

Country Report

for **Lithuania**

Implementation and status of priority measures

Baltic Compass WP3

Cover Note

In order to keep the focus of the data collection narrow, we are not interested in collecting information on EU regulatory requirements that are common to the BSR. Instead please focus on those requirements that are specifically national or local in design. For example, do not cover Nitrates Directive requirements that are common BSR (eg N-limit) but DO cover the way that action plans have been devised, what they include and how they operate.

To avoid repetition, if the information you are supplying in a section is common to several measure then please provide a description on one form only and then make links back to this form.

1. Promoting long-term grass cultivation of arable land

Cultivation of grass or legume/grass crops on arable land with high/low inputs of nitrogen (N) and phosphorus (P) and high/low outputs of feed, food or other services can reduce nitrogen and phosphorus leaching and surface run-off losses as well as soil erosion, compared with annual crops on arable land.

Crop rotations including **permanent grass or legume/grass crops** can decrease N leaching with 50%, compared with crop rotations dominated by annual crops.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit: **this measure must be more popular because subsidy is going to be bigger.**

2. To what extent is this measure implemented today in relation to goal set above? **2**
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **4**
"0"=Impossible; "10"=Very good

Comments: every year area of land is increasing: 2008-28789ha, 2009- 36451ha, 2010 - 49834ha

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

2. Vegetative cover in autumn and winter of arable land

Annual winter crops, such as winter wheat or winter rape, can provide a vegetative cover that actively takes up available nitrogen and phosphorus from the soil more efficient than annual spring crops at a seasonal period with high precipitation and cool climate.

Catch crops can be under-sown in the main crop, simultaneously with, or just after the sowing of this crop. When the main crop is harvested, the catch crop has an established root system ready to take up nitrogen from the soil during late summer and autumn. Nitrogen that otherwise could have been leached is then taken up and incorporated into plant material. The catch crop is then ploughed-in as late as possible in autumn or in spring. Perennial ryegrass (*Lolium perenne* L.) as a catch crop is an effective measure to reduce N leaching in spring cereal crop production. The use of catch crops has reduced N leaching by 50% or more in several studies. The effect of the catch crop on N leaching depends on precipitation and drainage conditions, available N amounts in soil and how successful the establishment of the catch crop was.

Describe this measure in your country if different : Over wintered stubbles provide an important winter food source for seed-eating birds, from split

grain and the seed of broad-leaved weeds. They are also a beneficial habitat for brown hare, grey

partridge and other wintering birds. Stubble fields provide shelter for many species of rodents which are important source of food for endangered birds of prey.

Soil surface of over wintered stubbles is locked by roots of plants and is more resistant against water and wind erosion. This is important in areas where intensive production of cereals takes place in huge open monoculture fields.

After harvesting of cereals or oilseed rape, stubble fields shall rest not ploughed until 1st of March next year. Each year a stubble field, left for winter season may be located in another place, but the area of each field every shall be the as indicated in application form.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized? **now in action**
 - c) give reference(s): Lithuanian rural development programme 2007-2013.
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **4**
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **6**
"0"=Impossible; "10"=Very good

Comments: every year area of land is increasing: 2008-22512ha, 2009- 41649ha, 2010 - 56820ha

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments: for participation in actions (stubby field in winter season), the farmer shall: after the harvesting to put order straw in order, bailing it into rolls or shredding it and spreading on the surface.

light cultivation of the surface for the purpose of coppicing of weed seeds or loosening the compressed soil is permitted to be performed only till 30 September;
not spray any pesticides, any herbicides after harvesting;
not use any fertilizers on stubble, not to lime, graze or trim stubby fields;

3. Soil tillage management

3.1. Reducing soil tillage by conversion from ploughing to minimal or no cultivation management systems or conversion from deep ploughing to shallow ploughing can reduce mineralization of organic matter in soil. Type of techniques can be, i.e. using discs or tines to cultivate the soil, or direct drill into stubbles (no-till).

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

3.2 Time-of the year effects. By postpone tillage actions from autumn to spring, the mineralized nitrogen will be available for uptake by the established spring crops, which also will provide surface cover.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**
 - If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
 - If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:
2. To what extent is this measure implemented today in relation to goal set above?

