



## **The potential of the fresh-water fern *Azolla* in aquatic farming systems**

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With aquatic farming systems a new avenue in agriculture is explored, in which the competition with conventional arable land is avoided. The aquatic, ubiquitous, floating fern *Azolla* is not yet widely explored as potential crop in such farming systems, despite its high potential because it grows in many natural systems under low-light intensities, has an enormous annual yield, and has special biomass qualities for applications in food, feed and specialty chemical industries. But, what makes *Azolla* particularly interesting as cost-effective crop is its capability to take up atmospheric nitrogen through symbiosis with nitrogen-fixing bacteria *Anabaena azollae*. This makes *Azolla* independent of nitrogen fertilization. In order to explore the potential of *Azolla* as a crop for a suite of applications, we have assembled a team of expertise: AZOFAST, consisting of agricultural engineers, plant physiologists, chemical engineers and organic chemists. Our growth experiments reveal high annual production yields with constant harvest. We are developing a germination and spore collecting/preservation protocol as a first step to domestication. Finally we have explored the biomass quality of different species of extant *Azolla*. We performed organic chemical analyses on lipid and tannin extracts, and quantified yields of specific compounds within these fractions. In our presentation we will present some of our results to show the potential of *Azolla* as a new, sustainable aquatic crop serving all kinds of industrial streams from protein feed to platform chemicals.