



The Fertilizer Association of Ireland,  
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Cork.

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Water Quality Section,  
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Wexford.

11<sup>th</sup> June, 2013

**Re: Submission from the Fertilizer Association of Ireland -  
Second Review of Ireland's Nitrates Action Programme.**

To Whom It May Concern,

The Fertilizer Association of Ireland is a representative body that promotes the efficient use of fertilizer to produce quality food in an economical and environmentally sustainable manner. Our members are drawn from the entire agricultural industry, and include farmers, agribusiness, fertilizer industry, government officials, advisors, researchers and university academics.

As an association, we acknowledge and support the spirit of these regulations in promoting benefits of responsible and efficient nutrient management, both from the perspective of agronomic efficiency of inputs, and of environmental protection. Unfortunately, the usage of fertilizers in agricultural systems has, in the past, been incorrectly seen as synonymous with pollution and negative environmental impact. There has also been an overall consensus within agri-environmental policy instruments that 'less is good' when it comes to nutrient use in agriculture.

However, we contend that the efficient use of fertilizers should be the driving force of policy rather than just reduced application rates *per se*. Within the regulations, allowances must be made to ensure that productive soils and crops are allowed to achieve their full production potential, including the provision of adequate nutrient inputs for soil and crop nutrition. The dramatic reductions in the usage of fertilizer nutrients and the decline in soil fertility on grassland and arable crops, recently reported by Teagasc, highlights the need to adapt the approach to nutrient usage in order to ensure that soil fertility and production potential is not compromised in the future.

We would like to highlight the following specific issues and associated proposals with regard to the revision of the Nitrates Action Programme:

1) Provision for adequate phosphorus fertilizer application rates in grassland systems

There has been a worrying trend of decreasing soil phosphorus (P) fertility levels in recent years. While the decrease in soils with P levels in Index 4 may be a positive and welcome outcome for the environment, the consequential increase in soils with low soil P in the low Index levels (1 and 2) is a cause for concern for farm productivity. To address this, the Fertilizer Association of Ireland are proposing revision to the regulations to permit increased rates of P application that are targeted towards soils with low soil P levels (Index 1 and 2):

- *Availability of P in concentrate feeds – reduce to 50%*

The regulations as they currently stand require that all the P that is contained in concentrate feeds used on the farm is accounted for in available P fertilizer allowances as being 100% equivalent to chemical fertilizer P. This P is in a slowly available organic form when excreted by animals. It is also unevenly distributed when excreted by grazing animals. The Fertilizer Association of Ireland therefore contends that P in concentrate feed cannot logically be assumed to be equivalent to chemical fertilizer P for the purposes of grassland fertilization. While the P is coming onto the farm and may accumulate in soils and benefit grass growth over time, an assumption of availability of 50% would be a more reasonable and workable figure to use for the availability of P in concentrate feeds.

- *Revert to old soil P Index for grassland*

Given the sharp decline in soil P fertility in recent years that has been reported based on Teagasc soil analysis results, the Fertilizer Association of Ireland is questioning the validity of the change in the P Index system for grassland that was brought in by the regulations in 2006. The Association is proposing that the original soil P Index range for Index 2 (3-6 mg/l) and Index 3 (6-10 mg/l) be re-instated. This would provide increased provision for P application in line with grassland requirements, and would reduce the current confusion at farmer and industry level that is induced by having different Index ranges for grassland and tillage soils.

- *Increased soil P build up rates to 40 kg/ha in soil P Index 1 and 20 kg/ha in soil P Index 2*

Given the increase in the proportion of soils in P Index 1 and 2, and minimal provision in the regulations for additional P for build up, the Fertilizer Association of Ireland propose that additional P be permitted in low P soils to increase the rate of build up of P into the agronomically optimal (and yet still low risk environmentally) Index 3. To do this, an increase in the rates of P allowed for soil P build up should be increased from 20 to 40 kg/ha on Index 1 soils, and from 10 to 20 kg/ha on Index 2 soils. While potentially increasing the total P permitted on the farm, this proposal would be very specific in targeting P application to low P soils with the highest demand for P and the lowest environmental risk. This proposal would also incentivise farmers to soil test to identify and correct poorly productive soils with low soil test results.

