

# BOOK OF ABSTRACTS

NUORO  
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6th EUROPEAN  
AGROFORESTRY  
CONFERENCE

*Agroforestry  
for the Green  
Deal transition.  
Research and  
innovation towards  
the sustainable  
development  
of agriculture  
and forestry.*





**EURAF2022**

# WELCOME ADDRESS

As I write these words, a revanchist superpower has invaded a seemingly defenceless neighbour in a war of conquest the like we Europeans hoped never to see again. Sadly, this was not wholly unexpected: from Russia's invasion of Georgia in 2008 onwards (an event I witnessed from my job at the National Security Council in Tbilisi - yes, my career has been varied), those in the know - from the Baltic States to Romania - wasted no time trying to warn Western Europeans of the danger emanating from the Kremlin.

Surprise or not, our old friends in the petrochemical agriculture industry wasted no time making theirs the old proverb, "let no crisis go to waste". Almost as soon as the bombs started falling, the cry went up: "we can't afford the Green Deal! We must plough up set-aside land! we must double down on industrial agriculture to make up for the loss of Russian and Ukrainian oils and cereals!".

The utter absurdity of calling for more spending on diesel and inputs at a time when the cost of diesel and inputs is going through the roof was only matched by the shamelessness of the immediate requests for - you guessed it - yet more subsidies to pay these inflated costs.

That is not very surprising to those who know the Brussels machine: every interest group uses every opportunity to try to get its hands on more European cash. For me, the surprise lay elsewhere: neither the EU Agriculture Commissioner, Janusz Wojciechowski, nor the Agriculture Council seemed to understand how serious the situation is - and how radical the measures needed to deal with it have to be.

Europeans, being rich, are unlikely to suffer overmuch from the rapid rise in food prices the war is bringing. But the FAO and WFP are warning us that across Latin America, Africa and Asia, hundreds of millions are going to tip into hunger. Some countries, like Lebanon or Egypt, depend on imports, mostly from Ukraine, for over half their calorie needs.

This suggests that the policies that feed a large fraction of Europe's agricultural output into cars and livestock must be urgently revised. But so far, not a peep from the Commission in that regard. Are the interests of our biofuel and livestock industries really more important than the bellies of tens of millions of men, women and children?

It also suggests that it is becoming imperative to rapidly wean Europe's farmers from their overreliance on expensive fossil fuel-derived inputs, and to help them adopt practices like agroforestry and adaptive mob grazing that help them do so. But again, not a peep from the Commission. On the contrary, it seems to be listening to those who are dismissing these agroecological practices with the nonsensical argument that "we cannot afford them in wartime".

The most charitable interpretation of this lack of political leadership is that everybody is simply hoping the war will stop very quickly and that business can return to its usual patterns.

Sadly, that is extremely unlikely to be the case. Back in 2008, we were telling anyone who cared to listen that unless we acted strongly against Russia's invasion of Georgia, Ukraine would be next. A year later, Secretary of State Hillary Clinton gave a big red "reset" button to Russian foreign minister Sergei Lavrov. The message was clear: "invade who you like, we won't care". Five years later, Russia invaded Ukraine, again without much pushback. Is it any wonder Mr Putin thought no one would mind if he completed the job of building his mythical "Russian World"?

Ukraine is not going to be conquered quickly or easily, and Putin won't give up. This means sanctions are likely to stay in place and the Black Sea ports to remain off-limits for a long time. Energy, food and fertilizer prices will stay high for the foreseeable future. Hunger will spread. Livestock and biofuel feedstocks will be diverted to feed people. The cost of agricultural inputs will put more and more farmers under rising pressure. This situation is unlikely to become normalised until Russia switches from revanchist totalitarianism to a functioning democracy - something it has no experience of.

The old normal of cheap gas, cheap oil and cheap agricultural inputs is gone. It won't come back.

Agroforestry and agroecology can relieve farmers from their reliance on these expensive inputs. Agroforestry produces more biomass per unit area than monocultures - with fewer inputs. It reduces the need for fertilizers, pesticides and irrigation. And the bonus? It protects fields from the increasingly strong storms and droughts that climate change brings.

