**International Research Project Focused on Environmental Modeling**

In June, vice-rector for scientific work of Vidzeme University of Applied Sciences (ViA), assistant professor and researcher Ginta Majore as well as research assistant at the Institute of Sociotechnical Systems Engineering (SSII, ViA) Andris Lapāns participated in the television program “Science Zoomed-In”. The program was focused on environmental modeling; on areas where professionals of the technological industries are using environmental modeling on a daily basis.

The show was devoted to the international project of the Horizon2020 program “reSilienT fARminG by Adaptive microclimaTe managEment” (STARGATE). In the project, ViA and the cooperation partners identify various vulnerabilities in the existing agricultural system in order to create the conditions for a smarter agriculture, based on the research of climate change. STARGATE uses the modern approach of precision agriculture, addressing the pressing issue of the impact of climate on potential yields. The research team uses both historical and current data to model the best solution and to help the farmers reduce crop losses.

A number of studies demonstrate that climate change is expected to have a diverse, severe and site-specific impact on agricultural production. There is no doubt that climate and weather instability will affect the availability of food as well as change the social and economic stability and regional competitiveness. Therefore, adaptation is considered to be a key factor in the context of climate change that will impact the production of food in future. Researchers call for an understanding of the agroecological features that underpin the resilience of traditional agroecosystems and their use in the design of adapted farming systems. Identifying and modeling systems that can withstand climatic conditions is important for thousands of farmers in order to expand the agroecological practices that improve the resilience of agroecosystems. The effective dissemination of agroecological technologies will largely determine how well and how quickly farmers adapt to climate change.

“Modeling is a schematic, graphical, or mathematical representation,” explain the researchers. Modern technologies spend about two hours for calculations which would have taken 20 years in the past with scrupulous observations. By setting out the basic principles of data modeling, a number of hypotheses are put forward and formulas are developed to predict the future.”

The project involves 26 partners from different European countries. Each develops an advanced, versatile and holistic smart farming methodology, leading to innovations in microclimate and weather risk management, as well as landscape design.

“The European Commission demands that agriculture around 2030 will largely be organic. This goal can be achieved by using technologies in the processes that help to understand the real situation and advise the farmer on how to achieve good yields,” say the researchers.

Experts emphasize that environmental modeling is our future; it is a tool that will save resources. “The better we know how to forecast the weather, the more effective the work will be. But in order to gain a deeper understanding of agricultural processes – in this case potato growing in particular – a close cooperation with industry experts and stakeholders is crucial for us.”

The show was created by ViA in a cooperation with the channel ReTV. The aim was to spark the interest and understanding of science, to discuss the current research results as well as their daily application.