



Trust in Tillage

SUPPORTING SUSTAINABLE FARMING



TECHNICAL
UPDATE

PART 2

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WELCOME TO

Trust in Tillage

DAIRYGOLD'S
AGRONOMY BULLETIN

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Dear Grower,

In this, the second edition of our Autumn Trust in Tillage publication, we look at and discuss some very important primary inputs for your tillage crops and the effects that they are having on overall crop costings and profitability. This is very important for the season ahead in particular, as costs are at an all-time high and while output values are strong at present and able to generate a reasonable margin, it is in no way guaranteed that this will remain to be the case going forward; so, we need to safeguard against complacency and be prepared to make decisions around crop choices and future sales for the year ahead; this can only be done when well informed and understood.

Fertiliser is now by far the greatest expense on tillage farms, with no obvious reason or expectation of price reductions soon; so, it is therefore imperative that you know exactly what's required for each crop and the cost of each element as there are significant saving to be made once realized and prepared to react to the opportunities. Seamus O Mahony, our Head of Commercial, gives us a quick overview as to what's coming down the track in the coming months as the new National Fertilizer Database is rolled out; another challenge for all the industry and will be strictly regulated and monitored overtime as the information is compiled.

We also look at weed control for the autumn plantings and the options and ai that are available, as this now is also becoming a more challenging and measured application as both resistance and difficult grassweeds become a growing problem. We look at the whole are of Grassweed control, not for the first time, but deserves to be continually commented on as posing one of the greatest threats to cereal production at present in Ireland. The team have also compiled a comprehensive piece to look at our choices for autumn planting crops, also including one-year results in the section for the first time. Finally, on a lighter note, we are enquiring on the where-about of a stranger seen in the East Cork area in recent times who caused a stir when first seen; maybe some growers can throw some light on his activities and now where abouts.

I hope that you all find some piece of interest in this edition and please contact the undersigned if for any reason you need clarification or wish to comment on any aspects of the publication.

Liam Leahy

Liam Leahy I.A.S.I.S.
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AGRI BUSINESS

Edited by **Mary Deane**

National Fertiliser Database

By **Seamus O'Mahony**, Head of Commercial, Dairygold Agri Business



The Department of Agriculture, Food and the Marine is in the process of developing a National Fertiliser Database which will come into place from 1st January 2023. The purpose of the register is to accurately track fertiliser sales and minimise reporting requirements which will:

- facilitate ease of checks and timely farmer payments under the proposed Eco-scheme action relating to limited fertiliser nitrogen use under the CAP Strategic Plan,
- help Ireland meet commitments to the European Commission arising from our 5th Nitrates Action Programme to develop a fertiliser sales register
- provide a more realistic picture of where fertiliser is applied to land

Once the database is operational in January 2023, a farmer can login to upload opening stock figures for the year. Any purchases made during the year will be recorded at the point of sale and will feed into the fertiliser database. There will be a requirement to input closing stock after the closed period to account for the total fertiliser used during the calendar year and this will be used as the opening stock for the following year.

The data will be available for farmers to login and view and also available to download which may be useful to qualify for possible voluntary industry sustainability initiatives in the future.

As and from 1 Jan 23 there are new practices and procedures being rolled out that will track the sale and hence usage for chemical fertilizers right through the whole chain of supply and will affect all stakeholders in the way they do business and the accountability of their sales, finding its way right down to the farmer who will be register with whatever nitrogen and phosphorus products that you purchase or receive, all in an way to accurately track the sale and usage of such products which will then be used to verify our compliance with the incoming

Eco Schemes, Nitrate Directive and Climatic Targets. This database is looked upon as the foundation for controlling all chemical fertilizer sales / usage and will be managed accordingly it seems with serious fines and/or consequences for noncompliance and general offenders.

While the final details are being finalized as we write, the main actions and targets, along with some required practices, are already published but still lacking some clarity on specific issues. However, the main point and thrust of the measures are now clear and gradually being update on the DAFM website. Below are some points that all farmers need to be mindful of and prepared for going forward. Please continue to check the DAFM National Fertilizer Database website for any new updates; Dairygold will also be in correspondence with all our customers when the finer details are finalized.

In the case of Organic Compounds that are being transferred between, on / off farmer and industry; these is already a traceable system in place which will automatically feed into the overall National Fertilizer Database allowing for the inclusion of any chemical fertilizers that are contained within them.

Some important actions for farmers to be aware of and prepare for same:

- All land will have to have to dated soil samples i.e. We presume, 1 sample per 5 ha and current to 4 years
- It would be advisable to draw up a proper and quantified nutrient management plan that will guide you on what you can purchase after considering your soil test results, cropping plan and evaluation of imported organic compounds leaving you with a maximum allowance of N and P that you can purchase as chemical fertilizer.
- This should be completed by Teagasc or a private trained and qualified planner.



Understanding the cost of Fertilisers



By **Liam Leahy** I.A.S.I.S. Dairygold Tillage & Beef Business Manager

One of the biggest costs associated with crop production each year are those of fertilizers, now grown to a big bill but an essential component as it's what creates and drives production. As we start out into a new planting season, these crucial elements, Lime, Phosphate, Potash and Nitrogen take centre stage again for all the right reasons. A lot of decisions that you'll make in the coming weeks will involve fertilizer cost at its core, as not alone will it dictate how much you plan to apply to each individual crop, it will also help decide what crops you grow, what type of nitrogen source you apply, when you apply it, how much to apply to each crop, the value of compounds versus straight products, availability, delivery terms, and of course all revolving around price. It was never more important to give time and thought to all the components of this decision as fertilizers are now at an all-time high in price and limited in availability. Then, after careful consideration a conclusion will be reached as to the potential profitability of each crop taking a multitude of factors into account which should dictate to some degree as to the crops you grow.

In the last edition of Thrust in Tillage we briefly discussed the whole area of "knowing your costs" as you set out on your annual journey again and we decided to further discuss it in this edition as it's crucially important that growers are aware of these important facts, never more than this year as inputs are going to be very expensive with no real idea of harvest prices for next July; it's a big gamble. We think that all growers need to look at every aspect of your business carefully going forward in the coming weeks, including input costs but also methods of mitigating risk which can be managed to some degree by picking crops that have a

lower input cost, crops that you know will perform best on your farm and soil types, crops that offer benefits to the following crops weather that be reduced establishment costs or residual fertilizer availability, crops that you can forward sell if the market offers a price that you are happy with.

If growers were to confine themselves into their office for the next week, just crunch the figures, you would probably have the most important weeks work completed for this year.

In this article we are just going to look at the fertilizer element and how best to manage these most important ingredients and the costs associated with them. To do a carefully analysis you will need to include the following.

Soils Test: Have you an up-to-date soils analysis; this needs to be completed every 4 years and samples taken properly as this is the foundation that you are about to build your plans on. Some growers are completing detailed nutrient management plans plus yield mapping now which is good but for others a standard soil analysis is fine once completed properly, then analysed in detail and implemented accordingly. In any case this is going to become mandatory going forward as grower will need to be responsible for their own nutrient plans when balancing fertilizer purchases versus allowances.

Lime: One has little business in venturing done through the results until your PH (Lime requirements) is evaluated and corrected, this is the first layer of the blocks in your foundation.



Also test periodically for Micro Trace Elements as also very important and can be as limiting to yield as Macro Elements if severe deficiency exists.

Know and understand exactly as what your individual crop fertilizer requirements are relative to your soil results and indexes.

Complete a nutrient management plan. This is going to become an essential piece of work going forward as the new Nitrate Directive Register is set up as now the responsibility will be on the grower to know what his allowances are and apply fertilizers and organic compounds as the allowances allow. This plan can be completed by Teagasc or your private Nutrient Management Planner.

Source, evaluate and apply as required to the identified plots any worthwhile organic compounds available. While these will provide valuable N, P, K, they also help build up organic matter in the soil which will improve its overall nutrient quality over time. It's important that you know the cost involved with these products, as they can be expensive in some cases with now expensive haulage and spreading charges and maybe not worth the efforts; but understanding what they bring to the soil biology must also be factored in as they will prove to be a major source of organic matter to often deplete tillage soils.

Where compound fertilizers are required, put some thought into the values of each product available and what you exactly require. This is a very important exercise, as in many cases you can purchase N for very little relative costs when included in the compound. This is due to the manufacturing process of some of these products where large amount of expensive Gas may not be required to manufacture the included N as the element is drawn from other ingredients such as DAP which has a natural inclusion of N in its raw form.

While applying P and K as individual elements, as your crop requires, may not be cost effective and often better value is achieved with more complicated compound products; at similar prices but with extra ingredients even though they may be extra to your requirements. Once these extra applied elements aren't excess to your allowances, consider using them and maybe the next crop will allow you a different and cheaper program on the back of the extra applied now.

If working soils that are identified or knowingly low in some Micro Trace Elements, there are opportunities to feed the crop at this early stage by including such elements as part of the base fertilizers; once such program included in Dairygold fertilizers is referred to as "Wolftrax Micro Elements". This is commonly used

by an increasing number of growers as it assures a supply of these essential elements to the young seedling plant at a critical time. Its very cost effective by this means and can be topped up later if necessary, as in some cases crops are in soils that need respective applications due to very low readings.

When to apply fertilizers:

There is regulation around the timing of application regarding N and P but none in the case of K or any trace elements. This is to safeguard and grow the quality of our water ways and sources. This is now heavily regulated as is of a major concern and in many ways the cornerstone of our updated Nitrate Directive plan, that now includes new requirements for the planting of cover crops, river bunding and application near water courses among other practices, all to improve our quality water flows and supply.

Where P and K levels are low, Index 1 or 2, consider apply these nutrients once legal and abiding by the directive, to the planted crop in the Autumn. This will help in its establishment as a "good start is half grown".

Understand when the best time is to apply nitrogen to a growing plant. When dose it requires it most, in what amounts and know your soil temperature as it will only mineralize when soil temperatures reach 6c plus. These practices will increase the nitrogen use efficiency which simply means you get more from less. Its estimated that this efficiency factor is somewhere around 60% in the case of tillage as losses will always take place as elements interact with other soil compounds and renders them unavailable to the host plant; one of the biggest offenders in such cases is natural PH or lime requirements as an alkaline soil is a very inefficient place for fertilizers to work and can lock up as much as 50% or more of applied ingredients at times make the cost of fertilizers even higher to the grower as he simply won't get the return.

Understand how different types of nitrogen sources work, when best applied and in what form. This will include debates around compound fertilizer verses straights; then dry verses liquid; all with their own distinct advantages / disadvantages; but all with a place in certain circumstances. In the case of nitrogen, the debate will revolve principle around Nitrogen verses Urea and dry verses liquid. In truth there is no difference between Can and Urea if applied correctly, at the right amounts and at the correct time; except that in the coming year a saving of approximately 35% with Urea as exceptional value verses expensive Can at present. In the case of liquid, you are applying UAN which is liquified form of Urea plus some ammonia but dribbled or conventionally sprayed on which brings



its own advantages to some but is slower unless well kitted out and priced similar to Can.

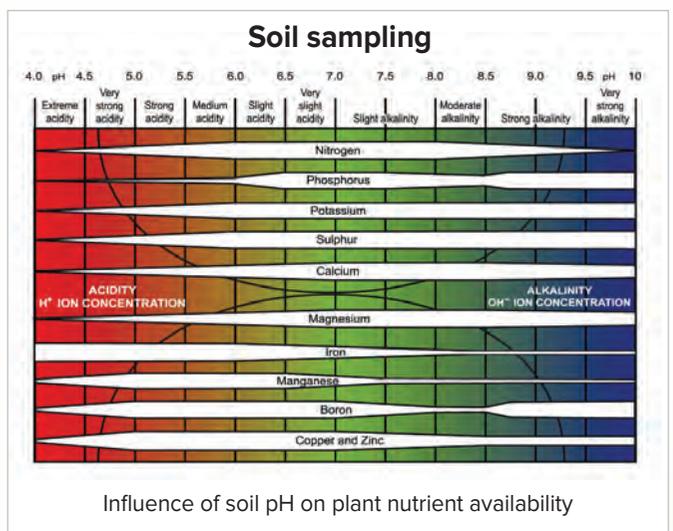
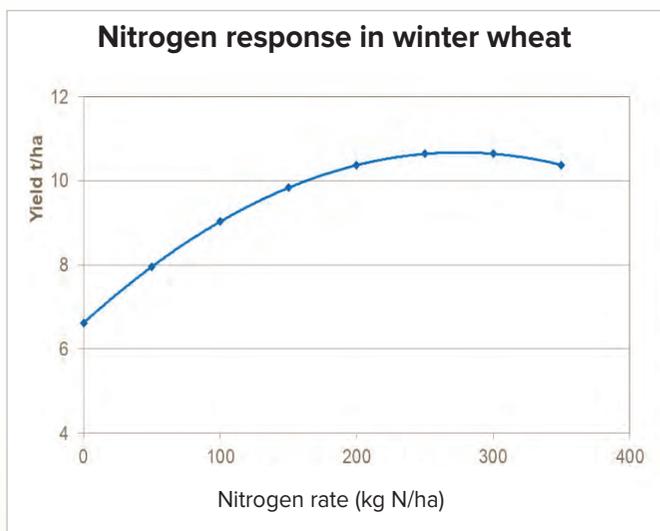
Understand the efficiencies and the associated costs of different forms of Nitrogen as again big differentials and need careful consideration as there are serious differences at present with big savings to be made.

