AI4Agri

Developing green and digital skills towards AI use in agriculture

Project Number: 2023-1-PL01-KA220-VET-000160825

Erasmus+

KA220-VET - Cooperation partnerships in vocational education and training

WP2:

WP2: Connecting AI with Agricultural sector:

current status and needs assessment

A.2.2.: Needs Assessment Survey National Report Greece

Developed by

ThinkOnception/YET

April 2024

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

Table of Contents

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

Executive Summary

This report's main focus is the presentation of the findings of the survey conducted with a number of agricultural workers and potential entrepreneurs in Greece regarding the identification of current gaps in the use of AI applications and tools and potential ways to engage the agricultural workforce into the use of such applications. The report also contains a brief introduction as well as a conclusions and recommendations section.

Introduction

The AI4AGRI project aims at increasing awareness and knowledge on the uses of AI technologies in the agricultural sector while at the same time enhancing skills on AI use and providing in-depth understanding of practical uses of AI. The importance of the project also lies in the fact that it promotes digital transformation within the agricultural sector and thus significantly contributes to the discussion on sustainability.

This report aims to present data pertaining to agricultural workers and potential entrepreneurs, drawn through a survey which focuses on looking into potential gaps in their knowledge and their training needs on the use of AI tools in the sector.

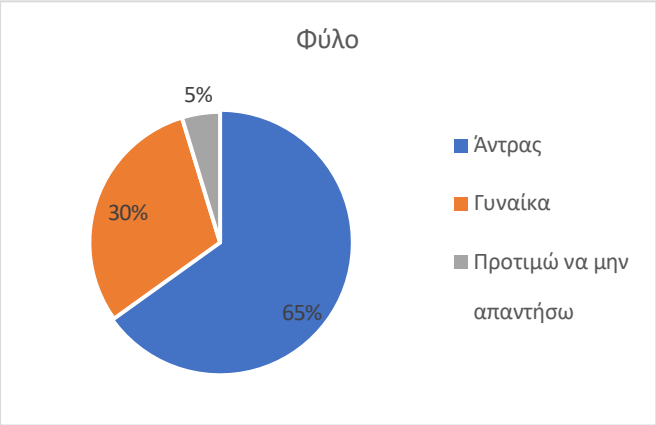
Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

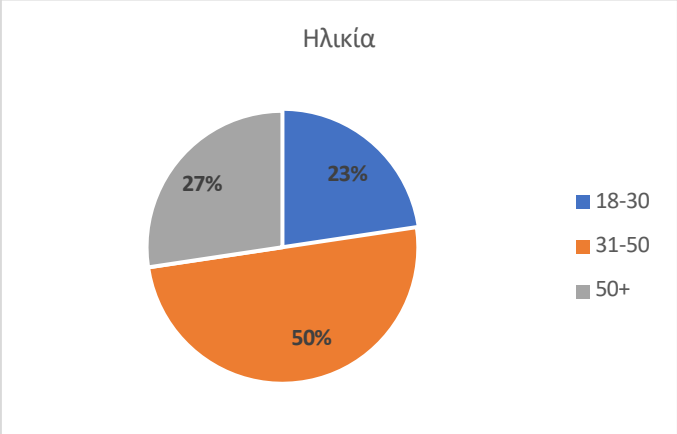
Results and Discussion

This survey was conducted in April 2024 by contacting individuals relevant to the subject at hand and distributing questionnaires of which the results will be presented below. Several agricultural workers completed the questionnaire as well as potential agricultural entrepreneurs.

Demographics



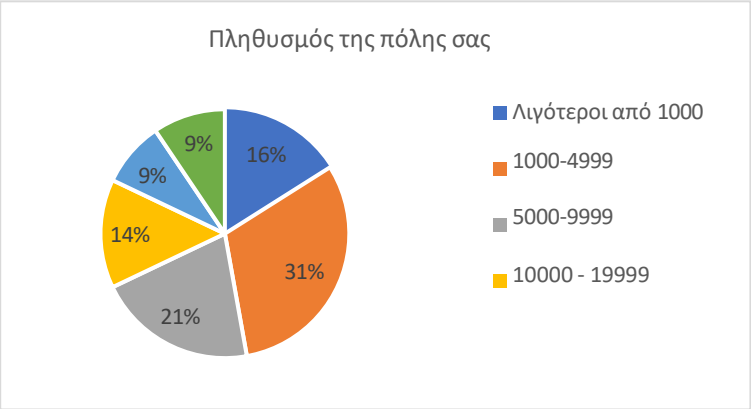
The chart above shows the division of the respondents' gender. Specifically, 69 people identified as men (65%), 32 identified as women (30%) and 5 wished not to answer the question (5%).



