



Trust in Tillage

SUPPORTING SUSTAINABLE FARMING



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Dear Grower,

With days getting longer, improved weather conditions, a better forecast and land slowly drying out, opportunities for field work to recommence are approaching and decisions need to be taken. While it can only be described as a long, wet winter, it's now behind us and we look forward to brighter and drier weather which will allow us to catch up on crop work.

In this edition we will review the current state of some of our winter crops and offer advice on how to deal with issues arising. We will also share our thoughts on crops for the spring and actions around same. We will also spend some time reviewing our recent Spring Tillage Conference and the papers that were presented there by some excellent speakers and the opinions and advice they shared with us. We feel that it was a wonderful day and more than just a technical seminar but a great opportunity to show case our Malting Barley Finalists of the year and the great work they do but also an opportunity for the whole industry from seed assemblers to fertiliser and chemical suppliers and from growers to end users, Malting Company of Ireland and Irish Distillers Ltd to chat and socialise and understand the concerns and requirements that exist on the ground.

Furthermore, we are introducing two new additions to our publication going forward to encourage people to look at things with a different perspective at times and to become more pro-active in their decision making. One will be revolved around integrated pest management and called 'Nature's Corner'. The second is based on health and safety issues, which will be referred to as 'Farm Safety'.

I hope that you find this publication both informative and helpful and I would welcome any comment, good or bad, to improve on it for future editions to help you, our growers. I would also like to thank you for your continued support in the past and assure you of our commitment to you, our customers and the tillage industry going forward.

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

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A View from the Field

by **Liam Leahy**

Dairygold Tillage & Beef Business Manager I.A.S.I.S.



01/3/20



Chat at the Farm Gate

After one of the most difficult winters in some time, a lot of crops are looking worst for wear after getting a battering from the constant wet weather which has persisted since last September. The early sown winter barley has established well and has moved to GS24 - GS25 and is generally performing satisfactory with plenty of yield potential.

Later sown winter barley hasn't established as well, and in many cases is performing moderately at best with much lower plant counts and patches missing in a lot of fields; some crops looked better last December than they do today. This is mainly due to poor ground conditions where some plants perished from water logging and by slug damage in early January. This begs the question; *"is one better off to plant early in moderate conditions or wait until later for better ground?"* Unfortunately, there is

no straight forward answer to this but in my opinion winter crops need to be planted earlier and will put up with more abuse than spring cropping that needs to grow roughly twice as fast and will benefit greatly from good soil conditions at planting.

Where there are issues with poor or patchy crops consider all options before replanting as this rarely is the right decision and should only be considered where the establishment is exceptionally poor. I think one should get professional advice when faced with this decision as its much easier for a neutral mind to make that call.

Winter wheat has a relatively small crop in many areas and has generally progressed very well. I think that we need to take a message from the resilience of this crop as in years like this it opens



a much wider window for autumn. Most crops are at GS13- GS22 and while a few were certainly challenged by slugs they will have the ability to compensate greatly even with low plant counts.

There is certainly a strong argument, especially for growers that cover larger working areas, to consider making winter wheat a bigger part of their cropping. Break crops will benefit the soil and the introduction of new fungicides on to the market and will prove to be much better at fighting septoria when used correctly.

There was a small acreage of winter beans planted which are powering on nicely now at 4 to 6 leaves or 3 to 4 inches over ground. This is a serious option going forward; to consider planting this crop



in the late autumn by ploughing in; it does work, and all trials suggest a very satisfactory yield is achievable.

Beet is probably 75% harvested with excellent yields. Sales are a little slower than anticipated but this may well be sorted out over the coming weeks as more dairy cows calve down and little likelihood of any serious grazing options in the immediate future.



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Dairygold Malting Barley Winner

Top tillage farmer crowned Dairygold Malting Barley Winner

Top tillage farmer Jeromy Dineen was announced as the overall winner of this year's Dairygold Malting Barley competition at the recent Spring Tillage Conference held at the Corrin Event Centre in Fermoy.

Consistently producing excellent quality grain and prioritising the environment by protecting water quality and embracing biodiversity has earned Jeromy the prestigious title, according to judges Jimmy O'Mahony, Crops and Horticulture Specialist, Teagasc and Ciara Donovan, Farm Sustainability Advisor, Dairygold.

"His attention to detail is obvious and commendable. His planning, technical knowledge and machinery expertise as well as record keeping is very impressive. His wealth of experience and knowledge of tillage and malting industries has stood by him in this year's competition," explained Jimmy.

"He has embraced environmental schemes and has developed an impressive knowledge of catch crops and conservation tillage techniques," according to Ciara.

"Located on the banks of the Bride, water protection was embraced, and biodiversity was encouraged particularly by managing excellent hedgerow throughout the farm.

In addition, his balance as regards taking care of the environment confirms our view that he is the deserving winner of the 2019 Dairygold Malting Barley Competition - he excelled in all scores," she said.

Jeromy farms with his wife Patricia on 80ha of tillage ground in Ovens, just 12km west of Cork city. He is a firm believer of crop rotation, religiously rotating oil seed rape, winter wheat, winter barley and spring barley.

The free draining soil lends itself well to producing top quality malting barley, enabling him to grow the highest quality on the banks of the river Bride. The self-contained grower uses Gate Keeper, regularly spreads cereal boost with Wolf Trax and embraces new technologies where possible.

The Malting Barley Competition was a great opportunity for Dairygold to showcase the standard of grain produced by our growers. The diversity of the contestants was impressive and ranged from large specialist tillage farms to relatively small mixed enterprise farms, all of which were committed to excellence.

The Finalists

- John & Thomas Dwyer, Cashel, Co Tipperary
- Michael Walsh, Cahir, Co Tipperary
- Hurley Bros, Kildorrery, Co Cork
- Nigel O'Keeffe, Glanworth, Co Cork
- Michael Archdeacon, Lombardstown, Co Cork
- James Pope, Ladysbridge, Co Cork
- Richard Lucey, Ballyclough, Co Cork



Malting Barley Competition Finalists, James Pope, Ladysbridge, Thomas O' Dwyer, Cashel, Michael Archdeacon, Lombardstown and Richard Lucey, Ballyclough with Seamus O' Mahony and Liam Leahy, Dairygold.

Malting Barley Competition Finalists, Michael Walsh, Cahir, Jeromy Dineen, Ovens, John Hurley, Kildorrery, Nelius O' Keeffe, Glanworth with Seamus O' Mahony and Mary Deane, Dairygold.

Today's Challenges in Agriculture

Although the agricultural industry is expanding to meet global food demand, it also being limited by specific targets set out by the Department of Agriculture's Climate Action Plan 2019. Currently, the agricultural industry is responsible for 32% of the national greenhouse gas emissions and 98% of the national ammonia emissions.

