Dairygold/Teagasc/Bord Bía

Dairy Sustainability Day

on the farm of

Trevor and Olive Crowley
<table>
<thead>
<tr>
<th>Table of Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Welcome from Bord Bia</td>
<td>4</td>
</tr>
<tr>
<td>• Welcome from Chairman</td>
<td>5</td>
</tr>
<tr>
<td>• Judges View</td>
<td>7</td>
</tr>
<tr>
<td>• Stand 1</td>
<td>8</td>
</tr>
<tr>
<td>- The Crowley Farm</td>
<td></td>
</tr>
<tr>
<td>- Bord Bia Sustainability Dairy Assurance Scheme (SDAS)</td>
<td>10</td>
</tr>
<tr>
<td>• Stand 2</td>
<td>12</td>
</tr>
<tr>
<td>- Protecting Water On Farms</td>
<td></td>
</tr>
<tr>
<td>- Agricultural Sustainability Support and Advisory Programme (ASSAP)</td>
<td>15</td>
</tr>
<tr>
<td>A New Advisory Service Working with Farmers to Improve Water Quality</td>
<td></td>
</tr>
<tr>
<td>• Stand 3</td>
<td>17</td>
</tr>
<tr>
<td>- Increasing Biodiversity on Dairy Farm</td>
<td></td>
</tr>
<tr>
<td>- SECAD / Wild Works - Helping Farmers, Help Pollinators, Help Farmers</td>
<td>19</td>
</tr>
<tr>
<td>• Stand 4</td>
<td>22</td>
</tr>
<tr>
<td>- Soil Fertility, Low Emissions Slurry Spreading (LESS) and Protected Urea</td>
<td></td>
</tr>
<tr>
<td>- The Role of Grassland Management, Clover and EBI in Greenhouse Gases</td>
<td>24</td>
</tr>
<tr>
<td>Reduction Strategy</td>
<td></td>
</tr>
<tr>
<td>• Stand 5</td>
<td>25</td>
</tr>
<tr>
<td>- Energy Efficiency on Dairy Farms</td>
<td></td>
</tr>
<tr>
<td>- Milk Recording, Breeding and Herd Health</td>
<td>27</td>
</tr>
<tr>
<td>• Dairygold Led Sustainability Initiatives</td>
<td>29</td>
</tr>
<tr>
<td>- Milk Supplier Sustainability Bonus 2019</td>
<td></td>
</tr>
<tr>
<td>- Dairygold Agribusiness, Your Sustainability Partner</td>
<td>32</td>
</tr>
<tr>
<td>- Leanfarm Programme</td>
<td>35</td>
</tr>
<tr>
<td>• Other Sustainability Initiatives</td>
<td>37</td>
</tr>
<tr>
<td>- AHI CellCheck - The National Mastitis Control Programme</td>
<td></td>
</tr>
<tr>
<td>- AHI Johne’s Control Programme</td>
<td>39</td>
</tr>
<tr>
<td>- EBI - Breeding a Sustainable Future (ICBF)</td>
<td>41</td>
</tr>
<tr>
<td>- The Dairy Sustainability Initiative (DSI) and Dairygold</td>
<td>43</td>
</tr>
<tr>
<td>- Sustainability in the Dairygold/Teagasc Joint Programme</td>
<td>45</td>
</tr>
<tr>
<td>- Dairygold / Teagasc Joint Programme Soil Sustainability Pilot Programme</td>
<td>47</td>
</tr>
<tr>
<td>- Dairygold Soil Sampling Services</td>
<td>48</td>
</tr>
</tbody>
</table>
Welcome from Bord Bia

I am delighted that Bord Bia is partnering with Dairygold and Teagasc today to support this important dairy farm walk on the Crowley Family Farm, winners of the Reduced Carbon Footprint category at our Origin Green Farmer Awards in 2018. This is the first walk in our programme for 2019 and I hope you find it valuable.

I would like to thank Trevor and Olive for hosting today’s walk. Their achievements in sustainable dairy production are truly impressive and show what Irish farmers are doing to constantly improve their production systems in a way that respects the environment and protects the farming enterprise for future generations. In the period of 2016 to 2017, they reduced their carbon footprint per kilogram of milk solids by 18% through a combination of best practices that included a longer grazing season, reduction in nitrogen application and reduced manure emissions due to a 17% reduction in housing days.

The Crowleys’ commitment to making improvements on the farm and to measuring the impact of these changes is paying off through making their enterprise more competitive while also protecting the future of the farm through sustainable production.

This constant drive to improve is vital at all levels of the Irish food industry. We export 90% of what we produce and our premium international food buyers and consumers want proof that the quality food they buy from us is produced in a way that respects the environment and the welfare of our animals.

At Bord Bia we put the Irish family farm at the heart of our engagement with international food buyers. When they meet you they see your commitment to the highest standards, your concern for the environment, the landscape and animal welfare. Through this they make a positive connection that stays with them. However, our international food buyers need this “in writing” to assure their customers and shoppers that food from Ireland, in addition to being top quality, really is sustainably produced. The Sustainable Dairy Assurance Scheme (SDAS) and the Origin Green programme, with their independent auditing procedures provide this proof to those who cannot visit the farms from which their butter, cheese or dairy ingredients comes.

We all have good reason to be proud of SDAS and the Origin Green programme. It provides Ireland with a unique selling point for our dairy exports which reached €4bn in 2018. We are the first country in the world with a national programme that audits and carbon footprints our farms, currently at a rate of 650 a week while providing feedback to our farmers for continuous improvement.

Thank you for your continued support for SDAS and for joining us today.

Every best wish,

Tara McCarthy
CEO Bord Bia
Welcome from Chairman

Dear Visitor,

Welcome to this year’s Dairy Sustainability Day on the farm of Trevor and Olive Crowley winners of Bord Bia’s 2018 Origin Green Award for the most reduced carbon footprint.

Between 2016 and 2017, the Crowley family reduced their carbon footprint per kg of milk solids by 18%.

As Dairygold suppliers we are very proud of the Crowley family’s achievement. It’s a fantastic achievement for any dairy farm but it’s also significant in terms of what’s achievable through implementing more sustainable dairy farming practices.

Today’s walk will highlight the award-winning practices on this farm including a strong focus on grass utilisation, a longer grazing season, reduced nitrogen application and reduced slurry emissions.

The Dairygold Board has always encouraged more sustainable farming practices. Demonstrating sustainable farming is critical in securing global customers for our produce but also in maintaining the public’s positive view of the Irish dairy sector.

We introduced milk bonus for Sustainable Dairy Assurance Scheme (SDAS) certification. This year we increased our milk quality and sustainability bonuses by 0.15 cent per litre with the introduction of the Milk Supplier Sustainability bonus. Our Leanfarm programme is also bringing benefits to participating farmers.

Today’s Open Day has been organised as part of our Dairygold/Teagasc Joint Programme. I want to thank our partner Teagasc for the invaluable work it is doing in conjunction with our Milk Advisory team and Bord Bia.

We thank the Crowley family - Trevor, his wife Olive and their children, Gavin, Alice and Katlyn for giving visitors the opportunity to visit their farm and see best practice dairying in operation. I hope you find today insightful and enjoyable and I trust the standards that you see applied on the Crowley farm can help you in your own dairy enterprise.

Thank you.

John O’ Gorman
Dairygold Chairman
Demand for Irish butter at an all time high in US. Exports of dairy products grew by 48% in 2018.

Irish dairy exports are valued at €4+ billion.

Focus on South East Asia as many countries have a dairy deficit and are set to remain major dairy importers.

Ireland supplies 10%+ of the world’s infant milk formula.

Japan is the world’s No.2 cheddar importer. Bord Bia opened an office in Tokyo to support this.

Kerrygold is the No.1 butter brand in Germany.

Bord Bia’s Global Footprint

14 Overseas Offices
30 International Trade Shows
4 Trade Missions
The judges in the 2018 Origin Green Farmer Awards found the Crowley’s farm to be a prime example of a well-managed, family-run dairy farm. In the period of 2016 to 2017, they reduced their carbon footprint per kg of milk solids by 18%, through a longer grazing season, a reduction in nitrogen application and reduced manure emissions due to a 17% reduction in housing days.

The Crowley farm is very much family orientated. They are milking 150 cows on a 68.8 hectare grazing platform. The Crowley’s reseed 6% of their farm annually and soil pH is monitored closely. Currently an aeration system is used in the slurry storage tanks so that slurry is always ready to spread when an opportunity arises in the open period and a trailing shoe is used to spread the slurry to minimise nitrogen loss. Biodiversity is taken seriously on this dairy farm. Over the years new hedges have been planted, existing hedges have been coppiced and watercourses have been fenced off to prevent pollution. A large man made pond and island developed by Trevor’s father is an interesting feature and is an alternative water source for times of drought.
Stand 1

The Crowley Farm
Stuart Childs, Teagasc

Trevor, Olive and family farm 117.3 hectares near Lissarda outside of Macroom. The farm has placed more emphasis on the dairy enterprise in the last number of years increasing the herd size organically from 100-110 to 150 in the last 4 years. In 2018, the cows milked just in excess of 6,000 litres and supplied 483 kg of milk solids to Dairygold.

Trevor and his family are very passionate about what they do and get a thrill from farming well but also get a thrill from doing so in an environmentally friendly way. The farm is a great example of how intensive farming and the environment can co-exist. The reason we are here today is to see how the Crowleys operate and to showcase the reasons that they were the Reduced Carbon Footprint award winners in the Origin Green Farmer Awards 2018.

