

Government Decree on Limiting Certain Emissions from Agriculture and Horticulture (1250/2014, amendments up to 1261/2015 included)

Enacted under sections 9 and 10 of the Environmental Protection Act (527/2014)

Section 1

Purpose

- (1) This Decree implements the Directive of the Council of the European Communities concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC), from here on the *Nitrates Directive*.
- (2) The purpose of this Decree is to prevent and to reduce emissions into surface water, groundwater, soil and air caused by the use, storage and processing of manure and other fertilisers referred to in section 2 and by livestock production.

Section 2

Scope of application

- (1) This Decree applies to agricultural and horticultural activities.
- (2) This Decree applies to the use, storage and application of manure and fertiliser products specified in the Fertiliser Product Act (539/2006) and provisions issued under it, with the exception of liming products.
- (3) Section 5, section 7(1) and (5) to (8), section 8, section 10(1) to (3), (5) to (8) and (10), and sections 11 to 13 of the Decree implement Articles 4 and 5 of the Nitrates Directive that constitute statutory management requirement 1 for cross-compliance under Annex II to Regulation (EU) No 1306/2013 of the European Parliament and of the Council on the financing, management and monitoring of the common agricultural policy. Furthermore, this Decree applies to organic by-products generated on farms that are used as fertilisers with or without further processing.

Section 3

Definitions

For the purposes of this Decree:

- 1) *exercise area* means an area in the immediate vicinity of a livestock shelter which is regularly used for exercising the animals and from which manure and runoff water are collected;
- 2) *floating cover* means a cover no less than 10 centimetres thick that is evenly spread on the surface of a tank containing slurry and urine or some other similar liquid; the layer can be either

peat, clay aggregate, polystyrene granules or aggregate, or other similar bulk material or floating flat cover material. Cow slurry is also considered to constitute a floating cover when it forms into a surface crust;

3) *fixed cover* means a fixed cover installation on the surface of a tank containing slurry and urine or other similar liquid in order to prevent rainwater from entering the tank and to reduce gas vaporisation;

4) *total nitrogen* means the nitrogen analysed in fertiliser products, by-products and manure, which is the sum total of organic and inorganic nitrogen;

5) *composting* means the processing of manure and other organic materials in aerobic conditions at a farm to form homogenous compost; however, this does not include mechanical processing in a drum composter or similar device;

6) *dry manure* means manure from which urine has been separated. The umbrella term 'dry manure' is used to refer to all types of solid manure (dry manure, litter manure, litter bedding manure), and to solids separated from slurry or decomposed manure;

7) *litter manure* means manure where urine has been fully absorbed by the litter;

8) *litter bedding* means a layer of litter that covers the bottom of a livestock shelter, absorbs manure and urine, is supplemented with new litter as needed and is replaced at intervals of several months;

9) *pasture* means a field area with annual or perennial grassy plants or forage crops where farm animals graze;

10) *manure* means unprocessed and processed dung and urine of farm animals, and it may also include litter and water;

11) *incorporation of fertiliser* means the application of slurry, urine and liquid organic fertiliser products with a device that cuts a furrow into the surface of the field for the purpose of pouring or injecting slurry, urine or fertiliser product;

12) *fertiliser* means organic and inorganic substances and products that are intended to enhance growth of vegetation or to improve crop quality, and where the effect is based on plant nutrients;

13) *soluble nitrogen* means ammonium nitrogen and nitrate nitrogen that are soluble in water or in a mild saline solution, and also means soluble organic nitrogen;

14) *agriculture and horticulture* means the breeding and keeping of cattle, pigs, horses, poultry, sheep, fur animals or other similar farm animals, the cultivation of agricultural plants, horticultural plants and field plants grown for energy production, as well as other agricultural use of fields;

15) *tilling* means the process of mixing surface-applied manure and organic fertiliser products into the soil to a sufficient depth with a suitable piece of equipment;

16) *organic fertiliser product* means the fertiliser products mentioned in the Decree of the Ministry of Agriculture and Forestry on Fertiliser Products (Regulations of the Ministry of Agriculture and Forestry 24/11), Annex I(1B) (organic fertilisers, excluding organic fertilisers whose effect is based

on substances other than plant nutrients, as listed in 1B3), 1C (organic mineral fertilisers), 3A2 (organic soil improvers) and 3A5 (by-products used as soil improvers without processing, excluding fibre slurry, as well as fungal or peat substrates used from which the nutrients have already been utilised); organic fertiliser products also means organic side fractions defined below; (1261/2015)

