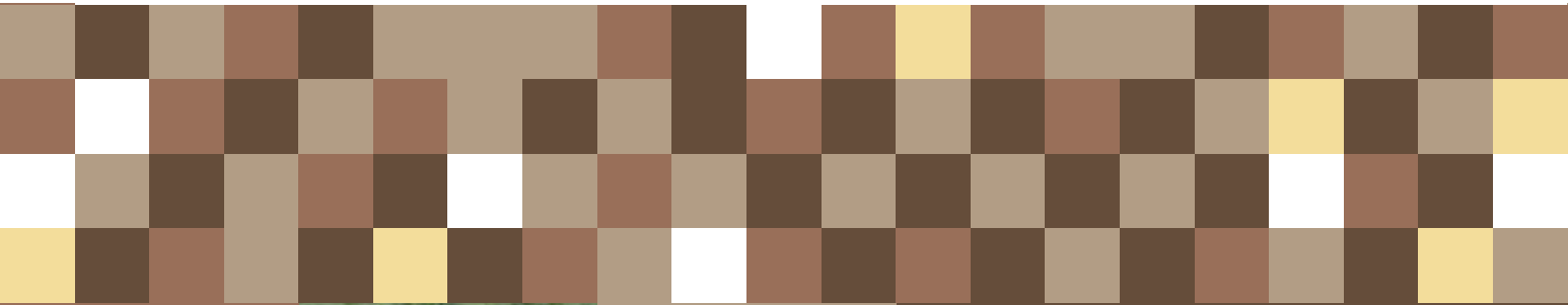


Nitrate Vulnerable Zones in Wales

Guidance for Farmers



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



2009 Edition

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Introduction

This booklet describes the rules that farmers in Wales must follow to comply with the Nitrate Pollution Prevention (Wales) Regulations 2008 - Statutory Instrument 2008 No. 3143 (W.278) - which came into force on 1 January 2009. The information provided is for guidance purposes only. The specific statutory elements concerning water and nitrates are set out in the Statutory Instrument, which can be seen on the Welsh Assembly Government web-site.

Why are the Regulations required?

The Nitrate Pollution Prevention (Wales) Regulations 2008 have been introduced to implement the European Communities Nitrates Directive and to reduce nitrogen losses from agriculture to water. They designate, and set rules for certain farming practices within, areas known as Nitrate Vulnerable Zones (NVZ) where nitrate pollution is a problem.

Where are the Nitrate Vulnerable Zones (NVZs) and when do the rules apply?

In the 2008 Regulations, about 4% of the agricultural land area of Wales is designated as an NVZ on the basis that it drains into a polluted¹ water and contributes to the pollution of that water. Some of the NVZ areas were previously designated in 1996 or 2002 and are referred to as **existing NVZs**. In these areas you must comply with all the new rules as from 1 January 2009 (unless a later compliance date is specified). For land or holdings within new NVZs, i.e. those designated for the first time under the 2008 regulations and referred to as **newly designated NVZs**, the regulations do not apply until 1 January 2010.

The designated areas are shown on field-scale maps that can be seen at Welsh Assembly Government Divisional Offices or on its web-site. Copies have also been lodged with Local Authorities.

¹ A water has been identified as polluted if:

- It is freshwater (i.e. either groundwater or surface freshwater) and contains a concentration of nitrate greater than 50mg/l, or could do so if preventative action is not taken; or
- It is eutrophic* or may in the near future become eutrophic if preventative action is not taken.

*Eutrophic means water that is enriched by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life that produces an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned.



What if my farm is partly in a NVZ?

Many of the rules apply to individual fields. You will need to comply with these rules in relation to each of the fields on your farm that fall within an NVZ.

The following rules apply to the farm as a whole (as opposed to individual fields):

- Minimum storage capacity for *livestock* manure
- *Livestock* manure total nitrogen farm limit (170 kg/ha)

Land outside an NVZ is not subject to the NVZ rules. You will therefore need to undertake calculations for the above two rules on a pro-rata basis. For example, if (say) 90% of your farm is within an NVZ, you are likely to need 90% of the storage capacity required by the Regulations - **but** you should only pro-rata what can **always** be safely spread on the land outside of an NVZ.

To whom do the rules apply?

Any person or persons who are the owners or occupiers (e.g. tenants, graziers) of an agricultural land holding (regardless of its size) within a designated NVZ are responsible for complying with these rules. In some circumstances, the rules may apply to persons who spread *nitrogen fertiliser* on the land.

