Trust in Tillage

SUPPORTING SUSTAINABLE FARMING

INSIDE THIS ISSUE

ISSUE 02 - APRIL 2020

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dairygold
Golden Valleys, Growing Naturally
AGRI BUSINESS

Dear Grower,

On the 8th of March I wrote the editorial for the last edition of Trust in Tillage. I spoke of the difficult wet winter that we were still experiencing and the heavy workload that had developed with significantly lower winter plantings , poorly established autumn crops while also facing the challenge of dealing with awfully wet and heavy soils with time starting to become an issue as we moved into the spring season. The following week the weather started to pick up and since then we have experienced some of the finest weather for field work that you could have hoped for; "what a difference a month can make".

In this edition we are going to focus on the more technical area revolving around the application of plant protection products onto our crops. We will study in some detail the different types of products and their mode of action and the necessity of having a clear goal of what you are planning to achieve. We will review the whole process from planning your job, checking your sprayer and the correct means of applying the product safely onto your crop. We will offer some expert advice on sprayer nozzle selection and the requirement to have these correct both for accurate application and to protect and maintain our ecosystem by reducing spray drift; this information is kindly complied with the help and guidance of Tom Gartland, Syngenta.

In this issue we are also including for the first time a crop summary from a local grower in Cork and some of the decisions that he has made during the spring and the consequence of same. Hopefully you will find this interesting as you can compare it to your own and create your own opinion. We also have our second piece in "Nature's Corner", which I'm delighted to say got a great response in our last edition as its purpose is to educate and understand the life cycle of threating crop pest in order to enhance our ability to deal with the issue both culturally and rotationally before considering pesticide application.

Finally, I think that it would be wrong of me not to make a reference to the terrible issues that has be-fallen on the world in the last three months regarding Covid-19. This is creating a lot of anxiety and worry on all of us due to its unknown and invisible nature. While this is a natural and human response, we must all stand and fight together. The people of Ireland have shown over the last four weeks their courage and resilience by committing themselves to social distancing and restricting their movements which has had a major impact on the spreading of the virus by doing so. You, as a food producer will continue to grow and produce food despite all the short-term complications in the marketplace and with one united front, we will all manage our way through these difficult times. Our magnificent frontline doctors and nurses must get great credit and support for their Trojan work while our research scientists work in the background developing a way of dealing with this pandemic and I have no doubt they will soon succeed.

Hopefully you will find something in this issue that helps you understand and farm better and if you have any comments, positive or negative, please contact me by phone or email where any issues will be given due consideration.

Liam Leahy

Liam Leahy I.A.S.I.S.
DAIRYGOLD TILLAGE & BEEF BUSINESS MANAGER

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WELCOME TO

Trust in Tillage

DAIRYGOLD'S AGRONOMY BULLETIN

TABLE OF CONTENTS

dairygold
Golden Valleys, Growing Naturally
AGRI BUSINESS

A View from the Field

14/4/20

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

What a month for field work; all cereal crops are planted, potatoes nearly wrapped up, beet 50% planted and a good start made on the maize. Most crops have been planted in near perfect conditions and this will stand well to them for the rest of their journey.

Winter barley looking really well

Winter barley has absolutely jumped out of the ground in the last three weeks, early crops now at GS32 with the later plantings making slower but steady progress. Crops that were poor and thin earlier on may look a little better now, but these plants are still missing and will affect the yield to some degree later. Most crops have been treated with CCC and trace elements where required at this stage with the T1 fungicide is being applied as we speak which will also include a wild oats herbicide where necessary. They are reasonably clean with some Rhynco on older leaves of prone varieties and Nett Blotch also visible. These will be controlled with the correct T1 program, in our case a combination of prothioconazole and a strobe, Decoy Comet or Boogie and will be addressed again in early to mid-May with the T2 fungicide where it will get a triazole plus a Sdhi plus Bravo. The final Nitrogen application is now applied in most cases with crops being brought up to 170 units per acre.

Winter wheat is a mixed bag of GS but will all even out over the next month. The early crops have got their PGR and herbicide where necessary and a T0 of Bravo which included a treatment for yellow rust also in some verities, Opera was included in such cases. The main split of Nitrogen was applied

10-16 April and the final application will be applied in early May. Most crops are heavily marked with Septoria and a well-timed application of a full rate fungicide plus Bravo will be necessary at leaf 3 fully emerged. There are some new products on the market over the three few years and only these should be considered as they contain the most up-to-date and effective ai, such as Lentyma or Elatus Era. Yellow rust isn't an issue in any crops yet in the south but be vigilant to it as it can be very localised at the start and has a massive ability to propagate. Bennington, Garrus and JB Diego are the most suspectable varieties.

Winter oats looking well

There is very little **winter oats** planted in the area but what of it has got an herbicide and a low-level application of PGR at GS30 along with a fungicide to prevent mildew and crown rust. All these crops are at 100 units on Nitrogen now and will get another 30 over the coming days. There are distinctly purple blotches on most crops which has been identified as Septoria Avenae and don't generally cause any level of concern as will be controlled when the main T2 fungicide is applied at GS32 along with the proper PGR program. This program should include such products as Decoy comet or Elatus Era. This will happen in the coming days at the present rate of growth. There is a reasonable acreage of spring oats planted but both won't add up the last years acreage in the Dairygold area. These will be getting a herbicide plus a preventative mildewcide in the coming days which will include Cameo Max plus Hurler and Midas

There is a small area of **winter beans** planted this year which is looking very well at present. Our focus farmer is one of these and his comments can be read under John Farmer Writes. The plan is for a 3-spray fungicide program and I think that the first will need to be applied shortly as there are low levels of Chocolate Spot starting to appear, Signum will be the choice product for this application. As they are true winter varieties, they are slow growing, which will be interesting to see what their harvest date will be come the autumn. All in all, they look very nice at present. We have some other protein crops planted in the last month and I will give you an update on these later as they develop.

Early potatoes under plastic covers are strong now and well established. They should crop in the next six weeks. They are at present receiving a weekly fungicide program for blight. There are some weed issues in these crops as its very difficult to have them clean as limited control achieved when covered with plastic.

There is a significant drop in **fodder sugar beet** acreage it seems at this stage as planting progresses. This is always a delicate area to forecast as weather, contracts and yields all have an impact on the area. As I have said in this column before the market is finely balanced and its better off to be in a slightly under-supplied state to safeguard future supply and price, otherwise growers will simply stop growing the crop. I'm told the seed will be tight in supply and growers should secure the varieties asap.

Maize planting is just underway. At this stage it looks like that the crop area could fall by 10% but its early days yet and another weather event could have an impact of the final acreage very quickly. Again, those that are interested in this crop should secure there seed now as seed supply is tight at present.

