

IN FIELD FOCUS

— AGRONOMY THAT DELIVERS —

SIDESTEPPING A SEPTORIA SUMMER?

After several summers where *Septoria tritici* has dried up, could we be in for an epidemic year?

A generally mild winter, lush crops and some early drilling has created high *Septoria* pressures this spring.

But whether we have a bad summer for *Septoria* or a normal one, prevention will be better than cure. And an effective T1 fungicide strategy will be pivotal. Also against rust.

So say ProCam technical specialists around the country, who point to the potential for a lot of yield being lost at the end of the season if crops are not managed correctly earlier on.

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PROCAM

Sidestepping a Septoria summer

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"It's very important not to be lulled into a false sense of security just because we've had so many recent seasons where dry summers have kept Septoria low," says ProCam head of crop production, Mike Thornton.

"The last major Septoria epidemic was in 2016. The lack of real Septoria pressure since then could make you think it's an easy disease to control. But it's not.

"There's also been a lot of noise in recent seasons about cutting back on T1 fungicides when the spring has been cold or dry and there's been little visible disease. But a key point of the T1 fungicide is to prevent disease building up to yield-threatening levels from that point onwards. Since 2016 the chemistry we have available has changed dramatically," Mike notes.

Early drilling

ProCam northern region technical manager, Nigel Scott, says crops came out of winter absolutely full of Septoria.

Nigel says: "Crops that were drilled early accumulated a lot of day degrees and canopies are large. Septoria is as bad as I've ever seen it. Early drilling can have the effect of reducing a variety's Septoria tritici resistance rating by about 1 point on the 1-9 scale.

"Septoria tritici management begins at T0, but even if an effective T0 has been used it doesn't allow T1 complacency.

It just means there's some leeway if T1 is delayed. In many ways, T2 is an easier timing. T1 is crucial.

"As well as the core T1 fungicide – typically an SDHI and azole combination – we have folpet which provides a multi-site mode of action to compliment the core single site chemistry. Trial plots have shown the best results with folpet come from inclusion at T0, T1 and T2."

Late drilling

Southern region technical manager, Paul Gruber, says delaying drilling, for example for black-grass management, often offers a commensurate reduction in Septoria pressure. But this season, even in areas where wheat was drilled later, for example from mid-October, he says, Septoria pressure is significantly higher than usual. So a robust T1 is particularly important, he notes.

Paul says: "By achieving effective control at T1 on leaf three, you reduce disease pressure on the leaves above it, with the aim that, by the time the flag leaf (T2) spray is applied, leaf two has as little pressure upon it as possible.



Don't be lulled into a false sense of security, says Mike Thornton, just because we've had so many recent seasons where Septoria pressure has been low

Leaf two may have been exposed to infection for a period of time beyond which we cannot expect curative activity from even the most novel fungicides by the time the flag leaf has emerged and ready to be targeted. Applying a robust, multi-way tank mix at T1 offers the best opportunity to manage this," he adds.

Soils staying warm after last summer allowed later-drilled crops to establish faster than normal, believes Mike Thornton. "Some crops have been as forward as I've ever seen. Whatever happens, you've got to protect crop potential," Mike says.

"If you're growing milling varieties, the price has been considerably higher than feed wheat recently. If you want a premium from milling varieties you can't afford to take your eye off the ball."



Early drilling can have the effect of reducing a variety's Septoria tritici resistance rating, says Nigel Scott

Be mindful of yellow rust

Septoria may be top of mind, but do not allow complacency about yellow rust to creep in at T1, urges ProCam technical development manager, Rob Adamson.

“Yellow rust control can go very wrong if consideration isn’t given to it in early fungicide choice,” explains Rob. “In the right conditions, levels explode very quickly due to its short lifecycle when compared to Septoria.

