

What we can show you this year with



# Fieldwise

AGRONOMY NEWS FROM

**HUTCHINSONS**

Crop Production Specialists

MAY 2020



# Helix and Hutchinsons Regional Technology Centres



Linking technology, knowledge and advice to deliver sustainable farming

**HUTCHINSONS**  
Crop Production Specialists

National Technology Development Farm

By kind permission of J W Pitts & Sons



David Hutchinson - Chairman

**Stuart Hill (Hutchinsons Head of Technology and Innovation) updates us on activity at our demonstration sites and the different ways we can present the information, in the light of current social distancing.**

**The national Helix technology development farm and Regional Technology Centres are continuing this year with their important work in delivering benefits to growers.**

## National Helix farm

At the Helix farm in Northamptonshire courtesy of Andrew Pitts the objective is to develop technologies alongside our knowledge to deliver benefit to growers in efficiency, productivity and profitability. This advances the strategic relationship between the grower and agronomist and develops agronomy into a more proactive, efficient and justified approach.

Project work on technologies, such as climate systems, pest models, predictive tools, imagery, sensors, strategic rotational tools and artificial intelligence are all being developed and channelled through our Omnia system, to facilitate this revolution and the associated benefits.

The majority of this work is being carried out at farm scale to understand and deliver the tangible financial and practical benefits for growers. The 'so what?' question.

As part of our new 'Fieldwise Live' campaign, during the spring/summer season you will see videos and commentary of how these projects are developing on the **helixfarm**

## Business Continuity

– a message from **David Hutchinson**

**Recent weeks have seen dramatic changes for everyone's day to day life and not least in the way businesses can continue to operate. We are fortunate and proud that we work in an industry providing essential services for the production of British food.**

Hutchinsons has been committed to the evidence-led and common-sense approach to containing the Covid19 outbreak since the beginning and we have worked hard to mitigate the impact on customers, colleagues and our wider business operations and to maintain "business-as-usual" as much as possible.

> website, as well as plenty of interesting snippets on social media. If you have any comments or ideas, please feel free to send them in via the contact email on the site.

## New Regional Helix farm

Additionally, this year we are launching the first regional Helix farm, as the Helix East demonstration farm, courtesy of G D Jewers, Rattlesden in Suffolk. Here the regional team are implementing many aspects from the national farm. The technology projects that we are developing at the national farm are transferrable to other regions, but use will be tailored to the region, farm and situation.

## Regional Trial Sites

Hutchinsons is delivering a range of innovative work at the Regional Technology Centres (RTCs) around the country. We are looking at seed rate work and its impact on establishment, plant, tiller, ear numbers, how these crops are treated accordingly and the impact on yield.

> In the coming weeks and possibly months, there may be further disruption to daily life and service delivery, as the country continues to tackle the Coronavirus issue. However, please be reassured that we have operational continuity plans in place to minimise the risk of infection for our staff and premises and, in so doing, enable the delivery of normal services to our customers.

Many of our colleagues, including agronomists, have the appropriate technology to work from home effectively, as well as in the field, to provide service continuation remotely. We are doing, and will continue to do, everything that we can to support front-line growers and UK agriculture as a whole to provide safe and reliable food supplies to our nation, through this extremely challenging and unprecedented time.

I sincerely hope that you, your families and your businesses come safely through this current situation and we look forward to an eventual return to normality for everyone.

**If you have any questions about our service, please do get in touch with your normal Hutchinsons contact who will be happy to help.**

This work ties in much of our learnings from the cereal Yield Enhancement Network (YEN), of which we are a main sponsor. It is critical we understand this, to maximise the yield potential of any given site. The reward for the grower is greater financial output. This work also includes assessment of Hybrid wheat and benefits in comparison to conventional varieties.

Many of the sites also have winter wheat variety trials linked into a fungicide programme. The aim of this work is to deliver regional bespoke variety information according to market and response to fungicide input. This enables bespoke agronomy to those varieties the following season.

## Nutritional trials

Additionally, as an all-round approach to soil and plant health, we have included nutrition and bio-stimulant programmes linking to TerraMap - our new non-invasive soil mapping and testing technology. This is an ideal opportunity to deliver bespoke soil management programmes in parallel to foliar applied plant health, in a season that has provided significant soil and water challenges.

## Topical issues

There are some very topical issues to cover alongside the in-field work. The farm in general, its soils and the dynamic with carbon, is a rapidly developing area with many variables that will need some debate and coverage over the coming months.