According to the Climate Action Plan 2019, the greenhouse gas emissions are to be reduced by 10% (17.5 – 19Mt CO₂e) and to increase carbon sequestration by 10% (2.7Mt CO₂e) by the year 2030. Furthermore, ammonia targets are set for a 5% reduction in the same period.

Agriculture is responsible for 20.21Mt CO₂e annually and comes from three gases; Methane 64% (CH₄), Nitrous Oxide 31% (N₂O) and Carbon Dioxide 5% (CO₂).

Methane is agriculture's largest GHG contributor and largely comes from enteric fermentation of cattle and sheep. Nitrous Oxide, more relevant to tillage farmers, comes from the soil. Fertiliser spread during wet periods comes off as Nitrous Oxide and is 300 times more potent than CO₂.

Ammonia (NH₃) is the 'air quality' gas. Three quarters of Ireland's NH₃ comes from manure; manure spreading, manure management and manure storage. More comes from urea-based fertiliser (7% of total).

Three Mitigation Pathways for Agricultural GHGs

- Reduce agricultural Methane and Nitrous Oxide by lowering emissions from animal waste and fertiliser.
- Sequester carbon via land use change, soil management and forestry.
- Improve energy efficiency and increase the use of biofuels and production of bioenergy. With the aim to reduce overall energy usage on farms and to displace fossil fuel emissions.

As farmers we can improve the management of our manure, better manage urea-based fertilisers or look at a better Nitrogen source in order to reduce emissions at farm level.

by Catherine Hurley B.Agr.Sc
Dairygold Agribusiness



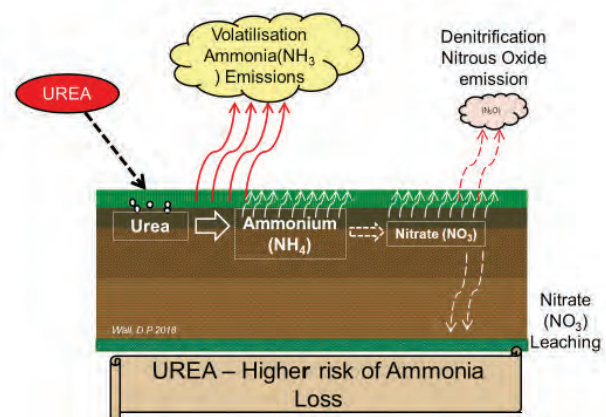
Selecting a suitable N fertiliser type

Most emissions associated with tillage farming are derived from mineral fertiliser. If we reduce N emissions or choose a better N source, we can potentially lessen emissions by 0.52Mt, a quarter of our total abatement options, according to Teagasc.

Urea goes through three steps before becoming available to the plant. Firstly, the urea transitions to ammonia by hydrolysis and undergoes a conversion to ammonium. This ammonium is converted to nitrate via nitrite, which typically takes 24 hours and slower in cooler, waterlogged soils. Plants can utilise ammonium and nitrate but under normal Irish soil conditions, it converts to nitrate before grass uptake.

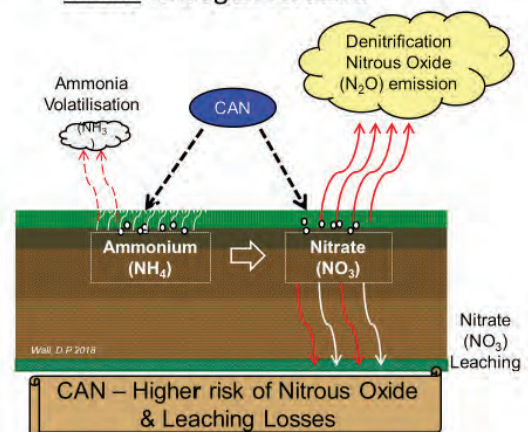
Potential N losses from the soil?

UREA Nitrogen fertiliser



Potential N losses from the soil?

C.A.N. Nitrogen fertiliser





When urea is applied in unfavourable conditions to bare pastures or in windy conditions, research has shown it is subject to losses due to volatilisation. Therefore, it is critical to have rain forecast just after or during application to ensure good soil incorporation to reduce these losses.

It is best practice to spread urea with 7–10mm of rain forecast within the following two days. Urea undergoes hydrolysis after its incorporation within three to seven

days. Urea is then converted to ammonia and this needs to be nitrified to convert to nitrate before it can be utilised by the plant.

According to Dr David Wall if urea is used incorrectly it could lose up to 25% through ammonia volatilisation. Calcium Ammonium Nitrate (C.A.N.) has a problem with GHGs. By swapping completely to protected urea as your sole source of N, you can avoid all losses.

Farmers urged to support local when sourcing feed

Irish grown grain should be prioritised for inclusion in rations ahead of all imported alternatives when formulating diets, according to Dairygold Nutritionist, Colman Purcell at our recent annual Spring Tillage Conference.

By choosing to support locally produced grains and proteins, not alone are farmers reducing their carbon footprint and becoming more environmentally friendly, they are also backing Irish tillage farmers and reinvesting back into their own economy, explained the Nutritionist to the crowd that gathered at Corrin Marts, Fermoy, Co Cork.

He said Irish grains and proteins are as good if not better quality than its imported alternative and should be used by Irish feed mills where possible.

“Our native grains and proteins can match or surpass any feed ingredient in the world in terms of nutrient density, traceability, carbon footprint and microbiological quality and should be prioritised for inclusion in all diets ahead of imported alternatives,” according to Dairygold Nutritionist Colman Purcell.

On average, Dairygold uses 110,000tn of grain grown by their own growers across the Golden Valley in our feed ranges milled in Lombardstown Mill.

The conference themed ‘Sustainable Farming in a New Decade’ showcased some of Ireland’s leading advisors in the tillage industry, while trade stands were demonstrating the latest trends in the industry. Speakers on the day took a broader view of ‘sustainable farming’ and looked at how farmers can benefit financially from taking ‘greener’ decisions in their farming practices.

Irish Farmers Journal Tillage Journalist, Mathew Dempsey chaired the meeting on the day. The panel also included Dr David Wall, Teagasc Research Officer, who briefed the crowd on Sustainable Tillage.

East Cork Tillage Farmer Darren Allen spoke about his experience with sustainable farming on his commercial farm. Teagasc Crops Specialist, Ciaran Collins highlighted the most pressing issues surrounding winter and spring crops.



The Importance of Water Quality for Spraying



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

When a decision is made to apply agrochemicals to a crop, we need to ensure the correct products are used at the correct rates to make the best impact. However, rarely the quality of water being used gets any consideration, even though water makes up over 95% of the volume of the tank mix in the sprayer.

As we are seeing many common products on the market losing efficacy and resistance issues being reported around the country especially in the case of herbicides, perhaps water quality could play a key role going forward. When looking at water quality for pesticide applications, the two main considerations are water hardness and pH. Water sources can vary widely depending on the source, rainwater being closest to optimum followed by well water and mains water.