Application methods of fertilizers is another aspect that needs careful consideration. There are many different times and methods now for feeding a crop all with great advantages, however some may be luxurious and unnecessary, and expensive to kit up, others may slow down the application process unnecessarily when an alternative method is adequate. Often what's a deciding factor is such debates are again the nutrient values within your soil or in other words your soil test results; how important they are. In recent times liquid fertilizers is back in-vogue; another way of applying nitrogen to a crop, offering little or no advantages in elemental application or value except for the fact that it is very accurate due to its application means and that's important too.

Below are some tables that are the foundation of all good nutrient management planning and should be

completed in a planned and pro-active way with view to applying what and when the crop requires and then in the most cost-effective way. Its fool's economy to hold back essential requirements to a crop if it's going to retard its production ability while its prudent with big financial saving to do this if the nutrient bank is already available to the plant from soil reserves; in the case of PH, P and K this can only be established from soil sampling.

In the case of Nitrogen what has a significant impact on your application targets is the budgeted crop price which suggest a BER factor, a point that suggest that any nitrogen applications above a certain point aren't cost effective as the extra yield won't compensate the cost involved. This is difficult to get right but, in any case, important to understand as growers can adjust this important element during the growing season if the ever-changing market prices support it. The past season was a prime example of this, as growers budgeted for say 180 kg Nitrogen in Jan as projected Wheat price was €250 / ton at the time; then wheat rose dramatically to near €400 / ton which made extra applications very worthwhile; off course the price of Nitrogen is also central to this equation, it's a balancing act once understood and the facts available.



Effective Nutrient Management Plan

Nutrient Values of Organic Manures Available Nutrient Content & Guide Value (€) of Organic Fertiliser 2022

Organic Fertiliser Type	N kg/m ³ (units/1,000 gal) ⁷	P kg/ m ³ units/1,000 gal) ^{6,7}	K kg/ m ³ (units/1,000 gal) ⁷	Value €/ m ³ Or (€/ 1,000 gal) ^{4,5}
Manures				
Cattle (6% DM) (SI 113,2022) ¹	1.0 (9)	0.8 (7)	3.5 (32)	12.4 (56)
Cattle (6% DM) (Actual) ²	1.0 (9)	0.6 (5)	3.5 (32)	11.0 (50)
Pig (4% DM) ³	2.1 (19)	0.8 (7)	2.2 (20)	13.3 (60)
Soiled Water	0.48 (4)	0.08 (0.7)	0.6 (5)	2.7 (12)
Solid Manures				
Dung stead Manure	N kg/t 1 (Units/t)	P kg/t 1 (Units/t)	K kg/t 1 (Units/t)	Value €/ton
Farmyard Manure	1.4 (3)	0.9 (2)	4.2 (8)	15
	1.35 (3)	1.2 (2)	6.0 (12)	19
Poultry³				
Broiler / deep litter	14 (28)	6.0 (12)	18.0 (36)	97
Layers (30% DM)	6.85 (14)	2.9 (6)	6.0 (12)	43
Layers (55% DM)	11.5(23)	5.5 (11)	12.0 (24)	78
Turkeys	14 (28)	13.8 (28)	12.0 (24)	123
Spent Mushroom Compost	1.6 (3)	1.5 (3)	8.0 (16)	25

¹ Nitrogen availability based on Nitrates Directive SI 113, 2022 (Cattle slurry total N of 2.4kg & 40% availability). Conversion - kg by 2 = units.
² The actual value of N in Cattle slurry (Green Book) is approx. 9 units/1,000 gallon (Based on total N of 2.4kgN/m³ @ 40% N availability by LESS application). Spring application of organic manures is required to maximize N recovery. Manures should be tested to determine manure nutrient content.
³ Incorporation of high N manures within 2 to 6hrs after application assume 50% N availability.
⁴ Value of N = €2.83/kg-Avg Value of Can V Urea, P = €4.55/kg, K = €1.69/kg for 2022 (Nutrient values based on price / volume of range of fertiliser products).
⁵ Cost of spreading & transport not included.
⁶ Reduce P availability to 50% on P index 1 & 2 soils.
⁷ Values under units/1,000gals or per ton have been rounded to closest unit.

Crop Requirements

Hk / Ha												
PH range	Straw Removed		1		1		2		3		4	
			N	P	K	P	K	P	K	P	K	
6.3 - 6.6	WW	4.5 t/ac	250	60	140	54	125	42	110	0	0	
6.3 - 6.6	WB	4 t/ac	212	57	130	50	114	40	100	0	0	
7	WOSR	1.75 t/ac	225	55	101	45	90	35	75	0	0	
6 - 6.5	WO	3.65t/ac	175	52	160	45	147	35	130	0	0	
6.3 - 6.6	SW	3.45t/ac	190	50	130	40	114	31	100	0	0	
7	Beans	2.5 t/ac	0	50	125	40	61	20	40	0	0	
6.3 - 6.6	SB	3 t/ac	155	49	115	39	100	29	85	0	0	
7	Beet	~30 t/ac	187	70	320	55	240	40	160	20	80	
6.2 - 6.6	Maize	~20 t/ac	181	70	250	50	225	40	187		120	

OFF-TAKE

Index	P		K		
	Grass	Index	Crops	All	Index
	0-3	1	0-3	0-50	1
	3-5	2	3-6	50-100	2
	5-8	3	6-10	100-150	3



Know the Values of Nitrogen

Fertiliser cost calculator as of		29/09/2022				
		For application 140				
Product	% N	Efficiency		Per Unit	units	
		Factor	Cost / ton Per Kg / Elm N			
Urea	46		€2.21	€1.11	€154.91	
Urea 40 s6	40		€2.50	€1.25	€174.65	
Can	27		€3.36	€1.68	€235.41	
Can 26 s4	26		€3.49	€1.75	€244.46	
Urea Eco	46	Protected	€2.32	€1.16	€162.52	
Urea Eco 38 s7	38	Protected	€2.74	€1.37	€192.13	
Liquid Droplet	Liquid UAN + S		~	€3.33	€1.67	€233.33
Liquid Foliar Fertilizer	N 16 / Ca Mg B CROP Top-Up	3	~	€1.56	€0.78	€121.03

Examine the value of Compounds Calculated as per Kg of Elemental value as per market prices on 28 Aug 22

Elemental value when purchased separately as individual elements:

N from Can: €3.10, N from Urea: €2.15, P: €5.85, K: €1.85

When purchased in Compounds they assume a much lower cost:

In the case of o's - P and K Compounds: 0:10:20, 0:7:30, P: €5.75, K: €1.82

Triple compounds are more complex and have different elemental values due to nutrient sources. Example: include 10:10:20, 18:6:12, 12:7:23:S Valued by simultaneous Equation. N as Can: €3.05, P: €3.25, K: €1.55

Therefore: Value of selected products per avg calculated Element value as found in compound Fertilizers

(Value verses market prices on 28/8/22. Please review your own purchase prices.)

	per Nutrient values			per Nutrient values	
10:10:20	€940.00	Correct	12:7:23 S	€950.00	Good Value
18:6:12	€930.00	Correct	13:6:20	€901.50	Moderate value
12:8:20	€936.00	Moderate Value	15:3:20	€865.00	Poor value

Therefore: Example Program for Winter Wheat in Index 3 P and Index 2 K with Straw removed at 10 T / Ha

Crop Requirements	N	P	K	all in Kg / Ha
Option 1: 570 kg x 12:7:23 s / ha 425 Kg 38% S7 Urea Protected	230 68 161 229	42 40 40 40	125 131 131	Market Prices 28/8/22 €541.50 €429.25 €970.75 Per ha / €393.02 Per acre
Option 2: 670 Kg x 13/6/20s / Ha 550 kg x Can 26 S4	87 143 230	40 40 40	134 134	€629.80 €462.00 €1,091.80 Per ha / €442.02 Per acre
Differential €121.05 / ha or €49 / ac				

Flight[®]

Continually soaring above the threat of weeds

What is Flight[®]

A pre/early post emergence herbicide for use on all varieties of winter barley and winter wheat

Why you should choose Flight[®]

- Broad-spectrum control of broadleaved and grass weeds
- The best start to wild oats control
- Two complimentary modes of action for long-lasting activity
- Flexible timing
- Excellent crop safety



BASF
We create chemistry

Flight is a registered trademark of BASF. Flight contains pendimethalin and imazamox. Use plant protection products safely. Always read the label and product information before use. For further product information including warning phrases and symbols, refer to www.agricentre.co.uk. Pay attention to the risk indications and follow the safety precautions on the label. Triple rinse containers and invert to dry at time of use.



Lime is the foundation to build your fertility on



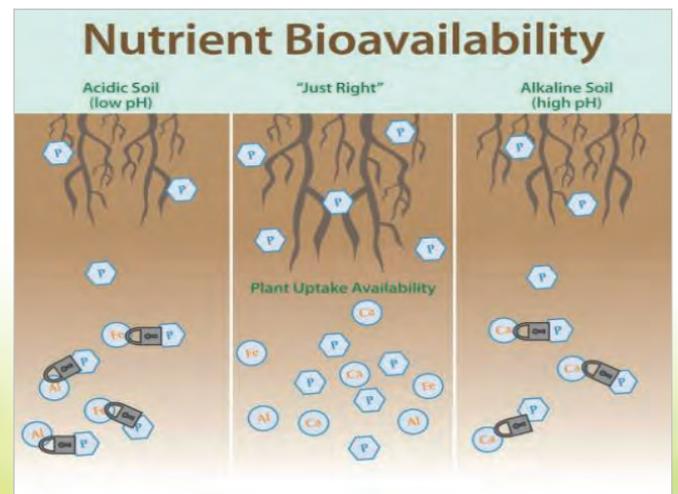
By Liam Leahy I.A.S.I.S. Dairygold Tillage & Beef Business Manager



We are often very reactive to low Phosphorus and Potash levels in our soils and rightly so as they are crucial for plant nutrition and growth; but only second to you soils acidity and will only work to their optimum when your PH is corrected. Yet we are slow, yes improving, in applying lime and often only after we have experienced poor crop performances and then investigated as to why. Its something that should be managed in a routine way on many farms, such as liming say 20% of the fam annually; this will keep the levels up and keep some control of the costs. Using Granulated lime where necessary but not as a replacement for Crushed limestone where you have a known deficiency.

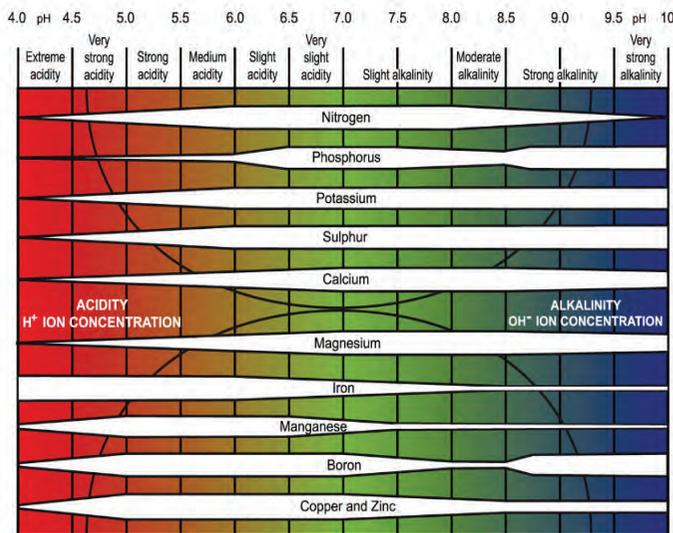
Regular soil sampling should be practiced and then studied, this is becoming a necessary requirement in the new Nitrate Directive in any case, but not mandatory, as failing to do so will automatically assume your soils are in index 4 which allows ZERO Phosphorus application to your crops and in fact allowing you to work in a “dark room”, no idea where or what you are doing. We have touched on this topic several times in the past in this publication and while we’re not going into detail this time round its important that a quick recap and some direction is given again, that’s how serious soil ph. is.

Not all soils need lime, in fact applications can damage some but where required they are necessary and immediately reactive with other locked up elements in the soil. The simple result of liming where required is that more complexed elements within the soil itself and the annually applied nutrients are much more available to the plants which are required for growth and yields of the host crop. In many cases where soils are low in PH, elements that are in the soil are largely unavailable due to complex reactions with other oppositely charged ions often described as “locked up” and unavailable; in such cases the lime, or Calcium, opens or removes this bond and releases these elements back to the crop. Its also very important to note that while the Macro elements are most important, ph. also effects Micro elements and with the similar effects as to the Macro elements. This often requires a more detailed soil test but very necessary and rewarding where completed. While there is an obvious requirement for test for macro elements in 5 ha plots, Micro elements tend to be more a soil natured issue and usually a bigger sample plot with lesser regularity is sufficient; they won’t change a lot over time and when identified they should be addressed annually in a correct and measured way.



The “Lock-Up Effect”

Influence of soil pH on plant nutrient availability



GREEN is where you need to be.
Target 6.4 to 7 Ph

Above are some graphs that best show the effects of liming at various soils acidities and nutrient availability

Take a soil Sample correctly.

When taking samples, do it properly. Ph reading in a single field can vary greatly and a single probe from one spot is near useless for its purpose.