With the challenge presented by Coronavirus, it is the right decision to cancel events in the near to medium term. Gatherings at events such as open days in June and July come into this bracket.

The positive from this is that we will be videoing Helix and RTC work as part of 'Fieldwise Live' for the Hutchinsons website and posting on social media. This is a great opportunity to try various methods of communicating beneficial work to growers utilising modern technology and we hope you enjoy this approach in a very different world.

**Keep up to date with progress at our demonstration sites via Fieldwise Live – view all the latest information on our websites [www.helixfarm.co.uk](http://www.helixfarm.co.uk) and [www.hlhltd.co.uk](http://www.hlhltd.co.uk)**

## Regional Technology Centres 2020

- 1 Carlisle
- 2 Alnwick
- 3 Warden Farming, Grayingham
- 4 Little Ponton
- 5 Ludlow
- 6 Harleston
- 7 Stowbridge
- 8 Fenland Potato Demonstration
- 9 Sutton Bonington
- 10 Brassica Demonstration
- 11  National Technology Farm
- 12  East Demonstration Farm (NEW)





**Dr David Ellerton**  
TECHNICAL DEVELOPMENT DIRECTOR

# The Importance of Late Winter Wheat Fungicide Strategies

Dr David Ellerton, Hutchinsons Technical Development Director, offers guidance on the best flag leaf fungicide strategies for this season in winter wheat, tailored to disease pressure and including strategies designed to minimise the risk of increasing fungicide resistance. Options for the final T3 ear spray are also considered.

**The leaf 3 (or T1) timing is becoming the most important timing to get disease under control and the flag leaf or T2 fungicide application often gives the most profitable yield responses.**

Late Septoria infection due to very wet weather in early June and high levels of yellow rust in a range of varieties in wheat in 2019 generally resulted in highly cost-effective yield responses to fungicide programmes. In Hutchinson's winter wheat variety trials, the average yield response across sites and all varieties was 2.49 t/ha compared to 1.54t/ha the previous season.

As usual, there was a significant difference in response between varieties with RGT Gravity giving a response 3.98 t/ha, while disease control in several varieties resulted in an increase in yield of less than 2 t/ha (see table 1 below).

The significant wet weather in early June around the time of the Cereals event meant that the largest yield increases were usually in response to the flag leaf or T2 timing in Hutchinsons small plot trials and were generally closely linked to Septoria resistance rating of the variety, also shown in the table below.

## Timing of flag leaf sprays

The purpose of flag leaf sprays is to ensure that disease is controlled on the top two leaves, which contribute approximately two thirds of final yield in winter wheat (see figure 1. below).

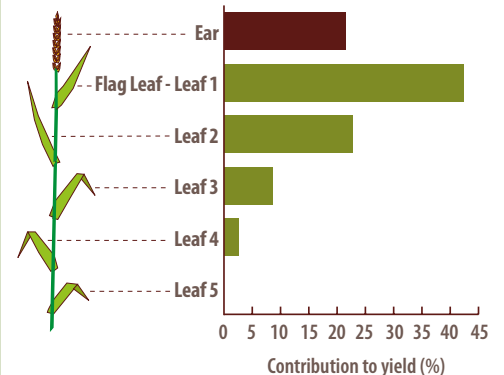
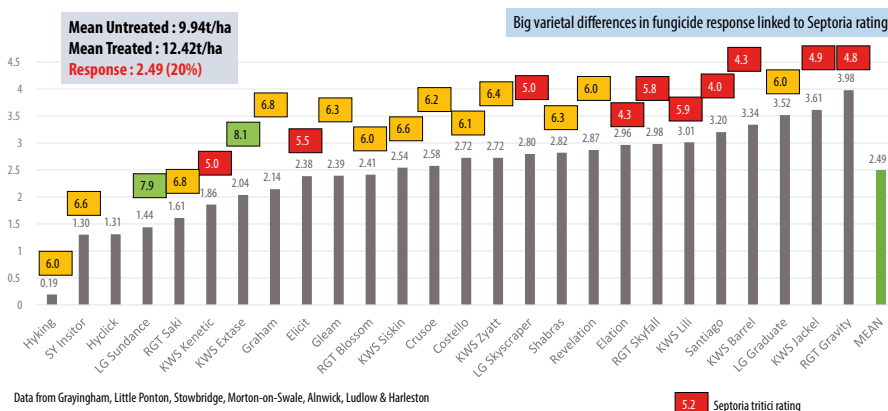


Fig. 1. Contribution of Leaves and Ear to Final Yield in Winter Wheat. Source: AHDB

Timing is critical and should not be delayed beyond the stage at which most flag leaves on main tillers have emerged (GS 37-39), usually in mid to late May. Although disease levels will vary between crops and varieties, it is vital to control disease before it gets established - particularly Septoria tritici. Sprays should be timed according to crop growth stage rather than calendar date, protecting the top 3 leaves and the flag leaves as they emerge.

