

IN FIELD FOCUS

— AGRONOMY THAT DELIVERS —

AUTUMN AGRONOMY ACTIONS

With a lot to consider with autumn cereal agronomy – especially after a year like 2024 – ProCam agronomists from around the country offer guidance.

Winter wheat crops could fall into two camps this season, depending on the weather. Those crops that growers drilled early, after the bitter autumn 2023 experiences. And those drilled later, for example after root crops or maize.

And while some aspects of agronomy will be the same for both, other aspects will need to be quite different, agronomists point out.

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AGRONOMY THAT DELIVERS™

Autumn agronomy actions

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Wheat watch outs

Prepare for increased expenditure to manage the added risks of early-drilled cereals, says ProCam South West agronomist, Guy Peters. These include grassweed risks, pests and diseases, he notes.

"If you drilled early, I can't stress enough the importance of controlling the green bridge. And be prepared for increased aphids and barley yellow dwarf virus (BYDV) risk," says Guy.

"Some of the worst crops last season were where autumn aphicides couldn't be applied. For resistance management and optimum control, use different aphicide modes of action through the spray programme. Even crops drilled in October, and potentially November if mild, remain vulnerable to BYDV. So use T sums to assess risks.

"Earlier drilling also effectively reduces the Septoria resistance rating of varieties. And it's already our main South West disease."

Delayed maize

Conversely, there is a considerable amount of cropping to go in after maize this season, says Guy, and the



Late maize harvesting has knock-on consequences for managing following cereal crops, says Guy Peters



Later-drilled cereals are more susceptible to slug damage, and slug pressures could be high after weedy maize crops

late harvest of heat-starved maize crops will push wheat drilling in these fields further back.

"This will increase workload pressures, for example herbicide applications. Later-drilled cereals are also more susceptible to slug damage. And where maize crops were weedy this year – due to pre-emergence herbicides not going on – slug risks after these crops will be increased.

"There's also a lot of soil damage. Later-drilled cereals need good seedbeds for the best start, so this will need alleviating. There's a drive to reduce deeper cultivations. But as well as reducing compaction, ploughing after maize reduces Fusarium and mycotoxin risks in the following wheat.

"After earlier-harvested maize, I'd choose Typhoon or Champion for their Septoria resistance, although Graham has also performed very well this year, but would need a full fungicide programme. If drilling later, seed rates need increasing and choose a variety like Extase.

"If you can't plant a winter cereal after maize, you still have to establish something for environmental reasons, so look at cover crops such as a brassica or ryegrass."

Grappling grassweeds

Be prepared for high grassweed seed carryover in fields with high grassweed populations last season, says South and East regional technical manager, Justin Smith.

Delaying drilling from September to October is a big help in reducing blackgrass, but do not maul crops in, he urges. If you do, and crops establish poorly, it reduces crop competition and can store up bigger weed problems, he notes.

"Often, the crops that went wrong last season were the ones mauled in. It was then difficult to apply pre-emergence herbicides. If you can't prepare a seedbed good enough to spray a pre-emergence it might be better to drill a spring crop rather than a bad winter one – they are the key building block that is often a non-negotiable in many situations



Thinner crops that haven't established well provide less competition against grassweeds, says Justin Smith

nowadays, certainly from a blackgrass management viewpoint.

"If you've already drilled early, you will also have to consider and embrace the relevant increase in expenditure. Don't put all the emphasis on the first pre-em. Make split applications wherever possible, and use multiple modes of action. There will also be a need to monitor aphid and disease pressures accordingly, with possible subsequent applications required as and when thresholds are met. The warmer ground temperatures with early drillings will also reduce residual herbicide persistence. These factors and discussions all need careful consideration in order to safeguard your long-term investment.

"There were also crop effects in winter barley last winter where heavy rain followed residual herbicide applications. As well as preparing good seedbeds, drill to the required depth for the treatments being used."

Nutrition knowhow

There is a strong case for soil testing with the SoilSense service to assess nutrient availability after last season's rainfall, especially before spring cropping, says Yorkshire-based ProCam agronomist, Josh Baker.

