

i-SoMPE

Innovative soil management practices across Europe

<https://isompe.gitlab.io/blog/>

Michal Sviček Miriam Kizeková

Innovative soil management practices across Europe

<https://isompe.gitlab.io/blog/>

European project on Innovative Soil Management Practices across Europe and their ability for

- (i) enhancing ecosystem services,
- (ii) minimising soil threats and
- (iii) sustaining agriculture in a climate change context.

Documentation of innovative soil management practices in Europe will provide information on regional and local practices and conditions. Online interactive maps, description, data and graphic will be accessible to the public. Exchange of knowledge between countries on current and innovative soil management practices and to develop a framework for assessing the current and potential area of application of soil management practices across Europe.

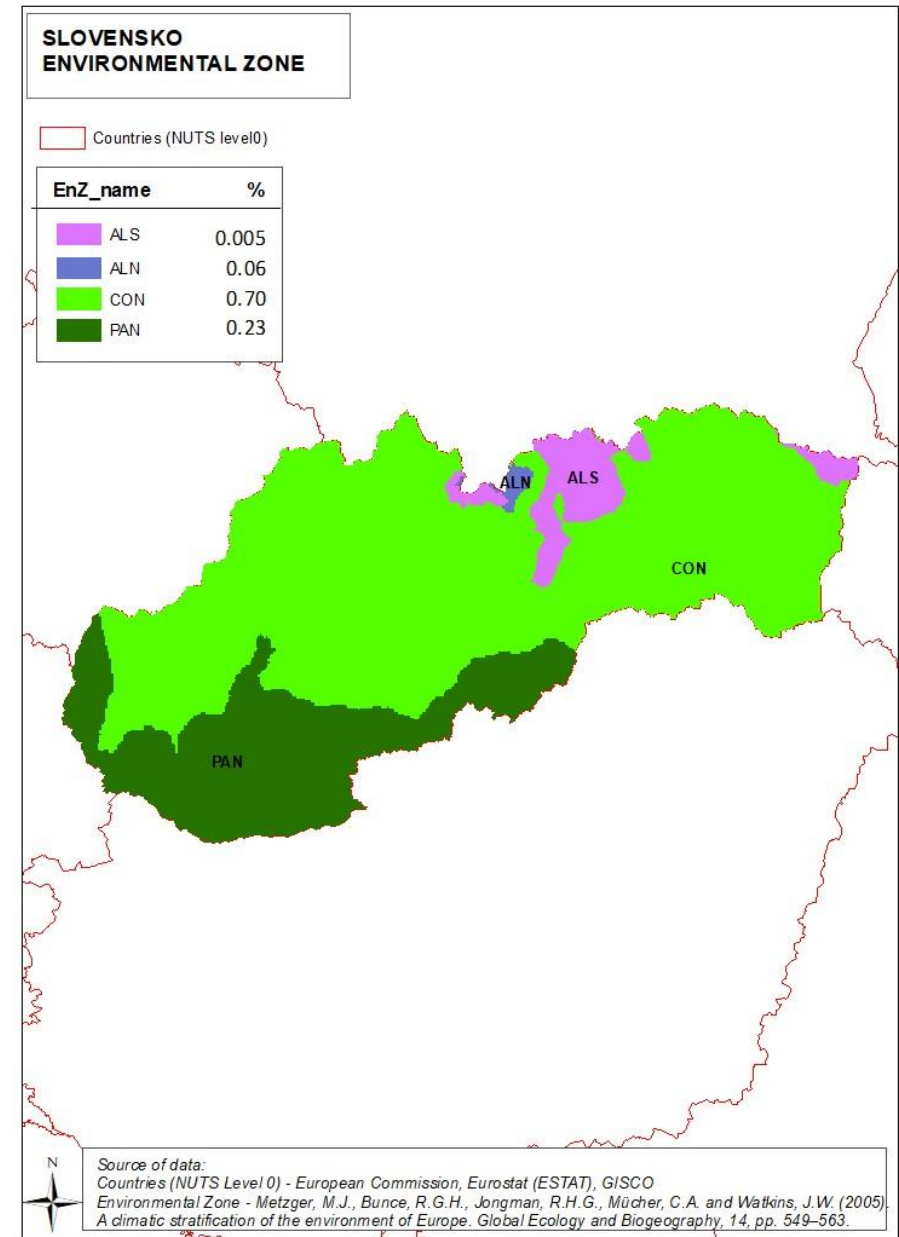


Innovative soil management practices (SMP) and agricultural systems are promoted to enhance ecosystem services in order to minimise soil threats and sustain agriculture in a climate change context.

