

Real Results Pioneers

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Spring patience

Patience is the key to succeeding with both direct drilling and spring barley in Scotland, as CPM finds out when meeting David Fuller-Shapcott.

By Mike Abram

Conventional logic says direct drilling in Scotland is challenging. Doing it in high magnesium content clay soils is even more difficult. Adding in using low horsepower tractors on such soils some would say is absurd.

But David Fuller-Shapcott is on a mission to prove the naysayers wrong on his 369ha in the Scottish Borders, having last autumn bought a second-hand Horsch CO4 direct drill after a few seasons testing various drills.

His 25-40% heavy clay soils are what he describes as “sticky boot land”, although a combination of a drier February, albeit not as dry as in parts of England, and the improvements he has made in managing his soils, meant he was able to walk across his wettest fields without his boots becoming coated this February.

“We’re definitely winning the soil improvement battle,” he says. “We’re not yet in a position to say that our soils are really healthy and we can direct drill everything

without an issue — I don’t believe that for one moment.

“But I do think we can direct drill our spring crops comfortably. It’s autumn crops, when it starts to get damp, that remain more of an issue.”

Patience is the key for spring crops, which is why he’s not panicking as a result of a much wetter March that has prevented any nitrogen being applied to his winter wheat, let alone starting spring barley drilling.

Cool soils

“Soil temperatures are sitting at 4.5°C, so I’ve not been in a desperate rush to do anything,” he says. “We have a saying up here that if soils are too cold to put your bare behind on, then it’s not time to drill yet.

“It’s all about soil temperature — I want it to be rising above 6°C and would prefer 8-9°C. Much to the annoyance of my staff, I do have a lot of patience and it is important.”

The other key factor for spring barley establishment is making sure the soils have dried out enough so drilling causes neither smearing or consolidation. “That includes on the turning headlands,” he says. “They need to be dry enough to withstand the weight of the tractor and drill.”

Everything is done with dual wheels on low horsepower tractors to minimise the footprint. “Our biggest tractor is 150hp, the 28m trailed sprayer is pulled by 115hp which most people think is absurd, while we use a 27-year-old, 85hp tractor with the rolls.

“Keeping on top of disease will also help delay any onset of ramularia.”

“The weight of machinery is the problem. Ruted tramlines on this soil with high magnesium content can have water sitting in them through harvest, and that’s just creating a permanent mess. I’d rather not do an autumn herbicide on winter cereals than make a mess.”

Spring barley forms approximately one-sixth of the cropped area on the farm in a rotation that starts with oilseed rape, spring oats sandwiched between two winter wheats, before spring barley and then winter barley as the entry back into OSR.

The alternation between winter and spring crops provides opportunities for either stale seedbeds, which are difficult between winter



Spring barley forms approximately one-sixth of the cropped area at Sweethope Farm.



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Cover crops or overwintered stubbles ahead of spring barley are grazed by a flying flock, before any remaining weeds are sprayed off with glyphosate in early April, explains David Fuller-Shapcott.

► crops in Scotland, or over-wintered cover crops if the wheat is cleared early enough.

“Realistically cover cropping is a long shot because it’s usually too late to do it. Even last autumn, after a particularly early wheat harvest, we only managed to get one field in.”

Cover cropping also requires the previous wheat crops to receive an autumn herbicide rather than a spring mesosulfuron-containing product, as the latter’s activity will impact on cover crop establishment success, he points out.

“Part of my switch to direct drilling is the aspiration that autumn herbicides will go on. It opens up the prospect of following the harvested winter wheat with a cover crop safely, or possibly flying a cover crop into the standing wheat crop.”

That would potentially extend the tight window for cover crops by around a month, he says.

Flying flock

Cover crops or overwintered stubbles ahead of spring barley are grazed by a flying flock, before any remaining weeds are sprayed off with glyphosate in early April. Base phosphorus and potassium fertiliser and around half of the crop’s nitrogen requirements are applied 7-10 days later.

