Department of
Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

FAS news

Farm Advisory System newsletter

Spring 2019 Issue 13

Foreword

Eric Long,
Head of Knowledge Advisory Service, CAFRE.

I am pleased to introduce the 13th edition of the "Farm Advisory System" (FAS) newsletter. This issue focuses on key advisory messages to help you realise the benefits of area-based schemes and EU support while minimising the risk of penalties.

What is FAS?

The EU requires all member states to have a Farm Advisory System (FAS) to inform farmers on the following five areas:

1. Cross-Compliance;
2. Greening and Land Eligibility;
3. Rural Development Programme;
4. Water Framework Directive;
5. Sustainable Use of Pesticides Directive.

This issue contains articles on a range of FAS topics which focus on compliance and improving agriculture's efficiency and impact on our environment.

- SAF 2019 Farmers online workshops.
- The application of SMR2 Conservation of Wild Birds to all land.
- The importance of cattle testing.
- The status of our water catchments.
- Compliance with the Environmental Farming Scheme.
- Improving nutrient efficiency through a new slurry dry matter test and fertiliser selection.
- Understanding and reducing ammonia emissions from NI agriculture through the CAFRE video.
- Pesticide use and certification.

Forthcoming Events

CAFRE Dry Stone Walling Courses

Saturday 27th April 2019 at 10.00am

Saturday 25th May 2019 at 10.00am

Saturday 22nd June 2019 at 10.00am

Venue: Greenmount Hill Farm, 62c Glenhead Road, Glenwherry, Ballymena.

CAFRE Bracken Management Demonstration Events

Thursday 13th June 2019 at 2pm
Venue: Antrim Estates, 2 Castle Lane, Glenarm, Ballymena, Co Antrim.

Thursday 20th June 2019 at 2pm
Venue: Northern Counties Co-op, Swatragh, Churchtown Road, Garvagh.

To book your place on any of these courses please visit www.cafre.ac.uk/industry-support or call CAFRE admin on 028 9442 6716

CAFRE releases 'The Ammonia Challenge' video

George Mathers, Sustainable Land Management Branch, CAFRE.

CAFRE has prepared a short video entitled 'The Ammonia Challenge' which shows how ammonia has become a threat to sensitive habitats, that farming is an important source of ammonia and finally it looks at some useful techniques to reduce ammonia emissions.

Ammonia is a powerful air pollutant and agriculture is responsible for 94% of atmospheric ammonia in N. Ireland. High levels of ammonia cause damage to sensitive habitats and species loss. Nitrogen loss by ammonia also reduces the fertiliser value of slurry and manure.

The video shows some methods of reducing ammonia emissions that are being employed at CAFRE and these include increased grazing, reduced protein in livestock diets, advanced livestock flooring and slurry storage systems and slurry application using the trailing shoe system.

To view the video open up **CAFREtv** in youtube and then select **'The Ammonia Challenge'**.

Slurry application using trailing shoe equipment greatly reduces ammonia emissions.

Excess nitrogen arising from ammonia emissions causes severe damage to sphagnum moss in bog habitat.

DAERA to host SAF online workshops

Mairead O'Neill, Area-based Schemes Delivery Support Branch, DAERA.

The Department of Agriculture, Environment and Rural Affairs (DAERA) will be hosting a series of weekly workshops for farmers on how to submit an online Single Application, including making mapping changes.

Attendees in previous years have found these work-shops to have been extremely useful and informative.

Feedback review comments from farmers who attended in 2018 have included:

- ***"Very useful and very helpful staff who were available to assist."***
- ***"Excellent course. Relevant details well covered with clear information that was well presented."***
- ***"Excellent tutors & very user friendly. Highly recommend."***

The Single Application window opens on Friday 1 March 2019 and applications should be submitted by 15 May 2019.

The 'How to apply online workshops' are aimed at those farmers who will be submitting an online application this year and have had limited or no experience of DAERA's Online Services, and would like or need help with making changes to their maps.

The workshops will be held weekly (based on demand) in CAFRE campuses beginning on 12th March and continuing through to the 15 May 2019.

There is no charge to attend a workshop, however pre-booking is required by contacting 028 7131 9955. Days and times are as follows;

- CAFRE Enniskillen Campus each Tuesday (from 12th March) 6.00pm - 8.00pm
- CAFRE Loughry Campus each Wednesday (from 13th March) 6.00pm - 8.00pm
- CAFRE Greenmount College each Thursday (from 21st March) 6.00pm - 8.00pm

The workshop format commences with a presentation by DAERA trainers followed by a more pro-active “hands on” training between DAERA trainers and attendees resulting in a majority of attendees submitting their applications on the night.

Applicants should note that DAERA will pay Direct Payments for the 2019 scheme year on the same basis as before. Rules derived from current EU legislation for the Basic Payment Scheme, Greening and Young Farmer payment will apply throughout the whole of 2019.

Book your place now - contact 028 7131 9955

Keep up to date with your Area-based Schemes news and information!
To receive emails and/or texts log into DAERA Online Services:
www.daera-ni.gov.uk/services/daera-online-services and go to “My Details”

To receive texts only - Text ABS to 67300 • Unsubscribe at any time.

For more information on your single application visit the DAERA website on:
www.daera-ni.gov.uk/topics/grants-and-funding/area-based-schemes-2019-0
Follow us on Twitter at twitter.com/daera_ni

Make Wise Use of Chemical Fertiliser for Grass Production - Latest Findings from AFBI

Dr John Bailey, Agri-Environment Branch, AFBI.

Don't apply phosphate (P_2O_5) fertiliser if you don't need it!

