**Expression of Interest - HORIZON-MISS-2023-SOIL-01-08**

**Express Innovation Agency (XIA)**

**Prevent erosion at HOMOKHÁTSÁG area in Hungary with very low organic matter content in arid environmental conditions.**

**Sandy soils. Fighting desertification. Improving water retention capacity.**

**Organisation**

The **Express Innovation Agency (XIA)** is an innovation service subsidiary of the National Research, Development and Innovation Office, supporting the Hungarian innovation ecosystem from youth education to the gateway of the international markets. In addition, the International Division of the Agency offers services to research-innovation actors to better reply to the call for proposals of Horizon Europe framework programme. In that context, we have expertise in project development and management activities.

The **Centre for Agricultural Research (ATK)**, the largest agricultural research complex in Hungary, carries out basic and applied research and development in the field of agricultural sciences, participates in the dissemination of professional and scientific knowledge, and works in cooperation with organisations involved in agriculture, the food industry, rural development, environment protection and sustainable development, at both national and international levels. The **Institute for Soil Sciences (TAKI)** operates as part of the Centre and has around 80 employees, where about half of them are scientists. **ATK TAKI** has been conducting soil exploration and applied research for more than 70 years, in which (i) the need to establish rational soil use for the improvement of human quality of life, (ii) the protection of soil "quality" and the maintenance of its multifunctional capacity, and (iii) the assessment, modelling and mapping of soil-environment interactions have always played an important role. TAKI is a multi- and interdisciplinary research institute, open to environmental and earth sciences as well as to more general agricultural disciplines (rural development, spatial planning, agricultural water management, etc.) and to environmental and nature conservation. The Institute carries out basic and applied research and development and contributes to the transfer of scientific and technical knowledge to society. ATK TAKI’s recently finished and ongoing EU-Projects, LIFE, REMIX, EJP SOIL (climate-smart, sustainable soil use and management), SMS (Soil Mission Support), OPTAIN, TUDI.

**Project idea and contribution**

**We are** looking for an international consortium that can be joined by Hungarian partners with the following project idea. In Hungary, the **Homokhátság** is the most endangered region as a result of climate change. The decrease of the groundwater level and the amount of precipitation and the disproportionality of their distribution during the year without the establishment of correct cultivation practices lead to desertification. The purpose and innovation aspects of the **soil health Living Labs** to be created:

* preservation of the soil's organic matter content and, if possible, its increase
* increasing the water retention capacity of the soil and the landscape
* changing soil use and farming methods (soil protection tillage systems, use of cover crops, reduction of soil disturbance, improvement of biological soil strength)
* implementation of the protection against erosion (especially wind erosion) and developing specific, local (site-oriented) methods
* increasing biodiversity in the soil and spreading the methods leading to this

As part of the living lab, we are starting a series of "on-farm" experiments in 15-20 local farms. At each location, we select the technology to be tested, taking into account the characteristics (e.g. the available organic material replenishment options, equipment system, cultivated plants).

Potential results:

* development of reasonable, scientifically proven and more economically grown plant culture and technologies;
* optimizes the composition of cultivated plant crops, as well as the preservation of endangered crops and the increase of their production scale;
* the development of specific agrotechnical procedures of local, regional, but European significance that adapt to the changed conditions.

The demand from farmers is the development of efficient and well-functioning technologies against drought damage and desertification, the transfer of scientific results into everyday practice, and the increase of the efficiency of cooperation between consultants and input material producers and farmers. The living laboratory strives to develop good agricultural practices adapted to the conditions of the region and takes into account the following characteristics of methods and technologies to be developed:

* its general parts, which are also valid at the European level with similar characteristics;
* its specificity, which can only be carried out under the given, specific conditions, or require attention and controlled changes.

Some more rationalization (why we are a good partner in a consortium):

* Hungary is one of the most sensitive country in Europe, and the large amount of low-quality sandy soils;
* Hungary was participating in EIP AGRI focus group (*Soil organic matter content in Mediterranean region*), in relation with the proposed subject;
* Hungary can show well-supported and applicable technologies in complex soil-oriented biofertilizer application for arid, sandy soils.

**Call**

Research and Innovation Action: <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-miss-2023-soil-01-08>

**Contact details**

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