A comprehensive stocktake of SMPs and their ability to succeed on multiple goals, agricultural production, ecosystem services, biogeochemical cycles, is missing.

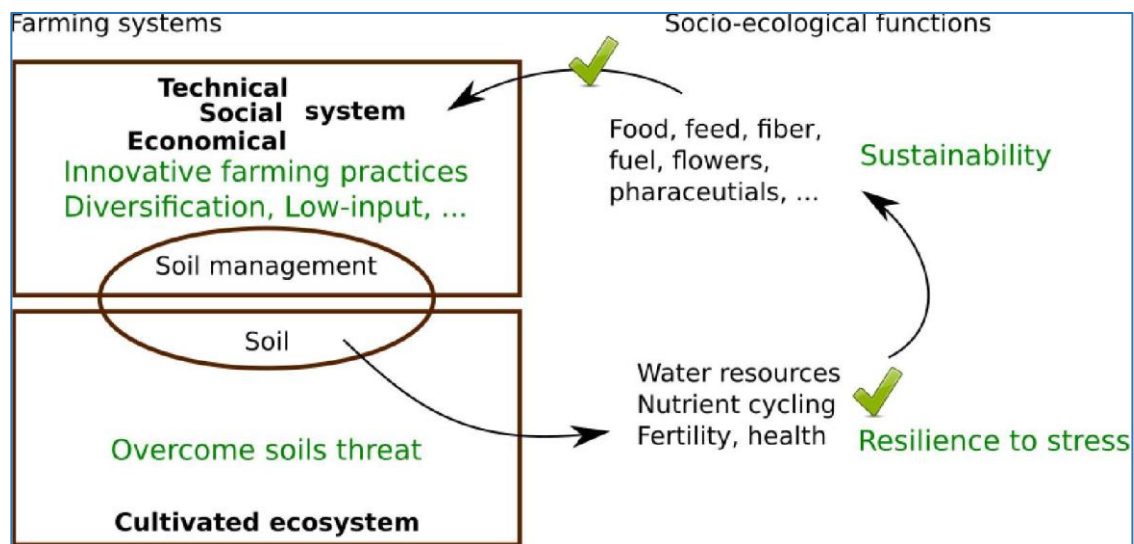
By using a surveying approach, i-SoMPE will aim to document these innovative farming practices. The data gathered will be synthesized considering technical and ecological constraints and socio-economic barriers.

Context specific thematic maps will be provided to guide policy makers to the most efficient innovative SMPs as climate-smart sustainable tools.



Ciel: Jadrom projektu boli inovatívne SMP (postupy hospodárenia na pôde). Niektoré inovatívne postupy hospodárenia s pôdou a poľnohospodárske postupy môžu riešiť hlavné **ciele EJP SOIL** „dobré hospodárenie s poľnohospodárskou pôdou pre: zmiernovanie zmeny klímy a adaptáciu na CC, udržateľnú výrobu, ekosystémové služby a menšiu degradáciu pôdy“.

Aim: Innovative SMPs were at the core of the project. Some innovative soil management and farming practices can address major EJP SOIL targets “good agricultural soil management for: climate change mitigation and adaptation, sustainable production, ecosystem services and less soil degradation”.



Survey I in the form of online questionnaires filled out by experts

The aim of this survey was to collect information for presenting and describing innovative soil management practices in Europe, and their ability to address the EJP SOIL soil challenges:

- Maintain/increase SOC
- Avoiding N₂O, CH₄ emissions from soils
- Avoid acidification
- Avoid soil erosion
- Avoid soil sealing
- Avoid salinisation
- Avoid contamination
- Optimal soil structure
- Enhance soil biodiversity
- Enhance soil nutrient retention/use efficiency
- Enhance water storage capacity

