Fieldwise
AGRONOMY NEWS FROM HUTCHINSONS
MAY / JUNE 2015

Oilseed Rape
Disease and Pest Control

The mid to late flowering spray is an important timing for control of a range of diseases in oilseed rape, particularly Sclerotinia, which has the potential to decrease yields by up to 50%. This timing also provides an opportunity to control insect pests such as seed weevil and pod midge. In this article **Dr. David Ellerton,** Hutchinsons Technical Development Director, considers the available control options.

Although Sclerotinia stem rot has not been a major problem in most crops for a few seasons, should appropriate weather conditions coincide with spore release and petal fall, then the disease has the potential to cause significant yield reductions.

While fungicide sprays applied at yellow bud to early flowering will have helped protect against early Sclerotinia infection, these will have ceased to be effective after three to four weeks, requiring a follow up treatment to maintain control over the full flowering period.

picture 1: Petal Fall & disease infection

Mid Flowering - Key Timing

Unsettled wet weather during flowering leads to petals sticking to stems and axils of branches when they fall. If spores of Sclerotinia are present they then use these petals as a food source, which enables them to enter the stem causing characteristic lesions with fluffy white mycelium (picture 1) on the outside and the black resting bodies or sclerotia on the inside (picture 2). Branches and stems above the lesions will be killed, causing the crop to go white.

This leads to premature pod shatter, seed loss and yield reductions of over 2t/ha in severe cases.

In addition, sclerotia will fall to the soil where they can lie dormant for many years, ready to infect susceptible crops following on in the rotation.

Sprays applied at the mid to late flowering stage may be based around a number of active ingredients including the triazoles - prothioconazole and tebuconazole, strobilurins such as azoxystrobin or picoxystrobin, or the established SDHI boscalid and the relatively new SDHI bixafen.

continue overleaf >>>

>>> One new alternative this season is a non triazole option containing boscalid and the strobilurin dimoxystrobin. In addition to disease control, there is evidence to show it can increase yield in the absence of disease, due to physiological effects on the crop.

Since all of these products are protectant only on Sclerotinia, timing is often more important than product choice.

Potential Insect Problems

Seed weevil/pod midge should be carefully monitored during flowering and pod formation.

Seed weevils can lay eggs singly in up to 50 pods and the larvae can eat up to a quarter of the seeds in each infested pod.

These larvae are plump and white with a definite head capsule and no legs. When mature the larvae burrow out of the pod to pupate in the soil.

These feeding punctures and exit holes then provide access for Brassica pod midge to lay their eggs. Midges can lay up to 60 eggs into these openings, and the resulting 20-30 larvae can cause significant damage to seeds and may cause pods to split and lose all their seed, resulting in yield losses of up to 10%. Thresholds for seed weevils are therefore low, at just one weevil per plant, or one weevil per two plants in Northern England and Scotland, or where there is a history of the pest.

