

Time for a fresh approach

Early disease control strategies in Winter Wheat

Dr David Ellerton (Hutchinsons Technical Development Director) considers early T0 fungicide strategies designed to maintain yield potential, whilst also ensuring sound product stewardship practices protect new and existing chemistry from further resistance development.



*Dr David Ellerton
(Hutchinsons Technical Development Director)*

Significant rainfall on 3 October 2020 made it the wettest UK day on record and led to a cessation of drilling which only recommenced in late October through to November.

This difference in drilling dates is likely to lead to significant changes in disease risk this spring, with the earlier drillings at greater risk of Septoria, eyespot and take all, while the later drillings are more at risk of yellow rust, as happened last season. Septoria is often driven by rainfall in April and May, so it is important to be aware of the potential risk of the disease developing in later drilled crops, depending on spring weather.

Varietal Susceptibility

Weather effects and drill date are not the only factors to take into account when deciding fungicide strategies. >

In contrast to autumn and winter 2019, when few winter cereals were drilled, there were two distinct drilling periods for many this season. These were late September/early October and late October into November, following an extremely wet period at the beginning of October.

Different drill dates can have a significant effect on disease risk and should influence early disease control strategies. In addition, revocation of some established fungicide active ingredients means that early cereal disease control is likely to be very different in 2021 compared to previous seasons.

Influence of the weather, drill date and variety

Extremely wet weather in 2019/20, across much of the UK, led to most winter cereals being drilled late.

This late drilling reduced the risk of Septoria tritici, but led to an increased risk of yellow rust. This, alongside the likely appearance of new races of yellow rust, led to a change in varietal responses to fungicides, with susceptibility to yellow rust often being the driver of higher fungicide responses.

In Hutchinsons 2019/20 winter wheat variety trials, fungicide treatment produced yield increases averaging 1.66 t/ha across all sites and varieties (*figure 1, overleaf*) compared to a 2.49 t/ha response the previous season. There were extremely large differences in responses, with varieties such as KWS Kinetic and KWS Kerrin giving average responses of around 3.5 t/ha, while Skyfall averaged a response of around 2.5 t/ha - all directly related to yellow rust infection in untreated plots.

Varietal disease susceptibility is a vital component and the new AHDB Recommended Lists have provided the latest information on varietal susceptibility to *Septoria tritici*, usually the most important disease of winter wheat. These susceptibility ratings have changed little from the previous Recommended List. Of the winter wheat varieties on the list, **Elation** (rated 4.1 for *Septoria tritici*), **KWS Barrel** (rated 4.2) **KWS Jackal**, **KWS Kerrin** and **RGT Gravity** (all 4.8) are all particularly prone to *Septoria* infection, with a rating of less than 5.0 and will need to be prioritised for protection during the season. At the other extreme, varieties such as **Theodore** (8.3) **KWS Extase** (8.0) and **LG Sundance** (7.9) are at significantly lower risk and fungicide programmes will need to be tailored accordingly.



Septoria

As for yellow rust, there have been significant changes to the ratings compared to last season, with many ratings significantly lower. The highest risk varieties are **Skyfall** with a rating of 3, **KWS Kinetic** and **KWS Kerrin** with a rating of 4 and **KWS Zyatt**, **SY Insitor**, **Gleam**, **RGT Wolverine** and **Shabras** with a rating of 5. Yellow rust has been reported from a number of crops this season, so all crops should be closely monitored to ensure rust is not allowed to take an early hold.

When considering disease control programmes, it is vital that all the above factors are taken into account, not just to ensure that the

Winter Wheat Varieties Mean of 5 Sites 2019/20 Yield Response (t/ha)



Data from Grayingham, Little Ponton, Ludlow, Carlisle & Sutton Bonington

Figure 1: Varietal response to fungicides in Hutchinsons winter wheat variety trials, 2019/20



Yellow Rust

most appropriate cost-effective programme is chosen, but also to reduce selection pressure on our fungicide active ingredients.

Availability of actives

This season we will be without one of our most established active ingredients, **chlorothalonil**, which has been the backbone of early disease control in winter wheat for many years. Not only has this given excellent protection against *Septoria*, but also from the danger of continuing increases in fungicide resistance.

Where *Septoria* is a risk, from the late tillering/stem extension (T0) timing, early use of alternative multi-site fungicides such as folpet, or biostimulants which boost varietal resistance such as **Scyon**, should be considered.

An important part of IPM is providing adequate nutrition in order to optimise plant health and enable plants to respond to disease pressure.