In the pie chart above, the age of the individuals that responded is recorded. 24 of the respondents were between the ages of 18-30 (23%), 53 were between 31-50 years old (50%) and 29 were over 50 years old (27%).

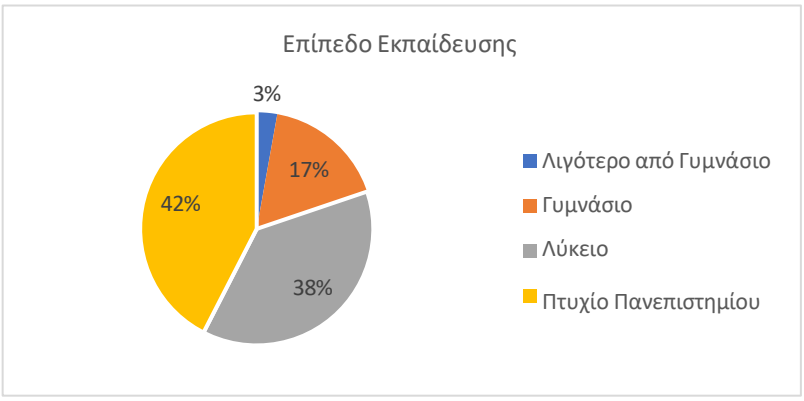
Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

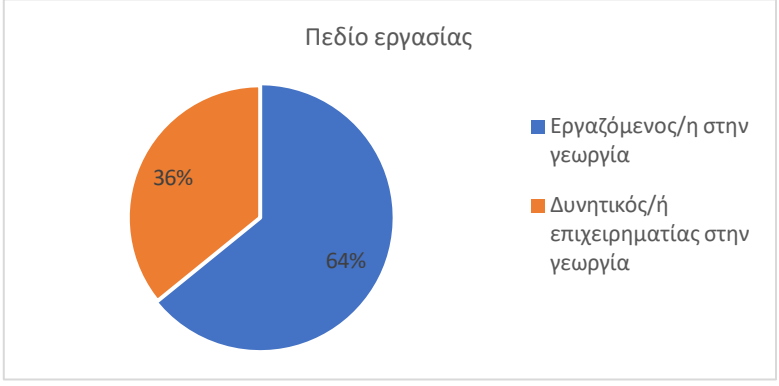


Regarding the population of the town of the respondents, the answers received varied. Most of the respondents live in a town where the population is between 1.000-4.999 residents, followed by the respondents that live in towns with a population between 5.000 and 9.999 residents. 16% of the respondents are resident in towns with fewer than 1000 inhabitants and 14% in towns with a population between 10.000 and 19.999 people. Finally, respondents from towns with populations of 20.000 and 50.000 and over 50.000 each made up a 9% of the total of respondents.