“Although it now has limited effect on Septoria, the SDHI solatenol is a strong yellow rust molecule and subsequently still has an important role to play in the programme. In a

trial on Skyfall at our Northern trials hub at the Stockbridge Technology Centre in Yorkshire last season, a programme with solatenol included at T1 produced significant reductions in yellow rust by mid-June and up to a 3.43 t/ha yield boost over untreated. But if its use was delayed until T2 in the programme, yellow rust had already got out of hand.

“Prevention is critical with all diseases, and rust is no different. If the T1 has been effective in creating a clean canopy, then the use of pyraclostrobin at T2 – another strong molecule for rust – will help

to enhance disease suppression on the flag leaf, improving the performance of a revysol-based programme,” he adds.



Yellow rust control can also go very wrong if consideration isn’t given to it in early fungicide choice

Alternative N sources under test

With last season’s high granular nitrogen (N) prices prompting a search for alternatives, ProCam is putting multiple options to the test.

“We are tackling this from multiple angles,” explains Rob Adamson. “These include evaluating alternative sources of N, evaluating how to deliver N into the plant more efficiently, and evaluating ways to improve the efficiency with which the plant utilises N. We are examining how these work as stand-alone treatments and within programmes,” he adds.

Work in 2022 on winter wheat at ProCam’s trials hub at the Stockbridge Technology Centre screened a wide range of these treatments. Extra yield was seen on top of that achieved from 180 kg/ha of bagged N from several spring-applied options (see chart).

“These included a rhizobacterium treatment (SR3) applied at T0 for fixing N around the roots,” says Rob, “a foliar T1-applied N-fixing endophyte (Encera) that works inside the plant, which is a new product for the UK this year, and a foliar N spray to deliver N into the plant efficiently, applied at T2.

Yield improvements

“Yield improvements were seen from all of these. A visual indicator of the endophyte’s performance, seen even before its yield increase, was the way it improved greenness from leaf 3 up to the flag leaf. Improved greenness was also seen when it was applied

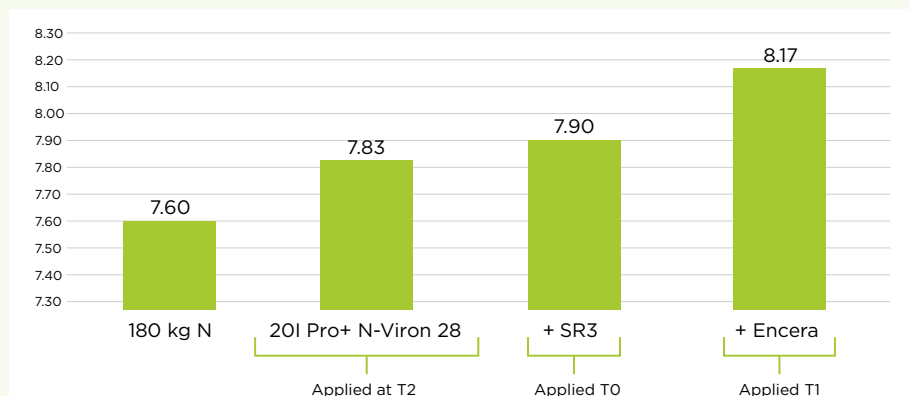
with a reduced rate of granular N of 140 kg/ha, showing the endophyte to still be working when inputs were compromised.

“In 2023, we are looking at how these and other technologies perform in a farm situation when applied with a range of base granular N doses. This is to explore to what extent these alternative N treatments might ‘bridge the gap’ if a reduced dose of granular N is applied, as well as how far yield can be pushed.”

These alternative sources of nitrogen are being evaluated

alongside a range of other treatments, including biostimulants designed to improve N utilisation within the plant, Rob adds. “It is important to differentiate between sources of N, and products which enhance the crop’s utilisation of N. Both should be used in combination and have the potential to facilitate crop production with lower reliance on granular nitrogen – this has benefits in terms of security against market volatility, but also can pave the way for reducing the carbon footprint of cereal production.”