The best time to plant an agroforestry system is always 20 years ago. But the second best time is today.

**Patrick Worms**

*EURAF President*

# WELCOME ADDRESS

I am honoured to present this volume of abstracts collected within the 6<sup>o</sup> European Agroforestry Conference under the umbrella of the European Agroforestry Federation, EURAF. This volume contains a rich and variegated assortment of research, studies, and best practices to testify to the potential of Agroforestry in contributing to the transition towards a bioeconomy and a more resilient and equal society.

For this reason, I want to first thank the authors for their deep interest in this Conference and the high level of contributions presented. More than 250 scientists and stakeholders will participate in the Conference. I am sure that the results will effectively help the change to a different view and management of forest and agriculture systems.

Indeed, this book results from rigorous work performed by the members of the Scientific Committee who evaluated about 200 abstracts sent from 4 continents and 33 countries. All the members of the Scientific Committee showed an outstanding commitment to using a rigorous approach in carrying out their tasks.

I also want to acknowledge the members of the Organizing Committee; only their determination made this Conference possible. They have successfully faced difficulties and obstacles related to such a difficult time.

All of us were joyful and proud of the idea of meeting in presence, thanks to the efforts of our local and national organizers. However, another tragedy suddenly appeared to make the situation difficult, devastating, and tragic: the aggression of Ukraine, causing a war in the heart of Europe. With all my strength, I would like this Conference to be a peacemaker; we can do so by achieving unifying scientific messages and the recognition of agroforestry and forest systems as perennial symbols of peace and life.

The Conference will take place in Sardinia, some land rich in diversity for environmental, social, and cultural characteristics and history. Sardinia is ideal for thinking together on scientific and technical issues relating to promoting agroforestry systems and models, saving and preventing our biodiversity, experiencing the landscape, good examples, and best practices. And together, try to correct and improve government and management options to make territories increasingly resilient and sustainable.

Agroforestry offers a holistic approach to obtaining biophysical, socio-cultural, and economic benefits from land management systems. This vision fits with the emerging paradigm known as One Health, where people's health is strongly connected to the potential nexus between land use change, food systems, and the health of animals and the environment. We are aware of the multiple benefits of this approach in mitigating risks associated with anthropized environments through the strategic actions related to intersectoral collaboration, collective education, and public awareness.

Furthermore, it is crucial to consider climate change impacts, entailing more complex feedback with ecosystems and trade-offs and synergies among the different sectors involved. This aspect is also emphasized in the last IPCC report encouraging testing of different integrated agricultural systems to assess synergies between mitigation, adaptation, and sustainability to reach low-carbon and climate-resilient pathways for sustainable food security and ecosystem health.

The Conference and this volume are organized on four main topics, including (1) agroforestry and the environment, (2) quality, safety, and sustainability of agroforestry productions, (3) economy and policy of agroforestry, and (4) agroforestry in society and culture. This structure strongly confirms the multidisciplinary and complex approach of agroforestry research and application.

I am confident you can find this volume and the entire conference program remarkable and inspirational for valuable opportunities and new connections between the scientific community, institutions, enterprises, and practitioners worldwide.

**Donatella Spano**

*Chair of the Scientific Committee*

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**P\_1.2\_141 Long-term taxonomic changes in the species composition of Dokuchaev shelterbelts in the southern steppe of Ukraine**  
*Nataliia Solomakha, Tetiana Korotkova, Svitlana Sydorenko, Serhii Sydorenko, Natalia Vysotska*

**P\_1.2\_142 Intensity and channelling of soil microbiological processes under the influence of shelterbelts**  
*Svitlana Sydorenko, Serhii Sydorenko, Nataliia Solomakha*

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**TOPIC 1 - AGROFORESTRY AND THE ENVIRONMENT**

**T1.3 - LANDSCAPE PLANNING AND MANAGEMENT**

**P\_1.3\_143 Concept for spatial evaluation of justified implementation potential of agrisilvicultural systems in hemiboreal Latvia**  
*Andis Bārdulis, Jānis Ivanovs, Aldis Butlers, Dana Purviņa, Andis Lazdiņš, Dagnija Lazdiņa*