"0"=Not at all; "10"=Goal already reached
3. If goal is not reached; how do you judge the possibilities to fulfill it?

"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

4. Fertilisation management

4.1. Adapting amounts applied for both chemical fertilizer and manure.

Animal density is a tool to express the number and type of animals kept at the farm in relation to the arable area available for spreading their manure. The tool is used to balance amounts of produced N and P in manure to available spreading area at the farm in order to avoid surplus application of N and P with manure.

Considering crop requirements of N and P in the fertilising plan is a prerequisite for avoiding excessive applications. Nitrogen and P content in manure shall be considered in the fertiliser plan in order to adapt the need of chemical fertilizers and avoid excessive applications.

Sampling and analysing N and P in manure gives information of the N and P concentration and the distribution of plant available-N and organic-N. Then the effect of the manure can be valued in the fertilising plan. Manure characteristics can vary a lot. Liquid manure is a general term that denotes any manure from housed livestock that flows under gravity and can be pumped. Liquid manure can have a high proportion of plant available N (NH₄-N + NH₃-N) of total-N content. Solid manure is a general term that denotes any manure from housed livestock with large amounts of bedding that does not flow under gravity, cannot be pumped but can be stacked in a heap. Solid manure can have a high proportion of organic-N of total-N content.

Sampling and analysing N and P in arable soil gives information of soil fertility concerning these nutrients, which should be considered in the fertilising plan in order to avoid excessive fertilizer applications or deteriorated soil fertility.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**
- If "Yes";
 - a) specify quantity and unit: The amount of livestock manure applied each year, including manure left on fields after grazing, should not exceed the equivalent of 170 kg of nitrogen per hectare.
 - b) if applicable, what year to be realized? **in action now**
 - c) give reference(s): Water pollution from agricultural sources reduction program.
 - If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit:
2. To what extent is this measure implemented today in relation to goal set above? **8**
"0"=Not at all; "10"=Goal already reached
3. If goal is not reached; how do you judge the possibilities to fulfill it? **9**
"0"=Impossible; "10"=Very good

Comments: if measure -170 kg of nitrogen per hectare is not correct in farm, according Cross Compliance requirements farm can be drawn penalty

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules
Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

4.2. Calculating nutrient balances on farm- and/or field level

Calculating N and P inputs/outputs and balances on farm and/or field level is a performance tool and a policy tool for assessing the environmental impact. The tool can also be used to monitor and evaluate the impacts of alternative manure and chemical fertilizer management practices and technologies on N and P use at the farm. When farm N and P balances can be linked to within-farm N and P sources and flows, there is a good possibility to identify the weakest link and possible improvements on the farm. The tool can be used to assess the risk of ammonia losses from manure management and the risk of N leaching losses to water.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

*Is this measure regulated in legislation? **No** If "Yes"; national or regional rules*

Reference(s) to legislation:

Comments:

*Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules*

Reference(s) to subsidy rules:

Comments:

4.3. Avoiding the spreading of chemical fertilizers and manure during high-risk periods.

The timing of chemical fertilizer and manure application is a key factor to have a high plant nutrient use efficiency. Poor timing is one of the most important sources of large N leaching loads.

Describe this measure in your country if different : Organic fertiliser (manure, sewage sludge, composts, etc.) should be spread from drying up of soil in spring to freezing of soil in autumn. Periods of application of organic fertilizers:

1. Forbidden to spread organic fertilizers from 15 November to 1 April.
2. Forbidden to spread organic fertilizers from 15 June to 1 August (except in fallow and grassland).
3. Forbidden to fertilize if land are frozen under snow or waterlogged.

The highest amount of manure is accumulated during winter. If it is not spread in spring, it has to be stored over summer. Therefore, there appear quite big nitrogen losses. In order to achieve higher benefit, manure has to be handled with regard to the time when experienced nitrogen losses are lower, soil structure is less destroyed and crops are less injured at the time of fertilisation. In order to achieve higher benefit, manure has to be handled with regard to the time when experienced nitrogen losses are lower, soil structure is less destroyed and crops are less injured at the time of fertilisation.

