



AGRONOMY UPDATE

AUTUMN 2023



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INTRODUCTION

Harvest season this year is certainly a challenging one! Terrible weather has hampered crop harvesting opportunities, crops themselves are yielding mixed results and getting straw finished up was never as difficult. You might ask, where are the positives? In general, winter and early spring planted cereal crops fared reasonable, particularly if you were fortunate to have planted before the weather broke last autumn or indeed took the chance on earlier than normal spring plantings. In the most part these have delivered on quality and met yield expectations despite the record early start date for harvest 2023. Interestingly, harvest 2023 commenced nine days earlier than 2022, with 2022 being nine days earlier than 2021.

Later sown spring plantings (April and May) have not delivered to grower expectations and yields were substantially less than prior years. Achieving the quality standards expected for premium crops such as malting barley were also unfortunately impacted by the growing season.

The focus now for many growers is to autumn sowings. Although oil seed rape plantings are complete at this stage, decisions must be made on other crops. To secure cereal seed for winter wheat, barley and oats please discuss this with your agronomy manager or local branch as soon as possible. I would remind growers to heed the risks associated with early sowing as September can be favourable for good seedbeds and seed establishment but carries the risk of increased threat from barley yellow dwarf virus (BYDV), grass weeds and take-all. We have covered these topics in previous agronomy updates and have links to these articles on our tirlanfarmlife.com website.

In this edition of our agronomy update Kevin Tobin and Tom Hession focus on the benefits of cover cropping and the care and management of the crop to get the most from your investment. Conor Hoey and Barry Purcell look at seed bed preparation with a particular focus on straw incorporation and slug management. James Hickey has compiled the updated Department of Agricultural recommended winter cereal seed lists and autumn herbicide options for your crops. Donal Moloney writes about ways to improve profitability on farm and gives a good outline of premium crops. Emphasises is placed on the importance of growing a number of different crops and availing of forward selling offers as a mechanism of spreading risk on your farm. It is worth while discussing options that may be available to you with your local agronomy manager as they will be best placed to assist you on a multiyear crop rotation plan with the aim of spreading your risk across a number of crops in the years ahead.

Over the past year Tirlán has spent a significant amount of time looking to the future for cereal growers. We have carried out pilot projects in conjunction with some of our end customers and asked growers to participate in trials and assessing how data is collected. Teagasc are supporting us in developing a model of assessing your carbon number for the various crops you produce.

I want to thank each of our growers that have made time available to us, shared information and provided feedback. It has been a challenge to get clarity on the information needed and how it is assessed. There is a lot of talk and discussion around sustainable agriculture and regenerative agriculture (Regen Ag) but we are in a good place to help our growers to make positive cropping and management decisions that will help benefit our growers into the future where emission reduction will be a requirement in the future.

As ever I wish to thank you, our growers for our continued support in what has been a challenging year. Our agronomy team are available to provide you with the technical advice and crop walking service that you may require for your crop production needs for the year ahead. I wish you all the best as we head into the season ahead.

Fintan Treacy
Tirlán FarmLife Agronomy Manager

STRAW INCORPORATION MANAGEMENT

There has been a widespread uptake of the straw incorporation measure (SIM) since its inception in the 2021 harvest. It has been a very welcome option to tillage farmers, offering great benefits in terms of workload management, soil health and nutrient return.

However, incorporating the chopped straw back into the soil can cause some issues that growers must be aware of, and it is crucial to follow the required management advice.

1. Cultivation techniques for straw incorporation

To initiate the straw breakdown process, it is imperative to get the straw mixed with the soil to allow the microbial breakdown of the straw into an available nutrient for the following crops. As soon as possible after the crop is harvested it is recommended to shallow cultivate the soil, thus mixing the chopped straw with the soil to begin the breakdown process. There is several tools available for cultivating and mixing the straw with the soil. An implement that is designed with discs or tines works well for this purpose. It is important that the straw is spread evenly across the entire field, as research has shown poor establishment in the following crops where straw is not evenly distributed.

Necessary depth of cultivation depends on the volume of straw the crop has produced. Deeper cultivation is necessary on heavier crops of straw to get adequate mixing of the straw with the soil.



Straw incorporation as soon as the crop is cleared

Shallow cultivating to mix the straw and soil can help reduce slug-laying conditions. Repeated shallow cultivation is recommended to minimise slug-egg laying and hatching. In high risk crops following high volumes of incorporated straw, it may be necessary to apply slug pellets along with the seed when setting the crop. It is also recommended to lay baiting points throughout fields to monitor slug numbers. This aids decision making on applying slug pellets as a form of chemical control.

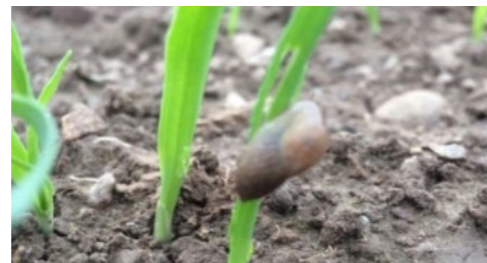
There is several considerations to make, depending on the crop establishment method adopted. Using the plough, till and sow method, inverting the soil and which in turn buries the surface laden slugs. However, if the seedbed isn't consolidated correctly it can allow for easy movement of slugs around the soil allowing them to cause a high level of crop damage. If a min-till method is used, cultivation pre sowing to reduce slug numbers is recommended. However, by using this method more slug numbers may be on the surface, but generally a firmer seedbed is produced which will restrict the pests movement.