All **our spring barley and wheat** are planted now, and the early crops are moving into tillering stage. Most have received their base fertiliser dressing pre planting and the early crops are receiving a herbicide plus aphicide at present where Presite Max or Cameo plus Pixxaro or Hurler are included. These will cover most weeds except for corn marigold which will need special attention now to remove it. All other crops should receive a treatment for aphids at the 3-leaf stage as this is where the best results are achieved. Trace elements and a wild oats herbicide can be included with the herbicide as best results are achieved will the crop and the wild oats are young. The early sown crops are now also due their top dressing, especially malting and this will be completed over the next week with crops being brought up to 110-130 units of total Nitrogen depending on their rotation and crop density.

by Matt Lawlee I.A.S.I.S.
Dairygold Agribusiness

Steps to Successfully Spraying your Crops

by Mary Deane B.Agr.Sc I.A.S.I.S.
Dairygold Agribusiness

There are several critical steps that need be considered before applying chemical to your crop.

1. Is your sprayer tested and in correct working order?

- All sprayers need to be serviced once every three years by a trained inspector.

2. Ensure you have a water source that is secured from chemical loss into the soil and all washings are collected are accounted for

3. Is your water quality up to scratch?

- Get it tested for acidity and hardness as water needs to have a pH5.5 to pH6 for best results.
- Ask your Dairygold Area Sales Manager about checking your water quality free of charge. They will be able to advise you on any actions needed.
- This only needs to be completed once as it generally remains static.

4. Before setting off, run your sprayer and check your nozzles and their flow rate.

- Consider using low drift nozzles or at least have access to a set as they will give you many more opportunities to complete a job especially with the varying climate in Ireland.
- Farmers are obliged to operate with knowledge of all buffer zone within your target areas. By using low drift nozzles, you can spray much closer to these sensitive areas as you have much greater control of spray drift.

Please see enclosed article with kind permission of Tom Gartland Syngenta Ireland.

5. Know and record the present weather and the immediate forecast. Wind, temperature and imminent rain are all factors to consider as each can affect a job in different ways.

6. Know your target weeds, diseases and pests.

- Ask your local Area Sales Manager, local Agronomist or Advisor for advice on best practice weed control. Have a plan drawn up and recorded after giving time to consider and discuss the job at hand. Dairygold completes this task free of charge and will provide you with a detailed summary of each job in a highly populated **Farmflo** or **Gatekeeper** program. This will include plant protection products that are required, active ingredient for each plant protection product, application rates per hectare, buffer zone restrictions, growth stage of crop, program timing limits and water volumes required among many other pieces of data.
- Most herbicides programs are broad spectrum except for a few troublesome weeds. These are the ones that you should be identifying and basing your herbicide program around. It is easier to know what a program **doesn't** control rather than knowing what it **will** control and concentrate on these species.
- One needs to know their target crop/variety and the strong and weak points of its disease profile. In the case of cereals, root crops and potatoes, this information is available from the DAFM recommended lists.
- It is also worth noting the lodging score of varieties as these will be crucial when formulating a PGR program over the course of the season.

WINTER WHEAT 2020

AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED				PROVISIONALLY RECOMMENDED	
	BENNINGDON	COSTELLO	JB DIEGO	TORP	KWS CONROS	GRAHAM
Relative Yield ★	**101**	**97**	**99**	**101**	**98**	**104**
Straw Height (cm)	80.3	69.6	77.9	78.1	77.7	78.0
Resistance to lodging	7	8	6	7	8	(7)
Straw breakdown	8	7	7	6	8	(7)
Earliness of ripening	6	6	6	5	5	(7)
Resistance to:						
Mildew	6	8	6	5	8	(8)
Septoria spp.	6	5	4	7	5	(8)
Yellow rust	4	8	4	5	8	(7)
Fusarium ear blight	7	7	6	4	(6)	(7)
Sprouting	5	8	7	6	7	(7)
Quality:						
Grain protein (%) (15% MC)	10.5	10.6	10.5	10.0	10.3	10.4
Hagberg falling number ▲	226	353	349	233	273	276
1000 grain weight (g)	47.6	46.0	47.1	45.9	42.4	48.6
Hectolitre weight (kg/hl)	74.3	77.5	74.9	72.0	75.5	74.8
Market +	F	F	F	F	F	F
Year first listed	**2018**	**2017**	**2010**	**2018**	**2019**	**2020**

With this very important information at hand, you can start to compile a purpose-built program that will optimise the yield potential and profitability of your crop.

7. Know your crop growth stages

- One of the most fundamental components when planning a crop protection program is understanding and identifying the crops correct growth stage. Timing restrictions apply to most active ingredients used within any program.

Example: Plant growth regulators (PGR), which work by affecting the growth hormones of plants, are active in plants at and only at a certain GS. Some need to be applied at GS30 to manipulate growth, while others influence hormones at GS32 to GS34 while more regulate plant growth at GS36 to GS39. In this case, product selection and timing are critical to achieving optimum results.

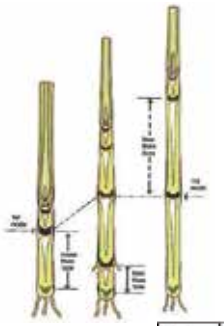
- It is important to be aware of growth stage restrictions as it can result in penalties being applied due to being in breach of cross compliance regulations.

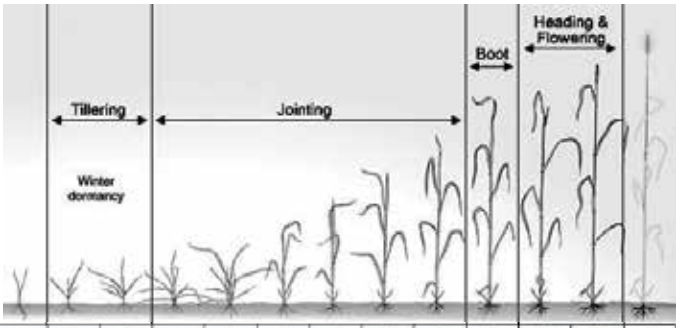
8. Know your crop protection product

- Most plant protection products have various strengths and weaknesses. If unsure about any of these, it is wise to seek professional advice in order to decide on which product is most appropriate for the task in hand. There are many different products available on the market that contain similar active ingredients which can appear confusing to an untrained eye, as one needs an intimate knowledge of active loading and subsequent rates.

- The majority of herbicide and fungicide programs include several different active ingredients, through either the inclusion of a different product in any one mix or using pre-formulated multi-active formulations. Combined actives increase the range of target weeds and/or plant diseases while also protecting the overall crop protection program from resistance breakdown. It has also been found that through the inclusion of several different actives, you can prolong the life expectancy of the different families of plant protection products. This is all part of ensuring the sustainability of our industry.

Growth Stage 31 (1st node detectable)





Feekes	1	2	3	4	5	6	7	8	9	10	10.1	10.5	11
Zadoks	10	21	28	30	39	31	32	37	39	45	56	60	90

Modes of action

by **Niall Laffan** B.Agr.Sc I.A.S.I.S
Dairygold Agribusiness

Herbicides

There are 3 main modes of action regarding herbicides. These can be either used as an individual herbicide or form part of a wider stacked program when added to other actives to increase control of the target weed profile.

1) Residual: This range of herbicides are absorbed into the top 2-3cm of the soil profile and is subsequently absorbed by the seedling weed plant and killed. They can generally be applied in most weather conditions, but best results are achieved when applied to moist seedbeds or when normal rain fall is forecasted. Examples include pre-emergence herbicides such as *Nirvana*, *Firebird* and *Defy*.