Specific information



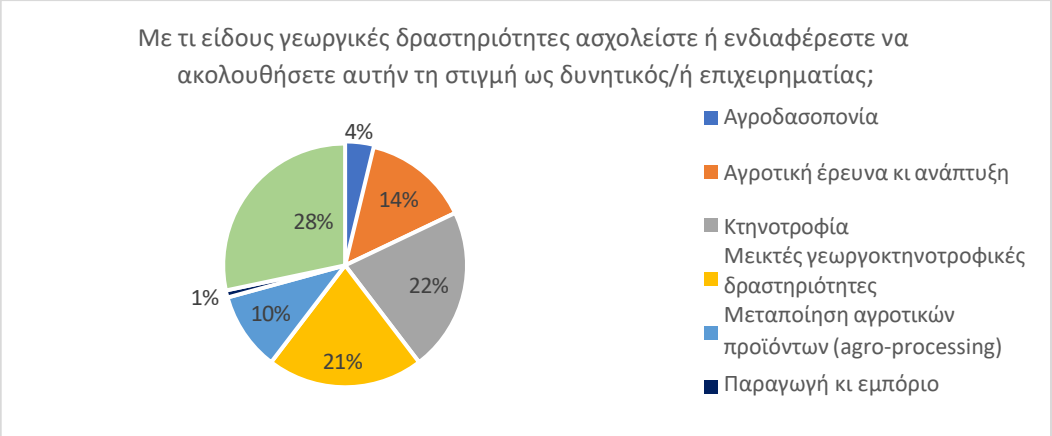
The above chart demonstrates the level of education of the respondents. 42% of the respondents have a university degree while 38% have finished higher education. 17% have finished secondary school and 3% less than secondary school.



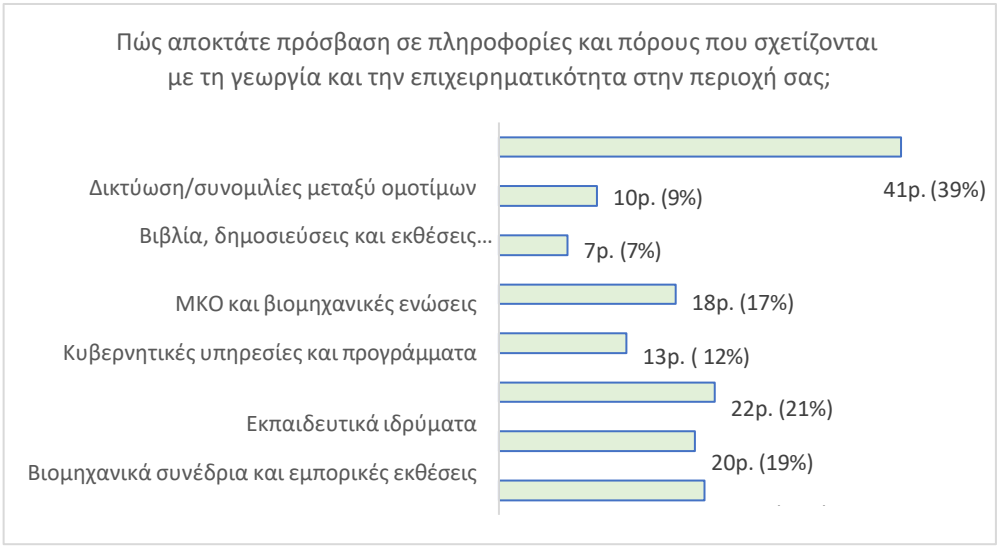
Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

In terms of field of work, 64% of the respondents is an agricultural worker while 36% is a potential entrepreneur in agriculture.



There are a variety of responses when it comes to the types of agricultural activities that the respondents are undertaking. 28% of the respondents are involved in crop production, while 22% are working in livestock farming and 21% in mixed farming. 14% is working in agricultural research and development and 10% in agro-processing. Agroforestry represents 4% of the total of respondents and only 1% is dealing with production and trade.