Hard water

Water coming from wells and mains supplies will most likely contain dissolved cations such as calcium and magnesium which are picked up as it soaks through the soil.

These cations in the water will affect pesticides by binding to the active ingredient and locking it up making it unavailable for leaf uptake. Glyphosate is sensitive to hard water and will be locked up by excess cations in the water, thus negatively impacting the performance at application.



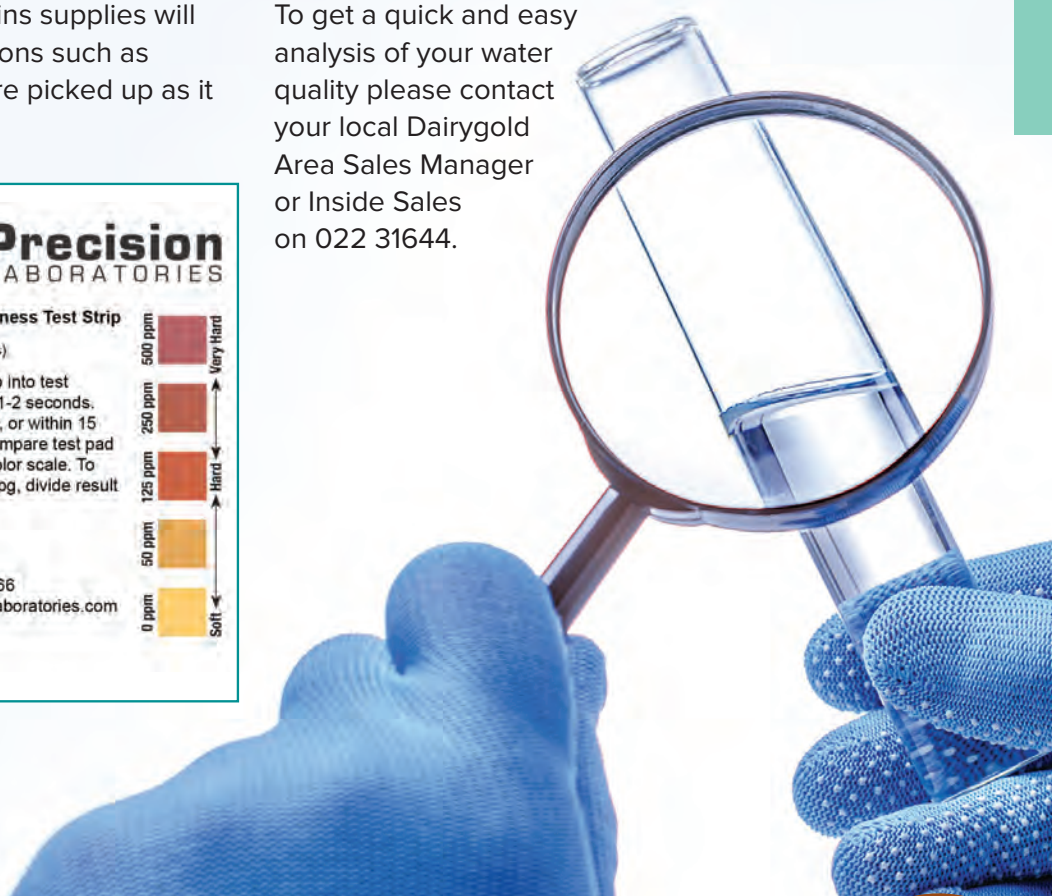
Water pH

The natural pH of water is 7 but, in many cases, it can be much higher. A water pH of 5-6 is best suited for optimum leaf uptake.

When the pH of water being used for spraying is too high, we encounter a problem called alkaline hydrolysis whereby a chemical reaction occurs and breaks down the pesticide, reducing its half-life and this causes a drop in efficacy. A pH of above 7.5 can potentially cause alkaline hydrolysis in some commonly used herbicides and insecticides.

If it turns out your water supply suffers from hardness or pH problems, this can be easily rectified with the use of a water conditioner. By conditioning water prior to adding products to the tank, this will give the agrochemicals the best chance to work to their full potential.

To get a quick and easy analysis of your water quality please contact your local Dairygold Area Sales Manager or Inside Sales on 022 31644.