Good practice:

- Complete in the Autumn when crops are harvested and soils are depleted.
- Give yourself time or hire some a person as it's a big and slow task and often rushed leading to shortcuts.
- Small plots, say 5 ha.
- Use a defined pattern system that will give you a representative result.
- Have bags and marker at hand and mark clearly the area tested.
- Soil Corers and Bags are available at most Dairygold Branches
- Clearly identify what services are required.
- Simply L, P and K **or** L P K plus Micro Trace Elements.
- Get samples to the Dairygold Lab or for collection at any Dairygold Branch and results will be returned with 12 to 14 working days.
- At times this may take a little longer if busy so best to get them in early.

- Finally, go through them in detail with your Dairygold ASM / Agronomist when received and draw up a proper nutrient plan
- File away safely for future reference.

Soil sampling patterns

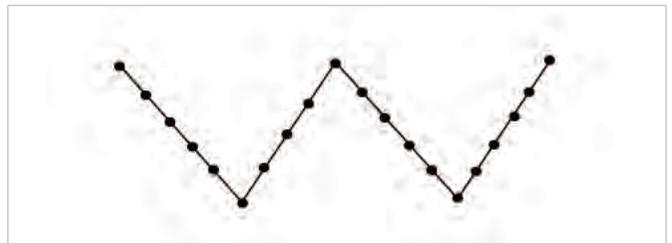


Figure 4-1. Sampling using a W shaped (or M shaped) oath is most convenient.

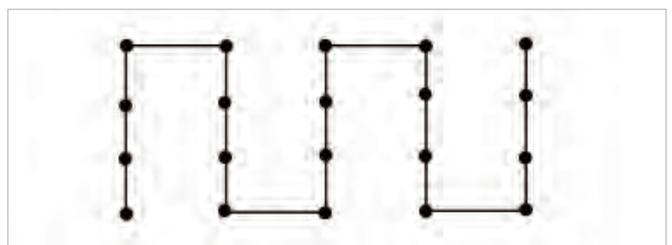


Figure 4-2. Sampling using a grid pattern better represents the field area.



Advice on Liming

Tillage Crops - The Benefits of Liming

- Increase crop yields annually
- Unlock soil phosphorus (P) and potassium (K)
- Increase the response to freshly applied N, P & K

Lime is a soil conditioner and controls soil acidity by neutralising the acids generated from N fertiliser applications and following high rainfall.

Soil pH has a large influence on soil nutrient availability. Aim to maintain minerals in the range pH 6.5 to 7.0 and peat soils pH 5.5 to 5.8 to maximise nutrient supply

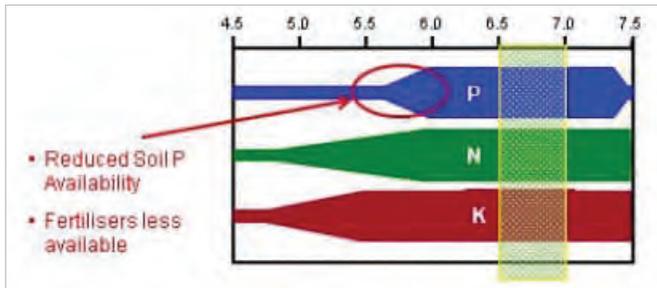


Figure 1. The Impact of soil pH on nutrient availability in mineral soils

Maintain tillage soils in the optimum pH (6.5 to 7.0) range for efficient nutrient availability over the growing season and sufficient crop uptake of plant nutrients.

Maintenance Lime requirements

Lime Removals per year	Kg/ha
Drainage (leaching)	250-625
Spring barley 7.0t/ha or Winter wheat 10t/ha	105 - 150
150 to 250kg Nitrogen (bag)	300 - 500
Total Lime Required	655 to 1275kg/ha/year

- High annual rainfall leads to a large removal of lime each year
- Typical maintenance lime requirements of 3.0 to 6.0 t/ha once every 5 years depending on regional location and rainfall

Target soil pH levels for tillage crops

Some tillage crops can be more sensitive to acid soil conditions than others and therefore require different target soil pH levels for optimum growth and to achieve high harvest yield production. The target soil pH for several important tillage crops is shown in Table 2.

pH	Effect
8.0	Over limed: low availability of micronutrients, especially of Mg, Mn and B
7.2	Top of optimum range for efficient use of N, P and K fertilizer
7.0	Optimum pH for white clover, beet (sugar and fodder), beans, peas, and oil seed rape.
6.5	Optimum pH for cereals.
6.3	Optimum pH for grass.
6.2	Maximum pH for grass on high Mo soils Bottom of optimum range for efficient use of N, P and K fertilizer for most crops
6.0	Optimum pH for potatoes.
5.5	Optimum pH for peats.
5.0	Very acid. Possibility of Al and Mn toxicity.

Table 2. Optimum soil pH for a range of crops on mineral soils

Crop	Optimum soil pH
Beet, Beans, Peas and Oilseeds	7.0
Cereals and Maize	6.5
Potatoes	6.0
Peaty soils	5.5 to 5.8

Effect of soil pH and lime on Soil P Availability

- Lime will unlock stored soil P (purple bar)
- Lime will increase the efficiency of freshly applied fertiliser P (green bar) compared to applying P fertilisers alone under low soil pH conditions (red bar).
- Correcting soil pH through liming is the first step to building-up soil test P levels
- On naturally acidic soils the application of lime is essential for improved nutrient supply and restoring soil fertilit.

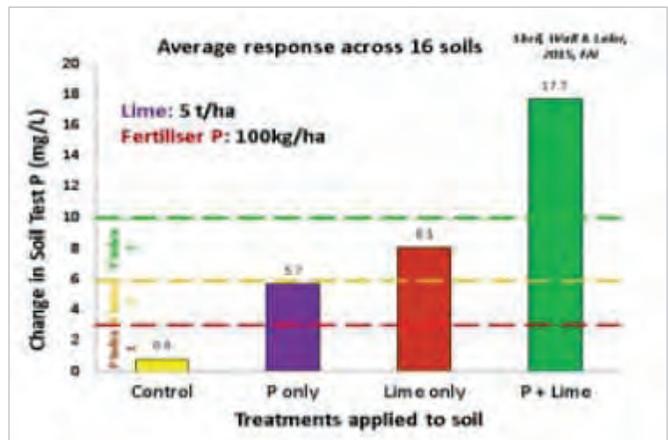


Figure 2. Average change in soil test P (Morgan's) across 16 soils (av. pH 5.2) treated with Lime (5 t/ha of lime), P fertiliser (100 kg/ha of P), and P + Lime and incubated over 12 months in controlled conditions

Return on investment from ground limestone applications

- Research shows average cereal grain production response of at least 1.5 t/ha from lime alone
- This is worth €225/ha of extra grain (15 % DM) (assuming grain price of €150 /t)
- Return on investment - maintenance lime application costing €33/ha/yr. enabling the production of at least €225/ha/yr. of extra grain
- At farm level every €100 investment in lime equates to approximately €675 in extra crop production annually

Spreading Lime

How much lime?

- Test soils on a regular basis (every 3 to 5 years) to determine lime requirements
- Only apply lime based on a recent soil test report
- Don't exceed 7.5t/ha in a single lime application
- Application rates >7.5t/ha, apply 50% now & remainder within 2 years

When?

- Prepare a farm liming plan
- Target fields with largest requirements first
- Ideally apply lime to ploughed / tilled soils and incorporate into the seedbed
- Where lime is applied to prevent club root (brassica crops) it should be spread at least 12 months before sowing
- In potatoes tuber skin quality (from common scab) can be reduced when lime is applied in the year preceding planting (lime & high pH close to tubers). To prevent tuber quality issues lime should up to 4 years in advance of the potato crop

How Often?

- Apply lime as per the soil test report
- On very acidic soils apply 50% to the stubble and the remainder to the ploughed soil
- Lime 2 years in advance of pH sensitive crops such as beet, barley, beans, and peas

Which Lime to Use?

- Calcium ground limestone is most common. Fast acting and rapid pH adjustment
- Magnesium (Dolomitic) ground limestone is available. Slower to react but higher liming value. Cost effective route to building soil Mg levels
- Granulated Limes. Finer lime (less than 0.1mm particle size) and very reactive. Apply as maintenance product where soil pH is in the optimum range. Consider costs (€) over a 3-to-5-year period

Lime & Trace Elements

Take care to not over lime soils (pH>7.0) as it may reduce the availability of manganese (Mn), copper (Cu) and zinc



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Our team are available for technical support and advisory



AGRI BUSINESS



Manganese

By Tim McCarthy B.Agr.Sc I.A.S.I.S Dairygold Agri Business



Manganese is probably the most commonly identified trace element that can give rise to issues in crops. Mn is crucial to chlorophyll assimilation in plant biomass and when not available the plant becomes very pale, limp and soft, often displaying actual dead line type structures running in the veins of the leaves; these will eventually lead to dye-off where the problem goes unattended. In a lot of situations it's not a case that Mn is actually critically low in the soil, it's the availability of the element that is the issue. Its inavailability is often associated with Alkaline, high PH soils that don't release this element easily and / or soils that include high organic matter content.



Land that is high in phosphorus can also be a problem as Manganese is tied up with this element that is also a lesser available element even in its own right. Its availability will be exaggerated in poorly consolidated seed beds or in very dry and cold conditions and its common place to see the much greener wheel markings in fields where tractors have driven over and created a better seed to soil contact; the reason being that it's a ++ ion and attaches itself readily to available oxygen in the loose seedbeds, this is more so the case in dry unconsolidated conditions and is quickly reversed once soils get water and displaces the excess oxygen. Where lime has been applied recently it will make borderline problems more serious. Both sandstone and to a lesser degree limestone soils contain lower levels of

background manganese, soils which are common place in some of the more free draining tillage soils in Cork and Tipperary. Crops like beet and cereals can be severely effected with patches throughout the crop lost in severe cases. For winter cereals growers its advisable to treat in the autumn, as often, damage will develop during the long cold winter, at times when you can't travel the ground to treat it. Manganese deficiencies are best identified in a clinical way with a leaf analysis as often soil test results are inaccurate as this element in particular is often effected by other actions and crop choice which will give a confusing message with a soil test. Once you establish a true picture you can apply this data going forward for several years and treat crops in a measured a controlled pro-active way



Manganese Mn deficiency in Barley

Known Mn deficiencies in cereals need to treat in a preventable way by applying the element to the crop in the Autumn in the case of winter cereals and again early in the growing season, Gs 25-30, in severe cases. The element can be applied through seed and / or fertilizer dressing to help with establishment of the crop and in foliar applications during the growing season. In severe cases a crop may need repeat applications. The crop is very reactive to treatments once applied in time, in a proactive way and at recommended levels.

Treatments

- Manganese can be included as a seed treatment to aid establishment , particularly useful in areas of known critically low availability; these crops will usually need a follow on spray at GS 13 to 26.
- Including micro elements with Fertilizers applications is becoming common place and very convenient both to crop and grower. Manganese is coted onto each individual grain under the “Wolftrax” system which assures uptake by the plant as it reaches the for the macro elements to feed the growing seed and plant. Again this is best applied onto the seed bed pre planting but also found to be very effective applied pre GS 13 before the plant is comprimized. Dairygold place a lot of these products into the market with their very popular “Winter Cereal Boost 12/7/23 S Mn (also available ZN CU Mg) and Spring Cereal Boost 12/5/18 S Mn”. Crops may need a further Mn application where the element is very low and this should be completed pre GS 26 to achieve maximimum effect. Foliar Manganese can be used at that timing.
- Apply Manganese Sulphate either pre or peri emergence in a planned proactive way. Work very well, cheap but is leachable in its sulphate form and limited in compatibility with lot of other pesticides.

- Foliar Applied Mn are very commonly used in lots of crops now a days. They come in various compound attachments such as corbonates, Nitrite and Chelates; all very efficient for their purpose and containing different levels on Mn as their attachment have a strong influence on the way that they work and enter the plant which allows lower levels in the cheleted products as are more efficient in the way they work in the host. While they are all very compatabile with most pesticides , nitrite compounds do not combine well with old hormone type herbicides and should be avoided where possible.
- There are significant supplies of Mn in some organic manures and a valuable source to a growing crop; however its difficult to build up Mn levels in the soil to such an extent that you could stop treating the growing crop as its complex with other added elements and different crop requirments makes it difficult.

Soil Er-Mn Index	Soil Er-Mn Ranges(mg/l) ¹
1 ¹	< 90
2	90-120
3	>120

¹Extrantant for Er-Mn : 0.5m EDTA-pH7.0

Mn Soil Index table



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CERALS | CATCH CROPS | OILSEED RAPE | PULSES



Bird Watch Ireland

By Paul Moore

The confusion around the new shallow cultivation requirements for tillage farmers was well covered in the last edition of Trust in Tillage. As the autumn progressed the rules changed as the impracticalities of some of the requirements became clear.

As part of these changes, it became necessary to retain 20-25% of cereal stubble uncultivated and unsprayed. The reason for this change was the realisation by the Department of Agriculture that cultivating all cereal stubble could have a serious impact on seed eating farmland birds, many of which rely on winter stubble and the grains and seeds found in it to survive the winter.

To examine whether cultivating stubble does have an impact on birds like Yellowhammers, Linnets,

Chaffinches and Skylarks it is planned to carry out bird surveys on tillage farms in east Cork this winter. Funding for this has been secured from SECAD and Irish Distillers in Midleton with BirdWatch Ireland as partners.

