Experience in sustainable agricultural education

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Cluster 6 Brokerage Event
Warsaw, 27 May 2025

Topic(s) addressed:

SKILL TRAINING ECOSYSTEM PILLAR FOR FUTURE AGRICULTURAL RESILIENCE
HORIZON-CL6-2025-03-GOVERNANCE-14: Preparing farmers, their workforce and advisors to the future of agriculture by providing the relevant knowledge and skills at the right time and place.

Other topics of interest:

Agroecological farming practices, Agricultural & Ecological digitalization, GIS in Agriculture, Organic Farming,
Optional: FARM2FORK
HORIZON-CL6-2025-01-CIRCBIO-14: Reconstructing areas affected by conflicts: the role of the bio-based solutions

Major importers of Ukrainian products 2024, mln USD

Project idea

Background: Farmers, their workforce and advisors face the challenges of climate change, market and political instability, technological progress and other shocks but do not have sufficient access to adaptive, structured and practically orientated knowledge and skills at the right time and place for an accelerated transition to sustainable agricultural production.

The project aim to enhance the capacity of farmers, their workforce, and agricultural advisers to adapt to modern challenges in agriculture by developing and implementing adaptive, flexible, structured, and practically orientated lifelong learning systems. Particular attention is paid to strengthening the interaction between participants in the AKIS, introducing innovative digital tools and learning methods. STEP4FAR will contribute to the transition to sustainable agricultural production as the basis for sustainable food supply chains in Europe.

The consortium STEP4FAR is open to organizations that have experience with sustainable agriculture and education. Organizations with proven experience in developing and implementing educational programmes for farmers, their workforce, and advisors are the focus.
Institutions engaged in sustainable agriculture, climate change adaptation, and the application of new technologies. Participants should have experience creating and maintaining interactions among farmers, advisors, scientists, and policymakers.

Our research expeditions

Crater from an exploded Shahed drone

Crater from a high-explosive tank shell, Ø3 m

Crater from an Iskander missile, Ø12 m

Crater from a Uragan rocket, Ø8 m

Crater from a Smerch rocket, Ø8 m

POLISSIA NATIONAL UNIVERSITY, UKRAINE

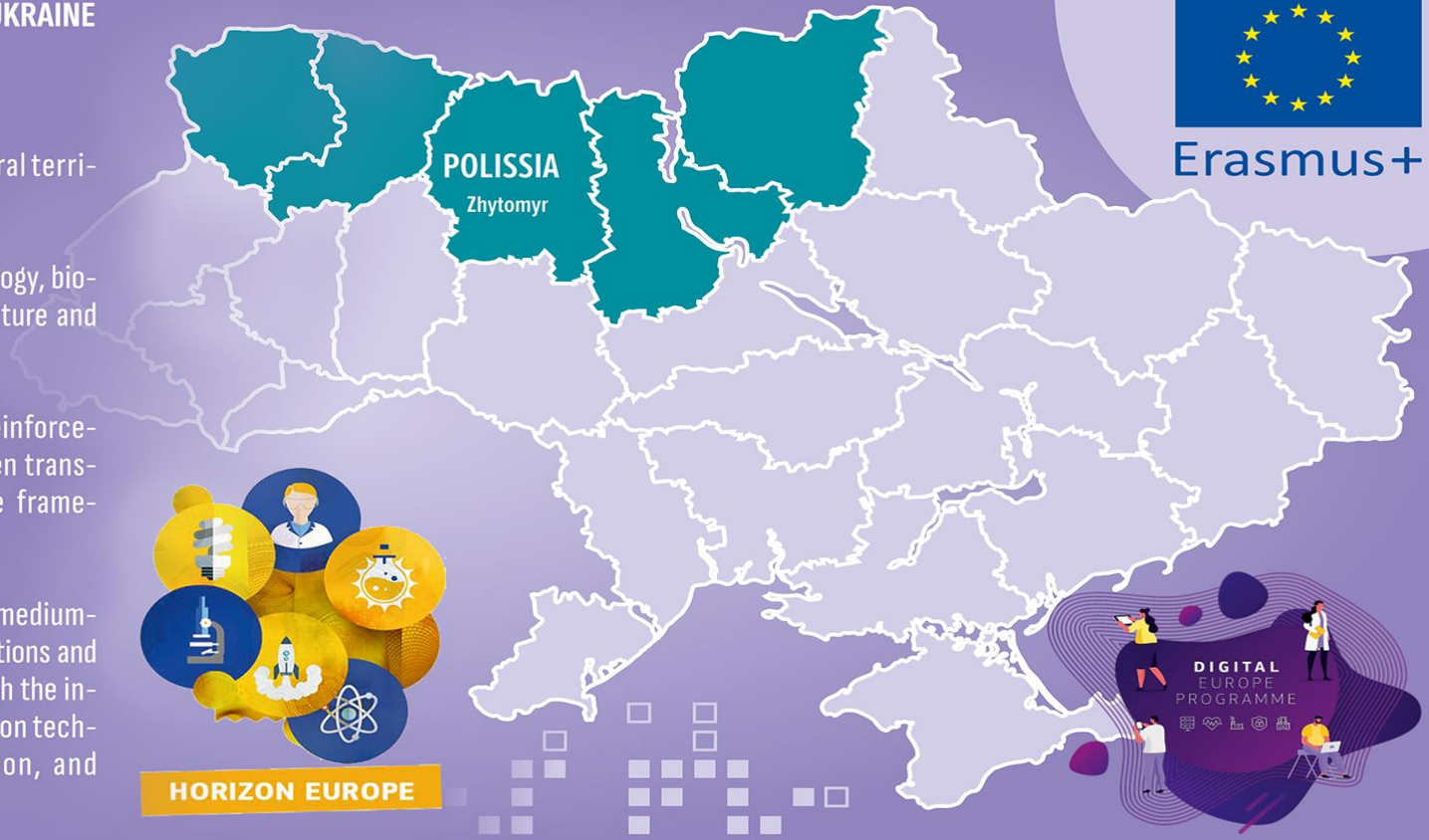
OUR PRIORITIES:

Agricultural policy, food security, rural territories development.

Innovative research in the field of ecology, bioeconomics, natural resources, agriculture and environment.

Integrated management and mutual reinforcement (interaction) of digital and green transformations, in particular within the framework of the Green Course.

Digital transformation of small and medium-sized enterprises, public sector institutions and organizations, and communities through the introduction of space and geoinformation technologies, automation, digitalization, and robotics.



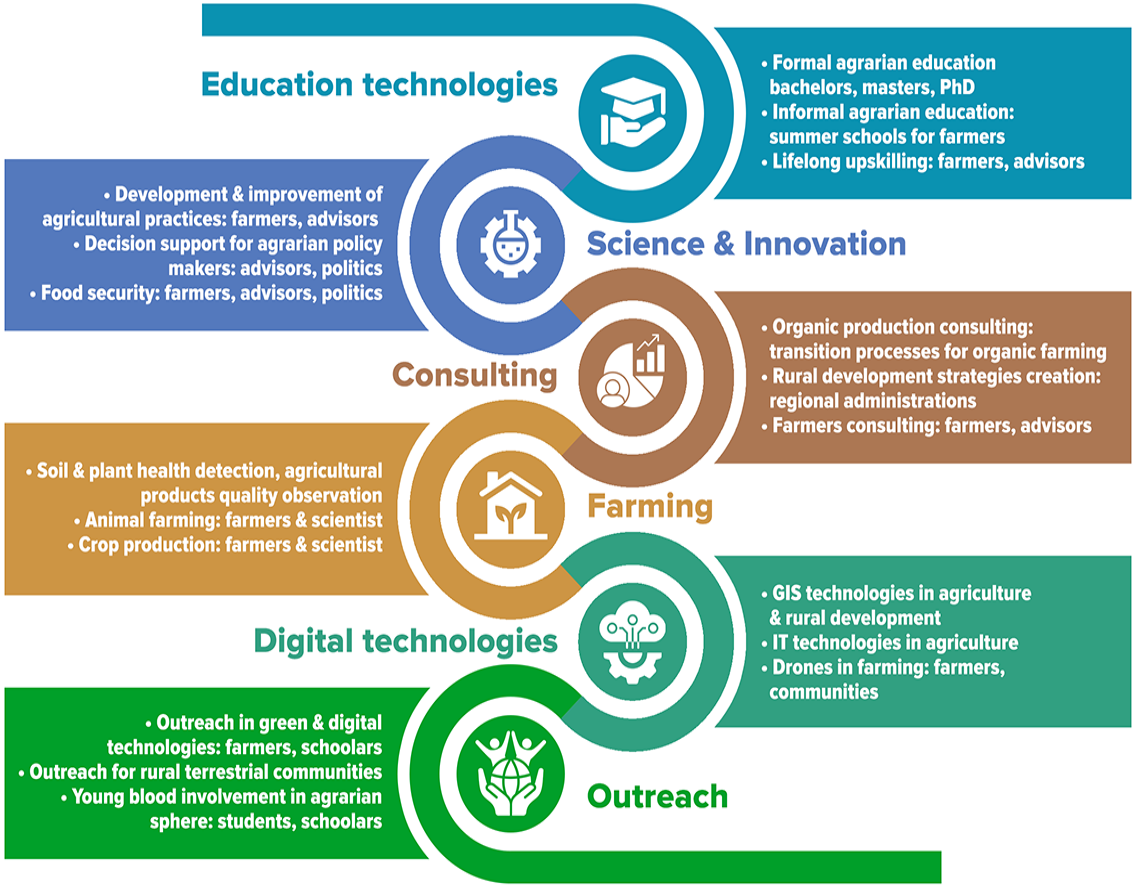
Pilot project on training women farmers on progressive principles of crop production under the sponsorship of the Japan International Cooperation Agency (JICA)

