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Managing a Sphagnum farming site on degraded bogs

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Sphagnum farming is paludiculture on rewetted bogs. It allows to use abandoned cut-over bogs and degraded bog grasslands with benefits for climate change mitigation, nutrient retention, and biodiversity. Sphagnum farming aims to cultivate Sphagnum biomass for harvest as an agricultural crop, e.g. to provide raw material for growing media. This new type of peatland agriculture includes the selection of highly productive species and active management to maximise yields.

A production system with Sphagnum production fields, irrigation system and causeways is successfully tested on ca. 14 ha pilot study site in NW Germany on former bog grassland. To convert the bog grassland into a Sphagnum farming site firstly the sod was removed and used for constructing bunds used as causeways, before Sphagnum fragments were spread on the bare even peat surface to ensure optimal water levels over the entire Sphagnum production field after rewetting. Commercial Sphagnum farming involves regular on-site controls, precise water management, weed management of production fields, cleaning of irrigation ditches and mowing of causeways.

For the fast establishment and optimal growth of a dense Sphagnum lawn water tables just below Sphagnum surface has to be secured permanently by regular adjustment of water table, irrigation of the Sphagnum production fields, and cleaning of the irrigation system. At our study site there is a water surplus in winter, whereas in spring and summer evapotranspiration exceeded precipitation, creating a water deficit which is compensated by a mean annual irrigation amount of 160 mm (i.e. 1,600 m^3 ha-1 yr-1), differing between the years up to 360 mm.

Next to the cultivated Sphagnum also vascular plants are establishing and may retard Sphagnum growth by shading, litterfall, and competition for water and nutrients. Thus, the vascular plant cover on Sphagnum production fields should be managed to be low. Regular mowing every three weeks during the vegetation period retained vascular plant cover below 30 %.

With the management at our Sphagnum farming study site Sphagnum produced dry masses up to 9 t ha-1 yr-1. However, since Sphagnum farming is still in its infancy more research is necessary to reach technological maturity and to reduce costs for large-scale implementation.