

SCHEDULES

SCHEDULE 1

Regulations 3(2), 9(2) to (5), 10,11, 12(4) and (7), 13(2),20(3) and (6) and 25(2)

Criteria for nutrient management

Table 1a

Regulations 9, 12 and 20 - Nitrogen (N) and phosphorus (P) excretion rates for grazing livestock

<i>Livestock type</i>	<i>Nitrogen (N) produced per head per year (kg N/yr)</i>	<i>Phosphorus (P) produced per head per year (kg P/yr)</i>
Cattle		
Dairy cow	91	17
Dairy heifer (over 2 years)	54	10
Dairy heifer (1-2 years)	47	7.9
Beef suckler cow (over 2 years)	54	10
Breeding bull	54	10
Cattle (over 2 years)	54	10
Cattle (1-2 years)	47	7.9
Bull beef (0-13 months)	30	7.5
Bull beef (6-13 months)	23	5.8
Calf (0-1 year)	19	4.7
Calf (0-6 months)	7.0	1.7
Calf (6-12 months)	12	3.0
Sheep		
Ewe (over 1 year)	9.0	1.0
Ram (over 1 year)	9.0	1.0
Lamb (0-6 months)	1.2	0.3
Lamb (6-12 months)	3.2	0.3
Lamb (0-1 year)	4.4	0.6
Deer		
Deer (red) 6 months - 2 years	12	2.0
Deer (red) over 2 years	15	4.0

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<i>Livestock type</i>	<i>Nitrogen (N) produced per head per year (kg N/yr)</i>	<i>Phosphorus (P) produced per head per year (kg P/yr)</i>
Deer (fallow) 6 months - 2 years	7.0	1.0
Deer (fallow) over 2 years	13	2.0
Deer (sika) 6 months - 2 years	6.0	1.0
Deer (sika) over 2 years	10	2.0
Horses		
Horse (over 3 yrs)	50	9.0
Horse (2-3 yrs)	44	8.0
Horse (1-2 yrs)	36	6.0
Horse (under 1 yrs)	25	3.0
Donkey / small pony	30	5.0
<i>Livestock type</i>	<i>Nitrogen (N) produced per head per year (kg N/yr)</i>	<i>Phosphorus (P) produced per head per year (kg P/yr)</i>
Goats		
Milking goats	15	1.7
Non milking Goat	9.0	1.0
Kid (0-1 year)	4.4	0.6
Kid (6-12 months)	3.2	0.3
Kid (0-6 months)	1.2	0.3

Table 1b

Regulations 9 and 12 - Nitrogen (N) and phosphorus (P) excretion rates for pigs

<i>Livestock type</i>	<i>Nitrogen (N) produced per head per year (kg N/yr)</i>	<i>Phosphorus (P) produced per head per year (kg P/yr)</i>
Adult pigs		
Boar	18	4.2
Maiden gilt	11	5.7
Breeding sow ⁽¹⁾	16	8.7
	<i>Nitrogen (N) produced per pig (kg N)</i>	<i>Phosphorus (P) produced per pig (kg P)</i>
Pigs weaned at 3-4 weeks		

(1) Breeding sows includes served gilts, dry and lactating sows and piglets to weaning.

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<i>Livestock type</i>		<i>Nitrogen (N) produced per head per year (kg N/yr)</i>	<i>Phosphorus (P) produced per head per year (kg P/yr)</i>
Approximate start weight (kg)	Approximate sale / transfer weight (kg)		
6-8	18 (7.5 weeks)	0.09	0.08
6-8	35 (11 weeks)	0.38	0.23
6-8	10 (23 weeks)	2.38	1.09
Growing and finishing pigs			
Approximate start weight (kg)	Approximate sale / transfer weight (kg)		
18	35	0.29	0.15
18	105	2.30	1.00
35	105	2.00	0.85

(1) Breeding sows includes served gilts, dry and lactating sows and piglets to weaning.

