



NEWSLETTER #16 CROATIA

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Every two weeks, this newsletter will be prepared by a different Alliance member.

Today we are happy to share a contribution from the [University of Zagreb Faculty of Agriculture \(FAZ\)](#) in Croatia.

Series of events on research and innovation in the field of crop protection and the transition to pesticide-free agriculture 21-24 May 2024, Faculty of Agriculture at the University of Zagreb



From May 21st to May 24th, a series of events will take place at the University of Zagreb, Faculty of Agriculture, aimed at disseminating knowledge and networking among four interconnected communities : the EU Alliance "Towards Pesticide-Free Agriculture," its COST network "TOPAGRI," the International Initiative for Agroecological Crop Protection, and its first EU project ACROPICS.

Over 70 people will take part in the following programme:

- * May 21 - 22: A **workshop** for researchers from these communities will focus on place-based system innovations, such as local initiatives and living labs, to catalyze research and innovation. It aims to foster bottom-up co-design and co-innovation, driving agricultural transformation at both EU and international levels.
- * May 22: the **General Assembly** of the European Research Alliance for Chemical Pesticide Free Agriculture (for ERA-GA members).
- * May 23 - 24: the **annual meeting of the Management Committee** of the COST Action 21134 Towards zero Pesticide AGRiculture: EUROPEAN NETWORK FOR SUSTAINABILITY- TOP-AGRI-NETWORK (for the members of COST Action 21134 MC).

The events aim to foster new ideas and collaborations, strengthening and connecting the European network of scientists working to reduce the use of chemical pesticides.

LIFE Project AGROWISE - Guideline for farm specific rules for mitigating pesticide impacts while ensuring sustainable agriculture (LIFE-2023-PLP)



The **LIFE project AGROWISE** - Consortium of research institutions/competent authorities (from 8 countries) led by INRAE, which together have extensive transdisciplinary experience and sectoral understanding of plant protection and agro-ecological transition factors, will start the implementation of the project **AGROWISE - Guideline for farm specific rules for mitigating pesticide impacts while ensuring sustainable agriculture (LIFE-2023-PLP)**.

AGROWISE will develop recommendations for arable, perennial crops, and grassland, respecting IPM principles across different pedoclimatic conditions. The project will lead the co-design of a guidance framework through consultation with relevant stakeholders, aiming to implement practices and systems that reduce pesticide use and impact, as planned in the Sustainable Use Regulation.

UNIZGFAZ will participate in all tasks and coordinate Task T.2.4, evaluating the efficiency of practices to reduce pesticide use and risks. This task assigns an estimate of pesticide use reduction to practices and systems outlined in Tasks T.2.1 and T.2.2 and recalculates the results into metrics defined in T.2.3. The assessment, based on scientific and technical evidence, will explore geographical variations, guiding the development of further tools and recommendations. It will also provide insight into the efforts needed for additional farming systems and the implementation of final recommendations.

AgroSPARC project "Smart and Predictive Agriculture for Resilience to Climate Change"

Current and projected climate change poses significant challenges to agricultural crop production, including lower yields, higher costs and the need to deviate from traditional farming methods. This destabilization is primarily caused by abiotic stress factors such as heat waves, droughts, floods, frost, salinity and nutrient deficiencies, as well as favorable conditions for pests and diseases. The **AgroSPARC project "Smart and Predictive Agriculture for Resilience to Climate Change"**, funded by the European Regional Development Fund, has addressed these challenges and successfully tackled the complexity of climate change and pest management in winter wheat cultivation.

By integrating artificial intelligence, mathematical modeling and remote sensing technologies, including precise spectroscopic data from stressed plants, the project was able to accurately predict pest infestations in wheat crops. By incorporating remote sensing and spectroscopy data into the analyzes, the project was able to improve its ability to monitor and assess plant health and pest activity across large agricultural areas. This comprehensive approach enables more targeted and timely intervention, reduces reliance on broad-spectrum pesticides and promotes sustainable farming practices. The results of the project, which are accessible via an online portal, provide farmers and policy makers with valuable insights for the effective management of wheat cultivation in times of climate change and pest pressure. These results underscore the importance of innovative technologies to promote agricultural sustainability while minimizing pesticide use for a healthier ecosystem and food system.



AgriART - comprehensive management system in the field of precision agriculture



AgriART - comprehensive management system in the field of precision agriculture (KK.01.2.1.02.0290) was a project co-financed by the European Union from the European Regional Development Fund, in which the University of Zagreb Faculty of Agriculture was the project partner. The project duration was from September 2020 to September 2023.

The **main objectives** of the AgriArt project were to develop a comprehensive management system in the field of precision agriculture aimed at increasing the quality and quantity of apples and reducing the use of chemical pesticides by utilizing key technological concepts of computer vision and artificial intelligence. The idea behind the project was that such a system would significantly facilitate the monitoring and control of economic apple pests, thus improve the quality of agricultural products, contribute to sustainable fruit production in Croatia and reduce the use of chemical pesticides. The project team at the Faculty of Agriculture collaborated on the collection of data on the main economic apple pests to develop new technologies in the form of appropriate devices and models for automatic monitoring of the situation in orchards, thus ensuring more targeted pest control, reduced use of pesticides and sustainable fruit production.

The **AgriArt** project produced a **significant scientific contribution** that addresses the need for advanced pest monitoring techniques in apple production. The dissertation employs artificial neural networks (ANNs) to create highly accurate models for detecting major apple pests from the Lepidoptera order, achieving accuracies of 99.3% for codling moth, 98.13% for pear leaf blister moth, and 94.6% for detecting leaf damage. These models enable real-time insights into orchard conditions, aiding targeted pest control and reducing pesticide use and ecological impact.



This is the newsletter of the European Research Alliance *Towards a chemical pesticide free agriculture*

Visit the Alliance's website: <https://www.era-pesticidefree.eu/>

This issue has been prepared by the [University of Zagreb Faculty of Agriculture](#) as a member of this Alliance.

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