## Winter Wheat Varieties Mean of 7 Sites x Septoria rating 2018/19 Yield Response (t/ha)



Data from Grayingham, Little Ponton, Stowbridge, Morton-on-Swale, Alnwick, Ludlow & Harleston

5.2 Septoria tritici rating

Table 1. Winter Wheat - Fungicide Yield Responses above untreated across Varieties in Hutchinson's Trials, 2018/19



**Questions about this article or need advice on fungicide product choice and timing on your farm? Email us: [information@hlhlt.co.uk](mailto:information@hlhlt.co.uk)**

It is important to realise that the gap between the flag leaf spray and the previous T1 fungicide should be a maximum of 3 – 4 weeks to continue disease protection, once the earlier spray begins to 'run out of steam'. However, it is likely that in late drilled crops this season, plants will move rapidly through the growth stages so a close eye should be kept on crop development and sprays applied when flag leaves appear even if the gap from the T1 spray is relatively short. Delaying the T2 spray to co-incide with ear emergence is a risky option.

Once again AHDB trials in 2019 confirmed that *Septoria tritici* resistance has limited the curative ability of many key fungicides such as triazoles and SDHIs. Significant shifts in SDHI resistance have been confirmed by Rothamsted in 2019. Of currently available fungicides the recently launched Revysol (mefentrifluconazole) is the strongest option on *Septoria* and should be used where *Septoria* risk is high.

## Key diseases

Diseases targeted at the flag leaf stage are usually *Septoria*, rusts and occasionally mildew. Priority should be given to varieties with a disease rating of 6 or less on the AHDB recommended

lists particularly for varieties susceptible to *Septoria tritici*, which is the most important disease of wheat, causing yield losses of up to 50%.

The appearance of aggressive strains of yellow rust, which can overcome certain varietal resistances, has increased the importance of control at early stages of rust development, since these strains are usually particularly aggressive and can build up quickly, causing significant impacts on yield. It is important to remember that new races of yellow rust can overcome even high levels of varietal resistance so all varieties should be closely monitored for the disease and treated accordingly.

## What to use on the flag leaf in winter wheat

Product selection for flag leaf sprays should include a combination of proven active ingredients with a number of modes of action, serving as an anti-resistance strategy and to give curative plus protectant control of diseases present or likely to develop. Adopting anti-resistance strategies is becoming ever more important as new mutations continue to be detected in *Septoria tritici* populations in the UK and Europe.

## Triazoles

Triazoles should still form the basis of T2 programmes and should be chosen to match disease risk in individual fields. Where low to moderate *Septoria tritici* is the main target, preferred active ingredients are prothioconazole, epoxiconazole or metconazole. However, mutations in the disease over the last decade have reduced sensitivity to these ingredients and compromised their efficacy, particularly their eradicant activity. Therefore, in higher risk *Septoria* situations consideration should be given to using mefentrifluconazole (Revysol) which is particularly strong on *Septoria*.

Triazoles such as epoxiconazole, tebuconazole and mefentrifluconazole should also give good control of both yellow and brown rusts while prothioconazole has reasonable yellow rust activity. While prothioconazole has shown good activity on low to moderate mildew a specific mildewicide such as cyflufenamid may be needed where mildew is well established.

## SDHI products

The importance of controlling *Septoria* at the flag leaf timing means that inclusion of SDHI based

products are likely to be essential in the majority of wheat flag leaf sprays. In AHDB trials over the last few years, particularly in more curative situations, the addition of SDHI fungicides such as fluxapyroxad or bixafen and fluopyram to triazoles clearly improved control of *Septoria tritici*, resulting in significant yield improvements. This was also shown in Hutchinsons' trials in sites across the UK over the last few seasons.

Recent work has shown that including a protectant multisite such as chlorothalonil (should be used by 20th May, 2020) or folpet, can not only improve persistence of *Septoria* control but are also an important part of an anti-resistance strategy. However, they are usually more important at earlier timings and should generally not be added to SDHI products based on bixafen alone, as antagonism has been noted in trials, particularly in curative rust situations.