Table 1c
Regulations 9 and 12 - N and P excretion rates for poultry

<i>Livestock type</i>	<i>Nitrogen (N) produced per 1000 birds per crop (kg N)</i>	<i>Phosphorus (P) produced per 1000 birds per crop (kg P)</i>
Broilers (1000's)	40	8.4
Male turkeys (1000's)	611 ⁽¹⁾	254 ⁽¹⁾
Female turkeys (1000's)	363 ⁽¹⁾	104 ⁽¹⁾
Fattening ducks (1000's)	139 ⁽¹⁾	65 ⁽¹⁾
Broiler breeders (1000s) 0-18 wks	5.9 ⁽¹⁾	2.1 ⁽¹⁾
Broiler breeders (1000s) 18-60 wks	21 ⁽¹⁾	7.6 ⁽¹⁾
Broiler breeders (1000s) 0-60 wks	19 ⁽¹⁾	6.8 ⁽¹⁾
Pullets (1000s)	5.7 ⁽¹⁾	2.1 ⁽¹⁾
Layers (1000s)	12 ⁽¹⁾	4.6 ⁽¹⁾

(1) Values that may change if further research into poultry manure nutrient content is carried out.

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Table 2

Regulations 3, 9, 12 and 13 - Total nitrogen (N) and phosphorus (P) contents of fertilisers and proportion of total phosphorus to total nitrogen (all on a fresh weight basis)

<i>Liquid/slurry manure types</i>	<i>Dry matter content (%)⁽¹⁾</i>	<i>Total nitrogen (N) content by volume (kg N/m³)⁽¹⁾⁽²⁾</i>	<i>Total phosphorus (P) content by volume (kg P/m³)⁽¹⁾⁽²⁾</i>	<i>Proportion of total phosphorus to total nitrogen</i>
Liquids				
Dirty water	0.5	0.5	0.04 ⁽³⁾	0.08
Cattle slurries				
	2	1.6	0.26	0.16
Cattle slurry	6	2.6	0.52	0.20
	10	3.6	0.79	0.22
Separated cattle slurries (liquid portion)				
Strainer box	1.5	1.5	0.13	0.09
Weeping wall	3	2.0	0.22	0.11
Mechanical separator	4	3.0	0.52	0.17
Pig slurries				
	2	3.0	0.44	0.15
Pig slurry	4	3.6	0.79	0.22
	6	4.4	1.13	0.26
Separated pig slurry (liquid portion)	3	3.6	0.70	0.19
<i>Solid manure type</i>	<i>Dry matter content (%)</i>	<i>Total nitrogen content by weight (kg N/t)</i>	<i>Total phosphorus content by weight (kg P/t)</i>	<i>Proportion of total phosphorus to total nitrogen</i>
Poultry manures				
Broiler litter	66	33	7.0	0.21
Layer manure	30 ⁽⁴⁾	16 ⁽⁴⁾	5.7 ⁽⁴⁾	0.36
Turkey litter	60 ⁽⁴⁾	30 ⁽⁴⁾	11 ⁽⁴⁾	0.37
Duck manure	25 ⁽⁴⁾	6.5 ⁽⁴⁾	2.4 ⁽⁴⁾	0.37

(1) Figures in bold are the most common values.

(2) For calculation purposes assume 1m³ of slurry weighs 1 tonne.

(3) Guideline value for information only.

(4) Values that may change if further research into poultry manure nutrient content is carried out.

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<i>Solid manure type</i>	<i>Dry matter content (%)</i>	<i>Total nitrogen content by weight (kg N/t)</i>	<i>Total phosphorus content by weight (kg P/t)</i>	<i>Proportion of total phosphorus to total nitrogen</i>
Farmyard manures				
Cattle manure	25	6.0	1.4	0.23
Sheep manure	25	7.0	1.4	0.20
Goat manure	25	6.0	1.2	0.20
Pig manure	25	7.0	2.6	0.37
Horse manure	30	7.0	2.2	0.31
Miscellaneous manures				
Spent mushroom compost	35	8.0	1.5	0.19
Separated cattle slurry (solid portion)	20	4.0	0.87	0.22
Separated pig slurry (solid portion)	20	5.0	2.0	0.40
<i>Other organic manures</i>	Dry matter content, total nitrogen content and total phosphorus content to be declared in accordance with the Waste Regulations. Proportion of total phosphorus to total nitrogen to be calculated from these analyses			
<i>Chemical fertilisers</i>	Dry matter content, total nitrogen content and total phosphorus content as certified by the producer. Proportion of total phosphorus to total nitrogen to be calculated from these analyses			