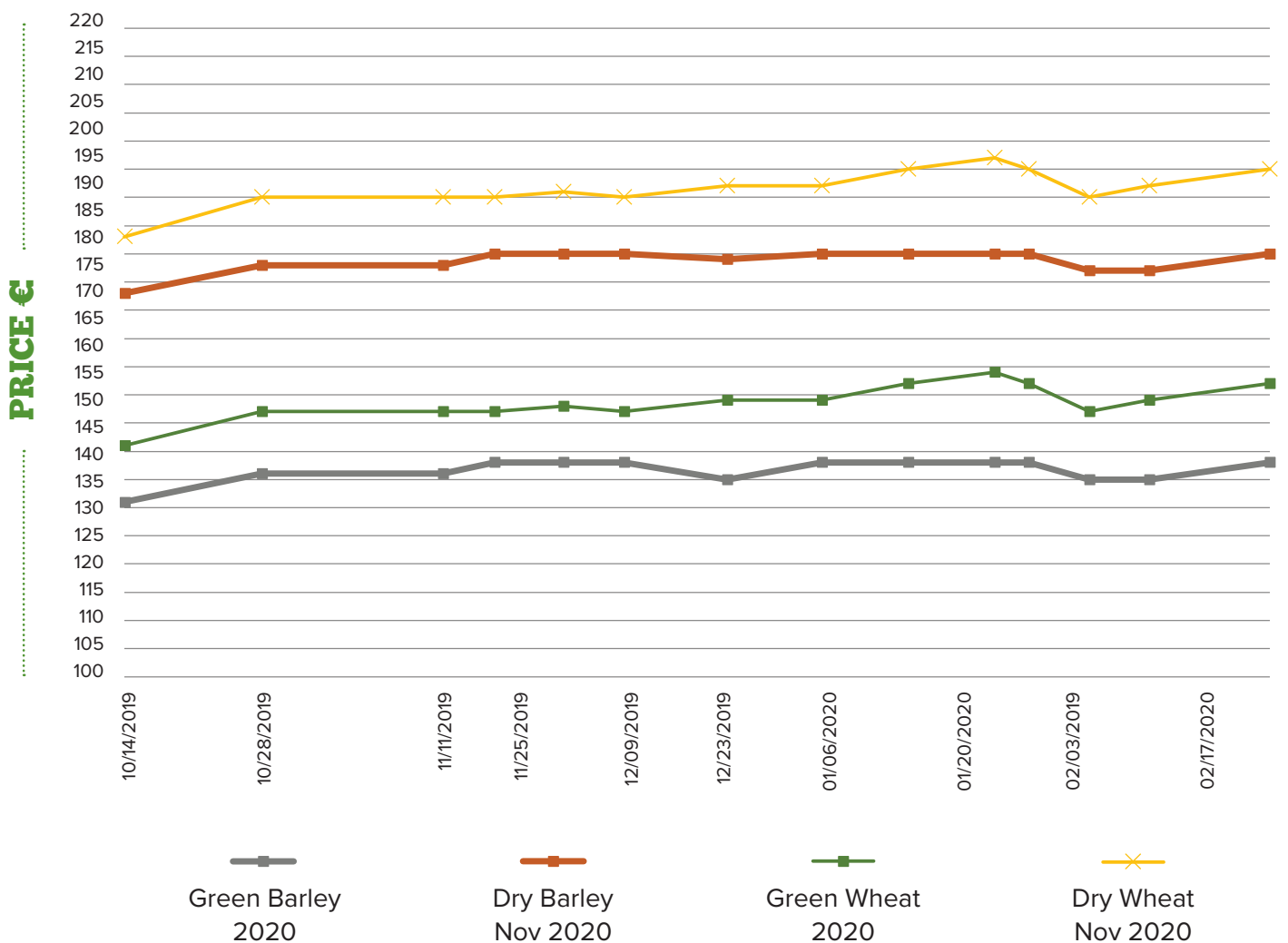
Market Update

Future Prices 2020 Harvest



by Frances Nash BA (Hons) UCC
Grain Operations Agri Business

FUTURE PRICES NOVEMBER HARVEST GRAPH



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

Wheat futures gaining ground as barley futures remain consistent

The futures grain market has been fairly stagnant since the 2019 harvest drew to a close, however, the last few weeks are showing some signs of excitement. There are various different factors that are contributing to this.

The most apparent contributor to market volatility at present is the spread of the Coronavirus. With an increasing number of cases detected in western Europe this week, this could influence the market in the coming days and weeks. Separately, winter wheat planting in the UK is significantly back on other years.

Even though some progress was made in the past few weeks, it is likely that spring crops will be dominant in the UK's 2020 harvest. This, of course,

will have an impact on the availability of seed in Ireland for our own spring harvest, which may too present its own challenges in the coming weeks.

Closer to home, current market prices are remaining stable. Barley has virtually held at €175/tn since December 2019 and Wheat is climbing slowly to circa. €203/tn.

The futures (November 2020) are reflecting this trend also. As the graph indicates, Barley is holding at €175, while wheat futures are showing signs of bullish activity, peaking at €192 this week. This could see a switch to a greater demand for Barley if it proves to be better value for money to the consumer.



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Nature's Corner

Life Cycle of the Slug and Method of control



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

There is an old saying; *"In order to conquer your enemy, one must first know your enemy"* and perhaps the same rings true for slugs! The slug life cycle is relatively simple. Slugs are hermaphrodites, this means a single individual is both male and female, but not at the same time. The male organs become active first, followed by the female organs. Following fertilisation, the slug generally lays eggs in October and the young from the eggs hatch in January. The optimum temperature for slug activity is 10°C but they can be active at temperatures from 0°C to 20°C. Slugs cannot survive a heavy frost (-3°C) but are generally below the frost layer if this occurs. Slug movement depends on species, but the slug can move further than you think, with the grey slug (most popular in Irish soils) able to travel between four and seven meters a day. Slug activity is easily seen once crops emerge. Shredding of leaves up and down the leaf is the first easily visible sign.

However, the damage to the sown grain before emergence or the damage to the emerging shoot can often be the most harmful to total plant numbers in the field. This can often lead to larger gaps in the field than overground grazing by the slug.

Monitoring slug activity can be achieved quite easily. Where the farm has a problem field, an indication of the number of slugs in the field prior to sowing can be beneficial as action can be taken before damage occurs. Cultivation will kill some slugs and accurate measurement of the slug numbers can be more difficult just after cultivation than before cultivation.

The **baiting procedure** for slugs is similar before cultivations or after sowing. Generally, an overnight assessment will work best. In the afternoon, sprinkle some layers mash (not slug pellets) and cover with a damp sack or boards (covering at least 6 x 6 inches) in several areas throughout the field as slugs are independent creatures and can live throughout the field on their own. In each field, 9 traps (13 in fields >20ha) should be set out in a W pattern, concentrating on areas known to suffer damage. Early in the morning (ideally before sunrise – slugs

being nocturnal will have returned to beneath the soil by sunrise), lift the objects and check for the presence of slugs. Where there are three or more slugs found, control is warranted. If two slugs are found in the traps of an oilseed rape crop, treatment is needed. This number increases to four slugs per trap in a crop of wheat.

In terms of controlling slug populations, **Integrated Pest Management (IPM)** involves the following steps:

- Identification and analysis of the potential risk factors associated with slug damage (these risk factors will be discussed over).
 - Consideration of the most suitable cultural control techniques that can be used to help reduce slug habitats and overall pressure (also discussed below).
 - Trapping and understanding thresholds to ensure treatment decisions are justified (mentioned previously).
 - Monitoring of crops while they are most vulnerable and assessing if further applications are required (i.e. regular crop walking during growing season)
- Record keeping and forward planning to improve IPM programmes for the next year (soil testing, keeping record of crop rotation and pests' diseases encountered, weather during growing season etc.).

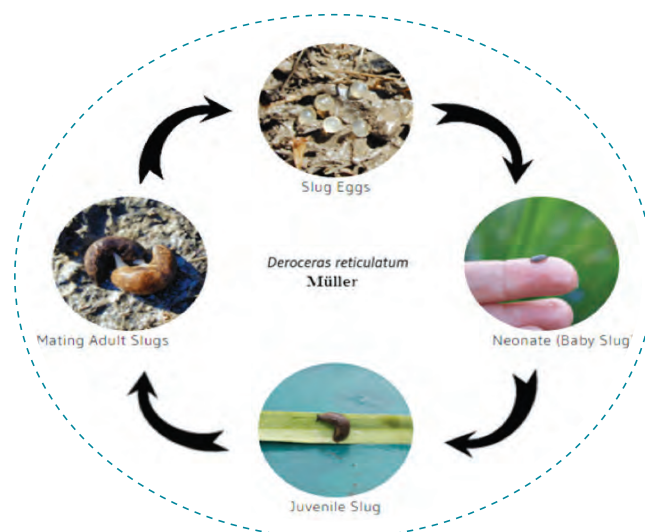


Figure 1 (above) shows the life cycle of the slug.



Figure 2 (Above) shows a grey field slug which are very common in Irish soils



Figure 3 (Above) shows slug damage to a crop of wheat

The following risk factors influence the population of slugs in any given situation:

Moisture and temperature – activity, survival and reproduction are all dependent on moisture. Whilst the optimum temperature is 10°C, the grey field slug can still be active close to freezing, other species are only active in temperatures above 5°C.