Slug eggs layed in clusters



Slug feeding on seed



Slug feeding on emerging crop

2. Pest management

With our growing conditions, there is generally a large quantity of straw produced in our cereal crops. This large quantity of straw needs to be decomposed and mixed in to the soil to reduce issues with the preceding crop. One pest that is of concern with straw chopping is slugs. Slugs attack crop seedlings as they are emerging and can have a huge impact on establishment percentage. Slugs thrive in mild and damp conditions, allowing them to grow and reproduce very quickly. This can become a problem in early autumn coinciding with growers autumn planting season. Slugs have the ability to lay up to 500 eggs each in their lifetime, laying on average 40 eggs in clusters at any one time. The slugs lay eggs near the soil surface in sheltered cavities or under crop residue such as straw on the surface. The slug eggs can mature and hatch from two-weeks to four weeks, in mild autumn conditions.

Slugs can cause issues before the crop even emerges, by hollowing out seed. One slug can hollow out up to 50 seeds in a week after sowing, this can cause a huge problem with establishment. The pest also feeds on shoots and leaves on crops after they emerge and the crop can remain vulnerable in slow growing autumn crops up to GS21.



Nitrogen deficiency in winter barley

3. Spring fertiliser timing

The straw incorporation process involves soil microbiology, feeding on the straw residue and decomposing it. This process requires soil nitrogen to complete the cycle and therefore can reduce soil nitrogen available to the following crop. This can often cause nutrient deficiency in winter crops in early spring, which may lead to an impact on tiller numbers. Crops may require fertiliser slightly earlier than a field where the straw was baled and removed. After the winter concludes and growth slowly starts, a crop following chopped straw may not have sufficient soil nitrogen reserves available and will require an earlier fertiliser application.

4. Nutrient management plan

An advantage of straw chopping is the return of nutrients back into the soil. This can provide a cost-saving through lower fertiliser application while also providing an opportunity to improve and build soil Phosphorus & Potassium Indexes. These nutrient returns need to be quantified and built into the overall nutrient management plan for that crop. Teagasc have figures for both phosphorus and potassium levels returned to the soil, due to straw chopping. See table below for relevant figures.

CROP TYPE	CROP YIELD (t/ha)	P (kg/ha)	K (kg/ha)
WINTER BARLEY	10	4	51
WINTER WHEAT	11	4.4	56
WINTER OATS	9	3.6	87
SPRING BARLEY	7.5	2	50
SPRING WHEAT	8.5	3.5	57
SPRING OATS	7.5	3	73
WINTER OILSEED RAPE	5	2.4	27
SPRING OILSEED RAPE	2.5	1.2	13

Nutrient returns from straw chopping based on grain yields (Source: Teagasc)

BENEFITS AND MANAGEMENT OF COVER CROPS

Cover crops by definition, are plants that are grown to protect and enrich the soil. They can also be called ‘catch crops’ or ‘green manures’, and these terms are used interchangeably. Cover crops are generally sown between July and September, producing a canopy which prevents soil erosion during the winter months. Cover crops also reduce nutrient loss and increase soil organic matter and have been quite topical in recent months, as many growers selected the cover crop option as part of their ACRES plan.

The key to a successful cover crop is early sowing. Teagasc trials have shown a 2t DM/ha reduction for every three week delay in planting from late July. Cover crops can be purchased both as straight and in mixes. Mixes are formulated with a specific goal in mind. For example, some are intended to be grazed, while others help to improve soil structure and reduce nutrient loss. Cover crops broaden the spectrum of crops grown on farm, which in turn can have a positive effect on soil health.

Cover crops can be classified into 4 groups:

Type:	Examples:	Key Points:
BRASSICAS	<ul style="list-style-type: none"> • Forage rape • Leafy turnip • Tillage raddish • Mustard 	<ul style="list-style-type: none"> • Brassicas are quick to establish and are fast growing • Forage rape and leafy turnip are both suitable for grazing • Tillage radish has a deep taproot which helps to resolve compaction issues within the soil profile. It's deep roots allow it to find nutrients deep in the soil profile, making these nutrients available to the following cash crop. It also naturally aerates the soil. • Mustard is a rapidly growing plant which helps to suppress weeds
LEGUMES	<ul style="list-style-type: none"> • Crimson clover • Berseem clover • Red clover • Vetch • Peas • Beans 	<ul style="list-style-type: none"> • Legumes fix nitrogen, which is of benefit to the following cash crop • There are a wide range of clovers available with different characteristics • Vetches are another popular option as they can rapidly form a canopy. This helps to suppress weeds
CEREALS	<ul style="list-style-type: none"> • Oats • Black oats • Forage rye 	<ul style="list-style-type: none"> • Cereals have vigorous and extensive root systems which helps with soil structure • Good tillering capacity which helps cover the soil and prevent soil erosion
OTHER	<ul style="list-style-type: none"> • Phacelia • Buckwheat • Linseed 	<ul style="list-style-type: none"> • These crops are useful in avoiding rotational conflicts with cereals/legumes/brassicas • Phacelia grows rapidly and smothers weeds. It's purple flower helps to attract bees and other insects • Buckwheat scavenges for phosphate and makes it available in the following crop • Linseed has a deep rooting system which helps to condition the soil. It can also be used as wild bird cover

Before choosing a cover crop mix for a particular field, the following points should be considered;

- Avoid using brassica cover crops if oilseed rape or vegetable brassicas are already in the rotation – this is to prevent the occurrence of clubroot (a soil borne disease which affects brassicas).
- Clovers prefer warmer temperatures. Therefore, they should be planted as early as possible (July/August) to maximise total biomass production as well as maximising the amount of nitrogen fixed from the atmosphere.
- Cereal cover crops may act as a green bridge for cereal pests and diseases.

