Spatial location of EFAs on the farm: searching for a compromise between environmental benefits and economic impact

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Assumptions

• At this time EFAs are selected and located with limited targeting (e.g. negative targeting in CZ).

• Tailoring of EFAs could increase their effectiveness (e.g. no fallow land close to a water body).

• EFAs represent a loss of income on arable land and there are differences between particular EFAs (to existing LF not applicable).

• Generic design of the tool helping farmers’ decision making while MSs specific application (this example generic, but we use Czech data).
Potential

• To assess environmental effects of each EFA type in different conditions in landscape (e.g. on slopes, proximity to water bodies, NVZs).

• To let farmers know for each land parcel which EFAs are tailored to local conditions from environment point of view.

• Assist farmers in minimising of income loss.
Technical possibilities

• When farmer selects a parcel on screen, the suggested EFAs pop-up with simple explanation of the effect on environment (e.g. from the best EFA to worst for the effect) – then he makes decision.

• Adding to existing calculator also the loss of income (the system will show for each type of EFA gross margin+additional costs/hectare of EFA).

• Detailed technical solutions should be developed.
Examples of calculation of EFA income loss + additional costs – landscape features not created (weights used in CZ)

<table>
<thead>
<tr>
<th>EFA type (examples)</th>
<th>Weighting factor</th>
<th>1 ha = X ha of EFA</th>
<th>Loss of income EUR/ha EFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land lying fallow (per 1 ha)</td>
<td>1</td>
<td>1</td>
<td>541</td>
</tr>
<tr>
<td>Field margins (field edges)</td>
<td>1,5</td>
<td>1,5</td>
<td>334</td>
</tr>
<tr>
<td>Field margins – as equivalent under AEKO*</td>
<td>1,5</td>
<td>1,5</td>
<td>314</td>
</tr>
<tr>
<td>Nitrogen fixing crops (fodder for animals)</td>
<td>0,3</td>
<td>0,3</td>
<td>0</td>
</tr>
<tr>
<td>Catch crops (winter coverage)</td>
<td>0,3</td>
<td>0,3</td>
<td>396</td>
</tr>
</tbody>
</table>

*) applicability limited by rules (100% EFA)
Support

• Farmers would get simple explanation of potential effect of particular EFA on environment to make it easier to understand comments popping-up in LPIS.

• Additional list of EFAs and explanation of logic behind the calculation of income loss will be provided.
Orthophoto and LPIS reference parcels
Farmers

Farmers (example is farm A)
Erosion layer

Annual soil loss (t/ha)
- Up to 4
- 4–8
- 8–20
- 20–40
Landscape features

- Field margins (A, B, C)
- Ditch (B)
- Group of trees (A)
- Isolated tree (A)
- Trees in line
- Terrace (B)
- Preferred water run-off row covered by grass (C) (Thalweg)
Nitrate vulnerable zones, protected areas

Protected areas

- NVZs
- Small protected area
Parcel No. 3.A
1. Nitrogen fixing: crop-erosion prevention
2. Field margins: water protection
3. Catch crops: water protection, erosion prevention
4. No fallow land: erosion danger

Parcel No. 21.A
1. Cover crops: nitrogen loss prevention, erosion prevention
2. Nitrogen fixing crops: NVZ
3. No fallow land: erosion danger

Parcel No. 11.A
1. Nitrogen fixing crops (fodder): erosion prevention
2. Buffer strips: water protection
3. Catch crops: nitrogen loss prevention, erosion prevention
4. No fallow land: erosion danger, water pollution

Parcel No. 12.A
1. Nitrogen fixing crops: erosion prevention
2. Catch crops: nitrogen loss prevention, erosion prevention
3. No fallow land: erosion danger
## Economic impact - options

Assumption: landscape features not newly created. Farmer A needs 7,54 ha of EFAs to reach 5%

<table>
<thead>
<tr>
<th>EFA type/LPIS parcel</th>
<th>Hectares real/length</th>
<th>Hectares equivalent</th>
<th>Loss of income per ha of EFA - EUR</th>
<th>Loss of income - total - EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landscape features</td>
<td>2,47 ha</td>
<td>3,69</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Buffer strips – water (4 m) - 11.A</td>
<td>2479 m</td>
<td>2,23</td>
<td>222</td>
<td>220</td>
</tr>
<tr>
<td>Buffer strips – forest (4 m) - 11.A</td>
<td>1930 m</td>
<td>1,74</td>
<td>222</td>
<td>171</td>
</tr>
<tr>
<td>Missing hectares to 5 % of EFAs</td>
<td>0</td>
<td></td>
<td></td>
<td>361</td>
</tr>
</tbody>
</table>

**Scenario II**

| Landscape features                   | 2,47 ha              | 3,69                | 0                                  | 0                            |
| Field margins (5m) - 8+11.A          | 2,78                 | 4,17                | 390                                | 1084                         |
| Missing hectares to 5 % of EFAs      | 0                    |                     |                                    |                              |

**Scenario III**

| Fallow land                          | - 21.A               | 8,21 ha             | 8,21                               | 572                          |
| Missing hectares to 5 % of EFAs      | 0                    |                     |                                    |                              |
Expected benefits and issues to be solved

- Improving effectiveness of EFAs for environment protection (e.g. by education and supported decision making).

- Helping farmers to reduce loss of income on farm/making it easier to assess potential loss.

**Issues** (a few examples)

- Parts of the LPIS parcels in EFAs?
- How detailed will be the tool? (complexity of situations on farms)
- Including costs of landscape features creation?
- Data availability in MSs (cost-effectiveness)
- Technicalities of programming of the tool (currently conceptual work, testing will come).
In case of interest:

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