Nitrogen (N), sulphur and boron are all easily leached, while phosphate (P) can run off, he points out.

"Soil testing after the wet 2023/24 winter showed residual N levels were depleted," says Josh. "We could see similar again.

"SoilSense results can be used to plan appropriate lime applications, as well as P and K applications for rooting and tiller survival. Producing good root structures proved crucial



There is a strong case for soil testing to check nutrient availability after last season's rainfall, especially if going into spring cropping

last season as it allowed crops to tap into further nutrition.

"You can also bring even greater precision to nutrient use with variable rate application using our new FieldSense service (see pages 4-5). For example, soil sampling on a 1ha basis in a 9ha field this year revealed 2 of the 9 sample points had a pH of 5.9 but the rest ranged from 6.9-7.1. In a whole field sample, these areas would have been missed despite being a whole pH point different. Similarly, P and K levels can also vary enormously, even across small fields.

"Variable rate application not only allows individual areas of the field that need it to receive more accurate nutrition, it also saves applying nutrients in areas that don't need as much. Plus, there's the SFI variable rate nutrient application payment, which helps with the cost."

One option to improve P availability and to encourage winter rooting, says Josh, is to apply LibPhos. "This works especially well on highly calcareous land, such as the Lincolnshire and Yorkshire Wolds, as the LibPhos preferentially binds to the calcium in the soil, leaving the P available for the plant. This is especially important when drilling later and with lazier-rooting crops and cold soils.

"Consider also other ways of supplying nutrients to crops. Encera – a spray-applied bacteria that fixes and supplies N inside the plant – was a big success last season. It provided a top-up where people didn't manage to apply early granular N."

North West challenges

While a fair proportion of winter crops in his area are planted early – before the weather deteriorates, which seems to get sooner and sooner, Lancashire-based Graham Singleton also foresees

challenges with planting winter wheat after this season's late maize.

"Rather than force late wheat in, see if soils can be improved by planting a cover crop with minimal cultivation as soon as the forager leaves the field. Then, look at what spring options you have," he suggests. "We've had some unbelievable spring barley yields in this area of 8.16 t/ha (3.25 t/acre) of late due to weather conditions and seasons changing. That said, don't put all your eggs in one basket; you want a bit of everything. If you go to all spring cropping and we have a dry spring, you might end up with a lot of very average crops."

Another increasing challenge in the area is blackgrass. To hit the problem hard when first spotted, Graham advises shallow cultivations to keep blackgrass seed near the surface and killing it in stale seedbeds at least twice before planting a new crop. "After 4-5 five years, consider re-setting by ploughing down and leaving for another 4-5 years, returning to shallow cultivation methods and stale seed beds where needed.

"Conditions are usually too wet for more than one autumn in-crop herbicide application, so the first pre-em needs to be robust. Growers also use rogueing when blackgrass is first spotted on farm to help stop seed returning. Most blackgrass in the North West is herbicide resistant as it comes from manures where straw used for bedding has been brought in from other counties where blackgrass is an issue."



With blackgrass increasing even in Lancashire, robust strategies are needed to prevent seed return, says Graham Singleton



One option to improve phosphate availability and to encourage winter rooting is to apply LibPhos, says Josh Baker

Boots-on-the-ground precision farming service launched

FieldSense, a new service that makes the benefits of precision farming readily accessible without growers having to master all its complexities, has been launched.

FieldSense uses satellite mapping of soil and crop variability across fields, says ProCam regional technical manager, Nigel Scott, who has been integral in developing and testing the new service. This data is then used to derive variable rate input applications rather than relying on a blanket approach, with the aim of improving economic crop output across the field and bringing environmental gains.

However, what makes FieldSense particularly appealing is that the system, which is easily accessed via a web browser, is based on a collaborative approach between the agronomist and grower, rather than growers having to do everything themselves.