2) Systemic: Systemic herbicides are best applied during times of growth and are taken up by the growing weed which in-turn stops its growth and leads to subsequent death. They are often selective by nature in so far as they only kill a specific range of weeds or plants. The 3 main modes of systemic herbicides include;

SU (Sulfonylurea / ALS inhibitors): These are rather slow acting, control a broad range of weeds and often used with an accompanying active within a program. SU's are very compatible with different forms of chemistry. Examples include *Presite-Max*, *Cameo-Max* and *Pacifica plus*.

SA (Synthetic Auxins): A relatively new range of chemistry with good effectiveness on a large range of suspectable weeds. These are commonly used in conjunction with an SU to give near 100% control of all weeds. Very slow acting and works quiet well even in lower temperatures. Examples include Pixxaro, Zypar and Belkar.

Hormones: These were the first developed and now the oldest selective herbicide available. Crude in chemical formulation, they work very quickly, and visual knockdown is evident in a matter of hours. Hormones are gradually being withdrawn from the market as found to be unsafe to our ecological systems in recent times. They have limits in compatibility with other chemicals and are not commonly used within crop protection programs at this stage.

3) Contact: These work when they encounter the living plant tissue. Rarely seen on the market at this stage except for Spotlight plus which is used in the desiccation of potato haulm.

Fungicides - there are 4 main families of fungicide products.

1) Triazole: These are now considered "old type chemistry". They have been on the market for many years but are still very effective and often the corner stone of most fungicide programs particularly in cereals. They have systemic activity which includes both strong curative and preventive properties and depending on the active ingredient, will control most cereal fungi. Examples include Folicure (Tebuconazole) and Proline (Prothioconazole). A new type of azole was launched in 2020, in the form of Revysol. This is classed as an Isopropanolazole.

2) Strobe (Strobilurin): These are a relatively recent family of molecules that have both curative and preventative properties and work systemically within the plant. Strobes are mainly used in conjunction with another mode of action, as they are found to be weak in some instances when used as a solo.

Strobes are still regarded as very important molecules when included correctly into a program. Examples of strobes include *Amistar* and *Comet*.

3) SDHI (Succinate De-hydrogenase Inhibitor): These possess both curative and preventative properties, but their main strength is in the form of persistence. Once an SDHI is absorbed by a plant, they protect it over a long period of time. They have become the main stay in most cereal fungicide programs and have been the focus of current research in recent years. Examples include *Boscalid*, *Solatenol*, *Xemium* and *Bixafen*.

4) Multi-Site: These are based around crude active ingredients that are gradually being withdrawn from the market due to their unsafe nature. They work principally by protecting the plant on the outer surfaces. Multi-Sites serve 2 crucial functions. Firstly, they act as a protectant fungicide and secondly as a resistance defence mechanism to prolong the life expectancy of other fungicides. Examples include *Bravo* (Chlorothalonil) and *Phoenix* (Folpet).

9. Be aware of the compatibility of different active ingredients in complicated tank mixes.

- At times one will need to be prepared to split tank mixes and travel the ground an extra time if necessary, rather than "hurt" the crop with an overloaded tank mix. This is where a well thought out pre-planned program becomes crucial. Recent studies have also shown that plant stress, either through "hot" tank mixes or nutritional deficiencies etc. can induce the onset of Ramularia in Barley crops. This is a very important consideration, especially because Bravo (Chlorothalonil) can no longer be applied after May 20th.

10. Know how to load your sprayer when you are using several different compounds in a single application.

WALES RECIPE FOR SUCCESSFUL TANK-MIXES

Step 1	Fill the tank one-half to 3/4 with water
Step 2	Add water conditioners if required
Step 3	**W**ettable powders and water dispersible granules
Step 4	**A**gitate
Step 5	**L**iquid flowable and suspensions
Step 6	**E**mulsifiable concentrate (EC's) formulations
Step 7	Add glyphosate if using
Step 8	Fill sprayer with water
Step 9	**S**urfactants/solutions

- Where trace elements are being included ADD LAST TO PROGRAM this can be included in Step 7
- Where there are any doubts with a program, it is wise and prudent to do a trial mix in a 10L open container with equivalent amounts of water and chemical and check their physical compatibility.

by **Michael English** I.A.S.I.S.
Dairygold Agribusiness

PREPARATION GUIDE FOR SPRAY SOLUTIONS

1. Fill the tank/knapsack with water to 80% of its capacity. Start agitation.
2. Adjust the pH to reach an optimal pH 5.5

3.	**Mix order:**
1st	Water soluble powder (WP) Crystallise fertiliser powder (CP)
2nd	Water soluble granules (WP)
3rd	Suspension concentrates (SE or EC) formulation
4th	Emulsified concentrations - EC and ES compounds
5th	Liquid foliar feeds

4. Top up the talk with water and keep agitating until all products are fully dissolved.
5. You are not ready to spray! (keep mixing device on and always clean equipment after use)

Nature's Corner

Barely Yellow Dwarf Virus and Aphid Control

by **Tim McCarthy** B.Agr.Sc I.A.S.I.S
Dairygold Agribusiness

The largest spring crop acreage this year has brought with it an increased workload over recent weeks. The challenge ahead of us now is to protect these crops from BYDV infection to maintain yield potential.

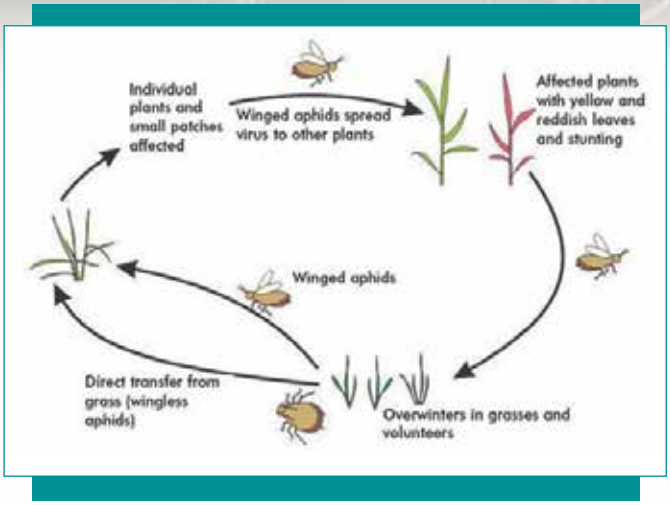
What exactly is Barely Yellow Dwarf Virus?

Barely Yellow Dwarf Virus (BYDV) is the most destructive viral disease on cereals and can be found on barley, wheat and oats. Originating in grasses in field margins and adjoining grassland, it is spread to cereals using aphids as its vector. As the aphid feeds on the plant's phloem sap, which is rich in sugars minerals and other elements, the virus enters the aphids' gut, which then circulates the body where it eventually ends up in the salivary glands. When the aphid migrates into a newly emerged cereal crop, the virus is injected as it feeds on the leaf tissue. Once inside the leaf, the virus consumes energy from the plant into viral growth through the plant. The resulting symptoms lead to stunted plants and yellowing of leaves which is caused by the virus interrupting the process of photosynthesis causing a reduction of sugars, proteins and nutrients on the leaf. This in turn can lead to a 45% reduction in photosynthesis in an infected plant.

