

## Metaldehyde stewardship to protect birds and small mammals

Many farmers rely on metaldehyde pellets to keep slugs under control. To help farmers achieve best practice around pellet use the Metaldehyde Stewardship Group (MSG) has introduced new guidelines for protection of birds and small mammals. These are in addition to existing guidelines for protection of drinking water, meaning even more care needs to be taken by farmers applying slug pellets. This is vital to protect the environment and maintain the ongoing use of metaldehyde. Crop production specialist, Dr Reuben Morris, explains the changes and their importance.

Metaldehyde slug pellets must now only be used as part of an Integrated Pest Management (IPM) programme to help minimise slug infestations and reduce the need for treatment.

### What does an IPM approach to slug control involve?

- Identification and analysis of the potential risk factors associated with slug damage
- Consideration of the most suitable cultural control techniques to help reduce slug habitats and overall pressure
- Trapping and understanding of thresholds to help justify treatment decisions
- Monitoring of crops while they are most vulnerable and assessing if further applications are required
- Record keeping and forward planning to improve IPM programmes for the next year.

### Protection of birds and small mammals

A new MSG guideline for protection of birds and small mammals means that no pellets are to be allowed to fall within a minimum of 10 metres of any field boundary. The field boundary is measured from the edge of non-cropped land, i.e. land taken permanently out of agricultural production, including Cross Compliance protection buffers for hedgerows and watercourses. Grass buffers, wild flower margins and conservation headlands are cropped land, but since these are havens for wildlife, it's best practice to minimise slug pellet application to these areas.

The new guidelines are currently voluntary but will become statutory when metaldehyde products are re-registered, likely in 2018. In the meantime, from October 2017, [Red Tractor Assurance](#) includes a new

metaldehyde stewardship key standard that must be recorded. See the latest Combinable Crops and Sugar Beet Standards for details.

The complete MSG guidelines are now:

- Metaldehyde slug pellets must only be used as part of an Integrated Pest Management (IPM) programme to help minimise slug infestations and reduce the need for treatment. [Click here](#) for the steps to consider and adopt as part of an IPM programme
- No pellets to be allowed to fall within a minimum of 10 metres of any field boundary or watercourse
- Use minimum active per hectare to avoid drainage / run-off losses
- Maximum application rate 210g metaldehyde a.s./ha. For additional protection of water, suppliers and BASIS advisors may recommend rates reduced to 160g a.s./ha or less\*
- Maximum total dose from 1st August to 31st December: 210g metaldehyde a.s./ha. For additional protection of water, suppliers and BASIS advisors may recommend rates reduced to 160g a.s./ha or less\*
- Maximum total dose rate: 700g metaldehyde a.s./ha/calendar year\*\*
- Do not apply when heavy rain is forecast
- If drains are flowing do not apply metaldehyde based slug pellets.

\* From any combination of metaldehyde products

\*\* 700g is also the statutory limit. a.s.: active substance (or active ingredient)

**For the latest advice on metaldehyde stewardship, speak to your local Frontier contact or visit [www.getpelletwise.co.uk](http://www.getpelletwise.co.uk).**

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**Reuben Morris**  
Crop production specialist



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# Managing grass weeds effectively after harvest

**Cultural controls are an important part of grass weed management, particularly pre drilling cultivations, but soil moisture, conditions after harvest and existing weed seed banks from previous years can all influence the success of any given technique. Research and technical support manager, Christine Lilly considers the most effective approaches for a variety of weed challenges.**

## Black-grass

The primary target for many, black-grass is an annual weed propagated solely from seed. Survivors of cultivation or herbicide can re-establish themselves in the next crop, so great effort is needed to minimise seed return.

For black-grass control as a way of reducing the seed bank prior to a winter crop, stale seed beds can be a successful tool as long as conditions are suitable. Shallow cultivation of the break crop or cereal stubble is needed post harvest, combined with sufficient soil moisture to allow the black-grass to germinate. Avoid cultivating to more than 5cm as deeper operations will bury black-grass seeds. If conditions are very dry, it's better to leave the stubble untouched or until sufficiently wetted before cultivating to allow natural degradation of the seed. Shallow cultivations also mean that residual herbicides may be more effective on the subsequently shallower rooted black-grass that emerges. Non inversion tillage is more effective in seasons with lower black-grass dormancy, when conditions are warm and dry during ripening.

