

Optimum Desiccation Strategies for Oilseeds and Cereals

In many parts of the country, the establishment of oilseed rape crops was affected by the very dry weather in September in 2014 and by the serious damage from cabbage stem flea beetle. The affected fields are quite patchy with weeds growing in the gaps, but in other regions crops have podded well and look to have good yield potential. As crops move towards maturity, desiccation and harvest aid applications can help ensure harvesting proceeds as efficiently and quickly as possible. Dr David Ellerton, Hutchinsons Technical Development Director, considers options available for use both in oilseeds and cereals.

While crop prices are relatively low at present, it is even more essential to harvest the full yield potential of crops this season. Desiccation is a vital component in maintaining that potential by evening up crops, controlling late emerging weeds and ensuring a smooth, efficient harvest. Determining the optimum desiccation strategy is crucial and a number of factors need to be borne in mind:

Desiccant Choices in Oilseed Rape and Linseed

Correct product choice, correct timing and effective application are vital in order to optimise the efficacy of desiccation. Where crops are variable, the aim of the desiccant should be to bring the maturity of the crop closer together before harvest and by definition even it up. Where crops are very variable, getting the timing right will be extremely difficult, with different areas of fields reaching the optimum timing at very different calendar dates.

Where glyphosate is chosen, crops should be regularly inspected from the start of senescence. In crops which are relatively thick and even and the majority of the yield is likely to come from the main raceme,

then a representative area of each field should be selected and 20 middle pods from the main racemes collected. Each pod should be opened and if a colour change from green to brown is seen, in at least two thirds of the seeds per pod, in at least 15 of the pods picked, then crops should be sprayed within 4 days, or 7 days in cool conditions.

Ideally crops should be sprayed in the morning when the plant's metabolism is responding to increasing light levels and therefore at its most active and likely to take up the chemical. In addition temperatures should definitely be less than 25°C, as high temperatures cause the plant's metabolism to slow down, reducing the uptake of the desiccant.

An interval of at least 14 to 21 days should then be left before combining.

Where crops are thinner and plants are well branched, yield from the main raceme is less important and timing should be built around the maturity of the primary branches, which will provide the bulk of the yield, rather than the main raceme and so application will be slightly later.

Hutchinsons' AGRONOMY ADVICE

Hutchinsons is committed to providing expert agronomy advice that is tailored to the specific requirements of each client's individual crop and field conditions.

During our longstanding relationships with UK farmers we have experienced variable agricultural economic conditions, sometimes positive and at times less so. We recognise that conditions at present are challenging.

Whatever the financial position of UK agriculture at any point in time, our agronomic advice concentrates on the best interests of our clients' crops and their businesses, whilst taking into account all relevant factors.

Our core belief is that this is a policy that brings significant benefits to us both and, as an independent family business, Hutchinsons are well placed to understand that to be successful in agriculture it is vitally important to be able to take this long term view. Our current priority is of course to help you to realise the potential of this year's crops.

I hope you enjoy reading this issue of Fieldwise and that it provides some helpful background to the detailed advice on farm. You are most welcome to view our crop trials at our Regional Technology Centres around the country this summer and we look forward to seeing you there.

David Hutchinson
CHAIRMAN



Pod Sealant

If crops are extremely variable, or where growers are prepared to optimise the timing of both pod sealant and desiccant, there is a strong case to be made for a pre desiccation use of a pod sealant rather than in tank mix with the

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>>> desiccant. Modern pod sealants work by creating a mesh around developing pods and along the seam, which prevents pods from splitting and losing their seed. Applying a pod sealant prior to desiccation, particularly one which offers a higher level of flexibility to enable pods to expand after application, will ensure the more forward pods retain seed, while enabling the more backward areas to catch up in maturity following desiccation. It will also limit damage to forward areas caused by machinery during application of the desiccant, particularly within the tramlines.

Optimum timing of the pod sealant is when the majority of pods are at full size and light green - typically mid June. At this stage pods are still pliable and can be bent into a U or V shape without splitting. However, growers should be aware of the need to rinse the sprayer immediately after application with a non-ionic wetter, to remove any remaining pod sealant.

