



“Last season was a reality check for many on heavy land using spring cropping.”

Patience pays in spring

Technical Spring cropping

Spring cereals didn't all fare well this season and many lessons were learned. *CPM* finds out how they fared at Stow Longa and gets advice on establishment.

By Lucy de la Pasture
and Rob Jones

Spring cereals can generate much better margins than winter wheat on heavy ground with blackgrass problems even where spring cropping conditions are as challenging as they were last season, according to the latest Agrii blackgrass technology centre research at Stow Longa.

Trials manager, Steve Corbett insists their establishment needs to be planned and managed with care and patience to ensure the best performance at least risk. From his work he identifies a number of agronomic keys to success, including choosing the right crop and variety, setting up the ground correctly in the autumn, drilling by soil condition rather than calendar date with minimal soil movement and prioritising early nutrition.

“Last season was a reality check for many on heavy land using spring cropping to break the blackgrass cycle. We calculate the very late, wet spring meant we had nearly 600t/ha more water to deal with at Stow Longa than the previous season. On the

heavy boulder clay this seriously got in the way of our drilling plans and put a huge amount of pressure on soil structure. The summer drought may have helped address the structural damage, but it certainly didn't help our spring crop performance either.

Poor performance

“As a result, average yields across our field-scale spring cereal cultivation and cover cropping trials were 4.38t/ha, almost exactly 2t/ha down on 2017. Despite healthier crop prices, average margins were pulled down by particularly poor spring wheat performances, reinforcing our view that, on our ground at least, the choice has to be between spring barley and spring oats,” he comments.

“At Nov 2018 values, Sangria barley for Budweiser brewing delivered us the best margins at up to £663/ha and contract-grown RPB Elyann oats generated up to £536/ha against a maximum of £94/ha for KWS Cochise wheat.

“Over the years, we've found all three spring cereals can be very effective in managing bad blackgrass. Growing them correctly, we typically cut infestations of 300 ears/m² in winter wheat down to less than 10 ears/m².

“With the original wheat/wheat/oilseed rape rotation at Stow Longa our initial spring cropping work concentrated on wheat. But issues with its competitiveness — especially when late-sown — not to mention ergot and gout fly, have led us to focus far more on spring barley and oats,” he explains.

Both crops have proved much more competitive against blackgrass than spring wheat and deliver better and much more consistent performance and margins, adds Steve.

Stow Longa spring cropping results across different varieties and an array of soil management regimes for the past two (very different) seasons clearly underline this, showing oats to be the most consistent yielder and barley the best and most consistent margin earner.

“Oats stand out as the most competitive spring crop for their particularly vigorous growth,” he points out. “For the same reason they're better able to deal with tougher conditions. But their Achilles heel continues to be the market, so they need to be grown on contracts which can be quite scarce. This leaves spring barley on a high nitrogen Budweiser contract as by far our best option.”

Despite last season's disappointing yields — 4.61t/ha on average for the spring barley



High N barley for Budweiser has proved the best margin earner across a range of heavy land establishment regimes at Stow Longa.

Stow Longa spring cereal performance (2017 & 2018)

Crop	Yield (t/ha)		Margin (£/ha)	
	Two-year average	Variation between years	Two-year average	Variation between years
Spring barley	6.21	1.31	560	48
Spring oats	6.40	0.69	394	186
Spring wheat	4.61	2.89	221	348

Source: Agrii Stow Longa trials, 2017-2018.

Stow Longa soil health testing (May 2018)

	Plough	Shallow tillage	Direct drilling	Phacelia	Black oat & radish
Soil organic matter (%)	4.5	4.4	4.4	5.4	4.9
Microbial biomass (mg/kg)	1284	1702	1988	2340	1922
Potentially mineralisable N (kg/ha)	37	48	54	70	55

Source: Agrii Stow Longa trials, 2017-2018.

and 5.38t/ha for the spring oats at Stow Longa — average 2018 margins of £584/ha and £418/ha respectively compared very well with the £166/ha delivered by the Sept 30-sown Skyfall wheat grown alongside them as part of the trial.