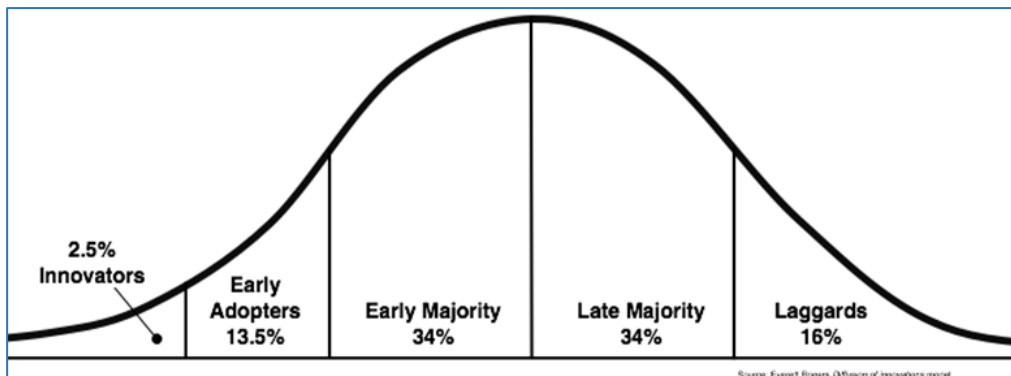
EJP SOIL has received funding from the European Union's Horizon 2020 research and innovation programme: Grant agreement No 862695



Survey I in the form of online questionnaires filled out by experts

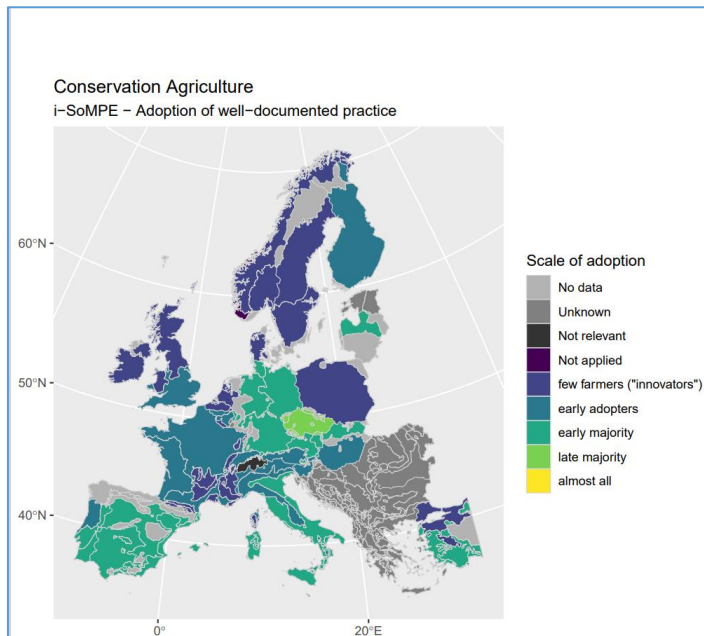
The survey was more a “screening“, for each practice we asked, how largely the practice was adopted by the farmer. We used the classes defined by Rogers (2003, see also Figure 2):

- only by a few farmers (e.g., **the innovators**) (approx. < 2.5% of farmers)
- by the **early adopters** (approx. < 16% of farmers)
- by an **early majority** (approx. < 50% of farmers)
- by a **late majority** (approx. < 84% of farmers)
- by **all farmers** (approx. 100% of farmers)

