INTRODUCTION

European agriculture is entering a period when productivity, resilience, and environmental responsibility can no longer be considered separately. Climate change, pressure on natural resources, emerging animal and plant health risks, technological transformation and changing societal expectations are reshaping the conditions under which food is produced. At the same time, European agriculture is highly diverse. Production systems, environmental constraints, farm structures and technological capacities differ considerably across countries and regions. Sustainable solutions must therefore combine common European objectives with approaches adapted to local conditions.

Against this background, the Scientific Symposium "Sustainable European Agriculture and Balanced Management of Natural Resources" was held on 21 September 2026 at the Academy of Sciences of Albania in Tirana, in conjunction with the XIII General Assembly of the Union of European Academies for Science Applied to Agriculture, Food and Nature (UEAA). The symposium brought together scientists and representatives of European academies, universities and research institutions, both in person and online, to discuss current developments and practical pathways towards more sustainable and resilient agricultural systems.

Tirana also provided a meaningful setting for this discussion. Agriculture continues to play a particularly important economic and social role in Albania, while the country faces many of the challenges shared across Europe: climate variability, sustainable land and water management, modernization of production systems, food security, and the need to reconcile agricultural development with environmental protection. These issues also appeared in opening addresses by representatives of the Academy of Sciences of Albania, the Albanian ministries responsible for agriculture and the environment, regional academic institutions, and UEAA.

The scientific contributions collected in this Proceeding demonstrate the breadth of the sustainability challenge. They range from the changing European framework for gene editing and the potential of new genomic techniques to agronomic innovations integrating agroecological, digital, and biotechnological approaches. Other contributions address adapting fruit production to climatic stresses, the role of the bioeconomy in linking resource efficiency, natural capital, and economic incentives, and livestock health and One Health, where animal health, food security, and public health are increasingly interconnected. The symposium also addressed artificial intelligence in agriculture and presented practical experience with conservation agriculture in Southern Sweden, extending the discussion from emerging technologies to their application within farming systems.

Despite their different subjects and geographical perspectives, these contributions converge on an important message: no single technology or management practice can deliver sustainable agriculture. Progress depends on combining biological knowledge, technological innovation, and sound agronomic practice with responsible natural resource management. Equally important are functioning institutions, effective knowledge transfer, appropriate regulatory frameworks and cooperation among scientists, farmers, policymakers and society.

This is precisely where organizations such as UEAA can make a distinctive contribution. European academies bring together expertise across disciplines, countries and production systems. Their role should not be limited to exchanging scientific information. They can help identify common challenges, critically assess emerging technologies and evidence, facilitate

dialogue between science and policy, and ensure that knowledge generated across Europe becomes accessible across national and disciplinary boundaries.

The discussions in Tirana also showed why such exchange is particularly valuable at a time when European agriculture must become more productive, resource-efficient, climate-resilient, and environmentally responsible. These objectives should not be treated as competing ambitions. Agricultural science must identify where synergies are possible, where trade-offs remain unavoidable, and how innovation can translate into solutions suited to different European regions.

This volume is intended not only as a record of the Tirana symposium, but also as a contribution to the continuing scientific dialogue within UEAA.

I sincerely thank the Academy of Sciences of Albania for hosting the XIII General Assembly and Scientific Symposium, the speakers and authors for their contributions, and all colleagues who participated in the discussions. I hope the ideas presented here will stimulate further cooperation among our academies and contribute to scientifically sound, practically relevant approaches for the future of European agriculture.

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President of UEAA, 2026–2028