

# The fermentation pilot plant at the Institute of Environmental Biotechnology

**Working group: Fermentation**

The fermentation pilot plant is a facility where microorganisms can be cultivated on a large scale. In order to implement processes in praxis they have to be scaled up from lab-scale experiments to industrial processes. The available infrastructure for fermentation, product recovery, and product formulation provides ideal conditions to develop fermentation processes for industrial application.

## Equipment

Fermentations can be carried out in fully sterilizable bioreactors. Fermenter sizes are ranging from 5–10 L, 30–200 L, 1 000 L, 3 600 L up to 6 000 L. In addition three moveable (500 L) and two fix installed vessels (2 000 L and 3 600 L) for storage of substrate or product and two kill tanks for sterilizing process effluents are available.

In order to obtain concentrated products a continuous flow centrifuge, diverse filtration units and an electro-dialysis unit can be used. For the production of storable powders lyophilization or fluidized-bed drying and granulation are applied.

Infrastructure like steam, ice and cooling water, vacuum and compressed air is supplied at the site. A CIP station for cleaning the reactors and pipes is installed. The pilot plant is equipped with an up-to-date process control system enabling the centralized monitoring and recording of all processes.

## Research and projects

Currently the focus is on the production of living microorganisms that are mainly applied in agriculture. The goal is to reduce or substitute the use of agrochemicals.

- Development and production of mycotoxin-degrading microorganisms
- Production of probiotics for animal nutrition
- Microbial antagonists in plant protection
- Development of microbial silage additives
- Product formulation using fluidized-bed technology
- Production of lactic acid from renewable resources

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