"It will be the ProCam agronomist who makes sense of the satellite images," Nigel explains, "drawing on their boots-on-the-ground experience of the field and ground-truthing any anomalies that the satellite images might reveal. This can be combined with the farmer's own knowledge of the field as necessary. Once the maps have been interpreted, the agronomist can produce variable rate files for downloading directly to the tractor that is controlling the drill or fertiliser applicator. It is precision agronomy through partnership," he explains.



It will be the ProCam agronomist who makes sense of the satellite images, drawing on their boots-on-the-ground experience, says ProCam northern region technical manager, Nigel Scott



Variable rate seed drilling and fertiliser application are just two of the packages available in ProCam's new FieldSense service

Growers can also cherry pick only those parts of the package relevant to their farm and machinery and can begin by trying FieldSense over just a few hectares.

ProCam western region technical manager, Harry James, who has also been integral in developing and farm-testing FieldSense, says FieldSense will initially focus on four key areas for combinable cropping: grid-based soil sampling; variable rate seeding; variable rate nitrogen (N), phosphate (P), potash (K) and lime applications; and yield mapping input.

"The process starts by mapping fields into various sized grids," Harry explains. "For example, one hectare squared grids for variable rate fertiliser spreading, and 6 metres squared grids for variable rate drilling, or the most appropriate grid size for the width of machine.

"The variable rate drilling package in FieldSense uses historical NDVI satellite maps that show the variations in crop biomass that have occurred in that field over multiple years," Harry continues. "From this information the agronomist can create a variable seed rate plan – to drill proportionally more seed in historically lower biomass grid squares and less seed where less is needed – with the aim of achieving a uniform, optimum tiller density over the whole field.

"In one test, we found that almost double the seed rate was needed in poorer areas of a field to bring tiller

numbers back up towards the better areas. Without this knowledge, poorer areas would have been drilled at sub-optimal density, risking below par yield."

Soil Sampling

For soil sampling, Nigel says the location of where samples were taken from in each hectare is captured by GPS and shared back to the FieldSense platform. Samples can be analysed using ProCam's SoilSense service, with the resulting gridded nutrient maps used by the agronomist to create variable rate spreading files to correct P and K deficiencies, and for liming if required.

"Variable rate N application, on the other hand, uses satellite NDVI measurements of the growing crop," Nigel explains. "These are taken every 5-7 days on a 10m x 10m grid or every 3-5 days on a 3m x 3m grid. Here, the aim is to use variable rate N applications to produce the optimum green area index (GAI) over the whole field. Farm-testing in oilseed rape where GAI in March was found to vary from a near optimum of 3.0 to just 1.0, showed that by varying N dose between 60 to 90 kg/ha, crop uniformity was corrected by early June.

"In fields where yield mapping is carried out on the combine harvester, yield data can also be uploaded into FieldSense to guide future agronomic decisions."

Agronomic accuracy

ProCam UK managing director, Alex Collingwood, says the launch



FieldSense provides a way for ProCam agronomists to take some of the complexity out of precision farming for growers, says ProCam UK managing director, Alex Collingwood, while bringing greater accuracy to agronomic decisions

of FieldSense is the latest in a sequence of technical introductions from ProCam, following on from the launch of the soil testing and nutrient planning service, SoilSense, last year.

"Growers face increasingly heavy workloads and pressures from legislation and environmental scrutiny," says Alex, "while at the same time, farm profits are volatile and under pressure."

"FieldSense provides a way for ProCam agronomists to take some of the complexity out of precision farming for growers, while bringing greater accuracy to agronomic decisions. In the case of variable rate application of nutrients, there are also potential SFI payments available of £27/ha."

"In essence, FieldSense offers focused use of key inputs for optimum crop output through partnership, technology, and boots-on-the-ground collaboration. Satellite image field

maps are one element of precision farming, but they are just the start. They need underpinning with solid field experience to interpret and make sense of them."



On-farm testing of the variable rate drilling package in FieldSense has shown how it can be successfully used to bring tiller numbers in poorer areas of a field back up towards those of better areas, says ProCam western region technical manager, Harry James

Can new varieties help in the fight against BYDV?

