

## IE NuMeA

### Experimental infrastructures for exploring rainbow trout nutrition and metabolism

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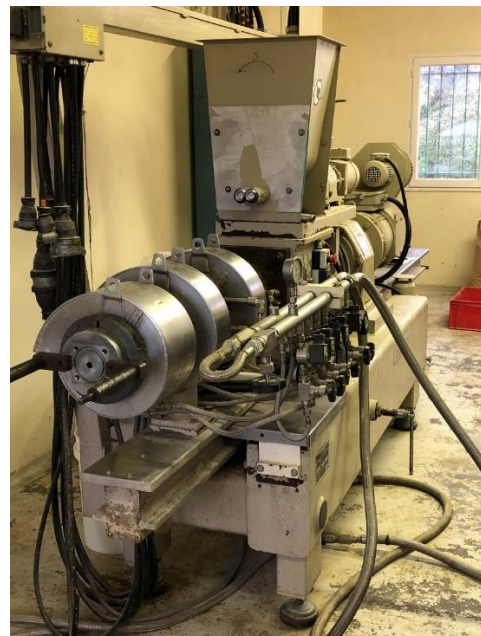
#### Description

Experimental facilities of NuMeA laboratory includes two full-scale experimental fish farms (Platforms 1 and 2) and a dedicated facility with two recirculated aquaculture systems (RAS – Platform 3) for rainbow trout (*Oncorhynchus mykiss*). All three platforms have regulatory approval for the use of animals in experiments.

**Platform 1:** The experimental fish farm located in Donzacq is supplied by a natural resurgence at a constant temperature of 17°C. The infrastructure has experimental tanks of different sizes: 60 tanks of 60 litres, 48 tanks of 150 litres, 18 tanks of 1m<sup>3</sup>, the latter being equipped with a computer-controlled feeding system. The farm also hosts an experimental feed manufacturing unit equipped with a twin-screw extruder.



*Experimental tanks in Donzacq*



*Twin screw extruder for aquafeed production*

**Platform 2:** The Lees Athas Experimental Fish Farm is supplied by a spring with a temperature of approximately 8°C throughout the year. The facility includes a hatchery for up to 400 groups of eggs in individual incubation, 90 x 50-litre tanks, a UV sterilised water supply system for egg and fry production. The outdoor facilities include 20 x 1m<sup>3</sup> tanks, 20 x 2m<sup>3</sup> tanks, 4 x 10 m<sup>3</sup> tanks, 16 x 200 litre tanks, 6 x 12-20m<sup>3</sup> circular concrete tanks and 8 raceways for juveniles and broodstock.



*Experimental tanks*



*Egg incubation racks*

Both experimental fish farms (Platforms 1 and 2) are committed to environmental protection and are ISO 14001 and AQUAREA certified. An automatic recording system for breeding and experimentation data is currently being developed on both fish farms. Financed as part of the AMI Infrastructures of the Institut Carnot France Futur Elevage (WIFish project), it will be operational in early 2022.

**Platform 3:** The technical platform in Saint Pée sur Nivelles includes an automatic self-feeder circuit and a digestibility measurement system.

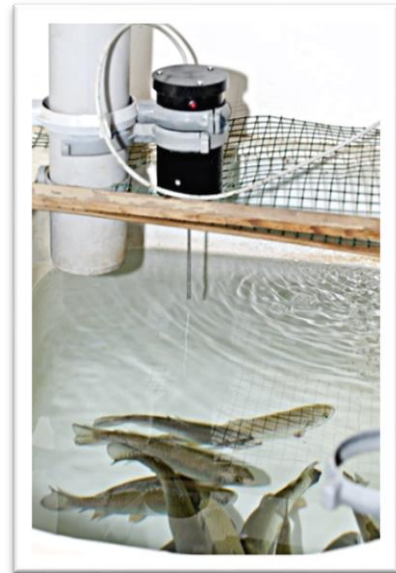
- The self-feeding system consists of two independent circuits of 12 tanks each, which are equipped with automatic self-feeders to monitor feeding behavior, control feed distribution throughout the day and measure the amount of feed distributed. Each tank also has its own photoperiodic control.



- The digestibility unit consists of three sets of six cylindrical-conical tanks connected to a rotating system for automatic and continuous faeces collection by filtration. This tool allows the evaluation of the apparent digestibility coefficients of diets and feed ingredients.



*Digestibility unit*



*Automatic self-feeder*

### Fields of application

This set of experimental facilities is unique in Europe. It offers perfect autonomy for carrying out experiments in nutrition and metabolism on the complete life cycle of the rainbow trout (embryo, fry, juveniles and breeders).

### Research topics and skills

- Development of new aquafeeds and evaluation of the nutritional quality of feed ingredients: growth trial with monitoring of zootechnical performance (growth, feed intake, feed efficiency, body composition, nutrient retention...).
- Exploration of metabolism by meal test or intraperitoneal administration of metabolites or pharmacological molecules
- Evaluation of the digestibility of feeds and feed ingredients.
- Measurement of voluntary feed intake
- Assessment of feed preference