Manure should be spread at more humid, colder and less windy time in order to reduce nitrogen losses. It is very important to spread manure evenly.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**

- If "Yes";
 - a) specify quantity and unit: [redacted]
 - b) if applicable, what year to be realized? **in action now**
 - c) give reference(s): water pollution from agricultural sources reduction program.
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit: [redacted]

2. To what extent is this measure implemented today in relation to goal set above? **7**
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **9**
"0"=Impossible; "10"=Very good

Comments: spreading time is valid on all land (in Lithuania agricultural land - 2,6 mln. ha)

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules

Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

4.4. No or reduced P-fertiliser for high soil P fields or part of fields.

When the soil P values increase beyond agronomical optimum ranges, there is a reasonable consistence pattern whereby P leaching increase significantly. However, P leaching has large spatial and temporal variations and can be influenced by several factors interacting with each other. It is therefore important to consider site-specific factors to be able to find measures to reduce P leaching.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

*Is this measure regulated in legislation? **No** If "Yes"; national or regional rules*

Reference(s) to legislation:

Comments:

*Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules*

Reference(s) to subsidy rules:

Comments:

5. Improved spreading technology of manure and chemical fertiliser

5.1 Site-specific dosage. In all fertiliser application, the use of **Global Positioning System (GPS)** signals for the purpose of determining the device's current location on earth can improve the possibilities for a controlled and proper distribution. GPS devices provide latitude and longitude information, and some may also calculate altitude. GPS in combination with **steering aid systems** means that the fertiliser can be spread with a minimum of bare spots and overlaps. The simpler variant of the

steering aid system is called **guidance**, where a ramp with a series of LEDs shows whether the driver is located right on line or if he should adjust to the right or left.

Auto steer is an automated steering system where the driver does not need to actively steer the vehicle except perhaps in curves or when turning. With the use of GPS technology, it is also possible to map different properties in the field, and later on use this information e.g. for **site specific spreading** of fertilisers.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **1**
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **5**
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

5.2 Combined drilling is when seeding and fertilisation is done with one and the same machine in one working operation. A drilling machine with normal distance between the drill coulters is equipped with coulters for chemical fertilisers placed in front of the drill coulters between every other row. Fertiliser coulters are placing chemical fertiliser a few centimetres deeper than the seeds.

Chemical fertiliser placed at this depth, provides good conditions for the crop to take up the added nutrients. This procedure is, in addition to time savings and a better nutrient utilization, reducing competition for plant nutrients from weeds and reduces the risk of nutrient surface runoff. Phosphorus in fertilizers binds quickly to soil particles and is thus less exposed to leaching.

The recommended nitrogen ration at a given harvest level can be reduced by 10 kg N / ha, if combined drilling is applied (Albertsson, 2010). Leaching will probably be reduced by 1-2 kg N/ha compared with other fertilization techniques.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**
 - If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
 - If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:
2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached
3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

*Is this measure regulated in legislation? **No** If "Yes"; national or regional rules*

Reference(s) to legislation:

Comments:

*Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules*

Reference(s) to subsidy rules:

Comments:

5.3 Incorporation of manure and chemical fertiliser may be achieved with equipments such as discs or cultivators depending on soil type and soil conditions. Usually the incorporation is done in a separate working operation. The manure/ chemical fertiliser must be completely incorporated within the soil to achieve maximum efficiency. As regards liquid manure, incorporation should be made quickly after spreading as ammonia losses takes place immediately after spreading.

This method will help to prevent the exposure of manure to the surface runoff and drain-flow losses. It will also increase the utilisation of manure nutrients compared with surface application.

Describe this measure in your country if different : Manure should be incorporated into the soil within 12 hours after application.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**

- If "Yes";
 - a) specify quantity and unit: manure should be incorporated into the soil within 12 hours after application.
 - b) if applicable, what year to be realized? **in action now**
 - c) give reference(s): water pollution from agricultural sources reduction program.
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **6**
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **8**
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules

Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

5.4 Liquid manure. Distribution uniformity of liquid manure has improved significantly with the introduction of **band spreading** technology, where the manure is discharged just above ground level in strips or bands through a series of hanging or trailing pipes attached to a boom. As the liquid manure is distributed laterally via a ramp, good lateral distribution uniformity is achieved. The spread in the longitudinal direction can also be kept at a constant level by means of the pumping equipment which is part of the equipage. Some newer spreaders are also equipped with a **control system** that automatically adjusts the output to the driving speed, which will keep the application rate to the desired level.