As far as the timing of the desiccant is concerned, this should be decided in the way described earlier, based on the majority of the crop, as long as most seed has entered the 30-35% moisture content zone.

Your Hutchinsons agronomist will be able to offer guidance on the most suitable strategy to adopt on a field by field basis.

Formulation Choice

Different formulations of glyphosate are likely to have a huge impact on the success or otherwise of the desiccation strategy this season. Formulations based around ingredients such as tallow amines, which tend to burn the plant, are unlikely to be as effective in evening up a canopy as some more advanced formulations, which allow more glyphosate to penetrate the plant, without impacting on a plant's metabolism. This will result in more translocation around the plant, pods will be less brittle and growers will see more even ripening of the crop, as long as time is given for moisture loss from the stems. In this situation this is likely to take a minimum of 21 days and growers should not be tempted to rush in before this stage. Another benefit of newer glyphosate formulations is improved rainfastness, which could be critical if we are to achieve optimum results.

Again our agronomists will be able to recommend the optimum formulation on your crops.

Another option:

Another alternative is to use diquat at a later stage than glyphosate, when 90% of the seed in the middle third of pods will be reddish brown to dark brown, with a few seeds black. The remaining 10% seeds

will be green, but must be firm and pliable. Timing the application in very variable crops will also be extremely difficult and the use of pre desiccation pod sealants is perhaps even more important here than where glyphosate is chosen.

Where pre desiccation pod sealants have not been applied, they should be tank mixed at the desiccation timing to reduce seed losses caused by pod shatter and retain the bulk of the seed produced. In some cases it may be necessary to follow up an earlier glyphosate desiccation with a diquat application in more backward areas of the crop.

Weed Control

A further benefit of desiccation is control of weeds in the base of the crop which are most likely to occur in thinner areas of the crop. It is important to apply glyphosate in a minimum of 200l/ha of water in this situation to aid penetration. Where even desiccation is achieved, combining is made considerably easier and quicker, resulting in savings in fuel and labour as well as maintaining quality and yield. Crops grown for seed should not be treated with glyphosate, as germination could be impaired.

The other alternatives to chemical desiccation are to leave crops to mature naturally, or to swath, but these are unlikely to be the ideal choice in many crops, particularly if they are uneven and should the weather turn catchy. In addition wet weather after swathing can lead to late season diseases such as *Alternaria* building up in the swath leading to pod shatter.

Linseed

Linseed is more common this season than for many years and where growers have drilled crops of linseed this spring, desiccation with glyphosate should take place at the brown capsule stage, when seeds are light brown and rubbery, lower leaves are withered but the upper leaves and stem are still green/yellow. An interval of 21-28 days is necessary before combining.

If diquat is used, ideal timing is when the seed capsules are dark brown with the seed inside light brown. At this stage the seed should also rattle in the bolls and the stems have turned yellow just below the capsule. Water rate should be 300-500 l/ha and direct combining occur 10-20 days after spraying, preferably in bright sunny conditions, when the seed is below 14 % moisture content.

Cereal Desiccation?

While desiccation has become the standard method for harvesting oilseed rape, cereals are relatively rarely treated with glyphosate as crops begin to mature. However, certain circumstances can justify its application:-

- Crops infested with perennial weeds e.g. common couch or perennial thistle
- As a harvest aid to control annual weeds e.g. bindweed
- In order to reduce moisture content of grain and straw (reducing sieving and threshing losses). A drier crop allows for increased speed of combining which may be vital in catchy harvesting conditions.

Another key benefit is desiccation of secondary growth and late tillers in thinner winter and spring crops. In this case dose rate should be greater than the standard low harvest aid rates and a minimum of 14 days left before harvest.

Cereals should be treated when grain moisture content is less than 30%, which may be ascertained by pressing the thumbnail into the grain. If the indentation holds then the crop is ready for spraying.

Another method is to apply glyphosate when the peduncle, situated at the top of the stalk, immediately below the ear, starts to lose its green colour and turns brown. As with oilseed rape, in variable crops application should be timed when the majority of the crop has reached the appropriate stage. Water rates of 100l/ha should be adopted.

Growers are reminded crops grown for seed should not be treated with glyphosate as germination could be impaired.