As the BYDV challenge gets more difficult, does the future of controlling this key disease lie in new genetics?

Protecting cereals against barley yellow dwarf virus (BYDV) has become more difficult in recent years, not least because climate change has pushed aphids into regions where cooler conditions have previously checked the disease's progression.

With some SFI schemes precluding the use of insecticides, and the threat of resistance to current chemistries and regulatory pressures making chemical control more complicated, more time consuming, more costly and less reliable, many growers and agronomists are looking for chemical-free ways to protect crops.

One common strategy for preventing BYDV is to delay autumn drilling until after the last migration of aphids has passed. But last year's wet conditions demonstrated with exceptional clarity why that isn't a feasible or reliable option for many.

Going forwards, the answer may lie in genetics: instead of relying on chemical or cultural controls to prevent exposure to the virus after a crop has been drilled, genetic resistance protects the crop from the outset. As such, it matters less if

an influx of aphids arrives after the crop has been established. Thus, growers can drill at a time and date that suits their farm, their rotation, their geography and the season's prevailing weather conditions without having to consider the virus risk.

BYDV resistant wheat

The AHDB Recommended List is developed using insecticide treated crops but doesn't include data from test plots where BYDV is confirmed. Unfortunately, this means that there is little understanding of how varieties perform in the presence of virus.

"To address this gap in official testing, and as a continuation of work conducted by RAGT during the last 12 months, ProCam will be working with the breeder to determine the natural BYDV resistance of a range of winter wheat varieties in insecticide-free situations," explains Rob Adamson, ProCam's technical development manager.

"The trials, which include a range of new 'Genserus' varieties which are resistant to BYDV, will continue into next year, after which we hope to have some undisputed proof of



Some varieties have proven less likely to lose green leaf colour, and less susceptible to dwarfism, both of which invariably reduce yield, explains ProCam's Rob Adamson

what these varieties can achieve in terms of disease mitigation and yield production."

At present, the AHDB doesn't rate varieties according to their resistance to BYDV, Rob explains, but there's good evidence to suggest that not all susceptible varieties behave the same when infected.

"Some varieties have proven less likely to lose green leaf colour, and less susceptible to dwarfism, both of which reduce yield," he explains. "Ultimately, in situations where the virus is prevalent, only resistant varieties will not suffer a yield impact. The ongoing trial work will therefore give a better understanding of these differences and enable growers in BYDV hotspots to capitalise on insecticide-free SFI payment schemes without having to compromise on yield."

Putting the bite into integrated pest management

Grazing oilseed rape and wheat with sheep is providing a sustainable way to reduce crop pests and diseases, manage canopies, recycle nutrients and extend grazing for one South West farm.



Winter oilseed rape recovery after grazing with sheep in November

Using sheep to graze arable crops is not a new idea, agree Somerset farmers Andrew and Robert Speed of Briddicott Farm, Carhampton and their ProCam agronomist, Emma Dennis.

But with developments such as the government's Environmental Targets Improvement Plan 2030, and a general industry drive to farm more sustainability, integrated pest management is becoming increasingly important, Emma points out.



Somerset farmers, Andrew Speed (left) and son Robert (right), have found that grazing arable crops is a balance between grazing hard enough to remove older leaves but not so hard that sheep start eating regrowth

"We used to graze some wheat and barley about 25 years ago but it fell out of favour," explains Andrew, who grows 360 ha of combinable crops on his 1,000 ha farm, also home to 1,400 ewes and 200 suckler cows.

"Five years ago we began grazing winter wheat again. Then, four years ago, we had some winter oilseed rape (WOSR) with really bad cabbage stem flea beetle (CSFB). I said let's put some sheep in. It was grazed to the ground but the larvae were cleaned out and it yielded 5 t/ha. So we have been grazing WOSR ever since."

By grazing off OSR foliage, CSFB larvae in the leaf petioles are consumed, Emma explains, with good CSFB reductions achieved at Briddicott Farm in two of the last three years.

