AI4Agri

Developing green and digital skills towards AI use in agriculture

Erasmus+

KA220-VET - Cooperation partnerships in vocational education and training

WP2: Connecting AI with Agricultural sector: current status and needs assessment

A.2.3. Reflection Roundtables between agriculture workers and AI experts

Developed by

The Polish Farm Advisory and Training Centre not-for-profit Sp. z o. o.

May 2024

Table of Contents

Introduction 3

Conclusion on the main aspects of the Roundtable 3

AI use in agriculture, opportunities and risks 3

Current training and policy needs 4

Comments on the Survey analysis results 4

Further demands expressed 4

Summary 5

Co-funded by the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Project number: 2023-1-PL01-KA220-VET-000160825.

Introduction

Partner organisation: The Polish Farm Advisory and Training Centre not-for-profit Sp. z o. o.

Date: 15/05/2024

Location: International Academy of Applied Sciences in Lomza (Poland)

Number of participants: 10

Profile of the participants: Educators, students in Smart Farming, students in Agrotronics and Precision Agriculture, potential entrepreneurs, AI experts.

Conclusion on the main aspects of the Roundtable

AI use in agriculture, opportunities and risks

During the discussions, the participants came to the reflection that Polish society is not yet fully familiar with the use of AI in agriculture, but they are trying to keep up to date with current trends and technical innovations. The most popular of the existing AI-powered applications in agriculture are those monitoring crops (weather prediction, monitoring of possible plant diseases, information on the best time to sow and harvest), but also intelligent irrigation systems.

The most prominent advantages of using AI in agriculture were identified by participants as:

- early detection of crop health issues such as nutrient deficiencies, pest infestations, and diseases;
- providing precise information on plant growth and health and enabling targeted application of fertilizers;
- helping farmers plan planting, irrigation, and harvesting activities;
- machine learning algorithms can distinguish between different types of diseases and recommend appropriate treatments;
- analysis of soil conditions, weather forecasts, and historical data to determine the best times for sowing and harvesting;
- monitoring soil moisture and weather conditions to optimize water usage.

Participants concluded that the ongoing low use of AI in agriculture may be due, among other things, to:

- concerns on data privacy;
- the initial cost of acquiring and implementing AI technologies;
- lack of technical expertise required to operate and maintain AI systems;
- over-reliance and loss of traditional knowledge;
- accuracy of predictions and algorithm bias in general.

Participants also accurately recognised that differences in attitudes towards AI use in agriculture may originate from differences in farm size. They mentioned that in small-scale farming it may be easier to monitor the AI's work, however, the initial costs may be quite high. In large-scale farming, on the other hand, AI use and especially automatization may help to lower operational costs, but it is also complex and requires vast knowledge, infrastructure and advanced management system.

Co-funded by the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Project number: 2023-1-PL01-KA220-VET-000160825.

When asked about age and educational level playing role in AI use in agriculture, the participants stated that the older generation may be resistant to the use of AI due to complex computer systems and the need to keep up to date with technical innovations and technological advances. In their opinion, the younger generation is definitely more open to the use of AI, nevertheless there is a risk that they will rely on it too much and, in case of possible problems with the system, they will not be able to get out of trouble.

Regarding income, the participants said that income level plays a crucial role in determining the extent to which farmers can adopt and benefit from AI-based applications in agriculture. High-income farmers may have greater access to technology, infrastructure, training, and market opportunities. In contrast, rural areas with lower income levels may lack the necessary infrastructure, hindering the adoption of AI technologies. Farmers with limited resources may struggle to access training and support services, making it challenging for them to maximize the potential benefits of AI in agriculture.

Current training and policy needs

Participants identified the currently existing training on AI use in agriculture as courses related to AI and data analytics, precision farming tools, agroecology, and integrated pest management. In their opinion, our society still lacks educational support on pandemic response measures and farm resilience planning, programs focused on gender-inclusive policies, women's access to land and resources, and women's leadership in agriculture, as well as retaining youth in agriculture.

Comments on the Survey analysis results

The survey findings highlighted important gaps in knowledge and awareness among the Polish society regarding the use of AI in agriculture. The key points that the participants suggested to consider are:

- educational programs and initiatives aimed at increasing awareness and understanding of AI technologies in agriculture;
- governmental initiatives and programs aimed at promoting digitalization and AI adoption in agriculture;
- public awareness campaigns regarding the potential benefits of AI in agriculture;
- collaboration and knowledge sharing by creating platforms for sharing information, experiences, and resources related to AI adoption and digitalization efforts;
- sensitizing farmers and agricultural workers to the importance of AI and digital technologies by continuous engagement, communication, and support.

Further demands expressed

Further suggestions for improvement given by the participants included development of tailored training programs, demonstrating good practice examples, providing grants or subsidies on AI infrastructure, development of clear regulatory frameworks and standards for AI applications in agriculture, and establishment of networks and knowledge-sharing platforms for experience and best practice exchange.

Co-funded by the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Project number: 2023-1-PL01-KA220-VET-000160825.

Summary

AI technologies are already being used in various agricultural applications, such as crop monitoring, weather prediction, disease detection, smart irrigation systems, and optimizing sowing and harvest times. It enhances precision in monitoring crop health and growth, improves accuracy in weather forecasts to aid agricultural planning, and allows for early identification and treatment of plant diseases. It also optimizes sowing and harvesting schedules based on data analysis and ensures efficient water use through automated irrigation systems.

The participants indicated several risks associated with AI in agriculture, including data privacy and security concerns, high initial costs and technological barriers, potential over-reliance on AI systems, risks of biased algorithms and inaccurate predictions, potential job displacement and increased inequality, resource-intensive technologies leading to environmental concerns, and the need for proper regulations and ethical guidelines.

Addressing the existing needs and challenges through comprehensive strategies can promote AI adoption in Polish agriculture, enhancing productivity, sustainability, and resilience in the sector. This requires collaboration among all stakeholders to create an enabling environment for digital innovation in agriculture.

Co-funded by the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Project number: 2023-1-PL01-KA220-VET-000160825.