Table 3

Regulations 9 and 12 - Nitrogen availability in organic manures and chemical fertilisers

<i>Fertiliser</i>	<i>Nitrogen availability (%)</i>
Chemical	100
Pig slurry	50
Poultry litter	30
Farmyard manure	30
Cattle slurry	40
Spent mushroom compost	20
Other organic manures	40

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Table 4**Regulations 10 and 12 - Nitrogen application standards for grassland crops**

	<i>Dairy cattle⁽²⁾</i>	<i>Other livestock⁽²⁾</i>
Balance of crop nitrogen requirement (kg N/ha/year) (e.g. from chemical fertiliser or organic nitrogen supply other than livestock manure) ⁽¹⁾	272	222

- (1) This table does not imply any departure from regulation 9(1) which prohibits the application to the agricultural area on a holding of livestock manure in amounts which exceed 170 kg N/ha/year, including that deposited by the animals themselves, or, in the case of grassland holdings granted a derogation in accordance with regulation 12, 250 kg of N/ha/year, including that deposited by the animals themselves.
- (2) The dairy cattle figures (dairy cows and heifer replacements) apply where it can be demonstrated that more than 50 % of the livestock manure applied to the agricultural area, both by land application and by the animals themselves, arises from dairy cattle. In all other cases the figures for other livestock will apply.

Table 5**Regulations 11 and 12 - Maximum permitted nitrogen application and standard yields for cereal crops**

<i>Crop type</i>	<i>Maximum permitted nitrogen (kg N/ha)⁽¹⁾</i>	<i>Standard yield (t/ha)</i>
Winter Wheat	220	8.0
Spring Wheat	180	7.0
Winter Barley	170	7.0
Spring Barley	140	5.0
Winter Oats	140	6.0
Spring Oats	110	5.0

- (1) For all crops in the table, an additional 20 kg N/ha is permitted for every tonne that the expected yield exceeds the standard yield. Evidence of this must be demonstrated by overall farm crop yield in any of the previous three years.

Table 6**Regulation 20 - Livestock manure production figures**

<i>Livestock type</i>	<i>Volume of excreta produce per animal per week (m³)⁽¹⁾</i>
Cattle	
Dairy cow	0.37
Suckler cow	0.23
Cattle (over 2 years)	0.23
Cattle (1 – 2 years)	0.18

- (1) The standard figures for slurry produced by animals do not include water for cleaning buildings.

- (2) Values that may change if further research into poultry manure nutrient content is carried out.

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<i>Livestock type</i>	<i>Volume of excreta produce per animal per week (m³)⁽¹⁾</i>	
Calf (6-12 months)		0.09
Calf (0-6 months)		0.05
Sheep		
Adult ewe / ram		0.03
Fattening lamb (6-12 months)		0.01
Adults pigs		
Maiden gilt / boar		0.05
Dry/lactating sows and served gilts		0.08
Pigs weaned at 3-4 weeks		
<i>Approximate start weight (kg)</i>	<i>Approximate sale / transfer weight (kg)</i>	
6-8	18 (7.5 weeks)	0.01
6-8	35 (11 weeks)	0.03
6-8	105 (23 weeks) (Meal fed)	0.06
6-8	105 (23 weeks) (Liquid fed)	0.08
Growing and finishing pigs		
<i>Approximate start weight (kg)</i>	<i>Approximate sale / transfer weight (kg)</i>	
18	35	0.02
35	105 (Meal fed)	0.03
35	105 (Liquid fed)	0.05
Poultry		
1000 laying hens		0.81 ⁽²⁾

(1) The standard figures for slurry produced by animals do not include water for cleaning buildings.