For how long must records be kept?

- Any person required to make records under the Regulations must keep them for five years.
- An occupier must keep a copy of any advice provided by a person who is a member of the Fertiliser Advisers Certification and Training Scheme and which is relied on for any purpose under the Regulations.
- Any person using sampling and analysis to determine nitrogen content in *organic manure* must keep the original report from the laboratory.

How will compliance with the rules be enforced?

The Environment Agency Wales is responsible for assessing compliance and it will do this by visiting farms and checking records. Selected farms receive a letter beforehand explaining what will be required during the visit. If a breach of the Regulations is confirmed (this may involve detailed checks of records held by other agencies, e.g. British Cattle Movement Service, or farmers, e.g. in the case of manure export),

actions will be taken according to the Environment Agency Compliance Assessment and Enforcement and Prosecution Policies. Possible actions depend on the seriousness of the breach and impact on the environment. They include:

- Advice on remedying a minor breach
- Warning letter noting the breach, which may be taken into account in the event of a future breach
- Formal caution
- Prosecution

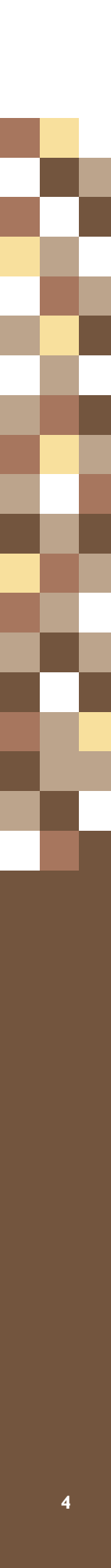
Full details of selection systems, inspection procedures and action taken in the event of a breach are available by contacting Environment Agency Wales. Details are also available regarding how exceptional circumstances are dealt with and what to do if you wish to register a complaint.

Complying with the NVZ rules is also a Statutory Management Requirement for cross-compliance under the Single Payment Scheme. This means NVZs form part of the cross-compliance inspection regime and that farmers have to comply with NVZ rules to be entitled to their full payment - failure to comply could lead to deductions.

Other information relating to implementation of the rules

Code of Good Agricultural Practice - the NVZ rules enshrine many of the good practices, relating to the use and storage of fertiliser and manure, set out in the “Code of Good Agricultural Practice for the Protection of Water, Soil and Air (Welsh Assembly Government revised, available in 2009)”. Farmers with land outside NVZs are encouraged to follow this code; in particular the parts that deal with minimising nitrate loss, to help prevent nitrate levels in waters rising to the point where further regulation becomes necessary. It will also help to reduce other pollution, including phosphate losses and microbiological contamination of bathing waters.

Biosecurity - to comply with some of the rules you may decide to export a proportion of the manure produced by your *livestock*. However, you should note that movement of manure/*slurry* between premises carries a risk of spreading disease unless both premises are of exactly the same disease status - and this is unlikely to be the case. Therefore you should give serious consideration to this option and weigh up the benefits against the risks. There are many diseases, some with significant impact and long term effect that may be disseminated by this route (even if applied to grassland for forage conservation). As a minimum, you should take basic steps to minimise



the risk of spreading animal disease while transporting the manure to other farms. These include:

- Providing secure containment for the manure
- Cleaning the exterior of the vehicle used for transport before leaving your farm
- Ensuring the manure is *spread* to tillage land or to grassland used for forage conservation

Other schemes and regulations - when adapting farm practices to comply with the NVZ rules, you must continue to respect all management agreements you may have entered (e.g. under Tir Cynnal, Tir Gofal or Organic Farming Scheme). Other legal obligations (such as the need to apply for an Environmental Impact Assessment screening decision before *spreading slurry* on uncultivated land or semi-natural areas) must also be adhered to.

Using the Guidance and Workbook templates

This **Guidance Booklet** outlines the rules (and the dates from which they apply) for NVZs. It is important that you read each rule and assess its implications for your farming system.

Many of the rules involve forward planning, making calculations or keeping records and a separate **Workbook** of templates is provided for this purpose. The **Workbook** also notes when the various rules come into force and at what times of the year action needs to be taken. Completing this (and updating it at regular intervals) will help identify adaptations that will be needed on the farm and enable the necessary records to be kept and presented for inspection. As long as you provide what is required, alternative methods of preparing the necessary plans and calculations, and keeping the necessary records may be used to demonstrate compliance with the Regulations.