This research is in part a follow up to surveys that were carried out in summer 2021 and which received great support from Dairygold suppliers, but it could also potentially influence the shallow cultivation requirements going forward.

If you're farming in east Cork and would be willing to have a bird survey carried out on your farm this winter please get in touch by emailing winterstubbleproject@gmail.com



Skylark in stubble by Gemma Kelleher



CROP COSTING

Winter OILSEED Rape 2023		Winter Barley 2023		Winter Wheat 2023			
Fertilizers		Fertilizers		Fertilizers			
€975.00	3 / 12.7.23 S	€146.25		€975.00	4 / 12.7.23 s	€195.00	
€1,000.00	2.9 / 46% Urea	€145.00		€1,000.00	3.5 / 46% Urea	€175.00	
	Total	€291.25		€0.00	€332.50	€0.00	€370.00
Seed		Seed		Seed			
€315.00	1 / 7.5ac	€45.00		€815.00	80kg / ac	€65.20	
	Total	€45.00		€65.20	Total	€65.20	
Pesticides		Pesticides		Pesticides			
	Herbicides	€35.00			Herbicides	€30.00	
	Scutch 1/3 year	€5.00			Scutch 1/3 year	€5.00	
	Wild Oats	€20.00			Wild Oats	€19.00	
	Fungicides	€40.00			Fungicides 3 spray	€60.00	
	Insecticide	€0.00			Insecticide	€6.00	
	Growth Reg	€14.00			Growth Reg	€5.00	
	Trace Elements	€10.00			Trace Elements	€10.00	
	Desiccant	€25.00					
	Total	€149.00			Total	€135.00	
Machinery		Machinery		Machinery			
	Plough /Till /Plant	€80.00			Plough /Till /Plant	€80.00	
	Fert / Roll / Spraying	€70.00			Fert / Roll / Spraying	€70.00	
	Harvest and carting	€70.00			Harvest and carting	€90.00	
	Total	€220.00			Total	€240.00	
TOTAL VARIABLE COSTS		€705.25		TOTAL VARIABLE COSTS		€772.70	
OUTPUT		OUTPUT		OUTPUT			
Tons grains /	<input type="text" value="1.8"/>			Tons grains / ac	<input type="text" value="3.75"/>		
Value / ton	€575.00	€1,035.00		Value / ton	€260.00	€975.00	
Straw				Straw		€100.00	
Crop support payment		€50.00		Crop support payment			
	Total	€1,085.00			Total	€1,075.00	
MARGIN OVER VARIABLE COSTS		€379.75		MARGIN OVER VARIABLE COSTS		€302.30	
ITEMS FOR INCLUSION IN FINAL FIGURE		ITEMS FOR INCLUSION IN FINAL FIGURE		ITEMS FOR INCLUSION IN FINAL FIGURE			
Fixed Costs		Fixed Costs		Fixed Costs			
Approx only	Phone/ Power/ Insurance/ Admin farm Transport Hedge cutting	€75.00		Approx only	Phone/ Power/ Insurance/ Admin farm Transport Hedge cutting	€75.00	
Land Rent	<input type="text"/>			Land Rent	<input type="text"/>		
Biss and Eco payments	<input type="text"/>			Biss and Eco payments	<input type="text"/>		

CROP COSTING

Spring Beans 2023			Malting Barley 2023			Spring Oats 2023		
€950.00	1.5 / 0.10.20	€71.25	€975.00	3 / 12.7.23 s	€146.25	€975.00	3 / 12.7.23 s	€146.25
€1,000.00		€0.00	€1,000.00	2 / 46% Urea	€100.00	€1,000.00	1,75/ 46% Urea	€100.00
	€0.00	€71.25		€0.00	€246.25		€0.00	€246.25
€850.00	80kg / ac	€68.00	€815.00	80kg / ac	€65.20	€815.00	80kg / ac	€65.20
	Total	€68.00		Total	€65.20		Total	€65.20
Pesticides			Pesticides			Pesticides		
	Herbicides	€50.00		Herbicides	€20.00		Herbicides	€15.00
	Scutch 1/3 year	€5.00		Scutch 1/3 year	€5.00		Scutch 1/3 year	€5.00
	Wild Oats	€20.00		Wild Oats	€15.00		Wild Oats	€15.00
	Fungicides	€58.00		Fungicides	€50.00		Fungicides	€50.00
	Insecticide	€0.00		Insecticide	€6.00		Insecticide	€6.00
	Growth Reg	€0.00		Growth Reg	€0.00		Growth Reg	€10.00
	Trace Elements	€10.00		Trace Elements	€10.00		Trace Elements	€10.00
	Total	€143.00		Total	€106.00		Total	€111.00
Machinery			Machinery			Machinery		
	Plough /Till /Plant	€80.00		Plough /Till /Plant	€80.00		Plough /Till /Plant	€80.00
	Fert / Roll / Spraying	€50.00		Fert / Roll / Spraying	€50.00		Fert / Roll / Spraying	€50.00
	Harvest and carting	€80.00		Harvest and carting	€80.00		Harvest and carting	€80.00
	Total	€210.00		Total	€210.00		Total	€210.00
TOTAL VARIABLE COSTS		€492.25	TOTAL VARIABLE COSTS		€627.45	TOTAL VARIABLE COSTS		€632.45
OUTPUT			OUTPUT			OUTPUT		
Tons grains / ac	2.25		Tons grains / ac	3		Tons grains / ac	3	
Value / ton	€320.00	€720.00	Value / ton	€325.00	€975.00	Value / ton	€255.00	€765.00
Straw			Straw		€100.00	Straw		€100.00
Crop support payment		€200.00	Crop support payment			Crop support payment		
	Total	€920.00		Total	€1,075.00		Total	€865.00
MARGIN OVER VARIABLE COSTS		€427.75	MARGIN OVER VARIABLE COSTS		€447.55	MARGIN OVER VARIABLE COSTS		€232.55
ITEMS FOR INCLUSION IN FINAL FIGURE			ITEMS FOR INCLUSION IN FINAL FIGURE			ITEMS FOR INCLUSION IN FINAL FIGURE		
Fixed Costs			Fixed Costs			Fixed Costs		
Approx only	Phone/ Power/ Insurance/ Admin farm Transport Hedge cutting	€75.00	Approx only	Phone/ Power/ Insurance/ Admin farm Transport Hedge cutting	€75.00	Approx only	Phone/ Power/ Insurance/ Admin farm Transport Hedge cutting	€75.00
Land Rent			Land Rent			Land Rent		
Biss and Eco payments			Biss and Eco payments			Biss and Eco payments		



REWARD FOR INFORMATION



Does anybody know this chap?

This guy was on vacation in East Cork during our recent heat wave and caused a bit of a stir when he decided to show himself off. To be honest he was a little intimidating at first sight, and it was decided maybe best left alone. However, we have a very curious reader who decided that he wasn't going to leave it at that and collect a sample, only the after sizing up the situation and how best to apprehend him. He then made it his business to get his passport and get him checked out; just to be sure.

Could any of our readers give us details on this traveller and where he ah come from; I'm sure it would be a great relief to many as his not seen often in our locality. There is a reward for this important information as he is threatening to move on at present, but we need to know more about him while his in custody as we will be need releasing him in the next few days as his period of detention will be expired.

We will give an Insect hotel to 3 of the best replies, but only with information that will lead to a positive identification.

Send your information to agriinfo@dairygold.ie



Recommend List 2023

By **Michael English** I.A.S.I.S. Dairygold Agri Business



WINTER BARLEY

As a result of very dry weather in August the harvest was completed earlier. It's now time to decide what crops and rotation you intend to have for 2023. Variety and field selection so important, as some crops this year had symptoms of BYVD or Take All.

The just published 2023 DAFM recommended list is out to help with crop and variety selection, with a minimum of three years of trials to get fully recommended.

We have two varieties upgraded to fully recommended list, KWS Joyau and KWS Tardis, four of the nine varieties on the list are six-row, of that three are hybrid varieties.

Also, two new varieties, Bordeaux and SY Armadillo have entered the provisionally recommended list for the first time.

Pixel, Kws Kosmos and Valerie all are no longer recommended.

Notes on Winter Barley varieties.

BAZOOKA: An early maturing hybrid six-row variety with very high yield potential. Very long straw with moderate resistance to lodging. Moderately susceptible to straw breakdown. Very good resistance to Rhynchosporium. Moderate resistance to brown rust and mildew. Good resistance to net blotch. Small grain size with a good hectolitre weight.

BELFRY: An early maturing hybrid six-row variety with very high yield potential. Long straw with good resistance to lodging and moderate resistance to straw breakdown. Very good resistance to Rhynchosporium. Moderate resistance to mildew. Good resistance to brown rust and net blotch. Small grain size with a good hectolitre weight.

KWS CASSIA: A moderately early maturing two-row variety. Short straw with good resistance to lodging and moderate resistance to straw breakdown. Moderately susceptible to mildew and susceptible to Rhynchosporium. Good resistance to brown rust and net blotch. Very good grain quality with a very good hectolitre weight.

KWS INFINITY: A moderately early maturing two-row variety. Short straw with good resistance to lodging and moderate resistance to straw breakdown. Moderately susceptible to mildew. Good resistance to Rhynchosporium and net blotch. Moderate resistance to brown rust. Large grain size with good grain quality.

KWS JOYAU: A very early maturing conventional six row variety with very high yield potential. Moderately short straw with good resistance to lodging and straw breakdown. Moderately susceptible to mildew. Moderately resistant to Rhynchosporium. Good resistance to brown rust and net blotch. Good grain quality. There is a breeder claim that the variety is tolerant to Barley Yellow Dwarf Virus.

KWS TARDIS: A very high yielding two row variety. Moderately early maturing. Short straw with good resistance to lodging and moderate resistance to straw breakdown. Moderately resistant to mildew and brown rust. Good resistance to Rhynchosporium and Net Blotch. Good grain quality.

LG CASTING: An early maturing two-row variety with high yield potential. Short straw and moderately susceptible to lodging and straw breakdown. Moderately susceptible to Rhynchosporium. Good resistance to brown rust and net blotch. Very good resistance to mildew. Good hectolitre weight.

**PROVISIONALLY RECOMMENDED**

BORDEAUX: An early maturing two-row variety. It has short straw with moderate resistance to lodging. It is moderately susceptible to straw breakdown. Good resistance to brown rust. Moderate resistance to net blotch. Moderately susceptible to mildew and Rhynchosporium. Good grain quality.

SY ARMADILLO: An early maturing six row hybrid variety with very high yield potential. Very long straw with moderate resistance to lodging. It is moderately susceptible to straw breakdown. It is moderately susceptible to brown rust. It is highly resistant to Rhynchosporium. It is moderately resistant to mildew while it has good resistance to net blotch. Small grain size with a good hectolitre weight.

WINTER BARLEY 2023

AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED							PROVISIONALLY RECOMMENDED	
	BAZOOKA	BELFRY	KWS CASSIA	KWS INFINITY	KWS JOYAU	KWS TARDIS	LG CASTING	BORDEAUX	SY ARMADILLO
Relative Yield \pm	106	105	98	97	105	103	99	100	108
Varietal Type	6R(H)	6R(H)	2R	2R	6R	2R	2R	2R	6R(H)
Straw Height (cm)	111.6	105.6	89.7	88.9	93.9	86.9	84.3	87.5	111.3
Resistance to Lodging	6	7	7	7	7	7	5	(6)	(6)
Straw Breakdown	5	6	6	6	7	6	5	(5)	(6)
Earliness of Ripening	7	7	6	6	8	6	7	(7)	(7)
Resistance to:									
Mildew	6	6	5	5	5	6	8	(5)	(6)
Rhynchosporium	8	8	4	7	6	7	5	(5)	(8)
Brown Rust	6	7	7	6	7	6	7	(7)	(5)
Net Blotch	7	7	7	7	7	7	7	(6)	(7)
Grain quality:									
Screenings % (<2.2mm)	3.4	4.3	2.0	2.8	2.4	2.2	2.4	1.3	2.4
1000 grain weight (g)	47.6	46.6	53.5	53.1	48.9	55.9	52.0	54.0	47.7
Hectolitre weight (kg/hl)	68.8	68.1	70.9	67.9	69.2	69.4	69.1	69.2	67.8
Year First Listed	2019	2019	2011	2016	2022	2022	2020	2023	2023

*Based on trial results from 2020, 2021 and 2022. *Yields are expressed as a percentage of the mean of KWS Cassia, KWS Infinity an Belfry (100 =10.28t/ha @15% moisture content). () Limited Data.

The 1000 gr weight on all recommendation sheets is a 3-year average and one should always take the calculable figure from the actual seed purchased as stated on each pack.

Please see the following 3 tables that will act as the base for your seed calculations with target plant populations and expected field losses after including the stated 1000gr weight from each pack.

