



Department of
**Agriculture,
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FAS Training Birr 2009

European Communities
Good Agricultural Practice for Protection of Waters
Regulations 2009



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Manure storage requirements

- | **16/18/20/22 weeks**
- | **Reduced storage**
- | **Rainfall**
- | **Freeboard**
- | **Definitions**



Farmyard Management

What is Soiled Water?

In general any water that comes into contact with

- | Livestock faeces / urine
- | Dairy washings or
- | Chemical fertilisers
- | Vegetable washings



Managing fertilisers and nutrients

Application limit of 170 kg N/ha/yr from livestock manure
DAFF prepares an N and P statement for cattle

- **Total nitrogen produced by livestock divided by net area of the holding (from SPS) is used to determine compliance with the 170 Kg limit**



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Managing fertilisers and nutrients

- | **Fertiliser use should not exceed crop needs**
- | **Fertilisation rates in the Regulations must not be exceeded**
- | **Assume Phosphorus Index 3 unless a soil test shows otherwise (Index 3 applies if >20% O.M)**
- | **In the case of grazing livestock take account of:**
 - **N and P in livestock manures over storage period**
 - **P in concentrates fed to grazing livestock**



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N and P from stored livestock manure

- | Nitrogen¹ / 52 * weeks storage (Zone) *
availability**
- | Phosphorus¹ / 52 * weeks storage (Zone)**
- | Nutrient content specified**

¹From N and P statement

Table 9 Nutrient availability in fertilisers

Fertiliser	Availability ¹ (%)			
		Nitrogen		Phosphorus
		From Jan 1 2008	From Jan 1 2010	From Jan 1 2007
Chemical		100	100	100
Pig and poultry manure		40	50	100
Farmyard manure		25	30	100
Spent mushroom compost		40	45	100
Cattle and other livestock manure (including that produced on the holding)		35	40	100

¹Refers to the year of application

Table 11 Phosphorus index system

Soil Phosphorus index	Soil phosphorus ranges (mg/l)	
	Grassland	Other crops
1	0.0-3.0	0.0-3.0
2	3.1-5.0	3.1-6.0
3	5.1-8.0	6.1-10.0
4	>8.0	>10.0

Table 12 Annual maximum fertilisation rates of available nitrogen on grassland

Grassland stocking rate ¹ (kg/ha/year)	Available nitrogen ² (kg/ha)
≤170	226
Grassland stocking rate greater than 170 kg/ha/year^{3,4}	
171-210	306
211-250	279
<p>¹Total annual nitrogen (kg) excreted by grazing livestock averaged over the net grassland area (ha) (grazing and silage area). Stocking rate refers to grassland area only.</p> <p>² The maximum nitrogen fertilisation of grassland shall not exceed that specified for stocking rates less than or equal to 170 kg/ha/year unless a minimum of 5% of the net area of the holding is used to grow crops other than grass or a derogation applies in respect of the holding.</p> <p>³ This table does not imply any departure from Article 20(1) which prohibits the application to land on a holding of livestock manure in amounts which exceed 170kg Nitrogen per hectare per year, including that deposited by the animals themselves (or 250kg in the case of a derogated holding).</p>	

⁴ The application of Nitrogen from livestock manure (including that deposited by the animals themselves) to the net grassland area shall not exceed 250 kg Nitrogen per hectare per year

Table 13 Annual maximum fertilisation rates of phosphorus on grassland

Grassland stocking rate ¹ (kg/ha/year)	Phosphorus Index			
	1	2	3	4
	Available Phosphorus (kg/ha)^{2,3}			
≤ 130	35	25	15	0
131 -170	39	29	19	0
	Grassland stocking rate greater than 170 kg/ha/year ⁴			
171-210	44	34	24	0
211-250	49	39	29	0

¹Total annual nitrogen (kg) excreted by grazing livestock averaged over the net grassland area (grazing and silage area). Stocking rate refers to grassland area only.

²The fertilisation rates for soils which have more than 20% organic matter shall not exceed the amounts permitted for Index 3 soils.

³ Manure produced by grazing livestock on a holding may be applied to Index 4 soils on that holding in a situation where there is a surplus of such manure

remaining after the phosphorus fertilisation needs of all crops on soils at phosphorus indices 1, 2 or 3 on the holding have been met by the use only of such

manure produced on the holding.

⁴ The maximum phosphorus fertilisation of grassland shall not exceed that specified for stocking rates less than or equal to 170 kg/ha/year unless a minimum of

5% of the net area of the holding is used to grow crops other than grass or a derogation applies in respect of the holding.