Injection of liquid manure means that it is applied directly into the active layer of soil, either in open or in closed slots. In the latter case manure is fully covered after injection, by closing the slots with press wheels or rollers fitted behind the injection tines. Closed-slot injection is more efficient than open-slot for decreasing the ammonia emission. To obtain this added benefit, soil type and conditions must allow effective closure of the slot.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

5.5 Solid manure. In solid manure handling, **disintegration equipment** has been developed that breaks the manure better and gives greater working width and more uniform spreading laterally. Distribution of solid manure in the longitudinal direction and opportunities to set the intended application rate still leaves much to be desired.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

5.6 Manure spreading and NH₃ emissions – general measures. Variables significantly affecting NH₃ emissions after spreading of manure are soil water content, air temperature, wind speed, manure type, dry matter content of manure, total ammoniacal nitrogen content of manure (TAN=NH₃-N+NH₄-N), application method and rate and manure incorporation. Losses of NH₃ can vary between 3 to 90% of the NH₄-N applied with manure.

Describe this measure in your country if different : About 30 % of nitrogen may be lost in 6 hours after spreading solid manure on ground and before its incorporation. But if it is incorporated into soil directly then nitrogen losses reach only 10 %. The most appropriate way to incorporate solid manure is to plough it over. If fine peat or chopped straw were used as litter then the solid manure may be incorporated by disc harrow. The highest nitrogen losses occur when solid manure is applied on perennial grasses in summer. Slurry and liquid manure should be spread in crop fields by trailing hoses. Having not such equipment, such manure should not be applied in crop fields. Slurry and liquid manure should be spread on bare soil by trailing hoses or broadcast spreaders and incorporated by cultivator with harrow within 12 hours after application.

Nitrogen losses from slurry fluctuate from 3 to 50 %. If slurry is poured in dry warm period but not incorporated then the losses are highest. But if it is spread in late autumn and not introduced then only about 10 % of nitrogen are lost per day. Liquid manure, which is spread in early spring and not incorporated, may loose to 10 % per first hour, to 20 % per day and to 40 % of ammonia nitrogen if not incorporated at all. Therefore, the quicker manure and liquid manure are incorporated, the less nitrogen is lost. In lighter textured soils slurry and liquid manure can be successfully incorporated by rod harrow, but in heavier soils cultivator with harrow will better incorporate the fertilisers.

Minimal nitrogen losses occur when special sprinklers incorporate slurry and liquid manure.

In order to reduce crop losses caused by heavy machinery of slurry application it is needed to choose such time when soil has dried up and the dew has fallen from plants. The best is if fertilisation and plant protection machinery can use non-sown ruts and technological ruts made during first riding of the machinery.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**

- If "Yes";
 - a) specify quantity and unit: Since 2014, 1 April fields fertilized with liquid manure and slurry, the use of sprays (representing more than 20 percent. fine aerosol particles) the dissemination of technologies.
 - b) if applicable, what year to be realized? **2014**
 - c) give reference(s): water pollution from agricultural sources reduction program.
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **7**
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **9**
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules

Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

6. Avoiding the application of chemical fertilisers and manure to high-risk areas

Examples of high risk areas on arable land are those: with a significant slope, with flushes draining to a nearby watercourse, soils with cracks over field drains, fields adjacent to water or fields with phosphorus values beyond agronomical optimum ranges.

Describe this measure in your country if different : Max. N-fertilizer amounts, The amount of livestock manure applied each year, including manure left on fields after grazing, should not exceed the equivalent of 170 kg of nitrogen per hectare.

In 1991, a resolution "On Measures to improve the Ecological Situation in the Karst Region of Lithuania" was issued by the Government of Lithuania.

Land was grouped into four categories with regard to the degree of ecological vulnerability measured in terms of the presence of karst processes in rocks of geological substrate, density and depth of karst sinkholes, type of hydrographic network and ground water

pollution indexes.