Biodiversity on this farm will be evident to all on arrival with the farm nestled into the hillside and strong vibrant hedgerows and trees all around. These are maintained in a way that encourages plant and animal life rather than being extensively manicured as is the case with many of our farm hedgerows. There are kilometres of hedgerow on this farm with some of them up to 5 metres wide but this does not interfere with good farming.

Crowleys grow lots of grass and convert this to milk solids for sale to Dairygold. They do this through a combination of factors:

1. Regular soil testing and monitoring of the results
2. Correction of any pH issues that may be identified
3. Targeting any low index soils with slurry which is applied with a trailing shoe since 2015 which increases the Nitrogen value of the slurry as well as allowing them to reduce P and K applications as the trailing shoe allows slurry to be applied to grazing ground throughout the season.
4. Spreading fertilizer using GPS technology which helps to spread fertilizer more accurately and minimised waste.
5. Use of clover which reduces nitrogen requirement and has a positive influence on milk solids.

Trevor’s father constructed a lake many years ago as a water supply for the farm and it still supplies water to some of the farm to this day. This lake is a wildlife sanctuary as well as a water source and even helped alleviate water issues during the drought in 2018!

Finally, there is the energy conservation. In 2017, Trevor installed a heat transfer unit along with a new bulk tank. This along with changing to LED lighting has resulted in a 25% reduction in electricity costs as well as reducing the carbon footprint for water heating and lighting on the farm.

The Crowley farm is an economically sustainable farm with good output from well managed
The desire to farm in tandem with nature and their willingness to embrace new technologies is what sets them apart and shows how they reduced their carbon footprint from 1.33 to 0.77 kg CO2 e FPCM/Kg MS.

---

### Dairy Gold/ICBF Performance Score Card

<table>
<thead>
<tr>
<th>Metric</th>
<th>Your Herd</th>
<th>Dairygold Average</th>
<th>Dairygold Top 10%</th>
<th>Your Rank out of 100</th>
<th>Your Star Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk performance for 2018 (Jan - Dec) based on Dairygold data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat + Protein (Kg/cow)</td>
<td>463</td>
<td>405</td>
<td>518</td>
<td>80%</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Average Fat and Protein yield per cow for your herd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Litres per Cow per Day</td>
<td>16.46</td>
<td>14.11</td>
<td>17.8</td>
<td>78%</td>
<td>★★★★</td>
</tr>
<tr>
<td>Avg litres of Milk per cow from Jan - Dec 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fat % to end December 2018</td>
<td>4.21</td>
<td>4.14</td>
<td>4.4</td>
<td>67%</td>
<td>★★★★</td>
</tr>
<tr>
<td>Weighted average Fat % from Jan - Dec 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein % to end December 2018</td>
<td>3.59</td>
<td>3.51</td>
<td>3.65</td>
<td>79%</td>
<td>★★★★</td>
</tr>
<tr>
<td>Weighted average Protein % from Jan - Dec 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Milk Price (cpl) Incl. VAT</td>
<td>37.0</td>
<td>35.7</td>
<td>37.6</td>
<td>83%</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Average milk price received from Jan - Dec 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Includes Bonuses/Penalties, Excludes Levies)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCC (000 cells/ml)</td>
<td>184</td>
<td>n/a</td>
<td>106</td>
<td>51%</td>
<td>★★★</td>
</tr>
<tr>
<td>The weighted average Somatic Cell Count for Jan - Dec 2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fertility &amp; Calving data based on HerdPlus 2018 Calving Report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calving Interval (days)</td>
<td>367</td>
<td>383</td>
<td>364</td>
<td>81%</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Average number of days between successive calvings for cows calved during the period</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring 6 Week Calving Rate</td>
<td>80%</td>
<td>68%</td>
<td>86%</td>
<td>76%</td>
<td>★★★★</td>
</tr>
<tr>
<td>Number of cows/heifers calved within the first 6 wks (120) as a proportion of all cows calved during the Spring (150)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% with known Sire and Calving Survey recorded</td>
<td>99%</td>
<td>61%</td>
<td>100%</td>
<td>85%</td>
<td>★★★★★</td>
</tr>
<tr>
<td>Calves where sire (152) and calving survey (150) are recorded as a proportion of all births during the period (159)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% AI bred replacements</td>
<td>0%</td>
<td>54%</td>
<td>100%</td>
<td>35%</td>
<td>★★★★</td>
</tr>
<tr>
<td>Calves born in the period from dairy AI (0) as a proportion of dairy females born (75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% of Heifers Calved at 22-26 months</td>
<td>100%</td>
<td>73%</td>
<td>100%</td>
<td>100%</td>
<td>★★★★★</td>
</tr>
<tr>
<td>No. of heifers calved (37) that were between 22 &amp; 26 months of age (37)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBI Statistics based on the latest HerdPlus EBI report 2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herd EBI (2019)</td>
<td>€81</td>
<td>€98</td>
<td>€135</td>
<td>25%</td>
<td>★★★★</td>
</tr>
<tr>
<td>Average EBI for Cows (111) with EBI data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EBI of 2019 Inseminations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted Average EBI of dairy AI bulls recorded in Spring 2019</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bord Bia Sustainability Dairy Assurance Scheme (SDAS)  
*Eleanor Murphy, Bord Bia*

The Bord Bia SDAS was developed (2014) in cooperation with milk producers, processors and regulatory authorities. It has been designed to assist in securing new and existing markets for Irish dairy produce as farmers look to increase milk production in a post quota era. It sets out the necessary criteria to produce quality milk and in addition the scheme has also been designed to assess and record data to demonstrate the sustainability of Irish dairying in a systematic way at individual farm level. It will therefore provide the necessary proof to customers of dairy products that milk has been produced under both Sustainability and Quality Assurance criteria. The SDAS is independently accredited by Irish National Accreditation Board (INAB).

As part of SDAS, our auditors gather information from the audit that enables us to assess the environmental performance of quality assured Irish farms and your participation qualifies you as a participant of the Origin Green programme.

The information gathered includes the General Farm Performance, Carbon Footprint, Soil Quality and Grassland Management.

The data gathered as part of SDAS is collated into a new farmer feedback report. This report compares changes in farm management activities since the last SDAS audit and compares the farm against farms with similar herd sizes.

Under the 5 emission sources on the farm, the board indicated changes on farm activity that has resulted in a reduction of overall farm emissions and thus a reduction in Trevor’s Carbon Footprint.

**Enteric Fermentation**

The herd size has increased by 8% since the previous audit. While an increase in cow numbers can increase enteric fermentation as a result of the biological nature of the system, the increase in milk production and milk solids can out weight the emission increase when focus is given to improved grass yield and quality and maintaining good herd fertility. According to milk supply data at the time of audit there has been 10% increase in Fat and Protein Corrected Milk and 3% increase in Milk Solids/Hectare.

**Manure Emissions**

The use of a Low Emission Slurry Spreading Equipment in the form of a Trailing Shoe can be used to decrease the loss of nitrogen to the atmosphere at time of spreading. The application of slurry close to the surface of the soil on mild days with little sunshine results in greater availability of N that can be taken up by the grass roots. When used in combination with soil test results slurry can be applied in a more precise way in fields that have the greatest N requirement in Spring. Trevor spread 50% of his manure in the Spring, 20% less than the previous audit year, this can be attributed to poor spreading conditions.
Fertilizer Emissions
A 30% reduction in the application of chemical N of the farm has reduced the emissions related to fertilizer application and production. Fertilizer is applied using a calibrated, GPS-equipped spreader, for more accurate application. The Crowley’s also applied lime on the farm which is used to improve soil fertility through improving the soils pH balance which can be identified through regular soil testing.

Feed Emissions
The SDAS audit has improved the collection of concentrate feeding rates as part of the sustainability survey. This new data gives monthly feeding rates of dairy cows. This change in data collection has improved the tracking of emissions from feed production and utilisation resulting in a 1% increase from the previous audit year.

General Farm Emissions
General Farm Emissions include emissions related to electricity use, fuel use etc. According to the data collected at the time of audit milk replacer was not being used on the farm while in the previous year milk replacer was being used. The reduction in the need for additional hot water can be attributed to the reduction in general farm emissions.

Percentage Share of Farm Emissions
What is the current status?
The last River Basin Management plan showed that as of 2015, only 57% of Irish rivers and 46% of lakes, met the EU regulation standards. Agriculture was shown to be the most prevalent pressure in the ‘at risk’ waterbodies, though forestry, waste-water, hydro morphology and extractive industries including mines and quarries also had a significant effect. The latest EPA water Quality Indicator Report for 2015 to 2017, showed a 3% deterioration in waterbody quality. The Water Frameworks Directive (WFD) requires that 100% of our rivers, lakes, groundwater and coastal waters achieve ‘good or high status’ by 2027 and trending towards that outcome by 2021.