## 2) Provision for adequate phosphorus fertilizer application rates in tillage systems

- *Application of P to autumn-sown crops*

During the early stages of crop development, (autumn sown) plants have a demand for available P from the soil. This is particularly critical on soils with low nutrient levels (Index 1 and 2), as the background release of nutrients is low on these soils. Teagasc advice at soil P Index 1 is to incorporate P into the seedbed at or before sowing. This is required to aid rapid root and plant development during crop establishment. The optimum sowing date for winter cereals in Ireland is mid October. However, under the current regulations, the application of chemical P fertilizer is not permitted on or after the 15<sup>th</sup> September. This may result in crops sown after this date having insufficient available P for optimum crop establishment, especially in poor sowing conditions. Crops that do not receive adequate P in the early stages run the risk of poor crop establishment and reduced crop nutrient uptake and yield potential due to poor rooting and tillering in the crops. Crops that are well rooted and tillered are more efficient at utilising other nutrients such as N during the growing season and will have higher yield potential as a result, thereby increasing the overall nutrient efficiency in the cropping system. The application of P into the seedbed in autumn would also provide environmental benefits over broadcast application to growing crops in the spring, since the P would be incorporated into the soil, making it less susceptible to run-off losses than P that is surface-applied.

In order to resolve both of these issues, the Fertilizer Association of Ireland is proposing that P fertilizer application should be permitted after 15<sup>th</sup> September where it is incorporated into the seedbed before or during sowing.

- *Phosphorus for high pH soils*

Spring cereals have an early demand for P to meet the needs for both root and tiller development. This is critical especially for spring barley production as the main components of grain yield are established in the early stages in the crop's life cycle (e.g. tiller numbers and grains per square metre). There are a number of Irish soil types (e.g. the Athy series) with soil pH typically being greater than 7.5 due to limestone-rich parent materials. On these soil types, the high soil pH can reduce the availability of soil P due to the fixation of P in calcium phosphates with low water-solubility an plant availability. Consequently, crops sown in soils with test results showing high soil P levels (Index 4) and high soil pH can be P deficient, especially during the early stages of tiller development. This anomaly can arise with the Morgans soil P test due to the chemistry of the test (buffered to pH 4.8) being more suited to acid soils than basic soils. Therefore, the Morgans test can be a less reliable indicator of plant available P in soils with high pH. However, despite this anomaly, the regulation requires that a cereal crop sown in a soil with a Morgans soil test P result in Index 4 is permitted no P fertilizer.

The Fertilizer Association of Ireland proposes that soils with pH (> 7.0) and with soil test P in Index 4 should have an allowance of 20 kg/ha of P to be applied at sowing time to meet the early demand for P by the crop.

- *Phosphorus allowance for forage maize*

The regulation currently states that P fertilizer application is not permitted on forage maize grown on a soil with P Index 4. Phosphorus fertilization plays a key role in the production of high quality forage maize crops. It is recognised internationally that the placement of P in the seedbed at sowing is beneficial for crop establishment, even where soil P levels are high. This is required by maize as it is a crop with a poor rooting structure for nutrient uptake, similar to other crops such as beet, potatoes, swedes/turnips and vegetable crops, which all have a P fertilizer allowance at soil P Index 4 within the regulations. The Fertilizer Association of Ireland proposes that an allowance of 20 kg/ha of P be permitted on maize crops in Index 4 soils. In order to minimise the potential environmental impact, a requirement that this P fertilizer should be incorporated at sowing would reduce the risk of P loss to waters that may arise from this proposal, since P incorporated into the seedbed will pose very little increased risk of loss in surface run-off. The environmental risk is also minimised by restricting the application rate to 20 kg/ha (i.e. 50% of the P offtake rate recommended at Index 3). Therefore, there will still be a net P offtake from the soil, so soil P levels would still gradually decline over time, albeit at a slightly lower rate. This will promote more efficient fertilizer management through increased soil testing and the production of high yielding maize crops grown on Index 4 soils. The application of the low rate of P proposed will also ensure that the utilisation efficiency of other nutrients (such as N) in the maize crop is maximised.

3) Additional N for spring wheat & winter barley

Nitrogen is the key driver of grain yield and profitability in cereal production. Ireland produces some of the highest grain yields due to soil type and climate suitability. Current N rates permitted within the regulations for spring wheat and winter barley are insufficient to satisfy current crop yield potential, and need to be adjusted to take account of the yield potential of modern cereal varieties. The average yield for both spring wheat and winter barley is between 8 to 10 t/ha (spring wheat 8.3t/ha, winter barley 9.0t/ha - CSO).

Cereal crop yields are increasing at an annual rate of 2% per year due to improvements from cereal breeding programmes (new varieties) and crop husbandry techniques. Comparisons of N rates in the regulations compared to recommended N rates in the UK show large differences in permitted N levels and crop reference yields. For example, the reference yield for spring wheat under SI 610 of 2010 is 7.5 t/ha with an N allowance of 140 kg/ha. However, in the UK, spring wheat with a lower reference yield of 7.0 t/ha, has an N allowance of 180 kg/ha (see table below for comparisons). The reference yield for winter barley under SI 610 of 2010 is 8.5 t/ha with an N allowance of 160 kg/ha. However, in the UK winter barley, with a lower reference yield of 6.5 t/ha, has an N allowance of 180 kg/ha.