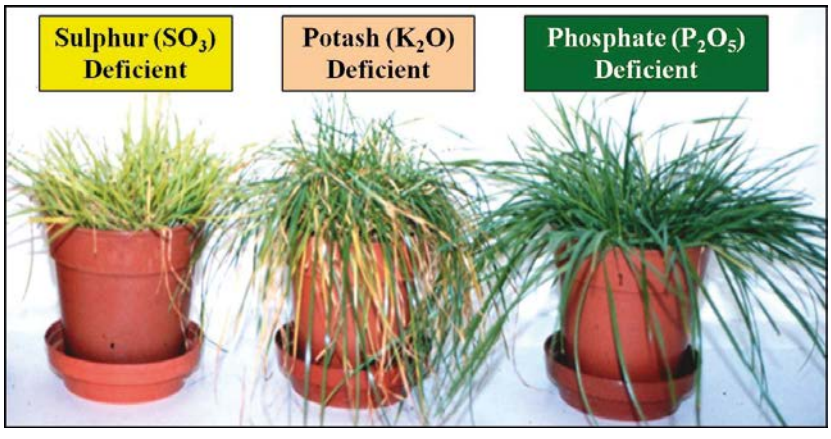
Chemical fertilisers and manures need to be applied to grow swards for cutting or grazing. Unfortunately, very few grassland farmers soil-test, and therefore most are completely 'in the dark' regarding the nutrient status of their soils.

A recent AFBI soil survey of more than 500 grassland farms across Northern Ireland indicated that more than 40% of fields, across all classes of farmland, are over-supplied with phosphorus (P). In some situations this has occurred because expensive NPK compound fertilisers have been applied routinely to cut or grazed swards, even though more than enough P has been present in soil and/or slurry to meet crop requirements. In other cases, P-containing fertilisers have been targeted at under-performing fields in the mistaken belief that these are suffering from phosphate deficiency.

It is **highly unlikely** that under-performing silage swards are being curtailed by phosphate deficiency. Provided phosphate in slurry is being recycled back to cutting land, there ought to be more than enough in both soil and manure to meet crop requirements without the need for additional fertiliser phosphate.

Yellow grass does NOT indicate phosphate (P_2O_5) deficiency!

If adequate nitrogen (N) is being applied to swards, under-performance could be due to sulphur (SO_3) or even potash (K_2O) deficiency. Farmers often assume that yellowing of swards is symptomatic of phosphate deficiency, when in fact it is almost certainly the result of either sulphur or nitrogen deficiency. Swards acutely deficient in sulphur are pale green to yellow; potash deficient swards have distinctive 'brown paper' discoloration of older leaves, whereas phosphate deficient swards are **DARK GREEN** – not yellow.



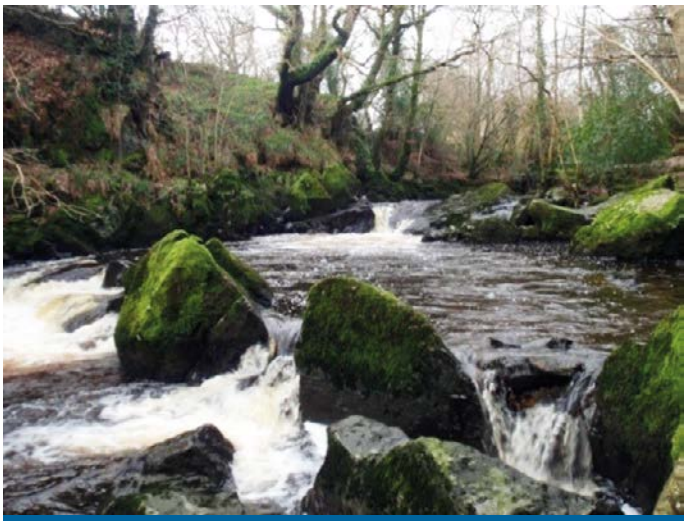
Phosphate-deficient grass is neither yellow nor brown - it is dark green.

Overuse of phosphate containing fertilisers is causing water pollution.

In the past, sulphur deficiency was primarily confined to sandy soils, and typically occurred during summer. Today, however, it is widespread on both sandy and clay textured soils, and is now most prevalent in spring. Consequently, **AFBI recommends applying 25 kg SO_3/ha, routinely, as sulphur-containing fertiliser (NS or NKS) to ALL silage swards in SPRING, even to those where slurry has been applied.**

Act responsibly, protect the environment and save money.

Only 37% of waterbodies in NI are at "Good" status or better under Water Framework Directive classification. A major cause of poor water quality in our rivers and lakes is excess phosphorus from agricultural sources. Although use of phosphate fertilisers declined dramatically from 2000, in the last 5 years it has increased again, and there is now evidence that water quality is deteriorating. Therefore continued over-use of phosphate-containing fertilisers is likely to lead policy makers to tighten regulations.



Manage nutrients wisely and responsibly to help improve water quality.

To protect the farming industry and the environment, and prevent further regulation, farmers must manage nutrient inputs wisely and responsibly. Only use phosphate-containing fertilisers when there is definitely a phosphate requirement that cannot be met using organic manure.

Nutrient analysis of slurry

Stephen Gilkinson, Intensive Livestock & Crops Technology Branch, DAERA.

In Northern Ireland, the majority of excreta from housed livestock is collected and stored as slurry; a mixture of urine, faeces, waste feed, possibly some bedding and often diluted with water from parlour washings, yards etc. It is estimated that there is approximately 10 million tonnes of slurry collected each year in Northern Ireland. The nutrients in slurry/manure on your farm have been paid for by you, the farmer, through purchased feed and fertiliser brought onto your farm. However, slurry is sometimes viewed as a 'waste to be disposed', rather than a 'resource to be managed'. By viewing slurry as a resource and applying the nutrient management steps as outlined below, it is possible to have a win/win situation: more crop production for the same input, whilst also reducing negative environmental impacts of farming activities, such as nutrient pollution of waterways.

The 4 steps of nutrient management are:

1. What is in the soil, (nutrient indexes from soil analysis)?
2. What is the crop nutrient requirement?
3. What nutrients were applied in manures/slurries?
4. What type and quantity of bagged fertiliser is needed as a top-up?

Slurry analysis

Nutrient content of slurry can be highly variable and is affected by many parameters, including but not limited to: type of animal, type of diet fed and amount of water added. Standard 'book values' can be used to get an estimate of nutrient content, but actual nutrient content could be quite different from book values for the reasons outlined above. Various methods have been, or are being developed to assess slurry nutrient content. They all have their pros and cons. Laboratory analysis of slurry could be considered the 'gold standard', as it gives accurate results for the sample tested. However, the sample tested may not be representative of the store contents, even if mixing has taken place, turn-round time can be up to 2 weeks, by which time the store may be emptied and cost of analysis is also a factor. NIRS inline analysis has been developed for tankers and umbilical systems, but is not widely utilised and is only likely to be available through a contractor.