Heavy soils with a high clay and/or silt content – tend to retain more moisture and become cloddy. Slugs are more prevalent on these soil types particularly where cloddy soils are more open allowing slugs to graze on seed or newly emerging shoots.

Previous cropping – the risk of slug damage to winter wheat is much greater following a dense, leafy crop (such as oilseed rape) which has provided a moist, shaded environment and food for populations to build.

Crop residues, organic matter and weeds – all increase risk of slugs as they increase soil moisture retention and provide both shelter and a food source (i.e. trash from min till cultivation).

Direct drilling and delayed drilling – both increase the risk of slug damage. Generally autumn planted crops are more at risk, although a cold delayed spring can also increase risk to spring cropping.

Seedbed Preparation – open and cloddy seedbeds allow slugs easy movement and access to seed and emerging seedlings. Rolling cloddy seedbeds after drilling will help reduce potential for slug movement but only if sufficient moisture is there to breakdown and consolidate clods.

Other agronomic conditions – lack of nutrients, poor drainage, weed competition, cold weather can all result in prolonging the period of seed germination and crop establishment thus extending the period vulnerable to slug damage.

Although an IPM approach to slug control is more effective than relying solely on slug pellets and can also help to ensure maximum protection to the environment, there are some cases where a chemical control is necessary. The main products on the market contain the active ingredient **Metaldehyde** (Gusto & Metarex Inov) which destroys the mucus-secreting cells and dehydrates the slug, the active ingredient has a low toxicity and will not kill earthworms.

Slug pellets are made using different processes from bran or durum wheat. The type of manufacture can affect the performance of the pellet in wet or dry conditions. Growers should check the likely rainfall for the first week after application before purchasing a slug pellet; choose the pellet most suitable to those conditions.



Practice good IPM farming

- Explore all options before making the decision of applying pesticides.
- Consider rotations that will help to reduce weed and pest burdens.
- Consider the bigger picture when controlling small problems.
- Crops don't need to be spotless.
- Needless use of chemicals will only shorten their lifespan and reduce their efficacy.
- Pesticides are an essential tool for agriculture and will always be part of it once not abused.



Pictured are a section of the attendance at the Dairygold 2020 Tillage Conference on 'Sustainable Farming in a New Decade' at Corrin Events Centre, Fermoy, Co Cork.

Photo O'Gorman Photography.



Thomas Dwyer, Cashel, Mark Hally, New Inn, Niall Laffan, Dairygold & Michael Walsh, Cahir are pictured at the Dairygold 2020 Tillage Conference, Fermoy, Co Cork.

Photo O'Gorman Photography.

Matt Lawlee, Dairygold, Michael Daly, Ballyh... pictured at the Dairy 'Sustainable Farming Centre, Fermoy, Co...



Speakers Liam O'Flaherty, Dairygold Head of Agri Business, Dr David Wall, Teagasc, Ciaran Collins, Teagasc Tillage Specialist, tillage farmer Darren Allen, Ballymaloe & Colman Purcell, Dairygold Nutritionist. Photo O'Gorman Photography.



Colm Noonan, Shanballymore, Robyn Smith, Vincent Daly & John Hurley, Kildorrery with Michael English, Dairygold are pictured at the Dairygold 2020 Tillage Conference on 'Sustainable Farming in a New Decade' at Corrin Events Centre, Fermoy, Co Cork. Photo O'Gorman Photography.



Michael Archdeacon, Lombardstown, Richard Lucey, Ballyclough are pictured at the Dairygold 2020 Tillage Conference on 'Sustainable Farming in a New Decade' at Corrin Events Centre, Fermoy, Co Cork. Photo O'Gorman Photography.

Willie Cronin, Mourneabbey, Paul Kiely, Mallow, Dan Kiely, Mallow & Matt Lawlee, Dairygold are pictured at the Dairygold 2020 Tillage Conference on 'Sustainable Farming in a New Decade' at Corrin Events Centre, Fermoy, Co Cork. Photo O'Gorman Photography.



Speakers Colman Purcell, Dairygold Nutritionist, Dr David Wall, Teagasc, tillage farmer Darren Allen, Ballymaloe & Ciaran Collins, Teagasc Tillage Specialist are pictured at the Dairygold 2020 Tillage Conference on 'Sustainable Farming in a New Decade' at Corrin Events Centre, Fermoy, Co Cork. Photo O'Gorman Photography.



Bean/Crop Choice for Ground Repair



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

Making Sustainable Decisions, Teagasc Key Points

As the climate change debate rages on there is an increasing focus on agriculture in terms of environmental sustainability as agriculture accounts for ~32% of national emissions. This has been reflected in the themes of many of the meetings and conferences this spring such as the recent Dairygold Tillage Conference, themed 'sustainable tillage in a new decade' and the Teagasc national tillage conference 'minimising risk, promoting sustainability'.

The carbon footprint of the main tillage crops in Ireland is very low ranging from 0.3 to 0.6kgCO₂ per kg grain. Overall tillage only accounts for ~8% of agricultural emissions as agricultural emissions are dominated by CH₄ and N₂O. A recently published Teagasc national farm survey 2017 sustainability report highlighted that in a comparison of farming systems tillage has the lowest GHG emissions on a per hectare basis and within that the majority of GHG emissions on tillage farms actually comes from livestock on the farm.

Nitrogen fertiliser use, improvements in soil organic matter and expanded rotations are the key areas where tillage farmers can further improve environmental sustainability and importantly financial sustainability through building better soils and matching fertiliser use to crop growth and off takes.

Fertiliser Efficiency

After a wet Autumn/Winter many winter cereals have sub optimal plant counts due to pest damage and water logging. The temptation is to apply high levels of nitrogen fertiliser early in the season to compensate for lost growth. Crop demand is very low until GS30 so large applications of Nitrogen fertiliser at the early growth stages is very inefficient and can lead to losses. Normal winter barley crops should receive 50kg/ha in early March but this can be earlier on thin or backward crops. For thin or backward winter wheat the amount of nitrogen in the first split can be higher at 75kg/ha due to the overall higher demand from wheat.

An application of CCC (K2/Ceraide) at the start of growth after Nitrogen has been applied can be used to encourage tiller survival but results are often variable and if positive will be small.

Tailor Inputs to Crop Potential

Not all crops will have the ability to produce high yields due to lower than expected plant numbers so inputs such as fertiliser and fungicides should be matched to yield expectations. It doesn't make sense to spend the same €/ha on a 10t/ha crop as a 7.5t/ha crop. A vital tool to assess crop potential is plant counts.

To determine plant counts, make a 0.2m² hoop by taking a 1.6m length of wire/wavin pipe and fashion it into a circle making sure the internal circumference is 1.6m. Take random counts across the field and multiply your answer by 5 to calculate plants/m².