If black-grass control has been poor in the current season's crop then ploughing may be beneficial. This generally works best if ploughing hasn't taken place for several seasons. Burying seed below the germination depth (>5cm) generally means that 70-80% of the seed bank will decline per year. However, if the number of seeds ploughed down is in the thousands per hectare, then an 80% decline potentially still leaves a huge number of seeds in the seed bank. As has been shown at Frontier's Staunton in the Vale 3D Thinking site, ploughing needs to be done effectively with attention to the set up of skimmers and with favourable soil conditions. Having to follow the plough with a set of discs to break down clods has negated any benefits of full inversion from the plough. In many cases, autumn ploughing followed by a spring crop has been more successful. Currently most soils will have sufficient moisture to allow black-grass to germinate.

## Bromes

Where bromes are the bigger issue, ploughing is more effective than non inversion tillage. However, there are differences between brome species and they can be easily confused. Sterile brome is the most common, with great brome being found mainly in East Anglia. Soft brome is very common but can be confused with meadow and rye brome. Cultivate immediately after harvest for sterile and great brome to no deeper than 5cm, as both germinate in the dark. Seeds should then germinate and can be sprayed off. If in a direct drilled situation, chopped straw may also give good seed cover, negating the need to move soil.



For other bromes, leave seed uncultivated on the surface for at least a month after harvest as they are generally under-ripe. Early cultivation enforces dormancy and reduces subsequent germination as seeds need light to germinate.

References: 'Everything you really wanted to know about black-grass but didn't know who to ask'. Dr S Moss - Rothamsted Technical publication, 2013. Brome plants pictured supplied by Dr S Moss.



### Wild oats, ryegrass and AMG

Cultural control has been less effective for wild oats with protracted seed emergence, seeds surviving in the soil for many years and emergence from depth. However, leaving seed on the surface allows for more predation and seed germination, which requires moisture and temperatures over 6°C.

Ryegrasses are difficult as the germination period can last until November, so stale seed beds aren't that effective. Seed can also remain viable in the soil for over five years.

Annual meadow grass is reduced by stubble cultivation.

### Grass weed management prior to winter oilseed rape

The options for cultural control before an oilseed rape crop are fewer due to the need for a rapid turnaround between crops. The main aim with oilseed rape is strong, rapid establishment, not only against pests but also to compete with weeds. Minimal soil disturbance before sowing can help reduce weed germination. Avoid sowing into dry seedbeds as this can induce secondary dormancy of the rape, leading to low vigour crops once they emerge which are uncompetitive with the weeds.



*Weeds flourishing in a stale seed bed. Time spent on preparation is a good investment.*

Many crops are now being drilled with low disturbance methods, which ensures black-grass doesn't germinate from depth. This method can aid performance of residual herbicides such as propyzamide and carbetamide.

### Non selective herbicides

Once effective germination has been achieved in stubble or after cultivation, spray off with a non selective herbicide.

Pre drilling glyphosate is important in all crops for control of emerged weeds. In conjunction with cultivations it can also help prevent glyphosate resistance evolution by killing any survivors. Table 1 shows the effect of glyphosate application timing and cultivation effect in the previous OSR stubble prior to winter wheat being drilled. Early timing was 1 leaf of the black-grass and mid timing was 2-3 leaf. At drilling, half the plot was shallow cultivated. The following wheat crop received a full herbicide programme and final black-grass heads/m<sup>2</sup> were counted.

Applying glyphosate too early, before full black-grass emergence in the stubble, allowed more heads/m<sup>2</sup> to be present in the following wheat crop compared to the later timing, when more black-grass had emerged at the time of glyphosate application. Cultivation prior to drilling reduced final heads/m<sup>2</sup> in the following wheat crop.

Taken in isolation, cultivation, drilling date, choice of crop species and herbicides will do nothing to dramatically reduce the grass-weed population, but with an integrated approach, success can be achieved.

	No cultivation prior to drilling (heads/m <sup>2</sup> )	Cultivated prior to drilling (heads/m <sup>2</sup> )
Glyphosate 540 g/a.s (early timing)	994	392
Glyphosate 540 g/a.s (mid timing)	127	63

**Table 1: AHDB, ADAS, distributor and manufacturer trial at Frontier's Wickenby 3D Thinking site in 2016/17**

“The options for cultural control before an oilseed rape crop are fewer due to the need for a rapid turnaround between crops.”