IMPORTANT CALCULATION

Target No seed / Sq. MT	Multiply	TGW of seed per pack	Divided	Expected Establishment	Equals	Kg seed / Ha
260	X	48	/	90	is	139

WINTER BARLEY

Sowing date (week)	Sept- 3 rd Week	Sept – 4 th Week	Oct – 1 st Week	Oct – 2 nd Week	Oct – 3 rd Week	Oct – 4 rd Week
Target plants m2	260	270	280	290	300	310
...Sowing seeds m2	289	318	329	387	400	443
% Establishment	90%	85%	85%	75%	75%	70%

WINTER WHEAT

Sowing date (week)	Sept- 3 rd Week	Sept – 4 th Week	Oct – 1 st Week	Oct – 2 nd Week	Oct – 3 rd Week	Oct – 4 rd Week	Nov – 1 st Week
Target plants m2	230	240	250	260	270	280	290
...Sowing Seeds m2	256	282	313	347	360	400	446
% Establishment	90%	85%	80%	75%	75%	70%	65%

WINTER OATS

Sowing date (week)	Oct – 1 st Week	Oct – 2 nd Week	Oct – 3 rd Week	Oct – 4 rd Week	Nov – 1 st Week	Nov – 2 nd Week
Target plants 350 m2	300	310	320	330	340	350
...Sowing Seeds m2	353	388	427	471	523	583
% Establishment	85%	80%	75%	70%	65%	60%

DAFM RECOMMENDED LIST FOR WINTER OATS

Both Husky and Isabel are the two variety’s again this year, they can be drilled from mid Oct to mid-April. Just a note of caution that all the varieties are spring but preform very well as Winter also. Husky have a DAFM rating of five for winter hardiness. They all had very good yields and KPH this year with very little lodging.

HUSKY: An early maturing spring type variety with high yield potential. Short straw with good resistance to lodging and moderate susceptibility to straw breakdown. Very good grain quality. Moderately susceptible to mildew and susceptible to crown rust.

WPB ISABEL: A high yielding, moderately late maturing, spring type variety. Good resistance to lodging and straw breakdown. Moderately susceptible to mildew and crown rust. Very good grain quality with a very good hectolitre weight.

An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine



WINTER OATS RECOMMENDED LIST 2023

AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED	
	HUSKY	WPB ISABEL
Relative Yield ♦	101	99
Straw height (cm)	111.6	114.7
Resistance to lodging	7	7
Straw breakdown	5	7
Earliness of ripening	8	5
Winter hardiness**	5	-
Resistance to:		
Mildew	5	5
Crown rust	4	5
Grain quality:		
Kernel content (%)	74.0	75.0
1000 grain weight (g)	39.8	42.1
Hectolitre weight (kg/hl)	57.9	59.9
Year First Listed	2010	2020

ORDER YOUR WINTER SEED IN TIME TO AVOID DISSAPPOINTMENT.



WINTER WHEAT

The Winter wheat list is out with seven varieties fully recommended and one provisionally recommended. Spearhead have moved to the fully recommended list, as KWS Dawsum makes its way on to the provisional recommended list. KWS Conros have being removed from list.

DAFM WINTER WHEAT RECOMMENDED LIST

COSTELLO: A moderately early maturing variety with very good resistance to lodging and good resistance to straw breakdown. Very good resistance to mildew and yellow rust, good resistance to fusarium ear blight and susceptible to Septoria tritici. Very good resistance to sprouting. Very good hectolitre weight.

GRAHAM: A very high yielding early maturing variety with good resistance to lodging and moderate susceptibility to straw breakdown. Very good resistance to mildew. Moderate resistance to Septoria tritici. Good resistance to yellow rust. Moderately susceptible to fusarium ear blight. Moderately resistant to sprouting. Good hectolitre weight.

JB DIEGO: A moderately early maturing variety with moderate resistance to lodging and good resistance to straw breakdown. Moderately resistant to mildew and fusarium ear blight. Susceptible to Septoria tritici and yellow rust. Good resistance to sprouting. Good grain quality with a good hectolitre weight.

SPEARHEAD: A very high yielding moderately early maturing variety. Moderate resistance to lodging and straw breakdown. Very good resistance to mildew. Moderately susceptible to Septoria tritici. Good resistance to yellow rust. Susceptible to sprouting. Moderate grain quality.

SY INSITOR: A very high yielding moderately early maturing variety with moderate resistance to lodging and straw breakdown. Good resistance to mildew. Moderately susceptible to Septoria tritici. Good resistance to yellow rust. Moderately resistant to fusarium ear blight. Susceptible to sprouting. Good hectolitre weight.

TORP: A high yielding, moderately late maturing variety. Good resistance to lodging and moderate resistance to straw breakdown. Moderate resistance to Septoria tritici. Moderately susceptible to mildew. Susceptible to fusarium ear blight and yellow rust. Moderately resistant to sprouting. Moderate grain quality with a low hectolitre weight.

PROVISIONALLY RECOMMENDED

KWS DAWSUM: A moderately early maturing variety, with good resistance to lodging and straw breakdown. Very good resistance to mildew and yellow rust and moderately susceptible to Septoria tritici. Very good resistance to sprouting. Low thousand grain weight with a very good hectolitre weight.

An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine



WINTER WHEAT RECOMMENDED LIST 2023

AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED						PROVISIONALLY RECOMMENDED
	COSTELLO	GRAHAM	JB DIEGO	SPEARHEAD	SY INSITOR	TORP	KWS DAWSUM
Relative Yield ♦	95	103	97	104	103	103	102
Straw Height (cm)	71.5	79.2	80.0	79.1	78.9	79.5	73.4
Resistance to lodging	8	7	6	6	6	7	7
Straw breakdown	7	5	7	6	6	6	7
Earliness of ripening	6	7	6	6	6	5	6
Resistance to:							
Mildew	8	8	6	8	7	5	(8)
Septoria spp.	4	6	4	5	5	6	(5)
Yellow rust	8	7	4	7	7	4	(8)
Fusarium ear blight	7	5	6	-	6	4	-
Sprouting	8	6	7	4	4	6	(8)
Quality:							
Grain Protein % (15%MC)	10.5	10.2	10.2	9.7	9.7	9.9	9.8
Hagberg Falling No.♦	360	276	330	133	225	224	359
1000 grain weight (g)	47.8	52.0	49.6	51.1	47.9	48.8	47.0
Hectolitre weight (kg/hl)	80.5	77.6	78.1	75.7	78.1	75.1	79.6
Market +	F	F	F	F	F	F	F
Year First Listed	2017	2020	2010	2022	2021	2018	2023

*Based on results from 2020, 2021 and 2022.
 ♦ Yields are expressed as a percentage of the mean JB Diego and Graham (100 = 11.49t/ha @ 15% moisture content).
 - No data.
 ♦ Based on results from harvests 2019, 2020 & 2021.
 + F - Feed quality.
 () Limited Data.



Winter Cereal Recommended List Trial Results 2022



By Frank Hayes I.A.S.I.S. Dairygold Agri Business

Note on Relative Yields

The results tables includes relative yield data for the varieties in trial, over the last three years: 2020, 2021 and 2022. Only results over a minimum of 3 years give a meaningful assessment of the true merits of a variety. The results for some of the varieties are only 'one year' or 'two year' results and may not reflect the true merits of these varieties. In these cases, the information should be treated with caution and should not be misused or quoted out of context.

The relative yield ratings as published in the Recommended List are statistically calculated using yield data from RL trials only. Previous NL yield figures are not considered for this calculation. A simple arithmetic average of the relative yields across three years may not reflect the final Recommend List relative yield figure.

The definitive relative yields of recommended varieties will be published in the Winter Wheat/Barley/Oats Recommended List 2023.

ONE YEAR RESULTS ONLY FROM 2022 HARVEST

Winter Wheat Recommended List Trial 2022

Variety	Yr	Agt	Breeder/ Country	Breeders Reference	Parentage	Yield		
						2022	2021	2020
1 JB Diego ©	R	ST	Breun, DE	5251d35	3851b2 x STRU2374	96	98	99
2 Graham ©	R	ST	Syngenta, UK	CCB11H159	Premio x Expert	104	102	104
3 Costello	R	GC	KWS, UK	SEWC118	CPBTW151 x CPBT W134	93	94	100
4 Torp	R	D	Nordic, DK	NOS 14012.23	Ambition x Symbol	105	102	102
5 SY Insitor	R	ST	Syngenta, UK	SY 116-157	Hereford x AB111-1011	103	102	105
6 Spearhead	PR	D	Elsoms, UK	EW 6534	Freiston x Dickens	103	103	108
7 KWS Dawsum	C	GC	KWS, UK	KWS W383	KWS Kerrin x Costello	98	101	109
8 LG Nida	C	ST	Limagrain, DE	LGWD14-3249-A1	Janne x KWS Vincent	95	99	(103)
9 LG Aldaniti	2	ST	Limagrain, UK	LGWU168	(Stigg x Skyfall) x Crusoe	93	97	
10 Positiv	1	ST	Florimond Desprez, FR	FD 15 WW 071	Cellule x Tobak	97	(97)	
11 Champion	1	ST	DSV, UK	DSV 318117	DSV 20122 x Reflection	104		
12 LG Artman	1	ST	Limagrain, FR	LGWF 17-4055	Fairplay X (Cellule x Oregrain)	96		
13 KW 2548-19	1	ST	KWS Lochow, DE	KW 2548-19	KWS Salix x LMGN 5327	105		
14 Fitzroy	1	GC	Secobra, UK	SC 2856	Evolution x Stigg	100		
15 SEMU1126-17	1	GC	Semundo, NL	SEMU1126-17	Apian x Zeppelin	98		
16 WPB14W0677-05	1	GC	Wiersum, NL	WPB14W0677-05	RGT Reform x Manitou	97		

NOTE: Unbracketed yield figures relate to performance in the Recommended List Trial. Figures in brackets relate to performance in the National List Trial. © = Control Variety
C = Candidate Variety - Graham was not a control variety in 2020. 100 = 12.46t/ha in 2022, 11.03t/ha in 2021 and 10.74t/ha in

**Winter Wheat Recommended List Trial 2022**

Variety	Yr	Ear	Agt	Breeder/ Country	Breeders Reference	Parentage	Yield		
							2022	2021	2020
KWS Cassia ©	R		GC	CPB/TWY, UK	CPBT B88	(Eden x Carat) x Saffron	98	99	96
KWS Infinity ©	R		GC	KWS, UK	KWS B104	Retriever x KWS Cassia	92	99	100
Belfry ©	R	6R (H)	ST	Syngenta, UK	SY 212-124	F1 Hybrid	110	102	104
Bazooka	R	6R (H)	ST	Syngenta, UK	SY 212-118	F1 Hybrid	109	105	104
LG Casting	R		ST	Limagrain, UK	LGBU 12-5432 C	California x NSL07-6654-D	95	101	101
Valerie	PR		GC	Breun, DE	Br11500r6	207-589 x Sandra	98	99	98
KWS Joyau *	PR	6R	ST	KWS Momont, FR	KM 12AY64	Amistar x MH 06DP32	112	103	100
KWS Tardis	PR		GC	KWS, UK	KWS B134	11-12 x KWS Orwell	102	105	103
Belmira	C		ST	Nordic, DK	NOS 915.046-58	NOS 9901-14 x Heimdal	94	104	(105)
Bordeaux	C		D	Nordic, DK	NOS 911.016-53	Padura x KWS Glacier	94	103	(102)
SY Armadillo	C	6R (H)	ST	Syngenta, UK	SY 217-581	F1 Hybrid	111	107	(105)
SY Canyon	2	6R (H)	ST	Syngenta, UK	SY 217-543	F1 Hybrid	113	105	-
Kismet	2		GC	Ackermann, DE	AC 14/361/40	KWS Carbis x KWS Creswell	96	103	-
NOS 916.040-51**	1		D	Nordic, DK	NOS 916.040-51	NOS 9075-15 x KWS Infinity	103	(100)	
NOS 916.008-52	1		D	Nordic, DK	NOS 916.008-52	KWS Creswell x Sobell	98	(106)	
LG Zebra *	1	6R	ST	Limagrain, BE	LGBB15W983	(S28214 x Souleyka) x (40203104 x Leibnitz)	108	(103)	
KWS Feeris *	1	6R	ST	KWS Momont, FR	KM 13CO24	Amistar x KWS Kosmos	111	(107)	
KWS B141	1		GC	KWS, UK	KWS B141	KWS B124 x Surge	94	(103)	
SJ172109	1		GC	Sejet, DK	SJ172109	Kathmandu x SJ150530	96	(101)	
NOS 916.037-51 **	1		ST	Nordic, DK	NOS 916.037-51	NOS 9070 -15 x KWS Infinity	97	(101)	

NOTE: Unbracketed yield figures relate to performance in the Recommended List Trial. Figures in brackets relate to performance in the National List Trial. © = Control Variety.
C = Candidate Variety. 100 = 10.25t/ha in 2022, 10.49t/ha in 2021 and 10.10t/ha in 2020. *Declared by breeder as BYDV Tolerant **Declared by breeder as BYDV Resistant

Variety	S/W	Yr	Agt	Breeder/ Country	Breeders Reference	Parentage	Yield		
							2022	2021	2020
Barra ©	S	R	GC	SW Seeds, SE	W17218	Selma x KM1MS	93	99	97
Husky ©	S	R	ST	Nordsaat, DE	NORD 04/122	Firth x Freddy	107	101	103
WPB Isabel	S	R	GC	Wiersum, NL	LW 09W035-04	LW 03W038-06 x Husky	100	97	105
WPB Shaun	S	C	GC	Wiersum, NL	WPB 13W668-03	(LW 06W146-01 x LW 07W013-11G) x LW 06W158-02	106	101	107
Efes	S	2	ST	LFS Edelhof, AT	SE 17 - 3005 SH	Canyon x Erwin	109	104	
KWS Ocre	S	2	ST	KWS Momont, FR	KM PFJ 06	Canyon x Albatros	106	100	
Eddy	S	1	ST	RWA Wein, AT	SEF 18 - 3019SH	Husky x Moritz	107		
Ely	S	1	ST	RWA Wein, AT	SEF 19-3032SH	Ivory x Ozon	108		
WPB Enya	S	1	GC	Wiersum, NL	WPB 13W671-05	Lw 06W146-01 x LW 07W013-11G) xLW 06W158-02	105		
KM 15-SHP1-84-1	W	1	ST	KWS Momont, FR	KM 15-SHP1-84-1	08 HR 02 x Mascani	95		
WPB14W885-01	S	1	GC	Wiersum, NL	WPB14W885-01	(LW07W013-04 x Bingo) x Symphony	108		
WPB14W882-02	S	1	GC	Wiersum, NL	WPB14W882-02	(LW07W013-04x Max) x WPB08W028-11	93		

©= Control Variety. 100 = 10.07t/ha in 2022, 9.80t/ha in 2021 and 8.65t/ha in 2020.