⁵ This table does not imply any departure from Article 20(1) which prohibits the application to land on a holding of livestock manure in amounts which exceed

Table 16 Maximum fertilisation rates of nitrogen on tillage crops

Crop	Nitrogen Index			
	1	2	3	4
	Available Nitrogen (kg/ha)			
Maize	180	140	110	75
Field Peas/Beans	0	0	0	0
Oilseed Rape	225	180	160	140
Linseed	75	50	35	20
Swedes/Turnips	90	70	40	20
Kale	150	130	100	70
Forage Rape	130	120	110	90

¹ Where proof of higher yields is available, an additional 20kg N/ha may be applied for each additional tonne above the following yields;

Winter Wheat - 9.0 tonnes/ha

Spring Wheat - 7.5 tonnes/ha

Winter Barley - 8.5 tonnes/ha

Spring Barley - 7.5 tonnes/ha

Winter Oats - 7.5 tonnes/ha

Spring Oats - 6.5 tonnes/ha

The higher yields shall be based on the best yield achieved in any of the three previous harvests, at 20% moisture content.

² Where milling wheat is grown under a contract to a purchaser of milling wheat an extra 30 kg N/ha may be applied

Table 17**Maximum fertilisation rates of phosphorus on tillage crops**

Crop	Phosphorus Index			
	1	2	3	4
	Available Phosphorus (kg/ha) ¹			
Winter Wheat	45	35	25	0
Spring Wheat	45	35	25	0
Winter Barley	45	35	25	0
Spring Barley	45	35	25	0
Winter Oats	45	35	25	0
Spring Oats	45	35	25	0
Sugar Beet	70	55	40	20
Fodder Beet	70	55	40	20
Potatoes: Main crop	125	100	75	50
Potatoes: Early	125	115	100	50
Potatoes: Seed	125	115	100	85



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Managing fertilisers and nutrients

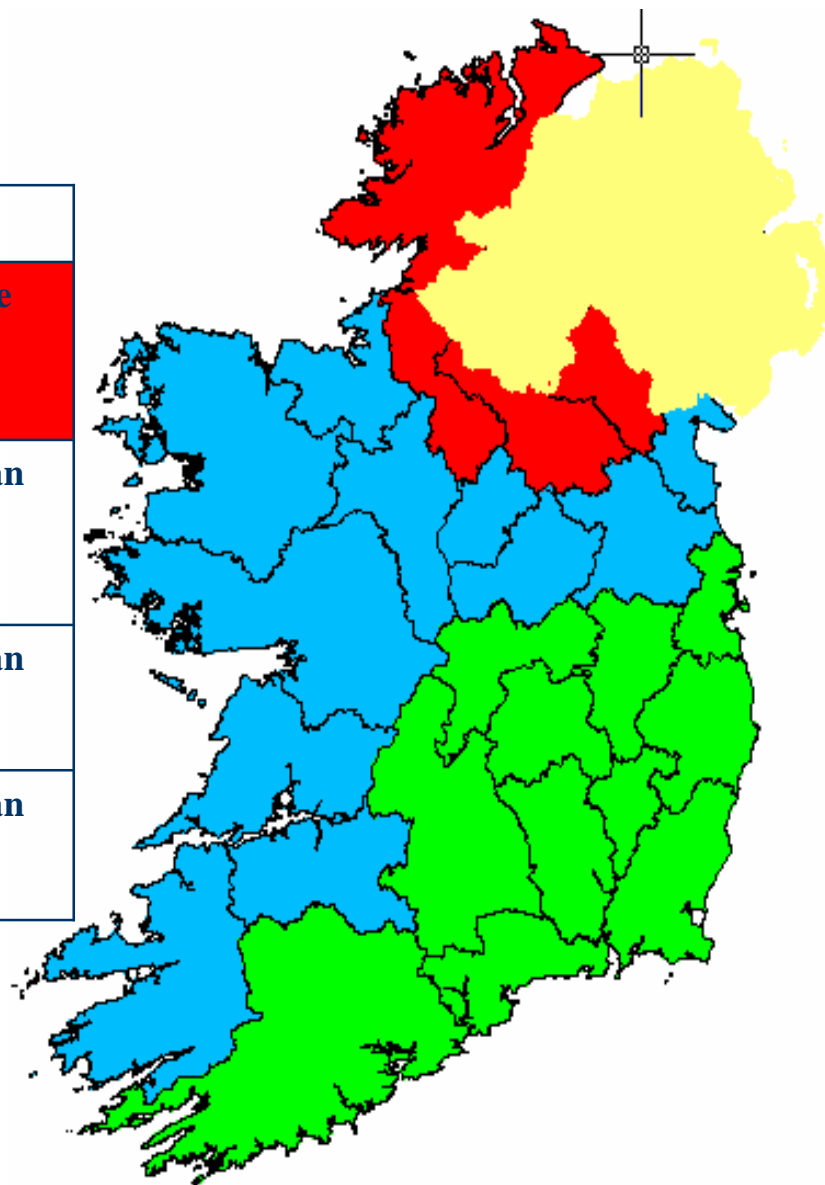
Apply fertilisers and soiled water in a uniform manner