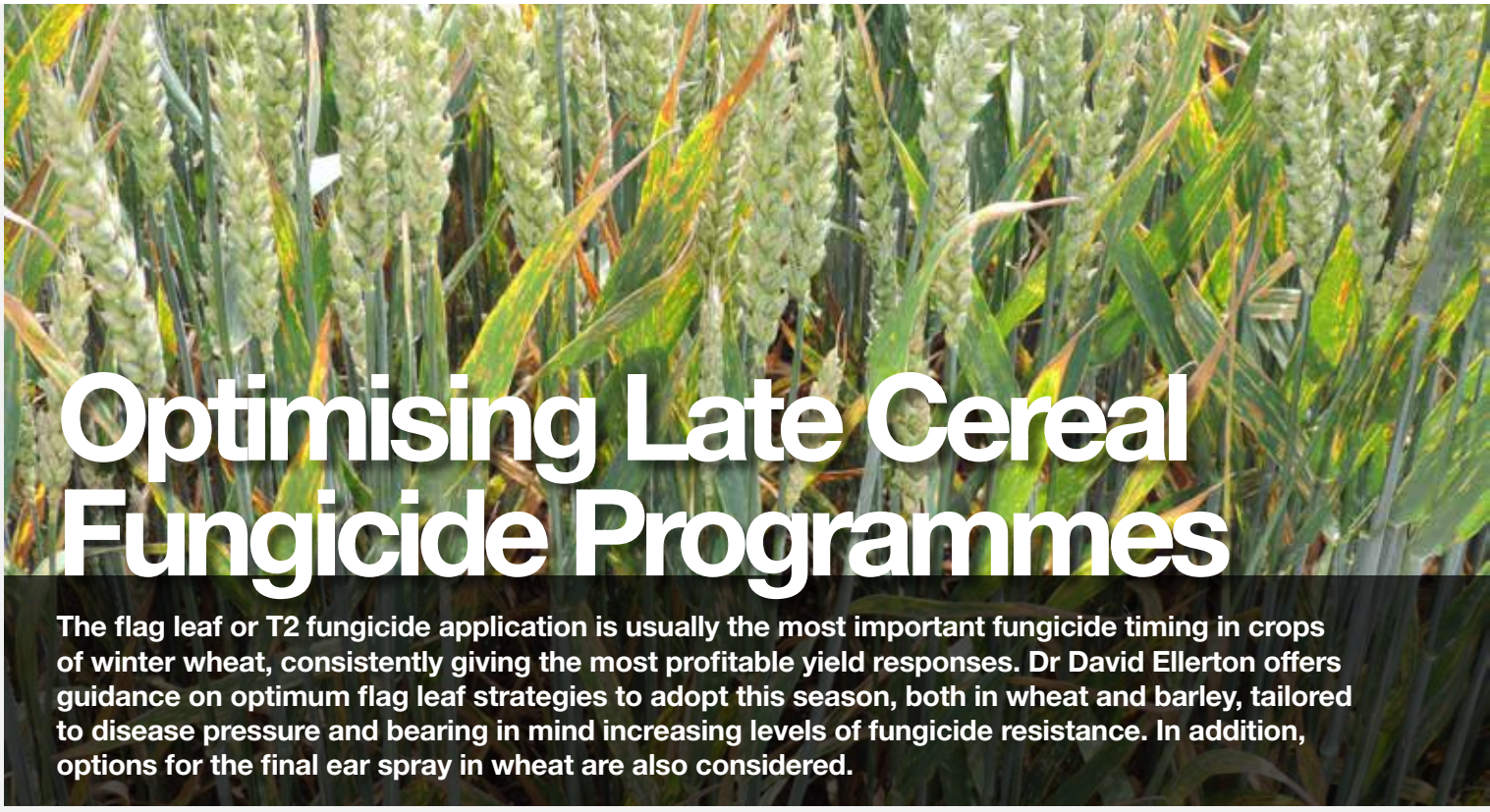
Although seed weevils are often hard to find, quite significant damage from weevils and pod midge have been seen in many crops in recent years so growers should be vigilant in monitoring crops for presence of the pest. Crops should be monitored for weevils during flowering and are most easily seen on warm, sunny days.

Insecticide treatment should be applied during flowering as pods start to form and weevils start to bore holes. Where insect pests occur above threshold levels, insecticides may be applied

picture 2: Sclerotinia in the stem

alone, or in some cases be tank mixed with certain fungicide sprays. However, growers should always avoid application of insecticides while bees are foraging in the crop.

Your Hutchinsons agronomist will guide you on the optimum strategy to control pests and diseases in oilseed rape, while minimising impact on beneficial insects.



Optimising Late Cereal Fungicide Programmes

The flag leaf or T2 fungicide application is usually the most important fungicide timing in crops of winter wheat, consistently giving the most profitable yield responses. Dr David Ellerton offers guidance on optimum flag leaf strategies to adopt this season, both in wheat and barley, tailored to disease pressure and bearing in mind increasing levels of fungicide resistance. In addition, options for the final ear spray in wheat are also considered.