(2) Values that may change if further research into poultry manure nutrient content is carried out.

Regulation 12(7) - Criteria as to calculation of phosphorus balance

1.—(1) Phosphorus balance is the difference between phosphorus inputs to the holding less the total of phosphorus outputs leaving the holding. It is calculated per unit area of agricultural land on the holding for each calendar year.

(2) Phosphorus inputs include, when imported on to the holding—

- (a) the total amount of phosphorus in chemical fertiliser;
- (b) the total amount of phosphorus in feedstuffs (calculated using values from Table 7); and
- (c) the total amount of phosphorus in organic manure (calculated using values from Table 2).

(3) Phosphorus outputs include, when exported from the holding—

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- (a) the total amount of phosphorus in produce, for example, meat, milk and crops (calculated using values from Table 7); and
 - (b) the total amount of phosphorus in organic manure (calculated using values from Table 2).
- (4) Inputs of phosphorus to agricultural land in precipitation and losses of phosphorus from the holding to any waterway or water contained in any underground strata are excluded from the balance calculation.

Table 7

Regulation 12(7) - Phosphorus (P) content of agricultural products and feedstuffs

<i>Agricultural product</i>	<i>Phosphorus content (% fresh weight)</i>
Poultry concentrate	0.5 (or actual declared content)
Pig concentrate	0.48 (or actual declared content)
Ruminant concentrate	0.55 (or actual declared content)
All other concentrates	0.58 (or actual declared content)
Cattle	0.66
Milk	0.10
Sheep	0.54
Wool	0.04
Pigs	0.50
Poultry	0.58
Eggs	0.22
Straw	0.10
Silage	0.06
Hay	0.30
Potatoes	0.04
Oats	0.29
Barley	0.30
Wheat	0.26
Maize	0.25
Full fat soya	0.45
Linseed	0.81
Rape	1.10
Soya	0.68
Sunflower	0.93
Gluten	0.96
Citrus	0.1
Wheat distillers	0.77

<i>Agricultural product</i>	<i>Phosphorus content (% fresh weight)</i>
Corn distillers	0.77
Peas	0.44
Palm kernal	0.63
Pollard	1.00
Soya hulls	0.14
Sugar beet	0.1

SCHEDULE 2

Regulation 16(1)

Requirements for slurry storage systems

1. The requirements which have to be satisfied in relation to a slurry storage system are as follows.
2. The base of the slurry storage tank, the base and walls of any effluent tank, channels and reception pit and the walls of any pipes shall be impermeable.
3. The base and walls of the slurry storage tank, any effluent tank, channels and reception pit and the walls of any pipes shall be protected against corrosion in accordance with paragraph 7.2 of the Code of Practice on Buildings and Structures for Agriculture published by the British Standards Institution and numbered BS 5502-50:1993+A2:2010 (1).
4. The base and walls of the slurry storage tank and any reception pit shall be capable of withstanding characteristic loads calculated on the assumptions and in the manner indicated by paragraph 5 of that Code of Practice.
- 5.—(1) Any facilities used for the temporary storage of slurry before it is transferred to a slurry storage tank shall have adequate capacity to store the maximum quantity of slurry which (disregarding any slurry which will be transferred directly into a slurry storage tank) is likely to be produced on the premises in any two day period or such smaller capacity as the Department may agree in writing is adequate to avoid any significant risk of pollution of a waterway.
(2) Where slurry flows into a channel before discharging into a reception pit and the flow of slurry out of the channel is controlled by means of a sluice, the capacity of the reception pit shall be adequate to store the maximum quantity of slurry which can be released by opening the sluice.
- 6.—(1) Subject to sub-paragraph (2), the capacity of storage facilities for slurry of a holding shall be sufficient and adequate to provide for the storage of all the slurry which is likely to require storage on the holding for such period as may be necessary to ensure compliance with these Regulations.
(2) The matters to which regard is to be had under sub-paragraph (1) are—
 - (a) the likely quantities of rainfall (including any fall of snow, hail or sleet) which may fall or drain into the slurry storage tank during the likely maximum storage period;
 - (b) the need to make provision for not less than 750 millimetres of freeboard in the case of a tank with walls made of earth and 300 millimetres of freeboard in all other cases; and
 - (c) soil quality in the vicinity of the slurry storage tank.