## T3 sprays

Where new generation SDHIs are applied on the flag leaf, their increased persistence on foliar diseases usually enables growers to concentrate on ear diseases with their T3 or ear emergence sprays. T3 fungicides should be applied just as flowering begins and are usually geared towards controlling *Fusarium*, *Microdochium* or sooty moulds. However, top-up foliar applications should also be considered, particularly if disease risk is high or the gap following the flag leaf spray is greater than 3 to 4 weeks. This was often the case last season where high risk wet weather following flag leaf sprays meant *Septoria* was poorly contained by weaker ear sprays.

For ear emergence sprays, triazoles again often form the base including active ingredients with activity on *Fusarium* (favoured by warm, wet conditions) such as prothioconazole, tebuconazole or metconazole/epoxiconazole. Where *Microdochium* risk is high (in cool wet seasons), the emphasis should be on prothioconazole. The inclusion of a strobilurin such as azoxystrobin or fluoxastrobin aids disease control and can have significant physiological effects including increasing crop biomass and prolonging green leaf area retention leading to higher yield potential. Again, including a multi-site may help with *Septoria* protection.

# Devising Barley Disease Control Strategies



**Dr David Ellerton**  
TECHNICAL DEVELOPMENT DIRECTOR

**Wet weather last autumn severely restricted drilling of many crops, resulting in a large increase in this season's area of spring barley. Dr David Ellerton, Hutchinson's technical development director, discusses optimum strategies for disease control in this spring's crop, as well as guidance on late fungicides in the winter barley crop.**

**The first step in devising a disease control programme involves ascertaining the varieties' susceptibility to disease.** The table below of disease ratings of the likely top spring barley varieties this season, based on seed certification, shows that many of the varieties are particularly susceptible to both Rhynchosporium and brown rust, with a number also susceptible to yellow rust. While mildew resistance ratings are high for most varieties, it is known that spring barley is generally more susceptible to abiotic spotting/Ramularia than winter varieties.

disease and usually accounts for about 40% of the final yield response to fungicide programmes.

Where Rhynchosporium is a problem, then ideally sprays should contain prothioconazole in combination with tebuconazole for rust control, since many varieties are at risk from both diseases.

Inclusion of an SDHI such as fluxapyroxad, isopyrazam (+ cyprodinil), benzovindiflupyr or bixafen, will give additional disease control, as well as offering physiological benefits such as increased rooting and higher water use

**Spring Barley – Disease Susceptibilities of Major Varieties**

VARIETY	MILDEW	YELLOW RUST	BROWN RUST	RHYNCHOSPORIUM
RGT Planet	9	4	5	5
Laureate	9	5	5	6
Propino	6	4	5	5
LG Diablo	9	-	5	5
Westminster	(9)	(8)	6	7
Concerto	9	8	5	4
Firefoxx	9	-	4	5
RGT Slipstream	9	-	4	3
RGT Asteriod	9	-	5	4

For spring barley, as with winter barley, early protection of developing tillers from disease is crucial, as barley is less able than wheat to compensate for early tiller damage and ear number is a vital component of final yield.

## T1 timing

Disease control will generally start in the latter stages of tillering to the beginning of stem extension, to ensure maximum tiller survival (GS25-30). The T1 spray timing in spring barley protects crops from early developing

efficiency - which could well be crucial if we experience a dry summer. Inclusion of a multi-site such as chlorothalonil (apply by 20th May) or folpet, will help protect against early Rhynchosporium and in particular Ramularia where resistance has been identified to other actives.

A new option this season is the newly registered triazole, mefentrifluconazole which, in combination with fluxapyroxad, has been shown to have broad spectrum activity against barley diseases including Ramularia.

However, Ramularia control is generally at the later T2 timing.

Inclusion of a specific active for mildew control may also be necessary, based around cyflufenamid or cyprodinil.

## T2 timing

**The T2 timing in spring barley is crucial - generally contributing about 60% of the final fungicide response.**

Product selection will be similar to the T1 timing and is aimed at protecting against late developing diseases.

It should also routinely include a multi-site product, as mentioned earlier, to protect against Ramularia. A key benefit of this late spray is to maximise specific weights and Thousand Grain Weights (TGW), as well as minimise screenings.

Responses to fungicide programmes will clearly be governed by disease pressure/variety and programmes should be tailored accordingly.