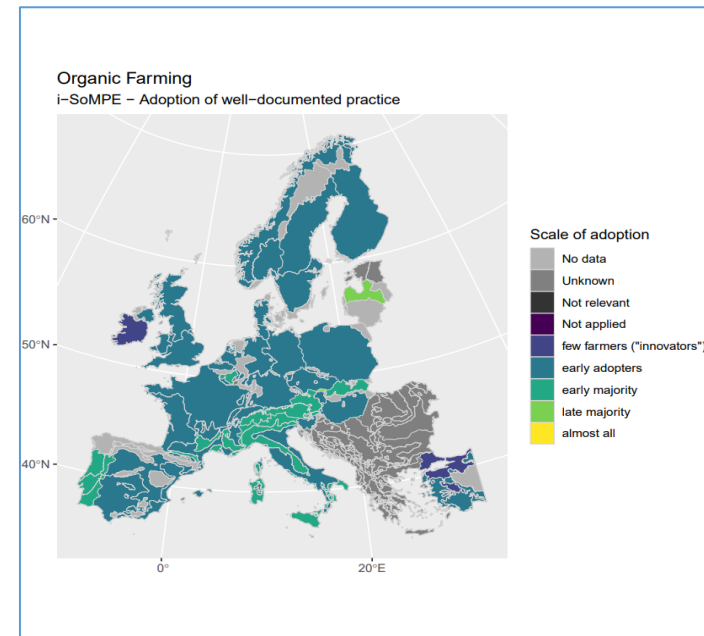


Survey I in the form of online questionnaires filled out by experts

Conservation Agriculture Early majority (SK)

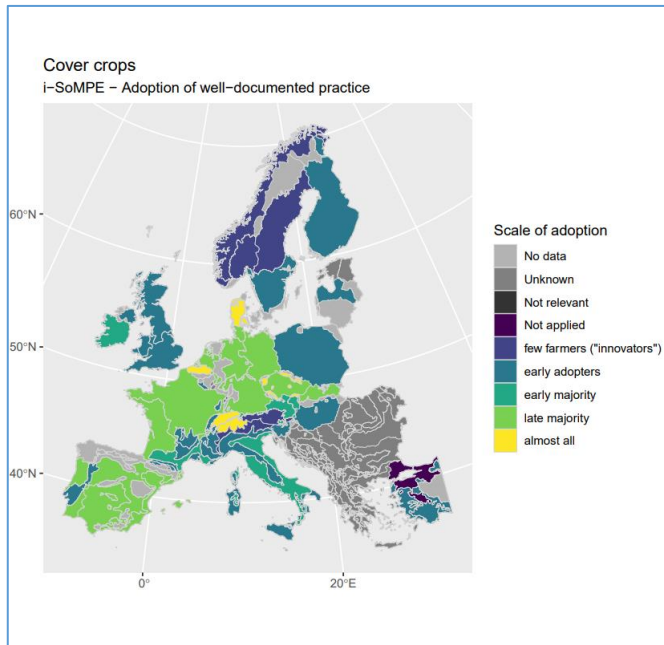


Organic Farming Early adopters (SK)

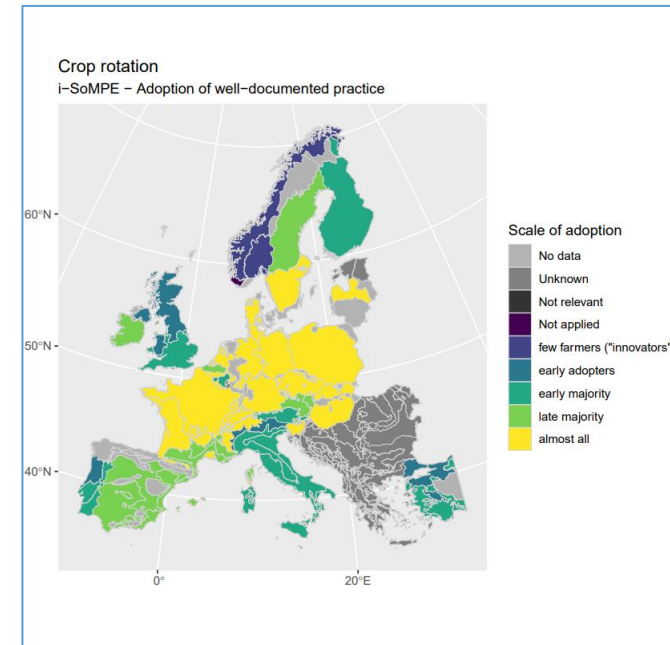


Survey I in the form of online questionnaires filled out by experts

Cover crops Late majority (SK)