17) *organic side fractions* means solid and liquid organic fractions generated in agriculture and horticulture that are not included in the fertiliser products defined in the Decree of the Ministry of Agriculture and Forestry on Fertiliser Products, such as silage effluent and runoff from exercise areas;

18) *groundwater area* means an area that can be delineated based on geological criteria and within which a soil formation or bedrock zone enables significant groundwater flow or intake;

19) *compacted surface* means a solid and intact surface with a density at least equal to asphalt and including the required bottom layer structures for the purpose of collecting manure and runoff water;

20) *flood risk area* means an area that is, on average, flooded more frequently than once every 20 years and that has not been protected with flood embankments or other permanent structures;

21) *farm animal* means an animal bred or kept for food, wool, leather or fur production, other agricultural production or some other equivalent purpose;

22) *technical and hygienic reason* means the following: a technical reason is considered to be frost heave, breakage of manure collection and storage equipment or some other similar reason, while a hygienic reason is considered to be a pathogen contained in the manure;

23) *exercise yard* means a fenced area larger than an exercise area where animals are normally kept year-round. An exercise yard may contain a shelter from weather, as well as feeding and watering points. An exercise yard may also include an exercise area;

24) *main ditch* means an excavated open channel, where the purpose is to collect water from field ditches, contour ditches and subsurface drains in the drainage area and water from upstream of the catchment area, and convey this water out of the drainage area;

25) *water body* means a water area as defined in Chapter 1, section 3(1)(3), of the Water Act (587/2011);

26) *watertight structure* means structures that prevent manure and urine and other liquids from entering soil, surface waters and groundwater.

Section 4

Placement of storage spaces, exercise areas, and feeding and watering points

Storage spaces for manure and unpackaged organic fertiliser products, exercise areas for farm animals, and the feeding and watering points of exercise yards may not be placed in the following locations:

1) in a groundwater area unless a soil survey has been conducted indicating that placement in this area will not cause groundwater pollution or any risk of it;

- 2) in a flood risk area;
- 3) less than 50 metres from a water body, a well for domestic water supply or a spring;
- 4) less than 25 metres from a main ditch or streamlet as specified in Chapter 1, section 3(1)(6), of the Water Act.

Section 5

Manure storage

- (1) A farm where manure accumulates as a result of the keeping of farm animals shall have a storage space for the manure (*manure storage*). The capacity of the manure storage shall be sufficient for manure collected over the course of 12 months. The minimum capacities of manure storages for various types of manure and processed manure are presented in Annex 1. The calculation of the minimum capacity of a manure storage facility can take into account the manure storages shared by farmers, housing sheds with litter bedding and manure left on the pasture over the course of the same grazing season. For cattle, manure left on the pasture over the course of no more than four months can be taken into account, with the exception of breeds that are kept outdoors year-round. Deviation from the minimum capacity is permitted if manure is delivered to a party that can accept it on the basis of a permit issued under section 27 of the Environmental Protection Act, or if manure is delivered to another farm for storage in a manure storage facility in the manner provided above.
- (2) If no more than 25 cubic metres of dry manure requiring storage accumulates on a farm in one year or if no more than 25 cubic metres of dry manure is stored on the farm at any one time, a watertight skip or other similar holding structure under a shelter or tarpaulin can be used to store the manure instead of a manure storage facility.
- (3) In addition, a farm that receives and stores manure shall have manure storage where the sizing of it is done according to the weight and amount received annually. However, manure storage is not required if manure is stored on the field until its application, as provided below in section 10(4).

Section 6 (1261/2015)

Storage of unpackaged organic fertiliser products

- (1) A farm that receives and stores organic fertiliser products shall have a watertight storage space that is sized according to the amount of fertiliser received.
- (2) Organic fertiliser with a dry-matter content of at least 30 per cent may also be kept in a heap.
- (3) The storage arrangement may not cause pollution of water bodies or any risk of such. Storage in a heap is always prohibited in groundwater areas and flood risk areas.
- (4) The heap shall be located in a field with firm soil, and in a sloped field, the heap shall be located near the top edge. The heap may not be placed less than 100 metres from a water body, main ditch or well for domestic water supply, or less than five metres from a ditch. A layer of absorbent material at least 20 centimetres thick shall be spread underneath the heap, and the heap shall be covered with an impermeable cover. Besides this, snow shall be cleared from where the heap is to be placed and the base shall be designed so as to prevent liquids from entering into the environment.