**Christine Lilly**

Research and technical support manager





# Chaff lining trials investigate harvest weed seed control efficiency

Retention of weed seeds at harvest varies depending on species and time between seed maturity and harvest. Annual ryegrass, bromes and wild oats have high seed retention at crop maturity, retaining 88%, 73% and 85% of the available seed at harvest respectively (M Walsh 2016). Black-grass on the other hand can be more variable, with seeds generally shed over time as they mature. To reduce the volume of seed being added to the existing seed bank, various harvest weed seed control approaches have been investigated, including direct baling of harvest residues behind the combine, collection and removal of the chaff fraction, harvest seed destruction and chaff lining. As Frontier begins to investigate the effectiveness of chaff lining, crop production technical lead, Dr Paul Fogg shares details of this harvest's innovative trials.

## What is chaff lining?

Chaff lining utilises a chaff deck to collect the chaff fraction of the post-harvest crop residue, which is then deposited on the ground behind the rear wheels via two hydraulically driven conveyor belts (Figure 1 and 2). The theory is that this consolidates the weed seed fraction instead of spreading it over a 6–8m bout width and places the weed seeds into a hostile environment, where conditions are more challenging when it comes to germination and subsequent emergence. Ideally, the chaff is dropped onto “permanent” tramlines which are more consolidated, which again should impact the weed seeds ability to establish. This system is particularly well suited to auto-steer harvesting where A and B lines remain fairly constant from year to year or a controlled traffic farming system (CTF).

Trials in Australia looking at ryegrass suggest that seeding survival was low when placed under oilseed rape and barley chaff relative to winter wheat (Table 1).

## Current UK trials

As part of its 3D Thinking trials programme, Frontier is evaluating the chaff lining approach this season in collaboration with E W Davies Farms of Essex, Primary Sales Australia, Rothamsted and AHDB. The chaff deck has been fitted to the farm's 780 Class Lexion combine



“As part of its 3D Thinking trials programme, Frontier is evaluating the chaff lining approach this season.”

**Dr Paul Fogg**  
Crop production technical lead

which has a 12.2m MacDon D65 header and is operated under CTF. This year's trial is looking at the potential of the system to add another option to the integrated approach already being used to manage black-grass. Trialled in a crop of Volume winter barley with a background black-grass population of 200–250 heads/m<sup>2</sup>, the standard farm treatment of all straw chopped will be compared to the chaff lining approach and a straw removal treatment throughout the season.

One of the initial questions was whether the chaff deck could cope with the increase in crop biomass of the UK crop. The crop was cut on 11th July; spot yields were in excess of 11t/ha and the system worked well (Figure 3 and 4).

Chaff type	Chaff t/ha	Survival %	
		At seeding	Anthesis
Oilseed rape	31	2	0
Wheat	19	74	10
Barley	18	3	0

**Table 1: Survival of annual ryegrass at seeding and crop anthesis following placement under a chaff line during the previous harvest. Source: [Harvest weed seed control systems for the northern region - GRDC](#)**



Figure 1: Installed chaff deck



Figure 2: One of the two chaff deck conveyors



Figure 3: Chaff deck in operation



Figure 4: Chaff fraction being deposited behind the combine rear wheels

To keep up to date with the trial, follow @FrontierAg or search #Chaffdeck on Twitter.

# EFA changes present opportunities for green cover

The EU Commission recently voted in favour of a ban on pesticide use in Ecological Focus Areas (EFAs) and many growers are unsure of how and when their farms will be affected. Kings' eastern technical advisor, Paul Brown outlines what we know so far and reassures growers that although a change may be required, EFAs can still be valuable.

## Legislation changes

The EFA changes proposed by the EU are for 2018; EFA rules in 2017 are not affected. All 2017 needs will already have been confirmed with this year's BPS application, so there is no need to do anything now. The changes are still a proposal and we await full confirmation.

However, a ban is expected on agrochemicals on peas and beans in EFAs. Growers will therefore likely have to turn to other EFA options in 2018, so it's worth thinking ahead to which best suit your business: fallow, hedges, buffers or catch and cover crops.

We expect catch crops (planted between harvest and autumn drilling) and cover crops (planted between harvest and spring drilling) to become more popular and these will need to be planned for autumn 2018. If you're likely to use this option, it might be useful to try an area this autumn.

## The cover and catch crop option

Green cover and catch crop planting has become increasingly widespread in recent years and is still rising. Bringing soil improvements, higher following cash crop yields and lower cultivation costs, these crops are now well established on many farms as a vital part of the rotation and soil management planning.

