



Contribution ID : 71

Type : **Oral**

Exploring Duckweed for Remediation of, and Resource Recovery from Industrial Fish Filleting WasteWater

giovedì 1 ottobre 2026 14:15 (15)

Seafood processing industries generate significant volumes of highly polluted wastewater that poses serious environmental challenges. The characteristics of seafood processing wastewaters were identified, focussing on the different processing stages. Fish filleting wastewater, generated from food-grade raw materials, contains plant nutrients, oils, proteins, and other organic compounds that are costly to remove yet represent underutilized resources. Within the Horizon Europe IMPRESS project, duckweed cultivation was explored as a strategy to both remediate these wastewaters and convert their nutrients into high-value biomass. Duckweed species (*Landoltia punctata*, *Lemna minor*, *Lemna minuta*) displayed good growth on fish processing wastewater, measured as a relative growth rate (RGR). Different dilutions of wastewater from the fish deheading stage gave excellent growth of *Le. minor* and plant health was good as ascertained using chlorophyll fluorometry. Different adjustments were applied to the wastewater to optimize *Le. minor* biomass growth, including pH adjustment, addition of micro-nutrients and of potassium, calcium and magnesium. Dilutions of 25% and 50% of the “raw” fish wastewater were found to be optimal for duckweed cultivation. A small-scale duckweed treatment system revealed that *Le. minor* cultivation in fish deheading wastewater results in rapid nitrogen removal from the wastewater and considerable levels of total soluble protein in the biomass. This approach highlights duckweed’s potential as a biological agent, capable of capturing valuable compounds from food-industry wastewaters, reducing waste, and contributing to circular bioeconomy strategies for future food systems. A challenging and multifaceted question is whether duckweed grown on food-grade waste can be considered fit for human food consumption.

Corresponding author email

Alexandra.Katsara@ucc.ie

Scientific Session

Applications

Keywords

duckweed, wastewater treatment, circular economy

References

DOI: 10.1016/j.envpol.2025.126761

Primary author(s) : Ms. KATSARA, Alexandra (University College Cork)

Co-author(s) : Ms. LORDAN, Olivia K. (University College Cork); Dr. COUGHLAN, Neil E. (University College Cork); Prof. JANSEN, Marcel A.K. (University College Cork)

Presenter(s) : Ms. KATSARA, Alexandra (University College Cork)

Session Classification : Applications II – wastewater & remediation