Winter wheat yield gains from alternative nitrogen (N) sources when applied with a standard granular N programme



Source: ProCam trial, 2022

Protect potential for oilseed rape oil bonus, growers urged

UK oilseed rape (OSR) prices may have fallen from their approximate £600/t highs, but maximising oil content to optimise bonuses paid on top of yield is as important as ever.

That is the message from ProCam agronomist, Daniel Hatchett, who says if an oil bonus pays 1.5% of the crop's purchase price for every 1% of oil content above 40%, there is a lot to play for.

"The key is to understand what influences oil production so agronomy can be geared accordingly," says Daniel. "Oil content is affected by plant density, the number of pods per plant and the number of seeds per pod. For maximum oil content, photosynthesis must be maximised. Maintaining the correct amount of green area in the crop is therefore key."

Photosynthetic activity

Nitrogen (N) is a prime driver of photosynthetic activity and yield, says Daniel, however, applying excessive N to push yield can adversely affect oil content, while severe sulphur (S) deficiencies can also impact on both seed and oil yield.

"For a tonne of seed yield, 15kg/ha of S is suggested to be needed. If S is deficient, as well as having yield implications, the chlorophyll content of seeds is raised and they turn green. This reduces quality for crushers and potentially oil content," he explains.

"As well as macronutrients, micronutrients must also be in balance. Manganese deficiency alone can drastically decrease the crop's ability to photosynthesise, even without visible symptoms. But an important period for influencing crop green area is around flowering," he says.

"We know the disease sclerotinia can have a significant impact on yield, and controlling it with a robust fungicide at the correct flowering stage is critical. By utilising an SDHI and/or strobilurin for this, there's an additional greening benefit which is extremely useful in building yield – even in the absence of disease."

In addition, Daniel says maximising light penetration throughout the crop is hugely important for photosynthetic activity, so checking the crop's green area index and selecting a fungicide with PGR activity is critical where canopies are overly thick.

"The canopy can be optimised further by applying a biostimulant treatment containing nutrients and pidolic acid at yellow bud stage. This is because pidolic acid enables the crop to use N more effectively, helping to promote green leaf retention and chlorophyll content, both of which are crucial during pod-

fill. Indeed, late N in OSR has been found to push yields and oil content. So a pidolic acid-containing treatment also fits well ahead of a later foliar N spray applied at mid-flowering."

Harvest management

At the end of the season, Daniel says it is crucial to get harvest management right. "Seed filling in OSR occurs over roughly six weeks, with most oil being laid down during the second half of this. Desiccating or swathing too early risks losing up to 2% a day in yield and compromising oil content. Alternatively, harvesting too late risks seed losses due to pod shatter. So it's about finding a balance.

"Applying a well-timed pod sealant against shatter and choosing the optimum time to harvest can substantially raise oil yield. It may be tempting to tank-mix a pod sealant and desiccant, however their optimum timings often don't coincide. Last season's high oil contents could potentially be attributed to pod sealants being applied separately from desiccation due to the crop's high value. This year should be no different. Doing everything to preserve yield and promote oil content is likely to give the best financial reward."



If an OSR oil bonus pays 1.5% of the crop's purchase price for every 1% of oil content above 40%, there is a lot to play for, says Daniel Hatchett

Growing grass more efficiently

A more focused approach to grassland management could reduce reliance on bought-in fertiliser and feed: Field Options agronomist, Rhys Owen, explains how.

“High costs, particularly for ammonium nitrate, have brought into focus the need to use inputs efficiently, with the Government’s greening policy adding to the need to assess how and when fertilisers are applied to grassland,” Rhys explains.

“By following a few simple steps, it’s possible to optimise the productivity of grassland and reduce the reliance on supplemental N.

“The first step is to assess the existing bank of available nutrients. Regular soil sampling is the only way of accurately determining nutrient status and identifying any increasing or decreasing trends.

“Soil pH is the main driver for nutrient availability, with the target for grass and clover on mineral soil in the range of 6.3-6.5: in this range the impact of antagonistic elements will be reduced, and the efficiency of applied nutrients increased.