Glossary and Definitions

Certain words and terms have specific meanings in the context of the NVZ rules. These (together with their meanings) are listed below and for ease of reference are highlighted in italic text in the remainder of the **Guidance** and **Workbook** documents:

land that has a low run-off risk - means land that has an average slope less than 3^o, does not have land drains (other than sealed impermeable pipes), and is at least 50 metres from a watercourse² or conduit leading to a watercourse.

² “Watercourse” includes: coastal waters, estuaries, canals, lakes, ponds, rivers, streams, and ditches which contain free flowing water and also temporarily dry ditches and blind ditches.

livestock - means any animal (including *poultry*) included in **Tables 1.1, 1.2, 1.3 and 2.3** of the **Workbook**.

manufactured fertiliser - means any *nitrogen fertiliser* (other than *organic manure*) manufactured by an industrial process.

nitrogen fertiliser - means any substance containing one or more nitrogen compounds used on land to enhance growth of vegetation and includes *organic manure*.

organic manure - means any *nitrogen fertiliser* derived from animal, plant or human sources and includes *livestock manure*.

organic manure with high readily available nitrogen - means *organic manure* in which more than 30% of the total nitrogen content is available to the crop at the time of *spreading*.³

poultry - means *poultry* included in **Tables 1.3 and 2.3** of the **Workbook**.

*sandy soil*⁴ - means any soil over sandstone, and any other soil where:

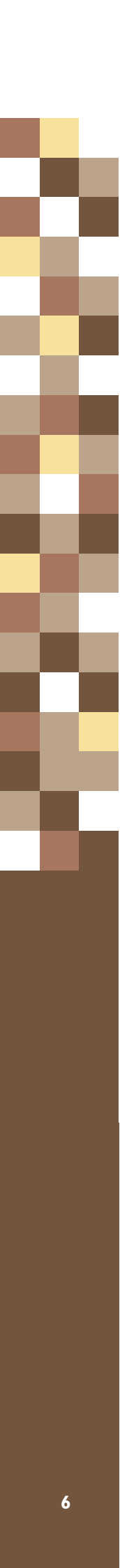
- a) in the layer up to 40 cm deep, there are:
 - i) more than 50% by weight of particles from 0.06 to 2 mm in diameter
 - ii) less than 18% by weight of particles less than 0.02 mm in diameter, and
 - iii) less than 5% by weight of organic carbon; and
- b) in the layer from 40 cm to 80 cm deep, there are:
 - i) more than 70% by weight of particles from 0.06 to 2 mm in diameter
 - ii) less than 15% by weight of particles less than 0.02 mm in diameter, and
 - iii) less than 5% by weight of organic carbon.

shallow soil - means soil that is less than 40 cm deep.

slurry - means excreta produced by *livestock* (other than *poultry*) while in a yard or building (including any bedding, rainwater or washings mixed with it) that has a consistency that allows it to be pumped or discharged by gravity (in the case of excreta separated into its liquid and solid fractions, the *slurry* is the liquid fraction).

³ generally this definition covers *slurry*, most forms of *poultry* manure and other off-farm wastes such as liquid digested sludges (solid farmyard manure, duck manure and dirty water do not come under this definition)

⁴ accurate assessment of soil texture requires laboratory analysis, but for practical purposes texture can be assessed by hand. A methodology is included in the RB209 Fertiliser Recommendations Manual.



spreading - includes application to the surface of the land, injection into the land or mixing with the surface layers of the land but does not include the direct deposition of excreta on to land by animals.

storage period - means:

- a) for pigs and *poultry*, the period between 1 October and 1 April, and
- b) for all other *livestock*, the period between 1 October and 1 March.

temporary field site - must not be:⁵

- a) in a field liable to flooding or becoming waterlogged
- b) within 50 metres of a spring, well or borehole, or within 10 metres of surface water or a land drain (other than a sealed impermeable pipe)
- c) located in any single position for more than 12 consecutive months
- d) located in the same place as an earlier one constructed within the last two years.

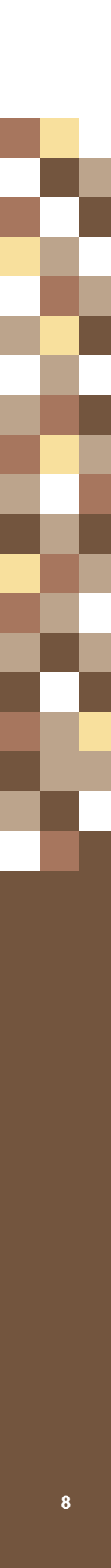
⁵ such a site can only be used for storage of *organic manure* as long as the material is solid (i.e. can be stacked in a free standing heap and that does not drain liquid)

Storage of *organic manure* (including *slurry*)

These rules do not apply until 1 January 2012. However, if you envisage that changes will need to be made to your farming system or that additional storage will be required to enable you to comply with the rules, you should start planning the actions you need to take, well in advance of this date.