A simple method to assess slurry nutrient content has been developed by CAFRE which is cheap, quick and easy to do.

It indirectly measures slurry dry matter content, which is closely correlated to nutrient content.

Steps to follow

1. Obtain a well-mixed sample of slurry: (do not forget health and safety considerations)
2. Pour 500ml into a measuring jug or similar.
3. Slowly empty container onto level surface at ground level.
4. Measure the diameter of the slurry puddle, (take average of several measurements, in centimetres).
5. Transfer this average diameter figure (centimetres) into the 'cattle slurry dry matter and nutrient content predictor application', (via DAERA online services/business tools/slurry and dirty water management), this will give an approximation of slurry dry matter, N, P and K content. If application method and season of year are entered, the approximate bagged fertiliser value of the slurry nutrients will be shown as well.

The process can be repeated at regular intervals during slurry spreading. A short video demonstration on the methodology is available at:
www.cafre.ac.uk/industry-support/knowledge-transfer/project/slurry-management/

Having an estimate of the nutrient content of slurry being applied is a good step, but do not forget that a reasonable estimate of the application rate is also important, so that the actual amount of nutrients applied can be assessed and the subsequent bagged fertiliser application reduced accordingly.

Once you know the nutrient content of your slurry then use the Crop Nutrient Calculator program, available under CAFRE Nutrient Calculators in DAERA Online Services to select the appropriate fertiliser type and application rate for your crop.

Summary

Slurry is a valuable resource; use it wisely to save you money and the environment.
Nutrient analysis is a tool that can help with this process.

Environmental Farming Scheme (EFS)

Terence Henry, Countryside Management Delivery Branch, DAERA.

Making your claim on 2019 SAF

EFS Tranche 1 and Tranche 2 agreement holders are reminded that claims for the Scheme in 2019 must be made through the Single Application and Maps Service by 15 May 2019. However, the EFS claim function element of the 2019 Single Application Form will not be available until a date in April.

DAERA will keep you informed about this. It is important to note that you can submit your 2019 SAF and amend it, without penalty, up to and including the closing date 15 May.

Tranche 1 Agreement holders- what do I do?

All Tranche 1 Agreement holders are now in Year 2 of their five year agreement and you must make a 'claim' for all the EFS options you have completed on the Single Application and Maps Service each year until the end of your agreement, even if you have been paid for certain options in Year 1. For example, if you completed the tree enhanced boundary option you will have been paid in full in Year 1, unless there were issues identified at inspection. However, the SAF will ask you to 'declare' the amount of tree enhanced boundary option you have maintained in 2019. This is because the options paid for in Year 1 must be retained and managed for the duration of the agreement and any required records kept.

Tranche 2 Agreement holders – what do I do?

Tranche 2 agreement holders must also make their EFS claim on the Single Application and Maps Service. The claim will be based on your agreement. When completing your SAF, **only claim for EFS work you will have completed by the date specified on each Information Sheet for Wider options or on your Higher Level agreement**. For example, if 6.00 ha of Primary Rush Control is on your agreement, but you only managed to complete 4.23 ha to the standard required you must only claim 4.23 ha. On your claim you will be asked to declare if the work has been completed at the time of your claim. Remember that you can reduce your claim at any time provided you have not been notified of an inspection or informed that something is wrong with your claim. Use an EFS SAF3 form for this.

Things to remember!

- You must claim your EFS payment on the 2019 SAF.
- Claim data will be available from mid-April.
- You must claim for an option or declare that you have maintained the quantity you claimed for in Year 1.
- All options established under EFS can be inspected at any time during the agreement period. The quantity of each option claimed should be present and maintained to the set standards otherwise penalties may be applied.
- Claims can be reduced after the 1 June by submitting an EFS SAF3.

Avoid TB testing breaches.

Kate McAllister, Veterinary Service Animal Health, DAERA.

It is a Cross-Compliance requirement that TB tests are carried out on time as required by legislation. Aside from the Cross-Compliance requirement the current levels of TB infection mean that testing promptly when required to do so is essential to pick up early infection in herds and prevent spread within herds and between herds.

TB herd tests can be done within the 30 days prior to their due date. They are considered overdue if not completed within 7 days after the due date. Currently failure to complete the test within the following 30 days can lead to cross-compliance breaches and disallowances. Letters are always issued in advance of tests to warn herd owners of the due date, and there is a wide window of opportunity to get the test done before failure to test may be considered a breach. Failure to complete the test in time is usually considered to be an intentional breach.

The size of the disallowances for TB testing breaches often comes as a shock to herd owners. In some cases 100% of payments may be disallowed. In order to avoid this you must ensure that testing is carried out in time. Contact your vet well in advance of your due date to get a test date agreed as availability may be limited if arrangements are left to the last minute.

Benefits of Low Emission Slurry Spreading Equipment

Martin Mulholland & Stephen Gilkinson, Intensive Livestock & Crops Technology Branch, CAFRE.

Slurry from housed livestock is a valuable source of plant nutrients; the major nutrients being nitrogen (N), phosphate (P_2O_5) and potash (K_2O). Nitrogen availability is particularly variable and its exact value depends on application method, time of year applied, slurry dry matter content and prevailing weather at spreading. In contrast, for slurry P and K, the fertiliser equivalent is much more consistent and largely unaffected by the parameters mentioned above.

The method and timing of slurry applications are the two main factors that determine the utilisation efficiency of slurry nitrogen by a growing crop, whether grass or arable. Spreading slurry during the growing season, using Low Emission Slurry Spreading Equipment (LESSE) such as the trailing shoe or trailing hose improves the utilisation of slurry nitrogen compared to the traditional splash plate. This is because the volatile N fraction in slurry, (ammonia N) is easily lost to the air, particularly when slurry is spread by splash plate. By using LESSE more N is available to the crop, and also from an environmental perspective, there will be significantly reduced ammonia emissions and this helps to address this area of major concern.