Exceptionally high disease levels in cereals in 2014 resulted in very large yield responses to fungicide programmes. In Hutchinsons' winter wheat variety trials the average yield response across all varieties was 3.28 t/ha (36.9 %) with some varieties such as Gallant, KWS Kielder and Cordiale averaging around a 5.0 t/ha response. Yield increases averaged just under 4 t/ha in HGCA recommended list trials, which was considerably higher than the long term average. This was in direct contrast to the previous season, although even under the lower disease pressure of spring and summer 2013, HGCA yield responses still averaged over 1.1 t/ha (see Figure 1). In both seasons the largest yield impacts were generally in response to the flag leaf or T2 timing.

The purpose of the T2 spray is to ensure that disease is controlled on the top two leaves, which contribute approximately two thirds of the final yield in winter wheat. Timing is critical and should not be delayed beyond the stage at which most flag leaves on the main tillers have emerged (GS 37-39), normally in mid to late May. Although disease levels this spring have generally been lower than last season, it is still vital to control disease before it gets established within crops - particularly with regard to Septoria tritici. This means that sprays should be timed according to crop growth stage, protecting the top 3 leaves, and particularly the flag leaf, as they emerge. It is particularly important that the gap between the flag leaf spray and the previous T1 fungicide application is a maximum of 3 – 4 weeks to continue disease protection once the earlier spray begins to 'run out of steam'. This gap is currently even more important, since

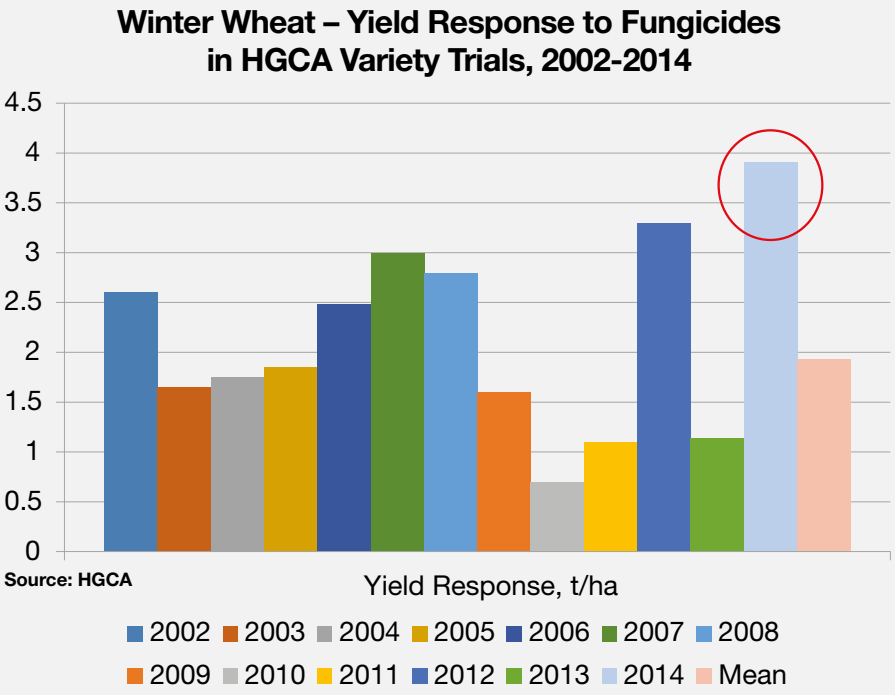


Figure 1 Winter Wheat - Fungicide Yield Responses 2002-14 (HGCA trials)

Septoria tritici resistance has limited the curative ability of many of our major fungicides.