The expertise possessed by PNU

Center for Dual Education
- Partner farms

Center for Digital Technologies and Systems Modeling
- Computer Engineering and Telecommunications Laboratory

Center for Agriculture, Environment and Bioeconomy
- Experimental field
- Botanical garden
- Measuring laboratory for soil quality, agricultural products, agrochemicals
- Organic production center «Polissia Organic»



POLIDIH Polissia Digital Innovation Hub
- State Space Agency of Ukraine
- National Space Management and Testing Center
- Robotics and Maker Center Robot.ON
- ITM Industry Group

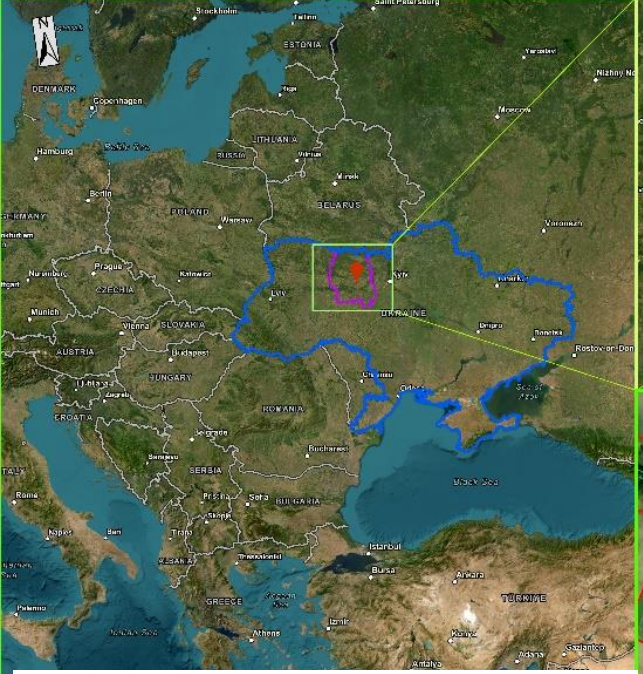
Center of Space and Geoinformation Technologies
- Remote sensing information receiving station
- Software and technical complex for geospatial data management

Center for Automation, Digitalization and Robotics
- Drone and navigation equipment complex

Our regular field trips

Our regular field trips

Digital technologies in agriculture



Actual (black) and simulated (colour) WI ratio

agriculture

MDPI

Article

Utilizing Remote Sensing Data to Ascertain Weed Infestation Levels in Maize Fields

Tetiana P. Fedoniuk, Petro V. Pyvovar, Pavlo P. Topolnytskyi, Oleksandr O. Rozhkov, Mykola M. Kravchuk, Oleh V. Skydan, Viktor M. Pazych and Taras V. Petruk

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Abstract: This study presents the evaluation of tools for weed analysis and management to support agroecological practices in organic farming, emphasizing agriculture digitalization, and remote sensing. The main aim was to provide techniques for monitoring and predicting weed spread using multispectral satellite and drone data, without the use of chemical inputs. Key findings indicate that VV and VH channels of Sentinel-1 and B2, B3, B4, and B8 channels of Sentinel-2 are not different regarding tillage, herbicide use, or sowing density. However, RE and NIR channels of drone detected significant variations and proved effectiveness for weediness monitoring. The NIR channel is sensitive to agrotechnical factors such as cultivation type, making it valuable for field monitoring. Correlation and regression analyses revealed that B2, B3, B8 channels of Sentinel-2, and RE and NIR drone channels are the most reliable for predicting weed levels. Conversely, Sentinel-1 showed limited predictive utility. Random effect models confirmed that Sentinel-2 and drone channels can accurately account for site characteristics and timing of weed proliferation. Taken together, these tools provide effective organic weed monitoring systems, enabling rapid identification of problem areas and adjustments in agronomic practices.