Why should we protect the water on our farms?
1. To ensure the retention of the derogation. Ireland’s 7,000 derogation farmers could be forced to reduce their stocking rate to 170 Kg N/ha if compliance with the WFD is not achieved as has already happened in Holland in 2016 (where 200,000 cows were culled).
2. Your farm is your business and if you lose nutrients, you lose money.
3. If Ireland does not satisfy the WFD there is a possibility that the industry will lose its green image along with consumer support, confidence and the market access this provides.
4. If you pollute water, even accidentally, it is illegal, and farmers are liable to be fined.
How do the Crowley's protect their Water?
On the Crowley farm, the protection of water is integrated into the everyday management of the farm. These are some of the main actions:

1) No slurry is applied to the ‘Critical Source Areas (CSA). On this farm, the most obvious CSA is the area above the lake due to the steep gradient of this field. Any nutrients applied to this sloped field could quickly be washed down into the lake. To prevent this nutrient loss, no organic manure is applied here. Chemical fertilizer is only applied in appropriate conditions and at all times at a distance of 30 meters from the lake.

2) On this farm Trevor leaves what he calls a ‘poverty area’ when applying fertilizer or slurry. He stays more than 2 metres out from every boundary including roadways, hedges and ditches when applying chemical fertilizer. When applying slurry, the buffer zones below are followed.


<table>
<thead>
<tr>
<th>Water body/Feature</th>
<th>Buffer zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any water supply source providing 100m$^3$ or more of water per day, or serving 500 or more people</td>
<td>200 metres (or as little as 30 metres where a local authority allows)</td>
</tr>
<tr>
<td>Any water supply source providing 10m$^3$ or more of water per day, or serving 50 or more people</td>
<td>100 metres (or as little as 30 metres where a local authority allows)</td>
</tr>
<tr>
<td>Any other water supply for human consumption</td>
<td>25 metres (or as little as 15 metres where a local authority allows)</td>
</tr>
<tr>
<td>Lake shoreline</td>
<td>20 metres</td>
</tr>
<tr>
<td>Exposed cavernous or karstified limestone features (such as swallow holes and collapse features)</td>
<td>15 metres</td>
</tr>
<tr>
<td>Any surface watercourse where the slope towards the watercourse exceeds 10%</td>
<td>10 metres</td>
</tr>
<tr>
<td>Any other surface waters</td>
<td>5 metres*</td>
</tr>
</tbody>
</table>

*The 5 metre buffer zone is increased to 10 metres for a period of two weeks preceding and two weeks following the periods when application of fertilisers to land is prohibited as set out in Schedule 4 of the Regulations (check the table and map on page 7).*

*Note: Chemical fertiliser must not be applied on land within 2 meters of a surface watercourse.*

3) All water-courses were fenced off for REPS several years ago and Trevor has maintained the fencing since. These over-grown buffer-strips along the banks now act as nutrient traps and prevent erosion to the banks.
4) Trevor soil samples all the land at least once every 3 years and then uses the trailing shoe to target low P index plots.

5) By targeting the slurry to low index soils and delivering to the root area, nutrients are delivered only where they are needed. Slurry is applied when soil temperatures are optimum and in appropriate weather conditions.

6) This farm has more slurry storage than is required (approx. 3 weeks extra). This means slurry can be stored and applied when soil temperatures and conditions are appropriate.

7) All grey water in the yard is collected. A diversion trap with an inspection point exists in the silage slab. This allows viewing into the run-off which ensures that effluent run-off has completely stopped before it is diverted to the clean water outlet. This is an excellent precaution due to potency of silage effluent.

8) The majority of water troughs are located greater than 20 metres from a watercourse and there is no run-off from roadway directly into drains or watercourses.

Note: New WFD regulations commencing in 2021 require water troughs to be located greater than 20 metres from watercourses and no direct run-off from roadways is permitted. These new regulations must be satisfied by all derogation farms and all farms that exceed 170 kg N/ha but are exporting slurry to stay less under the limit.

Do you know the status of your local river?
Simply visit the website www.catchments.ie and click on the ‘Maps’ section. On the top of the page, click on the ‘Water Quality’ tab, then simply zoom into where you live.

Below shows what you would see on the Catchments.ie website if you were to zoom in around the Crowley farm.
Agricultural Sustainability Support and Advisory Programme (ASSAP)
A New Advisory Service Working with Farmers to Improve Water Quality:

_Eimear Connery, Teagasc_

In Ireland all water policy is led by the Water Framework Directive. Under this directive Ireland has been set a target of achieving ‘good status’ for all waters in Ireland. However despite a lot of good work over the last 20-30 years we are falling short in achieving this target and water quality has remained mainly static with no significant improvement being recorded.

As a result, the Government has decided to adopt a new strategy. This strategy involves a more collaborative approach to facilitate improvements in water quality. The EPA has identified 190 catchments or ‘areas for action’ across the country where the status of the water is at risk of regressing.

There are multiple pressures across the areas for action such as; industry, waste water treatment plants, septic tanks, forestry, agriculture and urban pressures. ASSAP will focus its resources on addressing agricultural pressures.

ASSAP advisors will work closely with the farming community in each catchment providing them with a free and confidential advisory service. There are 20 advisors from Teagasc and 10 advisors from the dairy industry on the programme. Farmers can avail of this service within the ‘areas for action’ on a voluntary basis.

Catchment Scientists will assess the river/stream in each ‘area for action’ to identify the pressures on it. Where an agricultural pressure is identified the farmers in the area will receive the offer of a free farm visit from the local ASSAP advisor. The purpose of the visit is to meet with the farmer and assess the farm for any potential issues that may be having an effect on the water quality in the local river/stream. In general an advisor will assess the rivers and streams on the farm, a farmer’s nutrient management plan and nutrient management practices, use of pesticides and general farm land management.

At the end of the visit the advisor and farmer will agree on where the farmer should focus improvements or actions, if any are required, on the farm. The practical advice will be designed to ‘break the pathway’ and prevent nutrients from entering water.

The programme is a collaborative one and this is seen as crucial to ensuring that the ASSAP can aid in the collective goal of achieving ‘good status’ for waters in Ireland. The funding and support received from the DAFM, DHPLG and Dairy Sustainability Ireland has allowed the formation of the Catchment Assessment Teams and ASSAP advisors that will progress the programme on the ground.

Support from the farming organisations for the programme has been very strong and this is vital in communicating and informing farmers about the ASSAP programme and its key messages.

It is in everyone’s interest to work together to improve Ireland’s overall water quality. This will have many benefits across the local community and will help with achieving Ireland’s
obligations under the Water Framework Directive. It will also help to strengthen agriculture by reinforcing our green image as food producers and underpin the future development of sustainable Irish agriculture.

To see if your farm is located within an area for action go to www.catchments.ie. Under ‘Programme of Measures’ heading, select the ‘Areas for Action’ tab, then zoom into the location of your farm. The water quality in your area can also be checked using this website.

The ASSAP Advisor for Dairygold is Ciara Donovan who is contactable on 086 7930863.

The ASSAP advisors for Teagasc are:
- Lane Giles (West Cork) 087 3694388
- Eimear Connery (East and North Cork) 087 9053198
- Padraig Fitzgerald (Limerick) 087 2074890
- Paul Mullins (Clare) 087 1258840
- Claire Mooney (Tipperary) 087 7935643

Map showing the Areas for Action within regional committee boundaries.

Map showing the Areas for Action in regional area.
Increasing Biodiversity On Dairy Farms

Daire Ó hUallacháin, Teagasc

Introduction
Many of our best known farmland plants and animals are dependent on agricultural practices, and changes in these practices affect farmland wildlife. Intensification of agriculture over recent decades has resulted in a decline of biodiversity within agricultural systems. Whilst there is a need to increase production to cope with increasing food demands, the environment and ecosystem services it provides need not be compromised.

Emerging research and policy agendas are now based on sustainable management of agricultural land. Biodiversity is a primary environmental indicator of sustainable agricultural systems. There is a need for effective methods to promote wildlife conservation, as part of the development of sustainable agri-production systems. This provides important branding and marketing opportunities for dairy farmers and retailers.

Grass-based farming systems in Ireland are well positioned in terms of the wildlife they support. It is estimated that semi-natural habitats make up approximately 7% area of intensive dairy farms. Intensively-managed dairy systems can thus play an important role in halting the decline of farmland biodiversity.

Measures to enhance biodiversity on dairy farms
Appropriately-designed wildlife measures, targeted for intensive dairy systems, can play an important role in halting the decline of biodiversity and achieving the goals of sustainable expansion. Such measures can also play an important role in delivering on other environmental goals such as improving water quality and reducing greenhouse gas emissions.

1. Maintain and manage existing habitats
   It is typically more effective to retain existing habitats rather than establishing new ones. Existing habitats, including woodland plots, ponds and wetlands should be protected from more intensive agricultural management. These areas should be appropriately managed and avoided when sites are being selected for ‘new’ biodiversity initiatives. Many of these semi-natural habitats benefit from farm management that prevent the area from scrubbing over (e.g. light grazing of woodland plots (see Image 1) in spring and autumn can help improve the quality of the area thus benefitting a variety of species).

2. Hedgerow management
   Appropriately managed hedgerows can have multiple benefits, including providing shelter for stock and improving biosecurity; intercepting overland flow and improving water quality; sequestering carbon; and acting as a refuge for biodiversity. The quality of many hedges is sub-optimal, however some simple management practices can improve this quality:
- Leave occasional trees or bushes to mature. Mature trees and bushes provide greater feeding and nesting habitats for birds, pollinators and a variety of insects.

- The sides of hedges should be trimmed, with the top allowed to grow taller. This approach provides greater shelter and stock-proofing for animals, but also improves the diversity of habitats for wildlife.