Trailing Shoe Technology

Research at AFBI, Hillsborough has demonstrated that spreading slurry using the trailing shoe method increases utilisation of slurry nitrogen by up to 26% compared to conventional splash plate application systems, with the potential to reduce bagged nitrogen fertiliser rates whilst achieving similar crop yields.
In addition to potential fertiliser nitrogen savings, other benefits of LESSE include:

- Reduced ammonia emissions;
- Potential to reduce phosphorus runoff on flat or gently sloping land;
- A wider window of opportunity to apply slurry before and between silage cuts;
- Option for increased slurry application rates between silage cuts;
- Opportunities to utilise slurry in grazing systems without tainting the grazing sward, (ideally slurry should only be applied to grazing swards if soil analysis indicates a requirement for P and K);
- Reduced smell from slurry spreading;
- A less visible operation in the countryside (happier neighbours).

Reduced ammonia emissions

A major priority for DAERA is to reduce ammonia emissions from agricultural activities, hence increasing the amount of slurry applied by low (ammonia) emission spreading techniques is an important method that can help to achieve this, whilst also reducing the need for bagged fertiliser N applications, a potential win/win scenario.

Reduced phosphorus runoff

Research work at AFBI Hillsborough has demonstrated a 29% reduction in phosphorus runoff from slurry applied by trailing shoe compared to the splash-plate on gently sloping land. In addition, waiting 10 to 20 days after silage harvesting before applying slurry can reduce phosphorus runoff by 50% as a result of the re-growing grass sward slowing the movement of surface water following rainfall. Such delays are only possible with the wider application window presented by trailing shoe or trailing hose technologies.

Wider slurry application window

Research trials at AFBI, Hillsborough indicate yield benefits from trailing shoe slurry application up to 3 weeks after the silage harvest, without any detrimental impacts on the quality of silage made from subsequently ensiled grass re-growths. This wider window of opportunity also applies prior to first cut silage in March or early April, when farmers would traditionally have been reluctant to apply late slurry applications to silage swards.

Sloping Ground and potential run-off

On moderate to steeply sloping fields, especially of low permeability, (clay soils), there is a greater risk of run-off from trailing shoe or trailing hose if the bands of slurry are applied down the slope, compared to splash plate applications. AFBI research showed a 19% increase in phosphorus run-off on a grassland drumlin site from trailing shoe compared to splash plate. This increased risk of run-off can be reduced by application across the slope (if it is safe to do so, given the field slope and ground conditions) and particularly by delaying application when run-off events are more likely, (wet soils and/or heavy rain post application). Again, the wider window of opportunity for spreading can offset spreading delays and higher grass covers before application provides better protection against run-off and also reduces ammonia emissions.

Reduced smell and visibility in the countryside

Trailing shoe slurry spreading equipment deposits slurry on the soil surface in narrow bands approximately 50mm in width. By comparison, with a conventional splash plate the slurry is spread across the complete sward surface. Trailing shoe spreading reduces the exposure of slurry to the air, reducing ammonia volatilisation and resulting in improved slurry nitrogen utilization. This reduction in ammonia volatilisation also means a reduction in the odour associated with slurry spreading. This combined with slurry deposition on the soil surface means reduced visibility and smell from slurry spreading operations, helping to improve relations between farmers and other rural dwellers!

Nitrogen fertiliser options for 2019

Bryan Irvine, Sustainable Land Management Branch, CAFRE.

AFBI and Teagasc research has shown that there are considerable advantages of using stabilised urea fertiliser for early season dressings over other nitrogen options. Whilst it is the cheapest option per kg of N, urea can suffer from losses in the field due to ammonia volatilisation. Stabilised urea, also known as treated or protected urea, containing additives such as NBPT, has been shown to reduce ammonia volatilisation losses compared to urea by 78.5% on average, whilst maintaining comparable yields to Calcium Ammonium Nitrate (CAN).

Reducing ammonia emissions and greenhouse gases whilst maintaining production is a key target for all NI farmers and DAERA. In other words reducing nitrogen losses through ammonia volatilisation maximises the nitrogen that is available to grow crops and grass. Whilst losses of ammonia from CAN are lower than urea, CAN is vulnerable to loss of nitrogen by one of the most potent greenhouse gases - nitrous oxide (N_2O), and in wet years by nitrate leaching. For spring dressings stabilised urea will release much less ammonia than straight urea, and have significantly lower N_2O emissions than CAN, yet produce reliable yields.

For many producers straight N will be the only requirement this spring for grazing where nutrient levels are optimum. Silage ground with a history of slurry dressings and a correspondingly high nutrient status will have first cut phosphorus and potash requirements met from 33m^3/ha (3000 gallons/acre) of slurry and just require a top-up of straight N fertiliser. (See Figure 1)
Soil analysis should be conducted every four years and this invaluable tool provides the information and confidence to achieve high yields with greater fertiliser efficiency. The appropriate fertiliser rate taking into account soil analysis results and organic manure applications can be calculated by using the CAFRE's Crop Nutrient Calculator available at daera-ni.gov.uk/online services.

Through nutrient management planning CAFRE's farms at Greenmount Campus have sown straight N or N plus Sulphur on all dairy grazing and cutting ground and on the majority of the beef & sheep ground for the past 18 years. At the time of writing urea is priced at approximately 66p/kgN, stabilised urea at 74p/kgN and CAN at 90-96p/kgN, but stabilised urea has been shown to have a consistently similar yield and Apparent Fertiliser Nitrogen Recovery (AFNR) to CAN (See figure 2 & 3 on the following pages).

Figure 1a: Nutrient Management Planning for Silage lands at optimum nutrient status Grazing