Autumn Weed Control

By **Ger Hanley** I.A.S.I.S. Dairygold Tillage & Beef Area Manager



05/10/22



Winer Barley at GS 11 breaking through

Weed control is an element that is becoming an increasing challenge to many in recent years as our arsenal of products reduces and weed resistance and /or tolerance grows, all making the job a little more difficult and expensive, requiring a higher degree of technical competence and understanding. We now have a very significant amount of winter cropping with up to 65% of our cereals being planted in the autumn, probably 75% of these receiving an autumn applied herbicide and a very high percentage resprayed in the spring to clean up incomplete jobs. While there is nothing wrong with that, it's an area

that can be improved on with better understanding and planning around the job at hand which should improve the overall performance of your program and reduce overall costs in some cases as often growers are spending vast amounts of money on expensive programs to control weeds that maybe should have been addressed differently. There is also workload and weather to factor into this debate, as both, particularly the latter can throw you off your tracks at that time of the year as weather can change and close in very quickly, and then for a prolonged period.

When thinking this job through and planning, there are several factors to consider and plan around.

- Know and understand the weeds that are resident to the land you are working and the degree of difficulty that they have caused you in the past. Have you been controlling them with your present programs or are they becoming increasingly problematic?
- The rotation that you are applying to your farm; does it give you the opportunities to control these weeds correctly.
- The crops you are working with; can they be sprayed with the better ai if approached in a different way.



Chickweed, a growing problem in tillage fields



Groundsel, poorly controlled by most autumn herbicides



Common Fumitory, there area number of sus-species



- Is there resistance weeds present which creates a serious problem and may force you to close this block of land for a while unless alternative actions are considered, this simply means you **MUST** change what you are doing.
- Am I using the correct and better products for my crops and do I know and understand what they include? We often change chemicals by brand name in the believe that we'll do a more complete job with the newer brand, only to find that you were simply using the same ai, maybe slightly different ratios and getting no better results.

Planning an Autumn Herbicide Program.

Should I try to:

(approximate areas only from the authors opinion.)

- Prevent weeds in the first place
approx. 10% of crops are treated in this fashion

OR

- Is it ok to address these at peri-emergence state?
75% of crops receive some post emer Autumn herbicide

OR

- Is a single spring application sufficient for me?
25% of crops are treated this way

OR

- Plan for a 2-spray program, sometimes necessary if dealing with specific problems or as an unplanned "spring clean-up", again for specific reasons.
50% of all winter cereal will receive a clean-up application

There are three different timings for applying Weed control programs to winter cereals. This will depend on the crop type, target weeds, product type, time availability and weather.

The best and most complete program is a "pre-emergence residual" application of ai that will prevent weeds from establishing in the first place. In my opinion this is the bedrock of most good autumn herbicide programs, especially where some difficult weeds are being tackled. These will include grassweeds, marigolds and now chickweed is

falling into this bracket also. Surprisingly only ~10% of crops are sprayed in this fashion despite the now abundance of highly sophisticated machinery with excellent navigational technology. It's an absolute necessity when dealing with some grass weeds as often prevention is better than cure, especially when so few cures are available. From work that I had the opportunity to monitor, carried out by professional trial specialists in the Cork area during the 2022 season, there is no doubt that if you are to tackle weeds such as blackgrass, Pre-Emerg application are a given decision, and the results will speak for themselves. In fact, is hard to find a reason why you shouldn't apply such programs to your crops as its always easier to prevent than control. Some growers argue that they haven't time to complete this job as they are busy planting; then the weather closes in for a week, crop and weeds start to come through and the opportunity missed. In the UK where they are dealing with serious weeds issues such as blackgrass, broom and even chickweed, they will stop planting regularly to complete this job, always with 48 hours of sowing; they have learnt the hard way.

There are timings, conditions and weather events that need to be monitored when using these programs, such as:

- Making sure you have a nicely rolled firm seedbed
- Avoid imminent heavy rain
- Avoid overlapping, especially with some ai
- If soil is dry keep water rates high.

The more commonly used program is the "Peri-Emer or early Post-Emer" type application and is favored by many growers for a variety of reasons. A lot of these reasons are excuses in some ways to avoid the slightly more difficult job in the pre-Emer application as now they have a different crop to spray, visually in any case.

- You have more time now as crops are usually planted at this stage.
- Emerging weeds are still very small and easy to control. The ai that you apply in such cases are generally a mix of both residual and contact, depending on the actual timing and the GS of the weeds.
- You are spraying a crop that you conveniently can include the aphicide with the herbicide.
- You can follow the emerging tramlines which is a poor advertisement for GPS and traffic guidance systems.

- You have weeds to kill now and this gives some growers more satisfaction as they know their targets and can measure the results.
- Some weeds are better controlled after emergence, such as deeply emerging cleavers, groundsil and fumitory.

In the case of late planted crops, its often springtime before they get an herbicide applied; a truly **“Post-Emer”** and that’s ok too as usually little opportunity to travel ground in late autumn as weather closes in and ground conditions deteriorate quickly. Weeds are also slow to emerge at this timing and when you do get into the field in early spring the weeds are still very small and relatively easy to control. Its generally a contact type compound that you apply at this stage, often more expensive than the autumn applications as you are now completing the job 100% in one single application.

- Usually, a cocktail of ai to control the full range of weeds, often including wild oats.
- Can be hard on a crop at this very delicate stage if a lot of ai are included.
- Weather can be an issue in a late spring and weeds will become very strong and competitive quickly while you wait in the headland; or take the decision to move in and create some unavoidable field tracks.
- Must resist the temptation of including PGR, fungicides etc.... with this application as completely overloads the crop.
- You know exactly what you are targeting now but will check the crop; that’s part of the program and crops will recover quickly in any case if the weather is growthy and warming up.
- You will have little or no effect on any grass weeds in Barley and a very limited effect when using some wheat herbicides; not a program to use if you have these species with special attention to detail.
- Some post-Emer applications are follow up treatments to autumn applications and may be necessary to clean up late or resistant weeds or in some case a preplanned program to get 100% of weeds in difficult situations. Such weeds that often need a spring clean-up include Fumitory and Groundsil, not well controlled by most autumn programs.

Know your Growth Stages GS

GS1: Leaf development (seedling growth)

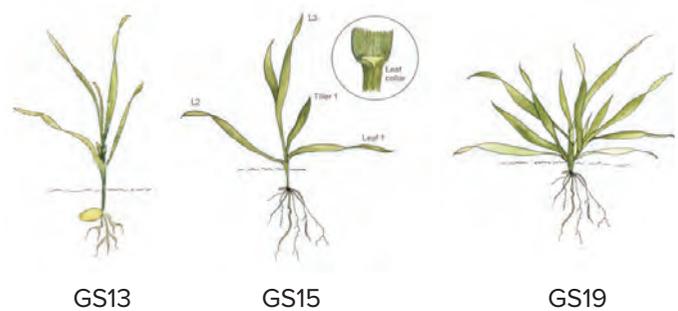
GS10: First leaf through coleoptile

GS11: First leaf unfolded (ligule visible)

GS13: Three leaves unfolded on the main shoot

GS15: Five leaves unfolded

GS19: Nine or more leaves unfolded on the main stem.



GS2: Tillering (product of side shoots)

GS20: Main shoot only (no tillers)

GS21: Main shoot and one tiller

GS23: Main shoot and three tillers

GS25: Main shoot and five tillers

GS29: Main shoot and nin or more tillers

Dairygold Autumn Cereal, Seeds and Programs.

Please see below a summary of the Dairygold Autumn herbicide products for the coming season. Not a lot new from last year, maybe a few more ai withdrawn but otherwise basically the same actives. There are no new ai on the market this year and any new products are only in name or slight variations of old Traded formulations and marketed as new products. As I have mentioned in this article, be careful in this respect; if you expect to improve your weed control by following these new trade names, it generally won’t happen as in fact you aren’t changing anything at all, maybe slightly different ai ratios but that’s it.

We have designed special and specific programs to deal with Grassweeds and Min-Zero Till establishment methods and you will need to be discussed with your Dairygold agronomist/ASM in an individual way as many issues will influence your program. These include:

- Planting date
- Crop choice
- Previous crop
- Planned crop for next season
- Rotation
- Field history
- Product availability and price / ha



As I have said in the introduction, weed control is now becoming a little more complicated as resistance issues start to emerge, so please consult your Dairygold Agronomist or ASM for best advice. We have a complete range to choose from and I can assure you that your crop will be treated with what it needs not what the trade wants to sell; there is a difference.

Winter Barley + Wheat Herbicide ai and general programs 2022/23

Individual Active details (not to be used on their own)

Product	CROP	Active Ingredient ai	ai/grm lt	ai / ha	Program comment
Hurricane	WB/WW/WO/ Rye / Trc	Diflufenican dff	500		Good broad-spectrum herbicide. Only moderate AMG even when applied early. Usually applied with another active to maximize cover/ Poor on Fumitory. Good on Chickweed which is now becoming an issue Often used as a winter application in OATS to control AMG.
Stomp Aqua	WB/WW/Rye/ Trc	Pendimethalin pdm	455		Good broad-spectrum herbicide. Good on AMG when applied early. Usually applied with another active to maximize cover. New formulation reduces staining and wash off easily. Excellent on corn marigold/ Poor on Groundsel. Is now considered the foundation to Problem Grassweed programs in conjunction with other ai
Fence	WW/WB	Flufenacet flc	480		Only to be used as part of a program and at a compromised rate. Strong on Grassweeds

Sample General Programs

Flight	WB/WW/Trc	Pendimethalin pdm	330	An ideal Winter Barley / Wheat program with strong residual and persistency Probably the most persistent program. Good on AMG and BLW. Good suppression of winter WO. Moderate on groundsel. No effect on BG, suppresses SB. Yellow staining washes off easily/ Good on Cleavers / Poppy / Fumitory Tends to work better at early post-emergence of some weeds > ideal timing GS 11-22
		Picolinafen pcf	7.5	
Reliance / Navigate	WB/WW/WR/WT	Flufenacet flc	400	W Wheat / W Barley/Rye Good broad-spectrum herbicide. Good on AMG with some effect on SB and BG. Moderate on fumitory, groundsel, and cleavers. Best applied Early for best results < gs 12. Will need a Spring Clean-Up in most cases as not overly persistent as a one spray program. Use the high rate when working on W Wheat crops
		Diflufenican dff	200	
Reliance	WB/WW	Flufenacet flc	400	W Barley Rate Good broad-spectrum herbicide. Good on AMG with some effect on SB and BG. Moderate on fumitory, groundsel, and cleavers. Best applied Early for best results < gs 12
Hurricane		Diflufenican dff	500	
Firebird MET	WW / WB	Flufenacet flu	90	WW Good broad-spectrum herbicide like Bacara Triple with higher loading of Dff plus Mtz. Good on AMG with better effect on Broom and Blackgrass. To be considered where Blackgrass is an issue but needs to be applied PRE-EMERGENCE <48hrs post planting or part of a stacked 2 spray program. <u>See Grass program.</u> WB apply at .5lt / ha at PRE-EMERGENCE fld by .5 /lt at GS 12, or .75 ls / ha max at GS 12 in 1 spray program where Grass weeds are an issue
		Diflufenican dff	240	
		Metribuzin mtz	70	
Tower	WB/WW/Rye/Trc	Diflufenican dff	40	Good broad-spectrum herbicide with extra activity on AMG. Often preferred product where herbicide application is slightly late but should be made before gs 14 to control AMG
		Pendimethalin pdm	300	
		Chlortoluron crl	250	
Defy plus Hurricane	WB/WW	Prosulfocarb psb	800	Good broad-spectrum herbicide with extra activity on AMG and cleavers. Can be hard on WB especially at peri em stage. While this is good value it's important that a Spring Clean-Up will be required as not overly persistent and narrow weed spectrum. DO NOT APPLY ON WB AT PETI-EMERGENCE STAGE
		Diflufenican dff	500	
Alyster Flex plus Biopower	WW only	Diflufenican dff	120	Broad spectrum Wheat Herbicide . ' mainly contact, for use as a post-emerge Spring Herbicide . Ideal timing Feb / Mar for unsprayed crops. Also contains dff for residual activity. Good on AMG, Broom and sensitive Blackgrass, WO (Moderate om TO), Cleavers etc... .75 lt where no problem grasses present. Add Delfan to sooth effect
		Mesosulfuron msl	9	
		Iodosulfuron isi	7.5	