For each group a series of restrictions on agricultural practices were outlined:

1. In the first land zone (density of sinkholes below 5-20 per 100 ha) perennial grasses should comprise – 20% of crops structure. Fertilization rates should not exceed 100 kg/ha of nitrogen (from mineral and organic fertilizers) per year.
2. In the second land group (21-50 sinkholes per 100 ha) perennial grasses should comprise – 30% of crops structure. Fertilization rates should not exceed 80 kg/ha of nitrogen (from mineral and organic fertilizers)
3. In the third land group (51-80 sinkholes per 100 ha) perennial grasses should comprise – 40% of crops structure. Fertilization rates should not exceed 70 kg/ha of nitrogen (from mineral and organic fertilizers)
4. In the fourth land group (more than 80 sinkholes per 100 ha) only meadows and forests are permitted. Fertilization rates should not exceed 60 kg/ha of nitrogen (from organic fertilizers). It is permitted to grow plants for honey or medical, but no plant protection chemicals may be applied.

Is forbidden for liquid manure and slurry spread on Saturdays, Sundays and public holidays, less than 100 m from a residential home without the resident's consent, and 300 m from the village without the consent of the Elder.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized? **in action now**
 - c) give reference(s): Water pollution from agricultural sources reduction program.
- If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **5**
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **8**
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules

Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Resolution "On Measures to improve the Ecological Situation in the Karst Region of Lithuania".

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional

subsidy rules

Reference(s) to subsidy rules:

Comments:

7. Measures to optimize soil pH and improve soil structure

Measures to improve soil fertility and soil structure can increase the crop's plant nutrient use efficiency and decrease the risk of N and P leaching and surface run-off. Such measures can be liming for improved soil structure or liming for optimizing soil pH.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **1**
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **3**
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

8. Adapted feeding

8.1 Adopting phase feeding of livestock

Livestock at different growth stages or stages of the reproductive cycle have different optimum nutritional requirements. Greater division and grouping of livestock on the

basis of their feed requirements allows more precise formulation of individual rations. This increases the animal's nutrient use efficiency and results in reduced excreted amounts of nitrogen and phosphorus in fresh animal faeces and urine.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

8.2 Reducing dietary nitrogen and phosphorus intakes

Farm animals are often fed diets with higher than recommended contents of nitrogen and phosphorus as a safeguard against a loss of production arising from a deficit of these nutrients. A surplus intake of nitrogen and phosphorus is not utilised by the animal and is excreted with faeces and urine, leading to a larger N and P content in the manure. Therefore a ratio balancing of nutrients in feed is a key factor to both ensure animal health and production requirements and minimizing adverse environmental impacts. To improve nutrient use efficiency purchased as well as home-produced feed components need careful management and analysis of nutrient content and dietary value.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

8.3 Phytase supplementation

Supplementation of synthetic phytase to pig feed reduces the need for the addition of mineral phosphate. Phytase increases the availability of phosphorus in the feed and allows total phosphorus contents to be reduced without affecting productivity. With the addition of phytase the phosphorus content of the feed can be reduced by up to 30% for pig feed.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

8.4 Wet feed and fermentation

Endogenous phytase in grain can be activated by wetting the pig feed some time before feeding thereby reducing or even eliminating the need for mineral phosphorus supplementation. This means that pig production with wet feed systems should be able to utilise feed with lower phosphorus content than normally recommended.

Fermentation of the feed can reduce the need for mineral phosphate supplementation. Fermentation occurs naturally in wet feed after a certain amount of time. The fermentation process is difficult to manage and the method is still to be developed.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

9. Reducing ammonia losses in stable

Key emissions to air from animal housing emissions are ammonia (NH₃), odor and dust. The level and variation of ammonia emissions from animal housing are determined by many factors, which also interact. Factors influencing ammonia emissions from animal housing are:

- Increased nitrogen use efficiency.
- Decreased emitting areas with manure in the stable.
- Avoiding high temperature in stable and manure
- Adapting airflows along manure surfaces.
- Use and choice of bedding material.

Describe this measure in your country if different : factor influencing ammonia emission: more frequently manure removing from stable.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country: Lithuania does not have official goals, so farmers will not begin to solve this problem by themselves. They don't see any benefit.