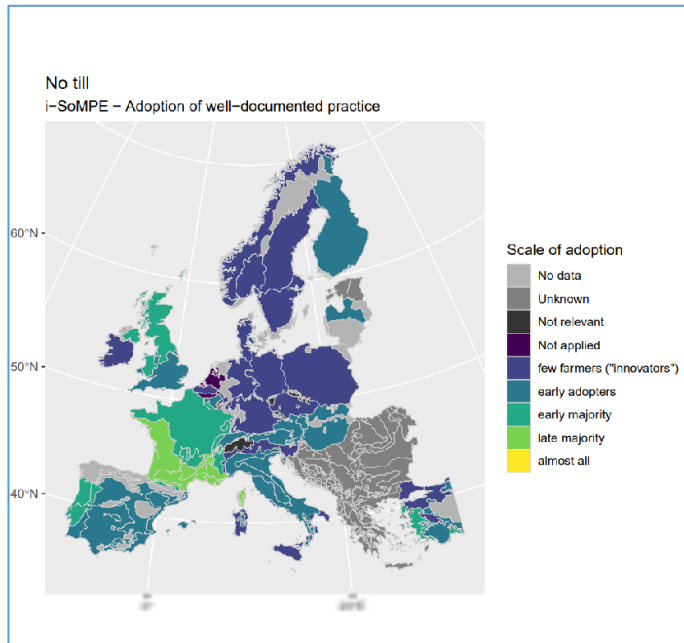


Crop rotation Almost all (SK)

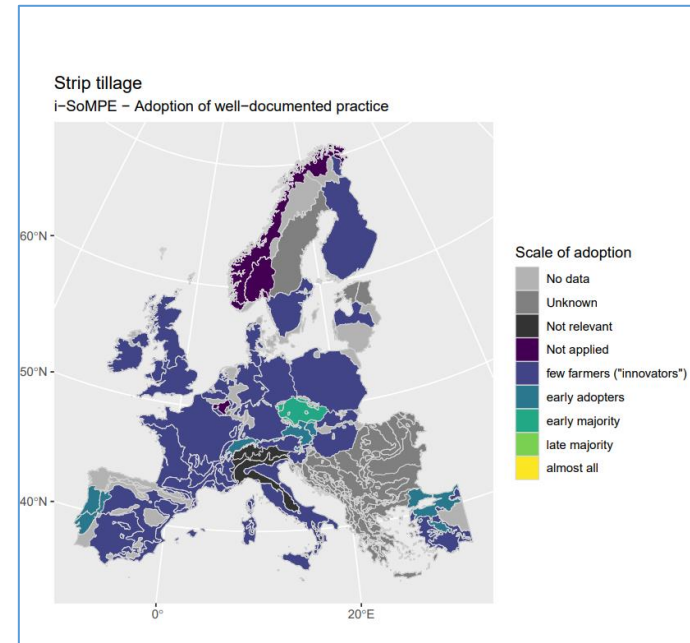


Survey I in the form of online questionnaires filled out by experts

No Till Early adopters (SK)

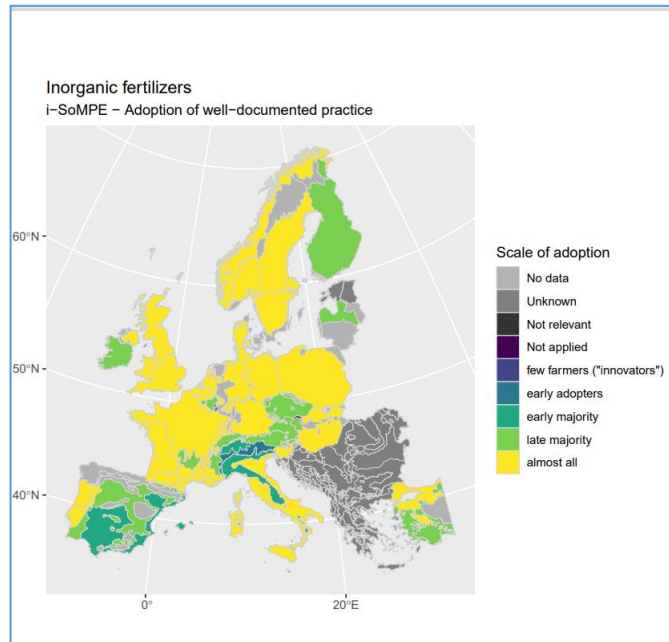


Strip tillage Few farmers innovators (SK)