There are three aphids of importance in Ireland:

- Grain Aphid
- Bird Cherry Aphid
- Rose Grain Aphid

In order to understand aphid activity, knowing the lifecycle of the aphid aids in making informed decisions on how to reduce the population in a crop.



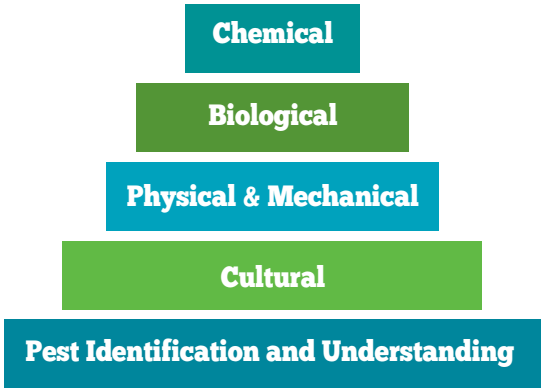
- During the autumn female aphids lay their eggs on grasses and cereals which allows them to withstand the harsh conditions of winter.
- When warmer weather returns in spring, these eggs hatch and female wingless aphids emerge. As they don't have wings, their movement is restricted over a small area.
- These females go on to reproduce asexually from the spring into summer and all their offspring are female clones which are liveborn instead of hatching from eggs. This reduces the interval between generations and the total number of Aphid s in the population rapidly increases over a short period of time.
- Because this explosion in numbers of wingless aphids happens in a concentrated area, they adapt their anatomy so that the following generation is born with wings allowing them to fly to and colonise new plants over a larger area.

- This cycle continues through summer and into the autumn. As autumn temperatures begin to drop, males are born as well as females. These then go on to breed with other females, and their eggs are laid on grasses to outwinter for the winter and the whole lifecycle begins again!

FACT: An aphid will live for about 25 days and will produce about 80 offspring throughout its lifecycle**

How can we control BYDV?

Since there is no treatment for this virus, prevention is our only line of defence against BYDV. Prevention centres around reducing the population of aphids that can infect the crop during the vulnerable stage from the 2 leaf stage to stem extension.



IPM Triangle

Cultural Control

This describes the actions a grower takes to manipulate the environment around the crop to give the advantage to the crop over the pest.
As aphids are less active in colder temperatures, sowing dates have a big influence on the level of BYDV infection. Crops sown in March will have a better chance to establish and grow past the vulnerable stage before the influx of migrating aphids as the weather gets milder in late spring.

Physical and Mechanical Control

This refers to physically removing the pest from the area. Removing the green bridge where aphids outwinter on grassweeds and volunteer cereals in the stubble before planting a cereal crop. This removes aphids that would otherwise have moved into the crop at emergence.

Biological Control

Parasitic wasps and ladybirds are natural predators to aphids and when at optimum levels will attack and eat a large quantity of aphids in a crop.
Parasitic wasps sting the aphid and lay their eggs inside

Grain Aphid

them. When the eggs hatch inside the aphid, the larvae feed on the aphid from the inside out. Ladybirds also have a large appetite for aphids and can consume up to 50 aphids per day. The use of pollinator strips and grass margins on the edge of crops can naturally encourage beneficial predators in enough numbers to keep aphids in check.

Chemical Control

A carefully timed pyrethroid insecticide will effectively remove all aphids.
Knockdown resistance, also known kdr, has been widely reported from sustained use of pyrethroids so the use of an aphicide should only be carried out in situations where other IPM methods do not reduce the BYDV infection risk to an acceptable level. Generally, late sown spring crops and warm sheltered fields are at greatest risk and chemical control is justified in these situations. When using aphicides it's important to apply full label application rates as reduced rates can impede efficacy and speed up resistance.

Some current ongoing research indicates that aphids are attracted to plants with excess levels of Nitrogen on the leaf. The role of Sulphur and Magnesium to balance out nitrates is under review.

Varieties with a tolerance to BYDV are also en route to the market and may possibly reduce the impact the virus makes on an infected plant. Natural based products containing oils or soaps may well play a future role by providing a different mode of action.

Bird Cherry Aphid

Rose Grain aphid

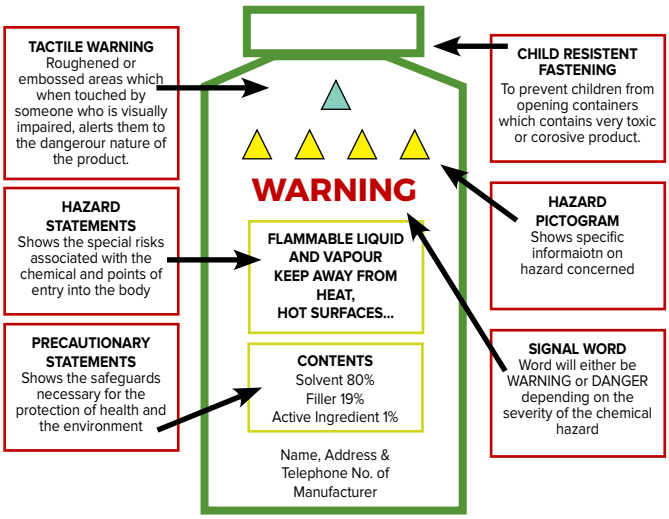
Farm Health and Safety

by Catherine Hurley B.Agr.Sc
Dairygold Agribusiness

Although it may seem the world has stopped amid the global pandemic, farming remains constant with the hum of activity alive in the countryside. Tillage farmers are facing a heavy workload at present, with many finding themselves under pressure to get work done and to get everything ticked off the list in a timely manner.

Rushing jobs can result in accidents and so during this busy time, we urge farmers to be mindful of safety especially when children are off school for the foreseeable. We're asking farmers to slow down, take their time and adhere to the health and safety guidelines made out by the Health and Safety Authority (HSA).

Working on farm on a day to day basis requires the use of many different chemicals whether it be fertilisers, oils, animal doses, weed killers or detergents they all play a vital part of the daily operations of that farm. If these chemicals are not used properly there is the potential for them to be extremely harmful to both yourself and your farm.



When you are using chemicals on your farm there are some crucial points that need to be adhered to:

- Know how dangerous the chemicals are that you are using
- Have all necessary safety equipment that is needed for handling each chemical
- Chemicals are only used as instructed by the manufacturer
- Chemicals are stored properly
- Excess chemicals are disposed of properly
- A contingency plan is in place if there is an accident involving chemicals on your farm

DANGER	Explosive - sensitive to fire, heat, vibration and friction	Keep your distance
	Highly flammable - serious fires if exposed to sparks, flames, heat	Handle with care No ignition sources
	Causes or intensifies fire, increases fire risk	Wear protective clothing
	Life threatening even in small amounts and brief exposure	Handle with care
	Causes very serious long-term health effects	Never swallow or inhale Avoid contact with skin
	Causes skin and eye burns	
WARNING	Destruction of metals	Handle with care
	Skin and eye irritation. Adverse health effects	Don't swallow touch or inhale
	Damage to ozone layer	Avoid release
	Container explodes if heated. Very cold liquid burns when touched	Do not heat
	Toxic to aquatic environment	Do not pour down drain

Following these points will ensure you are keeping yourself, your family and the environment safe.