Oilseed Rape Weed Control

Weed control in WOSR can be a little tricky in broken weather as there are several issues that can and will influence your decision and actions at any given time. In difference to cereals and most other crops, it's a delicate seed with a narrow window to germinate in, and few second chances if not successful at its first attempt. The most critical time I find in Winter Oilseed Rape agronomy is the timing around establishment, usually that 8 weeks immediately after planting where its exposed to both pest and herbicide damage. There are many

factors that can be problematic at this time and in many ways interactive with one another; such as a crop that's "sick" after a miss timed herbicide application can be much more vulnerable to pest damage while a crop that's been grazed by slugs can often be mistaken for Flea Beetle damage; its best to get professional advice in such cases and quickly as damage can happen very fast resulting with crops of low plant counts. **Dairygold Tillage ASM / Agronomists are at hand to offer immediate help and advise you if you have any concerns in this field.**

OILSEED RAPE 2022

Pre-Emergence Options

Product	Crop	Notes	
Option 1 Best Option	****Katermaran Turbo	WOSR	Best applied immediately after planting . Avoid Cotyledon Stage post emergence . Can also be applied post emergence with Gramicidin once weed hasn't grown too deep <i>as activity is both coleoptile shoot contact and residual</i> . Controls CLEAVERS , FUMITORY and poppy much better than Regular Katermaran
Option 2	Katermaran Turbo	WOSR	Apply immediately post planting
	Katermaran Turbo	WOSR	At Exp Coty +/- Salsa or Gramacide

Post Emergence Options

Product	Crop	Notes	
Option 1	Kerb 400	WOSR	3 leaf to 1/feb ay <6c Grd Temp. Narrow BLW Spectrum but VG on Grass incl Black grass at 1.7 lt/hct .Commonly used at 1.5 lt where weeds are at < 4 T1 and no Blackgrass. Excellent on Broom. Mod on Groundsel -poor on Fumitory
Option 2 BEST OPTION	Astro Kerb	WOSR	Extra to Kerb : Adds Poppy, Mayweed and Groundsel when applied pre-emerg and cleavers , also improved control on Fumitory but not total . Again commonly used at 1.5 lt / Hct where Blackgrass isn't a problem and weeds are < 4 TL .EXCELLENT ON BLACKGRASS AND BROOM AT 1.7 LT / HA
Option 4	Belkar - 2 spray program	WOSR	Min 2 weeks between T1 and T2 where used as a 2-spray program. Good broad weed post emergence option. Weeds need to be at 2 TL when applying . No activity on Vol Cereals or Grass weeds. <i>Sometimes part 1 application is sufficient depending on weed profile etc... You can clean up with Astrokerb later if necessary in such cases.</i> ALWAYS INCLUDE NON-IONIC WETTER
Option 5	Belkar - 1 spray program	WOSR	Good Broad weed post emergence control .Weeds need to be at 2 TL when applying No activity on Vol Cereals or Grass weeds / Needs nice growthy weather and may coincide Gramacide timing. ALWAYS INCLUDE NON-IONIC WETTER

Grassweeds and Vol cereals (not good on Blackgrass or Broom)

Option 6	Stratus Ultra	WOSR	Commonly used for Vol Cereals from 1lt /ha at GS11 to 2 lt / Ha at GS 30 plus of Vol Cereal
Option 7	Centurion Max	WOSR	Commonly used to control Vol Cereals and Wild Oats PLUS AMG and ~ Blackgrass up to gs13 NOT A Good MIXER

HERBICIDE PROGRAM FOR CLEARFIELD VARIETIES ONLY

Option 8	Clearanda	WOSR	Special Product for control of full range of Brassica weeds plus extensive range of BLW including Vol Cereals and Wild Oats . No activity on AMG . Needs to be applied PRE GS 12 of weeds. Always include DASH wetter with this product.
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Flee Beetle control

Insecticide	Ninja	WOSR	Flee beetle control >>To be applied at first sight of any damage 9 Shot holes in cotyledons or is pr true leaves
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PGR Program

Spring Application	Caryx	WOSR	Specialized PGR for OSR. Can be applied with the Fungicide / Boron program. This is now becoming a standard application as has effect on both root development in the Autumn while encourages greater branching and stem strength in the Spring.
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Autumn Fungicide Program

Autumn Application	Proline	WOSR	For the control / prevention of Phoma and Light Lear Spot LLS. Always be proactive with these diseases. Also include some boron and PGR if needed at this stage. We would suggest routine spraying in the Autumn and again in early Spring
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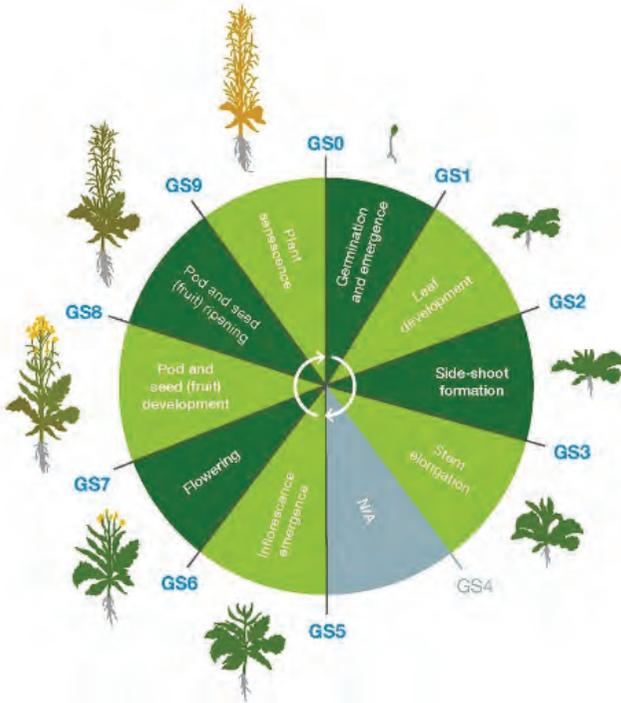
Weed controlled in OSR with popular products

Product	Katamaran Turbo		Cleranda	Belkar		Astro Kerb	
a.i. conc.	200g/l dimethenamid-p 200g/l metazachlor 100g/l quinmerac		17.5g/l imazamox + 375g/l metazachlor	10g/l halauxifen + 48g/l picloram		500g/l propyzamide + 5.3g/l amino pyralid	
Dose rate	2.5 l/ha		2.0 l/ha (+ 1.0 l/ha Dash)	0.25 l/ha	0.5 l/ha	1.0 l/ha	1.5 l/ha
Application Timing	Pre-em	Post-em	Post-em	2 leaf	6 leaf	Post-em	
GRASS WEEDS							
Blackgrass	MS	MR (1 true leaf)					S (2 true leaves)
Annual Meadow-grass			MS			S	S
Barren Brome							S
Rough Meadow-grass							
Loose Silky Bent							
Volunteer Cereals			S (3 tillers)			S	S
Wild Oat			S (3 tillers)			S	S
BROAD-LEAVED WEEDS							
Black Bindweed			MR (2 true leaves)			S	S
Black Nightshade						S	S
Charlock	R	R	S (4 true leaves)	R	R	R	R
Cleavers	S	S (2 whorls)	MS (2 whorls)	S (2cm across)	S (10cm across)		MS
Common Chickweed	S	S (2 true leaves)	S (2 side shoots)		MS	MS	S
Common Field Speedwell	S	S (2 true leaves)	S (4 true leaves)			S	S
Common Fumitory	S		S (3 true leaves)	S (2cm across)	S (15cm across)		
Common Orache							
Common Poppy	S		S (4 true leaves)	MS	S (8cm high)		S (3 true leaves)
Corn Marigold							
Corn Spurrey							
Crane's-bill	S	S (1 cotyledon)	MS (2 true leaves)	S (2cm across)	S (8cm across)		
Fat-hen	S		S (2 true leaves)			S	S
Field Forget-me-not	MS						
Field Pansy	MR		MS (2 true leaves)				
Fool's Parsley							
Groundsel	S		S (2 true leaves)				
Hedge Mustard	R	R	S (4 true leaves)	R	R	R	R
Hemp-nettle (Day Nettle)							
Henbit Dead-nettle							
Ivy-leaved Speedwell	S		S (2 true leaves)				
Knotgrass						S	S
Mayweeds (Scented)	S		S (4 true leaves)	S (2cm across)	S (8cm across)		S
Parsley Piert			S (3 true leaves)				
Pennycress Field				MS	S (8cm across)		
Red Dead-nettle	S	MS (1 cotyledon)	S (2 true leaves)	S (2cm across)	S (8cm across)		
Redshank	MR	R				S	S
Runch	R	R	S (4 true leaves)	R	R	R	R
Scarlet Pimpernel							
Scentless Mayweed			S (2 true leaves)	MS	S (8cm across)		
Shepherd's Purse	S	MS (2 true leaves)	S (4 true leaves)	S (2cm across)	S (10cm across)		
Small Nettle						S	S
Smooth Sowthistle	S						
Volunteer Beans							
Volunteer Oilseed Rape	R	R	S (4 true leaves)	R	R	R	R

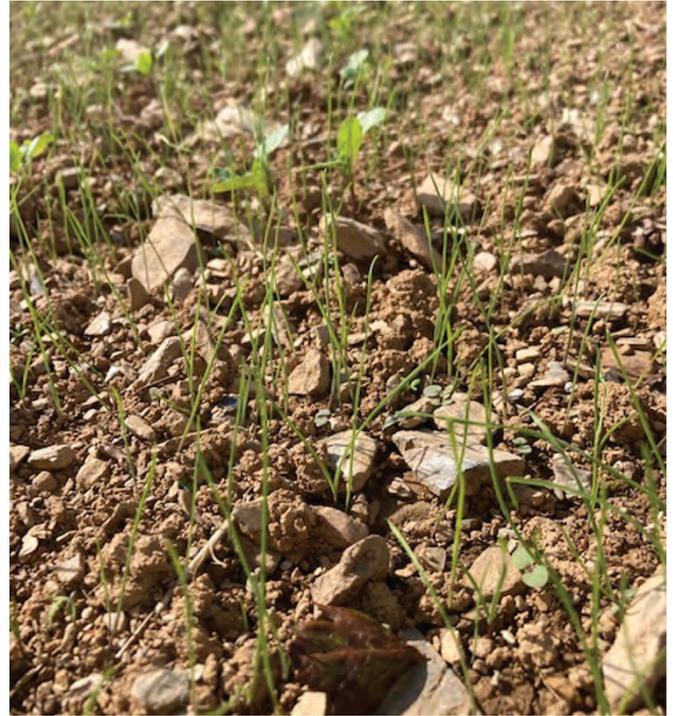
S = Susceptible
MS = Moderately susceptible
R = Resistant
MR = Moderately resistant

(1) = deep germinating volunteer Oilseed Rape may

* control may be achieved under favourable conditions



Know your Growth Stages GS



Oilseed Rape with an upcoming serious Blackgrass problem

Reliable & Proven weed control in winter wheat & winter barley



Syngenta Ireland Ltd., Block 6 Cleaboy Business Park, Old Kilmeaden Road, Waterford
Tel. 051 377203





AUTUMN 2022



ADAMA

TOWER®

TOWER® is a unique residual, containing pendimethalin, diflufenican and chlorotoluron, providing excellent stand-alone annual meadow-grass control as well as broad-leaved weed activity in winter and spring cereals.



Key Benefits

- Excellent stand-alone annual meadow-grass and broad-leaved weed control
- When combined with flufenacet, TOWER® is an important part of black-grass control programmes
- Flexible product label – can be used pre and post emergence in winter cereals and spring wheat and spring barley. Advantageous if pre emergence application is missed due to poor autumn weather conditions

Crop Information

Crops	Max individual dose (L/ha)	Number of applications	Latest timing
Winter wheat, winter barley, winter triticale & winter rye	2.0	1	Before pseudostem (leaf sheath) erect stage
Spring wheat & spring barley	2.0	1	Before pseudostem (leaf sheath) erect stage

Product Information

Active ingredients:
250g/L chlorotoluron
40g/L diflufenican
300g/L pendimethalin

Formulation:
Suspension Concentrate

Pack size: 10 litres

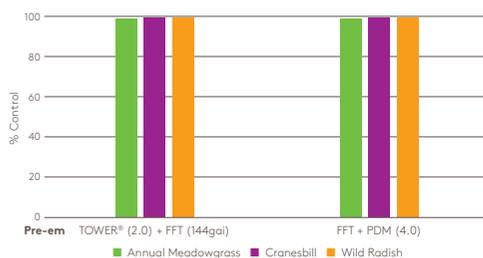
Application Information

Water volume: 150-300L/ha

Spray quality: Medium

Aquatic buffer: 6 metres

TOWER® vs common weeds



Excellent control of ALS resistant Chickweed



Untreated



TOWER® (2.0 L/ha)

NO VARIETAL RESTRICTIONS – TOWER® can be applied pre- or post-emergence to all currently grown commercial varieties of winter and spring wheat, winter and spring barley, winter rye and winter triticale.



info@croplink.ie | www.croplink.ie

TOWER® is a registered trademark of the ADAMA group. TOWER® contains 250g/L (21.7% w/w) chlorotoluron, 40g/L (3.5% w/w) diflufenican and 300g/L (26.1% w/w) pendimethalin. Use plant protection products safely. Always read the label and product information before use. For further product information, including warning phrases and symbols, refer to www.adama.com/uk or call The Technical Helpline on 01635 876 622.