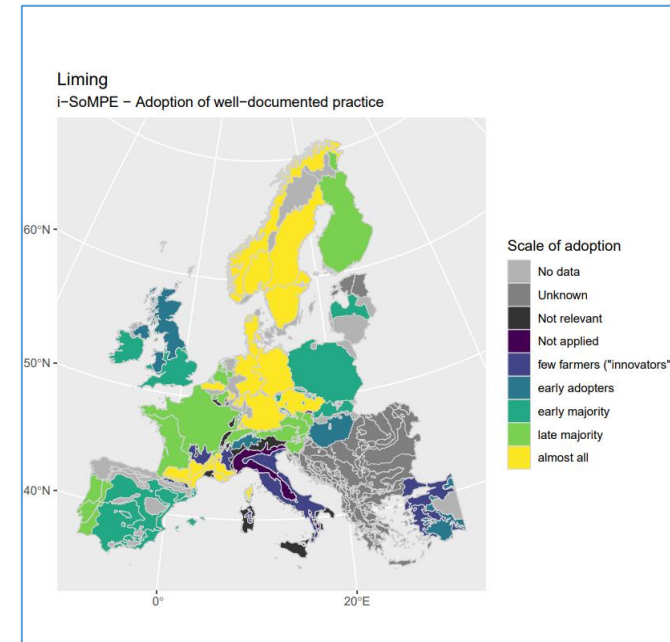


Survey I in the form of online questionnaires filled out by experts

Inorganic fertilization Almost all (SK)

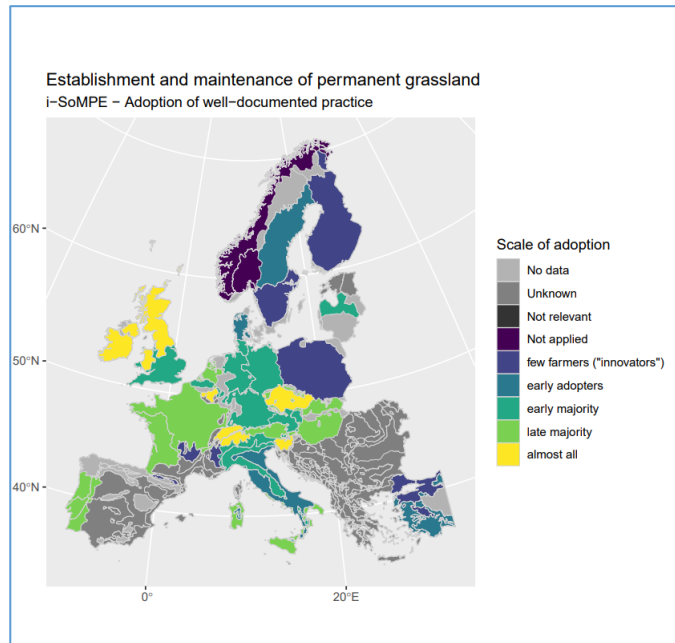


Liming Early majority (SK)

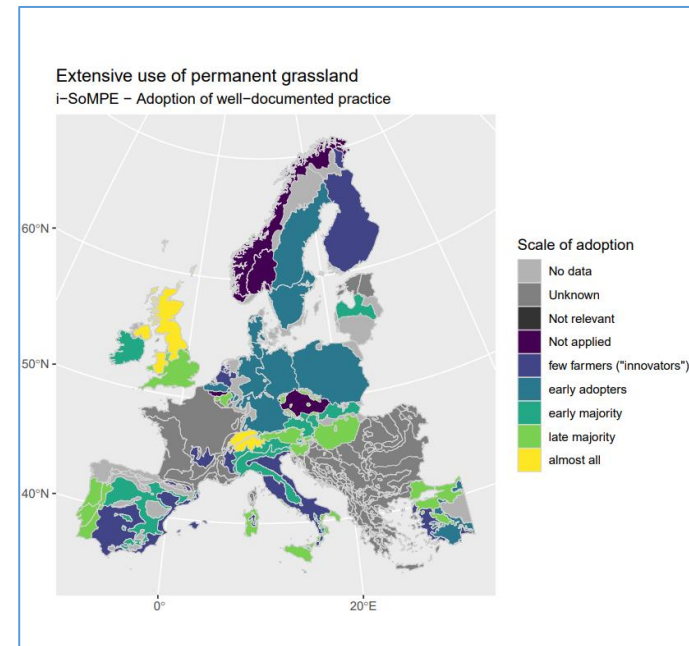


Survey I in the form of online questionnaires filled out by experts

Establishment and maintenance of permanent grassland Late majority (SK)

