

“Cultivation of halophytes and analysis of the physiological status of the plants”.



Prof. Dr. Jutta Papenbrock in front of *Crithmum maritimum*, Sea fennel, in the greenhouse of the institute of Botany, Hannover.

Prof. Papenbrock, you and your team are working on the “Cultivation of halophytes and analysis of the physiological status of the plants”. This work package requires a broad knowledge of halophytes so let me ask you: “When did you start working on halophytes”

I have been working with halophytes for 20 years. I am fascinated by how these plants can grow and develop in highly saline environments (e.g. coastal areas, estuaries). Initially, I focused on studying their physiological properties and their tolerance to salinity. Now, the global increase in soil salinity poses the challenge of how we can make degraded soils more usable. Therefore, the question arises as to how we can take advantage of the special properties of halophytes in order to cultivate them in harsh environments and at the same time restore these degraded areas (desalinisation).

What additional benefits do you expect from the project?

From my point of view, AQUACOMBINE project will answer the question of how to use halophytes as agricultural crops with an optimized process from sowing to final products and generating zero waste. This is not just about the fresh biomass shoots, which are already used as food. The aim of

the project is to use the whole plant. This is not only a question of sustainability, but also offers the possibility for new approaches.

Interesting, what kind of approaches are you thinking of?

Halophyte biomass can be used to produce multiple products such food, feed, botanical extracts, but it can also deliver new products for the pharmaceutical and cosmetical industry.

What is your most surprising result in these first two years of the project?

Salicornia spp. probably surprised me the most. Genetic characterisation and identification have shown that the variability within the genus Salicornia is broader than we thought. With this variability, the morphological and biochemical composition also varies. On the one hand, this offers more aspects to be studied. On the other hand, I think it will be important to develop a variety of different Salicornia cultivars through modern breeding approaches that achieves the best and consistent results as a crop plant species for defined applications in the future.

Thank you for the insight into your thoughts. On the last question. What is your favourite halophyte and why?

Clearly Salicornia spp.! The high variability and the associated challenges and opportunities make this plant so exciting for me from an academic but also from an applied point of view.



Prof. Dr. Jutta Papenbrock works at the Institute of Botany, and she is expert in molecular plant physiology. The Institute of Botany is part of the Faculty of Natural Sciences at Gottfried Wilhelm Leibniz Universität Hannover. This university is one of the nine leading Institutes of Technology in Germany, Leibniz University is aware of its responsibility in seeking sustainable, peaceful, and responsible solutions to the key issues of the future. The focus of the Institute of Botany is the research on the metabolism of plants. Both model plants and crop plants are being investigated.

In AQUACOMBINE project she is leading WP2. She is also involved in WP6: Bioactivity analysis of extracts and HCA fractions.



Co-funded by the European Union's Horizon 2020 research and innovation programme under Grant Agreement NO. 862834. Any results of this project reflect only this consortium's view and the European Commission is not responsible for any use that may be made of the information it contains.