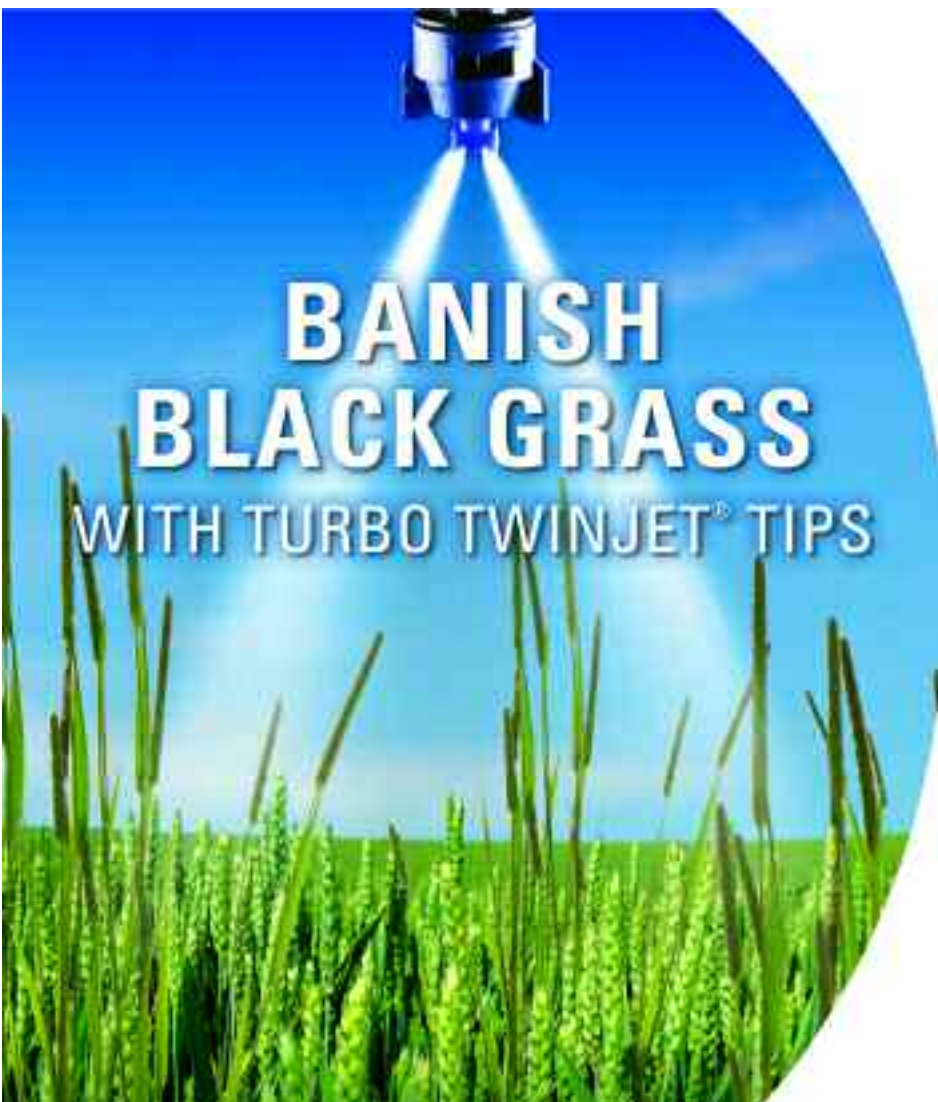
Equally revealing were the major differences apparent between the performance of the barley sown as planned on March 22 under very challenging conditions and that drilled more than a month later on April 27 into much warmer



Steve Corbett examines soil structure after cover cropping and highlights their longer-term benefits to SOM and microbiology.

and altogether better seedbeds.

