at a higher risk of scorch but it helps spread risk.



Having scrapped the plough, Steve has a selection of different drills so he can match the right machine to soil types and conditions.

Whether it's something we'll adopt over the whole farm we'll wait and see," he says.

BASF studies with ADAS have shown that for growers who were forced into being more prudent with fertiliser this spring, using Revystar enhances yield even under lower rates of nitrogen input, adds Maria.

The first Real Results trial has thrown up a bit of food for thought and highlighted the possible rewards from fungicide and rate selection. Steve's feeling pretty happy with how his crops are looking at the moment and says he will be investing in their potential.

"Crops are looking as good as I've ever seen them so they will be worth looking after," he concludes. ■

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.

To keep in touch with the progress of these growers and the trials, go to www.basfrealresults.co.uk or scan the QR code.