The rules concerning calculations and record keeping apply from either 30 April 2009 (existing NVZs) or 30 April 2010 (newly designated NVZs) - see Part I of Workbook for details.

- If you store any *organic manure* (other than *slurry*), or any bedding contaminated with any *organic manure*, it must be stored:
 - a) in a vessel
 - b) in a covered building
 - c) on an impermeable surface
 - d) on a *temporary field site*, as long as the material is solid manure that can be stacked in a free standing heap and that does not drain liquid.
- You must cover with impermeable material solid *poultry* manure that does not have bedding mixed into it and is stored on a *temporary field site*.
- If you separate *slurry* into its solid and liquid fractions, it must either be carried out mechanically or on an impermeable surface where the liquid fraction drains into a suitable receptacle.
- If you keep any of the animals listed in **Tables 1.1, 1.2 and 1.3** of the **Workbook** you must provide sufficient storage for all *slurry* produced on the holding during the *storage periods*.
- You must also provide sufficient storage for all *poultry* manure produced in a yard or building on the holding during the *storage period*.
- You must calculate the volume of manure produced by the animals on the holding in accordance with **Tables 1.1, 1.2 and 1.3** of the **Workbook**.
- A *slurry* store must have the capacity to store, in addition to the manure, any rainfall, washings or other liquid that enters the vessel (either directly or indirectly) during the *storage period*.
- Storage facilities are not necessary for *slurry* or *poultry* manure:
 - a) sent off the holding, or

- 
- b) *spread on land that has a low run-off risk* (provided that this is done in accordance with other NVZ restrictions on *spreading*); but in this case storage facilities for an additional week's manure must be provided as a contingency measure in the event of *spreading* not being possible on some dates.

Limiting the application of *organic manure*

These rules apply from 1 January 2009 (existing NVZs) or 1 January 2010 (newly designated NVZs).

- You must ensure that in any calendar year the total amount of nitrogen in *livestock* manure applied to agricultural land, whether directly by the animals whilst grazing or by *spreading*, does not exceed 170kg multiplied by the area in hectares.⁶
- You must take into account all classes of *livestock* included in **Table 2.3** of the **Workbook** and you must use the figures in the Table to calculate the amount of nitrogen produced by *livestock*.
- The area of the holding used in the calculation should exclude surface waters, hardstandings, buildings, roads and ungrazed woodlands.
- You should ensure that in any twelve month period, the total amount of nitrogen in *organic manure spread* on any given hectare on the holding must not exceed 250kg.

Planning the *spreading of nitrogen fertiliser* (includes *manufactured fertiliser, slurry* and other *organic manures*)

The NVZ rules for this aspect relate only to planning and record keeping. Full details are included in the **Workbook**.

⁶ unless you have successfully applied for a derogation to this rule. Full details are available from Environment Agency Wales or the Welsh Assembly Government, but the basis of the derogation is that farms with at least 80% of their land as grassland may be eligible to allow an increase in the nitrogen loading limit from *livestock* manure of up to 250 kg/ha/year. Farms that are granted a derogation will also be required to adhere to the following conditions:

- *Livestock* manures with *high readily available nitrogen* must not be *spread* on grassland that is to be cultivated in the autumn.
- A high nitrogen requirement crop must be sown after ploughing out grassland
- Re-seeding grassland by ploughing on *sandy soils* should only be undertaken in the spring
- Legumes cannot be included in the rotation unless undersown with grass/clover
- An annual fertilisation plan must be prepared for phosphate as well as nitrogen
- Soil must be analysed for phosphate content every four years using a standard methodology
- There will be a requirement for record keeping

Total nitrogen *spread* on a holding

The following rules apply from 1 January 2009 (existing NVZs) or 1 January 2010 (newly designated NVZs).