Keywords: agroecological farming; digitalization; drone; herbicide; organic agriculture; sentinel; weediness

check for updates

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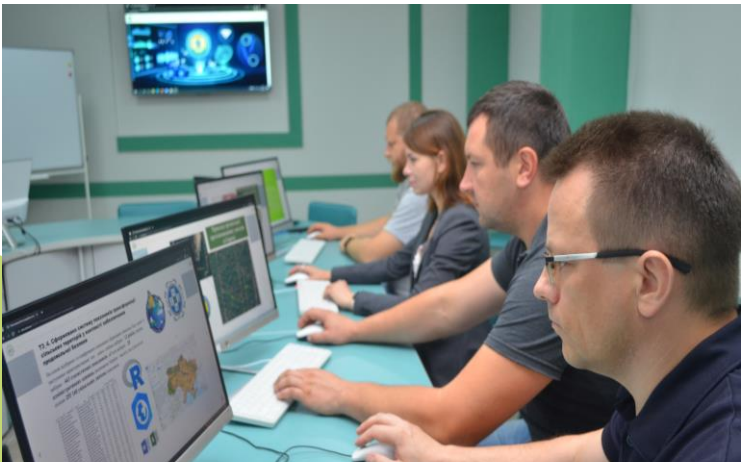
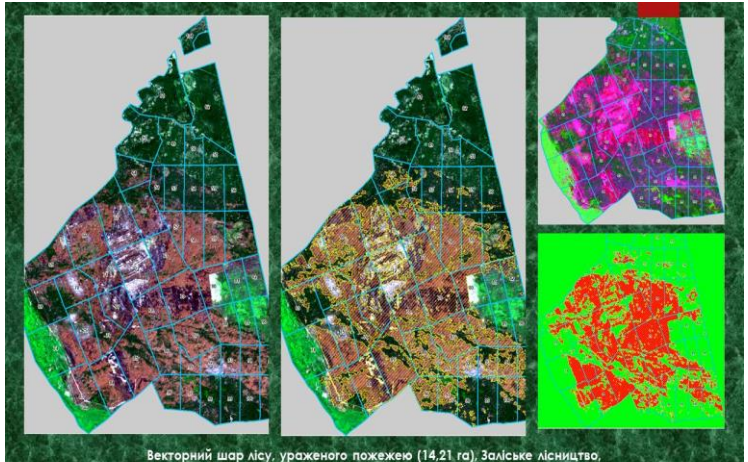
1. Introduction

Effective weed management is an important component of sustainable agricultural development in modern organic farming [1]. Organic production requires strong reduction or complete avoidance of the use of chemical herbicides, which stimulates the development of alternative, environmentally safe methods of weed control [2–5]. The use of remote sensing (RS) data in precision agriculture is an important tool in modern agronomic management. Using RS technologies and geospatial data processing, it becomes possible to conduct accurate monitoring of the state of crops. Such analysis of images from Sentinel-1 and Sentinel-2 satellites and data from drones opens new opportunities for monitoring





Векторний шар лісу, ураженого пожежею (14,21 га). Заліське лісництво.

POLIDIH aims to digitally transform small and medium-sized businesses, the public sector, and communities in the northern regions of Ukraine using innovative technologies. It develops infrastructure, skills, and ecosystems to support social development

ПОЛІСЬКИЙ ЦИФРОВИЙ ІННОВАЦІЙНИЙ ХАБ

POLIDIH

POLISSIA DIGITAL INNOVATION HUB

UKRAINE

Cluster 6 Brokerage Event

Warsaw, 27 May 2025

Involvement in ongoing projects in the area

European Commission | HORIZON EUROPE 2021-2027

AGROSUS

ID: 101084084

AGROSUS AGROecological strategies for SUStainable weed management in key European crops

ACT4CAP27

ID: 101134874

ACT4CAP27 Advancing Capacity and analytical Tools for supporting Common Agricultural Policies post 2027

Erasmus+

ReGrow

ID: 101179755

ReGrow Rebuilding Growth in Agriculture in Post-Conflict Ukraine & Transitioning Georgia

Sust Ed

ID: 101178414

SUSTED Education for sustainable development: synergy of competences for the recovery of Ukraine

ID: 101127011

EGARTU The Experience of the EU in Green Agriculture for the Recovery and Transformation of Ukraine in the Post-War Period

ID 101082258

EACEA European case of inclusive rural development policy: the roadmap for Ukraine

ID: 101082325

EUCP EU Cohesion Policy

DIGITAL EUROPE PROGRAMME

Advanced Digital Skills

POLIDIH

POLISSIA DIGITAL INNOVATION HUB

ID:101191240

POLIDIH Polissia Digital Innovation Hub

Ministry of Science and Education of Ukraine / HORIZON 2020

Geoinformation support of organic agriculture transition processes

Cluster 6 Brokerage Event
Warsaw, 27 May 2025

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HORIZON-CL6-2026-01-BIODIV-07: Boosting agrobiodiversity for food security and sustainable competitiveness - Google Docs
HORIZON-CL6-2026-03-GOVERNANCE-10: Embracing innovatio agriculture by peer-to-peer learning via on farm-demonstrations and cost-benefit analysis - Google Docs