- (5) A single heap shall contain an amount of organic fertiliser product adequate for a single hectare or no more than a full parcel and any parcels directly adjacent to it. The organic fertiliser stored in a heap shall be applied no later than one year after the heap was made.
- (6) A new heap may be placed in the same location after a two-year recovery period.
- (7) The provisions in subsections 1 to 6 concerning the reception and storage of organic fertiliser products also apply to the reception of dry manure with a dry-matter content of at least 30 per cent.

Section 7

Requirements for structures

- (1) The storage spaces for manure and unpackaged organic fertiliser products, manure channels and other structures for the purpose of conveying manure shall be watertight.
- (2) Composting shall take place on a compacted surface or the structures shall be otherwise watertight.
- (3) Compost with a dry-matter content of at least 30 per cent can be ripened in a heap in compliance with the provisions of section 6(3) to (6). However, the cover of a ripening heap does not need to meet the tightness requirement in section 6(4). (1261/2015)
- (4) Slurry storages and storage spaces for liquid organic fertilisers shall be covered with a fixed or floating cover in order to reduce ammonia and odour emissions. A storage space for dry manure and organic side fractions and fertiliser with equivalent dry-matter content shall be roofed or the stored material shall be covered in such a way that prevents rainwater from entering the space.
- (5) The structures and equipment shall be such that liquids are prevented from entering into the environment during the transfer and processing of manure or organic fertilisers and the clearing of the storage space. Loading shall be carried out on a hard surface that can withstand the weight and movement of the machinery, and that enables spilled or absorbed manure or organic fertiliser to be collected as necessary. (1261/2015)
- (6) Permanent feeding points shall be covered and have a compacted surface, and the manure shall be removed sufficiently often. However, the requirement for a cover does not apply to the permanent feeding points of exercise yards and exercise areas connected to livestock shelters. (1261/2015)
- (7) Exercise areas shall be managed in such a way that nutrient discharges are prevented from entering into surface water and groundwater.
- (8) The silage effluent generated during silage production shall be recovered and stored in a watertight tank, unless it is processed in a separate treatment plant.

Section 8 (1261/2015)

Storage of dry manure in exceptional situations

- (1) At a farm where manure accumulates from the keeping of farm animals, dry manure with a dry-matter content of at least 30 per cent may be stored in a heap if this is necessary due to a technical or hygienic reason.
- (2) Storage of dry manure in the exceptional situations referred to in subsection 1 shall be in compliance with the provisions under section 6(3) to (6). However, subsections 5 and 6 of that section do not apply to the storage of dry manure in a heap for a hygienic reason attributable to an animal disease.

Section 9 (1261/2015)

Duty of notification

- (1) As regards the storage of dry manure and unpackaged organic fertiliser products in a heap in situations referred to in section 6, the ripening of a compost heap in situations referred to in section 7(3), and the storage of dry manure in a heap in the exceptional situations referred to in section 8, the municipal environmental protection authority shall be notified 14 days before the commencement of the storage so that the authority can conduct an inspection, if necessary. The municipal environmental protection authority shall be notified of any deviation from the prohibition period concerning the application of manure laid down in section 10(2) by the end of October. The municipal environmental protection authority shall report annually on the notifications specified above to the Centre for Economic Development, Transport and the Environment.
- (2) Notification of the storage of dry manure in the exceptional situations specified in section 8, of the ripening of a compost heap in the situation specified in section 7(3), and of the prohibition on the application of manure referred to in section 10(2) shall be submitted by the operators whose animal farms generate the manure. The notification of the storage of organic fertiliser products and dry manure in a heap referred to in section 6(7) shall be provided by the recipient of the products.

