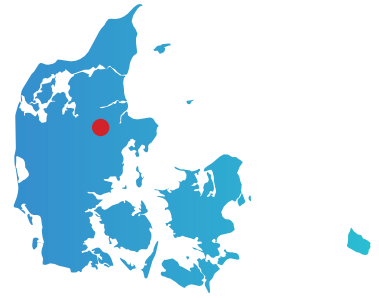




LAKE ORMSTRUP

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Country: Denmark

Name of the site: Catchment area of Lake Ormstrup

Ecosystem type: Agricultural fields

SITE DESCRIPTION

Agricultural fields in the catchment area of the Danish Lake Ormstrup are used to conduct plant growth experiments. The sediment of the eutrophic lake has been dredged and dewatered during another research project, and is now being tested for its fertiliser and soil improver value. This approach will contribute to recycling of the valuable resource phosphorus (P) as well as to sustainable lake restoration.

EXPERIMENTAL SET-UP

Field plots have been established to test the P-fertiliser value of lake sediment in pea and barley crops. The sediment is dredged from Lake Ormstrup and dewatered before field application. It is applied in different dosages, based on Danish farming practices, and tested against controls (without P fertiliser addition) and mineral fertiliser (as optimal P supply). Furthermore, the effect of biostimulants is tested by coating microbes on crop seeds. The biostimulants have been selected based on their ability to solubilise P and thereby increase its availability to plants. Lake sediments may contain pollutants, e.g., heavy metals such as cadmium. The fate of these potential pollutants is monitored during controlled pot experiments and real-world field conditions.



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CURRENTLY USED RESTORATION MEASURES

Dredging was used to remove nutrient-rich sediment from the eutrophic Danish Lake Ormstrup. With this measure the cause for internal loading (i.e., seasonal release of P from the sediment to the water column) and algae blooms, are reduced. The P-rich sediment can be reused as fertiliser material in agriculture.



STAKEHOLDERS

Farmers are benefitting through use of lake sediment as fertiliser material in agriculture, as sediment is a valuable P resource and also serves as a soil improver, for instance, by increasing water-holding-capacity and cation-exchange-capacity. Compared to conventionally used mineral fertiliser, P leaches less from lake sediment applied to farmland soil, which prevents recontamination of aquatic systems.