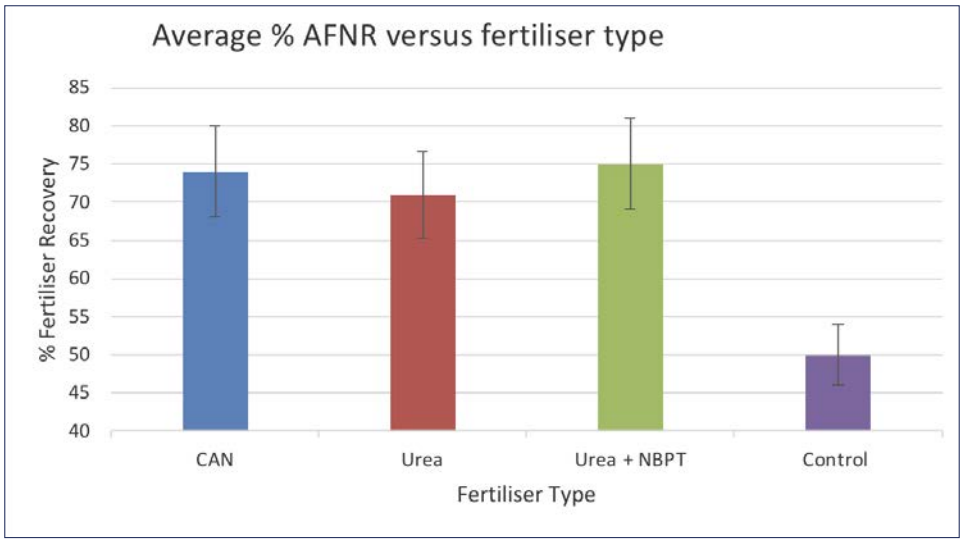
Silage field with soil analysis results of pH 6.0, P 2, K 2-			
	N kg/ha	P_2O_5 kg/ha	K_2O kg/ha
Requirement - Silage 1st cut	120	40	80
Supplied by slurry @33m^3/ha (3000g/acre)	30	40	76
Fertiliser requirement	90	0	0
Recommendation	Straight Nitrogen or a Nitrogen plus Sulphur product.		

Pollution swopping is often a major problem in trying to identify the correct method to proceed because moving from one product or system to another may reduce the target emission but have an unanticipated outcome in creating or causing another issue. However in the case of early season nitrogen fertilisers the situation is clear. Using stabilised urea will reduce ammonia emissions compared to urea, and reduce N_2O compared to CAN at an efficient cost per kg of dry matter production. Stabilised urea products are now available with Sulphur and Potash.

Figure 1b: Nutrient Management Planning for Silage lands at optimum nutrient status Grazing

Grazing field with soil analysis results of pH above 6.0, P 2, K 2			
Requirements	N kg/ha	P_2O_5 kg/ha	K_2O kg/ha
	30 (per dressing)	20	0
Supplied by slurry @~16m³/ha (1500gal/acre)	15	20	38
Fertiliser Requirements	15 for the 1st application	0	0
Recommendation	Straight Nitrogen or a Nitrogen plus Sulphur product. For grazing lands at optimum index of 2 that receives no slurry straight N is still recommended, as adequate P is supplied by the soil release where the pH is above 6.0		

Figure 2: Variation between Apparent Fertiliser Nitrogen Recovery (AFNR) with different N fertiliser options.



Source; Apparent Fertiliser N Recovery (Harty, M.A., Foresstal, P.J., Krol, D.J., Lanigan, G.J., Carolan, R., McKeough, K.L., Laughlin, R.J., Hennessy, D., Elliot, C., Watson, C.J., Richards, K.G. (2016). Nitrogen fertiliser formulation: The Impact on yield and gaseous emissions in temperate grassland. Poster Presentation at 19th Nitrogen Workshop, Skara, Sweden, June 2016).

Figure 3: Grass N uptake variation across 3 soil types at Hillsborough (HB) on clay loam, Johnstown Castle (JP) and Moorepark (MP) on sandy loams over 2 years between different N fertiliser options.

A wide variation between sites and years shows the impact of soil type and weather conditions with 2013 being above average rainfall and 2014 average rainfall at the Hillsborough sites.

Site-year	JC 2013	MP 2013	HB 2013	JC 2013	MP 2014	HB 2014	Avg
Fertiliser	Grass N uptake (kg/ha) and AFNR %						AFNR %
Control	166	184	107	120	194	117	
CAN	313	358	202	265	384	256	74
Urea	280	342	208	249	400	262	71
Urea & NBPT	297	377	217	261	376	262	75

Source; Harty, M.A., Forrestal, P.J., Carolan, R., Watson, C.J., Hennessy, D., Lanigan, G.J., Wall, D.P., Richards, K.G., 2017. Temperate grassland yields and nitrogen uptake are influenced by fertilizer nitrogen source. Agronomy Journal 109, 71-79.

Accurate Spreading

Remember it is essential to change the settings on your fertiliser spreader when switching between products to achieve an appropriate bout width to maximise fertiliser efficiency. Urea is less dense and prill size is 3-5mm, compared to CAN at 5-7mm. Check that discs and vanes are free of mud and in good condition. A tray calibration test can confirm the evenness of fertiliser spread and allow for adjustments.

Managing Pesticides – Information Guide

Leanne Harris, Environmental Farming Branch, DAERA.

Now is a good time of year to plan ahead for managing and using pesticides. It is important to keep up to date with best practice on how to use Plant Protection Products safely and efficiently. That way you will help to protect your own health and others, and the environment. It may also help to reduce your costs. The following information and links will help you to manage pesticides effectively.

Code of Practice

Comprehensive advice on all aspects of using pesticides is contained in the DAERA Code of Practice for Plant Protection Products. The Code explains how to use plant protection products safely and so meet the legal conditions which cover their use.

www.daera-ni.gov.uk/articles/code-practice-using-plant-protection-products

Training, Assessment and Certification

If you are applying professional pesticides you must have an approved certificate of competence. Training, assessment and certification are available from a range of providers including CAFRE. The assessment for the certification must be completed by an assessor who is approved by either City and Guilds or Lantra.

A list of approved certificates is available at: www.daera-ni.gov.uk/articles/specified-certificates-recognised-under-plant-protection-products-sustainable-use

If you are not applying the pesticide yourself, you are responsible for ensuring the person applying them on your land has the necessary certificate of competence. This is a legal requirement under the Plant Protection Products (Sustainable Use) Regulations 2012.

More information on training courses provided by CAFRE can be found at:

www.cafre.ac.uk/industry-support/industry-training/agriculture-industry-training/

Pesticide Product Label

It is the responsibility of all farmers and contractors to ensure that they only use pesticides at the correct rate and method. The law requires that only authorised Plant Protection Products shall be sold, supplied, used, stored or advertised. Therefore it is essential that you fully understand pesticide product labels.