- Replant escaped or ‘gappy’ hedgerows with native species (e.g. hawthorn). Native species support a greater abundance and diversity than non-native species.

Ensure that appropriate management is undertaken outside of the closed period from March 1st to August 31st.

3. Watercourses and buffer strips
Riparian buffer strips are strips of permanent vegetation adjacent to rivers and streams that are typically excluded from intensive farming practices. Appropriately managed buffer strips play an important role in maintaining water quality, ensuring bank stability, providing a habitat for biodiversity and acting as a wildlife corridor. To optimally manage these strips:
- Avoid nutrient (fertiliser or slurry) or herbicide application in the buffer strip.

- Allow vegetation in the strip to develop, but avoid the strips becoming dominated by scrub. Periodic cutting or grazing can improve the buffering capacity and habitat quality of the strip.

- Instream work should be targeted from July to September to avoid disruption to spawning fish. When cleaning the channel-bed, the spoil should be deposited away from the buffer strip.

4. Establish new habitats
New biodiversity measures play an important ecological role where there is a lack of existing habitats. New measures could be targeted to less productive areas of the farm.
- The banks of a cattle underpass could be sown with grass and wildflower mixes (see Image 2). This measure helps stabilise the banks, prevents undesirable plant species from encroaching into the field, and also provides a habitat for plants and animals.

- Awkward field corners could be left uncut following silage removal. This temporary measure provides food and cover for a variety of species such as farmland birds and small mammals. Corners could be grazed-off when animals are re-introduced to the field.
Helping Farmers, Help Pollinators, Help Farmers
William O’Halloran, SECAD

There are many different species which play an important pollination role in Ireland. Along with the Native Irish Honeybee (Apis mellifera mellifera); solitary bees, bumblebees, and hoverflies are perhaps the most important groups, and all are facing varying degrees of threat in terms of extinction.

The All-Ireland Pollinator Plan 2015-2020 found that in Ireland, of our native pollinator species including: 1 honeybee species; 20 bumblebee species; 77 solitary bee species; and 180 hoverfly species. 33% of bumblebee species, 43% of solitary bee species and 20% of hoverfly species were threatened with extinction. Contributory factors include: hunger from a lack of available flowers to forage on; homelessness caused by a lack of natural nesting sites; and poisoning from pesticides.

Overtime, changes in landscape management in farming has been a big factor. For example, traditional hay meadows are far more flower-rich than improved ryegrass swards and much of the landscape has seen a shift towards the latter.
Farmers are the stewards of our landscape and play a hugely important role in caring for nature. Thankfully, there are many things that farmers can do to help Ireland’s pollinators. Managing hedgerows sympathetically makes a huge difference. Instead of cutting all the hedgerows on your farm annually, why not reduce this workload and instead cut them on rotational 4-year cycle whereby each year you only cut 25% of your hedgerows. Another approach would be to allow the top of the hedge to develop in height by not cutting it at all.

A lot can be done in managing wildflowers around the farm, either by direct sowing or by working with what you already have. Obviously, this may present some difficulty in parts of the farm that require intensive management so its worth focusing on other areas like farm roadways, in and around the farmyard, or even in the farm garden.

Native wildflower seed can be sown quite easily, but should ideally be done in areas of low biodiversity value. There’s not much point in sowing wildflower seed in a habitat that is already flower rich like an area of wet grassland for example. If sowing seed, then cultivate the ground as for grass seeding. Source native seed and broadcast the seed at 1.5g per metre (easiest to do by hand). Sowing should be done outside of the summer months and seed should not be raked in as this does not favour most wildflower seeds. After flowering, manage the habitat like a hay meadow, i.e. mow, allow to dry if possible, and remove cuttings once the seed has dropped. Annual mixes may require re-seeding.

At the Dairy Sustainability Day (being run by Dairygold, Teagasc and Bord Bia), Wild Work are asking farmers to help pollinators by sowing more than 1000 metres of farmland with native
wildflower seed. This will complement Wild Work’s ongoing efforts to create an interconnected ecological corridor for pollinators and other wildlife in Cork.

Nesting habitats can be provided for wild bees very easily. Bumblebees will nest in long rank grass along the bases of hedgerows and solitary bees favor south facing earthen embankments to burrow into.

Many species of pollinating insect have been impacted by pesticide usage. The likes of insecticides such as neonicotinoids are causing direct health affects while herbicide usage has a serious indirect impact in that it leads to loss of foraging habitat. Good use of integrated pest management is hugely important for the overall health of pollinator populations. On a lot of farms, there are places where herbicide usage can easily be eliminated, particularly in areas such as farm roadways and farmyards. Why not have animals graze some of these areas instead of applying herbicide. Grazing is actually a great help for developing species rich flowering habitats.

To find out more about wildflower meadow management please contact info@wildwork.ie, 021 4613432, or visit www.wildwork.ie.

You can also visit www.pollinators.ie where you can read more about the All-Ireland Pollinator Plan and find plenty of farm specific guidance.
Soil Fertility, Low Emissions Slurry Spreading (LESS) and Protected Urea

William Burchill, Teagasc

Background
There is a perception that improving the environment and reducing carbon emissions will come at a significant cost to our farmers. However, many actions can be taken that are cost neutral and can improve overall farm efficiency i.e. ‘win-win’ options. Three of these options are to switch from CAN to protected urea in the mid-season, use low emissions slurry spreading techniques and improve soil fertility.

Protected Urea
Protected urea is a relative new fertiliser product available in Ireland. Protected urea is essentially urea with an inhibitor added to the fertiliser that reduces the risk of the fertiliser N being lost as ammonia gas emissions. Teagasc trials across multiple locations and years in Ireland have found protected urea to grow the same level of grass as urea and CAN. When compared to CAN, protected urea has lower greenhouse gas emissions, grows similar levels of grass and is slightly cheaper per kg of N (€0.95/kg N for protected urea vs €1.05/kg N for CAN) and is seen as an alternative to using CAN in the mid-season.

On the Crowley farm based on changing from CAN based fertilizers used in 2018 to Protected Urea in 2019 could save €1,200.

Low emissions slurry spreading (LESS) techniques
Low emissions slurry spreading techniques include dribble bars, trailing shoes and slurry injection systems. These systems reduce ammonia gas emissions from slurry after spreading and improve the efficiency of the N in the slurry compared to using splash-plate. Typically, slurry spread with a splash-plate will deliver 6 units/1,000 gallons in spring and 3 units/1,000 gallons in summer. Using the trailing shoe and dribble bar will increase these values by 3 units/1,000 gal i.e. 9 units/1,000 gallons in spring and 6 units/1,000 gallons in summer. The other main advantage of using these techniques is the reduced grass contamination compared to using splash-plate.

Soil fertility
Growing and utilising more grass on farms drives profitability. Soil fertility is key to this and also helps to improve the efficiency of the fertiliser that we use, meaning that less is lost to the environment. For our soils to be optimal for soil fertility the target is to have a soil pH of 6.3 to 6.5 and soil phosphorus (P) and soil potassium (K) index of 3. The key steps to improving soil fertility are as follows:

1. Soil sample
2. Soil pH and lime
3. Target Index 3 for P and K
4. Targeted slurry and manure usage
5. Balance with fertiliser
The first step is to have an up to-date set of soil samples for the farm. If one soil sample represents 10 acres and costs €20 it means that the cost per acre will be €2/year if samples are taken every year which is a small cost compared to a farms annual fertiliser bill.

Once the results are obtained the next step is to improve soil pH by applying lime where needed. Addressing soil pH has been found to release up to 64 units of N/acre, improve soil P levels and increase grass growth.

When soil pH is correct, index 3 for P and K should be targeted. The cheapest way to do this is to target slurry to paddocks that are low in P and K (index 1 or 2) and avoid applying slurry to paddocks that are in index 4 for P and K.

Once the use of slurry has been maximised fertiliser products such as 18:6:12, 10:10:20, 0:0:50 (Muriate of Potash) and 0:16:0 (super P) can be used to improve paddocks in index 1 and 2 up to index 3.

Before spreading fertiliser containing P ensure that you have an allowance to spread P. It is strongly advised that a nutrient management plan (NMP) is prepared by FAS Qualified Advisor.
The Role of Grassland Management, Clover and EBI in Greenhouse Gases Reduction Strategy
Stuart Childs, Teagasc

Grassland Management
When soil fertility is correct for all elements, grass growth potential increases significantly. This coupled with better nutrient management through the use of low emission slurry spreading technology and protected fertilizer allow for maximum grass growth which when coupled with good grassland management result in high utilization. Not only do better grassland management decisions reduce methane emissions by ensuring the highest quality grass is offered to animals but it also impacts by reducing the amount of silage and supplementary feeding in animal diets. All of these elements combined have significant potential to also reduce Nitrous Oxide (N2O) whilst also improving carbon sequestration of grassland.

Clover
Clover has significant potential to fix nitrogen (average 80kg/ha/year = 64units/acre). This fixation allows for reduced chemical nitrogen inputs to be used which reduces GHGs associated with fertiliser emissions. There are also production benefits to be seen where clover is incorporated into swards with higher milk solids output widely reported. However, clover persistence and management associated issues mean that further research into management strategies as well as breeding programmes to develop clover cultivars more suitable for intensive livestock systems may be required before there will be significant uptake. Nonetheless the potential for clover when combined with perennial ryegrass swards to improve carbon sequestration cannot be underestimated in the future.