“We moved to liquid fertilisers three years ago,” explains David. “And with every pass we also apply a liquid carbon source to try and feed the soil biology, which is going to convert that nitrogen instead of burning organic carbon to do the same thing.”

Typically, he’s applying around 105-110kgN/ha to his higher yielding Diablo spring barley variety, and 90-95kgN/ha to the older, lower yielding Golden Promise. He expects Diablo to yield around 8t/ha compared with the 5-5.5t/ha for the Golden Promise.

Keeping nitrogen inputs as low as possible is good both for soil health as well as the bottom line, in a season when it has been bought at not quite the top of the market but a price that is “fairly painful to look at,” says David.

Some of the higher input price risk this season has been negated through selling forward on what look like good contracts currently. “All the spring and winter barley is on contract, as are the spring oats and some of the wheat, which is going for seed.

“An 8t/ha crop of Diablo is not going to give an unattractive end result given its reduced growing costs and the Golden Promise has a good premium attached to take into account reduced yield.”

The Diablo is grown for distilling usage for specific end users through Simpsons Malt’s grower group scheme, while the Golden Promise is grown primarily for specialist brewing. “It’s a traditional variety that has its attractions apart from the premium price. It’s pretty robust — you will struggle to skin a Golden Promise crop with a combine, which in some years is an attractive feature.”

Having two different varieties can also help logistically, he says. “If there’s an intake for Diablo then they will take it off the floor, and likewise for Golden Promise. So I’ve got a bit of flexibility to try to keep grain moving

Net zero targets driving premium wheat contract

Net zero targets for distillers are driving a closer working relationship through the supply chain, with significant premiums potentially available for certain practices, says David.

“Some of the distillers are trying to be net zero by as soon as four or five years, while others are pushing it out to 2040 and there’s everything in between. It’s driving the distillers to get closer to the farmer in connection with trying to get a system that is net zero,” he explains.

That’s led to some interesting premium contracts for soft wheats for distilling in Scotland through Simpsons Malt.

“I don’t want to call it a sustainability premium because that’s not what it is, but it is a premium for growing soft wheat for this market where the other things we are doing around the farm are being rewarded by the end user.

“So the improvement in soil health, the biodiversity on the farm, water quality protections are all giving us a premium.

“There’s a premium for committing to grow soft distilling wheat on the long-term agreement, plus an additional uplift on top for achieving sustainability objectives agreed at the

start of each growing season. This is starting with baselining greenhouse gas emissions from wheat production, then looking at things like direct drilling and cover crops as time progresses.”

As a LEAF-accredited farm, David was well placed to take advantage of such a contract, so there hasn’t been anything specific he needed to change to access the premium.

“The distillers are looking at what they can do for their own in-house emissions and changing their energy consumption. But the supply chain is still where there’s a problem and they are looking to effectively support farmers in making changes by means of these contracts.

“This particular one is with Chivas for soft wheat, but I’m expecting the malting barley trade to look at a contract with similar principles. It’s a carrot rather than a stick.”

He’s also signed up for a carbon trading scheme with Soil Capital in the past few months. “I’m a fan of the concept of being able to earn carbon credits for trading by changing practices.”

In the Soil Capital scheme, change of practice is either from the norm in the local area



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or from a benchmarked point in time. In David’s case, his method of farming is unusual in the local region, he says.

“I fit the bill quite easily because most folk in this part of the world plough, whereas we’re either minimum tillage or direct drilling, so you can earn credits that way and by planting cover crops.”

He stresses the scheme is inset trading — within the agricultural supply chain — rather than offsetting a third party’s emissions from outside of farming. “From a conscience point of view that’s important — it’s not a greenwashing exercise.”