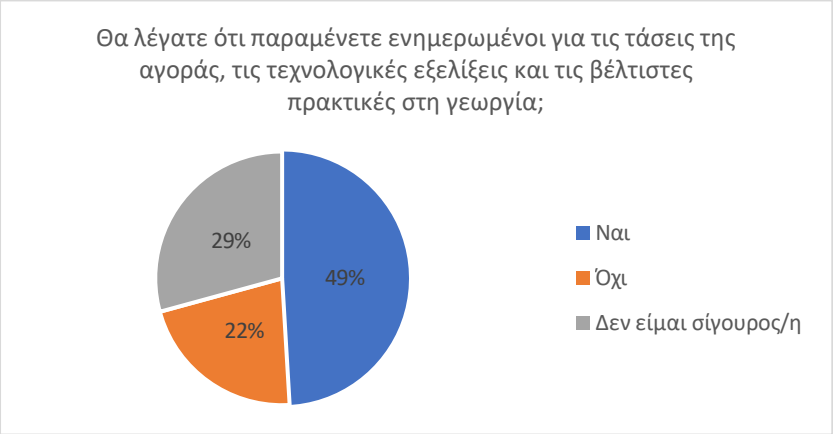


The above graph represents the responses recorded to the question on how the respondents access information and resources related to agriculture and entrepreneurship in their region. A number of respondents gave multiple answers which is represented here with a and to this end, 39% of the recorded responses (41 individuals) gain access through networking and peer conversations. 21% of the respondents (22 people) gain access through Industry conferences and trade shows while 20% (21 people) are informed through online resources and 19% (20 people) through agricultural service providers. A slightly smaller number (17% - 18 people) access information through government agencies and programs and finally, a smaller number of people are informed through other means,

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

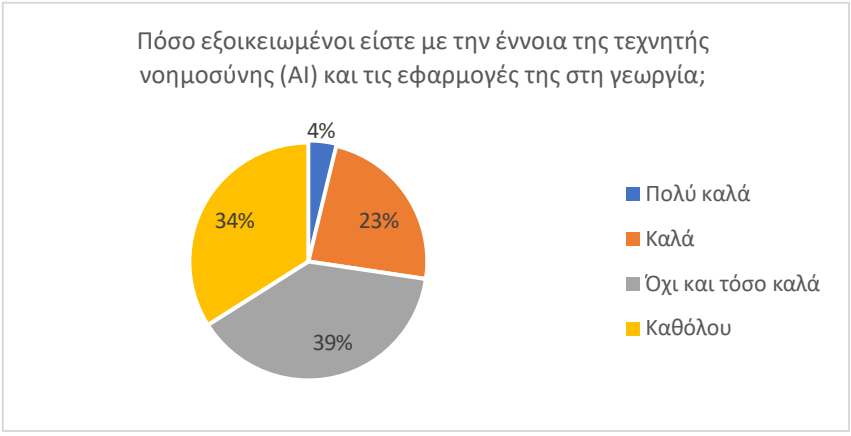
Co-funded by the European Union

specifically: 12% (13 people) by educational institutions, 9% (10 people) by books, publications and industry reports and finally, 7% by NGOs and industry associations.



When it comes to how informed the respondents are in terms of market trends, technological advances and best practices in their field, almost half of them (49%) state that they are well informed, 22% state they are not well informed and the remaining 29% are not certain they are well informed.