Emma says: "Grazing has also reduced diseases. By defoliating the crop, we have seen less phoma and less light leaf spot, and have not needed to apply autumn fungicides."

"Grazing also opens up the WOSR canopy. Rather than a single stem, we see 5-6 branches regrowing from the stem base, which improves light penetration. And Charlock does not seem to grow back after grazing, which is normally a difficult weed in OSR."

Yield potential

Although grazing has not given consistent WOSR yield increases, Andrew believes it does improve yield potential by reducing pest and disease pressures, and in a sustainable way.

Similarly, grazing the winter wheat has reduced pressures from barley yellow dwarf virus (BYDV) and certain fungal diseases and reined back thick canopies. So it provides a useful agronomy tool, as the region's wet autumns often push farmers towards early drilling, Emma points out.

Other benefits in the winter wheat have included 5-10% yield increases on the farm's sandy loam soils, plus 0.5-1% improvements in grain protein in the milling wheat.

Andrew says: "We have seen to a line the quality where the wheat has been grazed. It has happened time and time again."

"Anecdotally I think reducing disease means more protein can go into the grain. Grazing also stimulates rooting, and a bigger root mass helps nutrient absorption from the soil."

Typically, the farm's WOSR yields 3.5-3.7 t/ha, while first wheats average 10.2 t/ha and second wheats 8.4 t/ha.

"Two years ago, the combination of mild weather with early drilling exacerbated the BYDV risk," adds Emma. "But where we grazed we found a lower BYDV incidence because there was less crop for aphids to fly into. When they re-grew, leaves were also fresher and healthier, and we know aphids home in on under-nourished crops."

"We also saw reduced Septoria and yellow rust. Certainly in two fields that were not grazed there was more yellow rust early on."

Soil biology

Grazing also helps the soil's biology, by recycling nutrients via manure, Andrew believes, and provides additional forage. Combined with improved grassland management and taking on some extra land, this has helped the farm to increase its flock of mainly Dorset ewes from 1,000 to 1,400 head.

Lambing on a 'three times in two years' system beginning in autumn, 450 ewes with their lambs will graze the farm's 60 ha of WOSR over winter. From there, they go into the cereals.

Emma says: "By integrating livestock into the rotation it extends the grazing season substantially. As grass growth slows, we can move the sheep onto the arable crops. WOSR can provide them with 10 t/ha of fresh weight at grazing time.

"There are also potential livestock health benefits from moving them quickly to fresh ground with reduced parasite risks. But the timing and length of grazing must be tailored to individual crops.

"You want a short, sharp grazing period. It is all about precision grazing. Normally we start grazing forward WOSR in early winter – but only if the crop has developed a collar diameter of at least 11 mm and a decent root structure. Typically that has been late November or early December, but it depends very much on the season. A good root reserve is important for WOSR to bounce back in spring.

"If it is backward or the weather is cold and wet, crops may not recover as well and can start to rot. You also need to take the sheep out in good time.



By grazing the winter oilseed rape and winter wheat, we are maximising the potential of the farm in a sustainable way that supports the crops, the soil, the livestock and the environment, says ProCam agronomist, Emma Dennis

"In WOSR, we allow 450 growing lambs or ewes with young lambs per 0.25 ha, and 2.25 ha gives 10 days of grazing. Lambs weigh about 30-35 kg when they go in and achieve about 220 grams of daily liveweight gain. The farm does not buy concentrates. The sheep are all fed from home grown forage and cereals."

Winter wheat

Winter wheat grazing generally starts in early spring. Again, Emma says it has been critical the sheep go in at the correct stage.

"They stay in the winter wheat for a maximum of 7 days, but you must have enough sheep. The average field size is 10 acres, and there are 500 ewes and lambs moving around. We have found the worst thing you can do is under-graze because the crop regrows too soon. You must hit the sweet spot of not grazing too hard to cause harm, but grazing enough."

Andrew and Robert agree. "Get a large mob in, graze it hard and get the mob out," says Andrew. "If you only graze lightly it does more harm than good. They just pick out the young shoots.