Cover crops establishment and management

Timing

- Aim to establish cover crops early to exploit favourable weather and soil conditions.
- Late sowing will result in poorer establishment and less time to develop optimum biomass and root structure.

Seed rates

- Seed rates will depend on species/mix/acres requirements etc., so it is important to get accurate information before deciding on seed rates.
- Multi-way cover crop mixes can have different size seeds in a mix which can separate out in a seed hopper. This can lead to uneven species distribution in the field, so it's advisable to fill the hopper in small quantities to minimise this.

Sowing

- Good soil conditions and quality of sowing can be as important as the sowing date.
- Like sowing any crop, good seed to soil contact is vital. Seeds tend to be on the small side so seed depth needs to be shallow.
- Rolling is very important to help seed/soil contact and reduce the pressure from slugs.
- Broadcasting using an air seeder on a disc/cultivator works well especially in medium and lighter soils. Precision seeding with disc coulters works better in heavy land as it improves seed/soil contact but is more expensive and slower.
- Some autumn crop inputs such as fertiliser and slug pellets may be necessary to ensure maximum results, especially if the crop is needed as source of fodder for livestock.

Desiccation of cover crops

Cover crops need to be killed off and re-incorporated prior to the sowing of spring crops. The cover crop growth (biomass size) and sowing/cultivation system will dictate the best method to use.

- Mechanical destruction such as ploughing, mowing and crimping is very common and works well in plough-based systems.
- Chemical control using non-selective herbicides like glyphosate will kill cover crops and weeds, leaving a good clean stale seedbed to work with. Glyphosate can be slow to work so the addition of a hormone such as 2,4-D to the mix will speed up the kill and subsequent decomposition.
- Frost will kill some species such as buckwheat.
- Grazing can maximise the returns from cover crops and speed up nutrient recycling.
- It's important to kill cover crops off relatively early in order to speed up residue decomposition. A reduction in trash makes cultivations easier, reduces nitrogen immobilisation problems and reduces the allelopathic effects from some cover crop species on the following crop.



AUTUMN HERBICIDE OPTIONS



WINTER WHEAT

PRODUCT	ACTIVE INGREDIENT	RATE	WEEDS CONTROLLED	COMMENT
FIREBIRD / SHARP TURBO (Pre-em option or early post-em option) Cleared up to GS 23	400 g/l Flufenacet 200 g/l Diflufenican	0.3 L/ha	AMG, Rough stalked MG, Cleavers, Common chickweed, Common speedwell, Ivy-leaved-speedwell, Cranesbill, Forget-me-not, Field pansy, Groundsel, Dead nettle, Mayweed, Shepard's purse, Volunteer OSR	Firebird @ 0.3 L/ha delivers 120 g/ha Flufenacet + 60 g/ha Diflufenican. Two applications per crop permitted. For best results, product should be applied pre-em. A good option at pre-em where Bromes are becoming an issue. Should be used in conjunction with Alister Flex where Brome and Blackgrass is particularly bad. Can also be used in conjunction with DFF (0.1 - 0.2 L/ha) to improve control of Vol OSR and Chickweed. Poor on Wild Oats, Fumitory and Poppy. By using in an integrated approach with Alister Flex, good Wild Oat control will be achieved.
FIREBIRD MET (Contact and residual, pre and early post emergence option) Cleared up to GS 25 or the end of November	240 g/l Flufenacet 90 g/l Diflufenican 70 g/l Metribuzin	0.5 -1.0 L/ha	AMG, Italian Rye Grass, Common chickweed, Common speedwell, Charlock, Poppy, Cranesbill, Forget-me-not, Field pansy, Groundsel, Dead nettle, Mayweed, Shepard's purse, Volunteer OSR	Firebird Met @ 1.0 L/ha delivers 240 g/ha Flufenacet + 90 g/ha Diflufenican + 70 g/ha Metribuzin. Post emergence up to GS 25 (early post-em). Strong option on Bromes and Blackgrass. Early post emergence product which can be applied with the aphicide timing. Inclusion of Metribuzin to give increased contact activity on grass and BLW weeds. High rate of Flufenacet will improve residual control on grasses. Better on Cleavers, Fumitory and Poppy than Firebird. Will not control Wild Oats as a stand alone product.
FLIGHT (Pre-em option or early post-em option) Cleared up to GS 30	330 g/l PDM 7.5 g/l Picolinafen	3.0 - 4.0 L/ha	AMG, Rough stalked MG, Common chickweed, Fumitory, Poppy, Corn marigold, Common speedwell, Ivy-leaved-speedwell, Knotgrass, Cranesbill, Field pansy, Dead nettle, Shepard's purse, Volunteer OSR	Flight @ 4.0 L/ha delivers 1,320 g/ha PDM + 30 g/ha Picolinafen. By reducing the rate from 4.0 L/ha, control of certain weeds will be compromised. A good option where a farmer wants to go pre-em and Broadway Star is planned for use in the spring. A good option on farms where Poppy and Marigold is an issue. For best results on AMG, it is advisable to go pre-emergence, especially with IPU being no longer available. Use with DFF @ 0.1 - 0.2 L/ha if targeting Vol OSR. Flight is poor on Cleavers (pre-em), Groundsel and Mayweed. Contains PDM so will stain sprayers. This is an issue with some growers.
STOMP AQUA (Pre-em option or early post-em option) Cleared up to GS 30	445 g/l PDM	2.5 L/ha Max dose is 2.9 L/ha	AMG, Common chickweed, Poppy, Common speedwell, Ivy-leaved-speedwell, Field pansy, Dead nettle, Knotgrass, Corn marigold, Volunteer OSR	Stomp Aqua @ 2.5 L/ha delivers 1,112 g/ha PDM. Can be used as a method of controlling AMG in Winter Wheat if Broadway Star is planned as the main herbicide for the Spring. Can be used with DFF pre-em to increase control of Vol OSR or as a method of beefing up other products like Tower or Pontos. For best results, product should be applied pre-em. Will not control Wild Oats. Reasonable on Bromes and grass weeds when used as part of a stacked programme, e.g. with Broadway Star or Alister Flex in the spring. The same staining issues that exist with Flight, does not exist with Stomp Aqua due to a superior formulation.
DEFY / ROXY (Peri-em option or early post-em option) Cleared up to GS 21	800 g/l Prosulfocarb	2.0 L/ha	AMG, Rough stalked MG, Cleavers, Common chickweed, Common speedwell, Ivy-leaved-speedwell, Field pansy (moderate), Dead nettle	Defy @ 2.0 L/ha delivers 1600 g/ha Prosulfocarb. Syngenta recommend to use product in conjunction with DFF @ 0.1 l/ha. DFF will greatly improve the performance on Vol OSR and Chickweed. Excellent product on Cleavers. For best results, use Defy at pre-em. Less scorch pressure attached to Wheat as there is to Barley. Do not use product peri-em. Defy needs to be used pre-em to control Groundsel. Poor control of Fumitory and Mayweed. Will not control Wild Oats.
DIFLANIL 500 (Post-em option but can also be mixed with Firebird pre-em) Cleared up to GS 31	500 g/l Diflufenican	0.25 L/ha	Common chickweed, Common speedwell, Ivy-leaved-speedwell, Field pansy, Dead nettle, Groundsel, Vol OSR, Radish, Nipplewort	Broad leaf weed control only. Will not control Grass weeds. Ideal tank mix partner with Defy. Mixture of Stride DFF + Diflanil 400 to an overall dose of 0.4 L/ha DFF will increase control of cleavers. Can be used pre-em with Firebird. At modest rates DFF is poor on Cleavers. Very poor on Fumitory and Poppy. Will not control Wild Oats.
TOWER (Pre-em option and early post-em option) For best results, Tower should be used pre-em. Cleared up to GS 30	250 g/l Chlortoluron 300 g/l PDM 40 g/l Diflufenican	2.0 L/ha	AMG, Loose Silky Bent, Cleavers, Charlock, Common chickweed, Fumitory, Poppy, Common speedwell, Ivy-leaved-speedwell, Cranesbill, Field pansy, Dead nettle, Shepard's purse, Volunteer OSR, Runch, Mayweed, Forget-me-not	Will not achieve any form of control of Wild Oats or Bromes on its own. Do not drop rate below 2.0 L/ha. Stomp Aqua can be included at pre-em to increase rate of PDM which will increase control of grass weeds if known grass weed pressures are high. In order to achieve maximum control of the weed spectrum, product should be used pre-em. By delaying application until early post-em, control of Fumitory and Poppy will reduce. A good early post-em option since the removal of IPU from the market place. Include DFF @ 0.1 - 0.2 L/ha at peri-em/early post-em to improve control of Charlock and Vol OSR. It Contains PDM but staining levels are at a much reduced rate compared to alternative PDM products like Flight. Poor on Groundsel. Can be used comfortably at post-em on Wheat and will achieve good control of AMG. One should consider mixing Thor with Tower to improve control of Vol Beans in the late autumn.

