

Achieving a multitrophic integrated system for the production of microalgae and crustaceans for the feeding of sturgeons in aquaculture

Romanian aquaculture is based, over the last decades, on the growth of cyprinids in pond-type production systems. Romania still has a significant potential in terms of stocks of wild sturgeons encountered on the Danube River. However, the dynamics of these stocks has a downward tendency, which generates a high national interest in sturgeons aquaculture, both in order to meet market demand and to support the various restocking programs.

The SISTRAL project (INNOVATION CRAFT - PN-III-P2-2.1-CI-2018-1515) aimed to create a multi-trophic integrated system for the production of microalgae and crustaceans in order to be used on sturgeons feeding in aquaculture systems. The use of multi-trophic nutrition, which aims at increasing the intrinsic quality of aquarium production, is one of the expected results in the "National Strategy for Fisheries 2014-2020". Therefore, in this direction, the use of microalgae in aquaculture is promising because they are the basis of the trophic pyramid, due to their nutritional value.

Thus, in this project, financially accessible modular algae based plant was designed for the production of live feed used for feeding sturgeons fingerlings. The plant is made up of two subsystems, a microbial growth cell photo-reactor and a crustacean growth reactor.

The microalgae cultivated in the photo-bio-reactor are fed with nutrients from the wastewater of the sturgeon growing system and, when needed, this waste water is enriched with an inorganic substrate composed of salts (ammonium chloride, phosphates, etc.) of low economic value.

The technical solution identified as best suited to achieving the project's desideratum has been complemented by appropriate algal and crustacean technology and has been evaluated economically by cost-benefit analysis.

Also, the usefulness of crustaceans produced in order to be used as natural food for sturgeons fingerlings, in the early stages of life, has been tested. The biochemical characterization of algae and crustaceans was carried out in order to

assess as accurately as possible the technical and technological solutions identified as optimal.

Thus, the project provides a turn-key solution meant to improve the profitability of sturgeon farms that do breeding and rear fingerlings.

More details: <http://www.biosys.ugal.ro/sistral.html>