Key diseases targeted at the flag leaf stage are Septoria, rusts and occasionally mildew. Priority should be given to varieties with a disease rating of 6 or less on the HGCA recommended lists. This is vital for varieties susceptible to Septoria tritici, which is the most important disease of wheat in the UK, causing yield losses of up to 50%. The relatively recent appearance of the particularly aggressive 'Warrior' strain of yellow rust has also increased the importance of control at the early stages of disease development since these strains can build far quicker than in the past, causing significant impacts on yield.

Where the new SDHIs are applied on the flag leaf, their increased persistence on foliar diseases often enables growers to concentrate more specifically on ear diseases with their T3 or ear emergence sprays. Ideally, these should be applied just as flowering begins and will often be geared towards control of Fusarium, Microdochium or sooty moulds. Where necessary, top up of 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.

Wheat - Appropriate Fungicide Choice

Product selection for the flag leaf spray should include active ingredients with a number of modes of action, serving as both an anti-resistance strategy and to give curative plus protectant control of diseases present, or likely to develop.

Triazoles should still form the basis of all T2 programmes and should be chosen to match the disease risk in individual fields. Where Septoria tritici is the main target, active ingredients of choice are prothioconazole or epoxiconazole.

However, mutations in the disease over the last decade have reduced sensitivity to these active ingredients and compromised their efficacy, particularly in terms of eradicant activity. Reductions in efficacy of even the strongest triazoles on established Septoria were evident in HGCA trials in 2014. However, there is evidence to show an increase in efficacy can be achieved by using mixed triazole products, which include prothioconazole and epoxiconazole in combination with other triazole actives such as tebuconazole or metconazole.

In HGCA trials, particularly in eradicant situations, the addition of one of the new SDHI fungicides such as fluxapyroxad, penthiopyrad or bixafen to the triazoles clearly improved both protectant and curative control of Septoria tritici, resulting in significant yield improvements. This was also clearly shown in Hutchinsons' trials in sites across the UK. Care should to be taken to choose the most appropriate ingredients to apply in individual situations, depending upon disease pressure. The importance of control of Septoria at the flag leaf timing means that in most situations SDHI based products should form the backbone of wheat flag leaf sprays. In some cases there may also be a benefit of adding extra strobilurin, as this can improve rust control, increase greening and may lead to higher yields.

Inclusion of additional chlorothalonil can improve persistence of Septoria control, although it is generally more appropriate at the T0/T1 timings. However it should not be added to bixafen based treatments, as antagonism has been noted in a number of trials, particularly in curative rust situations.

As far as the ear emergence spray is concerned, once again triazoles should form the base including active ingredients with activity on Fusarium such as prothioconazole, tebuconazole or metconazole. Where Microdochium risk is high (generally in cool wet seasons) the emphasis should be on prothioconazole. Consideration should also be given to the inclusion of a strobilurin such as azoxystrobin or fluoxastrobin which will aid disease control as well as increasing persistence of green leaf area leading to higher yield potential.

Barley - Appropriate Fungicide Choice

In barley, the T2 spray is slightly less important than the T1 application and is usually timed a little later at GS 39-49 – from flag leaf emergence to booting. Its main purpose is to prevent net blotch, brown rust and Ramularia (plus Rhynchosporium in wet summers) invading upper leaves and the ears.

The benefit of this application is to reduce senescence of spikelets caused by disease, thereby increasing the number of grains per ear, which leads to increases in yield. In addition, by extending the duration of the canopy, increased thousand grain weight (TGW) may result.

As with wheat, triazoles, (particularly prothioconazole), will form the basis of many barley fungicide programmes. The new SDHI products, in combination with triazoles or cyprodinil, will all give very broad spectrum control of the key barley diseases and should be utilised particularly where disease risk is high. The inclusion of chlorothalonil will help protect against Ramularia infection.

Ensure you consult your Hutchinsons group agronomist to provide you with advice on optimum fungicide product choice and timing on your farm.