AUTUMN HERBICIDE OPTIONS



WINTER WHEAT

PRODUCT	ACTIVE INGREDIENT	RATE	WEEDS CONTROLLED	COMMENT
ALISTER FLEX (Post-em option for winter wheat only) Cleared up to GS 29	120 g/l Diflufenican 9 g/l Mesosulfuron 7.5 g/l Iodosulfuron	1.0 L/ha	AMG, Loose Silky Bent, Rough stalked MG, Fumitory, Poppy, Dead nettle, Groundsel, Mustard, Pansy White Runch/ Wild Radish, Forget-me-not, Common Chickweed, Vol-OSR, Charlock, Shepherd's Purse, Speedwells, Mayweed	Excellent post-em option on Winter Wheat. This will be a very popular approach going forward this season. Alister Flex will also control Wild Oats. Very good product on Grass weeds and Bromes. Use early post-em in the autumn to achieve good Grass weed and Brome control. If targeting Blackgrass, Alister Flex should be used in sequence post-em following a pre-em application of either Firebird. New formulation of Alister Flex has a wider weed spectrum. Has a tendency to be poor on cleavers so follow up herbicide may be required.
PACIFICA PLUS (Post-em option for winter wheat only) Cleared from Feb 1st to GS 39	30 g/kg Mesosulfuron 10 g/kg Iodosulfuron 50 g/kg Amidosulfuron	500 g/ha (pack/5ha)	AMG, Rough stalked MG, Italian RG, Perennial RG, Wild Oats, Blackgrass, Sterile Brome, Great Brome, Rye Brome, Cleavers, Common Chickweed, Mayweed, Charlock, Vol-OSR	Excellent post-em option on Winter Wheat. This will also be a very popular approach going forward this season. Pacifica will also control Wild Oats. Very good product on Grass weeds and Bromes. Excellent post-em option after March 1st in order to achieve excellent Grass Weed and Brome control. If targeting Blackgrass, Pacifica should be used in sequence post-em following a pre-em application of either Firebird or Vigon. Bio-Power should still be included to maintain product efficacy. Can be used as a mix with Cameo Max to broaden weed spectrum such as Fumitory, Vol Beans etc.
MONOLITH (Post-em option for winter wheat) Cleared from Feb 1st and GS 21 - 32	45 g/kg Mesosulfuron 67.5 g/kg Propoxy-carbazone	0.33 kg/ha	Increased control over Blackgrass compared to Pacifica or Alister. Will also control Wild Oats, Rye-Grasses, Sterile Brome, Rye Brome, Loose silky-bent, Common Chickweed and Mayweed	Predominantly a grassweed herbicide with a narrow range in terms of broad leaf weeds. Will control wild Oats. Can be used in sequence post-em following a pre-em application of Firebird. Monolith @ 0.33 kg/ha delivers 12 g/ha Meso + 22.5 g/ha Propoxy. Bio-Power should still be included to maintain product efficacy. Can be used as a mix with Zypar, Thor or Cameo Max to broaden weed spectrum such as Fumitory, Vol Beans etc. Do not mix with PGR's. Stronger option on Bromes and Blackgrass than either Pacifica Plus or Alister Flex.
BROADWAY STAR (Post-em option for winter wheat only) Cleared from GS 11 - 32	7.1 % Pyroxulam 7.1 % Cloquintocet 1.4 % Florasulam	265 g/ha (pack/4ha)	Bromes, Wild Oats, Bindweed, Cleavers, Charlock, Speedwell, Chickweed, Marigold, Creeping Thistle, Pansy, Groundsel, Knotgrass, Mayweed, Poppy, Vol Beans, Vol OSR,	Will not control AMG so autumn application of Defy or PDM will be required. Reducing dose rate will compromise weed spectrum greatly. Excellent product on Bromes and Grass Weeds. Wild control Wild Oats. Excellent spectrum on Broad leaf weeds. This will be a popular product for spring use on Winter Wheat. The addition of an adjuvant such as Torpedo is recommended to maintain product efficacy.



