STATUS OF NUTRIENT BOOKKEEPING IN LITHUANIA

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Lithuania

Workshop in Oldenburg, 2015
- **Population:** 2,979,000 (0.6% EU)
- **Geographical size:** 65,300 km²
- **Border to neighbour states:** Latvia (588 km), Belarus (678 km), Poland (104 km) and Russia (273 km)
- **Seaboard:** 90 km.
- **22,000 rivers and streams**
- **2,830 lakes.**
- **The country is flat**, with a few low hills in the western uplands and eastern highlands.

<table>
<thead>
<tr>
<th>LAND-USE CATEGORIES</th>
<th>Area, thou. ha</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural land</td>
<td>3,465.3</td>
<td>53.1</td>
</tr>
<tr>
<td>Forest land</td>
<td>212.3</td>
<td>32.5</td>
</tr>
<tr>
<td>Other wooded land (bushes)</td>
<td>79.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Roads</td>
<td>13.2</td>
<td>2.0</td>
</tr>
<tr>
<td>Urban territory</td>
<td>180.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Water</td>
<td>262.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Swamps (bogs)</td>
<td>117.2</td>
<td>1.8</td>
</tr>
<tr>
<td>Other land</td>
<td>170.5</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,530</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Protected area in Lithuania – 15.74%

All Lithuanian territory designated as Nitrate vulnerable zone
NATURA 2000

Habitat protection areas
Bird protection areas
View of Lithuania’s farm situation

No. of registered farmers in farm registre ~ 119 202
No. of associated agricultural enterprises ~ 600
No. of applications for Direct payment ~ 142 581
Average agr. holding size ~ 15,1ha

Šaltinis: LT Statistikos departamentas, 2014 m.
Registered holdings manage land area...
Applications for the direct payment

15 pav. Pateiktų deklaracijų skaičius, bendras deklaruotas plotas, vidutinis deklaruoto ploto dydis 2004-2014 m.

<table>
<thead>
<tr>
<th>Year</th>
<th>Pateiktų deklaracijų skaičius, tūkst.</th>
<th>Deklaruotas plotas, tūkst. ha</th>
<th>Vidutinis deklaruoto ploto dydis, ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>237,5</td>
<td>2554,5</td>
<td>10,8</td>
</tr>
<tr>
<td>2005</td>
<td>226,7</td>
<td>2574</td>
<td>11,4</td>
</tr>
<tr>
<td>2006</td>
<td>212,8</td>
<td>2619</td>
<td>12,3</td>
</tr>
<tr>
<td>2007</td>
<td>197,6</td>
<td>2646,5</td>
<td>13,4</td>
</tr>
<tr>
<td>2008</td>
<td>182,8</td>
<td>2627,6</td>
<td>14,4</td>
</tr>
<tr>
<td>2009</td>
<td>176,6</td>
<td>2648,2</td>
<td>14,9</td>
</tr>
<tr>
<td>2010</td>
<td>172,1</td>
<td>2687,3</td>
<td>15,6</td>
</tr>
<tr>
<td>2011</td>
<td>167,7</td>
<td>2736,5</td>
<td>16,3</td>
</tr>
<tr>
<td>2012</td>
<td>159,4</td>
<td>2784,3</td>
<td>17,5</td>
</tr>
<tr>
<td>2013</td>
<td>151,2</td>
<td>2803,2</td>
<td>18,5</td>
</tr>
<tr>
<td>2014</td>
<td>142,6</td>
<td>2836,6</td>
<td>19,9</td>
</tr>
</tbody>
</table>
**Deklaruotų žemės ūkio naudmenų plotų pasiskirstymas
2014 m.**

*Distribution of declared agricultural land in 2014*

- Ariama žemė / Arable land: 61.45%
- Pievos ir ganyklos / Grasslands and pastures: 2.96%
- Pūdymai / Fallow: 0.50%
- Sodai ir uogynai / Orchards and berry plantations: 1.52%
- Kiti deklaruoti plotai / Other declared areas: 33.56%

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**Deklaruotų pasėlių pasiskirstymas pagal grupes
2014 m.**

*Distribution of the declared crops by groups in 2014*

- Žeminių javų / Winter cereal: 45.57%
- Vasarinio javų / Summer cereal: 3.76%
- Ankščio augalų / Leguminous crops: 3.89%
- Techniniai augalai / Industrial crops: 14.06%
- Pasmarinių augalų (šiaskrus ganyklos ir pievos) / Forage crops (excluding grasslands and pastures): 28.21%
- Kiti deklaruoti pasėliai / Other declared crops: 4.50%
Dynamic of the number of animals

Galvijų, kiaulių ir paukščių skaičiaus dinamika

Šaltinis: Lietuvos statistikos departamentas
Concentration of animals
Legal Background

- On base of ND, WFD – nacional regulations
- All environmental regulations obligate farmers to make changes.
- The tools necessary to encourage and facilitate this process of adjustment are knowledge, information and advice.
Compulsory requirements for farmers

Periods of application of fertilizers

- Organic fertilizers might be spread during warm season - from 1 April to 15 November
- Forbidden to spread organic fertilizers from 15 June to 1 August (except fertilization of fallow, meadows, pastures and areas for winter crop cultivation)
- Forbidden to fertilize if land is frozen, under snow or waterlogged
Compulsory requirements for farmers

Requirements for the capacity of storages manure

- Manure and (or) slurry must be stored in a way to prevent surface and groundwater pollution.
- Manure or slurry may be stored in barns, manure storages, slurry storage or especially equipped solid manure pile near the barn or in the fields;
- with capacity to accommodate not less than 6 months of manure (except for manure processing)
Compulsory requirements for farmers