The following table compares N rates and crop reference yields in regulations in the UK compared with Ireland:

Crop	UK		Ireland	
	Crop N *	Ref Yields (t/ha)	Crop N	Ref Yields (t/ha)
Spring Wheat	180	7.0	140	7.5
Winter Barley	180	6.5	160	8.5

*\*An additional 80 kg/ha of N is permitted where straw or paper sludge is applied.*

This issue has been exacerbated in Ireland in recent years with concerns mounting over the potential of Irish spring wheat to deliver sufficient grain protein concentration to meet the standards required for milling wheat. In addition, the area of winter barley has doubled in the last 5 years and is now taking good rotational positions to maximise grain yield potential of high yielding 2 row, 6 row and hybrid varieties.

To realise the full yield potential of high yielding modern cereal varieties under Irish growing conditions, the Fertilizer Association of Ireland propose that the level of N on spring wheat should be increased by 20 kg/ha at each soil N Index (1 to 4) for a reference yield of 7.5 t/ha. Permitted fertilizer N rates on winter barley should also be increased by 20 kg/ha at each soil N Index (1 to 4) for a reference yield of 8.5t/ha (see table below). Provision for an additional allowance of 20 kg/ha per tonne of grain yield above the reference yield should also be retained within the amendment to the regulations.

Proposed N allowance for Spring Wheat & Winter Barley (kg/ha)				
Crop	N Index			
	1	2	3	4
Spring Wheat (7.5 t/ha)	160	130	95	60
Winter Barley (8.5 t/ha)	180	155	120	80

#### 4) Additional N for grassland following continuous tillage

The supply of N from soil is well correlated to the soil organic matter content. Soils are known to be lower in organic matter following long-term tillage cropping than grassland. Therefore, soils that have been under tillage crops for a number of years will have lower soil N supply than more long-term grassland soils. The Fertilizer Association of Ireland is proposing that this should be taken into account in the N rates that are permitted in grassland when soils are being reseeded to grass following long-term tillage. An additional N allowance for a period of three years (consistent with Teagasc advice) after grassland establishment in these circumstances would permit grass production to be optimised. This should not result in significant increases in leaching since the overall N supply in the soil will not be increased, as the additional chemical N fertilizer input is only replacing the shortfall of N mineralisation that would be higher in longer-term grassland soils.

#### 5) Utilisation of Organic P sources on farms stocked to 170 kg/ha of organic N

The GAP regulations currently prohibit applications of imported animal manures on farms with a derogation. However, these farms are typically the farms with nutrient removals and requirements, and hence could potentially be the best situations to use animal manures such as pig slurry. The Fertilizer Association of Ireland proposes that the prohibition to import animal manures onto derogation farms should be removed for farms that have a requirement for nutrients that could be supplied with these organic fertilizers.

#### 6) Increased flexibility with calendar farming

While calendar farming is a greater issue for organic fertilizer management than for chemical fertilizers, the Fertilizer Association of Ireland acknowledges the frustration and difficulties that are imposed on farmers by a calendar based system of restrictions. The temporary changes to both chemical and organic fertilizer

spreading dates in recent years have proved testimony to the need for a more practical flexible system to be operational. In particular, the early announcement in the recent provision of temporary arrangements where a decision was made to overwrite the regulations is welcome and should be continued and formalised. More permanent solutions to specific issues arising from calendar farming restrictions, such as the restriction to P application in the seedbed of autumn crops at sowing time as outlined in proposal 2 above, should also be addressed in this review of the regulations.

7) Derogation retention

The Fertilizer Association of Ireland acknowledges the importance of the Nitrates derogation to Irish Agriculture. The stocking rate of 250 kg/ha of organic N is critical to achieving the targets set in Food Harvest 2020. The rules and administration governing the Derogation should be simplified to make it more user friendly for the farmer thus ensuring its smooth implementation.

The Fertilizer Association hopes that these proposals can be considered in the constructive manner in which they are intended, and can be implemented within the regulations as part of Ireland's Third Nitrates Action Programme.

Respectfully yours,

Jeremiah Murphy

On behalf of the Environment Sub-committee,

The Fertilizer Association of Ireland.

[www.fertilizer-assoc.ie](http://www.fertilizer-assoc.ie)