Averaged across the 11 main soil preparation treatments, the March-sown crop following spring oats the previous year yielded 4.63 t/ha to earn a margin of £388, against the 5.77t/ha and £607/ha of the April sown crop that also followed oats. ▶



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Spring cropping



Barrie Hunt says make sure the rate of glyphosate used is man enough for the job in the spring.

► “These results are complicated by the fact that we switched from the Sangria for all our main sowings to Explorer for the later drilling because of its much faster development ability,” notes Steve.

“As well as the importance of choosing the right variety for the drilling slot, this very nicely underlines the value of patience in spring barley establishment. Conditions in March were far from ideal for our minimum disturbance Sky disc drill, so the seed went

into very ‘slotty’ conditions with much more smearing than we like.

Later sowing

“We deliberately left one whole strip for later sowing just to see. And by our next drilling opportunity at the end of April the ground was in a beautiful state as well as much warmer. The crop drilled superbly, the soil flowing well around the coulters without a hint of smearing. Patience is, indeed, a virtue.”

Interestingly, while the Stow Longa team has struggled to achieve margins from cover cropping that match those from cultivation-based spring cereal establishment strategies over the years, this wasn’t the case with the 2018 March barley drillings. Across all the earlier-drilled ground, margins from the five cover crop treatments averaged £576/ha against £572/ha from the cultivation regimes.

This position was reversed with the later-drilled crop — almost certainly due to the much better conditions overall — giving the cultivation regimes a margin advantage of almost £37/ha, so that across the entire trial they generated an average margin £12/ha better than the cover cropping.

“Although our work shows cover

cropping has little, if any, value in controlling blackgrass, these results are beginning to suggest some valuable soil health and structural benefits from the practice,” he observes. “It’s important to realise that this comes after four years of continuous cover cropping. So it’s clearly no quick fix.

“As well as generating encouraging 2018 barley margins, the cover-cropped ground — especially where we have been growing phacelia every year — gave us noticeably better drilling conditions last March.

“Soil organic matter (SOM) testing in May also suggests we could be seeing valuable soil improvements from the best cover cropping regimes,” he added. “As do both aerobic microbial activity and nitrogen mineralisation potential calculated from Solvita soil respiration measurements (see table 2).

“So the slight annual margin deficit we’re seeing for biology against metal in soil preparation four years into the trial programme could well represent a worthwhile long-term investment in soil improvement and weather risk management.”

Also important in achieving the best results from spring cereals, the 2018 Stow Longa research shows, is previous cropping.

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Very much poorer yields and margins were recorded for both spring barley and oats following spring oats with substantially better performances following spring beans.

"Growing a spring cereal after spring oats is asking for trouble in our experience, especially in a cold wet spring like 2018. Without adequate metal at depth, they leave far too much straw to get in the way of establishment and, being shallow rooted, give little soil structuring. Unsurprisingly this is where we see the greatest yield and margin benefits from either a plough in the rotation or a good cover cropping regime," explains Steve.

"In complete contrast, spring beans leave little trash and their deep rooting works wonders for soil structure and drainage. Here we see cultivation regimes delivering substantially better results than cover cropping.

"This reinforces the critical importance of setting-up soils correctly for spring cropping, which is essential with ground as unforgivingly heavy as that at Stow Longa. Our primary objective in drilling is to place seed with the least possible soil movement so we don't wake up the blackgrass," he says.

"For both blackgrass and soil condition

we aim to set up the ground with an early cultivation — or a cover crop which we always sow from our Lemken Karat which gives good shallow working for the best start. Then we leave it well alone until the spring when we spray off the cover and weed growth with glyphosate and drill without further cultivation."

Moisture imbalance

Preparing spring ground before Christmas to try and address the moisture imbalance that is often found in late spring, is an approach Farmacy agronomist Ben Pledger also advocates. This means the moisture is locked in and drilling can be earlier if conditions allow.