Established rust should be controlled with active ingredients such as tebuconazole or cyproconazole, while products containing bromuconazole and flutriafol will also give a level of control. Strobilurins such as azoxystrobin or pyraclostrobin will give long lasting protection against rust, as well as providing physiological benefits. Other diseases such as mildew, eyespot, Fusarium and take all should also be taken into account when deciding fungicide programmes.

Your Hutchinsons agronomist will be happy recommend a suitable programme for you, or contact us: information@hlhlt.co.uk

NUE – Nitrogen Use Efficiency, has been a hot topic in recent months. More often than not, arguments have revolved around the comparative efficiency of urea versus ammonium nitrate or liquid nitrogen.

However, it should be stressed that all nitrogen fertilisers are 100% “efficient” until they enter the spreader or the sprayer. Accurate application and correct timing are imperative to get the best out of the fertiliser. Calibrating spreaders should be viewed much like a car MOT – an annual event to ensure the machine is fit for purpose. Nitrogen Fertiliser is invariably the largest single variable cost in broad acre crops, and we are at pains to produce precise nutrient management plans. For these plans to be effective, application needs to be as accurate as possible.

Another point worth considering is that NUE can be influenced by the availability of other essential nutrients, for example:

Phosphate – provides the necessary energy to assimilate nitrogen. Research has clearly shown that an adequate supply of phosphate increases NUE, with a resultant increase in yield. Soils with high levels of plant available P may be able to meet crop requirement, but if that is not the case, omitting phosphate from your fertiliser plan will have a detrimental effect on nitrogen uptake.

Potassium – There is a direct link between Nitrogen Use Efficiency and available potash in the soil. In order for a plant to sustain unrestricted development of the leaf canopy – and therefore to maximise light capture and photosynthesis, there is a need for potassium to work in tandem with nitrogen to optimise these processes. The target index in RB209 of 2- is generally the lowest level at which optimum yield would be achieved (See table opposite). Quite simply, insufficient K through the spring will have a direct impact on crop development – and consequently yield.

Sulphur – the close relationship between the function of sulphur and nitrogen in protein production allows us to assess crop requirement for sulphur in relation to nitrogen. There is a fixed ratio of N to S needed to ensure the nitrogen can be effectively utilised.

Optimising spring nitrogen

March is upon us and with the onset of spring come the main applications of nitrogen fertiliser.

Tim Kerr (Nutrition Manager) reviews what can prudently be done to make the most of the fertiliser being applied.



Tim Kerr (Nutrition Manager)



To get the best from your nitrogen fertiliser –

- Spread it accurately
- Do not think of Nitrogen and NUE in isolation
- Efficient nitrogen uptake relies on all the nutrients we have mentioned. In each case there is no substitute.

Questions about crop nutrition? Please contact us: information@hlhld.co.uk

In most plants this is 5:1 (sulphur as SO_3). Where possible it makes sense to apply N and S at the same time – applying the annual dose of sulphur early in the spring as sulphate carries a risk that late season demand may be unfulfilled, if the sulphur has leached. The deposition of sulphur that came free of charge, care of power stations and heavy industry, has all but disappeared now. Therefore, the safest assumption is to apply enough sulphur for each crop every year.

That is by no means the end of the list – Magnesium, for example, is fundamental to chlorophyll production and a shortfall of Mg reduces photosynthesis – leading to reduced nitrogen uptake.

TABLE 1: Effect of declining levels of exchangeable K in soil on winter wheat grain yield and the effect of freshly applied potash

Soil K index	mg K/litre	Standard N management		Canopy N management	
		Fresh K_2O , kg/ha		Fresh K_2O , kg/ha	
		0	100	0	100
		Grain yield, t/ha		Grain yield, t/ha	
2-	121-180	11.0	11.0	10.9	10.9
1	61-120	10.1	10.9	10.7	10.7
0	0-60	6.8	9.6	9.8	9.9

Reference A.E Johnston, Rothamsted Research

Scrunching the leaves of beet to check for virus
- it sounds like a crisp packet being scrunched



Outlook for Sugar beet virus yellows

Darryl Shailes (Root Crop Technical Manager) examines why virus yellows was such a problem in 2020 and outlines IPM strategies for 2021.

Virus yellows was a huge problem in 2020, more so in the West of the sugar beet growing region than the East. There was a definite geographical split with Lincolnshire and the Fens being particularly badly affected with huge yield losses, less so east of The Wash.

So why was 2020 worse than most of us involved in the sugar beet crop can remember? Sadly, even for the older growers amongst us, with long memories, who can remember life before neonicotinoids.

Virus yellows in beet is a mainly a complex of Beet virus yellows (BYV), Beet mild yellowing virus (BYMV) and is spread principally by the Peach Potato aphid (*Myzus persicae*).