Irrespective of the figures calculated for the Plan (in the section titled “Planning the *spreading of nitrogen fertiliser*”), you must ensure that the total amount of:

- a) nitrogen from *manufactured fertiliser*, and
- b) nitrogen available⁷ for crop uptake from *livestock manure*

spread on the crops listed in **Table 4.1** of the **Workbook** and calculated according to the figures in **Tables 4.2 and 4.3** of the **Workbook**, does not exceed the limits set out in any 12 month period (i.e. the total amount of nitrogen permitted to be spread on any given crop is the figure in the second column of **Table 4.1**, adjusted in accordance with the notes to the Table and multiplied by the total area in hectares of that crop sown on the holding).

For the purposes of this measure, you must first establish the total amount of nitrogen in the manure, either using **Table 4.2** of the **Workbook** or by sampling and analysis in accordance with **Annex I** of this **Guidance Booklet**.

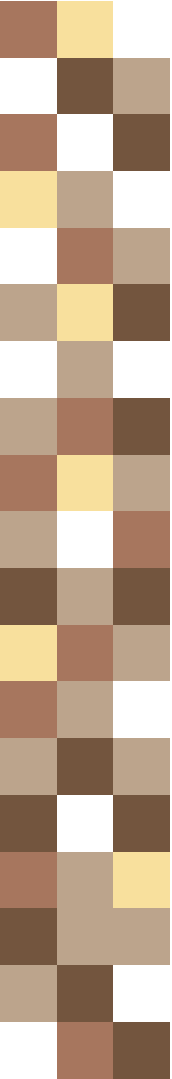
Once the total amount of nitrogen in the manure has been established, the percentages in **Table 4.3** of the **Workbook** must be assumed to establish the amount of nitrogen in the manure that is available for crop uptake in the growing season in which it is *spread*.

Controlling the *spreading of nitrogen fertiliser* (includes *manufactured fertiliser, slurry* and other *organic manures*)

The following rules apply from 1 January 2009 (existing NVZs) or 1 January 2010 (newly designated NVZs).

- If you intend to *spread nitrogen fertiliser*, you must first undertake a field inspection to consider the risk of nitrogen getting into surface water.
- You must not *spread nitrogen fertiliser* on land if there is a significant risk of nitrogen getting into surface water, in particular taking into account:
 - a) the slope of the land, particularly if greater than 12° (equivalent to “20%” or “1 in 5”)

⁷ in the growing season in which it is *spread*

- 
- b) any ground cover
 - c) proximity to surface water
 - d) weather conditions
 - e) soil type
 - f) presence of land drains.
- You must not *spread nitrogen fertiliser* if the soil is waterlogged, flooded or snow covered, or has been frozen for more than 12 hours in the previous 24 hours.
 - You must not *spread manufactured fertiliser* within 2 metres of surface water.⁸
 - You must not *spread organic manure* within 10 metres of surface water, however, *livestock manure* (other than *slurry* and *poultry manure*) may be *spread* there if:
 - a) it is *spread* on land managed for breeding wader birds or as a species-rich semi-natural grassland and the land is:
 - i) notified as a Site of Special Scientific interest, or
 - ii) subject to an agri-environment commitment
 - b) it is *spread* between 1 June and 31 October inclusive
 - c) it is not *spread* directly on to surface water
 - d) the total amount does not exceed 12.5 tonnes per hectare.
 - You must not *spread organic manure* within 50 metres of a borehole, spring or well.
 - If you *spread nitrogen fertiliser* you must do so in as accurate a manner as possible.
 - If you apply *organic manure* on to the surface of bare soil or stubble (other than soil that has been sown) you must ensure that it is incorporated into the soil in accordance with the following:
 - *Poultry manure* must be incorporated as soon as practicable, and within 24 hours at the latest

⁸ includes: coastal waters, estuaries, canals, lakes, ponds, rivers, streams, and ditches which contain free flowing water and also temporarily dry ditches and blind ditches

- *Slurry* and liquid digested sewage sludge (that is, liquid from the treatment of sewage sludge by anaerobic digestion) must be incorporated as soon as practicable, and within 24 hours at the latest, unless it was applied in separated bands
- if the land is within 50 metres of surface water and slopes in such a way that there may be run-off to that water, any other *organic manure* (other than *organic manure spread* as a mulch on *sandy soil*) must be incorporated into the soil as soon as practicable, and within 24 hours at the latest.

The following rule applies from 1 January 2012 in all NVZ areas.

- If you *spread slurry* you must use *spreading* equipment with a low *spreading* trajectory, i.e. below 4 metres from the ground.

Closed periods for *spreading nitrogen fertiliser* (includes *manufactured fertiliser, slurry* and other *organic manures*)

The following rules apply from 1 January 2009 (existing NVZs) or 1 January 2010 (newly designated NVZs).

