Inspirational ideas

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Constructed wetlands for water purification

Reducing N and P concentration and enhancing revenue

Constructed wetlands can be installed to treat agricultural wastewater and runoff. The plants within this system take up nitrogen and phosphate and purify the water. The German Operational Group MeerGewinn is testing different plant species for this purpose. Henning Holst from project partner DUENE Institute of sustainable development of landscapes of the earth tells us: "We are investigating the innovative application of plants which can be used as fodder or ornamental plants and that can actually bring in revenue for the farm".

Constructed wetlands can be installed as artificial wetlands for the purposes of nutrient retention and therefore water purification. The systems can be implemented in different sizes - from small treatment plants to large retention areas. Not only do the plants take up nutrients, but the substrate of the wetlands also contributes to the water-treatment process: "Wetlands can potentially provide additional ecosystem services such as stormwater catchment, water storage and the support of biodiversity" explains Max Wenzel from DUENE.

"Due to the agricultural activity in the area, the Baltic Sea and the majority of all waterbodies of Mecklenburg-Westernpommerania (Germany) are highly polluted with excess nutrients" explains Nora Köhn, also from DUENE. MeerGewinn is aiming to test a variety of plants for constructed wetlands which could not only act as water-purifiers but which can also be cultivated by the farmer as an added-value to the current farm system: "Our goal is to use those nutrients for growing renewable resources: fodder, ornamental plants, herbs or renewable raw materials."

MeerGewinn is a cooperation between DUENE e.V. (research facility), the city of Loitz, farmers and numerous small and medium-sized enterprises. This combination of partners brings in all of the expertise and resources needed to start implementing small to large scale Constructed Wetlands. The Operational Group runs from 2015 to 2019. They have already set up a number of pilot projects of various sizes, where the project partners support the content and structural planning of the constructed wetlands:

Pilot project Polder Rochow: A farmer from Ueckermünde (Germany) wanted to test a new land use concept and provided a part of his land for the production of renewable resources. They have tested the use of cattail as a possible plant for nutrient removal and also ornamental plants (including swamp iris).

Pilot project with Joachim Krüger Pflanzenkläranlagen GmbH: This pilot project is currently running a new series of experiments in purpose-built test basins. The three planted basins contain six different types of plants. Ornamental plants, food plants and medicinal plants are

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examined on their ability to grow with water from a water purification plant. "The experimental design ensures that the conditions in constructed wetlands for wastewater treatment are adjusted as accurately as possible. With the help of nutrient measurements, we can accurately document the nutrient retention potential and the increased yield connected to the additional nutrients." Says Max Wenzel.

The last phase of the project will focus on assessing realistic numbers on the economics of renewable resources from Constructed Wetlands. The Operational group will release a brochure to summarise the results. Furthermore, the project will conduct a feasibility analysis for a large-scale Constructed Wetland.

"Constructed wetlands create new circular value chains that can make a positive regional economic contribution. We want to encourage farmers and landowners as environmental service providers and make it possible for them to use constructed wetlands for their own economic benefit while also saving the future of upcoming generations." - Henning Holst.

"MeerGewinn"
Meer -> Sea and also sounds like "Mehr", meaning "more".
Gewinn -> Profit

EIP-AGRI Workshop: Connecting innovative projects: Water & Agriculture

"The EIP-AGRI workshop was very useful for our project. It was an inspiring time of discussions with experts from all over Europe. Especially for our networking goals it was very helpful, because of the good contacts to projects and colleagues. One of the goals we set in our projects focuses the nutrient status of the Baltic Sea – therefore international contacts to other projects are important. So I made some very good and reliable contacts.

To visit a dry region and to visit practical examples was very helpful for learning something of the stewardship of the resource water. Using some of the knowledge of "farming under dry conditions" could be rather helpful for solving problems in the rainy north of Europe – especially with regard to climate change."

- Henning Holst

EIP-AGRI Workshop: Connecting innovative projects: Water & Agriculture

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Partners

Lead partner: Institute DUENE Institute of sustainable development of landscapes of the earth" (German: Institut für Dauerhaft Umweltgerechte Entwicklung von Naturräumen der Erde e.V. - DUENE)

TP Haffküste GmbH
Joachim Krüger Pflanzenkläranlagen GmbH
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