Grass weed control in maize using foramsulfuron + iodosulfuron-methyl. Source: Bayer CropScience UK

Maize Update from Hutchinsons Energy

Dominic Bovis (Hutchinsons Sales Development Manager) **provides an update on activity within the crop and introduces our maize trials sites this year, plus the launch of an exciting, new competition for maize growers – the 'Dry Matter Challenge'.**

AD plant at Wykey Farm near Shrewsbury. Host to Hutchinsons maize RTC.

Weed control in Maize

Much of the focus for maize at this time is around weed control, with growers working to reduce the risk of yield loss and quality being affected later. There are a wide range of herbicide options available, but growers need to be aware of following crop restrictions – particularly important where land is rented in, which might later be used in high value crop rotations. One particular issue with herbicide residues is the potential for clopyralid to be added back to the land via digestate.

For Energy crops, where the focus is on preserving crop mass and dry matter yield, a pre-emergence herbicide strategy is the favoured starting point, which can then be followed by a post emergence herbicide tailored to any remaining weed problem. This reduces the need for a mix of products, which may scorch the crop, possibly limiting yield potential.

With more maize now grown in the eastern counties, black grass control is one of the main issues facing growers and foramsulfuron plus iodosulfuron-methyl is proving to be an effective solution. Although it is an ALS-type herbicide, foramsulfuron has not been used in the UK before, so resistance is less of an issue. The weed control spectrum can be increased by tank mixing bromoxynil.

Phosphate Nutrition

Another problem which some growers are facing is phosphorus deficiency, particularly where conditions are wet and cold or where seed has been drilled into poor seed bed conditions.

Maize plants will absorb phosphate throughout the entire growing cycle, but it is most important at the early stages of plant development. An application of phosphate will be needed if there are signs of deficiency, such as older leaves turning reddish-purple, or leaves drying up from the tip downwards.

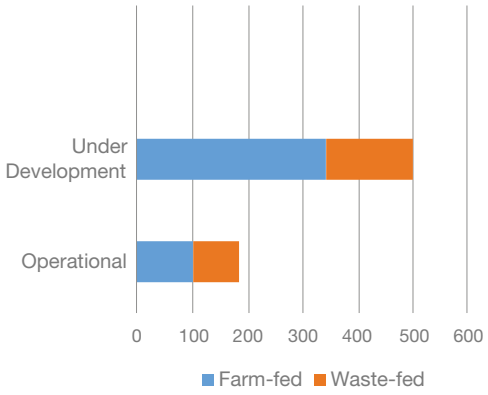
Developing our knowledge of Digestion

The anaerobic digestion sector is continuing to grow. Figures released in April by the National Non Food Crops Centre (NNFCC) stated that there are currently 102 active AD plants running on 836,000mt of slurry and 1.2MMT of crops. There are a further 343 anaerobic plants in development, which if they were to all come on stream would add to a sector capable of producing enough energy, just over 1TWh, to power 250,000 homes.

Maize for anaerobic digestion is a relatively new crop, so Hutchinsons have established two new trials sites in order to develop practical experience and understanding around the issues that growers face. Located near Shrewsbury, Shropshire and Thetford in Norfolk, the sites are positioned so that we can conduct trials under the growing conditions found in the West and East of the country.

For this year, the trials will focus on varieties, different forms of nutrition including micro-granular starter fertiliser, nitrogen stabilisers and foliar applied nutrients. There will be open days for farmers closer to harvest, where we will be able to demonstrate the findings of our first year's work.

Number of Anaerobic Digestion Plants in the UK



Source: NNFCC Anaerobic Deployment in the United Kingdom 22nd April 2015

Dry Matter Challenge

The aim of our trial sites will be to develop understanding that will help growers achieve consistent yields, with the focus at this stage being Dry Matter Yield – how dry matter impacts gas yield, through anaerobic digestion, will be an area to develop in time.