Section 10

Use of fertilisers

- (1) Fertiliser shall be applied on fields in such a way that nutrient runoff into water bodies and any risk of subsoil compaction are prevented. The average crop yield, cultivation zone, crop rotation and soil type shall be taken into account in fertilisation.
- (2) The application of manure and organic fertilisers in fields is prohibited from the beginning of November to the end of March. However, deviation from this prohibition is possible until the end of November in situations where exceptional weather conditions have prevented the use of manure as fertiliser during the growing season. An exceptional weather condition is a situation where the wetness of the field, resulting from prolonged heavy rains and low evaporation, has prevented the autumn fertilisation in October at the latest. (1261/2015)
- (3) Fertilisers shall not be applied on snow-covered, frozen or water-saturated ground.
- (4) Dry manure and organic fertilisers with a dry-matter content of at least 30 per cent can be stored on the field during the fertilisation period for no more than four weeks until application.

- (5) The tilling of the soil shall be done within 24 hours of the application of manure and organic fertiliser products, with the exception of the application of fertiliser on plants with a hose sprayer or over an entire area.
- (6) On field parcels covered with vegetation throughout the winter, manure and organic fertiliser products may be incorporated from September 15 onwards only by means of placement fertilisation, except in the case of the application of manure in preparation for the autumn sowing of plants.
- (7) Fertilisation less than five metres from a water body is prohibited. The surface application of manure and organic fertiliser products is prohibited in the next five-metre zone from the water body unless the field is tilled within 24 hours of the application. However, these prohibitions on fertilisation and surface application do not prevent domestic animals from grazing in the areas in question. (1262/2015)
- (8) The application of slurry, urine and liquid organic fertiliser products by any other means than injection is always prohibited in sections of field parcels where the gradient is not less than 15 per cent. Other manure and organic fertiliser products to be applied in sloped sections of field parcels shall be incorporated into the soil within 12 hours of application. (435/2015)
- (9) Depending on the elevation of the terrain, the well structure and soil type, a buffer zone no less than 30–100 metres wide where no manure or organic fertiliser products are applied shall be left around wells and springs used for domestic water supply.
- (10) The provisions of this section also apply to the use as fertiliser of the silage effluent and exercise area runoff referred to in section 7(8).

Section 11

Amount of nitrogen fertiliser

- (1) In the application of farm animal manure and organic fertiliser products containing manure, the amount of total nitrogen contained in these may not exceed 170 kg/ha per year. (435/2015)
- (2) The maximum amount of soluble nitrogen includes the soluble nitrogen contained in inorganic fertilisers, farm animal manure, manure generated during grazing, and organic fertiliser products. The nitrogen in manure left on field parcels used for grazing has been taken into account in the maximum amount for nitrogen fertilisation. The annual maximum amounts of soluble nitrogen (kg/ha) for various plants are as follows:

Plant	Mineral soil	Organic soil
Barley, oats and mixed grains	160	120
Spring wheat	170	130
Autumn rye		
– in the autumn	30	30
– in the spring	150	120
Spring rye	160	120
Autumn wheat, triticale and spelt		
– in the autumn	30	30
– in the spring	170	140
Other grains, their mixtures and other arable crops	160	120
Grass	250	210
Pastures	210	170
Autumn turnip rape and autumn oilseed rape*	200	160
Spring turnip rape and spring oilseed rape	170	130
Flax, maze, oil hemp and sunflower	150	110
Legumes	60	40
Sugar beet	170	130
Early potato	100	80
Starch potato	130	90
Other potato	120	80
Brassica vegetables and scallion	250	210
Other bulb vegetables	160	120
Root vegetables	200	170
Spice crops and herbs	120	80
Other vegetable and garden plants	210	170
Berry and fruit plants	140	100
Plant nursery production	200	160

*Fertilisation before the beginning of September is not considered autumn fertilisation, but it is deducted from the maximum amount.

- (3) If in the annual fertilisation the amount of soluble nitrogen exceeds 150 kg/ha, this amount shall be split into at least two applications with no less than two weeks between them.

- (4) From the beginning of September, the amount of soluble nitrogen in farm animal manure and organic fertiliser products may not exceed 35 kg/ha. The amount of soluble nitrogen applied in the autumn shall be considered as part of the total fertilisation of the next crop.

Section 12

Determining the nutrient content of manure

- (1) Every five years the operator shall conduct a manure analysis to determine the soluble nitrogen, total nitrogen and total phosphorus contained in the manure. Fertilisation shall be planned either based on the manure analysis or the values in the table in Annex 2.
- (2) The operator shall retain the data from the manure analysis and the product specifications of organic fertiliser products and, on request, present them to the supervisory authority.

