Agriteach 4.0

NEWSLETTER

Connecting VET Teachers to Agriculture 4.0

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ICT in Agriculture

Information and communication technologies play an important role in agriculture. From helping with day-to-day work and administration to advanced techniques of precision agriculture which help reduce costs and increase productivity.

High-tech agriculture for the next generation

It has been demonstrated that the ability of the agricultural community to connect to knowledge databanks, networks and institutions through information and communication technologies will substantially improve agricultural productivity. Such a model is generally referred to as e-Agriculture.

There are several key factors that can determine, how well will ICT and precision agriculture be utilized in the future.

One of the first hurdles is actually technical in nature. It doesn't matter if there is a cool new technology that will help farmers tremendously, if the ICT infrastructure is lacking, there is not much you can do.

Another issue is the level of knowledge and skill within the agricultural workforce itself. As far as new technologies are concerned the older generation of farmers is not really invested in the idea of modern high-tech agriculture. And most young people view farming as some ancient relic of past, which is necessary to bring the food onto the table, but not worth their pursuit.

And this is where new teaching methods and awareness campaigns can make the most difference. On one hand, it can help bring the more seasoned farmers up to speed with the newest trends and prevent creation of generational gap. On the other hand, quality education can capture a fresh audience of young people and get them interested in agriculture.

WHAT IS PRECISION AGRICULTURE EXACTLY?

Precision agriculture is the concept of modern agriculture management using digital technologies for monitoring and optimizing production processes in agriculture.

The term precision agriculture covers many different areas and various technologies that can be utilized to optimize costs and productivity of agricultural production.

Precision agriculture uses satellite navigation and navigation positioning systems, as well as a number of other technologies. These include: automatic steering control, prescribed trajectories, automatic vehicle rotation, precision sowing, targeted use of fertilizers, data analysis obtained from remote sensing, utilization of UAVs to create map databases etc.

State of the art analysis

An extensive analysis of the state of the art in use of ICT in agriculture and precision farming was conducted im each target country as well as on the level of EU. These analyses serve as a baseline for following parts of the project. Additionally, a survey was devised to get relevant information directly at the source – from local farmers and representatives of agricultural enterprises.

HUNGARY

Overall, the agricultural conditions in Hungary are above average. Compared to other European countries, terrain conditions are favorable for agriculture. However thanks to the border between the dry and wet continental climate zones, the precipitation conditions are not optimal and Hungary experiences harsher droughts.

Agriculture is a traditionally important sector in the Hungarian economy and contributes approximately 4% of Hungarian GDP, while employing about 5% of the total workforce. The country shows a somewhat even split of arable land between larger agricultural corporations and individual farmers, who hold 58% of the total cultivated land.

The ICT infrastructure is quite developed with most household having access to the internet, however the extensive use of specialized services is still limited, mostly thanks to high costs.

Precision agriculture is being utilized in Hungary and the number of farmers involved with new technologies is increasing, but the overall lack of readiness, skill and knowledge of the workforce prevents a faster progress in this area.

MACEDONIA

The agricultural sector in Macedonia is third biggest GDP contributor right behind the services and industry with 12% contribution. Together with the food processing industry they contribute 18% to the total GDP of the country. Cultivated land represented approximately 41% of total agricultural land, while the remaining 59% is categorized as pastures. Agriculture in Macedonia employs approximately 17% percent of the workforce.

Small-scale agricultural holdings dominated agricultural production both before and after the privatization process in the 1990s. And even though the family-farm structures give way to larger, monoculture farm operations, the overall average size of an agricultural holding is still quite small (1,85 ha).

Compared to EU, the productivity of agricultural production is lower, mostly thanks to lower utilization of technical and technological solutions.

While overall the awareness of sophisticated technological solutions such as precision agriculture is low among farmers, the younger generation seems very eager and agile in terms of willingness to obtain new knowledge.

SURVEY

A survey was conducted among farmers from target countries. Apart from getting basic background information about the respondents (type of farm, size, number of employees etc.), the main goal was to ascertain the level of knowledge about ICT tools and precision farming methods among the farmers and its level of utilization.

In Hungary, 64 representatives of agricultural enterprises took part in the survey, while in Macedonia it was only 11 respondents.

Background

The results of the first part of the survey shown that the selected participants were representative to the overall structure of agriculture in a given country (in terms of size of arable land, number of employees etc.)

Knowledge of ICT

Both Hungary and Macedonia have shown good results in terms of overall awareness about ICT, with Hungary having higher percentage of users replying that they are actively utilizing ICT in their business. However in both countries the majority of users feel that they do not utilize ICT to its fullest potential.

Precision agriculture

In this area, the two target countries differ the most. While in Hungary, decent number of respondents answered, that they are already utilizing at least some of the precision farming methods (and those who did not were at least aware of them), in Macedonia the results is this section were recognizably worse. While the amount of users that are familiar with precision farming was decent (even though lower than in Hungary), the number of companies currently actively utilizing precision agriculture was very low.

Aim of the project

Guide agricultural VET teachers in the renewing of their teaching methods by providing them a freely available online course "Teachers for Farming 4.0" based on a networked learning pedagogical model.
The project will integrate the networked learning methodology of a successful Leonardo project Tenegen with the pedagogical innovations of learner-centred methods such as the Creative Classroom (CC) and the Flipped Classroom (FC) model.
The learning environment and teaching model applied by this project is aligned with the pedagogical innovations of the ET 2020 framework, focusing for the development of 21st century skills, creativity, and the digital entrepreneurship of students.

Objectives

- A focused needs-analysis, and comparative study to identify the training needs by involving VET teachers and representatives of the beneficiaries - the agricultural companies.
- Developing a standard competency framework for agricultural workers and agricultural ICT practitioners aligned with EU standards such as the EQF and the e-Competence Framework.
- Curriculum Design based on the CAPDM methodology.
- Developing learning content for THREE MODULES:
  - M1 Reinventing agricultural education
  - M2 European Strategies and initiatives of e-Agriculture
  - M3 Digital systems within Agriculture 4.0
- Development of an online collaboration platform and the implementation of the components for "Teachers for Farming 4.0"
- Piloting the "Teacher for Farming 4.0" course (HU, MK).
- Refining the syllabus and the course components according to feedback from the participants.
- Planning for valorization and sustainability.

Project basics

TARGET GROUP
Agricultural VET teachers

BENEFICIARIES
Students, farmers, advisors

PARTICIPATING COUNTRIES
Hungary, Macedonia, Czech Republic, United Kingdom

TARGET COUNTRIES
Hungary, Macedonia

PROJECT START DATE
01-09-2017

PROJECT DURATION
24 months

COORDINATOR ORGANIZATION
Galamb József Agricultural Secondary School Hungary

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Teachers for Farming 4.0 online course

Contact us

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- CAPDM Limited – UK
- Wirelessinfo - CZ