Is this measure regulated in legislation? **No** If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

10. Storage of manures

Adequate collection and storage facilities provide the possibility to choose a time to apply manure to fields when the crops can utilize N and P and there will be fewer occasions when lack of capacity forces the farmer to spread manure at unsuitable times.

Manure storage must be of such a quality that it prevents N, P and manure losses. The main influencing factors on the ammonia losses from storages are manure properties (pH, dry matter content) temperature and wind conditions, filling technology, storage time, and for liquid manure storage ratio surface: volume, crust formation and mixing methodology.

Ammonia losses can be sharply reduced if the air directly above the liquid manure store is prevented from circulating. A method that efficiently reduces NH₃ losses is to cover the liquid manure stores with, for instance, a roof, a floating plastic cover or a stable natural crust. If the liquid manure storage is filled underneath the cover, this can be kept intact even during filling, which reduces the risk of NH₃ losses.

From storages with solid manure, especially if composting takes place with high temperatures, NH₃ losses could be high. Peat included in the bedding material will reduce NH₃ losses during storage. Roofs on solid manure storages could be an effective measure to reduce ammonia losses from solid manure storages. Additionally, a roof keeps rainwater away, which could prevent nutrient leakage from the manure pad if it has insufficient or lacking drainage leading to a collection pit.

Describe this measure in your country if different :

Manure storages should be constructed in the farms keeping more than 10 animal units. except farms keeping animals on deep litter.

Establish manure storages on farms keeping from 10 to 300 AU within till 1 January 2012.

Manures storage should be of such size that could contain manure of 6 month.

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**

- If "Yes";
 - a) specify quantity and unit: [redacted]
 - b) if applicable, what year to be realized? **2012**
 - c) give reference(s): Water pollution from agricultural sources reduction program.
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit: [redacted]

2. To what extent is this measure implemented today in relation to goal set above? **5**
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **8**
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country: Farmers dont want make investment in manure handling.

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules

Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

11. Constructed wetlands for nutrient reduction/retention

11.1 Sedimentation ponds

Small surface flow wetlands designed primarily to retain phosphorous. This is achieved by retaining eroded phosphorous bound to aggregates and particulate materials in the run-off water by optimizing the conditions for sedimentation processes. To some extent phosphorous and other nutrients are reduced due to biological and chemical decomposition and transformation processes as well as plant uptake.

A sedimentation pond is suitable for establishment in highly intensive small-scale agricultural areas. The ponds are relatively small representing approximately 0.1 –

0.5 % of the run-off area. The sedimentation pond is constructed for instance by widening a section in a ditch into a sedimentation pond slowing down the speed of the run-off water hence increasing sedimentation.

A sedimentation pond is often designed as a serial combination of (i) a sedimentation basin with a water depth of 1-1.5 m representing 20-30% of the total area of the sedimentation pond where the main sedimentation of larger particles takes place, followed by (ii) a wetland filter covered with typical wetland plants providing good conditions for sedimentation of smaller particles. In case the area is highly sloped it is suitable to include an overflow area followed by a second wetland filter prior to the outlet to further induce the sedimentation efficiency.

The accumulated sediments in the sedimentation basin need to be removed on regular basis for maintenance.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? No

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? No If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? No If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

11.2 Constructed wetlands

Large free water surface wetlands are designed and constructed primarily for removal of nutrients, e.g. nitrogen and phosphorous and other pollutants from run-off water through sedimentation, biological and chemical transformation and degradation and plant uptake. Constructed wetlands have additional benefits, i.e. improved biodiversity, water storage capacity, resource recovery, irrigation possibilities and production of crop biomass.

Constructed wetlands are established, or re-established, to receive water from large run-off areas in arable as well as agricultural areas. The run-off area should be represented by at least 50 percent intensive agricultural land use with the constructed wetland covering approximately 0.5–4 % of the total run-off area.

An important characteristic is the establishment of typical emerges and submerges wetland vegetation. A constructed wetland provides heterogenic water regimes and environments. It is common with a mixture of areas with (i) permanently high water level, more or less covered with typical wetland vegetation, as well as (ii) periodically waterlogged areas with low water level. The water regime can also vary over the year.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **No**
 - If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
 - If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:
2. To what extent is this measure implemented today in relation to goal set above?