Do:

- Study the label and safety data sheet
- Read and follow the instructions
- Use recommended protective clothing
- Keep chemicals locked away
- Dispose of empty containers
- Drop off your drums
- Stay updated with technical information

Don't:

- Transfer chemicals into unmarked containers containers properly
- Use flammable chemicals near ignition sources
- Mix chemicals, unless you are sure they don't react
- Store in sunlight or the boot of the car
- Dispose of drums or left over chemicals in an unsafe manner

dairygold QUALITY FEEDS

Gold Farm Beef

UNIQUE SELLING POINTS

"Dairygold are proud to support our grain growers by launching our native beef feed exclusively including Irish sourced cereals and beans."

"We are anxious to show our allegiance and support to the tillage industry as much as possible, not just by paying strong prices in a very pressurized market but also by promoting home-produced feeds from native grains."

"Our new beef feed range highlights the efforts that we are going through to support our tillage growers and to acknowledge their support throughout the 2018/2019 grain growing season."

PRODUCT DESCRIPTION

- Available in both cube and coarse ration.
- Our course ration contains Irish barley, rolled wheat and beans.
- Our cubed ration contains Irish barley, rolled wheat, oats and beans.
- Both forms included optimum levels of vitamins and minerals with and added buffer to create an optimal rumen environment.
- The protein content of the coarse ration is 12.5% while the cube comes to 12% protein.
- UFL value of our coarse ration is 0.97 while the cube is 0.95.

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For further information or if you wish to place an order please contact your local Dairygold Co-Op Superstores or our

Inside Sales Team on 022 31644

dairygold Golden Valleys, Growing Naturally AGRI BUSINESS

Optimising the Performance of Agrichemicals

by **Tom Gartland**, Syngeta Irl.

The first step in any disease, weed or insect control program is to select the correct product for the job at hand. However, this is only the starting point because the level of control achieved is also very much determined by other factors.

Good pest control is dependent on a combination of the following factors:

1. Product Choice
2. Spraying Operation
3. Crop Conditions
4. Weather Conditions

1. Product Choice

Assuming the correct active ingredient is chosen, ensure that you use a product that is well formulated and tested. A good formulation can improve the performance of a product on the pest as well as causing fewer physical problems such as nozzle blocking when mixed in the sprayer. When more than one pesticide is to be tank mixed, follow the recommended tank mixing sequence. It is good practice to have the batches of spray prepared and laid out in the sequence that they are to be added to the sprayer before spraying starts and double check them. This way there is less chance of adding the 'wrong product' to the tank and potentially causing crop damage.

2. Spraying Operation

Spraying technology has come a long way since the early days, with many new developments such as active suspensions, bigger tanks, wider booms, faster forward speeds, lower water volumes, specialist nozzles, section control, GPS guidance etc. However, owning a sprayer with all the latest technologies doesn't necessarily guarantee success. It is important to understand the principles of good spray application. Sprayers should always be checked and calibrated before the spraying season begins and thoroughly cleaned out as required in season.

The objective when spraying is to place as much spray on the target as possible, while keeping off target drift to an absolute minimum. Choice of nozzle, nozzle operating pressure and boom height are critical in achieving this objective.

Nozzle Choice – the spray nozzle is the ultimate controller on the sprayer. If the nozzle is worn or blocked, then good application is compromised. The most widely used nozzles nowadays produce a flat fan shaped pattern. Flat fan patterned nozzles are classified as conventional flat fans, low drift flat fans, low pressure air induction (a.i) flat fans, high pressure a.i flat fans. There are similarities and differences between these nozzle classifications.

Nozzle Similarities – all ISO rated flat fan nozzles are colour coded depending on their orifice size and hence flow rate e.g. yellow nozzles are classified as 02 size with a flow rate of 0.8l/min at 3 bar pressure while a blue 03 size has a flow rate of 1.2l/min at 3 bar pressure.

The most common sizes used on farm for cereals range from 025 to 04. There are smaller and larger nozzles sizes available, but these are not generally used. The numbering on these nozzles - 110 03 - describes the fan angle of 110o and the nozzle size 03 refers to the flow rate. The higher the number, the bigger the flow rate at a given pressure. At a constant forward speed and pressure, growers who use lower water volumes generally tend to use nozzles sized 025 or 03. Those choosing to use higher water volumes opt for the 04 or 05 sizes.

Nozzle output charts are available for the different sized nozzles and show the application rates in l/ha at different forward speeds and nozzle operating pressures.

Nozzle differences – the significant differences between the different nozzle classifications relates to the droplet size produced by the nozzle. The smaller the droplet size, the better the coverage of the target, however too many small droplets will increase the amount of off target drift. The conventional flat fan

nozzle produces the smallest droplets and as a result the most drift. High pressure air induction nozzles produce the largest droplets and reduce drift over the conventional nozzles by 90%. However, when choosing a nozzle, select one that combines good coverage with good drift reduction. The Hypro Guardian Air nozzle is one such nozzle, reducing drift by 75% compared to a conventional fan jet while also giving good target coverage.

Nozzle output should be checked on a regular basis during the season. Hold a calibrated cylinder under the nozzle for a minute and record the output at the set pump operating pressure. Nozzles should be replaced If the output varies by 5% from the nozzle output charts. Worn nozzles produce an uneven fan pattern leading to poor coverage and as a result poor pest control.

Choose a nozzle that operates best at 2 to 3 bar pressure. Increasing the pressure will increase drift even with Air Induction nozzles. The perception in the past was that penetration into a crop could be improved by increasing the nozzle operating pressure above the recommended range. Increasing the pressure does not improve penetration and coverage. More smaller droplets are produced that hang around in the air above the crop and are blown off target as drift.

Nozzles operating at too high a pressure – unacceptable drift

Boom Height – The spray boom should be set 50cm above the target for 1100 fan nozzles. At this height, drift is reduced significantly and coverage in the crop is better than where booms are set higher. If the boom is set too low, as could happen when applying a final fungicide to a cereal crop, then uneven application of product will occur because of insufficient overlapping of nozzle outputs across the boom.

Boom at 50cm – the correct height

The forward speed chosen will depend on a number of factors -how level is the seebed? wet or dry soil conditions, wind speed, crop thickness, boom stability, the size of the field. etc,. Keeping the boom stable is essential for even spray application and drift reduction. If the boom is bouncing around when spraying, then recalibrate and slow down.

3. Crop Conditions

There are many different crops grown in Ireland - cereals, oilseed rape, field beans, peas, potatoes, brassicas, carrots, etc., These crops have different crop structures and need to be treated differently regarding nozzle choice. As crops develop and grow, penetration of the spray down into the crop can be difficult due to the shielding effect of the dense canopy.eg control wild oats early in cereals with Axial Pro when the crop is open and allows better coverage of the weed and consequently a better result. If the spray cannot reach the target through the canopy, then control will be reduced.