With this in mind, this year we are launching a Dry Matter Challenge with the purpose being to challenge maize growers to achieve the highest level of dry matter production during one growing year. This might involve dual-cropping, the use of cover crops, or other innovative cultivation techniques such as sowing under plastic. We plan to have a series of discussion group meetings along the way so that growers can share expertise and a challenge would not be a challenge without prizes, which will be awarded in 'field scale' and 'research' categories.

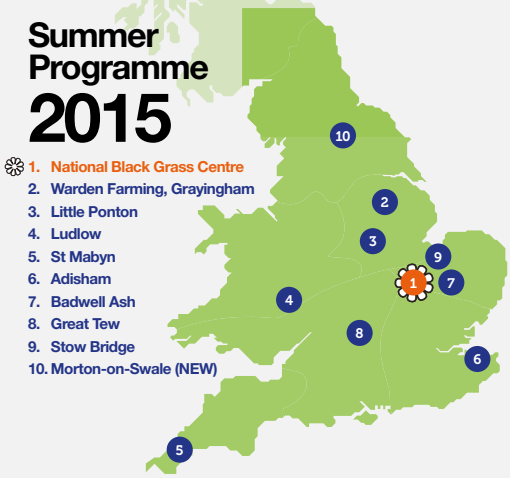
THE DRY MATTER CHALLENGE 2015

Entries will be invited in July, once the 2015 maize crop has been established. For more information please contact Dominic Bovis at Hutchinsons Energy Email: dominic.bovis@hlhltd.co.uk

Regional Technology Centres Summer Demonstration Events

AS A REMINDER Hutchinsons have a series of open day events during June and early July at our **National Black Grass Centre of Excellence** – Brampton and our regional crop demonstration sites. For further details, including a video preview and to book your place(s) – please visit our website **www.hlhltd.co.uk**

Summer Programme 2015



Pest and Disease Control in Vegetable Crops

Sean Lumley (Vegetable Technical Lead) reviews the current pest and disease issues in the main areas of vegetable cropping.

Brassica

With brassica planting well under way and crops starting to emerge from under poly, now is the time to consider early season pest and disease control.

With the cabbage root fly forecast showing egg laying reaching 10% in Cornwall on the 26th April and Blairgowrie on the 15th of May, then all crops should have been treated for cabbage root fly. Some of the very earliest plantings may well be starting to run out of protection and we could see some damage to these from eggs laid by late first generation flies towards the end of the month.

One key consideration this season is the difference in approval status of the 'Cruiser 70WS dummy pills' which were approved this year on an Emergency Authorisation. This authorisation states that no more than two neonicotinoid insecticides can be applied to any crop, including seed treatments which the dummy pill counts as. This therefore means crops treated with dummy pills should only receive one neonicotinoid foliar spray. This will not be an issue in some of the shorter term crops, but in Brussels Sprouts and Cabbage could lead to some issues, particularly with mealy cabbage aphid control. With the first capture of Peach Potato aphid forecast for between late-April and mid-May, then we must be vigilant for early colonisation of plants, particularly those under poly which are close to harvest and plants not treated with the Cruiser dummy pill. The Cabbage aphid forecast is also set for between early-May and mid-June, depending on location, throughout the UK, ensuring even more vigilance is required, especially on those crops close to harvest.

With ringspot evident in untreated overwintered crops, there is no doubt that the inoculum is there. Crop residues should be incorporated post-harvest, to avoid the green bridge onto crops emerging from under poly and new plantings. White Blister is visible in some crops but only at very low levels. However, because of a lack of curative control in broccoli in particular, a preventative approach is essential when weather patterns are conducive to the disease.

Carrots and Parsnips

With the Carrot fly reaching 10% egg laying in Cornwall on the 5th of May and on the 12th of May in Blairgowrie, then foliar insecticides should now be considered. Crops which received an insecticidal seed treatment should have around 6 week's protection from the date of sowing. Crops out with this window and which did not receive a seed treatment, should be monitored with sticky traps and once thresholds are reached, then insecticide applications should be started. Second generation carrot fly seems to be changing, with less of a peak of activity and more of a constant low level number of carrot flies throughout August and into September. This change demands more monitoring and timely applications of insecticides to minimise late season carrot fly damage.