## Planning

The best option varies from farm to farm, so unfortunately there is no blueprint. Taking expert advice on the most suitable species, establishment, management and destruction is key to success, but here are some points to consider:

- **Identify your goals.** Do you want to improve soil health and structure, avoid nitrogen loss from overwinter leaching, facilitate direct drilling or minimal cultivations, reduce nematode and soil pest levels, meet EFA requirements or a combination of these?
- **Consider the whole rotation.** Some crops are incompatible, such as mustard in a rape rotation.
- **Sow early at a suitable rate.** Early drilling allows maximum time to achieve results, but the seed rate must be right; too thin a crop won't do the job.

- **Plan destruction in good time.** Consider timings and methods, taking advice where needed.
- **Meet the criteria** if using as an EFA option.

## Catch and cover crop EFA rules

It's important to check the full guidelines, but the key rules for EFAs are:

**In England,** both catch and cover crops must be a mixture of at least 1 cereal, oat, barley or rye, mixed with at least one non-cereal: radish, mustard, phacelia, vetch, lucerne. Both categories must be visibly present but the ratio isn't specified, allowing growers to select a mix that really suits their needs.

Catch crops must be established by 31st August and can be destroyed after 1st October.

Cover crops must be established by 30th September and can be destroyed after 15th January.

**In Scotland,** a catch crop must be a cereal nurse crop with undersown grass, established between 1st March and 1st August and retained until 31st December.

Cover crops must consist of two or more of only the following crops: alfalfa, barley, clover, mustard, oats, phacelia, radish, rye, triticale and vetch, established between 1st March and 1st October and maintained until 31st December.

**For expert advice on the best options for your business, speak to your local Kings or Frontier advisor or call 0800 587 9797.**

"Growers will likely have to turn to other EFA options in 2018, so it's worth thinking ahead to which best suit your business."

**Paul Brown**  
Kings' eastern technical advisor





# Successful OSR establishment

With harvest already underway, it's worth taking time to consider what's next in the rotation and plan any actions necessary to ensure yield potential is not compromised from the start. Each season presents its own challenges, but oilseed rape has a tremendous capacity to perform in difficult conditions once it's well established. Crop production specialist, Paul Cartwright and national crop nutrition technical manager, Edward Downing advise how investing in your crops during the early growth stages will leave them in the best possible shape to deal with the challenges of the year ahead.

## As big as possible, as early as possible

Building a deep root structure anchors the crop to the ground and provides access to the largest possible volume of soil from which to draw nutrients and water. There are few stress situations that an OSR crop might encounter where a far-reaching root system is not a benefit; for example, periods through the winter where soils sit wet, or in areas prone to drought stress during pod filling in the spring. Where pest grazing occurs, crops with healthy root systems tend to put on more foliage and are consequently better able to grow through early leaf damage caused by slugs or flea beetles.

Plants with bigger leaves and longer petioles are also less prone to damaging phoma infections, which will provide some flexibility in fungicide application timings after leaf lesions are seen, particularly if varieties without the double phoma resistance traits are being grown.

## Digging holes

Seedbed preparation is important, but moving large quantities of soil should be avoided where possible to conserve moisture. Where soil structure is good and free from compaction, good seed-to-soil contact can be made and OSR taproots will be able to develop unrestricted. Compaction may not be obvious from the surface, so dig a hole to identify the depth at which any issues occur. Subsurface compaction can result in crops going backwards after apparently healthy initial growth, so cultivate only as deep as necessary to alleviate any tight layers and prevent kinked and inefficient root formation (see Figure 1).



“Frontier trials have repeatedly shown improvements in crop vigour and foliage development from one or two foliar pyrethroid sprays.”

**Paul Cartwright**  
Crop production specialist



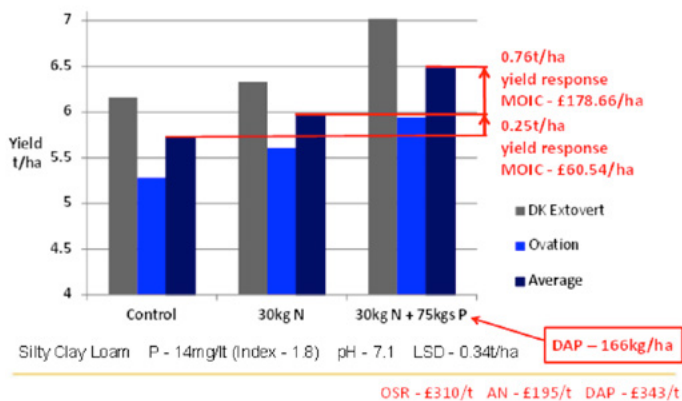
**Figure 1:** Plants on the left were established in cultivated soil, which resulted in slower initial growth but unrestricted taproot growth through autumn. Plants on the right were established by direct drilling and grew more vigorously for the first few weeks, but this was not sustained as roots deformed when they hit the compacted soil layer.