One alternative for treatment of laid crops of barley and oats, intended for stock feed only, is diquat, which should be applied when the crop is mature for combining. This will normally take place after 4-7 days.

With many good potential crops this season, getting your desiccation strategy right could be crucial in maintaining high yields, and your Hutchinsons agronomist will be able to provide expert guidance on the best strategy to adopt in individual fields, to ensure optimum return from crops.



Autumn Cereal and Oilseed Rape Options 2015

Peter Brundle (Hutchinsons Commercial Seeds Specialist) takes a look at the latest entrants to the HGCA Recommended List and gives his recommendations for varieties to sow this coming autumn.



Winter Wheat

Ten years ago the UK wheat market was focused on quality bread and biscuit making varieties (see figure 1). Three quarters of the market was based on the marketability of wheat. In recent years the market has been dominated by feed wheat varieties with lower quality characteristics which have challenged the country's ability to trade in increasingly competitive export markets.

We are starting to see a change back to wheats that combine high yields with good quality characteristics for both domestic and export markets.

All of this autumn's new HGCA recommended varieties display these characteristics:

- **KWS Trinity** (Group 1)
- **KWS Lili** (Group 2)
- **Britannia and RGT Conversion** (Group 3)
- **Reflection and Costello** (Group 4)

Last autumn's sowings also saw a trend towards more robust agronomic varieties with market share growth from **Skyfall, Crusoe, Revelation, Leeds, JB Diego** and **Evolution**. We would expect these varieties to maintain their popularity this autumn. The variety **Belepi** has also proved popular with growers due to its wide drilling window and competitive growth habit.

Winter Barley

Winter barley also saw an increase in popularity last season. Feed varieties dominate this sector with the main choice between high yielding conventional two row varieties and the flexible six row hybrid's.

KWS Infinity is the highest yielding two row barley on the recommended list joining the already popular **Glacier** and **Tower**, which are all Retriever x Cassia crosses.

Hyvido Fletcher joins **Hyvido Volume** as a hybrid barley which performed exceptionally well in 2014. A wider sowing window coupled with vigorous and

competitive growth characteristics should continue to prove popular with growers looking for effective grassweed control.

Oilseed Rape

The oilseed rape variety options have never been better, with new entrants from most major breeders offering diverse genetic options for growers this autumn.

The risks associated with establishing and producing an economic return from the crop are high and growers are advised to select from the newer options available to manage this risk.

Vigorous establishing varieties that display good tolerance to Light Leaf Spot, Stem Canker and Verticillium Wilt should take precedence;

- **New Hybrids – SY Harnas, Fencer, Popular** and **DK Exalte** are all good choices.
- **Established Hybrids – Harper, Incentive, PT211** and **PR46W21** are also very sound choices.

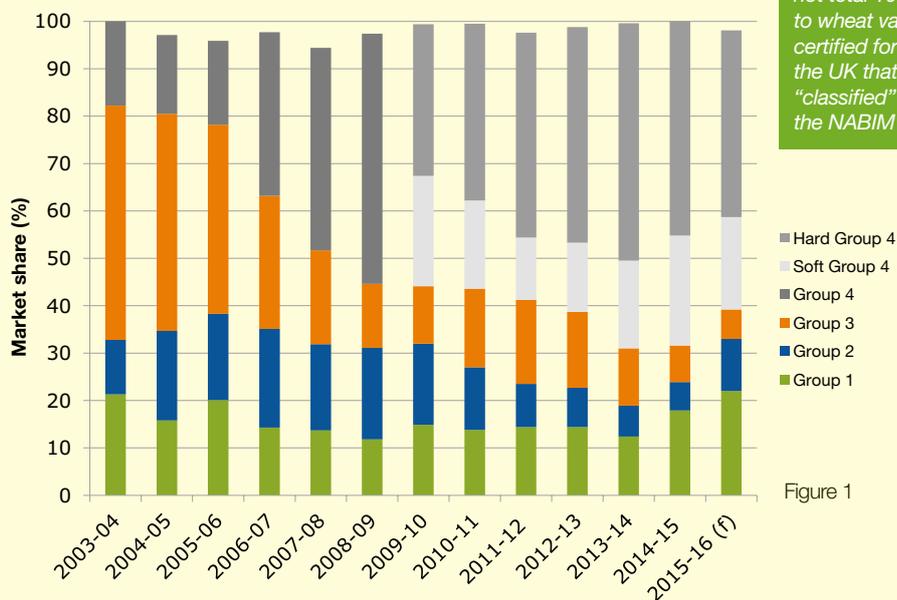
Conventionals – KWS Campus is the stand out new variety in this sector and has a recommendation for East/West and North regions.