As Willow Carrot Aphid migration has taken place between mid-April and late-May in the past, this season is average with migration starting in early May. Crops treated with Cruiser seed treatment will give early control of Willow Carrot aphid and will lower the risk of Virus transmission. Crops not treated with Cruiser will require aphid control, potentially before they require carrot root fly control. Protection of the crop is the key to the prevention of viruses such as Carrot Yellow Leaf Virus, Parsnip Yellow Fleck Virus, Carrot Tornado Virus and Carrot Motley Dwarf Complex.

Advanced crops which have been under poly will now be at risk from sclerotinia with the 'BASF Sclerotinia germination tool' showing sclerotinia germination at all sites. A critical timing for achieving good control is at 60-70% ground cover, allowing fungicides to still penetrate the bottom of the canopy. In Hutchinsons trials in a crop of Chantenay there was a large difference in the efficacy of currently available fungicides and choosing the right mix of actives is essential. A robust fungicide programme for sclerotinia using a mix of actives will also give effective control of alternaria, especially towards the end of the season.

Onions and Leeks

With spring drilled onion crops now at 2-3 true leaves, crops are now out of the stage where they lose their cotyledons, stand still and fields seem to go backwards. Weed control is generally looking good with early season moisture, followed by prolonged dry spells seeming to give higher efficacy than normal. The below average soil temperatures have also led to less germination of broad leaved weeds.

Both overwintered and spring planted sets are again weed free and should be well into their fungicide programmes. Downy mildew is easily found in salad onion crops and if weather conditions allow, warm temperatures with free moisture (even heavy dews are enough), then downy mildew will need control. With the earliest overwintered crops looking on target for a late June harvest, these crops should be on their fourth or fifth fungicide and aiming to apply the last fungicide in early June. With this sustained pressure, especially if close to salad onions or overwintered onions, then fungicides on spring sets should be started on the earliest crops which are around 6 true leaves (during week commencing 25th May), with later crops, currently at 5 true leaves, starting the following week. Drilled crops should have their fungicide programme started around the week commencing 15th of June if at or over 5 true leaves and near other allium crops. Crops which are in a low pressure area and smaller than 5 true leaves can wait until the week following before starting their programme. Programmes should generally be applied every 7 days, and only be stretched to 10 days in very dry periods. If active lesions are found, then slotting an additional fungicide between the 7 day programme can provide effective control. Fungicides are best applied in 200 L/Ha using either a standard flat fan, or an angled flat fan nozzle, alternated forward and back.

Bean seed fly and onion fly populations have been higher than normal this season, however seed treatment has controlled damage well, except on the highest risk sites which include high organic matter soil, or crops which received high organic matter applications as either previous crop residue or FYM. Thrips will be the next pest to be aware of as cereals start to ripen and thrips look to migrate into alliums. Control options are limited as pyrethroids have lost most of their efficacy leaving either 'Tracer', 'Dursban WG' or 'Calypso' (on Leeks only).

Hutchinsons specialist vegetable agronomists will be happy to guide you on the optimum strategy to control pests and diseases in your crops.

Potato Blight Control Update

Darryl Shailes (Hutchinsons Root Crop Technical Manager) **reviews current thinking on potato blight control and the limitations of the 'Smith Period' in predicting infection.**

In the last few seasons we have seen some real changes in the way we need to think about potato blight. 2007 was the first real blight epidemic to get the industry thinking that things might be changing.

If we cast our minds back, blight came in earlier than normal with severe infections widespread by about mid-June. The disease pressure did eventually calm down as the weather changed, but for a while no-one really knew how to react and blight product supply was getting very tight.