Here on the Crowley farm, Trevor has incorporated clover into some of the swards as part of REPS over a number of years. Clover is still prevalent in some of these fields today.

Economic Breeding Index (EBI)
Research shows that for every 10 euro increase in EBI, GHG emissions per unit of product are reduced by 2%. This was because EBI will reduce emissions through;

1. Improving fertility, reducing calving intervals and replacement rates with subsequent reduction in enteric methane (CH4) emissions per unit of product.

2. Increased milk yield per unit of grazed grass and improving milk composition which increases the efficiency of production, thus decreasing emissions.

The Teagasc Dairy Roadmap projects that average EBI will increase to €180/cow by 2025 and milk delivered per farm will increase to over 570,000 litres, at almost 3.6% protein and 4.25% butterfat. This would result in the carbon footprint of milk production be reduced by over 20%.
Introduction
Average electricity usage costs on Irish dairy farms is €5 per 1,000 litres milk produced varying from €2.60 to €8.70 per 1,000 litres produced, or €15-45 per cow per year. These figures suggest many farmers could reduce their electricity usage by making some changes. Teagasc estimates that the average farm could save €1,800 (excl. VAT and network charges) per year through altered management strategies and the use of energy efficient technologies. The main drivers of energy consumption on dairy farms are milk cooling (31%), the milking machine (20%) and water heating (23%).

Typical Energy Consumption on Dairy Farms.

Calculate your energy costs
A simple calculation can be done to approximate on-farm electricity costs;
1. Add up total electricity charges on your electricity bills over a year excl. standing charges, VAT and PSO levy.
2. Multiply by 100 to convert from euro to cents.
3. Add up total number of litres of milk sold to the processor over the same period.
4. Divide electricity cost in cents by the litres sold to give cost in cent per litre.

The average three bedroom house in Ireland uses approx. 5,000 units of electricity per year. Deduct this to account for domestic usage if the dwelling house is on the same meter as the farm.
Night Rate electricity Vs Day Rate electricity
Night rate is charged at approximately €0.08 per KWh, and day rate at approximately €0.16 per KWh; exact costs vary by the electricity supplier. Checking your pricing structure can yield significant savings. Price checking can be done on pricing comparison websites such as www.bonkers.ie. All you need is information about your present tariff, annual usage and night rate usage to make comparisons. If you decide to switch suppliers, read the small print and check standing charges and termination charges.

Key points about night rate electricity
• Night rate hours are as follows:
  - Winter time - 11pm to 8am
  - Summer time - 12 midnight to 9am.

• Digital clocks with battery backup should be used where appliances operate during night rate hours (e.g. electrical water heaters) as analogue timers without battery back-up will go out of sync in power failures.

• Note: There is no charge from ESB networks to install a night rate meter. The meter standing charges increase from approx. €0.46 per day to €0.60 per day after moving to night rate electricity. This means that a minimum of 1.5 units of electricity would need to be used each night to offset the extra charges.

• A typical dairy water heater uses approx. 1.5 units of electricity per hour and takes about 6 hours to reach full temperature.

Dairy Energy Decision Support
Teagasc in conjunction with Cork Institute of Technology and the Sustainable Energy Authority of Ireland have developed an on-line decision support tool to assist farmers in making decisions around energy efficiency. The tool is available to use at http://messo.cit.ie/dairy. This online Dairy Energy Decision Support tool can be used to gain farm specific recommendations tailored to your situation (e.g. farm size and grant eligibility), to look at energy efficiency projects that deliver a return in 5 years or less.

On the Crowley Farm new energy saving technology in the form of LED lighting and heat transfer unit which heats water using the heat extracted from the compressor of the new direct expansion bulk tank has resulted in electricity cost savings of €100 to €120 per month (€1,200 - €1,400 per year)

Conclusions
Calculating energy costs of your farm in cents per litre of milk produced is a useful exercise to benchmark efficiencies against national averages. Farms with energy costs > €8 per 1,000 litres milk produced will benefit from investing in energy efficient technologies (such as plate cooling), whereas farms below the average electricity spend (< €5 per 1,000 litres) would benefit from cost reduction measures such as moving consumption to night rate electricity (e.g. for water heating and morning milking) and moving to the least cost supplier.
Sustainability is happy, healthy, profitable herdowners working with happy, healthy, productive grass-fed livestock producing wholesome food and enhancing the environment that they work in, is a sustainable model.

Herdowners need to be profitable, need to be able to enjoy a good work life balance, remain healthy and dairying needs to be an attractive career for herdowners to enter. The family farm and the ability to convert grass into Kgs of milk solids and meat in an energy efficient, resilient profitable system, is the strength of our dairy industry and the beef industry that we are dependent on.

Genetics creates the potential, management realises it and herd health protects it, this describes the impact on the success of the dairy industry the services that Munster Bovine offer. Namely semen supplies, AI technician service, milk recording, and herd health contribute to improving the genetic merit of the herd, help with the management of the herd and ensure the herd is healthy through disease mitigation.

The current €BI system is really a sustainability index for Irish dairying as it produces a cow that is fertile, efficiently produces fat and protein kgs through high %, is healthy, calves with ease, is easily managed and produces a valuable calf. Ireland is the envy of the world by its collaborative approach to cattle breeding, the AI companies, Teagasc, Department of Agriculture and ICBF all work together to deliver for Irish herdowners the best solution possible. Munster Bovine offers herdowners the best genetics available worldwide proven in Ireland to produce their future replacements and to add value to the remaining calf crop without compromising on dairy efficiency or profitability. Our technician service delivers the highest genetic merit sires into the cow with the highest possible achievable fertility as we endeavour to have the technicians and the semen achieving the highest conception possible. Herdowners to ensure they have the highest genetic merit replacements available just need to decide how many replacements are required and then multiply the number with 4.5 and use the resultant number of straws prior to the 31st May to ensure the replacements are born in February. The handheld used by the technicians highlights potential inbreeding and can facilitate usage of the most appropriate panel of sires for the herdowner. To maximise the outcome the herdowner needs to identify the highest genetic merit cows as the dams of the replacements.

Milk recording is the key to maximise genetic gain, avoid milking unprofitable cows, managing SCC, ease of milking and reducing the time spent per cow in the year. Milk recording has never been easier for a herdowner to complete. No equipment is required on your farm therefore no capital investment needed; electronic milk meters will be delivered to your farm for the milk recording. Milk recorders now have a new handheld which is much quicker and convenient to use in the parlour.

Milk recording identifies the cows that are contributing to profitability on farm. The profitable high genetic merit cows are the ones that we need to breed our replacements from. One day of planning prior to breeding season with your technician each year ensures you will make the
most genetic gain. Time spent per cow and profitability are key areas for herd owners. Milk recording will identify the unprofitable cows in the herd that put pressure on the system, taking up time, cubicle and barrier space and eating forage that can be used to build reserves. Secondly milk recording allows the herd owner to control SCC and reduce the amount of antibiotic usage on farm. Selective dry cow therapy, minimising the spread from high SCC cows and appropriate timely treatments will reduce the total antibiotic usage on farm, AMR is all our responsibility and milk recording is key.

The Munster Bovine herd health programme is a continuous monitoring of the parasite and disease burden on farm throughout the lactation. The samples are collected at the mallow laboratory automatically and the results posted to you. This programme will protect your investment in the herd, monitor your vaccination and dosing programme and allows you an early warning system.

The carbon footprint can be reduced by having higher genetic merit animals, reducing the number of unprofitable cows milking on farm, reducing the number of replacements required and produced and maximising the longevity of cows in the herd to 5.5 lactations.
Dairygold has introduced a new bonus payment for Milk Suppliers. The Milk Supplier Sustainability bonus is designed to deliver healthier herds with the more productive cows thereby improving both the economic and environmental sustainability of the Dairygold milk production base.

Bonus payments will be made to Dairygold Milk Suppliers who participate in Milk Recording and Herd Health programmes with Munster Cattle Breeding Group. The programmes have proven returns for farmers in terms of herd performance and profitability.

Within the Dairygold supplier base Milk Recorded herds currently produce, on average, 50 Kg more solids, per cow, per year, than non-milk recorded herds which is potentially worth an additional €23,650 per annum for a 100-cow herd.

Dairygold is offering Milk Suppliers who participate in Milk Recording a 0.1 cent per litre bonus and another 0.05 cent per litre bonus for those who join Munster Cattle Breeding Group’s Herd Health programme. These bonus payments together with the existing 0.1 cent per litre SDAS bonus will mean a total of 0.25 cent per litre in sustainability related bonus payments for Milk Suppliers on top of the existing milk quality bonus of 0.4 cent per litre.

**The Bonus Payment Breakdown**

<table>
<thead>
<tr>
<th>EXISTING SDAS BONUS</th>
<th>NEW MILK RECORDING BONUS</th>
<th>NEW HERD HEALTH BONUS</th>
<th>TOTAL BONUS AVAILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1cpl</td>
<td>0.1cpl</td>
<td>0.05cpl</td>
<td>0.25cpl</td>
</tr>
</tbody>
</table>

*Per 100 Cows: €550 + €550 + €275 = €1,375

**Milk Recording:**
In the Dairygold Milk Supplier base, milk recorded herds produce on average 50 Kg more milk solids, per cow, per year, than non-milk recorded herds. This increase in production means that 13% less cows could provide the same quantity of milk solids output.