## Access to nutrients

Due to its small seed size and associated energy reserves, OSR plants quickly look to find nutrients from the soil, so it's essential to feed the emerging crop straight away, applying at or even before drilling. Nitrogen is needed by the crop but phosphate will fuel the all important taproot growth required for successful establishment. Phosphate doesn't move quickly in the soil so placing fertiliser near the seed can be beneficial, but if this isn't possible, overall applications still work very well as long as they are applied early.

Farmers are understandably concerned about spending on OSR crops before they are certain they have a crop, but delaying fertiliser applications reduces their impact on crop growth and benefit to establishment. With the lack of flea beetle seed treatments, you have to stack everything in your favour to encourage early plant growth. Remember that any phosphate applied will not be wasted and the nitrogen may also benefit an autumn sown crop if the OSR does unfortunately fail.

If your drill is capable of applying fertiliser, use it to apply some N and P at drilling. The kit will dictate which product to use in this situation. For granular fertiliser, DAP is recommended. For micro-granular or liquid options, speak to your Frontier advisor. Don't be concerned if you don't have these types of drills; graph 1 shows what an overall application of DAP can do if applied immediately after drilling. If you have a low disturbance system you can even apply this before drilling so it is incorporated into the soil closer to the seeds.

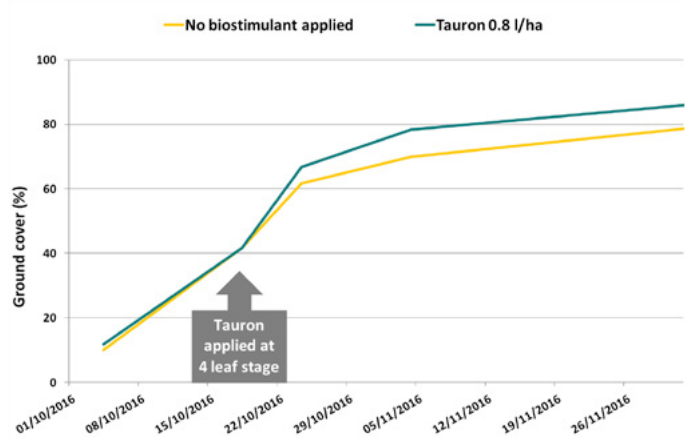


Graph 1: Yield responses to phosphate, Frontier OSR trials at Alford, Lincolnshire in 2014

Organic manures can be valuable as they generally supply good levels of readily available N and P. Rapid incorporation is required to reduce ammonia losses but be aware that ploughing these down will put the nutrients away from the germinating seed, reducing the benefit to early establishment.

Whichever establishment technique you use, apply nitrogen and phosphate at drilling to fuel that all-important early growth and reduce the risk of crop failures.

Aim to get crops to the four leaf stage in good condition, at which point crop losses to drought, insect pest or pigeon grazing are unlikely. Applying a root and growth promoter such as Tauron will improve vigour and encourage young plants to develop roots quickly, enabling them to better access and utilise any nitrogen and phosphate applied and in soil reserves. OSR plants respond rapidly and increased plant size and crop cover quickly become apparent.



Graph 2: The effect of Tauron on crop ground cover, Frontier trials in 2016

**Pest pressure**

Both hybrid and conventional varieties are now available with vigorous early autumn growth habits, which is a particularly desirable trait when establishing winter OSR in areas where high cabbage stem flea beetle (CSFB) pressure is expected. Ideally drill into moisture, or if soils are dry, hold on and drill just ahead of forecast rain.

Avoid increasing seed rates too far in an effort to compensate for losses to insect pests, especially when drilling on wide rows. Over-thick crops will compete with themselves, resulting in thin stems, poorer branching and a weaker canopy structure, leaving crops at greater risk of lodging next summer and less able to compensate for CSFB larval damage during winter. Drilling 50-60 seeds/m<sup>2</sup> is a good compromise; if 100% of plants establish, the crop will not be too thick but even if 50-60% don't survive, numbers are still sufficient to produce a well structured, high potential crop.