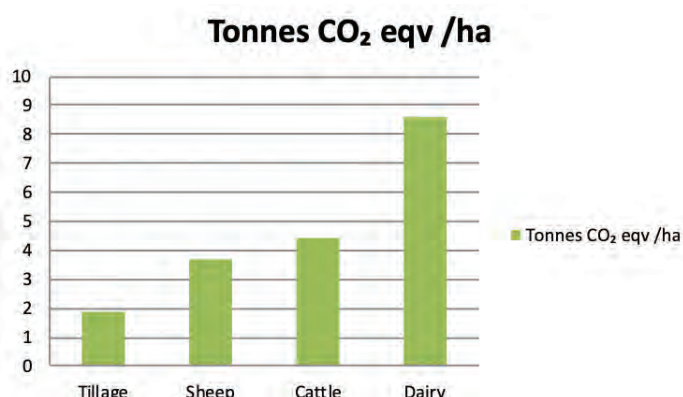


Figure1: GHG emissions by enterprise. Teagasc NFS sustainability report 2017

Plants are rarely evenly distributed across a field but wheat and oats have a massive ability to compensate for low plant numbers. Wheat will compensate for low plant numbers by producing more tillers and can also compensate with a higher grain weight. Oats has an enormous ability to compensate for low plant numbers by producing a large number of grains per panicle as was evident during the frost in 2010/2011 and recent research at Teagasc Oak Park. Wheat and oats can still give an economic return with plant counts as low as 90 plants/m². Winter barley (2 row) is different because barley does not have the same ability to compensate and is reliant on producing 800-1,000 ears at harvest for high yields so the threshold will be slightly higher than wheat and oats.

It rarely pays to replant a crop but in some cases there may be no option due to an area of a field that is completely wiped out. A useful rule of thumb is that the replacement crop (e.g. spring barley) would need to be able to yield at least 1.5t/ha more than the crop it's replacing to be economically viable.

Weed Control

Due to lack of opportunities very little herbicides were applied over the winter. This is a pressing issue for winter barley as control options for annual meadow grass are limited and for many crops it is too late.

Once annual meadow grass has started to tiller a level of suppression is going to be the best outcome so the priority may be controlling broad leaved weeds with sulfonylurea combined with suitable partner e.g. Zypar/Galaxy/Hurler/Pixxaro etc. but active growth is important.

Grass weed control in wheat is easier as there are a range of products available that will combine grass weed control with broad leaved weeds like Alister Flex or Pacifica Plus +/- Zypar. Normal spring type choices like sulfonylurea combined with suitable partner e.g. Zypar/Galaxy/Hurler/Pixxaro will suffice where no grass weeds are present.

Spring Options

Spring barley has often been the default option for farmers who haven't managed to plant after a wet autumn but introducing rotational crops can offer financial sustainability benefits. Fodder crops like maize and beet are options where a market exists, a contract is signed and payment terms are agreed. Beans are also a viable option and can be profitable at €205/t and the protein payment is available again this year. In 2019 farmers received €365/ha. The department of agriculture has announced that there will be a derogation from the 2/3 crop rule but this will only apply to farmers who had winter crops, maize or potatoes on their 2019 basic payment application form and will be assessed on a case by case basis.





What are our Environmental issues?



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

We are damaging our atmosphere with excessive amounts of gases being emitted from activities on the earth's planet every day. The emissions come from many different sources ranging from industrial, to transport and agricultural among other human activities.

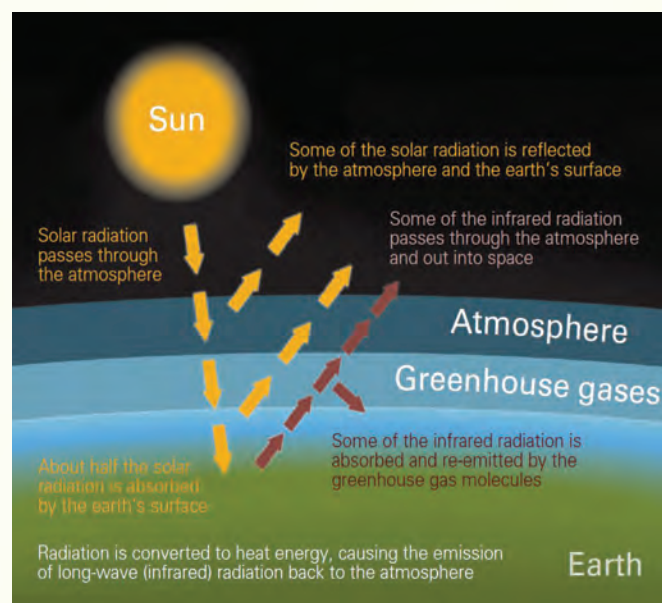
This in-turn is causing an increase in climatic temperatures that are affecting the world's ecosystem with erratic weather, rising sea levels and faltering ecosystems as well as having other catastrophic changes in these ecosystems. All these affect productions of food, drinking water availability, population curves and agricultural output.

Facts:

This is a world problem, but we must play our part. Some countries are more unbalanced than others because of high industrial and agricultural output, low carbon sinks i.e. a landscape/ecosystem that absorbs carbon.

The means of calculating the national footprint is still in development and some countries are slow to recognize the problems, USA. Every nations target should be to become "Carbon Neutral" soon.

Tillage farming is near carbon neutral, but we are still asked to become part of the solution.



Agricultural implications

O-Zone layer

Carbon Dioxide (CO_2) is generated in vast amounts during normal everyday respiration, but also emitted in large quantities during the burning of fossil fuels which is a carbon that is being removed from our soils.

Methane (CH_4) is emitted mainly by livestock during rumination and the numbers are now increasing again. This gas is 34 times more potent than CO_2 . Nitrous Oxide (N_2O) is 300 times more potent than CO_2 . It is emitted from nitrogen fertilisers as it activates in the soil and is very slow to break down in the atmosphere.



Water Quality and Availability

Water is becoming one of the most limited food sources in the world as a direct result of increasing temperatures. This needs to be preserved and protected from all damaging substances and used in controlled and measured way especially where intensive agriculture is practiced and in areas of high population. Recent sampling of our waterways indicates a 5% reduction in the quality of our surface water which supplies 65% of all drinking water. This is of major concern to the authorities and will be policed accordingly going forward.

Biodiversity

There is an increasing awareness and concern to the general health of our habitats and native wildlife species. The quality of much of our soils have depleted over recent years from a constant

draw down of nutrients including all minerals and its balanced carbon reserves. It is commonly stated that there is growing pressure being applied on this fragile ecosystem and greater efforts must be made to protect it as it's an integral part of food production and general sustainability.

However, despite the issues we need to increase food production to feed a rising population. We need to produce more with the same inputs or produce the same with less.