**Potential Benefit to Milk Supplier**

€23,650

Based on a 50Kg increase in milk solids at €4.73 per kg returns €236.50 per cow or €23,650.00 in a 100 cow herd.
Herd Health
Infectious and parasitic diseases in dairy herds will affect performance, fertility and profitability. A healthy herd will be a more productive herd. The Herd Health programme will establish your herd’s disease status through four separate bulk milk tests, allowing you to identify and manage the diseases that might limit your herd’s milk output. It gives you the information you need to make an informed cost benefit analysis of your vaccination plan.

Herd Health programme participants realise a 1% increase in six week calving rate which results in an associated increase in farm profitability of €9.26 / cow per annum.

**Herd Health Programme Options:**

<table>
<thead>
<tr>
<th>Herd Health Options</th>
<th>Gold Programme</th>
<th>Silver Programme</th>
<th>Bronze Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What Is Included</strong></td>
<td>Testing &amp; one to one Munster Vet consultation</td>
<td>Testing &amp; Munster Vet phone support</td>
<td>Testing only</td>
</tr>
<tr>
<td><strong>Programme Cost</strong></td>
<td>€349/Herd</td>
<td>€280/Herd</td>
<td>€190/Herd</td>
</tr>
</tbody>
</table>

**Benefits of Herd Health**

**Recommendations on Vaccinating Programme** - What to do and when.

**Dosing Programme** - Reduction in antibiotic usage, contributing positively to Anti-Microbial Resistance (AMR)

There has been much debate on the issue of blanket treatment of animals and its impact on Anti-Microbial Resistance (AMR).

**Sample of Information Provided in Munster Milk Recording Reports**

**Your Questions Answered**

**Q. How do I qualify for the Milk Recording bonus payment?**

**A.** To qualify for the Milk Recording bonus a Milk Supplier must sign up to a recognised Milk Recording programme with a minimum of four Milk Recordings a year. Dairygold Milk Suppliers who are already Milk Recording and continue to do so will automatically receive the bonus along with their first milk payments for 2019 milk supply.

**Q. How do I pay for the Milk Recording and Herd Health programmes?**

**A.** The annual cost of the programmes will be deducted from your monthly milk payments across peak months. NOTE: Participation in a Milk Recording programme in Ireland requires
the payment of an annual €60 Herd Fee. This flat fee applies nationwide to all herds, irrespective of size.

Q. Can I receive the Herd Health bonus but not the Milk Recording bonus?
A. No. Only Milk Suppliers who are Milk Recording will be eligible to receive the Herd Health bonus.

How to Sign up?
Signing up for Milk Recording or Herd Health is as simple as completing the following forms:
- Sustainability Bonus Application Form
- ICBF Authorisation Form

and returning by post to: Munster AI Group Ltd., Ballyvorisheen, Mallow, Co, Cork.
Should you require additional information on the Milk Supplier Sustainability Bonus (Milk Recording or Herd Health programmes), please contact your Milk Advisor, Area Sales Manager or Local 1890 200 840
Within Dairygold, we have always offered the best quality, latest innovation and best value within our product range. We also believe it is our responsibility to be your partner in sustainable farming. Our feed and fertiliser range now offers products that can help make our industry more sustainable.

1. Protected Urea Products:
Until 2015, the nitrogen market in Ireland was dominated by Urea and CAN. Both these forms of Nitrogen have considerable limitations in our changeable and somewhat inclement weather conditions. Past experience shows us that one of the problems with using untreated Urea is the risk of nitrogen loss due to ammonia release during hot drying weather conditions. On the other hand, CAN products run the risk of leaching during wet conditions. Moving from CAN to an unprotected urea fertiliser decreases the risk of nitrous oxide losses but increase the risk of ammonia losses. Protecting the urea fertiliser decrease this risk of ammonia losses.

Within Dairygold, we have a range of protected urea products. These products are powered by differing additives some coating the urea granule, some contained within the Complex Compound Fertiliser (CCF).

These products:
- Decrease the ammonia losses versus urea, by 78.5% compared to urea
- Decrease the nitrous oxide emissions versus CAN, by 73% when compared to CAN
Protected Urea Products available through Dairygold Agribusiness:

<table>
<thead>
<tr>
<th>Fertiliser Product</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protected 46% N</td>
<td>Ideal as CAN replacer on grazing ground or silage ground getting 3000 gals slurry</td>
</tr>
<tr>
<td>Protected 40% N + 6% S</td>
<td>Ideal as CAN replacer on grazing ground or silage ground getting 3000 gals slurry</td>
</tr>
<tr>
<td>Protected 38% N + 7.5% S</td>
<td>Ideal as CAN replacer on grazing ground or silage ground getting 3000 gals slurry</td>
</tr>
<tr>
<td>MAIZE BOOST 19-4-19+1.3% S+0.5KG ZN</td>
<td>Ideal as compound replacer on grazing ground or for silage ground that is index 4 for P but needs K</td>
</tr>
</tbody>
</table>

Ever wonder how methane emissions from dairy cows are measured?

2. Post calver gold feed range:

Post calver gold has been a flagship product for many years. It is formulated with only the best raw materials; it contains high levels of maize meal, good protein quality, yea-sacc, biotin, protected copper, zinc, selplex and elevated levels of vitamin E. Its ability to drive efficient milk production while ensuring your cows go back in calf is an industry leader. Recently post calver gold has added a sustainability string to its bow.

Yea-Sacc® from Alltech, used within post calver gold has been certified by the Carbon Trust to reduce greenhouse gas emissions from dairy and beef animals. Yea-Sacc is the only yeast culture designed for use in ruminant diets that has been awarded this certificate.
3. Hi ProEco Lac range:

Hi-Pro ECO LAC is designed around the same core values that extend right throughout the Dairygold quality feeds range. It contains high levels of maize meal, has good protein quality and a high level of available minerals. It also contains Agolin, a natural rumen modifier that has also be awarded a Certificate of Achievement, by the Carbon thrust stating that Agolin® Ruminant reduces methane emissions by 10% in cattle daily and by 14.4% per litre of fat corrected milk.

Soil sampling and designer fertiliser plans

89% or 1 in 10 of our fields are sub-optimum for fertility, meaning they are too low in soil pH, phosphorus or potassium. This affects fertiliser efficiency, grass growth and farm profitability. Some of our soils are conversely too high in phosphorus; spreading too much phosphorus on these soils can impact water quality. Before we can determine a safe level and the correct timing of nitrogen and phosphorous fertilisers we need to know our soil fertility status.

Dairygold laboratory services, Lombardstown have been offering a soil sampling and analysis service since 2016. Simply sign up at your local branch, with your local Area sales manager or through our inside sales office and we’ll sample your farm, analyse your sample and our advisory team will complete a field by field fertiliser plan for your farm.

For more information on these products or to discuss how we can work together to achieve greater environmental sustainability please contact your Area sales manager, your local branch Agri lead or our inside sales department.
Time is a precious commodity on the Crowley Farm. That is why Trevor attended Dairygold’s Leanfarm Training, to identify changes to make that would help to save time and ensure continuous improvement on the farm.

While at the Dairygold lean training, Trevor compiled a list of improvements he planned to complete at home to save time, effort and money. At the Leanfarm Waste Walk (which is part of the lean training and held on a farm near the inhouse training location), Trevor was both able to suggest to other farmers ways to save time doing daily tasks as well as pick up suggestions that he could carry out on his farm.

Here are just a few examples of improvements to be seen all over the Crowley farm:

- Covered clothes line beside compressor using free heat – drying aprons, overalls and dairy clothes
- Fast fill dairy wash trough tap
- Cheap covered foot-bath. Less filling needed & excellent disease control
- Calves are moved quickly and safely on this farm
- Silage scrape to speed up feeding
- Point of use – easy access for frequently used items
A place for everything and everything in its place
One useful tip Trevor was able to suggest at the Leanfarm Waste walk, was to use a movable battery gate release latch when moving cows. This latch releases and opens the gate at a set time daily. It is very easily moved and set up but saves the trip out to the field to bring in the cows each evening saving 20/30 minutes daily.

Approximate cost of above model shown above is €475.

Planned further improvements this year include covering the collecting yard and installing a new feed bin that will deliver feed into the hopper bin beside the dairy. This will allow more flexibility as well as save time, effort and money.

Leanfarm training workshops are open to all Dairygold milk suppliers (including family members and staff). Workshops, which are free will be held across all regions throughout the year. If you want to find out more about Dairygold’s Leanfarm and how you can attend the next training in your area, please contact a member of our Continuous Improvement team or your milk advisor for more information. You can also Lo call 1890 200 840 to make contact. We encourage all our members to participate in the training workshops which are an invaluable source of tips, advice and information.

<table>
<thead>
<tr>
<th>Saves approx. 140 Hours/ Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worth over €1,372/Year</td>
</tr>
</tbody>
</table>

Over a milking year this amounts to 8,400 minutes saved. That is 140 hours saved (equivalent to over 17.5 working days (@ 8 hour days) and worth €1,372 euros (using minimum wage €9.80) per annum
Other Sustainability Initiatives

AHI CellCheck - The National Mastitis Control Programme

Finola McCoy, CellCheck Programme Manager

Ensuring optimal udder health and milk quality is one way that suppliers and processors can maximise profitability while remaining competitive and sustainable in challenging markets and times. There is also a growing focus on the prudent use of antimicrobials in animal production systems, and the importance of implementing preventative measures to reduce the risk of disease and maintain healthy animals.