**P\_1.3\_144 A systematic approach to agroforestry system planning, case studies from Slovakia**  
*Anna Mária Mitrová and Antonín Martiník*

**P\_1.3\_145 Agro Fluvial Park of Calore Salernitano Restoration and valorization of historic and landscaped heritage of fluvial area in the territory of Aquara**  
*Sofia Cerruti, Patrizia Giannattasio, Domenico Scorziello, Marzio Marino, Pasquale Maiale, Fabio De Feo, Nadia Chianese*

**P\_1.3\_146 Traditional and Innovative: A Review of Diverse Agroforestry Systems across European Landscapes and Cultures**  
*Attila Tóth, Miroslav Čibik*

**P\_1.3\_148 Effects of Unplanned Space Utilisation on Water Resources of Serbia**  
*Boško Josimović, Božidar Manić, Ljubiša Bezbradica*

**P\_1.3\_149 Satellite imagery for land classification and detection of agroforestry systems: a study case of Olive trees classification in Tuscany**  
*Celeste Righi Ricco, Lorenzo Brilli, Piero Toscano, Federico Carotenuto, Ilaria Tabarrani, Beniamino Gioli*

## Effects of Unplanned Space Utilisation on Water Resources of Serbia

EURAF 2022  
Agroforestry for the Green Deal transition. Research and innovation towards the sustainable development of agriculture and forestry

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**Theme:** Landscape planning and management

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### Abstract

The activities of man have been concentrated around water resources since the dawn of civilization, water being his primary existential need and a precondition for all other activities, such as agriculture, transport or tourism. Only recently have water resources been considered in the context of specific and highly significant landscape value of space to be taken into account in space planning and management. However, in the Republic of Serbia, the last decades, considered transitional towards standards of developed countries in all social areas, have witnessed mostly unplanned development and the so called investor planning, having serious negative implications for water resources, space, landscape, and the environment. In addition to the devastation of landscape and water resources, there is also a reversible effect of water resources on space, such as frequent flooding, especially by rivers with unregulated riverbeds. Climate changes reflect in the changed distribution and intensity of precipitation, just contributing to the negative effects and processes. Space planning and activities in the areas rich in water should be complex and primarily based on taking stock of hydrological characteristics of space and their interaction with composite elements planned in the particular space. Such complex consideration of space in which the elements of the environment (water, forests, land, air, anthropogenic activities) are considered separately as well as in symbiosis, enables the management of water resources, space, and landscape in line with the principles of sustainable development. One of the basic planning measures in protecting people and property from floods is the spatial distribution of activities in the areas close to water resources in line with the hydrological and other spatial analysis of the wider area. Space planning in the immediate surrounding of water resources should be based on comprehensive hydrological studies and their integration in various space planning and management documents. The focus of such an approach to space planning should by all means be preventive protection of water resources, which can be realised in the planning process only by the implementation of strategic environment assessment as a universally accepted environment management document in spatial planning. This can be done by taking into account the broader context, including the analysis of the entire drainage basin in the first phase, and then the implementation of an array of planning measures and technical activities on the regulation of water bodies in the second phase. Since the largest portion of land in drainage areas of significant water bodies in the Republic of Serbia is forest and/or agricultural land, the process of planning should be directed towards the protection and preservation of sylvan and agricultural resources, and/or the improvement of infiltration characteristics and preventing surface runoff and land erosion. Taking care for the existing forest stands, new forest plantings, afforestation of steep grounds affected by erosion are but a few of activities on the biological regulation of river basins against

the buildup of erosion deposits. The protection of forests include preservation and improvement of stands structure, their vitality, and/or management in line with the intended purpose of forests. It is the determination of sylvan stands as protection forests that is being considered the most important measure in preventing land degradation. Financial and educational stimuli in agriculture, directed towards defining and implementing anti-erosion and melioration land use methods, improve the infiltration capabilities of land and reduce the risk of surface runoff. Planting perennial cultures, the cultivation of land parallel to contour lines, and the enhancement of physical and chemical characteristics of land by implementing agrotechnical measures, are but a few actions with beneficial effects to preventing devastation of land structure and the incidence of surface runoff.