Common farmland biodiversity – Agri-environment Scheme (AES) as a tool to preserve it in Estonia

Eneli Viik
Agricultural Research Centre, Estonia
Workshop, Göttingen, 13-15 February 2013
ESTONIA

Population: 1.34 mln.
Total area: 45,266 km² (4.5 mln ha)
Forest area: ~50% of total area
Agricultural land: ~30% of total area
Natura 2000 species and habitats are the priority
BD in agricultural land

<table>
<thead>
<tr>
<th>~43% from EU under agricultural land</th>
<th>~30% from Estonia under agricultural land</th>
</tr>
</thead>
</table>

Related common farmland BD

Ecosystem services and public goods

Photo: R. Marja
Photo: E. Merivee
Photo: U. Tartes

Photo: K. Maikov
Estonian RDP 2007-2013 Axis 2

RDP 2007-2013 AXIS 2 – IMPROVING THE ENVIRONMENT AND THE COUNTRYSIDE

2007
- LFA 212
  Target - 9 000 beneficiaries
  Area 350 000 ha

- Natura 2000 support for agricultural land 213
  Target - 1 500 beneficiaries
  38 000 ha

2008
- Establish-ment of protection forest on agricultural land 224
  Target - 5 000 beneficiaries
  61 300 ha

2009
- AES 214
  Target - 5 000 beneficiaries
  545 000 ha
  (400 000 + 100 000 + 10 000 + 35 000)

- Animal welfare: support for grazing animals 215
  Target - 500 beneficiaries
  80 000 livestock unit

- Non-productive investments – establishment and restoration of stonewalls 216
  Target – 120 km established
  300 km restored stonewalls

2009
- Environmentally friendly management BASIC
  Target - 1 800 beneficiaries
  100 000 ha

- Organic farming
  Growing plants of local varieties
  1 local plant variety
  10 000 ha

- Environmentally friendly management BASIC + ADDITIONAL

2007
- Keeping animals of local endangered breeds
  4 local breeds

2007
- Maintenance of semi-natural habitats
  1 500 beneficiaries
  35 000 ha, incl 3 000 ha of wooded meadows

To preserve and promote biological and landscape diversity
Environmentally friendly management - whole-farm scheme

- Compulsory trainings – raising awareness
- Crop-rotation
- 30% under winter vegetation
- 15% certified seed
- 15% leguminous crops
- 2–5 m wide grassland strip with perennial vegetation or other kind of landscape element between the field and public road
- Preservation of cultural heritage sites and other valuable landscape elements
- No glyphosates from the time of emergence of cultivated plants until harvesting
- Soil and manure samples
To get feedback about the impacts of AES, monitoring and evaluation is implemented.

The independent evaluator for the RDP 2004-2006 AES and for Axis 2 measures of Estonian RDP 2007-2013 is Agricultural Research Centre (ARC).
<table>
<thead>
<tr>
<th>SOIL</th>
<th>WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil organic matter and</td>
<td>Nutrient balance</td>
</tr>
<tr>
<td>soil fertility</td>
<td>Pesticide use</td>
</tr>
<tr>
<td>Soil fertility (pH, K, P)</td>
<td>Water quality</td>
</tr>
<tr>
<td>Soil nutrient dynamics</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LANDSCAPE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in the landscape</td>
<td></td>
</tr>
<tr>
<td>structure in terms of</td>
<td></td>
</tr>
<tr>
<td>point, linear and area</td>
<td></td>
</tr>
<tr>
<td>elements</td>
<td></td>
</tr>
<tr>
<td>General upkeep (visual</td>
<td></td>
</tr>
<tr>
<td>appearance) of the farm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BIODIVERSITY</th>
<th>SOCIO-ECONOMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmland birds</td>
<td>Family farm income</td>
</tr>
<tr>
<td>Bumble bees</td>
<td>Share of organic products sold as</td>
</tr>
<tr>
<td></td>
<td>“organic”</td>
</tr>
<tr>
<td>Earthworms, soil microbes</td>
<td>Environmental awareness</td>
</tr>
<tr>
<td>Vascular plants</td>
<td></td>
</tr>
</tbody>
</table>
66 farms in monitoring scheme
2 regions, each 33 farms:
- 11 organic farms (OF)
- 11 environmentally friendly management farms (EFM)
- 11 SAPS farms
Farmland bird monitoring methodology

- Since 2006, 66 monitoring farms each year
- Transect method (3 x April-June), since 2010 transect width 100 m and length 1 km
- Field work: Estonian Ornithological Society
- Breeding bird species and their abundance is noted down

Photo: A. Ader
Bird indicators in farms with different support types, 2012

- Area of landscape elements and area of arable land (excluded short-term grasslands) on the transect – included as cofactor into the analysis
- No significant differences
Bumblebee monitoring methodology

- Since 2006, 66 monitoring farms each year
- Transect method (3 x June-August), transect width 2 m and length 500 m
- Field work: Estonian University of Life Sciences
- Bumblebee abundance, species and flower density is noted down

Photo: E. Ploomipuu
BB indicators in farms with different support types, 2012

- Significant impact of flower density – included as cofactor into the analysis
- BB indicators in EFM farms significantly higher than in OF and SAPS farms

Why?!
Which info should be included in the analysis?
- Area objects (e.g. % of forest and agricultural land in the buffer)
- Line objects (e.g. the length of ditches and tree lines in the buffer)
- Landscape indices

Estonian National Topographic Database
Land use data at field level – time-consuming digitalization

- Field size
- Share of arable crop type (e.g. leguminous) / permanent grassland
- The share of organic farming, environmentally friendly farming

![Diagram of fields and monitoring transects with details on field size, share of arable crops, and organic farming.](image-url)
Implementation of AES in Estonia

- Rather preventive measures
- Regional differences
- Lack of specific studies – examples from foreign countries
- Need to consider all stakeholders
- Attitude: Estonia is green enough!
Thank you!

More information about RDP Axis 2 evaluation in Estonia:
https://pmk.agri.ee/pkt
hindamine@pmk.agri.ee