Do not apply when:

- **Land is waterlogged, flooded or likely to flood**
- **Land is snow-covered or frozen**
- **Heavy rain is forecast within 48 hours**
- **The ground slopes steeply**

Prohibited application periods for fertilisers

Fertiliser type	Prohibited application period			
	Start date	Zone A	Zone B	Zone C
Chemical	15 Sept to	12 Jan	15 Jan	31 Jan
Organic	15 Oct to	12 Jan	15 Jan	31 Jan
Farmyard Manure	1 Nov to	12 Jan	15 Jan	31 Jan





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Ploughing and the use of non- selective herbicides

- | Where arable land is ploughed between 1st July – 1st Dec,
a green cover must have emerged within 6 weeks of
ploughing from a sown crop**

- | Where grassland is ploughed between 1st July - 15th Oct,
a green cover must have emerged by 1st Nov from a sown
crop**

- | Grassland must not be ploughed between 16th Oct - 30th
Nov**



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Ploughing and the use of non- selective herbicides

- I Non selective herbicides**

- I Where green cover provided to comply with any of the previous requirements is removed by ploughing or the use of a non-selective herbicide before the 1st Dec, a crop must be sown within 2 weeks**



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Records

- | Total area of the holding**
- | Net area of the holding**
- | Crop areas**
- | Livestock numbers and type**
- | Estimate of annual fertiliser requirement**
- | Quantities and types of chemical fertilisers moved onto or off the holding**



Records

- | **Details of livestock manure and other organic fertilisers moved onto or off the holding**
- | **Copy of any NMP prepared (e.g REPS plan)**
- | **Results of any soil tests**
- | **Description of facilities for the storage of livestock manure, soiled water, FYM, etc.**
- | **Quantities and types of concentrated feedstuff fed to grazing livestock**
- | **Location of any water abstraction point**



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Derogation

- | **Long growing season**
- | **Crops with high N uptake**
- | **High rainfall**
- | **Soils with exceptionally high denitrification capacity**





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Derogation Decision

I **Grazing livestock**

cattle (excluding veal calves) , sheep, deer, goats and horses

I **Annual application to DAFF**

- **Plan on farm by 1 March**



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N crop requirement (guide)

Grassland stocking rate (kg/ha/year)	Available nitrogen (kg/ha)
<100	74
101-110	80
111-120	86
121-130	92
131-140	97
141-150	116
151-160	143
161-170	176



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N crop requirement (guide)

Grassland stocking rate (kg/ha/year)	Available nitrogen (kg/ha)
171-180	203
181-190	237
191-200	275
201-210	306
211-220	279
221-230	279
231-240	279
241-250	279



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P crop requirement (guide)

Grassland stocking rate (kg/ha/year)	Phosphorus Index			
	1	2	3	4
	Phosphorus (kg/ha) ^{2 3}			
<80	29	19	9	0
81-90	30	20	10	0
91-100	31	21	11	0
101-110	33	23	13	0
111-120	34	24	14	0
121-130	35	25	15	0
131-140	36	26	16	0
141-150	37	27	17	0
151-160	38	28	18	0
161-170	39	29	19	0



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P crop requirement (guide)

171-180	41	31	21	0
181-190	42	32	22	0
191-200	43	33	23	0
201-210	44	34	24	0
211-220	45	35	25	0
221-230	46	36	26	0
231-240	48	38	28	0
241-250	49	39	29	0



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Fertilisation plan and accounts

- I Plan revised within seven days of any changes on the farm to ensure consistency between plans and actual agricultural practices
- I Accounts submitted to Johnstown Castle by 1 March each year



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Land management

- | **No manure in Autumn before ploughing grass**
- | **Temporary grassland to be ploughed in Spring**
- | **Ploughed grass to be followed by a high N demanding crop**



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Derogation Conditions

- 1 **No legumes except < 50% clover in grass or peas in arable silage**
- 1 **No imports of livestock manure**
- 1 **100% of applications subject to administrative control**
- 1 **3% of applicants will be inspected**



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Table 1 - Total Nitrogen and Phosphorus produced by grazing livestock on your holding

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Grazing Livestock	(i) Average No	(ii) N kg/head/yr	(iii) Total N (i) X (ii)	(iv) P kg/head/yr	(v) Total P (i) X (iv)
Dairy cow		85		13	
Suckler cow		65		10	
Cattle (0-1 year old)		24		3	
Cattle (1-2 year old)		57		8	
Cattle > 2 years		65		10	
Projected production of Nitrogen			<u>A</u>		
Projected production of Phosphorus					<u>B</u>