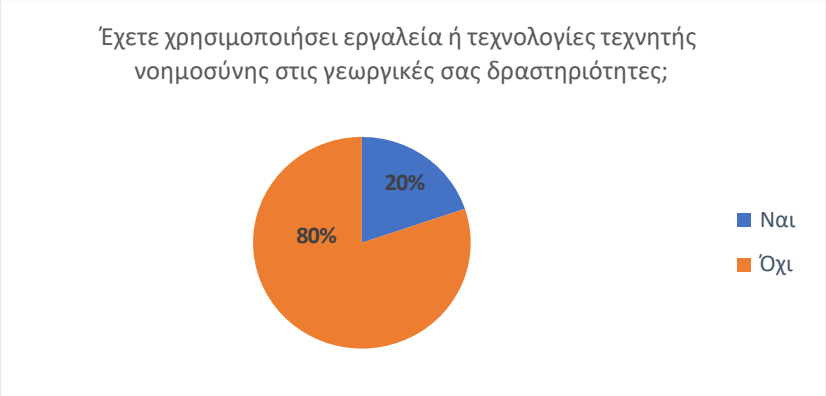
Digitalisation and AI use



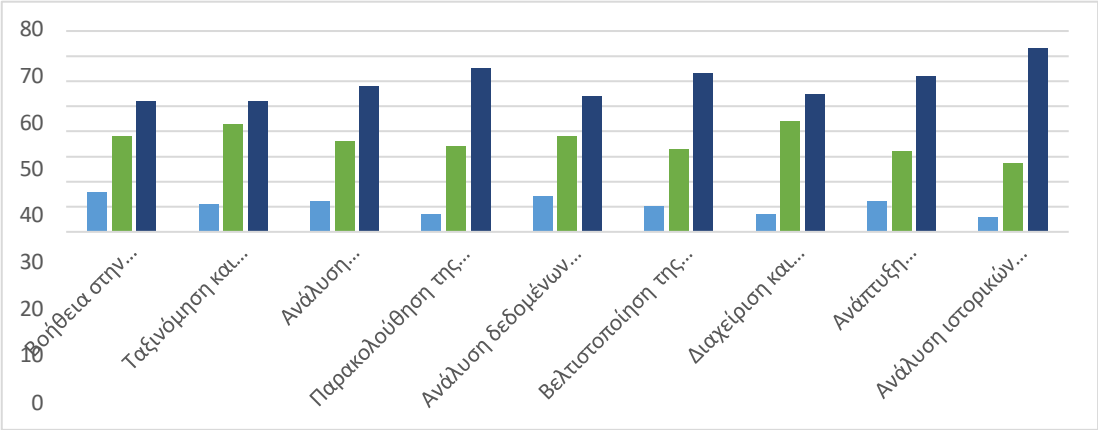
The above graph demonstrates the respondents' familiarity with the concept of AI and its applications in agriculture. Specifically, 39% believes they are not really familiar with the concept, while 34% of the respondents states that they are not familiar at all. 23% state they are quite familiar with the subject and a very small 4% is very well acquainted with the concept of AI.

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union



80% of the respondents have answered that they have never used any AI tools or technologies in their agricultural activities while only 20% responded that they have.



Regarding AI use and in line with the previous question, most of the respondents have stated that they do not know of the selected uses of AI in the agricultural sector.

In more detail, for "*Assistance in predicting crop yields based on weather data and historical trends*", 16 respondents answered that they use it regularly, 38 responded that they know about it but do not use it and 52 responded that they do not know it at all. "*Classifying and identifying weeds in agricultural fields*" is used by 11 respondents, while 43 have heard about it but do not use it and 52 have never heard about it. "*Analysis of satellite imagery to detect crop health issues*" is known and regularly used by 12 respondents, 36 respondents have heard about it but do not use it and 58 have never heard about it. "*Monitoring livestock health and behavior*" is known and used by 7 people, while 34 have heard about it but do not use it and 58 do not know about it at all. When it comes to *analysing soil data to recommend optimal crop planting strategies,* 14 respondents know it and use it regularly, 38 have heard about it but do not use it and 54 do not know about it at all. 10 people know about and use AI tools for "*Optimising supply chain logistics for agricultural products*", while 33 people know about it but have never used it and 63 do not know about it at all. 7 people use AI technologies for m*anaging and optimizing energy usage on farms*, 44 have heard about it but never used it and 62 have never heard about it. 12 people know about and use AI tools for the d*evelopment of predictive models for disease outbreaks in crops or livestock,* 32 have heard about it but do not use it and 62 do not know about it at all. Finally, only 6 participants know about and use AI tools to *analyse historical*

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

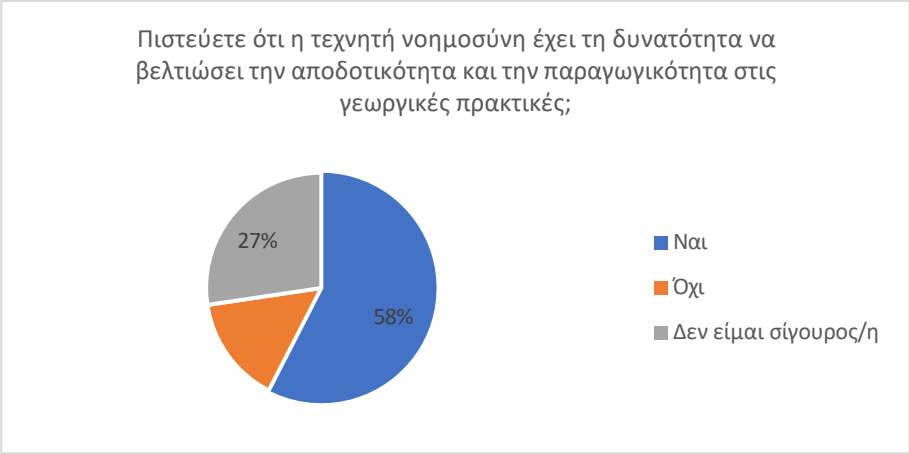
data to optimize crop rotation practices while 27 have heard about it but do not use it and 73 do not know about it at all.