Further information on understanding pesticide product labels can be found on the pesticides section of the DAERA website.

www.daera-ni.gov.uk/publications/pesticide-regulations-guidance

Sprayer Testing Equipment

From 26 November 2016 all pesticide sprayer application equipment, must be tested and certified. To apply for a test, contact the National Sprayer Testing Scheme (NSTS) who is the

approved provider for certification of pesticide application equipment in the UK. For more information and a useful operator check sheet visit www.nsts.org.uk/

Integrated Pest Management (IPM)

IPM is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimises economic, health and environmental risks. The implementation of IPM is a requirement under the Sustainable Use Directive and the application of IPM can save you money as well as reducing environmental impact. DAERA has produced an IPM Guide which is available at: www.daera-ni.gov.uk/integrated-pest-management

Pesticide Storage

Stores should be secure and frost free. The storage needs to be large enough to handle the maximum amount of product likely to be stored. You can get detailed guidance on how you can store pesticides safely and legally from the HSE. This link will take you to a useful guidance sheet:
www.hse.gov.uk/pubns/ais16.pdf

Pesticide Disposal

Despite good management you may have some pesticides that you need to dispose of. You may ask your supplier if they could take back any unwanted, unused pesticides that are packaged, labelled and of good quality. Pesticide concentrates are likely to be 'hazardous waste'. Disposing of this type of waste is tightly controlled and will need a registered carrier, (registered by NIEA) and a licensed waste-disposal contractor. More information can be found on:
www.daera-ni.gov.uk/articles/hazardous-waste

A comprehensive range of information and advice can be found on the DAERA website:
www.daera-ni.gov.uk/topics/plant-and-tree-health/pesticides-use-and-regulations

You can also follow DAERA on Facebook and Twitter.

Other useful information on best practice can be found at:
Voluntary Initiative: www.voluntaryinitiative.org.uk/en/library

Important change to the verifiable standards for Cross-Compliance in the Scheme Year 2019.

Denise Philips, Area-based Schemes Operational Policy Branch, DAERA.

Lapwing nest on the ground in soft, damp improved and semi-natural grassland. *(photo coutesy of D.Brown)*

Cross-Compliance conditions are designed to promote sustainable agricultural practices in Europe and reflect a number of environmental and other objectives. They are good farm management practices and encourage responsible stewardship of the land. There are two aspects to Cross-Compliance:

1. Statutory minimum requirements (SMRs) of which there are 13 which are contained within European regulatory requirements covering the environment, climate change, public health, plant health and animal welfare;

2. The requirement to maintain all land in Good Agricultural Environmental Condition (GAEC) of which there are 7, which have been developed from a framework set out by the European Commission to address protection and management of water, protection of soil and carbon stock and minimum level of maintenance in relation to landscape features and habitats.

With effect from 01 January 2019, Statutory Management Requirement 2 (Conservation of Wild Birds) will apply to **all lands** and all claimants of:

- Basic Payment Scheme
- Greening Payment
- Young Farmers Scheme
- Environmental Farming Scheme
- Forestry Expansion Scheme
- Forest Protection Scheme
- Woodland Investment Grant
- NI Countryside Management Scheme
- Woodland Grant Scheme (agreements signed after 1/1/07)
- Farm Woodland Premium Scheme (agreements signed after 1/1/07)

Snipe nest and feed in soft, boggy unimproved pasture. *(photo courtesy of A.Hay, RSPB)*

Until now, SMR2 has been applied to those claimants who have a Special Protection Area (SPA) on their holding and to Areas of Special Scientific Interest (ASSI). However, following clarification of Directive 2009/147/EC (articles 4(4) and 3(2)(b)), the requirements of SMR2 will now also apply outside SPA and ASSI lands. Additional rules still apply to land designated as an SPA, ASSI. This means that, on all lands declared as part of your farm, **you must not carry out any activities which are likely to result in the disturbance of birds or the deterioration of habitats affecting birds**.

Yellowhammers nest on or close to the ground in ditch vegetation or at the base of short, thick hedgerows and scrub. (photo courtesy of H.Chambers)

Examples of activities likely to cause disturbance of birds and deterioration of habitats affecting birds as applicable to all lands would be conversion of uncultivated lands, large scale habitat clearance, scrub clearance including hedge row removal and significant landscape change.

The 2019 Cross-Compliance Verifiable Standards can be found at: www.daera-ni.gov.uk/publications/cross-compliance-2019. You can get a copy of this document in other formats, such as:

- Large print
- Braille
- Audio CD
- Computer disk
- Other languages

To get a copy of this document in another format, please request a copy by contacting DAERA at:

Area-based Schemes Delivery Support Branch,
Orchard House,
40 Foyle Street,
Derry/Londonderry,
BT48 6AT

Tel: 0300 200 7848

Email: DAERA.Area-basedSchemesDeliverySupportBranch@daera-ni.gov.uk

Curlews nest on the ground in soft, semi-natural grassland. (photo coutesy of K.Billington)

The Importance of Sulphur application in the Spring.

Bryan Irvine, Sustainable Land Management Branch, DAERA.

An unseen sulphur deficiency can decrease nitrogen use efficiency and hit silage and grazing yields by up to 20%. When symptoms become visible a yield penalty of up to 40% may occur. Sulphur is essential for many reactions in the plant and is key to the use of nitrogen in the plant through the formation of amino acids, and therefore the synthesis of protein. Whilst the use of sulphur containing fertilisers has increased dramatically in NI over the past decade it appears that some farmers are not applying sulphur and others applying it at every fertiliser dressing. There is a lot of sulphur in our soils, and notably a fair supply in organic manures, however it is mostly in organic forms such as proteins making up microbial populations, and for it to be mineralised into sulphates for root uptake requires decomposition by the soil biological cycle. As with other nutrients mineralisation from organic to an available form for plant uptake requires a healthy soil with suitable aeration, temperature and pH conditions to drive microbial activity.

Only 30% of sulphur in slurry may become available that season (around 0.4kg/1000 gallons). Whilst by summer there may be a supply of sulphate in the soil solution, it is less likely in the spring and this is when sulphur deficiency in NI mostly occurs. AFBI research showed a rate of 38% deficiency at first cut in dairy farm silage swards compared to 17% at second cut.

The higher the use of nitrogen the greater the requirement for sulphur. Even when slurry has been applied, 25kg of SO_3/ha should be applied to all silage swards in the spring, and 20kg SO_3/ha to grazing swards when around 100kg N/ha is applied.