4. Weather Conditions

Around the application of chemistry, weather conditions can influence how a pesticide performs. Avoid spraying when temperatures are very cold or very warm. It is not recommended that crops are sprayed when there are wide variations between daytime and nighttime temperatures. Wet crops at time of application will reduce the amount of product sticking to the leaf. Wind can reduce the amount of active ingredient reaching the target while at the same time increasing off target drift. Spray operations should not be carried out if the wind is blowing in the direction of a house, a school or a sensitive crop. If spraying near a surface water body, apply STRIPE principles (ref. Pesticide Controls Division, DAFM). Wind speeds of between 2 – 6km/hr at boom height are ideal for spraying. Be wary of spraying during calm conditions due to temperature inversions. It is advisable to have a nozzle body on the sprayer that can hold more than one nozzle. A good choice for cereals would be a Defy 3D nozzle and a Hypro Guardian Air 75% drift reducing nozzle. Conventional flat fan nozzles should no longer be used on cereals as they create too much drift. We, at Syngenta are currently trialing 90% drift reducing nozzles to see if we can recommend these with our product range in the future.

A View of the Markets
COVID-19 Impact

by Frances Nash BA (Hons) UCC
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Our lives have been turned upside down and inside out in the past couple of months with news of a deadly virus sweeping across the globe. It will be no surprise to the readers that every market in the world has been thrown into turmoil. Markets thrive in certainty and the world has never been in more uncertain times.

Reports from feed markets across the world are bringing the most unprecedented scenarios that even the best of speculators couldn't have envisaged.

At this time of year, when most countries are approaching their harvest season, stocks are tight. This situation has been intensified by the impact of coronavirus on origin logistics, ultimately causing shipment delays and reduced internal movements.

In South America for example, there is serious local resistance to trucks moving through towns and villages. Scenarios like this are occurring across the world, production and port facilities are working with skeleton staff and are facing the ongoing risk of workers contracting the virus. In addition, many of these workers are threatening strike action with fears of contracting the deadly disease; in essence, these essential workplaces are just a sneeze away from their own lockdown. This is the single biggest threat to raw material imports in this country.

Consumer behaviour is irrational, we don't have to look too far to see examples of this kind of irrational behaviour. Panic buying across the world, including Ireland has seen a shortage of many products. Milling wheat is in hot demand across the world due to the shortage of flour and pasta. The Farmers Journal reported recently that this demand is being aggravated by the proposed limit on grain exports from Russia, to ensure replenished stocks during the pandemic in their own turf. In essence, global trade has never faced such dark times.

They say it's an ill wind blows no good. The greater uncertainty posing on imports gives the Irish tillage sector a much-needed bargaining chip in internal trade. This has been reflected in prices over the past number of weeks. Throughout the year, prices have been very stable, there was little evidence of peaks and troughs in grain. Now, however, there is a bit more excitement on the marketplace. Wheat is gaining ground, and alternatives are becoming increasingly difficult to obtain, this will only benefit the price for Irish farmers, at least until harvest.

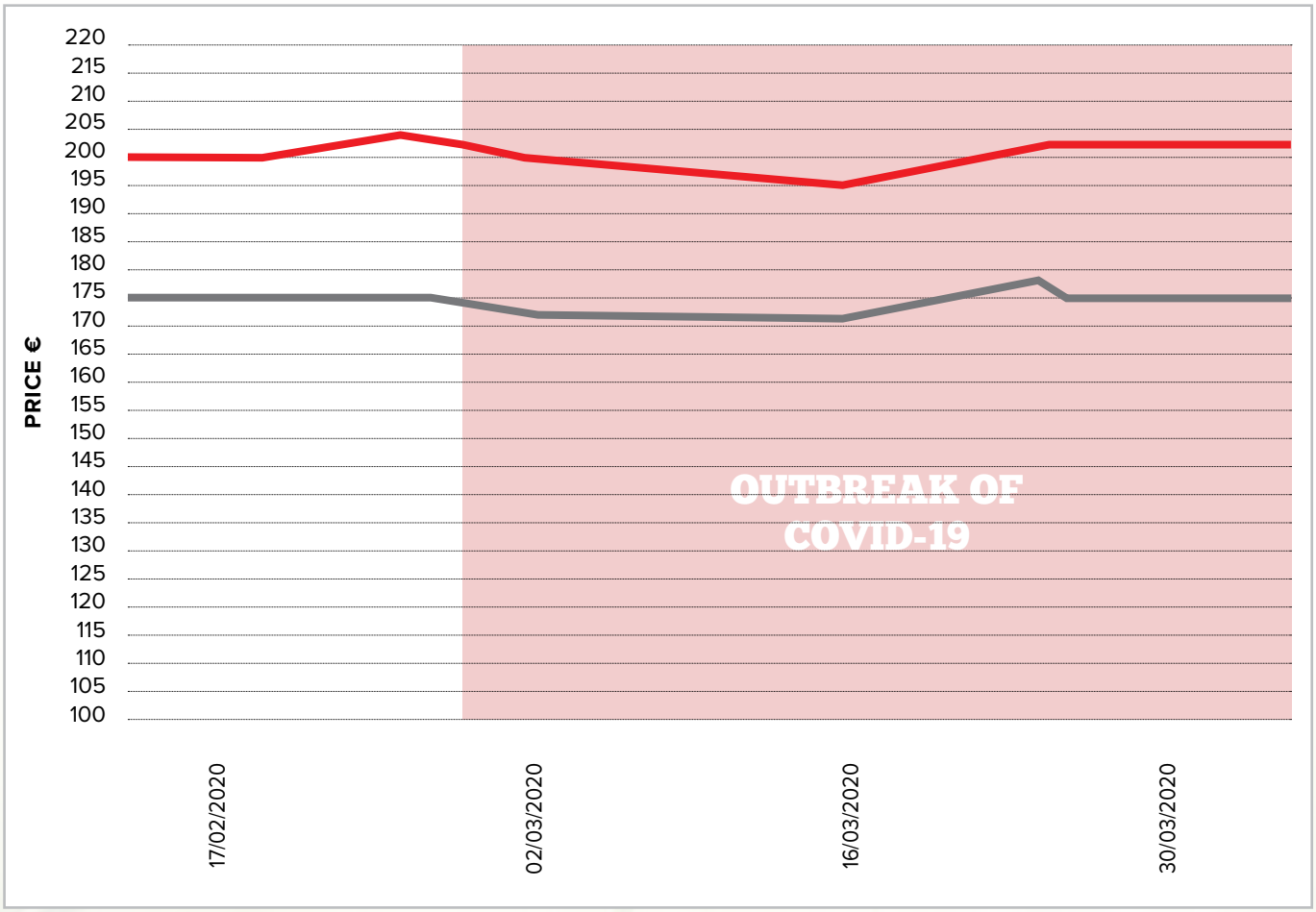
Future prices faced a setback in mid-March, but seem to have recovered well, with December MATIF wheat back up to circa €189/tn from a low €179/tn mid March. Barley has started to gain some ground, with it closing in on wheat, showing some healthy increases the last few weeks. This is likely to be linked to the fall in demand for maize.

All in all, the Grain Market is not exempt from the global pressures that are facing trade at present, there is volatility, the future looks more certain than the present, but one thing is for sure, the demand for grain hasn't disappeared and markets always respond to demand.