When it comes to main challenges encountered in adopting digital technologies, including AI, in their agricultural activities, 42% responded that they are too complex and hard to understand. This is followed by a 28% that responded that a main challenge is the cost for software, training and infrastructure and a 25% which find that there is limited technical support. 24% also believe that there is a lack of awareness and education, 18% that there is lack of reliability and accessibility and 17% identify integration with existing systems as a challenge. 14% of respondents also state risk aversion as a challenge while 8% mention data privacy and security concerns and 6% mention poor internet access.

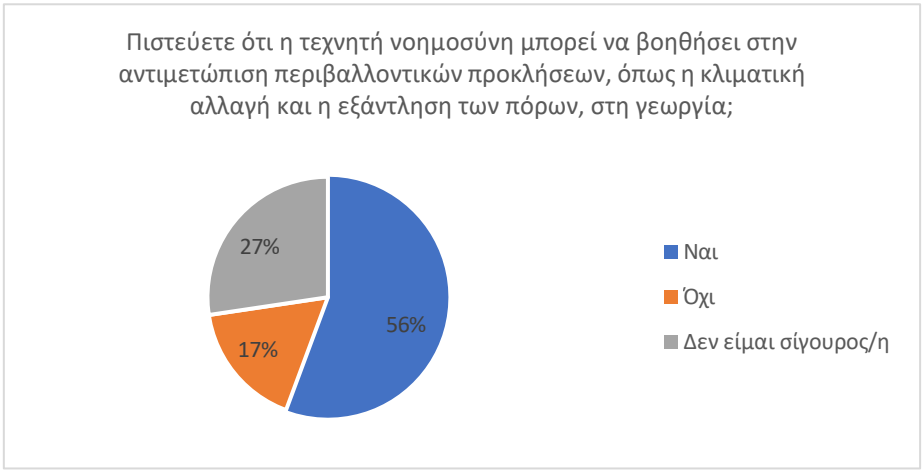
In terms of knowledge of government initiatives or programmes aimed at promoting digitilisation and AI uses in agriculture, the vast majority (75%) answered that they are not aware of such initiatives while 22% responded that they do, not further elaborating. A total of 3% mentioned specific initiatives through the Ministry of Environment and Energy, the Ministry of Digital Governance and Hellenic Agricultural Organisation (ELGO).

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union



In the question “Do you believe that AI has the potential to improve efficiency and productivity in agricultural practices?”, 58% answered positively, 27% that they are not sure and 15% stated that they do not believe so.