In the past sulphur was supplied to soils as a by-product through the use of traditional fertilisers and importantly through rain and atmospheric deposition returning pollution from burning wood, coal and oil, but these sources have declined whilst yield requirements have increased. Typically 15kg/ha of sulphur/ha would have been deposited through rainfall each year in the 1970/80s with higher amounts closer to industrial areas.

Nitrogen is used by the plant along with sulphur at a rate of 12:1. A leaf test shows a S deficiency when the N:S ratio rises to over 13:1 or less than 0.25% S in grass dry matter.

Testing for Sulphur

Sulphur behaves like nitrogen with the inorganic form being mobile in the soil solution and therefore prone to leaching with experimental soil losses of up to 130kg/ha/year. However, most sulphur is unavailable to plants as it is locked up in organic forms in humus and microbial protein. A winter soil test will not represent what will be in available form in the spring. Laboratories offer herbage analysis tests ranging from £20-40 which can be used where a 0.5kg of leaf tissue is taken from several sample points across the field in April/May and a Nitrogen/Sulphur ratio identified. An alternative test is to spread half a silage field with a sulphur containing fertiliser and half with your normal spring dressing to see if there is a difference. However with the S containing fertiliser costing only £5-10/ton more and deficiency common, a regular light dressing of sulphur makes sense.

The level of atmospheric deposition of Sulphur onto farmland has declined steadily from 1990 due to the move away from coal fired power generation. Approximately 40% of NI soils are thought to be deficient in Sulphur.

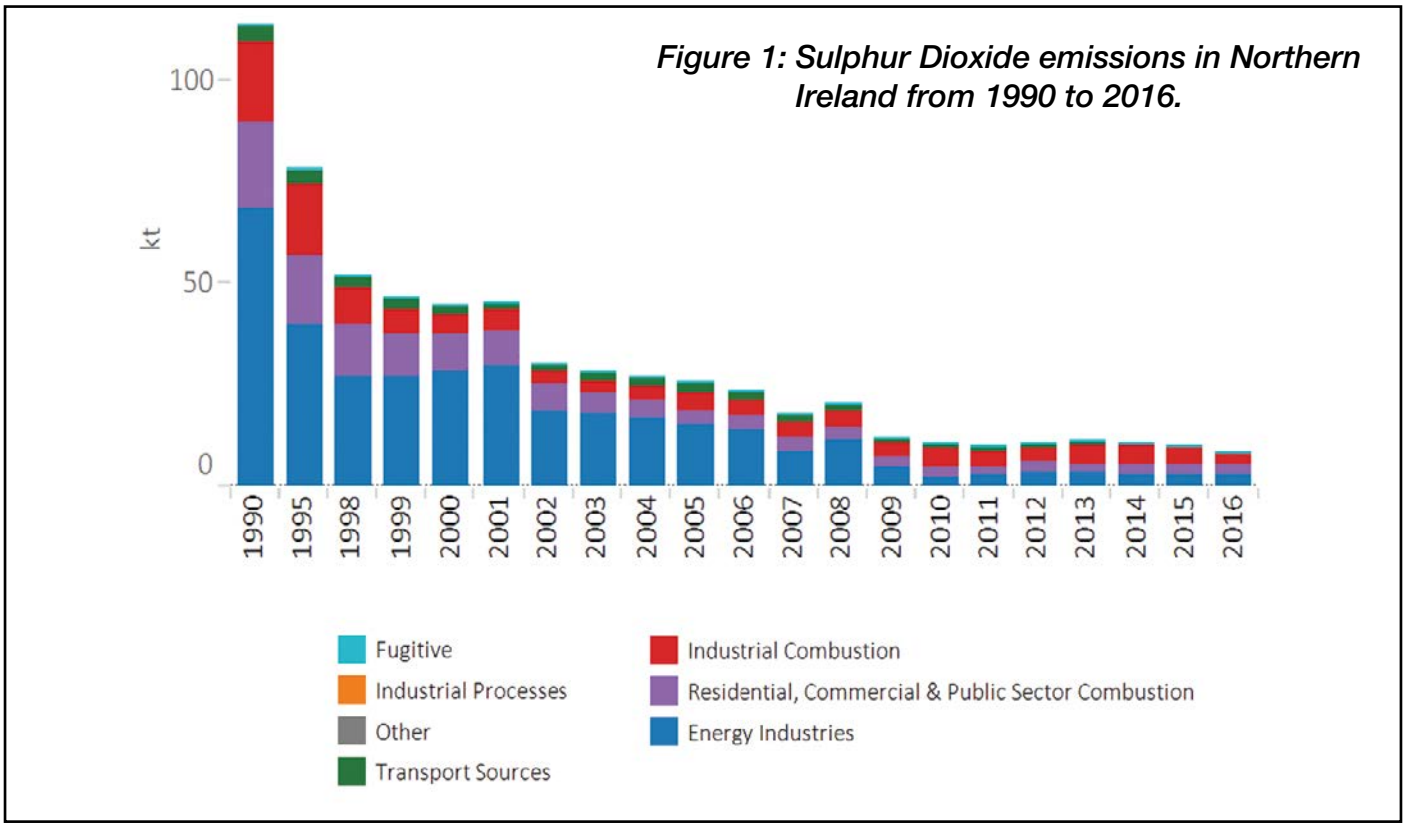


Figure 1: Sulphur Dioxide emissions in Northern Ireland from 1990 to 2016.

Source; National Atmospheric Emissions Inventory. Air Pollution Inventories for England, Scotland, Wales, and Northern Ireland; 1990-2016.

Visible symptoms of sulphur deficiency are unlikely to be seen unless in extremes but are similiar to nitrogen deficiency with yellowing in younger leaves. (Photo courtesy of S.Higgins, AFBI)

Recent Update on Water Quality Shows More Action Needed on Phosphorus

Siobhan Bowers, Environmental Farming Branch, DAERA.

Fencing to prevent cattle accessing rivers and causing pollution.

The Water Framework Directive (WFD) requires us to achieve at least "good" status of our water bodies and prevent deterioration of water quality. Only 37% of Northern Ireland water bodies are currently at "good" status or better, with a target of up to 70% by 2021.

However, the recently published WFD status update shows that little progress has been made in improving water quality since 2015. The percentage of Northern Ireland's 450 rivers classified as "good" or better declined from 32.7% in 2015 to 31.3% in 2018.