In February 2015, through the forum of the CellCheck Industry Consultation Group, a common industry target was agreed; that by 2020, 75% of milk supplied in Ireland would have an SCC of 200,000 cells/mL or less. The industry is well on the way to achieving this target, although continued improvement requires continual focus and effort—there is no room for complacency.

Significant progress has already been made nationally in the udder health of Irish herds, since the commencement of the CellCheck programme. Analysis of bulk tank somatic cell count (SCC) data from the national SCC database shows a continued positive trend, with a reduction in the annual average SCC of almost 100,000 cells/mL over the last decade. (Figure. 1)

![Figure 1. Annual average SCC (2007-2017)](source: National bulk tank dataset)

It also shows an increase in the proportion of herds and milk volume with an annual average SCC <200,000 cells/mL from 39% to 68%, and 46% to 71% respectively, between 2013 and 2017. (Figure 2).

![Figure 2. Proportion of herds and milk volume with SCC <200,000 cells/mL](source: National bulk tank dataset)

Analysis of medicine sales data also shows positive change. The usage of in-lactation intramammary tubes in 2015 fell by 33%, from peak levels of usage in 2008 (Figure 3).
While clear progress is being made, there are still opportunities to improve udder health nationally, as well as ongoing and emerging challenges to continued progress in udder health in Ireland. While a clear reduction in the number of in-lactation intramammary treatments can be demonstrated, the same dataset also shows that blanket dry cow antibiotic therapy is common. In light of the increasing awareness and focus on prudent antibiotic use this no longer aligns with international best practice and thinking. Winter 2018 saw the commencement of the CellCheck Dry Cow Consult, delivered as part of the RDP-funded Targeted Advisory Services in Animal Health (TASAH). The purpose of the TASAH Dry Cow Consult is to enable farmers to engage with their TASAH-trained vet to develop farm-specific selective dry cow strategies, where appropriate. Milk recording results and farm records are reviewed, as well as current practices when drying off cows, to help develop and plan these strategies. A key focus for 2019 will be to continue building awareness of prudent antibiotic use, particularly at drying off, including the continuation of the Dry Cow Consult service.

Another ongoing challenge is the low level of engagement nationally with whole herd milk recording, which is a limiting factor to improving areas such as udder health, decision-making around dry cow therapy and farm efficiencies. Addressing this challenge is also a priority activity for the CellCheck programme, including understanding the barriers to milk recording, developing targeted solutions and quantifying the economic benefit in order to challenge the current value perception.
Johne’s disease is a bacterial disease of cattle for which there is no cure. It is caused by the bacterium Mycobacterium avium subspecies paratuberculosis (MAP). Animals are susceptible from birth and once infected, the disease is progressive. Many herd owners do not fully appreciate that prevention is much easier and offers more certainty than trying to control infection once it has become established in a herd. Some herd owners find the infection extremely difficult to eradicate once it has become well established.

Once infected, an animal progressively becomes more unproductive. Initially there is a reduced feed-conversion efficiency, followed by weight loss, scour and ultimately emaciation and death. These changes may not be recognised unless the animals are regularly condition scored and weighed, or milk production is being measured. Signs are often only noticed when animals are approaching peak productivity.

In some cases, infected animals may never develop the full range of clinical signs but are still able to shed MAP and infect other animals and the environment. These animals may also have a reduced fertility and produce less milk while continuing to test negative. This affects dairy production directly. MAP-infected cattle may also be more susceptible to other diseases.

Johne’s disease is usually introduced to a herd with an infected younger animal which appears healthy and may even have had a single test with a negative result. As the animal matures and it starts to shed MAP in its dung, the cycle of infection continues as other susceptible animals in the herd come into contact with the infective dung.

Calves are typically infected early in life by drinking or eating milk or food containing or contaminated with MAP. On occasion, calves are born infected, most often when their dams have advanced Johne’s infection. One infected cow in a calving pen or housed with other cows can infect a number of calves that come into contact with her dung. Calf to calf transmission can also occur in calf pens, and dairy farmers are advised to house calves in individual pens for the first week of life.

MAP infection has a long incubation period which makes Johne’s challenging to diagnose; there is no treatment, so prevention is the key to managing this disease. Whole herd testing for Johne’s is one part of a strategy for preventing and controlling Johne’s disease. Even after a herd has had repeated rounds of negative tests, it is not possible to guarantee a herd is ‘free’ of Johne’s. However, a herd owner is certainly able to demonstrate a higher level of assurance.

The most successful approach to Johne’s management internationally incorporates:
• Includes a herd risk assessment and management plan (VRAMP)
• Herd biosecurity to exclude infection, and contain infection in infected herds
• Whole herd testing to identify heavily infected animals and remove them from the herd.

Herdowners who register with the IJCP, are required to carry out the following activities.
• An annual veterinary risk assessment and management plan (VRAMP).
• Annual Whole Herd Testing (using either a single milk or blood sample for each eligible
animal), with repeated rounds of negative testing contributing to an improved level of herd assurance.

- Further individual testing of any animals that are test positive at the WHT to determine if the MAP bacterium is present in the dung (ancillary testing).

Phase Two of the Irish Johne’s Control Programme (IJCP), is open to all dairy herdowners and is supported by Dairygold as well as the majority of Irish Dairy co-ops. The dairy industry recognises that by being part of the IJCP, dairy farmers are demonstrating a commitment to the Irish dairy industry and are actively helping to promote the quality of Irish dairy products. Dairy farmers who have adopted the hygienic calf rearing practices required for effective Johne’s prevention and control have also observed improved calf health and a reduced use of antimicrobials for the treatment of sick calves.

Dairygold suppliers are able to take advantage of financial support towards the cost of each year’s whole herd testing. This funding is available for the first four years of the IJCP and Financial support is available for these activities and more details are available from the Animal Health Ireland website http://animalhealthireland.ie/?page_id=340

For more information about preventing and controlling Johne’s disease in your herd please download the information leaflet available here. http://animalhealthireland.ie/?page_id=333
EBI - Breeding a Sustainable Future
Kevin Downing - Irish Cattle Breeding Federation (ICBF)

Introduction
The three pillars of sustainable agriculture are Economic, Social and Environmental and in that context, breeding plays a big role in all three pillars. The Economic Breeding Index (EBI), which is a single figure profit index, is used by dairy farmers to breed more profitable cows. Not only that, the gains in extra profit are directly contributing to a reduction in Greenhouse Gas (GHG) emissions. Therefore, the EBI is delivering a more sustainable cow.

Latest work by Teagasc indicates that for each €10 gain in herd EBI there has been a gain of €20 in terms of additional net profit per cow per year while leading a 2% reduction in the carbon footprint.

Reducing the Carbon Footprint
There are currently a number of ways in which the EBI index is contributing to the reduction of Ireland’s carbon footprint. They are as follows:

1. Milk Production
Increasing Milk yield and composition per cow will automatically decrease the emissions on a per unit of product basis. Table 1, containing data from 4,862 herds, shows the increase per cow that has been achieved in both milk yield and milk solids between 2013 and 2018. While improvements in herd management have played an important part in these increases, breeding has also played its part. Cows today, are producing over 590 litres more milk and over 60 kilos more in milk solids, than they were six years ago.

<table>
<thead>
<tr>
<th>Year</th>
<th>Litres/Cow</th>
<th>Milk Solids/Cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>4,743</td>
<td>361</td>
</tr>
<tr>
<td>2018</td>
<td>5,336</td>
<td>422</td>
</tr>
</tbody>
</table>

Table 1: Co-op Milk Production 2013 & 2018

2. Cow Fertility
Improving the cow’s fertility will result in reduced calving intervals i.e. more calves produced per cow, and increase the longevity of the cow in the herd, thus reducing methane emissions per unit of product. Table 2 shows the fertility gains that have been achieved in the national herd between 2010 and 2018. All the key fertility metrics have seen improvement with Calves/Cow/Year going from 0.85 to 0.90, which across 1.4m cows represents an additional 84,000 calves being born. Similarly, in that period, the calving interval has been reduced from 402 days to 387 days.

<table>
<thead>
<tr>
<th>Year</th>
<th>Calves per cow per Year</th>
<th>6 Week Calving Rate</th>
<th>Calving Interval</th>
<th>Heifers calved 22-26mths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0.85</td>
<td>52%</td>
<td>402</td>
<td>54%</td>
</tr>
<tr>
<td>2018</td>
<td>0.90</td>
<td>64%</td>
<td>387</td>
<td>70%</td>
</tr>
</tbody>
</table>

Table 2: Dairy Calving Statistics 2010 - 2018
3. Compact Calving
The more compact the calving season, the more grazed grass can be included in the cow’s diet. Breeding more fertile cows will help achieve this intensive grazing strategy. It will also contribute to the age at first calving. Having more replacements born early in the year will allow them more time to achieve the correct target weight at breeding and therefore more heifers will hit the optimum age of between 22-26 months of calving thus reducing the ‘idle time’ in a cow’s lifetime.

4. Animal Health
Improved cow health e.g. Mastitis & Lameness, reduces the incidence of disease and deaths leading to higher production levels and lower replacement rates. The EBI sub-index for health can be used to identify bulls that will breed healthier cows while the calving sub-index will help identify easy calving bulls with lower mortality rates.