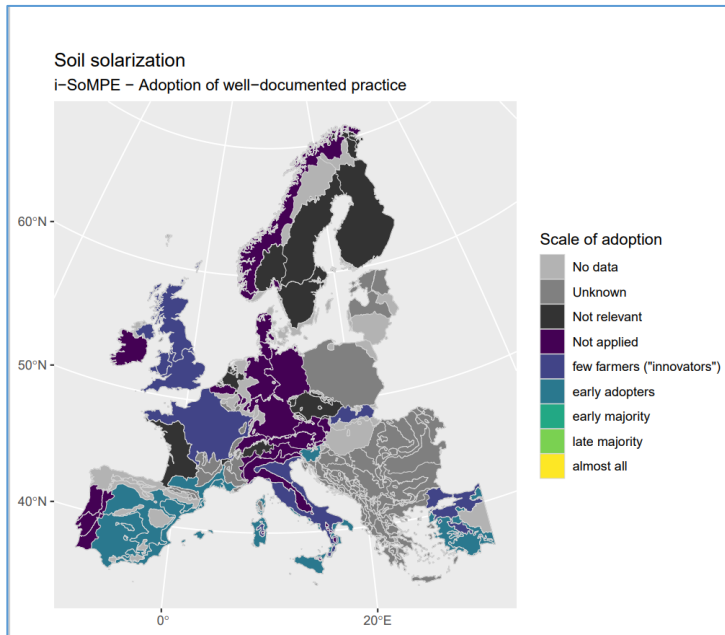


Extensive use of permanent grassland Early majority (SK)

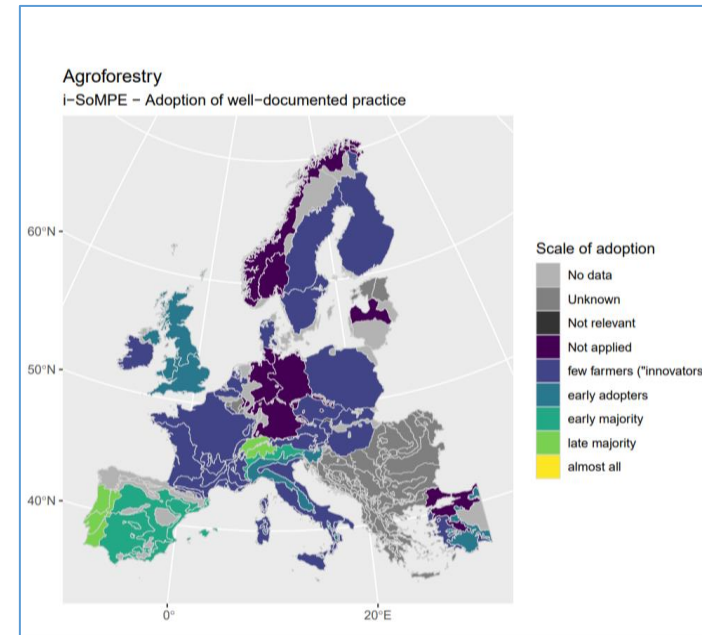


Survey I in the form of online questionnaires filled out by experts

Soil solarization Few farmers innovators (SK)



Agroforestry Few farmers innovators (SK)



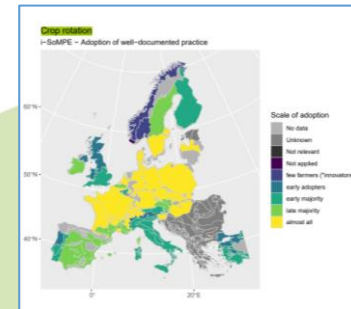
Survey II - Qualitative data on barriers and enablers on the adoption of innovative Soil Management Practices

Main result- 58 SMPs (58 land management methods) were described within the i_SoMPE project. (EXAMPLE)

CROP DIVERSIFICATION

- Crop diversification is part of adaptation to climate change, increasing biodiversity, improving soil properties, soil water regime, storing carbon in the soil and increasing the level of provision of ecosystem services of agricultural land.
- In recent decades, the diversity of cultivated crops has decreased in Slovakia, a substantial majority of the area is occupied by 10 crops, and of these 10 crops, the five most widespread over 80% of arable land.
- In addition, monocultures often take up large fields and the average size of agricultural parcels is large, one of the highest in the EU (highest average area in EU).
- The introduction of "greening" as one of the CAP tools in this respect was positive for the agricultural land of the Slovak Republic.





