


PALUDICULTURE

Climate Change Mitigation through Land Use on Rewetted Peatlands

What are peatlands?




Wetlands with a thick layer of **organic soil** formed over centuries in waterlogged conditions.

Peatland benefits



90% of organic matter + water

Benefits and Impacts

-  Store and sink of carbon
-  Conserve biodiversity
-  Regulating water flows



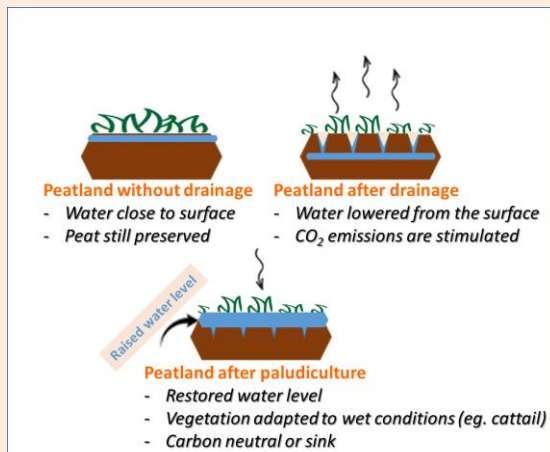
ABOUT THE PALUDICULTURE INITIATIVE

LANDMARC in collaboration with **Carbon Connects (CCONNECTS)** and stakeholders including the water boards 'Aa en Maas' and land users aims to explore to which extent C losses from peat soils can be reduced by using paludiculture in the Netherlands. Paludiculture is the practice of crop production on wet soils, predominantly occurring in peatlands. Wet soil cannot be used to grow standard crops and has limited capacity to support cattle. When drained for agriculture, stored C from peatlands is released to the atmosphere as CO₂. Therefore, to achieve a zero or negative carbon balance in paludiculture, the water level has to be close to the surface to guarantee water saturation of the peat body. Crops adapted to wet conditions, such as cattail, can grow in peatlands and their biomass can be used for a range of applications, including fodder. In addition, these saturated soils can also be used as wet grasslands (e.g. by light dairy cows).

Why are peatlands under threat?

Because activities as drainage and peat fires are responsible globally for around 2 Gt of CO₂ annually.

Solutions – PALUDICULTURE



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CASE STUDY SITE



SWINKELS – NL

- **Size: 1 ha**
- **Crop type: cattail**
- **Water level fluctuations: -10 and +20 cm**
- **GOAL: keep water level high through paludiculture and ensure that this technique contribute to peatland recovery.**

In-situ observation tools



Soil sampling

physical



chemical

Molecular microbial identification and quantification

Workflow



DNA extraction from soil

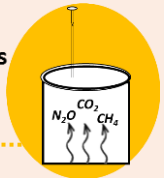


Identification of microbes

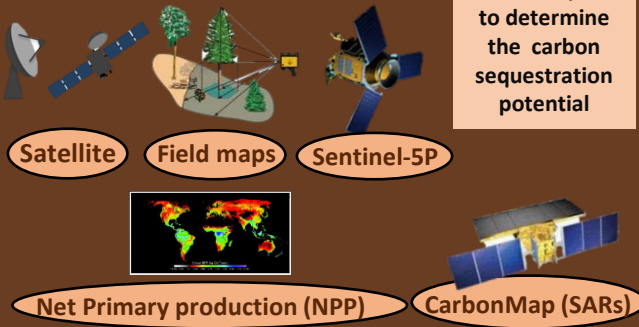


Data analysis

GHGs measurements



Earth observation tools



With these tools we plan to determine the carbon sequestration potential

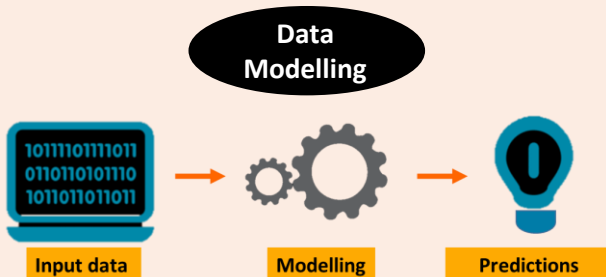
LANDMARC

Together with stakeholders, LANDMARC will provide support services to enable the measurement of carbon soil sequestration and to perform a robust climate change risk assessment of paludiculture practice. This risk assessment will be performed within a participatory setting and aims to ensure that climate change related risks are better included in project risk management practices for peatlands.

We will also assess the potential of scaling up local peatlands as potential net GHG sinks to the national level and the tradeoffs with other social, economic and environmental goals and develop corresponding peatland policy portfolios to scale up locally implemented paludiculture to the Netherlands.

Swinkels is one of the 16 case studies in the LANDMARC project. The experiences from these case studies will be used for scaling up negative emission solutions to the national, continental and global level. By doing so, we will get insight to which extent these solutions might contribute to meeting the Paris Agreement on global climate goals. In this case study, for the peatland ecosystem.

Estimation of emissions of peatlands



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