Section 13

Obligation of the operator to keep records

- (1) The operator shall keep annual records of fertilisation and, on request, submit the information to the supervisory authority.
- (2) The records shall include the following information:
 - 1) the amount of manure, organic fertiliser products and nitrogen fertilisers used for adding nutrients to the field, and the concentrations of soluble nitrogen and total nitrogen contained in these;
 - 2) crop yield;
 - 3) the times when manure or organic fertiliser has been applied to the field.

Section 14

Supervision

- (1) Supervision of compliance with this Decree is provided under Chapter 18 of the Environmental Protection Act, and penal provisions under section 224 and section 225 of the Environmental Protection Act.
- (2) The municipal authority for rural industries and the municipal environmental protection authority shall provide the Centre for Economic Development, Transport and the Environment with the information needed for supervising compliance with this Decree and for compiling the reports required under the Nitrates Directive and with information on any violations of this Decree.

Section 15

Entry into force

- (1) This Decree enters into force on 1 April 2015.
- (2) However, the requirement for the compacted surface for composting in section 7(2), the requirement for the hard surface of the loading area in section 7(5), the requirements for structures for permanent feeding and watering points in section 7(6), the prohibition on the application of manure and organic fertiliser products in section 10(2), and the provision on the maximum amount of soluble nitrogen in cell sap from starch potatoes used as fertiliser under section 11(4) do not apply before 1 January 2016. (1261/2015)
- (3) This Decree repeals the Government Decree on the Restriction of Discharge of Nitrates from Agriculture into Waters (931/2000).
- (4) However, section 5(1) of the repealed Decree remains in effect until 31 December 2015 concerning the part on the use of cell sap from starch potatoes applied as fertiliser.

Section 16

Transitional provisions

- (1) The provisions on the minimum capacities of manure storages that are effective upon the entry into force of this Decree shall be applied to manure storages that are put into operation or that have a pending application for an environmental or building permit upon the entry into force of this Decree. (220/2015)
- (2) The provisions under section 4 on the placement of structures and under section 7(4) on the covering of storage spaces apply only to building projects that are initiated after the entry into force of this Decree.

Decree 1261/2015 amending this Decree entered into force on 16 October 2015.

Decree 435/2015 amending this Decree entered into force on 17 April 2015.

Decree 220/2015 amending this Decree entered into force on 20 March 2015.

Annex 1 (1261/2015)

Minimum capacities of manure storages

Table 1. *Minimum capacities of manure storages for a 12-month storage period per animal/animal place by manure type (m³/animal per year, excluding rainwater).*

To account for rainwater, the calculated slurry and urine tank capacity is increased by a height of at least 300 mm if the tank is covered by a surface crust and by a height of at least 500 mm if the tank is covered by some other floating cover. Furthermore, the tank height shall be increased by at least 100 mm for a separate cover to be added on the surface of the slurry. If liquids, such as silage effluent, are fed into the slurry and urine tank alongside washing water from the livestock shelter, this shall be taken into account in the size calculations.

ANIMAL	SLURRY	LITTER MANURE, LITTER BEDDING MANURE	DRY MANURE	URINE
Dairy cow (8,500 kg) ¹	25.5	28.6	15.8	8.7
Heifer	8.5	13.4	6.6	2.9
Suckler cow	19.0	20.4	16.9	1.9
Beef cattle, bull	12.1	12.9	10.1	1.7
Heifer calf 6–12 months	7.2	9.7	6.1	1.7
Heifer calf < 6 months	3.6	6.1	3.1	1.1
Bull calf 6–12 months	9.5	12.1	8.0	2.1
Bull calf < 6 months	4.7	7.1	4.0	1.3
Fattening pig ^{2, 3}	2.4	3.0	1.0	1.6
Sow and piglets ⁴	9.3	10.7	2.2	6.8
Sow and piglets at a satellite piggery ⁵	12.7	15.5	3.5	10.4
Pregnant sow	3.9	4.9	1.6	2.7
Weaned piglet ⁶	1.2	1.6	0.6	0.8
Boar (fully grown)	4.9	6.1	1.8	3.5
Broiler ²	-	0.015	-	-
Commercial layer chicken, female broiler	-	0.04	-	-
Turkey ²	-	0.06	-	-
Duck, goose ²	-	0.04	-	-