“But it’s no use soil sampling if you can’t decode the results. That’s where an experienced agronomist who can recommend an appropriate course of action really adds value.”

Soil structure

Step two, assessing and improving soil structure, goes hand-in-hand with soil testing. “The primary aim is to remediate any excessive soil compaction so that plants can develop strong roots,” Rhys continues. “Soil biology, be that beneficial microbial populations or earthworms, all require oxygen. Providing the right conditions for these organisms will increase nutrient availability and cycling from soil reserves. Aerators can be used to remediate compaction close to the soil surface or to alleviate capping. Deeper layers of compaction will require a grassland subsoiler to break the affected zone.”

The third step is to reseed older swards: “Although the costs of reseeding can be £400 to £700/ha, the longer-term financial benefits are worth it,” Rhys explains. “While the average grass sward will

produce approximately 7.0 tonnes DM/ha at a metabolisable energy content of 10.8ME, a young, well-managed ley can produce closer to 13.5t DM/ha at 12.0-12.5ME. That equates to significant increases in livestock production, be it liveweight gain or milk production.

“Reseeding also enables new species to be introduced, with more productive grasses also reducing the requirement to purchase bought-in feed.”

Herbs and clovers

Fourth is the consideration of the inclusion of herbs and clovers at reseeding: “Herbs like chicory and plantain may have a lower yield potential than perennial ryegrass, but they also have a different growth pattern, especially in dry seasons when their deep roots provide added drought tolerance.

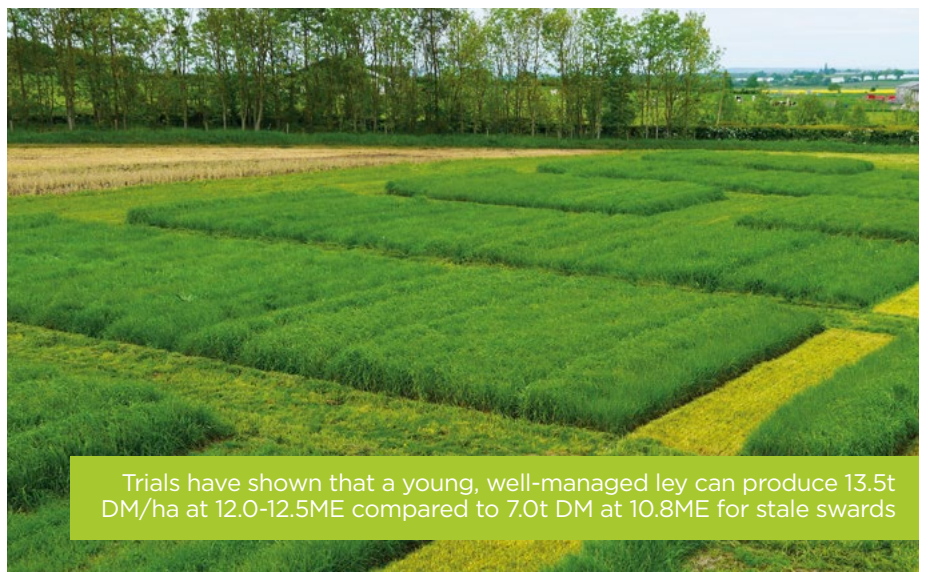
“The inclusion of White and Red Clovers can also increase forage yields thanks to their summer growth habit which means they work hard when grasses are in decline. And their ability to fix nitrogen (150 – 250kg N/Ha annually) reduces the need for artificial N. Red clover, with its deep-rooting nature, has good drought-tolerance and is an excellent source of sustainably home-grown protein.”



Rhys Owen explains that a more focused approach to grassland management could reduce reliance on bought-in fertiliser and feed

Finally, grazing intensity should be managed carefully, says Rhys. “Any under or over-grazing has the potential to compromise productivity. Regular sward measurements using a plate meter or sward stick should therefore be taken to assess growth rates and to balance grass cover versus on-farm demand from grazing livestock.