The "basic" agricultural measure for the WFD is the Nitrates Action Programme and Phosphorus Regulations. The key "additional" agricultural measure is the Environmental Farming Scheme (EFS). It provides support for water protection measures, including the creation of riparian margins or buffer strips, and fencing of watercourses.

However, despite the range of measures aimed at reducing pollution from agricultural sources, the recent WFD status report shows that phosphorus levels in some rivers are rising and were the key reason for the deteriorations observed in 2018. The areas where water quality has declined will also be the focus of further investigations. Therefore, to help improve water quality, more effort is needed to manage phosphorus inputs to farms in chemical fertilisers and concentrate feeds. Poor farmyard management and run off of slurry and effluent is also causing water pollution.

What can be done?

Stop and think

- Do you need to apply chemical phosphate fertiliser to your land?
- Do you know the soil index of your land?
- How much concentrate feed are you using?
- What is your farm phosphorus balance?
- What is the water quality like near your farm?

Here are some useful actions you can take to help improve water quality.

Actions to help improve Water Quality and Nutrient Management:

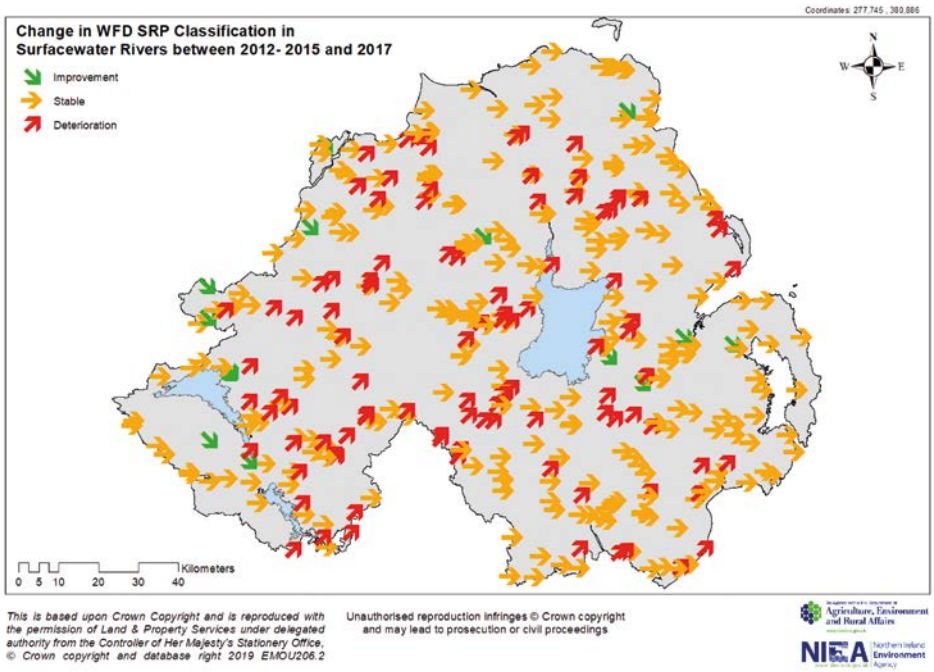
- Find out what water quality is like near your farm by visiting the following website appsd.daera-ni.gov.uk/RiverBasinViewer/
- Regularly check the streams, sheughs and water courses around your farmyard for signs of pollution.
- Manage your farmyard - keep yards cleaned. Regularly maintain and check effluent collection facilities. Ensure tanks don't leak or overflow.
- Do not spread slurry within 10m of watercourses.
- Ensure you comply with the Nitrates Action Programme and Phosphorus Regulations to manage manures and chemical fertilisers efficiently.
- Calculate your farm phosphorus balance at:
  www.daera-ni.gov.uk/services/daera-online-services
- Regular soil testing is essential for the efficient management of nutrients on your farm and should reduce fertiliser costs. Soil testing must be carried out if P rich manures are spread which can include digestate, pig slurry or poultry litter. The CAFRE leaflet, ***'Five Steps to Managing Nutrients'***, helps you to understand the information on your soil analysis report, so you can develop a nutrient management plan for your farm. The leaflet is available on the DAERA website under publications.
- Are livestock accessing watercourses, poaching the banks and causing pollution? If so, fence off the area and create a riparian margin of buffer strip.
- Improve concentrate feed use efficiency through increasing forage yields and quality. Reducing concentrate feed levels, will help to increase farm profits and reduce phosphorus surpluses.

A comprehensive guidance booklet on the Nitrates Action Programme and Phosphorus Regulations, and details of the Environmental Farming Scheme are available on the DAERA Website:
www.daera-ni.gov.uk

EFS includes support for creation of riparian margins and pasture pumps.

Phosphorus levels in some rivers are rising and causing water quality to deteriorate.

The chart shows that a number of sites throughout Northern Ireland are exhibiting increased Soluble Reactive Phosphorus (SRP) levels. This is causing a deterioration in SRP status when assessed using Water Framework Directive (WFD) criteria, as illustrated by the red arrows on the chart. A deterioration is a decline in status of one or more classes on the 5 band WFD ecological scale – High, Good, Moderate, Poor or Bad.



Revised figures on the nutrient content of poultry litter for the Nitrates Action Programme (NAP)

Revised figures on the nutrient content of poultry litter for the NAP should be used from 1 March 2018. They are based on research by the Agri Food and Sciences Institute. These were published in FAS News Issue 10, which can be accessed at https://www.daera-ni.gov.uk/publications/farm-advisory-system-fas-newsletter

These revised figures now include seven new categories of poultry: broiler breeders 0-18 weeks, broiler breeders 18-60 weeks, broilers (hot water heating), free range broilers (Day old to Death), turkeys 6 weeks-kill, pullets and free range laying hens.

If you are a farmer using the revised figures, the new N and P excretion rates, along with the nutrient content of the associated litters means the amount of poultry litter to be exported from / imported to your farm, to comply with the NAP 170kg N/ ha/year limit, may change and in some cases be reduced.

From March 2018, you will have been able to calculate the nitrogen loading for your farm with the revised poultry figures using the online farm nitrogen loading calculator. Log onto the CAFRE Nutrient Calculators at www.daera-ni.gov.uk/onlineservices to access the calculator.

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