"0"=Not at all; "10"=Goal already reached
3. If goal is not reached; how do you judge the possibilities to fulfill it?

"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

*Is this measure regulated in legislation? **No** If "Yes"; national or regional rules*

Reference(s) to legislation:

Comments:

*Is this measure entitled to economic subsidy? **No** If "Yes"; national or regional subsidy rules*

Reference(s) to subsidy rules:

Comments:

12. Buffer-zones along water areas and erosion sensitive field areas

Buffer zones are uncultivated areas between fields and water courses, main ditches, ponds, lakes or gulfs. Buffer zones are also to be implemented in erosion sensitive field areas such as around surface water wells or surrounding field areas with high ground water levels.

Buffer zones reduce the speed of water surface run-off mitigating losses of eroded aggregates, soil particles, and particulate phosphorous and other soil borne

pollutants. They also decrease the risk of freshly spread manure and pesticides to reach the water environment. Buffer zones are an especially important measure in areas with eroding problems. Buffer zones also provide conditions for biological and chemical transformation of pollutions as well as plant uptake.

The buffer zones are under permanent plant cover of dense grass or vegetation. Buffer zones are situated on former agricultural land and have a width of 5-20 m. They are not allowed to be cultivated, fertilized or sprayed with herbicides or pesticides. The vegetation should be kept dense and plants should be established if needed for maintenance.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented? **Yes**

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above? **5**
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it? **7**
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? **Yes** If "Yes"; national or regional rules
Reference(s) to legislation: Special land and forest use (Lithuanian). 1992 m. gegužės 12 d. nutarimas Nr. 343

Comments:

Is this measure entitled to economic subsidy? **Yes** If "Yes"; national or regional subsidy rules
Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

13. Added measure; no and title

Description of measure.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented?

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

14. Added measure; no and title

Description of measure.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented?

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
 "0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
 "0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules: Lithuanian rural development programme 2007-2013.

Comments:

15. Added measure; no and title

Description of measure.

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented?

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years? quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? If "Yes"; national or regional rules

Reference(s) to legislation: Environmental requirements for manure and sewage handling (Lithuanian). 2005 m. liepos 14 d. Nr. D1-367 / 3D-342, Vilnius.

Comments:

Is this measure entitled to economic subsidy? If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

16. Added measure; no and title

Description of measure

Describe this measure in your country if different :

1. Is there any official quantified goal that states to what extent this measure should be implemented?

- If "Yes";
 - a) specify quantity and unit:
 - b) if applicable, what year to be realized?
 - c) give reference(s):
- If "No", what is your expert opinion of the desirable level in 5 years?
quantity and unit:

2. To what extent is this measure implemented today in relation to goal set above?
"0"=Not at all; "10"=Goal already reached

3. If goal is not reached; how do you judge the possibilities to fulfill it?
"0"=Impossible; "10"=Very good

Comments:

Comments on why the goal is easy/difficult to reach, what are the most important parameters in your country:

Is this measure regulated in legislation? If "Yes"; national or regional rules

Reference(s) to legislation:

Comments:

Is this measure entitled to economic subsidy? If "Yes"; national or regional subsidy rules

Reference(s) to subsidy rules:

Comments:

List of used words

Agricultural land (also **agricultural area**) denotes the land suitable for agricultural production, both crops and livestock.

Arable land is land under temporary agricultural crops, temporary meadows for mowing or pasture, land under market and kitchen gardens and land temporarily fallow (less than five years). The abandoned land resulting from shifting cultivation is not included in this category.

Permanent crops - land cultivated with long-term crops which do not have to be replanted for several years; land under trees and shrubs producing flowers, such as roses and jasmine; and nurseries (except those for forest trees, which should be classified under "forest")

Permanent meadows and pastures - land used permanently (five years or more) to grow herbaceous forage crops, either cultivated or growing wild (wild prairie or grazing land).

References

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harald.menzi@shl.bfh.ch

Definitions of agricultural words can be found in the FAO glossary
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