“Rotational grazing and the sub-division of fields will improve grass utilisation by protecting new leaf growth and maintaining plant root mass.”



Trials have shown that a young, well-managed ley can produce 13.5t DM/ha at 12.0-12.5ME compared to 7.0t DM at 10.8ME for stale swards

Stripping back maize establishment

With the popularity of maize increasing, growers are looking for new ways to simplify its establishment, with some turning to strip tillage to reduce cultivation costs and preserve soil health. Simon Montgomery of Field Options explains.

Maize crops in the UK have historically been confined to livestock systems, with the majority established into ploughed ground. However, as the crop's role in AD plants and as an alternative break has increased, growers are experimenting with new ways of integrating forage and grain varieties into a wider array of rotations.

In parts of the world where drought conditions are commonplace, strip tillage is already a recognised and proven method of establishing maize, with some UK growers also using the practice to reduce establishment costs, minimise soil disturbance and preserve soil-moisture.

"Strip tillage offers a quick and cheaper alternative to ploughing as a reliable method of establishing maize after a range of crops including grass, cereal stubbles and cover crops," Simon explains. "It's also viable on permanent maize ground where its ability to protect soil structure offers tangible benefits, especially in wet years."



Strip tillage reduces the number of passes required, protects soil structure and preserves soil moisture

Preparing ground

To prepare ground for maize, narrow strips of soil are cultivated using a low disturbance ripper tine to a depth of 20-25cm at 50-75cm spacings, with the exact tolerances dictated by soil type, pre-existing compaction and drill width.

"The aim is to produce an open and airy seedbed into which seed and fertiliser can be placed using a GPS-guided precision drill. Where a lot of trash has been left by the previous crop, a cutting disc in front of the ripper tine will prevent fouling, while a following crumbler roller will help to break up heavier soils and leave a clod-free seedbed with plenty of retained moisture."

On heavier land or in wetter conditions, the surface of the cultivated strip should be allowed to dry a little prior to drilling, to prevent seed coulter blockages.

Preserving moisture

"Compared to ploughing which can reduce the ground's ability to take and hold rain, strip tillage helps to preserve soil moisture as rainfall drains naturally into the rip line, with the soil's firmer structure between the cultivated rows



Crops with bigger roots will have greater standing power and be more tolerant of drought

helping to reduce erosion.

"A well-structured soil will enable crops to put down bigger roots which not only boosts standing power as the crop matures, but also mitigates the threat of drought. For growers of high performing varieties such as Agagold, this could be a blessing if the spring turns out to be excessively dry as crops will need all the help they can get to ensure performance isn't detrimentally affected."

"Free-draining soils will also be easier to manage at harvest, reducing the propensity for mud to be dragged onto roads and making it easier to prepare a seedbed for the following crop."

Strip tillage also offers additional benefits where maize is being grown for crimping or grain: "In addition to providing an energy-rich break crop, grain maize offers the added advantage of putting organic matter back into the soil," Simon continues. "This not only improves soil structure and fertility but also boosts soil health by promoting natural microflora and fauna which, as the latest findings from Rothamstead show, can help to reduce nitrogen losses as nitrous oxide emissions."



Strip tillage is a proven method of establishing maize in drought prone countries

Don't let weeds steal a march on maize

With fewer herbicides approved for maize, and a label amendment downgrading the maximum dose of a key mesotrione product, growers mustn't let weeds steal the march this spring. ProCam's Guy Peters explains more.

As the number of herbicides approved for use in maize has declined, mesotrione has become the go-to option for many growers at the pre- and early post-emergence timings for the control of broad-leaved weeds in forage and grain maize.

Unfortunately, one of the more popular straight mesotrione products, Callisto (100g/l mesotrione), has recently had its maximum individual dose downgraded from 1.5 l/ha to 0.75 l/ha. Growers may still apply product labelled under the outgoing MAPP number (MAPP 12323) at the higher of these two rates, but any new product (MAPP 19756) can only be applied at the reduced rate. All existing products labelled with the outgoing MAPP number have a final expiration date of 31/01/2024.