"You can't control the heat in June, but you can control the moisture in the soil in April," he says. "Plough or deep cultivate before the ground becomes really wet in late autumn and then all that's necessary at drilling is to knock the top of the soil and away you go. It's the best way to produce a dry and well-structured seedbed in the spring which allows crop roots to go deeper to access water and nutrients."

With such a short growing season and spring cereals' inability to compensate for setbacks, avoiding any check to growth is



It's important to do as little as possible to the soil before drilling where blackgrass is a problem.

an equally important element for heavy land growing success.

Effective grassweed control ahead of planting is also vital with in-crop options so limited. Ben says there should be time for 4-5 stale seedbeds before planting.

For both cover crop destruction and pre-planting weed control, national Grassweed Action Initiative co-ordinator Barrie Hunt recommends a modern Roundup, proven to get more glyphosate into plants more rapidly and reliably at low temperatures than other formulations. ►

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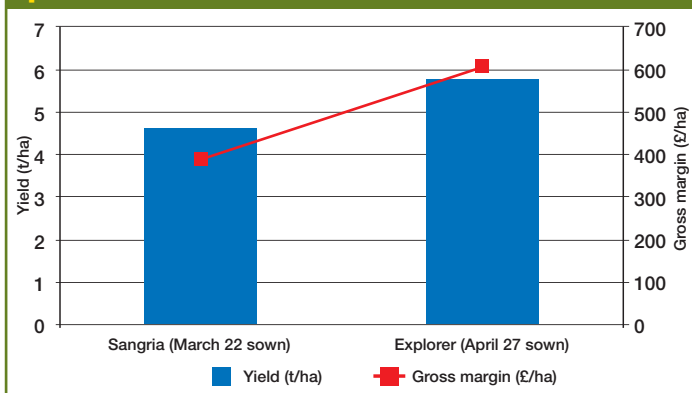
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Spring barley after spring oats performance 2018



Source: Agrii Stow Longa trials, 2017-2018.

► He also advises using formulations with maximum rainfastness to take advantage of every spray window, and those with the shortest cultivation intervals for the least possible delay ahead of seedbed preparation and drilling.

It's equally important to use the right rate of Roundup for the job, believes Barrie. "For tillered blackgrass 720g/ha of glyphosate should be sufficient, but 1080g/ha may be required for particularly thick and advanced grassweeds. And tough perennials and harder-to-kill cover crop species like oil radish and vetches will need higher rates, often up to 1800g/ha.

"Water conditioners can improve performance in hard water areas but remember that no amount of adjuvant can make up for insufficient glyphosate. And whatever you do, don't treat pre-planting applications as a rush job. Take as much time and care as you would with your winter wheat's T2 fungicide because you have only the one chance to get it right."

For the most effective pre-planting control he recommends around 100 l/ha of water and a spray on the finer side of medium for the best targeting of seedling weeds.

Nutrition plays an important part in getting spring crops off to a good start. At Stow Longa the typical approach is to include 60kgN/ha in the seedbed for spring barley, balanced with

P, K and S as necessary, with the rest of the nitrogen applied by GS15. Ben also applies N down the coulters at drilling but also applies P, which he believes is as, if not more important in helping the crop get quickly away. He also reckons manganese seed treatment can pay dividends as an insurance against conditions turning too wet after drilling to apply foliar treatments.

The Stow Longa barley is grown on Budweiser contracts, delivering good returns from malting on ground that certainly isn't ideal for traditional markets, believes Steve.

"We typically use around 150kgN/ha and would far prefer to spend on nutrition than on graminicides which are more likely to hold back the crop than the blackgrass. Depending on the variety, we also like to use an early PGR to promote tillering and avoid the brackling which can be such a problem," he says.

"With well-planned attention to detail in general and soil condition, in particular, we know spring cropping can be very rewarding financially on Stow Longa's heavy ground as well as being the best thing we can do to deal with bad blackgrass. Then once we've got blackgrass levels down to an acceptable level, we can go back in with a winter wheat that really will earn its keep." ■