AUTUMN HERBICIDE OPTIONS



WINTER BARLEY

PRODUCT	ACTIVE INGREDIENT	RATE	WEEDS CONTROLLED	COMMENT
FIREBIRD / SHARP TURBO (Pre-em option or early post-em option) Cleared up to GS 24	400 g/l Flufenacet 200 g/l Diflufenican	0.3 L/ha	AMG, Rough stalked MG, Cleavers, Common chickweed, Common speedwell, Ivy-leaved-speedwell, Cranesbill, Forget-me-not, Field pansy, Groundsel, Dead nettle, Mayweed, Shepard's purse, Volunteer OSR	Firebird @ 0.3 L/ha delivers 120 g/ha Flufenacet + 60 g/ha Diflufenican. Two applications per crop permitted. For best results, product should be applied pre-em. A good option at pre-em where Bromes are becoming an issue. Can also be used in conjunction with DFF (0.1 - 0.2 L/ha) to improve control of Vol OSR and Chickweed. Poor on Wild Oats, Fumitory and Poppy.
FIREBIRD MET (CONTACT AND RESIDUAL) Pre and early post emergence option, cleared up to GS 25 or the end of November	240 g/l Flufenacet 90 g/l Diflufenican 70 g/l Metribuzin	0.5 - 1.0 L/ha	AMG, Italian Rye Grass, Common chickweed, Common speedwell, Charlock, Poppy, Cranesbill, Forget-me-not, Field pansy, Groundsel, Dead nettle, Mayweed, Shepard's purse, Volunteer OSR	Firebird Met @ 1.0 L/ha delivers 240 g/ha Flufenacet + 90 g/ha Diflufenican + 70 g/ha Metribuzin. Post emergence up to GS 25 (early post-em). Strong option on Bromes and Blackgrass. Early post emergence product which can be applied with the aphicide timing. Inclusion of Metribuzin to give increased contact activity on grass and BLW weeds. High rate of Flufenacet will improve residual control on grasses. Better on Cleavers, Fumitory and Poppy than Firebird. Will not control Wild Oats as a stand alone product.
FLIGHT (Pre-em option or early post-em option) Cleared up to GS 30	330 g/l PDM 7.5 g/l Picolinafen	3.0 - 4.0 L/ha	AMG, Rough stalked MG, Common chickweed, Fumitory, Poppy, Corn marigold, Common speedwell, Ivy-leaved-speedwell, Knotgrass, Cranesbill, Field pansy, Dead nettle, Shepard's purse, Volunteer OSR	Flight @ 4.0 L/ha delivers 1,320 g/ha PDM + 30 g/ha Picolinafen. By reducing the rate from 4.0 L/ha, control of certain weeds will be compromised. A good option where a farmer wants to go post-em. A good option on farms where Poppy and Marigold is an issue. For best results on AMG, it is advisable to go pre-emergence, especially with IPU being no longer available. Use with DFF @ 0.1 - 0.2 L/ha if targeting Vol OSR. Flight is poor on Cleavers (pre-em), Groundsel and Mayweed. Contains PDM so will stain sprayers. This is an issue with some growers.
DEFY / ROXY (Pre-em option or early post-em option) Cleared up to GS 21	800 g/l Prosulfocarb	2.0 L/ha	AMG, Rough stalked MG, Cleavers, Common chickweed, Common speedwell, Ivy-leaved-speedwell, Field pansy (moderate), Dead nettle	Defy @ 2.0 L/ha delivers 1600 g/ha Prosulfocarb. Syngenta recommend to use product in conjunction with DFF @ 0.1 l/ha. DFF will greatly improve the performance on Vol OSR and Chickweed. Excellent product on Cleavers. For best results, use Defy at pre-em. Has a tendency to scorch Winter Barley when used post-em but crop will recover. Do not use product peri-em. Defy needs to be used pre-em to control Groundsel. Poor control of Fumitory and Mayweed. Will not control Wild Oats.
DIFLANIL 500 (Post-em option but can also be mixed with Firebird pre-em) Cleared up to GS 31	500 g/l Diflufenican	0.25 L/ha	Common chickweed, Common speedwell, Ivy-leaved-speedwell, Field pansy, Dead nettle, Groundsel, Vol OSR, Radish, Nipplewort	Broad leaf weed control only. Will not control Grass weeds. Ideal tank mix partner product. Mixture of Stride DFF + Diflanil 400 to an overall dose of 0.4 L/ha DFF will achieve good control of cleavers. Can be used pre-em with Firebird. Poor on Cleavers, Fumitory and Poppy. Will not control Wild Oats.
TOWER (Pre-em option and early post-em option) For best results, Tower should be used pre-em. Cleared up to GS 30	250 g/l Chlortoluron 300 g/l PDM 40 g/l Diflufenican	2.0 L/ha	AMG, Loose Silky Bent, Cleavers, Charlock, Common chickweed, Fumitory, Poppy, Common speedwell, Ivy-leaved-speedwell, Cranesbill, Field pansy, Dead nettle, Shepard's purse, Volunteer OSR, Runch, Mayweed, Forget-me-not	Will not achieve any form of control of Wild Oats or Bromes on its own. Do not drop rate below 2.0 L/ha. Stomp Aqua can be included at pre-em to increase rate of PDM to increase control of grass weeds if known presures are to be high. In order to achieve maximum control of the weed spectrum, product should be used pre - em. By delaying application until early post - em, control of Fumitory and Poppy will reduce. A good early post-em option since the removal of IPU from the market place. Include DFF @ 0.1 - 0.2 L/ha at peri- em to improve control of Charlock and Vol OSR. It Contains PDM but staining levels are at a much reduced rate compared to alternative PDM products like Flight. Poor on Groundsel. One should consider mixing Thor with Tower to improve control of Vol Beans in the late autumn.