Similar rate restrictions have already been incurred by a number of other mesotrione straights and co-formulations, with all remaining products containing mesotrione expected to face similar challenges as and when they go through the reregistration process.

That said, all is not lost: even at a reduced rate straight mesotrione can still be used to good effect but growers must remember that the bigger weeds are allowed to grow before being treated, the harder they will be to control.

Timing and precision of application are therefore vital, with the rate reduction putting a greater emphasis on the need to hit weeds early and accurately to prevent them from stealing a march on young crops. It's therefore advisable to use mesotrione as soon as possible (from the two-leaf stage of the crop onwards) to provide control of any remaining weeds prior to their emergence. Care will also be needed in dry conditions when uptake of the active ingredient may be reduced.

Careful thought should also be given to the use of mesotrione in the wider rotation, as cropping restrictions (for example, for fodder beet and/or sugar beet) can limit subsequent crop choices.

The loss or downgrading of any active ingredient always make effective crop protection that bit harder to achieve, but mesotrione remains a useful tool even at its lower rate, especially as it boasts good crop safety and is relatively benign to beneficial insects and organisms.

As always, the best advice for growers is to seek the latest advice from their agronomist prior to making any crop protection decisions. That advice should then be clearly conveyed to the sprayer operator to ensure no-one falls foul of changing circumstances.



Guy Peters warns of the need to tackle maize weeds early

Three new appointments

ProCam has appointed Eilish Johnston and Stephen Acott as trainee agronomists in Scotland, with James Bromwich joining as the company's new trials assistant.



James Bromwich joins ProCam as the company's trials assistant

James Bromwich grew up on his family's farm in Leicestershire and, after studying business management at De Montford University, joined the MDS graduate scheme where he completed placements within companies in the food and fresh produce sector. In his new role as a trials assistant, James will work alongside Rebecca Tunnicliffe to assist in co-ordinating ProCam's in-house research and knowledge exchange projects to enable growers and agronomists to



Stephen Acott has joined ProCam's Scottish team of agronomists as a trainee agronomist based at Cuminestown in Aberdeenshire

make better decisions to improve cropping performance.

Stephen Acott joins ProCam as a trainee agronomist based at Cuminestown in Aberdeenshire. Stephen relocated to Scotland in 2004 and joined Agrii in 2008 where he spent 12 years running the company's Turriff seed analysis laboratory and working as a cereal crop inspector. Stephen has subsequently joined ProCam's Robertson Crop Services team as a trainee agronomist and will be working

throughout Aberdeenshire.

Eilish Johnston also joins ProCam's Scottish team as a trainee agronomist based at Kildary in Easter Ross.



Eilish Johnston has joined ProCam's Scottish team of agronomists as a trainee agronomist based at Kildary, Easter Ross

Eilish studied agriculture at Scotland's Rural College (SRUC) and joins ProCam from Agrii where she gained a BASIS foundation qualification. Having relocated to the Highlands, she is currently training for her BASIS IPM exams and FACTS qualification.

Find out more

For more information about any of the products or services mentioned in this edition of In Field Focus, please visit the ProCam website at www.procam.co.uk or contact our Customer Services Team on 01954 712150.

In addition to a UK-wide team of on-the-ground agronomists who can help you get the most from your cropping enterprise, ProCam also offers the following products and services, backed-up by a UK trials and research programme:

- Crop protection advice and solutions
- Biological products and pest prediction
- Rotation planning, seed selection and variety analysis
- Crop financing
- Nutrient management advice and solutions
- Soil health, variety selection and establishment advice
- Precision farming services including field mapping, farm data collection, soil and crop analysis and business benchmarking



ProCam UK Limited

2020 Cambourne Business Park, Cambourne, Cambridge, CB23 6DW

Tel: 01954 712150

www.procam.co.uk



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