ADAMA Agricultural Solutions UK Ltd, Third Floor East, 1410 Arlington Business Park, Theale, Reading RG7 4SA. Telephone 01635 860 555. UKenquiries@adama.com.

Blackgrass Update



05/10/22

By **Tim McCarthy** B.Agr.Sc I.A.S.I.S Dairygold Agri Business

This is a weed that I consider to be one of the greatest threats to modern day tillage farming in Ireland. It's not a new weed to us as it has been here for many years to some degree, but only recently has it developed into a bigger problem for tillage farmers as the species now evolving are showing high degrees of resistance or tolerance to most herbicides in the field. Before discussing on how to try and deal with it, it's important to understand the weed and its history as there are lessons to be learnt from the past that may prove part of the answers into the future. There is also a reluctance by some growers in admitting to having the problem and seeking out help to deal with it and other growers may well have the weed and just not recognizing it for what it is, often leaving it late and then a major issue.

Growers, this is just another weed, yes a difficult one, but let's take it on and solutions will be found in time."

Blackgrass (*Alopecurus myosuroides*) is a member of the *Alopecurus* family of grasses, but the only annual member of the species as the other three species can survive for up to three years as perennial plants. Its sister species are found in old grassland often boggy meadows and not known to survive in tillage plots or systems. They are commonly known as Meadow Foxtail and Marsh Foxtail and favored by animals that graze them. They are very similar to Blackgrass to look at but when studied they consist of smaller, slightly more oval shaped heads and don't grow in distinct shallow clods as is the case with blackgrass. All species favor heavy natured soils, but blackgrass can propagate equally as well in high fertile dry soils and can grow and seed very quickly. One of its real threats is the fact that it can take over an area of land very quickly as it has mass ability to propagate. It can produce

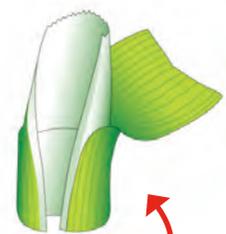
100 seeds per stem, often with 30 stems per plant and often with 20 plants per square meter; without any calculator this amounts to a serious threat in the following autumn where all these fertile seeds can grow. It favors early autumn germination, August to late September in moist mild weather and can grow from a depth of no more than 5 cm in consolidated ground and for those seeds that are deeper in the soil they can survive for a maximum of 5 years reducing significantly in the intermediate years. While some shallow seeds will germinate in the spring, it will be in much smaller numbers with very small ears and usually to a level that allows cropping to continue if that's the grower's choice.

Life Cycle



Black-grass seed statistics

Seed longevity: 1-5 years
 Seed decline: 80% per year
 Germination depth: 5.7cm
 Seed Weight: 1.8mg
 Seeds/head: 100
 Seeds/plant: 800



Black-Grass Ligule:

Medium: 2.5mm. Blunt and finely serrated.

Auricles: Absent

Leaf blade: Bluish-green, short, flat and hairless. Usually rough with a well-defined keel and usually rolled.

Description: Tall, erect annual. Compact: flower spike 3-13cm; narrow and pitted, often tinted purple, Seedling leaf sheath often purple.



Blackgrass Seeds:
Syngenta



Emerging Blackgrass seedlings:
FW publication



Blackgrass clods in March:
Teagasc



Blackgrass plants as they
mature: Bayer Pict 1



Blackgrass plants as they
mature: Bayer Pict 2



Blackgrass plants as they
mature: Bayer Pict 3

The Blackgrass plant itself is dark green in color with a distinct purple / black hue to it from a distance. It establishes on the surface of the soil, creating a very shallow root mass and easily removed if pulled at. It has a distinct absence of hairs on any part of its stems or leaves and grows in a very upright fashion with few if any nodes. Another noticeable feature to a trained eye is the absence of auricles or collar where the leaf sheets leave the stem and a very defined ligule, again found where the leaf sheet extends from the stem, short with a surface like a saw blade. When left to nature it tillers aggressively throughout producing as much as 30 stems per established plant over time, all developing seed heads which will start to appear over the crop from early-May onwards. The ear will flower very quickly and lay down seeds while the ear changes from is juvenile light green color to a more distinctly black looking species from where I presume its name derived. The whole seeding process is over quickly and immediately the plant start to die off leaving a dried-out hay like material up through the crop which can and often do causes real issues at harvest time particularly in a wet season. If present in root crops it can be as problematic as it wraps around shafts and

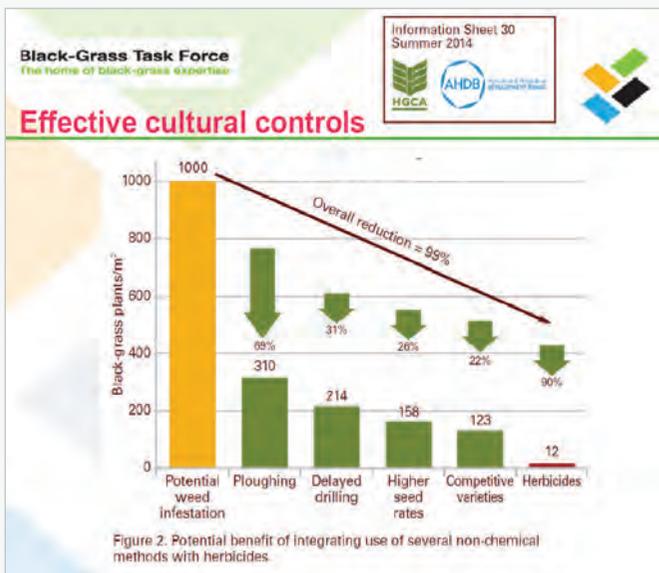
axials of harvesters often bringing the harvesting process to a halt for maintenance. There is also a huge yield penalty, up to 33% in severe cases but this is always overshadowed by the sheer cost of weed control and harvesting difficulties I find.

Having recognized and confirmed that you have an issue with Blackgrass you need to reconsider your whole farming practice with view to

- stopping the spreading of the seed.
- reducing the seed burden in your infected lands.

Its commonly accepted that the seed is spread by machinery now in Ireland as combine harvesters and balers move from field to field. The initial infection is thought to have come from either infected red label seed and / or imported secondhand machinery but in many respects that's irrelevant now as we have the problem but an expensive lesson for the future. You need to be ultra-careful with machinery sanitation both within your own fleet and contractors' machines and when considering importing goods from outside Ireland.

Consider all cultural methods before reverting to limited chemical means.



Average reductions achieved when using cultural methods correctly: AHDB UK

- If possible, you should switch to spring cropping or at least a portion of our farm, as far less seed germinates in the spring. Also, it allows you opportunities to apply stale seed bed techniques which will reduce the seed returning to the seed bed going forward.
- Where winter planting must be part of the farm plan, Winter Barley should be avoided if at-all possible and only considered if planted after 20 October and using 20% higher seeding rates then. The main reason for the later planting dates is to give you opportunities to deal with any flushes in the Autumn pre planting as blackgrass don't readily germinate once temperatures drop from mid-October on. While there are some "contact herbicide" sensitivity its better to assume there is none until such time that you have a defined identification and plan in place. Hybrids are considering a better choice as more competitive when tillering but try and plan without winter barley if possible. There is also a more limited arsenal of chemicals that can be applied on winter barley in difference to wheat which is also a limiting factor. While Winter Wheat is a better choice for winter cropping, only because you can plant later with a high crop establishment expectation, again use 20% higher seeding rates, plant in late October or early November if possible. Winter Oats and Rye seem to fare better, but this is down to the competitive nature when growing and often harbor significant amount of blackgrass

in the body of the crop that don't become obvious until later in the summer; you cannot hold off planting these crops until late in the season as your establishment will suffer too much, with that in mind I would avoid these crops also if possible. The one autumn crop that should be considered is Oilseed Rape as we can control all germinated blackgrass in the winter with the known herbicide, Astrokerb, the only one in the market that this can be said for. Most other winter crops should not be considered as germicides that would be commonly used in many of these won't control ~90% of known blackgrass species in Ireland.

Planting Techniques

There are many debates and discussions around this with no real defined answers I feel as often other farming decisions take precedent over the core blackgrass issue. Where you know you have a blackgrass problem the following should be considered.

- At least Till and burn down one stale seed bed for Autumn cropping if using a till establishment technique. In the case of changing to spring cropping you should practice two or three passes with maybe 2 burndowns
- Direct Zero till drill or min till would be my favored choice as it disturbs very little soil, and most blackgrass seeds will need to germinate or die off on the surface. I would still be an advocate of ploughing the ground 1 year in 5 as this will renew the surface core with near sterile soil at that stage. This is often referred to as "rotational ploughing".
- Ploughing is a great way of burning seed once off, but you will bring a portion, much reduced in fairness, back to the surface with the following years plough back. This is the preferred method of establishment by many for their own good reasons but not the ideal way to tackle a serious blackgrass problem I feel as the seed burden will continue to grow depending on your success with chemical control which is often poor.

Herbicide Options

There aren't any options that we know will offer complete control of blackgrass except for Astrokerb in the case of oilseed rape. What is practiced with varying degrees of success is "stacking" of different chemical options to load the plant and stop its progress. While this is the favored option among many growers for understandable reasons, its expensive and only partly

successful and should only be considered after all cultural control measures are applied. The one "must" in such cases is that the herbicide program starts within 24 hours of planting as each day after that your expected control falls off significantly. Relying on "contact herbicides" to control this weed is not an option. Another very important ingredient for success with this option is that some measure of rain or moisture in the soil is available to mobilize the herbicide within the top 5 cm.

There are two programs to be considered when trying to deal with a known grass weed problem pro-actively. This is the same both for Blackgrass and Brooms even though the later can be controlled post-emergence in Wheat successfully.

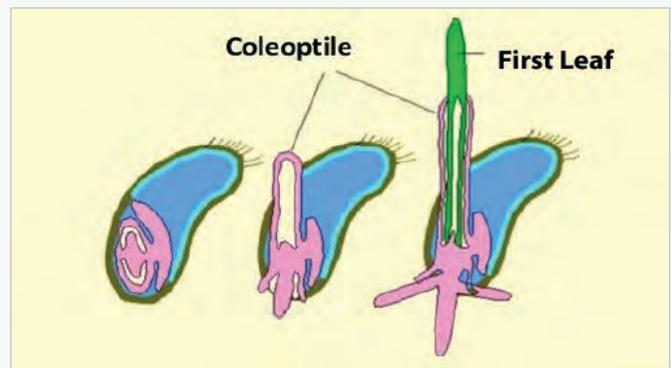
The first program consists of an application of Pendimethalin pdm plus Fluctenacet flc plus/minus Tri-allate trll immediately post planting (< 24 hours) as this is the critical timing to inhibit the development of the blackgrass seedling as it moves through the Coleoptile development stage. The difference between this early pre-emergence application verses a more conventional Peri-emergence application is very significant from work carried out in Cork during the 2021 season. This study was further developed during the 2022 season to drawn down more information with very clear evidence of the preferred application of EARLY Pre-Emer applications of ai as the real standout performer even in the case of all ai applied. There with a further application of flc plus Metribuzin mtc at peri-emergence timing to top up the residual activity and this was another great addition to the pre-Emer program. In the case of the rial in Cork two other important findings were discovered.

- There were at least 2 different species of Blackgrass in the plots which were controlled to different degrees by the Pre-Emer program
- Broadway Star had a great effect of one of the species that was present after the initial Pre-Emer program. As this is an ALS inhibitor type chemical it has an effect on SOME strains of Blackgrass only.
- At present, John Mahon Teagasc, is identifying these species and their sensitivity which will take time as they need to be propagated and grown in glasshouses but an essential part of the journey to control this weed.

Key Points:

- Herbicide resistance is a huge challenge with blackgrass control.

- Cultural control mechanisms must be an essential element of getting a problem under control.
- No-till and spring cropping have been important tools for Andrew Mahon.



A Coleoptile is a: hollow, cylindrical sheath that surrounds the primary leaf of a germinating monocot seed

The second program to be considered was a new product to the market last autumn, not new ai, but assembled in new different ratios. This program consists of flc plus dff with the addition of Metribuzin mtc. The same rules apply, immediately post planting with at top up of flc at peri-emergence. There are different rates and advice for barley and wheat and best get advice as you plan your program. This program gave very promising results in the Cork trials during 2022 but remember this can depend greatly on the species that are present in the plots.

These two applications will cost in the region €50 / acre and you may also need a spring cleanup for Fumitory and Groundsel later but that's the price that blackgrass control costs especially when levels are high. Hopefully, you will find after a few years as seed stock / returns reduces you will be able to reduce you spend, especially if spring cropping is part of the rotation; that's a decision for a later date after reviewing your progress I feel.

Summary

- **Avoid winter barley in the rotation if possible.**
- **Practice rotational ploughing, 1 year in 5, to manage seed stock.**
- **Delay planting with all crops as late as you dare go.**
- **Use increased seed rates to increase crop competition, + 20%**
- **ALLWAYS apply herbicide immediately post planting. < 48 hours with a follow-on spray at peri-emergence where necessary**
- **Consider OSR as part of your rotation.**



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