Establishment of fertilization plans

Fertilization plans should be established in farms:

- fertilizing organic fertilizers more than 50 ha of agricultural land
- Fertilization plan should take into account: soil type, soil conditions, slope, climate, crop rotation, desirable yield, nutrient storage in soil, soil pH, requirements of special land use conditions
- Records on fertiliser use should be kept in farm record book
Compulsory requirements for farmers

Limitation of the amount of manure applied to the land

- 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.
- Animal density should not exceed 1.7 animal units per hectare of agricultural land.
- When animal density is higher, farmer should procure additional land or to transferee excess of manure to other farm, where animal density is less than the norm established.
Compulsory requirements for farmers

Preventive measures in hilly areas:

- On slopes > 5° perennial grass have to cover >35-40% of the total crop rotation area
- On slopes 5-7° - perennial grasses have to cover at least 50% of the total crop rotation area
- On slopes 7-10° - the area of perennial grasses has to cover at least 65-80%
- When slope is 10-15° only perennial grasses have to be planted
Compulsory requirements for farmers

Water protective strip belt

- Near rivers longer 10 km or water accumulations bigger than 0.5 ha:
  - 5 m – if stream side slope is > 5°
  - 10 m – if stream side slope 5-10°
  - 25 m - if stream side slope <10°
Compulsory requirements for farmers

Time for manure incorporation – during 24 hour after spreading
Compulsory requirements for farmers

Natural (flooded and dry) meadow and pastures

It is forbidden to drain and plough natural meadows and pastures (except polder types) or change their condition and grassland composition in other ways.
Compulsory requirements for farmers

- Protection zone has to be established around a karst sinkhole - depending on sinkhole type: from 5 to 10 m from its edge.
Parties involved

- Policy makers – The Ministry of Agriculture; The Ministry of Environment;
- Controliing institutions - Regional Department of Environmental Protection (RAAD), National Paying Agency (NMA), State Plant Production Service (VAT);
- Data processing - Agricultural Information and Rural Business Centre (ŽŪIKVC); Environmental Agency (AAA); Lithuanian Department of Statistic (LSD);
- Research institutions - Lithuanian Agriculture and Forestry Sciences Center (LAMMC);
- Advisory and other institutions - Lithuanian Agricultural Advisory Service, Centre for Environmental Policy (AAPC), etc.
- FARMERS
Methods

- The nutrient balances and agricultural pollution on water bodies have been calculated within the River Basin District management plans.
### Calculated anthropogenic influence of the Nemunas basin and sub-basins in 2010

<table>
<thead>
<tr>
<th>Basin/sub-basin</th>
<th>Concentrated pollution into water bodies</th>
<th>Agricultural pollution falling into the soil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N, t</td>
<td>P, t</td>
</tr>
<tr>
<td>Žeimenos</td>
<td>32.42</td>
<td>6.00</td>
</tr>
<tr>
<td>Šventosios</td>
<td>88.43</td>
<td>12.48</td>
</tr>
<tr>
<td>Neries mažųjų intakų</td>
<td>738.83</td>
<td>56.12</td>
</tr>
<tr>
<td>Nevėžio</td>
<td>229.45</td>
<td>19.64</td>
</tr>
<tr>
<td>Merkio</td>
<td>64.30</td>
<td>10.41</td>
</tr>
<tr>
<td>Nemuno mažųjų intakų</td>
<td>627.55</td>
<td>72.90</td>
</tr>
<tr>
<td>Dubysos</td>
<td>10.44</td>
<td>1.79</td>
</tr>
<tr>
<td>Šėsupės</td>
<td>105.11</td>
<td>12.25</td>
</tr>
<tr>
<td>Jūros</td>
<td>60.20</td>
<td>12.79</td>
</tr>
<tr>
<td>Minijos</td>
<td>50.78</td>
<td>6.39</td>
</tr>
<tr>
<td>Lietuvos pajūrio upių</td>
<td>167.07</td>
<td>20.77</td>
</tr>
<tr>
<td>Priegliaus</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2175</td>
<td>231.5</td>
</tr>
</tbody>
</table>

*Source: Nemunas River basin district plan, By Centre for Environmental Policy*
Methods

- **Fertilisation plans and soil tests**
- If a farmer fertilize organic fertilizers and manure (or) slurry over 50ha of agricultural land during the calendar year, he must have requirement compliant fertilization plan;
- Fertilization plan must be drawn up each year before the start of the crop fertilization with manure and (or) the slurry and must be showed on request of controlling authority.
Methods

Fertization plan:

- Soil tests not older than 3 years of data on nitrogen and phosphorus in the field;
- The planned use of manure and slurry amount;
- Estimated nutrients needed for the planned crop yield (annual rate of fertilization, a single rate of fertilization);
- Fertilizing timetable (in months);
- Map of fertilize fields
Methods
Implementation

- Advisory services:
  - trainings;
  - soil sampling and fertilization planning;
  - internet based computer program e-GEBA;
- Lithuanian Ministry of Agriculture signed up new regulation since 2016 for farmers who participate in Rural Development Program for Ecological farming to calculate nutrient balance on farm level. New methodology is under preparation now.
- Implementation on farms
- Controlling
Summary

- involve farmers in training, to educate them in usefulness of Nutrient balance recording;
- improve the collection of actual data by combining the knowledge and resources of various organizations;
- based on the experience of other countries to develop / improve the calculation of Nutrient Balance in Lithuania.