How can a Tillage Farm help?

Use Correct Fertiliser Plans

Have a well-planned soil sample rotation that will see all soils tested every three years and apply fertiliser accordingly thereafter. Change your nitrogen source to urea which is significantly safer to atmosphere as it emits only a fraction of the harmful gas compared to C.A.N.

Respect Buffer Zones

This is important when applying fertilisers and chemicals near water sources. This is an area that had improved significantly over recent years up until 2018 where it starts to show increases in various contaminants again. Some of these were directly related to agricultural practices with the identification of a range of pesticides along with increasing levels of phosphorus.



Field Boundaries and Hedges

They should be maintained in such a way that they will continue to support wildlife and to sequester CO₂.

Slurry and Farm Yard Manure Application

Apply in appropriate weather and plough in with 24 hours to reduce ammonia and N₂O losses to the atmosphere.

Soil Conditioning

Consider incorporating straw in the soil at harvest especially where prices are low. This will in turn increase the organic matter and carbon profile within the soil along with retaining much more phosphorus and potash. While the micro-organisms profile in the soil will be enhanced and will function better, you will also be able to adjust your P and K applications accordingly.

Establishment Techniques

Consider strip till or direct drill as less soil carbon lost to environment if soil left largely undisturbed.

Green Cover Crops

Encourage natural crop regrowth or plant green-cover crops for winter period as they will trap free soil nitrogen and absorb atmospheric CO₂; they become both carbon sinks and a means of reducing free soil nitrogen and phosphorus losses.

Biodiversity

We need to conserve our natural vegetation and wildlife species. They are critical to the whole balancing of our ecosystem. Trees are need to absorbed CO₂, bees to pollinate plants. We need to practice good crop rotations that will encourage and promote better microorganism activities in the soil which will in turn enhance yields.



Fuels

We need to reduce our dependence on fossil fuels, which emit tonnes of CO₂ or become more efficient where and when they are used. This should be considered when we decide of the output of various machines verses the requirements of the job, what fuel we use in our grain drying equipment, the type of lighting system that we have in our sheds and yards.

Carbon Sinks

We should consider planting waste ground with trees that are very efficient at absorbing large amounts of carbon. They will also help and promote our natural environment and ecosystems.



Make Farm Safety a Priority This Spring

Farmers: As your workload increases this Spring make sure to make farm safety a priority. Extra care should be taken to avoid hazards above, below and around your machinery as farmers battle to make up for lost time given the recent poor weather conditions.

Always:

- ✓ Keep the brakes on all your machines properly maintained – especially the parking brakes
- ✓ Ensure all guards are in place on tractors and equipment – especially PTO guards
- ✓ Make sure that all mirrors and cameras are clean, correctly set and fully functional on tractors and loaders
- ✓ Make sure equipment is stopped fully before clearing blockages
- ✓ Only start your tractor from the driver's seat
- ✓ Make sure the brakes are connected to the tractor and work properly when pulling heavy machinery equipped with hydraulic brakes.

- ✓ Be aware of those around you including workers, children and older family members.

Never:

- ✗ Do not attempt to repair machinery if you do not have the correct tools and equipment – or are not competent to do so.
- ✗ Never work near overhead power lines when tipping trailers or using high-reach machinery.
- ✗ Do not check hydraulic pipes for leaks by running your finger or hand along them while they are connected and under pressure.



AGRI BUSINESS



Spring Cereals

Recommended List 2020



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

It's that time of year again when farmers are picking their varieties of spring seeds to plant. The Spring Cereal Recommended List 2020 is a critical tool for selecting varieties for the coming season.

This year, we are encouraging all farmers to place orders in good time due to shortages across all varieties of spring cereal.

Establishing the correct number of barley plants is essential for the crop to achieve high yields. The thousand grain weight will be printed on the seed bag. Generally plumper grain will weigh more than shrivelled grain there for seed with plumper grain will require higher seed rate.

There have been no new varieties of spring barley added to the 2020 recommended list. However, it must be noted that KWS Irina, Mickle and Paustian are no longer on the list.

SPRING BARLEY 2020

AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED			PROVISIONALLY RECOMMENDED		
	GANGWAY	RGT PLANET	SY ERRIGAL	LIMONA	PROSPECT	SY ARDERIN
Relative yield ★	98	102	101	96	100	100
Straw height (cm)	69.3	70.1	68.2	69.3	67.8	66.5
Resistance to lodging	6	5	7	7	6	5
Straw breakdown	7	4	6	6	6	7
Earliness of ripening	5	5	5	7	6	5
Resistance to:						
Mildew	8	8	8	8	8	8
<i>Rhynchosporium</i>	5	5	5	7	7	6
BrownRust	6	5	7	5	5	6
NetBlotch	8	5	8	8	6	7
Quality:						
1,000 grain wt. (g)	47.2	50.0	49.6	46.6	46.3	51.0
Hectolitre wt. (kg/hl)	68.3	66.5	65.9	67.1	66.2	66.3
Screenings % (<2.2 mm)	1.8	1.6	1.6	3.0	2.3	1.3
Grain Protein %	11.2	10/8	11.1	11.4	11.3	11.3
Year First Listed	2018	2017	2019	2018	2019	2019

* Based on trial results from 2017, 2018 and 2019.

★ Yields are expressed as a percentage of the mean of RGT Planet and Gangway. (100= 7.3t/ha @ 15% moisture content).

SPRING WHEAT 2020

Dairygold malting varieties for 2020 grown under contract for MCI are Gangway and RGT Planet. SY Errigal has been added this year.

KWS Chilham made the fully recommended list. It is a high yielding maturing variety. It has good resistance to mildew and yellow rust. It is moderately resistant to Septoria spp. It also has good grain quality.

AGRONOMIC & QUALITY CHARACTERISTICS*	RECOMMENDED	PROVISIONALLY RECOMMENDED	
	KWS CHILHAM	KWS STARLIGHT	KWS TALISKER
Relative Yield ★	100	103	104
Straw Height (cm)	62.2	71.9	71.4
Strength of straw	(4)	-	-
Earliness of ripening	5	(5)	(5)
Resistance to:			
Mildew	7	(6)	(7)
Septoria spp.	6	(6)	(6)
Yellow rust	7	(7)	(8)
Sprouting #	(7)	(7)	(7)
Quality:			
Grain protein content (%)	11.7	11.6	11.7
Hagberg falling number ▲	315	167	280
1000 grain weight (g)	33.4	35.5	37.6
Hectolitre weight (kg/hl)	77.1	80.2	78.4
Hardness index	Hard	Hard	Hard
Year first listed	2019	2020	2020

* Based on trial results from 2017, 2018 and 2019.

★ Yields are expressed as a percentage of KWS Chilham (100 = 7.3 t/ha @ 15% moisture content). - No data available.