5. Low Maintenance Cows
Levels of feed intake are an important factor influencing methane production. Smaller cows consume less feed than larger cows. The maintenance sub-index in the EBI captures cow size using the cull cow factory weights. This can then be used to breed lower maintenance cows that produce the same output.

Summary
Genetic gain is cumulative and permanent, so the gains achieved in EBI continue to add up and last permanently. Mitigation strategies like the EBI, that increase profit and reduce emissions are a win-win for the farmer and the wider communities.
In 2016, the Dairy Industry Ireland (formerly known as the Irish Dairy Industry Association (IDIA), chaired by Jim Woulfe, (Dairygold CEO), recognised the need to ensure that expansion of the dairy industry was sustainable. To ensure sustainable growth into the future, a joint industry/farmer/government forum was established, which subsequently introduced the Dairy Sustainability Initiative (DSI).

The Dairy Sustainability Initiative (DSI) is a unique initiative combining the collaborative efforts of industry stake-holders including Dairygold and other Co-operatives, Bord Bia, Teagasc, DHPLG, DAFM, local authorities and the EPA. This initiative aims to address the challenges of soil and water quality, climate change and air quality issues while also ensuring economic sustainability for the Irish dairy industry.
Since the inception of the Dairy Sustainability Initiative three main projects have been developed -

1. The Joint Teagasc/Dairygold Soils Pilot project
   This is a pilot programme with the aim of demonstrating best practice in nutrient management, linking improvements in soil fertility on farms to financial and environmental benefit. Over thirty Dairygold suppliers located across the Dairygold region are now actively participating in this four-year project.

2. ASSAP (Agricultural Sustainability Support & Advisory Program)
   The ASSAP programme, also a four-year programme, takes a collaborative new approach to improving water quality on farms. Through this programme all farmers within 190 different ‘areas for action’ around the country and across the Dairygold region, will be offered free and confidential advice on how to protect and improve water quality on their farm. This programme will see a specialist Catchment Assessment Team from the Local Authority work in tandem with Teagasc and Co-Op advisors to assess the potential causes of water pollution and then provide specialist advice to rectify and prevent identified issues.

Promotion of Nutrient Management
   The promotion of best practice in nutrient management on farms has been promoted through the Dairygold / Teagasc Joint Programme for many years and continues to be a priority of the programme. In support it this initiative, Dairygold also provide free fertilizer plans to all suppliers who carry out soil sampling. Soil sampling has further been promoted and encouraged, through extremely competitive pricing and providing the free service of taking the samples for farmers.
Sustainability in the Dairygold/Teagasc Joint Programme

Stuart Childs, Teagasc

The term sustainability can be defined in two ways.

1. Sustainability is the ability to maintain a certain rate or level, or

2. Sustainability is the avoidance of depletion of natural resources in order to maintain an ecological balance.

Previous joint programmes have always emphasised sustainability. However, while always encouraging good farming practice with regard to environmental standards and the landscape around us, the focus was more the sustainability of the farmer themselves, their income and their standard of living so that they themselves could remain viable.

The current joint programme is different. There is still that emphasis on the economic sustainability but it has expanded to look at many other elements of sustainability that have come to the fore.

**Soil fertility** is a critical to sustainable farming, appropriate use of nutrient while ensuring that the soil nutrient status isn’t depleted is critical to good farming. To this end, we have a programme that is looking at soil fertility on 33 farms in the catchment to learn more about how to manage this important resource.

**Biodiversity** describes the variety of plant and animal life in a particular habitat. Modern day farming practices can impact significantly on biodiversity so the programme is looking at biodiversity levels on farms in the Dairygold catchment and how it can be managed and expanded upon.

The Dairygold Teagasc Joint Programme has 9 Demonstration farms which focus on:

1. **Grass growth** - our main comparative advantage in the market. High milk solids production from grass is our objective to ensure economic sustainability but this must not come at a cost to the soil nutrient status, soil structure and the environment in which we farm. Demo farms in this area look at growing more grass, grass and **high input, high output** production systems and farming on **heavy soils and managing a fragmented land base**.

2. **Leanfarm, Labour efficiency** and **Labour management** - since the abolition of milk quota, cow numbers have increased, this has resulted in increased workload, in some cases this workload has increased to unsustainable levels. Labour efficiency and Leanfarm aim to streamline the farm business to make workload manageable and safe. Labour management looks to help maximize the performance of staff or other stakeholders in the farm business.

3. **EBI** and Breeding - High EBI herds are not only more profitable but are also more environmentally sustainable through improved carbon efficiency and greater conversion of grass per unit of milk solids thus maximising return from inputs.
4. Antimicrobial resistance in human health is a major concern. Our Herd Health demo farm is focusing on reducing antibiotic usage with special focus on reduction of prophylactic antibiotic usage especially at drying off.

5. Finally, encompassing all of the other elements mentioned above, we have a demo farm that farms puts these elements into practice on 100% leased land to demonstrate career opportunities that exist for those that may not have land but wish to farm.

Pictured below at the launch of the Dairygold and Teagasc Joint Programme (2018 - 2021) are John Keane (Dairygold supplier), John O Gorman (Chairman of Dairygold), Tom Kelly (Teagasc) and Minister for Agriculture, Food and the Marine Michael Creed.
Objectives
To be truly sustainable a dairy farm must be capable of being handed on to the next generation in as good or better physical, financial and environmental shape than it is now. To achieve this goal, good soil fertility and efficient use of fertiliser and slurry have a very important role to play in this. The objective of the soils pilot programme is to focus on practical steps that can be implemented at farm level to improve soil fertility and water quality through better nutrient management planning. The long term goals are to reduce fertiliser costs, increase grass growth, improve water quality and grow farm profit. The pilot study can also act as a template or a guide for future sustainable development at farm level.

Pilot programme details
The four year pilot programme revolves around 33 Dairygold Co-op suppliers that are representative of their catchment area. The farms vary in soil type, scale, natural topography and milking system. The project involves soil testing and establishment of soil fertility at a field level and completion of an individualised nutrient management plan (NMP) for each farm on an annual basis. With this information to hand, a better mix of fertilisers can be used to balance soil requirements and farmers can manage the cost of fertiliser and lime to be purchased. The plan is to build farmer confidence in nutrient management planning and its long-term importance in developing substantial financial and environmental rewards at farm level.

Programme Focus
Improving soil fertility
• Soil sample farm annually to establish soil fertility status
• Use nutrient management plan, including colour coded maps of each paddock to indicate where extra lime, P or K is needed
• Targeted plan for slurry and fertiliser, slurry can be targeted to paddocks that are low in P and K and a better mix of fertilisers can be used that suit the farms requirement

Improving water quality
• Improve nutrient management
• Achieving optimum pH and index 3 in P & K then adding maintenance amounts of slurry where possible and chemical fertilizer only where needed
• Applying Nitrogen to crop demand level only
• Improve decision making around slurry application and timing
• Eliminating point sources of pollution from farmyards
• Reducing sediment loss to streams
• Improving production efficiency through better breeding and grassland management

Reducing greenhouse gas emissions
• Use low emission slurry spreading equipment (trailing shoe, dribble bar or injection system)
• Use protected urea
• Improve nutrient use efficiency (produce more output from the same or lower levels of inputs)
The main message is a simple one - better nutrient management will improve soil performance and farm profitability through increased grass production, while also protecting local water sources and improving environmental performance. The progress of these soil sustainability farmers will be monitored and reported on over the remaining two and a half years.
Soil Sampling Service
& Fertiliser Plan

Complete your details below to avail of our soil sampling service and hand it to a Dairygold Representative

Name
Address

Account Number
Contact Number

Number of Samples __

Samples to be taken by: (Date):
1. __ / __ / __
2. __ / __ / __
3. __ / __ / __
4. __ / __ / __
5. __ / __ / __
6. __ / __ / __
7. __ / __ / __
8. __ / __ / __
9. __ / __ / __
10. __ / __ / __

For more information please contact your Dairygold Area Sales Manager or Inside Sales Team on 022-31644

www.dairygoldagri.ie
Soil Sampling Service
& Fertiliser Plan

**SOIL SAMPLES**

taken from your Farm and Analysed for

€16.50 + VAT*

by Dairygold Agri Services Laboratory

Targeted Fertiliser Plan included FREE!!!

90% of Irish soils have sub-optimal levels of soil pH.

With the right soil fertility and pH, an average 35ha grassland dairy farm could generate over €40,000 in additional farm income over a five-year period.

---

3 Point Action Plan to Improve your Soil Indexes:

1. **TAKE A SOIL SAMPLE**
   Soil corers are available free of charge from all Dairygold branches.

2. **DO A FERTILISER PROGRAMME FOR YOUR FARM**
   Dairygold have designed a fertiliser planning tool which formulates a customised farm specific fertiliser plan for your farm based on your stocking rates, your slurry application and your soils indexes.

3. **PUT YOUR PROGRAMME INTO ACTION BY USING THE FERTILISERS YOUR PLAN RECOMMENDS**
   *T’s & C’s. Minimum of 10 samples. Less than 10 samples €18.00+VAT

---

www.dairygoldagri.ie

---

For more information please contact your Dairygold Area Sales Manager or Inside Sales Team on 022-31644
Working together for a sustainable future

Wishing you a safe and sustainable farming in 2019