WINTER OATS

PRODUCT	ACTIVE INGREDIENT	RATE	WEEDS CONTROLLED	COMMENT
HURRICANE OR DIFLANIL 500 (Post-emergence option but can also be mixed with Firebird Pre-emergence) Cleared up to GS 31	500 g/l Diflufenican	0.25 L/ha	Common chickweed, Common speedwell, Ivy-leaved-speedwell, Field pansy, Dead nettle, Groundsel, Vol OSR, Radish, Nipplewort	Broad leaf weed control only. Will not control Grassweeds. Good product on Winter Oats. Mixture of Stride DFF + Hurricane can bring overall dose to 0.4 L/ha DFF. This will help in the control of Cleavers. However, at low rates poor on Cleavers, Fumitory and Poppy.

BYDV RISK ASSESSMENT AND MANAGEMENT STRATEGIES

BYDV RISK ASSESSMENT AND MANAGEMENT STRATEGIES



HIGH RISK

Consider sowing colder and latest ground first

Sow seed at increased depth to slow down emergence

Consider sowing wheat before barley at increased depth and reduced seed rate

Insecticide at 2/3 leaf stage (gs 12 / 13)

Follow up insecticide again

Temperature dependent



MEDIUM - HIGH RISK

Consider sowing colder and latest ground first

Insecticide at 2/3 leaf stage (gs 12 / 13)

If temperatures reside above 5 degrees at 2/3 weeks later, a follow up insecticide will be required

Possible follow up insecticide again (Temperature dependent)

Hybrid Barley varieties have the ability to withstand later sowing dates

Location and temperature depending



MEDIUM - LOW RISK

Temperature dependent

Insecticide may be required at 2/3 leaf stage (gs 12 / 13) if temperature remains above 5 degrees

Possible follow up insecticide in the spring if favourable conditions persist

Regular crop monitoring will be essential. As soon as the first vectors have been identified, a targeted application of a suitable pyrethroid insecticide should be made.

Insecticides for Aphid Control in Cereal Crops Autumn 2023

PRODUCT	ACTIVE	CROP	TIMING	RATE/HA	COMMENTS
KARATE ZEON, SPARVIERO, KARIS 10 CS, NINJA	100 g/l Lambda-Cyhalothrin	Wheat, Oats, Barley	Up until gs77 on Wheat and Barley. Up until gs71 on Oats.	50 ml/ha	Contact only

SUGGESTED SOWING RATES FOR WINTER CEREALS 2023

Suggested Winter Wheat Seed Rates for 2023

Sowing Date (Week)	3rd Week September	4th Week September	1st Week October	2nd Week October	3rd Week October	4th Week October	1st Week November
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%

Suggested Winter Barley Seed Rates for 2023 (Hybrid seed rates will differ)

Sowing Date (Week)	3rd Week September	4th Week September	1st Week October	2nd Week October	3rd Week October	4th Week October	1st Week November
TARGET PLANTS M²	280	290	300	310	320	330	330
SOWING SEEDS M²	312	342	354	414	427	470	508
% ESTABLISHMENT	90%	85%	85%	75%	75%	70%	65%

Suggested Winter Oat Seed Rates for 2023

Sowing Date (Week)	3rd Week September	4th Week September	1st Week October	2nd Week October	3rd Week October	4th Week October	1st Week November
TARGET PLANTS M²	300	310	320	330	340	350	360
SOWING SEEDS M²	353	388	427	471	523	583	655
% ESTABLISHMENT	85%	80%	75%	70%	65%	60%	55%