Projected National Crop Areas

		Estimated 2020 area	Change v 2019	
Winter	Barley	48,000	-33,000	-40%
Spring	Barley	150,000	48,000	55%
Winter	Wheat	34,000	-24,000	-42%
Spring	Wheat	14,000	10,000	270%
Winter	Oats	9,000	-7,000	-45%
Spring	Oats	15,000	7,000	110%
Winter	OSR	9,000	0	
Beans		9,500	1,600	22%
TOTAL		**288,500**	**2,600**	**0.75%**
Beet		8,400		-10%
Maize		15,000		-5%

Spot Grain Prices 2020



*Prices accurate at time of print & may not reflect prices today

April 17th Field Update

John Farmer writes

Hybrid Belfry at ~ GS30 - My Winter Barley on April 1st with a decent number of tillers, signs of old slug grazing and some low-level disease issues evident at the time.

Winter Barley

All my crops have made good progress over the last 10 days. As I look back through my notes, I see that my 6-row hybrid ***winter barley*** (Belfry) was just at GS30 on the 28th March. This was when I applied my main split of Nitrogen, 105kg/ha (85 units/acre), to bring the crop to 170kg/ha (135 units/acre) in total. This is 10 days later then I would have normally applied the main dressing, but the weather has delayed the whole nutrition program resulting in a late base dressing. I plan to top this up again in the next few days with another 45kg/ha (35 units/acre) to bring up to a total of 212kg/ha (170 units/acre). This is because I have been getting consistently good yields from hybrid barley in recent years.

I have also applied some PGR to help with plant rooting and stem strength, but mostly to check the main shoot from racing forward and shading out the younger tillers coming through. This was completed on April 1st along with some trace elements and a clean-up herbicide to take out fumitory and groundsel that came through the autumn herbicide program.

On April 8th I applied my T1 fungicide. This season I plan on using use a 3-spray program. This will involve 75% rate T1, 50% rate T1.5 and a 75% rate T2. This season my T1 compiled of a Triazole and Strobe mixture which will take me nicely to GS32-GS33 in early May. This is when I plan to apply my main PGR with a 50% rate T1.5 fungicide. This will again be centred around a combined Azole and Strobe mix. CTL (Bravo) will also be included to help bolster Ramularia control.

All in all, I am reasonably happy with my winter barley, especially considering the winter we got, but I will admit that my tiller count isn't as high as previous years. For the record I did take out 11 acres of winter barley that was simply too thin and I couldn't keep looking at it for the rest of the season. This was a reasonable crop at Christmas but suffered badly from slug damage in January, despite my best efforts with pellets. I replanted this area with spring barley in there on April 2nd.

Winter Wheat

My winter wheat is now at GS30-GS31 and is probably the nicest crop that I have on the farm. Despite the awful wet winter, my wheat crops have come through very well. They received two applications of slug pellets, because I got a second attack in early January. This really hit the crop hard at the time when I wasn't paying any particular notice to it. My wheat received its base fertiliser (compound) dressing in late February to bring the crop on, and it certainly gave it a great lift and I have no regrets about this early application.

I applied a strong herbicide on March 20th to control grass weeds and volunteer beans, along with general broad leaf weeds. This was a mix of Alister Flex plus Zypar which gave great cover but certainly hurt the crop, especially with the cold weather we have had. It has however recovered

well and "greened-up" again, but I don't think all my grass weeds are dying off and I'm concerned that I may have a nasty newcomer on the farm in the form of "Blackgrass". This will be monitored carefully over the coming weeks, but it seems to be in several small patches in one particular field. Last year there were beans in this field and the year previous there was winter barley. A crop Westerwolds was planted as a forage crop after the winter barley harvest as an emergency form of forage for livestock feeding. Hopefully it's just some ryegrass coming again.

Graham winter wheat March 20th prior to a spring herbicide being applied

My main split of Nitrogen on my wheat, 105kg/ha (85 units/acre), was applied on April 5th and a further 65kg/ha (50 units/acre) will be added over the next 7 – 10 days to bring it to a total of 230kg/ha (185 units/acre).

My T0 fungicide and PGR was applied on April 15th. I took the decision to include a Strobe as I had Yellow Rust last year and I certainly don't want to go back there again. I plan to use the new fungicide, Revysol, on my wheat crops this year as I feel we must always follow new and better chemistry in our battle with Septoria in the south coast. At this stage my T1 should be due between May 1st and May 10th but this will need careful monitoring and there will be plenty of leaves stripped to determine the optimum growth stage of leaf 3 fully emerged before application.

Winter Beans

This year I planted a crop of Wizard ***winter beans*** for the first time. I had heard and read that they can yield very well when planted and established successfully. This crop was planted on November 10th after firstly lightly disking the stubble, broadcasting my bean seed with a fertiliser spreader and then shallow ploughing the seed in. I simply sprayed the crop with straight PDM and Glyphosate immediately after to clean up any Meadow Grass. The ploughing came up well with very few clods and ridges which allowed for a successful pre-em application.

This crop will need to be sprayed with Basagran in late April or early May for Charlock as there is a history of this weed on the farm, originating from the sugar beet years. The winter beans started to appear over ground just before Christmas and are slow growing compared to volunteer spring beans that were present in my winter wheat crop before spraying. As I write, they are about 8 inches tall and have already received a robust fungicide last week along with some trace elements, as they were starting to show moderate levels of Chocolate Spot. At this stage it looks like a 3-spray program will be required to keep fungus diseases at bay. The crop received two bags of 0-10-20 per acre in early March to simply replace the crop off-take as the field is in good health in any case. The field received 5tn/ha (2tn/acre) of lime last year which is very important for beans as they need a high

pH in order to thrive. It will be interesting to see how much earlier they will mature compared to the spring beans that I usually plant.

Wizard winter beans on April 8th which were planted in early November

Malting and Feed Spring Barley

On March 30th I planted my ***malting and feed barley*** into excellent seedbeds. It was freshly ploughed, grubbed up and left dry for a few days. I then applied 4 bags per acre of 12-5-18+S+Mn (Dairygold Spring Cereal Boost) and then simply "one passed". This was all completed over three days. I rolled the ground straight after with the crop emerging on April 15th. As soon as I can see the tramlines, I will have it all brought up to 160 kg/ha (130 units/acre). This is old continuous tillage ground and I normally don't have issues with proteins unless I have a thin crop or planted much later. In any case I have both malting and roasting contracts with Dairygold and surely, I'll make the contracts with all the options available to me.

Combinable Peas

This year I am growing a small acreage of ***combinable peas***, just to see how they will perform. I planted these on April 15th into a well tilled seedbed, rolled and sprayed for weeds immediately and as of now have not seen one pigeon in the field. I broadcast 2 bags per acre of 0-10-20 prior to planting and also spread 3.7 t/ha (1.5t/ac) of lime. Currently the plan is to spray once for disease and aphids at mid flowering and hopefully close the gate. This will make them a very cheap crop to grow. The big question is how they will stand as historically this has been an issue with peas. Dairygold are anxious to look at the crop in their search for home grown protein and they feel that peas may well give growers another cropping option if the project proves a success.