- You must not spread *organic manure with high readily available nitrogen*⁹ on land during the following inclusive dates (the “closed period”):

Soil type	Grassland	Tillage land
<i>Sandy or shallow soil</i> ¹⁰	1 September to 31 December	1 August to 31 December
All other soils	15 October to 15 January	1 October to 15 January

- Spreading *organic manure with high readily available nitrogen* on tillage land with *sandy* or *shallow soil* is permitted between 1 August and 15 September inclusive provided that the crop is sown on or before 15 September.

⁹ generally this definition covers *slurry*, most forms of *poultry* manure and other off-farm wastes such as liquid digested sludges (solid farmyard manure, duck manure and dirty water do not come under this definition)

¹⁰ accurate assessment of soil texture requires laboratory analysis, but for practical purposes texture can be assessed by hand. A methodology is included in the RB209 Fertiliser Recommendations Manual.

- If you are an occupier of a holding registered as an organic producer with a body registered with the Advisory Committee on Organic Standards you may *spread organic manure with high readily available nitrogen* at any time on:
 - a) crops listed in **Table A** below, or
 - b) other crops in accordance with written advice from a person who is a member of the Fertiliser Advisers Certification Training Scheme

provided that each hectare on which *organic manure* is spread does not receive more than 150 kg total nitrogen between the start of the closed period and the end of February.

Table A - Crops to which *nitrogen fertiliser* may be applied during the “closed period” (subject to conditions)

Crop	Notes	Maximum nitrogen rate (kg/ha)
Winter oilseed rape	a	30
Asparagus		50
Brassica	b	100
Grass	a,c	80
Over-wintered salad onions		40
Parsley		40
Bulb onions		40

Notes

- a) Nitrogen must not be *spread* to these crops after 31 October
 - b) An additional 50 kg/ha of nitrogen may be *spread* every 4 weeks during the closed period up to the date of harvest
 - c) A maximum of 40 kg/ha nitrogen may be *spread* at any one time.
- From the end of the closed period until the end of February
 - a) the maximum amount of *slurry* that may be *spread* at any one time is 50 cubic metres per hectare and the maximum amount of *poultry manure* that may be spread at any one time is 8 tonnes per hectare, and
 - b) there must be at least three weeks between each *spreading*.
 - Until 1 January 2012, farms who apply *organic manure* in the above closed periods and are able to prove that they could not satisfy the NVZ storage requirements may use the absence of sufficient storage as a defence.

- You must not *spread manufactured fertiliser* on land during the following periods (all dates inclusive):
 - a) on grassland, from 15 September to 15 January
 - b) on tillage land, from 1 September to 15 January.
- *Spreading manufactured fertiliser* during these periods is permitted to crops specified in **Table A**, provided the maximum rate in **Column 2** is not exceeded.¹¹
- *Spreading manufactured fertiliser* during those periods on crops not in **Table A** is permitted on the basis of written advice from a person who is a member of the Fertiliser Advisers Certification Training Scheme.

¹¹ If you apply *manufactured fertiliser* during the closed period, you should ensure that its use was identified as necessary in your “Nitrogen fertiliser spreading plan” (see **Part 3** of the **Workbook**)

Sampling and Analysis

Slurry

1. At least five samples, each of 2 litres, must be taken.
2. The sample must be taken from a slurry vessel, and
 - a) if reasonably practicable, the slurry must be thoroughly mixed before the samples are taken, and
 - b) each sample must be taken from a different location.
3. But if a tanker used for *spreading* is fitted with a suitable valve, the samples may be taken while *spreading*, and each sample must be taken at intervals during the *spreading*.
4. The samples must be poured into a larger container, stirred thoroughly and a 2 litre sample must be taken from that container and poured into a smaller clean container.
5. That sample must then be sent for analysis.

Solid manures

1. The samples must be taken from a manure heap.
2. At least ten sub-samples of 1kg each must be taken - each from a different location in a heap.
3. Each sub- sample must be taken at least 0.5 metres from the surface of the heap.
4. If samples are being collected to calculate compliance with the whole farm limit for pigs and *poultry*, four samples for analysis must be taken in a calendar year (one taken in each quarter) from manure heaps not more than 12 months old.
5. The sub-samples must be placed on a clean, dry tray or sheet.
6. Any lumps must be broken up and the sub-samples must be thoroughly mixed together.
7. A representative sample of at least 2kg must then be sent for analysis.