WINTER BARLEY 2024



AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED								PROVISIONALLY RECOMMENDED	
	BELFRY	KWS CASSIA	KWS INFINITY	KWS JOYAU*	KWS TARDIS	LG CASTING	SY ARMADILLO	BORDEAUX	MOLLY**	
RELATIVE YIELD ◊	105	98	97	105	104	98	109	98	102	
VARIETAL TYPE	6R(H)	2R	2R	6R	2R	2R	6R(H)	2R	2R	
Straw height (cm)	110.2	93.2	92.6	95.4	91.7	88.0	115.0	90.0	95.1	
Resistance to lodging	7	7	7	7	7	5	6	5	(5)	
Straw breakdown	6	6	6	7	6	5	6	5	(6)	
Earliness of ripening	7	6	6	8	6	7	7	7	(7)	
RESISTANCE TO:										
Mildew	6	5	5	5	6	8	(6)	(5)	(8)	
Rhynchosporium	8	4	6	6	7	5	8	5	(7)	
Brown Rust	7	7	6	7	6	7	5	7	(7)	
Net Blotch	7	7	7	7	7	7	(7)	(6)	-	
GRAIN QUALITY:										
Screenings % (<2.2mm)	2.6	1.7	2.5	1.3	1.9	2.5	2.3	1.4	2.4	
1000 grain weight (g)	46.9	53.4	52.8	49.1	55.6	51.3	48.6	52.9	56.5	
Hectolitre weight (kg/hl)	68.2	70.8	68.2	69.5	69.5	68.8	68.1	69.0	65.8	
YEAR FIRST LISTED	2019	2011	2016	2022	2022	2020	2023	2023	2024	

Data in this table is based on trial results from 2021, 2022 and 2023.
 *Breeder claim of BYDV tolerance.
 ** Breeder claim of BYDV resistance.
 ◊ Yields are expressed as a percentage of the mean KWS Cassia, KWS Infinity and Belfry (100 = 9.88t/ha @ 15% moisture content).
 () Limited Data.

WINTER WHEAT 2024



AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED				
	GRAHAM	JB DIEGO	KWS DAWSUM	SPEARHEAD	TORP
RELATIVE YIELD ◊	102	98	100	103	104
Straw height (cm)	78.9	80.3	73.9	78.6	79.9
Resistance to lodging	6	6	7	5	7
Straw breakdown	5	7	7	6	6
Earliness of ripening	7	6	6	6	5
RESISTANCE TO:					
Mildew	8	6	8	8	5
Septoria spp.	5	4	5	5	6
Yellow rust	7	4	8	7	4
Fusarium ear blight	5	6	-	-	4
Sprouting	6	7	8	4	6
QUALITY:					
Grain protein % (15%MC)	10.3	10.2	9.6	9.8	9.7
Hagberg Falling No. ^	305	359	397	141	221
1000 grain weight (g)	51.7	48.3	45.9	50.3	48.3
Hectolitre weight (kg/hl)	77.3	77.8	78.7	75.9	74.7
Market +	F	F	F	F	F
YEAR FIRST LISTED	2020	2010	2023	2022	2018

* Based on results from 2021, 2022 and 2023.
 ◊ Yields are expressed as a percentage of the mean JB Diego, Graham and KWS Dawsum (100 = 11.1t/ha @ 15% moisture content).
 - No data ^ Based on results from harvests 2021, 2022 and 2023.
 + F - Feed quality. () Limited Data.

WINTER OATS 2024



AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED	
	HUSKY	WPB ISABEL
RELATIVE YIELD ◊	102	98
Straw height (cm)	116.5	119.2
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 (%)	71.8	73.0
1000 grain weight (g)	38.7	41.7
Hectolitre weight (kg/hl)	57.9	60.2
YEAR FIRST LISTED	2010	2020

* Based on trial results from 2021, 2022 and 2023. () Limited Data.
 ◊ Yields are expressed as a percentage of the mean of Husky and WPB Isabel (100 = 9.44t/ha @ 15% moisture content).
 ** Winter hardiness score for Husky is based on robust data from Spring 2011.
 - No data.

All varieties are spring type varieties sown in winter. Prolonged severe frost or harsh winds can seriously damage spring varieties sown in winter and may cause drastic reduction in yield or even crop failure.



The TGW of the seed will help determine the correct seeding rate. TGW of seed can differ greatly between varieties and seed lots. Don't rely on the TGW on seed labels, count out the seed and determine the TGW yourself.

Once the TGW is determined, consult the seed rate calculator to assist you in determining the optimum seeding rate. Sowing date, ground conditions and establishment method will also help dictate seeding rate.

It is important to keep in mind that hybrid barley varieties like Belfry and Bazooka have target seed rates of 200 seeds/m² in September rising to 220 – 250 seeds/m² in October.



WINTER BARLEY
 Aim to establish between 250 – 300 plants/m²



WINTER OATS
 Aim to establish between 300 – 350 plants/m²



WINTER WHEAT
 Aim to establish between 200 – 250 plants/m²

CROP OPTIONS FOR IMPROVING PROFITABILITY FROM TILLAGE IN 2024



Written by Donal Moloney

The harvests of 2022 and 2023 will remain in most growers' memories for a long time, albeit for very different reasons. Harvest 2022 saw the perfect combination of favourable weather, record high prices and overall excellent yields and quality. Harvest 2023 was dominated by very difficult weather conditions, yields and quality were average at best for most growers and prices dropped sharply from the levels seen a year earlier. Obviously, there is little that can be done about the prevailing weather in any particular year, and yield and quality will largely be influenced by the weather and agronomic management. While many growers will feel that grain price is also out of their control, they can have much more influence on this parameter than they might imagine. Forward selling and the options a grower has in deciding when to sell a proportion of their crop have often been discussed before; however, in addition to deciding when to sell, a grower also has options in choosing what crop to grow and this can have an important influence on the potential returns to a grower in any particular year. Tirlán assembles grain for various different customers and some of these grains carry significant bonuses for meeting an agreed specification; these are termed "Premium Grains". Tirlán is also a significant purchaser of crops other than cereals, such as oilseed rape and beans. Growers should give consideration as to how they might expand the range of crops grown on their own farm and the potential margin benefits from these crops.

