



Field of irrigated crops

Whats next

Continued fiels irrigation will be implemented during the 2017-2018. The plan for the future is to study the possibility of transferring the method in a lager scale in other coastal bays around the Baltic Sea.

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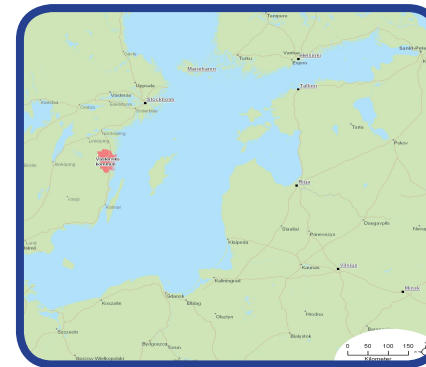
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Eutrophication as a resource

Restoration of a eutrophicated fjord through irrigation of crops with nutrient rich water

The Dynestad bay project demonstrates how a heavily eutrophicated inner fjord can be rehabilitated by recirculating nutrient-rich water to neighbouring agricultural fields. The measure has high cost efficiency - and increase the harvest 20 %



Västervik Municipality in the Baltic Sea



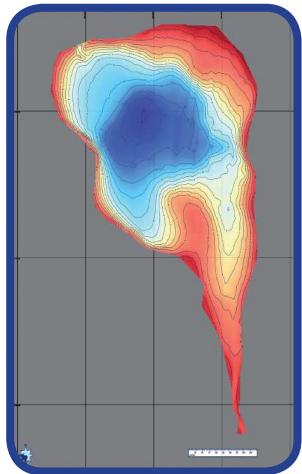
Dynestad bay

Where

Gamlebyviken is a deep sill bay located on the Swedish east coast. During several years, Västervik Municipality (supported by LOVA funding, among others) have implemented several measures to reduce the nutrients load from farming and wastewater. However, this measures are still not enough to achieve Good Environmental Status. Additional measures are needed in order to rehabilitate the water and remove the nutrients that cannot be captured on land.

Why

The inner fjord of Gamlebyviken – Dynestad bay has been hit by several total collapses. During the collapse oxygen-free water rose to the surface and malodorous hydrogen sulphide vapours were released. The water contains extremely high concentrations of nutrients such as nitrogen and phosphorus. The average concentration from 6 meter to 16 meter is 15 mg N/l and 2 mg P/l. Moreover, the connection with the Baltic Sea results in different water layers with the salt content increasing with depth.



Water depth



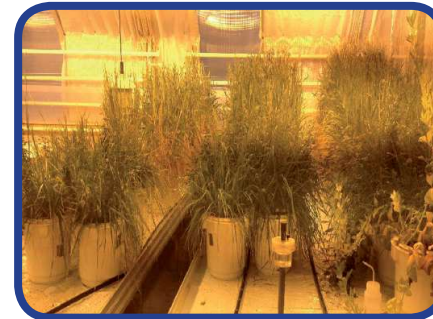
Oxygen-free sea floor of Dynestad bay

What

The measure to decrease eutrophication is pumping water from the Dynestad bay and use it for irrigation on surrounding arable fields. This will lead to increasing oxygen levels and reduce the nutrient content in the water. According to our calculations the possible total removal of water would be 125 000 m³ and the possible nutrient removal would be 1875 kg N and 250 kg P.

The Pilot

The first test was a greenhouse study, carried out by the Swedish University of Agricultural Sciences. During three growing seasons (2014-2016) field trials have been conducted to compare how different crops respond to irrigation of the nutrient-rich water. Water and harvest analyzes has been conducted in collaboration with SLU.



The Greenhouse study



Irrigation experiment



Results from field study, Biomass in kg/m²



Results

So far the studies have shown promising results, with positive yield responses and no negative impact being experienced. Forage cultivation in a non-irrigated field had a harvest of 9 tons/year and the irrigated gave a harvest of 11 tons/year. The results of forage harvest indicate a yield increase of 20%. The risk of unpleasant odor is lower than expected.