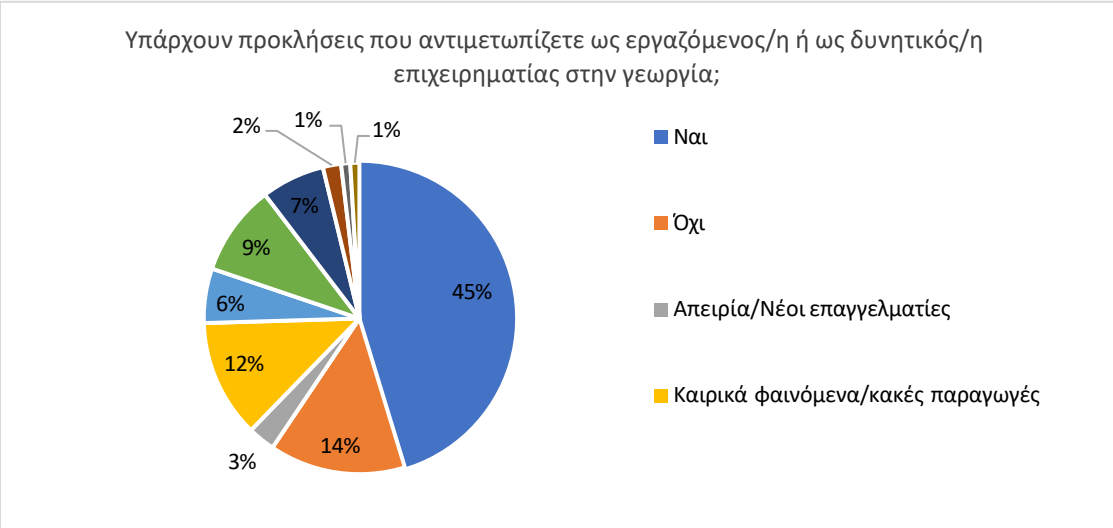


Regarding the question “Do you think AI can help in addressing environmental challenges, such as climate change and resource depletion, in agriculture?”, 56% of the respondents state that they believe so, 27% that they are not sure and 17% that they do not believe so.

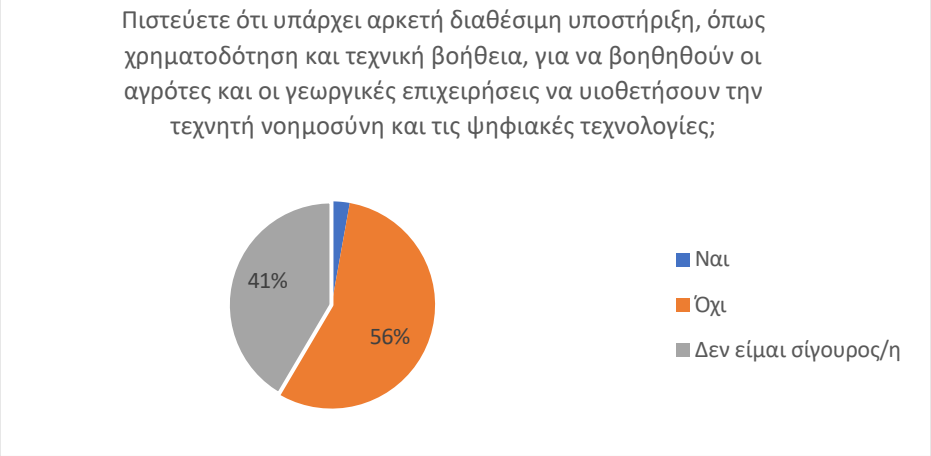
Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

Summary



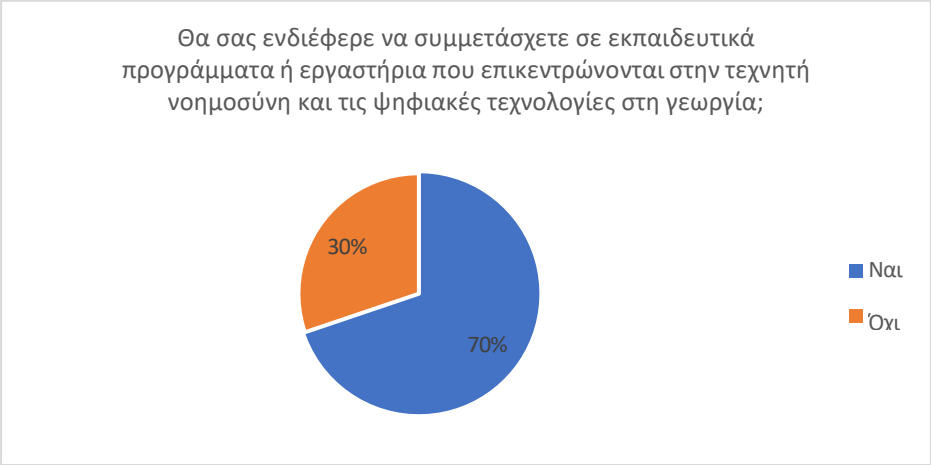
Regarding the challenges that the respondents face when it comes to their agricultural activities, 45% mention that they are facing challenges and 14% that they do not. 12% mention specifically bad weather conditions and subsequent bad crop production, while 9% mention lack of training and information on AI practices. 7% state the lack of financial resource and governmental support as a challenge and 6% plant diseases. The remaining 7% state the following as challenges: young professionals/lack of experience, lack of access to relevant equipment, lack of accessibility, fast development of tools with no sufficient scientific information on the results of their use.