## Winter barley

The T2 spray in winter barley is often regarded as less important than the T1 and is traditionally timed a little later at GS 39-49. Recent trial results have shown a benefit of bringing forward the timing to GS 37-39 (flag leaf emerging), with an additional T3 application once the ear is emerging at GS 49-59.

The T2 spray aims to prevent net blotch, brown rust and Ramularia (plus Rhynchosporium in wet summers) from invading upper leaves and ears, to reduce senescence of spikelets and to increase grain numbers per ear and TGW, leading to yield increases.

Product choice is similar to that of spring crops but generally at higher dose rates with triazoles, (particularly prothioconazole), again forming the basis of many winter barley T2 fungicide programmes.

SDHI products in combination with triazoles, will give broader spectrum disease control and should be utilised where disease risk is high. As with spring barley, account should be taken of Ramularia resistance to SDHIs and triazoles. Where an additional T3 spray is to be applied, this should be based on a reduced rate triazole plus a multi-site for extended Ramularia protection.

**Your Hutchinsons agronomist will be happy to advise on suitable disease control strategies for your barley crop, or contact us: [information@hlhlt.co.uk](mailto:information@hlhlt.co.uk)**

# Spring Barley Nutrition

## Meeting nitrogen demands with foliar products

Whilst there are a host of experienced barley growers up and down the country, some farmers - through necessity rather than choice, are getting to grips with a crop unfamiliar on their land. Here Tim Kerr (Nutrition Manager) focusses on delivering the nitrogen requirement of spring barley.

**Once the crop has reached GS 31 it will be entering its peak growing period- accumulating 1.5 tonnes of biomass each week for the next 4 or 5 weeks. During this phase the crop will take up on average 30 kg/ Nitrogen /ha/week.**

Meeting this demand relies upon the soil having enough available nitrogen and sufficient moisture to allow the roots to take the N up. Higher root length density provides the crop with more resilience to drought, however late drilled crops this year will be facing an uphill battle to build sufficient root biomass to overcome a significant risk of nitrogen shortfall.

In a typical year, a crop of spring barley would accumulate 150 kg/N per ha. Usually the soil would supply around a third of this requirement. Fertiliser applied should meet the extra demand - remembering the likelihood is, that at best, 65% of the N applied would be taken up by the crop. Therefore, to supply 100 kg of N you would need to apply 155 kg/ha of N as fertiliser.

Lower than average root length density, combined with the effects of the wet winter, exacerbate the risk of nitrogen running short - especially where soils have been dry through April.

Note that ideally all Fertiliser N should, wherever possible, be applied by GS 31. If soil moisture is limited and the chance of getting freshly applied fertiliser into the soil unlikely, then there are alternative means of supplying the crop with nitrogen.

### Foliar N

It should be stressed that when talking about foliar nitrogen this is not describing liquid nitrogen fertiliser. The two are very different - with liquid nitrogen fertiliser the aim is to apply large droplets that will reach the soil due to size of droplet and gravity. Inevitably some N from liquid nitrogen can be taken up by the leaves - and if this happens it can lead to leaf scorch. Application techniques are designed to avoid this happening.

**Foliar Nitrogen products are designed to be absorbed by the leaf - safely.**

By bypassing the soil, the efficiency of the nitrogen applied can be increased. This can overcome low nitrogen availability caused by drought stress.

The key to getting the best out of a foliar application is to ensure the formulation makes the product safe to the crop and easily assimilated into the plant.

**A basic foliar nitrogen would be liquid urea** - this is relatively cheap and effective, but can be associated with crop scorch at higher rates - liquid urea can be very quickly absorbed, which can lead to plant cell damage - which in turn shows up as leaf scorch.

### Amine N

Applying nitrogen in the Amine form overcomes the risks associated

with foliar urea and it has the added advantage of providing a phased release nitrogen. This form of nitrogen is capable of maintaining the plant's requirement over a period of weeks. The Amine N is manufactured by a reaction process which creates long chains of nitrogen polymers which release N steadily - in a form that is directly available to the plant. Due to the increased nitrogen efficiency, Amine N does not have to be applied in the same quantity as nitrogen fertiliser - making it cost effective as well as agronomically effective.

**For more information about foliar nitrogen products, or to discuss getting the best out of your spring barley, please contact your local Hutchinsons Agronomist or email us: [information@hlh ltd.co.uk](mailto:information@hlh ltd.co.uk)**

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

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