### The European Society of Agricultural Engineers

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# Scientia

## THE EUROPEAN SOCIETY OF AGRICULTURAL ENGINEERS

Founded in 1992, the <u>European Society of Agricultural Engineers</u> (EurAgEng) promotes the profession of Agricultural and Biosystems Engineering and the people who serve it. In this exclusive interview, EurAgEng's President, Professor Fátima Baptista, discusses how the Society supports scientists and engineers in the multi-disciplinary field of Agricultural and Biosystems Engineering, facilitates knowledge exchange and promotes collaboration, towards improving food security and agricultural sustainability.



### To begin, please tell us a little bit about the history of EurAgEng.

The European Society of Agricultural Engineers (EurAgEng) was established in 1992 in a spirit of collaboration, to bring together specialists who recognised the need to communicate knowledge and experience, to foster mutual understanding and to promote professionalism among National Societies of agricultural engineers in Europe, as well as among individuals.

The successful series of agricultural engineering conferences demonstrated the strong desire for mutual contact and exchange among agricultural engineers throughout Europe, who were seeking to meet the challenge of increasing the food supplies and to resolve the diverse demands on the agricultural sector in industrialised nations.

### What exactly are the fields of Agricultural Engineering and Biosystems Engineering?

Traditionally, Agricultural Engineering was focused on technologies applied to agricultural sciences including vegetable crops, animal production and forestry. The main topics of research and technological development were mechanisation, irrigation, rural buildings and soil management. Biosystems Engineering is an updated version, with a broader application, dealing with the technologies for food, feed, biomass, fibre and energy, with respect for nature, the environment, the landscape and rural communities.

In fact, we prefer to use the term 'Agricultural and Biosystems Engineering', which includes all the research and technology developments, and deals not only with the technology itself but also with economic and environmental impacts. This implies a multi-disciplinary and trans-disciplinary work to enhance sustainable production systems. A key goal is to improve the efficacy and sustainability of agricultural practices.

Nowadays, research projects have a multi- and interdisciplinary nature, involving several scientific areas and partners coming from different sectors: scientific and academic, farmers, engineers, distribution specialists, consumers, public institutions, and so on. Agricultural engineers are key in projects to develop innovative technologies and solutions to promote a sustainable agricultural production.

How does EurAgEng support the Agricultural and Biosystems Engineering community and accelerate research in this field? EurAgEng's mission is to support scientists and engineers working on multi and trans-disciplinary projects in the field of Agricultural and Biosystems Engineering, to coordinate the exchange of scientific and engineering achievements, adapt education programs to the needs of the sector, and to promote the collaboration between academic and industry research.

To achieve this, EurAgEng helps to organise the bi-annual AgEng conferences. The last conference was in July 2021, which was online due to the pandemic, and was organised by the University of Évora, Portugal.





AgEng conferences are an opportunity to bring together engineers, academics, researchers and technicians to exchange knowledge and ideas, to present innovations and to discuss the state-of-the-art and future perspectives for agricultural engineering. The conference provides the opportunity, especially for young engineers, to present their work and make contact with other experts. <u>The next AgEng conference</u> will be in Berlin between November 22nd and 23rd.

Every other year there is as a prequel to the AGRITECHNICA show and the Land.technik conferences, which are linked to EurAgEng. These conferences are more oriented towards industry researchers with bigger focus on technology than on agricultural practices.

EurAgEng also sponsors the AgriTECH days conference as a prequel for the Paris agricultural machinery show SIMA, as organised by AXEMA, the French association for the agricultural machinery industry.

EurAgEng brings together agricultural and biosystems professionals from the national societies of agricultural engineers in Europe and constitutes a platform to enhance communication and the transfer of knowledge and experience. Promoting the connection between professionals plays an important role in enhancing research projects and collaboration, involving professionals from academia, technicians, farmers and other stakeholders.

The EurAgEng Official Scientific Journal, *Biosystems Engineering*, is also an example how EurAgEng supports agricultural and biosystems professionals. Another example is the EurAgEng Awards, which recognise outstanding professionals.

#### Tell us about your focus on sustainable agriculture – both in terms of environmental sustainability and ensuring global food security into the future.

First of all, I need to say that there isn't agriculture production with zero impacts. That is not possible. It always has some interference. Also, when we refer to sustainable agriculture it is important to emphasise that this means environmental, economic and social sustainability.

It is very important that agricultural production limits impacts to its surroundings. Sustainable agriculture means respecting and minimising impacts on biodiversity, maintaining soil and water health, respecting the use of water and other resources. It also implies resilience to the consequences of climate change.

There will always be different interests and challenges that require trade-offs. Ensuring global food security is a huge challenge concerning not only production but also logistics and processing, and the inevitable cultural and political implications. However, sustainable agriculture and food security are two faces of the same coin. Only with sustainable agriculture can food security be kept intact.

#### In what ways will the Russian invasion of Ukraine impact Europe's food supply? What can we do to adapt our agricultural systems to ensure food security?

The pandemic situation brought us into an unusual and unexpected situation, that changed our lives, and showed the importance of health systems, science, technology and food supply systems. Regardless of the lockdowns, these sectors had to keep performing. Farmers continued to work the land and make us realise how import the sector is to feed the population, ensure food security, and to prevent chaos and war.



But war hit us in any case, and it is impacting food supplies, creating scarcities of certain products and resulting in rising food prices globally. This is not only due to the blockage of grain exports but also blockages of crucial fuel, fertilisers and even parts for machinery. Food scarcities are expected to increase further, which will mainly affect the poorer regions of the world with higher budgets spent on food and less negotiation power to get access to food, pesticides and fertilisers.

European farmers are feeling the cost of fuel, fertilisers and pesticides, but that is nothing new. Overall, European agriculture was in crisis long before now, with farmers operating on very small margins and being trapped between the demands of food security and the growing pressure to become more sustainable. But cheap prices lead to quantity production not quality production. With the very high prices for agricultural products, farmers may get more interest to invest in new technologies and sustainable practices.

The renewed political interest for keeping production in Europe, and for increasing resilience of farmers to be less dependent on foreign imports, could be a welcome trigger for change. Finally, what do you see as the other major challenges affecting our agricultural systems in the coming decades? How is EurAgEng working to tackle these challenges?

Aside from the particular situations created by the pandemic and now the war, with a sincere wish this will end soon, I believe that the major challenges for agricultural systems will remain the same. These challenges are ensuring the proper management of soil, water and energy, adapting to and mitigating climate change impacts, ensuring enough food and feed production but also adequate distribution, and facilitating knowledge access and knowledge transfer to society.

EurAgEng members are working to develop innovative solutions that contribute to the efficient and better use of soil, water and energy. Some examples are the Intelligent farms, the application of circular economy principles in the sector, the enhancement of conservation agriculture practices and the awareness of the importance of a multi- and inter-disciplinary approach.

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But only time will tell.