Fodder Beet

Finally, I have 15 acres of ***fodder beet*** again this year after I promised myself in mid-February that I was finished with the crop after I was left with feed that I thought was sold last spring. Since then, a neighbouring dairy farmer has convinced me to grow the crop for him and he will make two payments over the course of the year, one in May and another in September to secure the deal. I am happy enough with this agreement but it's a crop that leaves a lot to consider as I don't have my own harvester. I do have the planter, but I have no intention of setting up a washing system. I cannot see that type of profit from the crop unless you get very high yields consistently and a good price for all the crop. The other element that often goes unnoticed is the state of the land after harvesting especially when you're relying on a contractor to harvest and you're not in control of the day he arrives as he is under pressure to get through work.

I will keep you posted over the course of the season with another update planned for July.

Nitrogen for Winter and Spring Barley

by Ciaran Collins B.Agi.Sc. I.A.S.I.S.
TEAGASC TILLAGE SPECIALIST

One of the most common questions any advisor will be asked in April and May is what is the optimum level of Nitrogen for this crop? This is always a difficult question to answer because there are so many variables to be considered. Previous cropping, organic manure application, soil type and intended use of the crop are just some of the many variables to be considered.

Ultimately too much Nitrogen is money wasted and can cause lodging and environmental issues and not enough Nitrogen and crop potential may not be realised.

The Nitrogen (N) requirement of any crop is met partly by N already in the soil, organic matter and the remainder has to be supplied by fertiliser. The biggest difficulty is to accurately estimate the level of N mineralised from the organic matter. Previous cropping and manuring history have a major influence on the level of available N in the soil.

A relatively high level of N is mineralised and available to a crop following a permanent pasture. Conversely, the need for fertiliser N is high in a continuous cereal rotation. A soil N index is used to relate previous cropping and management to the recommended rates. Continuous cereals would be Index 1 and cereals following, for example beet and beans would be Index 2. N application should also be related to the potential yield of the crop. Table 1 below gives an example for the recommended rates of N for winter barley at Index 1 and 2 based on expected yield.

Table 1: Nitrogen recommendations for winter barley based on soil N index and crop yield potential (kg/ha)*

Soil N Index	8.5	9.5	10.5
1	180	200	220
2	155	175	195

** Proof of higher grain yields is required for an additional 20kgN/ha for each one tonne above a base grain yield of 8.5t/ha.*
** Higher grain yields shall be based on the best yield achieved in any of the 3 previous harvests, at 20% moisture content.*
To convert kg/ha to units/ac multiply by 0.8

Malting Barley

The aim of any malting barley grower should be to grow a high yield. Achieving high yields has the effect of diluting the protein (N) and a grower is more likely to achieve the desired specification of

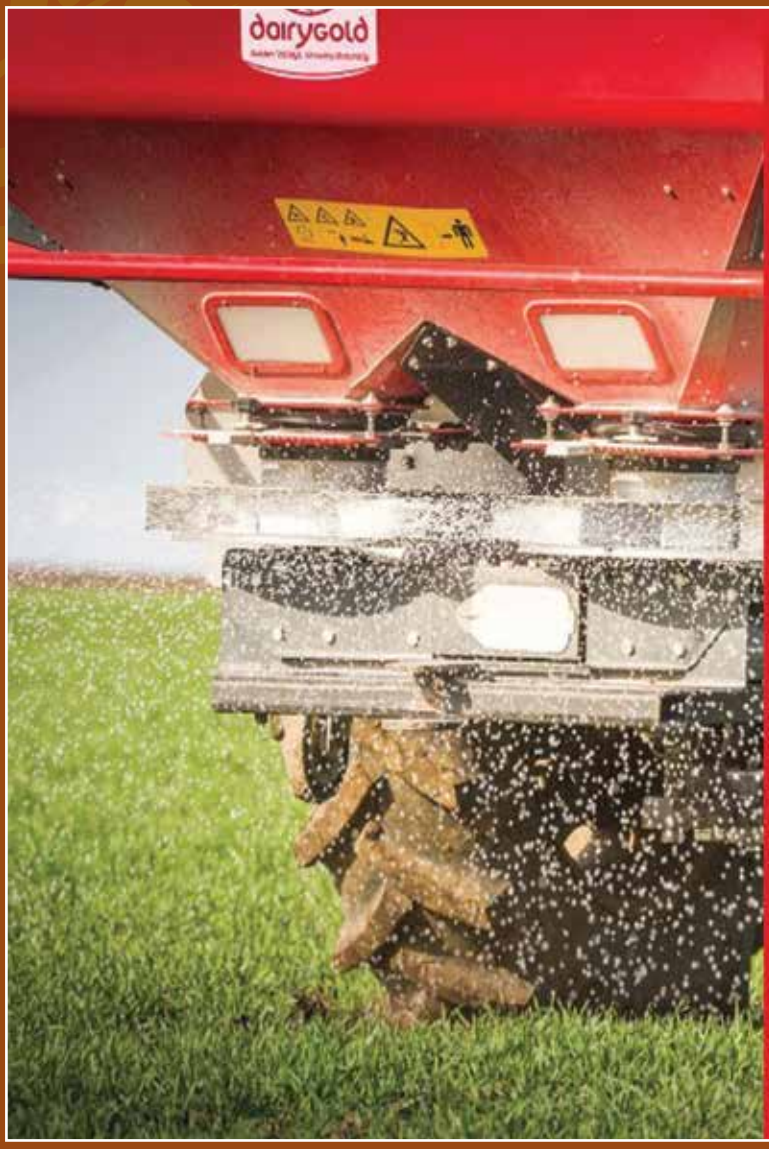
9.0-11%. Sowing date, establishment percentage, weed and disease control are key components in achieving a high yield of spring malting barley.

Nitrogen for Malting Barley Research Update

Summary of Teagasc research conducted from 2011 – 2014 shows the following:

- N rate has the largest effect on grain protein rather than N timing
- Results indicate that fertiliser N rates between 150 to 160kgN/ha gives highest probability of achieving malting barley protein specifications where soil N supply is modest.
- Adjust N rates downwards where soil N supply is high or where organic manures are applied
- Little effect of not putting N into the seedbed (and putting the first N on at tramlines visible stage instead) on either grain yield or protein content
- Splitting the main N application had little effect on grain yield or protein on average over seasons and sites
- Delaying a proportion of the main N application until flag leaf/heading tended to lead to increased grain protein contents but with a risk of reduced yield, and so is not recommended. Applications of N should be completed by GS32
- Low protein levels experienced in 2011 were due to reduced soil N supply combined with relatively low fertiliser N recovery.
- In 2012 the higher proteins were due to higher soil N supply compared to 2011.
- In 2013 soil N supply was similar to 2012 but fertiliser N recovery was higher and in some areas yields appeared to have been limited by drought which further increased proteins.

Applying 150 – 160kg/ha will give a grower the best chance of achieving malting specification on continuous tillage soils but there will be variations from season to season depending on soil N supply. The overall N rate needs to be reduced for crops following beet, beans, oilseed rape or fields close to grass. Also it is vitally important to take organic manure application into account when deciding on overall N rate.



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Dairygold Agri Business Tillage Team

Our team are available for technical support and advisory