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7. No part of the slurry storage tank or any effluent tank, channels or reception pit shall be situated within 10 metres of any waterway into which slurry could enter if it were to escape unless precautions are taken that the Department agrees in writing are adequate to avoid any significant risk of pollution.

8. The slurry storage tank and any effluent tank, channels, pipes and reception pit shall be designed and constructed so that with proper maintenance they are likely to satisfy the requirements of paragraphs 2 to 4 for a period of at least 20 years.

9. Where the walls of the slurry storage tank are not impermeable, the base of the tank shall extend beyond its walls and shall be provided with channels designed and constructed so as to collect any slurry which may escape from the tank and adequate provision shall be made for the drainage of the slurry from the channels to an effluent tank through a channel or pipe.

10.—(1) Subject to sub-paragraph (2), where the slurry storage tank, any effluent tank or reception pit is fitted with a drainage pipe, there shall be two valves in series on the pipe and each valve shall be capable of stopping the flow of slurry through the pipe and shall be kept shut and locked in that position when not in use.

(2) Sub-paragraph (1) does not apply in relation to a slurry storage tank which drains through the pipe into another slurry storage tank of equal or greater capacity or where the tops of the tanks are at the same level.

11. In the case of a slurry storage tank with walls which are made of earth, the tank shall not be filled to a level which allows less than 750 millimetres of freeboard, and in all other cases the tank shall not be filled to a level which allows less than 300 millimetres of freeboard.

SCHEDULE 3

Regulation 21(1)(a)

Requirements for silos

1. The requirements which have to be satisfied in relation to a silo are that—
 - (a) it complies with the following provisions; or
 - (b) it is designed and constructed in accordance with the standard on cylindrical forage tower silos published by the British Standards Institution and numbered BS 5061: 1974(2).
2. The base of the silo shall, where the silo has retaining walls made other than of earth, extend beyond those walls and shall in all cases be provided with channels so constructed as to collect any silage effluent which may escape from the silo and adequate provision shall be made for the drainage of that effluent from the channels to an effluent tank through a channel or pipe.
- 3.—(1) Subject to sub-paragraph (2), the capacity of the effluent tank—
 - (a) in the case of a silo with a capacity of less than 1500 cubic metres, shall be not less than 3 cubic metres for each 150 cubic metres or part thereof of silo capacity;
 - (b) in the case of a silo with a capacity of 1500 cubic metres or more, shall be not less than 30 cubic metres plus 1 cubic metre for each 150 cubic metres or part thereof of silo capacity in excess of 1500 cubic metres.

(2) The effluent collection system associated with silos may, with the agreement of the Department, incorporate a system of pumps and sumps, together with detailed sizing, pumping and management requirements, designed to reduce the capacity of the effluent tank.