2017 data.

▲ Based on results from 2018.



SPRING OATS 2020

AGRONOMIC & QUALITY CHARACTERISTICS*	Recommended				
	BARRA	DELFIN	HUSKY	KEELY	WPB ISABEL
Relative Yield ★	93	116	107	103	113
Straw height (cm)	94.4	95.2	93.8	96.3	98.3
Resistance to lodging	3	7	6	5	8
Straw breakdown	4	6	5	4	8
Earliness of ripening	6	7	8	7	6
Resistance to:					
Mildew	3	8	6	5	6
Crown rust	4	4	4	4	6
Quality:					
1000 grain weight (g)	35.7	41.4	36.8	36.1	40.0
Kernel content (%)	73.6	72.3	74.2	73.9	74.9
Hectolitre weight (kg/hl)	56.6	54.5	55.5	56.1	56.9
Year first listed	1985	2019	2009	2017	2019

* Based on trial results from 2017, 2018 and 2019.

★ Yields are expressed as a percentage of the mean of Barra and Husky (100 = 6.3 t/ha @ 15% moisture).

Spring Beans

There are many benefits to growing spring beans.

- Rotation
- Break crop
- Protein subsidies are among many of the reasons that farmers are growing spring beans in 2020
- Beans contracts are available through your Dairygold ASM
- Dairygold beans contract price for 2020 is €205 Per ton at 20% moisture

RECOMMENDED LIST OF SPRING BEAN 2020

	Recommended		
	Boxer	Fanfare	Lynx
Treated Yield (t/ha @ 15% moisture)	97	101	105
% Crude Protein	99	100	99
Plant Height (cm)	125	131	127
Resistance to:			
Chocolate Spot	(5)	(6)	(7)
Downy Mildew	(6)	(7)	(7)
Year of first Recommendation	2016	2016	2019

Sowing Rate: Teagasc research has shown that the optimum plant population for spring beans is 30-35 plant/m². To achieve this, you should drill 35-40 seeds/m² assuming 90% germination and 5% field losses. These figures should be adjusted to reflect seed lots and soil conditions.

To calculate an appropriate seeding rate: Target Plant Population X TGW

Estimated plant establishment % (seeding rate is kg/ha)

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POWERFUL, CONSISTENT, COMPLETE

Rhynchosporium, a classic wet weather disease, can reduce yield by up to 30%. ELATUS™ Era, the combination of a powerful SDHI plus prothioconazole will optimise control.

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*as seen in trials

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Nutrition Drives Yield

Pesticides protect yield



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

What is a correct PH for Tillage Crops

Crop	PH water
Barley / Wheat	6.5-6.7
Oats	6.0-6.3
Peas / Beans	6.8-7.0
Beet	6.8-7.0
Potatoes	5.8-6
Maize	6.4 - 6.6

Know your Crop requirements

Always strive to have the correct pH. This will maximise the efficiency of all other macro and micro elements

Macro nutrient index

	Phosphorus	P		Potash	K
	Index	Crops		All	
V Low	1	0-3 PPM	Mg / Lt	0-50	Mg / Lt
Low	2	3-6	Mg / Lt	50-100	Mg / Lt
Med	3	6-10	Mg / Lt	100-150	Mg / Lt
High	4	10 +	Mg / Lt	150 +	Mg / Lt

This table indicates the offtake and correction (rebuilding) required for all common tillage crops

General offtake for cereals at Units/tn of grain with no allowance for soil correction in ground with Index 1 and 2	Straw removed	p	k
	Winter Wheat / Barley	7	20
	Spring Wheat / Barley	7	18
	Oats	7	23

Example Nutrient requirement per crop at a given yield including soil build up in deficient 1 and 2 soils

Straw Removed		Yield	Index 1	Index 1	V Low
			N	P	K
WW	Winter Wheat	4.5tn/ac	200	49	112
WB	Winter Barley	4tn/ac	170	46	104
WOSR	Winter Oilseed	1.75tn/ac	180	44	81
WO	Winter Oats	3.65tn/ac	140	42	128
SW	Spring Wheat	3.45tn/ac	152	40	104
Beans / Peas	Spring Beans and Peas	2.5tn/ac	0	40	100
SB	Spring Barley	3tn/ac	124	39	92
Beet	Fodder Beet	~30tn/ac	150	56	256
Maize	Forage Maize	~20tn/ac	145	56	200

Micro nutrient index

	Index	Manganese MN	Copper CU	Zinc ZN	Magnesium MG
V Low	1	< 90	<1	<1	0 - 25
Low	2	90 -120	1 -1.5	1 -1.5	26 - 50
Med	3	>120	1.5 - 3	1.5 - 3	51 - 100
High	4		>3	>3	> 100

Manganese Defficiency

Very common in land with high pH and also soils with high organic matter . Soil tests can by unreliable in identifying problem as often found in patch of fields only . Should be treated quickly when identified or in a preventive way where there is a history of the problem as can cause serious damage very quickly. This can be done by including Mn with the fertiliser compound or spraying onto growing crop.

Copper Defficiency

Often found in high dry reclaimed ground with sandstone base with an high organic matter soil structure. Can be treated with chemical applications of copper compounds successfully. A more permanent solution is an application of copper sulphate orcommonly known as Bluestone at 12kg/ac which will last in the soil for 7 - 10 years.

Zinc Defficiency

More commonly associated with high pH soils and often associated with soils that have Mn issues also. Best applied in a chemical compound to a growing crop early or included with the fertilisers where there is a known problem. Its often applied with manganese treatment as a chemically formulated dual product to treat both in one application.

Magnesium Defficiency

This element is best applied in foliar application to a growing crop as Mg is not readily stored in the soil and the “little and often” approach is prefered. Commonly deficient in a lot of high yielding tillage crops especially in times of crop stress such as very cold or very dry weather. Easily treated with foliar applications of inexpensive bittersals will supply high levels of Mg in single dose applications when applying herbicides or fungicides to the growing crop. Kesrite can be considered for soil application but while expensive it will prevoid season long supply of Mg.



Index 2 Low		Index 3 Med		Index 4 High	
P	K	P	K	P	K
43	100	34	88	0	0
40	91	32	80	0	0
36	72	28	60	0	0
36	118	28	104	0	0
32	91	25	80	0	0
32	48	16	32	0	0
31	80	23	68	0	0
44	192	32	128	16	64
40	180	32	150		96

CEREAL BOOST RANGE FROM DAIRYGOLD

Winter Cereal Boost
12-7-23 +S

Spring Cereal Boost
12-5-18 +S +MN



KEY BENEFITS

- Balanced NPK compound designed specifically for Spring Crops
- Immediate availability of Manganese to developing plant / seedling
- No need for foliar application of Manganese early in the Season
 - Uniform distribution of Manganese throughout field due to Wolf Trax DDP technology

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