"By grazing harder, they graze out the older leaves, which are the ones that act as a reservoir for disease in spring. When to bring them out comes down to experience. You cannot use a

set interval. It depends on time of year, growth stage and other factors. If you leave them in too long, as soon as they start grazing regrowth, it devastates the yield."

After grazing, Emma says focus must turn to managing crops effectively, by tailoring nutrition and crop protection to variety potential. "Once the WOSR comes out of the winter, that is when you need to invest. You need balanced crop nutrition.

"It is the same with wheat; the first nitrogen dose after grazing must be timely. Wheat plants tend to struggle more to come back, but the stronger plants remain. Certain varieties also seem better at bouncing back."

For farmers considering the technique, Emma urges seeking guidance from someone with experience. "Crops often look terrible after grazing. That is when you need to remember the reasons for doing it.

"We are maximising the potential of the farm in a sustainable way that supports the crop, the soil, the livestock and the environment.

"With rising environmental regulation and consumer demands, we need to get better at incorporating integrated pest management.

"The government has set environmental targets under the Environmental Improvement Plan. We need to respond to these," Emma adds.



Emma Dennis says she only starts grazing winter oilseed rape with sheep once the crop has a collar diameter of at least 11 mm and a decent root structure, in order to aid recovery

Five lessons for better maize in 2025

Unwelcome as the challenging 2024 growing season was for forage maize, it underlined some valuable lessons.

Like other high-value crops, successful forage maize demands attention to detail, says Simon Montgomery, technical lead for ProCam's Field Options Performance Seeds range.

And that starts with early planning. He outlines five lessons to take into 2025.

1. Field type and film

It goes without saying, but choosing the right fields to grow a heat-hungry crop like maize is essential, says Simon, but what 2024 also underlined was the value of establishing maize under film.

"During the cold June, film kept crops going. And generally, film allows the crop to be planted earlier, for example during April depending on location, and can bring harvest forward by three weeks."

2. Successful seedbeds

Although the wet spring conditions that hampered soil preparations were beyond farmers' control, the season did reinforce the importance of good seedbeds, Simon points out.

"Where seedbeds were overworked, it hindered maize establishment and we saw poor crops. But where crops were drilled later into superior seedbeds, it might have ultimately delayed harvest, but they grew better."

3. Wiping out weeds

Where pre-em and post-em herbicides could be applied last season, they generally worked well, says Simon, but what was clear was the importance of a programmed approach.

"Where post-em couldn't be preceded by pre-em because of rain, it created bigger weed burdens in a season when crops were struggling. This wasn't made easier by the cool June, which slowed growth and reduced crop competition."

4. NPK nutrition

Getting maize up and out of the ground rapidly is crucial, says Simon. "Maize needs P and K early for strong root development," he stresses.

"What also worked well was applying an endophyte bacterial treatment, in this case Encera. Applied with post-em herbicides, this fixes atmospheric N, making it available inside the plant to complement other N sources.

Treated crops looked healthier, and previous trials have shown Encera to give a 3.5% DM yield uplift and boost metabolisable energy yield by 10,000 MJ/ha."

5. Variety values

Fundamental to the success of maize is choosing appropriate varieties; for yield and energy but also harvestability, Simon points out.

"You never know whether harvest weather will be kind. So steer clear of varieties that reach the optimum 33% DM but then dry down rapidly and resemble tobacco plants in as little as 10 days. Not only is dead, dry foliage less digestible and lower in sugar, it's also difficult to consolidate and at risk of heating in the clamp.

"Ideally, choose varieties where the cobs ripen, providing starch, and the plant gets to around 33% DM, but then stays green as long as possible – for maximum chance of harvesting in peak condition. Rodriguez, which is early, very high yielding and very high in ME, is one example. But the newer options of Marcopolo, which is early maturing, or Jardinero, which is ultra-early, are other examples," he adds.



Ideally, choose forage varieties where the cobs ripen, providing starch, and the plant gets to around 33% DM, but then stays green, says Simon Montgomery



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