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Table 2. Total Nitrogen and Phosphorus produced by non-grazing livestock on your holding

Non-grazing Livestock	(i) Average No	(ii) N kg/head/yr	(iii) Total N (i) X (ii)	(iv) P kg/head/yr	(v) Total P (i) X (iv)
Breeding unit (per sow place)		35		8	
Integrated unit (per sow place)		87		17	
Finishing unit (per pig place)		9.2		1.7	
Laying hen per bird place		0.56		0.12	
Broiler per bird place		0.24		0.09	
Turkey per bird place		1		0.4	
Projected production of Nitrogen			<u>C</u>		
Projected production of Phosphorus					<u>D</u>



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Table 3: Projected Exports (-) of Livestock Manure

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Type	Vol m ³	kg N/m ³	Total N	kg P/m ³	Total P
Total Nitrogen & Phosphorus from Livestock Manure exported			<u>E</u>		<u>F</u>
Total Nitrogen & Phosphorus from livestock manure to be applied on the holding (kg)			<u>G</u>		<u>H</u>

NB: Livestock manure may not be imported on to a derogation holding.

Table 4 - Animal Housing

Existing facilities		Dimensions		Floor Area	No and Category of Stock to be Housed
Ref No	Describe Building*	Length	Width		

*Identify straw-bedded houses



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Table 5 - Manure Storage Facilities

Manure Storage Facilities*		Dimensions			Capacity	
Ref No	Type	Length	Width	Depth	Slurry	FYM
Note: Free board must be deducted for all storage tanks 4 200mm for covered tanks 4 300mm for open tanks					Total Capacity	

* Identify straw-bedded houses

Soiled Water Storage Facilities*		Dimensions			Capacity
Ref No	Type	Length	Width	Depth	
Total Capacity					



Table 6 – Estimate of annual phosphorus fertiliser requirement

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Grassland Stocking Rate		kg N/ha/yr		Whole Farm Stocking Rate		Kg N/ha/yr	
Soil Sample ¹¹¹ Identification (all land farmed)	CROP ²	Field or LPIS Plot Number	Soil Sample ³ Area in Ha	Actual Soil P Index ⁴	Crop Requirement kg available P/ha	Total Available P/Plot kg	
Plots not soil tested							
				Total Available P required on holding		<u>↓</u>	

Additional Notes

¹¹¹ You are required to provide soil analysis if available, in any event the results of a soil analysis must be provided at least once in every 4 years. **NB: If you are joining REPS, check REPS conditions:**

² Please indicate whether winter or spring crop

³ Subject to (1) above at least one analysis per 5 hectares shall be required

⁴ Assume Index 3 where no valid soil test result available



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Table 7 - Estimate of available nitrogen for crop requirements

Soil Sample ¹ Identification (As per Table 6)	CROP ²	Field and/or LPIS Plot Number	Soil Sample ³ Area in Ha	N Index (tillage crops only)	Crop Requirement kg available N/ha	Total Available N/Plot kg
Total Available N required on holding						<u>K</u>
* You must provide a sketch map indicating location of individual fields, NB: If you are joining REPS, a sketch map will not suffice, check REPS requirements						

Projected available nitrogen and phosphorus produced by grazing livestock over the storage period
Projected phosphorus contained in concentrates to be fed to grazing livestock

Additional Notes

Nitrogen kgs	Phosphorus kgs
<u>L</u>	<u>M</u>
	<u>N</u>

[1] You are required to provide soil analysis if available, in any event the results of a soil analysis must be provided at least once in every 4 years. **NB: If you are joining REPS, check REPS conditions re soil tests**

² Please indicate whether winter or spring crop

³ Subject to (1) above, at least one analysis per 5 hectares shall be required



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Table 8 – Planned Nitrogen and Phosphorus application

Soil sample identification ¹ <small>(As per table 6)</small>	CROP ²	LPIS/ Field No	Crop Area (ha)	ORGANIC Fertiliser <i>(Livestock manure derived from housing)</i>				CHEMICAL Fertiliser					
				TYPE ³	Available N from organic fertiliser (kg/ha)	Available P from organic fertiliser (kg/ha)	Organic fertiliser (M ³ or litres or tonnes/ha) Please state units used	Nitrogen		Phosphorus			
								Chemical N (kg/ha)	Total Chemical N (kg)	Chemical P (kg/ha)	Total Chemical P (kg)		
Total Chemical N and P required for the holding:										O		P	

In the case of soiled water please specify suitable fields and method of application: _____

¹ You are required to provide soil analysis if available, in any event the results of a soil analysis must be provided at least once in every 4 years. **NB: If you are joining REPS, check REPS conditions re soil tests**

² Please indicate whether winter or spring crop

³ Describe the type of organic fertiliser to be applied e.g. cattle slurry, FYM etc



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