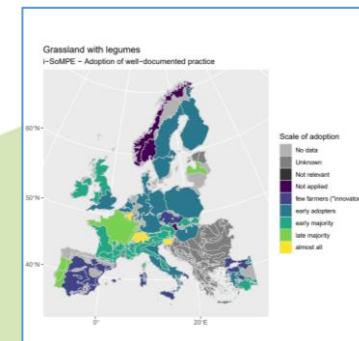
CROP DIVERSIFICATION / ROTATION

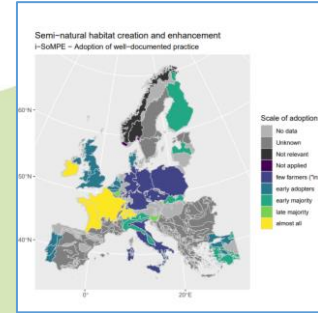
- Crop diversification within the farm affects the diversity of crops, fruits and vegetables grown. The minimum number of cultivated crops and the share of their acreage within an agricultural enterprise is set out in the Regulation of the Government of the Slovak Republic no. 342/2014 Coll., Which lays down the rules for providing support in agriculture in connection with decoupled direct payment schemes. This is an interpretation of Article 44 of Regulation (EU) No 182/2011. 1307/2013.
- area of arable land declared by the holding for the purpose of granting payment for agricultural practices beneficial for the climate and the environment required number of cultivated crops According this Law the required area of crops in the sowing procedure:
 - up to 10 ha
 - 10-30 ha at least 2 main crops may not cover more than 75% of the arable land area
 - over 30 ha at least 3 main crops may not cover more than 75% of the arable land area two main crops may not cover more than 95% of the arable land area
- Therefore, all farmers over 10 ha of arable land, if they receive support payment for agricultural practices beneficial for the climate and the environment, are obliged to carry out crop diversification.



GRASSLAND WITH LEGUMES

- Forage legumes have a key role as the main source of N supply in place of fertilizers in permanent and temporary grassland as well. Moreover, grass-legume mixtures may improve several ecosystem services including soil structure maintenance, carbon sequestration, nutrient cycling, water regulation and purification, biodiversity conservation.
- In general, permanent grasslands are oversown by grass-legume mixtures, except for habitats, where according to Regulation of the Government of the Slovak Republic No 342/2014 Coll. that lays down the rules for granting support in agriculture in relation to the schemes of decoupled direct payment as amended, only sowing of habitat specific grass species is allowed
- On arable land, grass-clover mixtures are included in crop rotations especially in areas with a slope of more than 12°. In compliance with the National Rural Development Plan of the Slovak Republic, in these areas at least 40% of soil cover has to be maintained in autumn and winter (from November 1st to March 1st). In 2020, grass-clover mixtures occupied app. 213 thousand ha in Slovakia.





SEMI-NATURAL HABITAT CREATION AND ENHANCEMENT

In Slovakia, the national inventory of woody and herbaceous vegetation in agrarian landscape was performed in 2011-2012. Woody and herbaceous vegetation was considered as one of the elements of the **Traditional Agricultural Landscape (TAL)**.

Based on this study, these elements of the traditional agricultural landscape were divided into 5 groups:

- 1. TAL with occurrence of woodland – not more than 10% of the site covered by woods,
- 2. TAL with spatial woodland formation,
- 3. TAL with solitaire trees dominant
- 4. TAL with lines of trees or shrubs dominant,
- 5. TAL with small woodland dominant.

In 2014, TAL covered approximately 44 thousand ha, out of which only 10 thousand ha were supported by agrienvironmental payments, largely under measures for implementation of organic farming and preservation of biodiversity





Ďakujem za pozornosť
Thank you for attention



EJP SOIL has received
funding from the European
Union's Horizon 2020
research and innovation
programme: Grant
agreement No 862695