If weed control is an issue, then Dekalb and Pioneer have some effective Clearfield® variety choices including **DK Imperial** and **PT229CL**.

The gross output results from the conventional variety **Amalie** will be interesting, as the full benefits of its unique TuYV resistance should be more readily quantifiable.

All of the above varieties are fully detailed in Hutchinsons new 'Seed & Varieties Information Book' and will also feature in our extensive Regional Technology Centre trial sites this summer (see our website for details of the dates and locations).

The UK certified wheat market by nabim groups



**In some years market share does not total 100% due to wheat varieties certified for use in the UK that are not "classified" using the NABIM system.*

Figure 1



Fieldwise Nutrition

Tim Kerr (Hutchinsons Fertiliser Manager) explains that auditing the farm fertiliser policy and having a considered nutrient management plan will pay considerable dividends.

“An investment in knowledge pays the best interest”

– (Benjamin Franklin)

It is, let's face it, unlikely that Mr Franklin was referring to the knowledge that we have of our soils when he uttered these words. Yet, how accurately it captures the essence of what growers and advisers alike need to address when it comes to getting the best out of the soil as a growing medium.

Fertiliser manufacturers and distributors have been busy promoting new season nitrogen offers – inevitably casting grower's minds forward to the next cropping year, despite the fact that we are far from finished with the current year.

The thought of investing thousands of pounds in, what is invariably the costliest input into field grown crops, before cropping plans are finalised will be anathema to many, particularly in these very challenging economic times.

However what should be encouraged is that growers and their advisers undertake a detailed review of crop nutrition inputs – in terms of suitability, quality and timing. What might appear a bargain today can become a liability later if it is not the right product for the soil, and of the right quality to be accurately applied.

A few hours invested in auditing the farm fertiliser policy will, at the very least, confirm that it is up to date.

Detailed soil testing

Regular measurement of your soils has to be the starting point to understanding not only what they contain, but also how applied nutrients are likely to behave when applied. What would be classed as a standard soil or loam test offers a basic picture of phosphate, potash, magnesium and pH levels. Whilst it does provide

useful information, this type of test has its limitations and is to some degree a one-dimensional measurement of the soil.

More detailed tests can reveal the soils ability to retain and release nutrients and conversely the inherent risks of nutrients being leached or locked up. A knowledge of soil texture, organic matter content and Cation exchange capacity will be valuable in the crop nutrition audit process and this can be done at a small cost over the standard soil test.

One example which can lead to a potential yield benefit as well as cost savings is actually quite a common scenario;

The soil pH is (6.0 – 6.5) below the ideal range and oilseed rape is grown as a cereal break crop. The Phosphate index is 2.

It is understood that liming will reduce the risk of club-root and enhance the availability of several essential nutrients, in particular phosphate.

Current farm policy is to apply DAP to the seedbed to supply autumn Nitrogen and a maintenance dressing of phosphate - in order to apply 30 kg of N, 166 kg of DAP is applied. Ground limestone is also applied, also pre-planting.

In this scenario, the OSR will not get the full benefit of the DAP – as the phosphate is immobile and will only become less available over time. Nor will the soil pH be amended in time for the rape being sown. Nett result – a relatively inefficient use of two inputs.

Firstly if the lime was applied in the previous autumn it would have the necessary time to correct the soil pH. Secondly if LimeX70 was used as the liming material – applied at 5 tonnes per ha – this would provide a minimum of 50 kg of phosphate applied from the LimeX70. This would buffer the soil phosphate supply, allowing the phosphate required to be applied as a starter fertiliser with the rapeseed.

Applying 10-20kg/ha of Primary P microgranular fertiliser along with the rape



seed will supply available phosphate in the all-important rooting zone adjacent to the emerging seedling. This approach will maintain soil P levels, and get better utilisation of the plant available Phosphate in Primary P by placing it next to the seed.