During the peak of the epidemic in 2007 many fields were being sprayed every 4-5 days with multiple tank-mixes and still the blight was only just being held. Luckily the weather eventually intervened - it became hot and dry and the blight stopped almost in its tracks.

There was a lot of R&D commissioned by The Potato Council as a result of the problems we encountered in 2007 and the 'Blight Scout' scheme was set up.

This was probably the first time that the different strains of blight were brought to the attention of anybody beyond the academic research institutes. Along with fears that we were getting sexual recombination between the two mating types that were identified (A1 and A2), it was first muted that they were forming resting spores that could overwinter. Since then, thanks to all the research that has gone on, we have come to understand a little more.

The dominant strains over the last few years have been A2 Blue 13 and A1 Pink 6.

The evidence for overwinter resting spores has not been found, although some of the strains are able to sexually recombine in the laboratory.

These newer stains of blight are however more aggressive, able to operate over a wider range of climatic conditions and some are resistant to blight fungicides such as Metalaxyl.

Since 2007 we have had 2 other very significant blight epidemics - 2012 and 2014. Both of these epidemics, in common with 2007, started very early in the season, with many crops being infected almost as soon as they came through the ground.

So what does this mean for 2015?

No one can predict whether or not we will have a bad blight year, although what we can say is that modern potato blight does not seem to have heard of a 'Smith Period'.

A full Smith Period occurs if, on each of 2 consecutive days, the minimum air temperature is at least 10°C and there are a minimum of 11 hours with a relative humidity of at least 90%.

This was the infection criteria defined by Mr Smith who worked for the Agricultural department of the Met office in the 1970's.

We know that the modern blight strains can operate outside of these parameters, but the Smith Period has yet to be re-defined. Unfortunately, most of the freely available forecasting systems such as 'Blight Watch' still use Smith criteria. However, we do know that in dry weather blight pressure will be low, as leaf wetness is a critical factor that is not even mentioned in a Smith Period. Also, by its very nature, a Smith Period is historic and a reaction to Blight pressure, whereas we need to have a more predictive model if we are not just to set a programme at the start of the season and spray every 7 days.

In recent years in trials and in the field, we have been able to see that when blight is very active, it can be difficult to control and single actives are usually not enough. In our trials conducted by Dr John Keer of 'Richard Austin Associates' and also in the Agrisearch trials sponsored by the manufacturers, it has been the products or mixtures that contain contact/protectant actives, mixed with others that offer translaminar/kickback activity, that have been the most effective. A good example and one that has done very well in our trials in recent years is 'Hubble', a mixture of dimethomorph, a translaminar active with some kick back activity and fluazinam, a contact protectant active.

In addition, when the epidemic occurs early in the season this is combined with very rapid canopy expansion and, as has already been mentioned, Metalaxyl, the only very systemic active currently available for blight control in the UK, does not control Blue 13 - which is completely resistant.

Under high early season pressure, to counteract the lack of truly systemic products and the increased aggressiveness of the new blight strains able to operate in cooler weather, we must be prepared to spray at shorter intervals (sometimes less than 7 days), with mixtures of actives or products that contain kickback and contact materials.

So for 2015 if we consider what we know and are prepared to react accordingly, as many did in 2014, then we should still be able to effectively control blight. However, if we sit back and wait for a Smith Period to come along, then do not be surprised to find blight in crops if the weather is conducive to infection.

Yield Enhancement Network (YEN) 2015

to view interviews with some of this year's YEN growers as they outline their ideas for maximising wheat yields, please see our latest video: http://www.hlhltd.co.uk/yen2015.html

Further video updates and on farm interviews will be posted during the early summer.

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

HUTCHINSONS

H L Hutchinson Limited • Weasenham Lane
Wisbech • Cambridgeshire PE13 2RN

Tel: 01945 461177

Fax: 01945 474837
Email: information@hlhltd.co.uk

www.hlhltd.co.uk