Foliar insecticides can help manage rape winter stem weevil and turnip sawfly larvae as well as CSFB. Select the most persistent pyrethroid formulations and only treat if thresholds are reached, ensuring good spray coverage and monitoring the effectiveness of applications. Frontier trials have repeatedly shown improvements in crop vigour and foliage development from one or two foliar pyrethroid sprays, even where pest pressure is moderate to high. Avoid repeat spraying if resistance means control of the target pest is poor.



Trash dispersal using a light harrow or straw rake between crops can expose slug eggs to the air and sun so they dry out rather than hatching. Adequate soil consolidation after drilling will physically impede slug movement around the seed as well as reducing slug migration to the surface from depth.

Be mindful of the revised Metaldehyde Stewardship Group guidelines (see page 1) if pellet applications are required to contain slug damage this autumn. Monitor crops closely; if molluscicide treatment is necessary, metaldehyde pellets should not be spread on the outer 10 metres of any field; see [www.getpelletwise.co.uk](http://www.getpelletwise.co.uk). If wall-to-wall protection is required, apply a ferric phosphate product (e.g. SluXX HP or Derrex) at least to the field edges, if not to whole fields.

“Whichever establishment technique you use, apply nitrogen and phosphate at drilling to fuel that all-important early growth and reduce the risk of crop failures.”

**Edward Downing**  
National crop nutrition technical manager





# MySOYL upgrade enables more effective decision making

SOYL's precision farming data management platform, MySOYL, allows farmers to explore and analyse their data layers to make smarter decisions. The latest version includes a new Custom Applications tool to create variable rate applications for any purpose. SOYL's head of products and technology, Tom Parker, explains how the new feature gives users more flexibility and power than ever before.

The value of Custom Applications lies in the opportunity for a farmer to combine different management techniques in one tool to deliver benefits in the field. It gives users the flexibility to create variable rate applications of any product or technique, including grass control, slug pellets, irrigation, cultivations, herbicides and pesticides.

## Gathering information

Custom Applications can be used independently or in conjunction with the iSOYLscout app which allows growers to record observations in the field on an iPad or iPhone. Areas can be recorded with or without photos using the GPS location or drawn remotely, including plant establishment, slug damage, weed pressure, black-grass populations; the options are endless. Anyone linked to the MySOYL account can use iSOYLscout to record information. This builds up an archive of information which grows in value over time, helping to make more informed decisions in the future. For example, plant performance or pest damage in a particularly wet or dry autumn could be compared to a similar previous season.

## Simple plan creation

MySOYL allows these observations to be viewed back in the office and provides tools including Custom Applications to use the data effectively. Using a straightforward interface, the farmer can then build a task as follows:

- Pick fields to include in the task
- Enter some basic product information including minimum and maximum application rates
- Use simple editing tools to define the zones of application
- Export the variable rate application plan.

Features allow users to manage headlands differently, change the task at any time, apply only the total amount of product available on-farm and copy areas scouted using iSOYLscout automatically.

## Some examples

If a grower records areas of slug damage in autumn and uploads them directly to MySOYL, the platform then enables the relevant fields to be picked individually by crop or name to create a variable slug pellet map. This can be a particularly valuable tool in adhering to metaldehyde stewardship guidelines (see page 1). All the areas previously recorded using iSOYLscout can be copied into the application plan with just one click. Application rates can be targeted to the zones recorded, giving agronomic, economic and environmental benefits.

Other data layers already available in MySOYL can also be used in combination with Custom Applications. In this example, the soil type layer could have a dramatic effect on slug populations.

Capturing information over time means that, in this example, targeted slug control can be directed in future years before damage occurs.

A different example would allow recording at one time of year and control at another. For example, as grass weeds break through the crop canopy they become much easier to see. Recording these areas with iSOYLscout allows various control options; the information can be re-visited after drilling the following crop when the weeds are more difficult to spot, or control might even be targeted on a stale seedbed. In severe cases, non-selective destruction can be targeted to exactly where the problem lies.

Various subscription levels are available for MySOYL. Using iSOYLscout data is part of the bronze package and the Custom Applications module is included in the Platinum subscription. Speak to your local SOYL or Frontier contact for more information.

“Application rates can be targeted to the zones recorded, giving agronomic, economic and environmental benefits.”

**Tom Parker**

SOYL's head of products and technology