In this scenario there is one less pass through the field, the nutrients and lime are applied in an effective and appropriate form leading to more efficient utilisation with corresponding yield response benefits and yet there is a tangible cost saving.

LimeX70 is the UK's leading liming product – it is widely available and contains valuable levels of Magnesium and Sulphur as well as the phosphate mentioned earlier. It is worth re-iterating the benefit of planning ahead and liming one year in advance of the planned oilseed rape area.

Hopefully at this point we can see what the quote at the beginning of the text refers to – getting the best out of what is spent on nutrition is more about understanding and managing your soils and less about picking the right day to buy fertiliser.

Returning to the subject of nitrogen – and early season offers... The good news is that Ammonium Nitrate is at its lowest starting point for many years. It remains a strong possibility that whenever you buy next year's nitrogen fertiliser it will be costing less than last year, or the year before that.

When it comes to making purchases, it is generally recognised that spreading the purchases and consequently the payments throughout the year makes good sense. We would strongly advocate investing more time in the knowledge of the soils you are working with, and the way fertilisers respond. A well thought out nutrient management plan will give the grower every chance of optimising yields, and will offer much greater reward than any bargain hunting will achieve.



'Flood or bypass' drainage to cultivation depth with ploughing or deep tine tillage.



'percolation' drainage in well-structured silty clay loam employing 'surface tillage'

Fieldwise Focus on Drainage

Dick Neale (Hutchinsons Technical Manager) points out the numerous benefits of an efficient drainage system, particularly in heavy clay soils.

Never ignore the basics!

In our work at Brampton one thing has become abundantly clear since the autumn of 2012, you cannot actively manage heavy soil where the drainage is inadequate.

The UK yield plateau has been widely investigated in recent years but very few reports make reference to field drainage and this should be considered a vital component in our desire to move yields forwards again.

The preference for black grass to seek out damp soils is well understood and at Brampton we have identified the basic management strategies that need to be employed. These include the need to delay sowing, but we have two

fields where failed field drains, installed during the 1950's, have highlighted the frustrations of farming wet soil.

Seedbed cultivation techniques bring no long-term solution, surface til, shallow or deep min til and ploughing have all been practised, but as the rain falls in late autumn and early winter the crops in these fields simply fail as roots increasingly find themselves in water logged soils to depth. As the water levels rise against the impervious lower clay soil, crop growth is impaired and slug grazing increases. Surface ponding in heavy rainfall events then sees a separation of the silt fraction as the weather pounds the surface soil which is unprotected by vigorous crop growth, plugging the soil surface pores, and then

it's 'all over bar the shouting'. Another crop with failed patches.

For most UK soils, impervious clay at depth is the area to be addressed. The cultivated area of soil sees reasonable water movement throughout the profile via natural fissures, worm burrows and previous root passages but without effective movement of water from the lower clay fraction, drainage water will back up until it impacts on the growing crop and soil stability, as happened in autumn 2012 and has been repeated in these fields during the autumns of 2013 and 2014.



In the wet areas at Brampton, the cause has now clearly been identified as a failure of the tile drainage system. Inspection with a digger has revealed collapsed clay tile drains and no permeable back fill meaning that the past 60 years have seen the tiles encased in a tight layer of silty clay washed into place via drainage waters. Drainage water still follows the lines of the tiles but with no functioning outfalls and random collapses and blockages the result is unstable soils with frequent ponding.

Deeper soil movement is often practised in an effort to improve the drainage of soils ...this simply increases the speed of infiltration, it does not improve the movement of water from the field to a ditch. In clays, only good drainage pipes with permeable back fill can do that.

At Brampton the permeable layer of soil is around 450mm deep and natural drainage through this zone is generally good with natural fissuring, worm burrows and old root passages all playing their part.

Around half this depth is regularly cultivated on many soils. At Brampton at depths below 450mm we are into impermeable clay and this is where natural water movement slows to a trickle.

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>>> The autumn of 2012 highlighted clearly how vital good field drainage is. For many it has been a case of focussing on ditch clearance to allow still functioning field drains to empty unimpeded, for others the use of jetting has reinstated drain function but for many there has been a realisation that their old field drain installations are failing.