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4. The base of the silo, the base and walls of its effluent tank and channels and the walls of any pipes shall be impermeable.
5. The base and any walls of the silo, its effluent tank and channels and the walls of any pipes shall, so far as reasonably practicable, be resistant to attack by silage effluent and, where the walls are made of earth, they shall be lined with an impermeable membrane.
6. No part of the silo, its effluent tank or channels or any associated pipes shall be situated within 10 metres of any waterway into which silage effluent could enter if it were to escape.
7. If the silo has retaining walls—
 - (a) the retaining walls shall be capable of withstanding minimum wall loadings calculated on the assumptions and in the manner indicated by paragraph 15.6.1 to 15.6.3 of the Code of Practice on Buildings and Structures for Agriculture published by the British Standards Institution and numbered BS 5502-22:2003+A1:2013 (3);
 - (b) the silo shall at no time be loaded to a depth exceeding the maximum depth consistent with the design assumption made in respect of the loadings of the retaining walls; and
 - (c) notices shall be displayed on the retaining walls in accordance with paragraph 18 of the Code of Practice referred to in sub-paragraph (a).
8. Subject to paragraph 9, the silo, its effluent tank and channels and any pipes shall be designed and constructed so that with proper maintenance they are likely to satisfy the requirements of paragraphs 2 to 5 and, if applicable, 7(a) for a period of at least 20 years.
9. Where any part of an effluent tank is installed below ground level, it shall be designed and constructed in accordance with the Code of Practice referred to in paragraph 7(a) so that with proper maintenance it is likely to satisfy the requirements of paragraphs 4 and 5 for a period of at least 20 years.

SCHEDULE 4

Regulation 8(2)(f)

Risk assessment for fertiliser application to steeply sloping land

10. If application of organic manure (including livestock manure) or chemical fertiliser to steeply sloping land is proposed, a risk assessment must be undertaken in addition to meeting all relevant requirements of these Regulations. The factors set out in Table 1 shall be considered in making this risk assessment. Table 2 shall be consulted to ascertain whether fertiliser application is permitted.

Table 1

Fertiliser application to steeply sloping ground - risk assessment factors

Factor	Risk	Liquid organic manures	Solid organic manures	Chemical nitrogen fertiliser
Distance from spreading area to other waterway than lake	<i>High</i>	less than 20 m	less than 20 m	less than 5 m
	<i>Medium</i>	20-30 m	20-30 m	5-10 m
	<i>Low</i>	greater than 30 m	greater than 30 m	greater than 10 m

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Factor	Risk	Liquid organic manures	Solid organic manures	Chemical nitrogen fertiliser
Distance from spreading area to lake	<i>High</i>	less than 30 m	less than 30 m	less than 5 m
	<i>Medium</i>	30-40 m	30-40 m	5-10 m
	<i>Low</i>	greater than 40 m	greater than 40 m	greater than 10 m
Level of fertiliser applied	<i>High</i>	more than 25m ³ /ha	more than 25 tonnes/ha	greater than 120 kg/N/ha
	<i>Medium</i>	15-25m ³ /ha	15-25 tonnes/ha	80-120 kg/N/ha
	<i>Low</i>	less than 15 m ³ /ha	less than 15 tonnes/ha	less than 80 kg/N/ha
Soil conditions	<i>High</i>	very wet, compacted soil	very wet, compacted soil	very wet, compacted soil
	<i>Medium</i>	wet, poached soil	wet, poached soil	wet, poached soil
	<i>Low</i>	dry, firm trafficable soil	dry, firm trafficable soil	dry, firm trafficable soil
Forecast weather conditions for next 48 hours	<i>High</i>	heavy rainfall (more than 4 mm per hour)	heavy rainfall (more than 4 mm per hour)	heavy rainfall (more than 4 mm per hour)
	<i>Medium</i>	moderate rainfall (0.5 – 4 mm per hour)	moderate rainfall (0.5 – 4 mm per hour)	moderate rainfall (0.5 – 4 mm per hour)
	<i>Low</i>	low rainfall (less than 0.5 mm per hour)	low rainfall (less than 0.5 mm per hour)	low rainfall (less than 0.5 mm per hour)
Arable land only - time to incorporation	<i>High</i>	more than 48 hours	more than 5 days	n/a
	<i>Medium</i>	12-48 hours	3-5 days	n/a
	<i>Low</i>	less than 12 hours	less than 3 days	n/a

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Table 2

Risk assessment determination

Risk level	Number of factors applicable	Is the land application of fertiliser permitted?
<i>High Risk</i>	One or more factors	No
<i>Medium Risk</i>	Two or more factors	No
	One factor	Yes
<i>Low risk</i>	One or more factors	Yes