PREMIUM GRAINS:

About 40% of Tirlán's green grain intake carries a bonus above the base price paid for feed grains. Land suitability, crop rotation and agronomic management are key factors in determining what premium grains a grower might include on their farm. Some of the options available include the following:

Gluten Free Oats (GFO) – Oats is inherently gluten-free and the production of GFO involves the elimination of any risk of contamination with gluten-containing cereal crops such as wheat, barley or rye. The crop must be grown after a non-cereal break crop (e.g. maize, oilseed rape, beet, potatoes, etc.) or grass; seed drills must be cleaned down before sowing; the crop must be inspected during the growing season and any contaminant cereal plants removed; the crop is harvested and transported to the drying location using equipment dedicated to GFO for the duration of the harvest. At present, this contract pays a premium of €30 per tonne above base wheat price and the cost of harvesting and transport is covered by Tirlán. All prospective fields will be inspected by Tirlán to assess their suitability.

Contracted Winter (Cassia) Barley – This contract carries a premium of €20 per tonne over base feed barley price and potential opportunities for a preferential forward price also. The variety Cassia continues to produce remarkably consistent yields and quality for growers, despite first being listed on the Recommended List in 2011. Contracted crops must be delivered direct to Portlaoise grain intake and cannot be sprayed with glyphosate pre-harvest.

Seed Production – Crops to be used for seed production must be grown after a non-cereal break crop, grass or a cereal crop of the same variety, also grown for seed. One

of the main considerations is that the crop produced is completely free of wild oats; if there are reasonably low levels in the field, this can be achieved by roguing or the application of a wild oat herbicide.

Adjunct Barley for Brewing/Distilling – This contract is exclusively for spring barley crops and the aim here is to produce good quality barley with a minimum specific weight of 63 kph. Crops cannot be sprayed with glyphosate pre-harvest and should be relatively free of contamination from other cereals, wild oats and weed seeds. This contract typically attracts a bonus of €8 per tonne above base feed barley price.

ALTERNATIVE CROPS: The inclusion of non-cereal crops or "break crops" has become an increasingly important feature of agronomic management on tillage farms in recent years. While mainly intended to reduce the build-up of soil-borne diseases such as Take-All, some of these crops have become economically important in their own right.

Oilseed Rape (OSR) – This crop has become increasing popular with growers in recent years, with 2023 seeing the largest ever area grown in Ireland at over 20,000 hectares. Ideally, OSR should only be grown in the same field once every 5 years. Tirlán is a competitive purchaser of conventional OSR every year; however, in 2020, we began offering contracts for an industrial type of OSR called High Erucic Acid Rape (HEAR) and the area sown to this crop has increased each year since then, reaching over 2,000 hectares in 2023. HEAR has typically paid a premium of €50 per tonne over conventional OSR price. In 2023, the HEAR crop appeared to suffer disproportionately from the high rainfall in July and yield was significantly reduced in many fields as a result. In order to encourage growers to continue growing the crop into 2024, Tirlán offered a very favourable forward price of €575 per tonne for HEAR grown for the 2024 harvest. This compares with prices in the order of €415 per tonne on offer for conventional oilseed rape.

Feed Beans – 2023 also saw a very significant increase in the area sown to feed beans in Ireland. This increase was driven by a number of factors such as excellent sowing conditions in February, high protein prices and a substantial increase in the EU-funded Protein Aid Scheme. This increase in funding means that there is a total budget of €7m now available annually for the growing of high protein feed crops in Ireland; in 2023 this has translated to approximately €430 per hectare. This level of funding will continue at least until the end of the current CAP regime (2027). Tirlán is committed to using whatever level of native protein crops are grown by its suppliers and will again offer an attractive forward price for beans in spring 2024. We will also have contracts available for the sowing of feed peas in 2024.

Growing some of the crops above may represent a change in mindset and direction for individual growers, but with pressure likely to remain on crop margins into 2024, growers need to look at all possible options available in order to remain profitable. Please contact your Tirlán agronomist for further information on any of the crops outlined above.

YOUR LOCAL TIRLÁN FARMLIFE AGRONOMIST



Head of Grains & JVs
John Kealy



Grain Manager
Donal Moloney – 087 2530566



Agronomy Manager
Fintan Treacy – 087 2541163



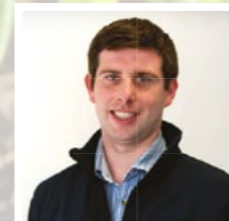
North East
Conor Hoey – 087 9487460



North Kildare
Peter O'Grady – 087 2527045



South Kildare
Sean Boland – 087 2273885



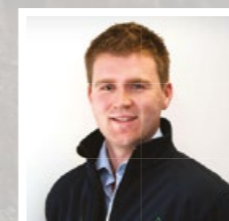
Laois/Offaly
Tim Scott – 087 7553410



Kilkenny
James Hickey (Technical Lead) – 087 7525138



Carlow
Barry Purcell – 087 6668879



North Wexford/Wicklow
Tom Hession – 086 0285412



South Wexford
Ed Prendergast – 087 2568967



Tipperary/Cork
Kevin Tobin – 086 0213200



Abbey Quarter
Kilkenny
R95 DXR1
Ireland

www.tirlanfarmlife.com