Data from North America

Field drainage may have been ignored as a significant factor in the yield plateau in clay based soils, but 2012 Nuffield scholar Rob Burtonshaw found some impressive yield improvement figures across North America where drainage of arable land is still a major feature in farming budgets annually.

With ongoing land drainage featuring so prominently, there is frequent opportunity to measure yield pre and post drainage and in drained vs un-drained situations.

For spring and winter cereals the yield response is between 33-38% ...that would take the average UK winter wheat yield to in excess of 11T/ha and this is a database extending back 20 years with 136,500 data points. While overlaying this data to the average yield for the UK may seem rather simplistic, in reality heavy clay soils tend to yield above the UK average of 8.4t/ha so have even greater potential to increase yield in response to effective drainage.

Beans have almost 30,000 data points over 20 years, recording a 21% yield increase and 10 years of rape data has recorded a 13% increase in yield.

In soils with a consistent clay base, the installation of a well-planned mole system can bring relief from wet soils. GPS location and steering can result in some very efficient installations but understanding soil zones is critically important to avoid simply moving a wet soil problem from one area into another.

Well drained soil is fundamental to efficient crop production and in calculating its value we should take into account;

- **Increased yields - comparable to the response to fungicides**
- **Easier working soils**
- **Improved seedbeds**
- **Reductions in slug populations**
- **Reductions in seed rates due to increased % survival**
- **Reductions in 'wet land' weeds i.e. Black grass**
- **Improved residual herbicide performance.**



The meeting of minds to make science work in the field

Jeremy Macklin (Hutchinsons Director of Technology & Innovation) reports on a visit by scientific staff from Rothamsted Research to see field-based development work that Hutchinsons are conducting, to help farmers control problem weeds and improve the utilisation of nutrients and water.

A key part of the Hutchinsons technical program is to build close relations with the UK's leading research organisations. This allows our agronomists to bring to growers the best objective advice to help them grow the best crops. As part of this work, we are involved in a number of collaborative projects with Rothamsted Research.

Achim Dobermann (Director and Chief Executive of Rothamsted Research) is also keen to ensure that the research at Rothamsted is closely linked to grower needs, and has tasked his researchers to spend some of their time in close collaboration with grower and agronomy organisations. This was the context for a full day visit from twelve researchers, including Achim, to Hutchinsons flagship development platforms on 15 May.

The first location was at the National Blackgrass Centre of Excellence (at Brampton, Huntingdon) where the researchers learned from Andrew McShane, Hutchinsons Managing Director, about the many activities of our business, including the importance of objective advice to satisfy grower expectations. The researchers were then able to see how technical manager Dick Neale had applied some of their research work from the HGCA weed control manual to develop practical solutions for growers.

The researchers were very interested in work with hybrid barley and spring barley as part of the blackgrass management programme, and also the bespoke machinery developments for soil management. Perhaps the greatest interest was in the work with glyphosate, and the importance of the timing of applications to avoid the potential build-up of allelopathic residues in the soil.

After a full morning, the team moved on to our new research farm for nutrition and crop establishment at Hockwold where they were welcomed by David Hutchinson. David explained how important it was for the Hutchinsons technical team to be close to leading thinkers from Rothamsted Research, and encouraged both parties to think of collaborative research projects.



Nick Strelczuk from the Omnia team was able to show the visitors how farmers are embracing Precision Farming, and the researchers were encouraged to see how the Omnia programme can translate the many different layers of information into concrete agronomic advice. Out in the fields, Dick Neale was able to interest the researchers in the overall analysis of the soil health on the farm and the different steps he proposes to take to enable the farmer to reach peak yields. There was great interest in the cover-crop work which is ongoing, as well as some of the many different mineral fertiliser trials.

Back in the barn at the end of an information-filled day, **Achim Dobermann** reflected on the different roles of Rothamsted Research. *"The laboratory work we do is vitally important to initiate new ideas, but these ideas can only become useful to farmers through close collaboration with the farming community. What we have seen today at Hutchinsons has been very interesting, both in terms of the quality of the developments but also in terms of the scale of work that you do. These two sites are great examples of how collaborative research and development programmes can be optimised."*

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

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