Real Results trial: Field 7, Sweethope Farm, Kelso, Roxburghshire

Treatment	Field Comparison	BASF programme
T0 (28 May)	Growth regulator & micronutrients	Growth regulator & micronutrients
T1 (6 June)	Inception Xpro (0.2 l/ha) + Zephyr (0.4 l/ha)	Tevos (0.4 l/ha) + prothioconazole (0.4 l/ha)
T2 (4 July)	Tacanza Era (0.55 l/ha) + Arizona (1.0 l/ha)	Tacanza Era (0.55 l/ha) + Arizona (1.0 l/ha)
Yield (t/ha)	8.26	8.50 (+/- 0.15)
Specific weight (kg/hl)	63.3	63.6

Source: BASF, 2022

off the premises, which when you have a fair bit to do and not a lot of shed space makes a difference.”

With his relatively late drilling date, David uses a high seed rate of at least 400 seeds/m². “Because the growing period is quite short, barley doesn’t have much time to tiller with us, so I keep the seed rates up in order to achieve somewhere near the right head count — we’re aiming for around 900 heads/m² at harvest.

“Roughly speaking, that’s a main stem and one additional tiller per plant, so tiller retention is important. If you check a barley crop it’s difficult to get it going again, and in the process, you lose tillers.”

That means disease control and nutrition are key parts of growing a successful crop. While mildew is a weakness for Golden Promise, rhynchosporium is usually the primary disease threat, with net blotch an occasional problem.

“Keeping on top of disease will also help delay any onset of ramularia,” says David.

He also uses micronutrient applications to de-stress the plant and delay triggering ramularia, as well as maximising output and

improving nitrogen use efficiency. Historical data and, when needed, leaf issue tests are used to help guide decision making.

Trace elements

“We’re routinely short on manganese, copper and zinc, so we’re always looking at applying those, plus other nutrients that are slow to move around the plant, such as boron in particular.”

Boron is applied in little and often applications as it’s difficult to get from the soil, while molybdenum and sulphur are used to improve nitrogen use efficiency.

In total, the micronutrient package costs around £20-30/ha. “It’s a reasonable spend, but if you’re spending £200/ha on nitrogen, it’s important to make it as efficient as possible. Last year, we took off 130kgN/ha nitrogen in the crop, while only applying 105kgN/ha,” he says.

There could be a change in his standard two-spray fungicide programme this season after last year’s Real Results trial showed a yield improvement of 0.24t/ha +/- 0.15t/ha (90% confidence interval) from Tevos (fluxapyroxad + pyraclostrobin) plus



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prothioconazole treatment at T1 compared with his farm standard of Inception Xpro (bixafen) plus Zephyr (prothioconazole+ trifloxystrobin).

ADAS Agronomics analysis of the yield map from the field, where three pairs of tramlines were each treated with the BASF treatment and the farm standard, suggested the estimated yield gain was unlikely to have been the result of unexplained variation across the field.

“There wasn’t much difference in disease between the two during the season,” notes David. “Although you could see the Tevos treatment was hanging on to its green leaf area for a little bit longer, perhaps, so I wasn’t really expecting much of a yield difference.”

While the 0.24t/ha difference wasn’t massive, it’s enough for David and his agronomist to consider trying a bit more Tevos plus Innox (prothioconazole) this season, although it will come down to the relative cost of the two programmes.

Conducting Real Results trials are hugely informative, he adds. “Trials results that are any further than about 10 miles from here don’t really mean much, so that’s the principal reason for wanting to do them here.

“I think there’s also the opportunity to effectively have a scientist in the field, albeit remotely, with these trials. You have a scientist who is looking at what you’re doing, taking soil samples and doing disease assessments, which is a particularly attractive element,” he says.

“We also had the chance to trial Revystar (mefentrifluconazole+ fluxapyroxad) pre-registration, and you don’t get those opportunities without being part of such groups,” 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 more than 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 a continuation of this series we follow the journey, thinking and results from farmers involved in the programme. The features also look at

some other related topics, such as environmental stewardship and return on investment.

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.