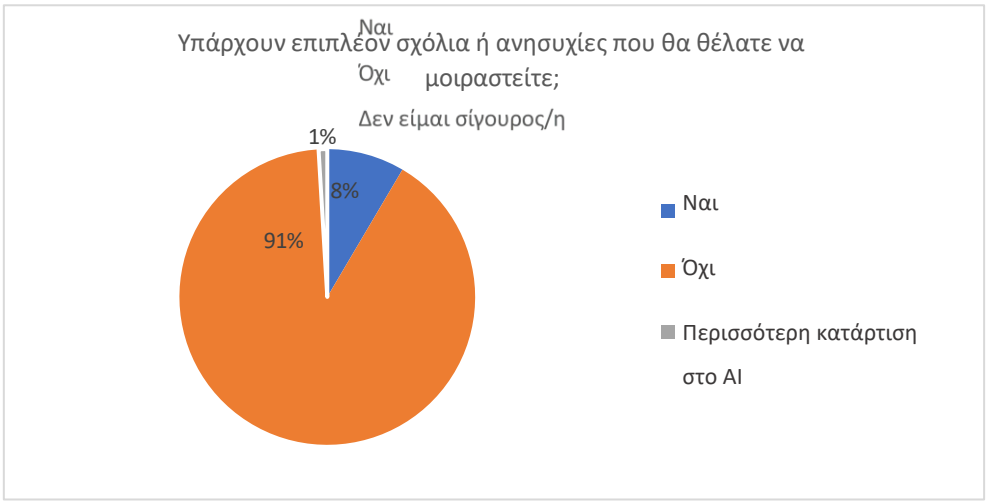
In the question *"Do you think there is enough support available, such as funding and technical assistance, to help farmers and agricultural businesses adopt AI and digital technologies?"*, 56% of the participants replied Yes, 41% replied that they are not sure and 3% replied No.

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union



In terms of interest in participating in training programs or workshops focused on AI and digital technologies in agriculture, 70% of the respondents answered that they would be interested and 30% that they would not be interested in such programs.



Finally, in the question “Are there any additional comments or concerns you would like to share?”, 91% responded with No, 8% with Yes but no further elaboration and 1 person responded that they wish for more training in AI uses.

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

Conclusions and Recommendations

The main conclusion drawn from the survey conducted in Greece is that when it comes to AI technologies being used in the agricultural field, the majority of the workforce, be it agricultural workers or potential entrepreneurs, either is vaguely familiar or not familiar at all with such concepts. There is a small number that is working with AI technologies but in general, there is lack of knowledge on the subject.

The most prominent issues that stem from the survey conducted regarding the Greek agricultural workers and entrepreneurs and should be further discussed are the following:

- Little to no familiarity with the concept and uses of AI in the agricultural field
- Lack of sufficient training and relevant initiatives for AI uses in the agricultural field and the interest of agricultural workers/entrepreneurs to participate in such trainings and initiatives
- Lack of knowledge for uses of AI tools in the agricultural field for any of the following mentioned in the survey:
    - Assistance in predicting crop yields based on weather data and historical trends
    - Classifying and identifying weeds in agricultural fields
    - Analysis of satellite imagery to detect crop health issues
    - Monitoring livestock health and behavior
    - Analysing soil data to recommend optimal crop planting strategies
    - Optimising supply chain logistics for agricultural products
    - Managing and optimizing energy usage on farms
    - Development of predictive models for disease outbreaks in crops or livestock
    - Analyse historical data to optimize crop rotation practices
- The lack of governmental initiatives that can promote digitilisation (including AI uses) in the agricultural sector
- The potential technical support such as funding and technical assistance that could help farmers and agricultural businesses adopt AI and digital technologies.

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union

AI4Agri Project website: https://www.ai-4-agri.eu/

AI4Agri Project e-Learning Platform: https://ai4agri-elearning.eu/

Funded by the European Union. The views and opinions expressed are solely those of the author(s) only and do not necessarily reflect those of the European Union or Foundation for the Development of the Education System. Neither the European Union nor the Foundation for the Development of the Education System can be held responsible for them.

Co-funded by the European Union