Every year, Rothamsted Research in conjunction with BBRO issue a risk warning for *Myzus persicae* and subsequently Virus Yellows, showing what the potential is in untreated crops.

One of the main drivers of the aphid populations is the weather and frost in January and February.

The winter of 2019 /2020 was noticeable by its lack of frosts and this led to large populations of overwintered aphids in crops of oilseed rape and other brassicas species,

which flighted into sugar beet crops much earlier and in much greater numbers than normal.

When we consider that the threshold for treatments is set at 1 green wingless aphid per 4 plants and some growers were finding 30-40 per plant at the 2-4 leaf stage in early May, that goes some way to understanding the issue - not only the numbers alone, but also the fact that small plants are much more susceptible than older plants.

This huge influx also came when many crops were struggling to emerge due to the challenging seed beds in many fields. Timing of insecticide treatments was especially difficult, with a limited armoury, when only 30% of the crop has emerged, but what had emerged was at the threshold so needed treating. Also, each flush of new plants made perfect targets for the aphids.

Peach-potato aphid (<i>Myzus persicae</i>)	Bulletin Week Totals 15/06-21/06			Accumulated until 21/06		
	2020	2018	10-year average 2009-18	2020	2018	10-year average 2009-18
Preston	232	0	5	426	2	23
Kirton	50	15	103	724	28	185
Bury St Edmunds	244	61	158	4401	139	498

Table 1. Numbers in early June were 10 times the long-term average, or more. (Rothamsted Insect Survey)

Outlook for 2021

So, what can we hope for in 2021 and what should an Integrated Pest Management strategy look like to enable us to manage virus yellows more effectively?

First let us hope for a more 'normal' winter. As I write this, we have had more frosts than in the similar period in 2020, with hopefully more to come, to reduce the aphid numbers and timing of the flights.

Better seedbeds will help, as crops that emerge well and get away are less attractive to aphids than crops with staggered emergence.

Soil management is key to this, we have seen from the BYC that soil health and organic amendments play a big part in evenly established crops and, of course, good drilling.

Aphids seem to be particularly attracted to small, yellow, slowly growing crops, so **early season nutrition will be crucial**, using starter fertiliser, early N and foliar micronutrients all having a role to play. On drills with a potentially redundant granule applicator, a microgranule fertiliser such as Primary P can be utilised.

Kind but effective weed control that does not damage small beet plants will be crucial.

Destruction of all sources of inoculum is essential. Old beet clamps, volunteer beet and other sources must be managed to reduce the potential, especially after a bad year like 2020.

If the Rothamsted model is triggered, then we have Cruiser SB to help with the early influx of aphids, but **keen scouting will still be needed** for follow up treatments.

Myzus persicae is resistant to pyrethroids, so they should they must be avoided wherever possible.

Genetics is the long-term answer, but in the meantime, there are several things we can do and it is essential we do not rely on chemistry alone, but explore all other avenues for a full IPM strategy.

Environmental opportunities

- have you made the most of yours?



Matt England Environmental Services Specialist

Matt England (Environmental Services Specialist) reminds us that the application window for Mid-Tier and Wildlife offers opened in February - if you are not already in an environmental scheme, now is the time to consider if you should be.

The publication of DEFRA's Agricultural Transition Plan last November started laying out a pathway for the move away from direct payments towards the new Environmental Land Management Scheme (ELMS). However, with the rollout of the ELMS not due until late in 2024, **what can you do now to prepare yourself for this transition?**

Firstly, consider whether you will benefit from signing up to one of the Countryside Stewardship (CS) schemes that are on offer. This will allow you to have the option to terminate the scheme early and apply for ELMS when it is launched, if it proves a benefit to switch schemes.

No matter what level you decide your business can benefit from, the experience of managing options

and running an environmental scheme on your farm that is providing both 'public good' and 'natural capital', is the best preparation you can do for ELMS. The indication is that they will not be moving too far away from existing options when it comes to the new schemes, so many of those currently available will continue in ELMS.

The table **below** shows some of the key findings from the test and trial plots, which demonstrate how much payments could increase under the new scheme. Note, many of these are options that could roll straight from CS into ELMS, **so why wait?**

If the RPA chooses to bring in a payment by results system, it will be important to be able to **grow good environmental mixes to achieve the highest payments**. Work with your agronomist now, within the current scheme, to assess which mixes are most successful on your farm.

ELMS is likely to reward farms that are providing the most biodiversity.

We suggest exploring some of the options already available, to start building habitats straight away.

For example, planting wildflower margins (currently £539/ha) is a great way to take marginal areas out of production and increase biodiversity, plus it will give you a long-term option that you can roll straight into ELMS.