Wild duck ²	-	0.025	-	-
Sheep and lambs	-	1.3	-	-
Goats and kids	-	1.3	-	-
Lambs and kids 3–9 months ⁷	-	1.3	-	-
Lambs and kids 6–9 months ⁷	-	0.6	-	-
Horse > 150 cm	-	17.0	-	-
Pony 120–150 cm	-	12.0	-	-
Small pony < 120 cm	-	8.0	-	-
Mink, ferret	-	0.25	-	-
Fox, raccoon	-	0.5	-	-
Indigenous cattle breeds ⁸				
Dairy cow	-	22.3	-	-
Suckler cow	-	15.9	-	-
Heifer	-	11.7	-	-
Bull	-	11.9	-	-
Heifer calf 6–12 months	-	8.5	-	-
Bull calf 6–12 months	-	9.4	-	-
Calf < 6 months	-	5.3	-	-

¹ For high-yield livestock, larger storages than those listed in the table are recommended.

² Per animal place.

³ Applies to fattening pigs whose average maximum carcass weight is 90 kg. If the carcass weight is higher, the values for idle sows are used.

⁴ Regular farrowing piggery. Piglets with the sow up to an approximate age of 11 weeks.

⁵ Applies to satellite piggeries. Manure amounts per sow place when at least eight farrowings occur at the place each year. The piglets are taken into account until a weaning age of approximately five weeks.

⁶ Piglet in intermediate rearing, age 5–11 weeks.

⁷ Rearing, two lambings per year.

⁸ Livestock in eastern, western and northern Finland.

Minimum capacities of storages for processed manure

Biogas process

Processing manure in a biogas plant does not significantly change the volume of manure, which means that the table provided here can be directly applied to these manure types.

Separation

The process separates slurry into liquid and dry fractions that require separate storage spaces. The storage space needed for the fractions is calculated based on the volume of slurry generated at the farm according to the table above. The fraction amounts and the size of the storage space required depend on the efficiency of the separation device used and the properties of the raw slurry.

The following separation efficiencies have been reported for various devices (Hjorth 2009¹):

Belt press	29%
Drum screen	10–25%
Screw press	5–25%
Basket centrifuge	7–26%
Decanter centrifuge	13–29%

The percentage indicates how much of the raw slurry volume is separated into solids by the separation process.

The separation efficiency provided by the device manufacturer is used to calculate the various fraction quantities.

Calculation example:

A farm has 100 dairy cows that produce a total of 2,550 m³ of slurry each year. The slurry is separated into fractions with a screw press with a manufacturer-listed efficiency of 15%.

The separation process yields $15\% \times 2,550 \text{ m}^3 = 383 \text{ m}^3$ of solids. The remainder, i.e. 2,167 m³, is liquid.

The manure storages shall be sized according to these amounts, taking into account the requirements concerning rainwater and a possible floating cover specified in Table 1.

Composting

In the case of active overturning of dry manure and litter manure heaps or reactor composting, the amount of manure requiring storage can be calculated to be 20% less than the annual manure amounts according to Table 1.

¹ Hjorth M., Christensen K.V., Christensen M.L., Sommer S.G. 2010. Solid-liquid separation of animal slurry in theory and practice. A review. *Agron. Sustain. Dev.* 30, 153–180.

Annex 2

Table: Manure values

MANURE TYPE	Total phosphorus kg/m ³	Soluble nitrogen kg/m ³	Total nitrogen kg/m ³
Cow litter manure	1.0	1.1	4.0
Cow slurry	0.5	1.7	2.9
Cow urine	0.1	1.5	2.5
Pig litter manure	2.8	1.2	4.6
Pig slurry	0.8	2.2	3.4
Pig urine	0.2	1.3	2.0
Sheep and goat litter manure	1.3	1.0	4.9
Horse litter manure	0.5	0.4	2.6
Chicken litter manure	5.6	4.2	9.4
Broiler litter manure	3.6	2.7	8.7
Turkey litter manure	4.4	3.2	8.0
Fox litter manure	12.7	1.4	6.5
Mink			