Furthermore, you can **start to use some of the stewardship options** to help fund changes in the way you farm, or perhaps fund something you are already doing. Options for grass leys such as a two-year legume fallow (currently £522/ha), or a legume and herb-rich sward (currently £309/ha), represent good opportunities to try something new in the rotation. There is even an option for overwintered cover crops (currently £114/ha), and all of these options will help to support your move towards a more regenerative agriculture approach, no doubt encouraged in any new schemes.

Finally, we would also suggest **making use of the capital grants now available**, some of which are very generous. For example, hedge planting, gapping, laying and coppicing all attract payments per metre of work completed. This presents an opportunity to improve the environmental features on your farm and encourage more wildlife to your field boundaries.

If you would like further details please contact your agronomist, they will be able to provide you with the advice you need or, if desired, put you in touch with a Hutchinsons Environmental Specialist, who can help you get into the right scheme for your farming business.

Environmental Option	ELM (suggested rate)	Countryside Stewardship rate
Sow a quick establishing single species cover crop after harvest (winter cover crop).	£150-220/ha	£114/ha
Establish a zero-input grass buffer adjacent to a ditch/water course (12-24m).	£500-£700/ha	£512/ha
Zero application rates in waterside fields.	£250/ha	£131/ha
Sow multi-species diverse grass leys; to include mix of 5 grasses and 5 forbs, including legumes and some deep-rooted species.	£500-650/ha	£309/ha
Arable winter bird seed mix field margin (4-6m) or as a whole field break-crop rotation.	£840/ha	£640/ha

Source: DEFRA Environmental Land Management Tests and Trials Evidence Report (September 2020)

Roy Fisher and Morven Anderson

New contract drives move to precision farming

When pitching for a new contract farming agreement it was the use of precision technology that won the deal for one grower.

With a strong ethos in soil health, Roy Fisher of Roy K Fisher & Co, Anstruther in Fife, knew that he could improve the soils of the large block of land that was up for tender. However to do this, he had to create a baseline and demonstrate how he would measure any improvements.

A member of the Worshipful Company of Farmers, it was whilst Roy was away on a course that he was chatting to Jason Noy of Farmacy, that he heard about the Omnia Precision Agronomy system.

Omnia is a web based decision support platform that imports new and existing field data from multiple sources creating layers of information in the form of maps. These maps can be overlaid, creating a picture of what is happening at sub – field level, allowing for informed decisions for a range of variable input applications.

"Following on from an initial demo trial, I was really impressed, the system made sense and offered everything we needed, in a complete package, including a central hub for holding all of our data."

"Hutchinsons digital farming manager, Lewis McKerrrow, helped to set Mr Fisher up on the system, and he acknowledges that it has been easy to use.



Lewis McKerrrow
(Hutchinsons Digital Farming Manager)

"We were able to transfer over data we already had - this was critical as we didn't want to lose the historical data that we had already collected." "Omnia is hosted on a cloud, which means we can access it whenever we like, so for example, if I have a contractor coming in to spray or cut hedges it's easy to pass on specific information seamlessly."

Mr Fisher finds the range of tools available within Omnia really useful, particularly the Climate module which links weather forecasting to crop management decisions such as spraying for BYDV.

Find out more about the benefits of Omnia by visiting our website: www.omniaprecision.co.uk

Inside soils with TerraMap

At about the same time, Mr Fisher took on a new agronomist, Morven Anderson of Hutchinsons, who was aligned with his vision of running the farm. "By integrating our agronomy with the precision data that we were generating, we felt that we would get more value from both services and use it in a proactive manner, rather than in a prophylactic way, when making crop management decisions."

Having won the contract for the new land on the basis of our aims to improve soil health, Mr Fisher got to work straight away.

"One of the first things we did was to have all of our fields scanned using TerraMap."

TerraMap is a revolutionary soil scanning service, that provides high definition mapping of all common nutrient properties, which are then used to create maps within Omnia.

Using the data from TerraMap, he was able to establish the baseline of soil nutrients including criteria such as pH, soil texture, organic matter and CEC, as well as elevation and plant available water.

"We found that much of the new land we took on was low in pH which needed addressing with lime – and having the TerraMap data allowed us to justify this decision with the land owner."

"It's only by knowing what we have that we can manage it," he says. "It's the old adage, you've got to measure to manage, and we have the best system in place to do both of these to remain profitable and sustainable."

For more information on any of our products or services, please contact your local Hutchinsons agronomist, or contact us at:

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2020/21 CPD Points Allocation reference numbers:
NRoSO NO468211f • BASIS CP/100416/2021/g