

A TYPE OF PEATLAND RECULTIVATION: CULTIVATION OF LARGE CRANBERRIES

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This type of recultivation involves the transformation and adaptation of a former peat extraction site for the cultivation of large cranberries (*Vaccinium macrocarpon* Ait.). Large cranberries are dwarf shrubs of the evergreen mite family. The Latvian climate is suitable for development of large cranberries in raised bogs, where the upper part of the remaining peat layer is formed by raised bog peat type.

The first harvest is expected in the 3rd year, but regularly from the 6th year. The purpose of the real estate's use — land on which the main economic activity is agriculture, a type of land use — land under orchards.



Figure 1 Cranberries in blossom (D.Siliņa)



Figure 2 Cranberry field (D.Siliņa)

Table 1 Conditions under which the recultivation scenario is possible

The type of the top peat layer	raised bog peat
The thickness of the remaining raised peat type	> is not a limiting factor >
pH values of the top peat layer used	3.5-4.5pH
Average groundwater level	0.5 m
Average number of days in a year when the area is flooded	cannot be flooded
Degree of peat decomposition	low decomposed <20%

Large cranberries are an evergreen shrub of the evergreen small bush family. The climate of Latvia is suitable for cultivating large cranberries in the extracted peat bogs, where the upper part of the remaining peat layer is formed by raised bog type peat.

To create large cranberry plantations the following must be evaluated:

- The location and functionality of the drainage system in the territory to be restored by ensuring an average groundwater level in the plantation territory of 0.5m. It is necessary to monitor the humidity regime with collecting ditches and gullies;
- There are water bodies (ponds, fire pools, lakes) in the area to be restored or adjacent to it, or there is the possibility of creating water bodies with the required amount of water in the area.
- The condition of the field's surface, because it is important that the surface of the field to be planted is flat, without microlowlands or hills. If the area for large cranberry cultivation does not form a flat surface after completion of peat extraction, surface plating is required to level the field so that the surface slope does not exceed 2%.
- The top layer of the remaining peat should be raised bog peat with a pH of 3.5-4.5. If the pH value of the soil in the planned field of cultivation does not correspond to the implementation of the chosen recultivation scenario, soil improvement and fertilization must be carried out.

In peat extraction areas where peat extraction has been done historically and an overgrowth plant cover has formed, the area must be cleared from overgrowth before planting.

If there are stumps on the surface of the plantation area, they should be removed by removing stems from the fields.



Figure 3 Cranberry type – Pilgrim (D.Siliņa)



Figure 4 Young cranberry plantation with superficial watering (D.Siliņa)

Climate change

Large cranberry plantations completely cover the turfy soil surface, which reduces GHG emissions.

The impact on GHG emissions has been assessed for a 30-year period following the implementation of the scenario, assuming that the scenario is introduced in an area where peat extraction has been discontinued recently and ground vegetation has not yet emerged, but the topsoil is formed by infertile raised bog peat. Following the implementation of the scenario, GHG emissions will be reduced by 3.4 tonnes CO₂ eq. . ha⁻¹ per year compared to the initial situation. Total GHG emissions in this scenario over the calculation period correspond to 2.9 tonnes of CO₂ eq. ha⁻¹ per year. The calculation of GHG emissions does not include emissions from fertilizers which, depending on the fertilizer doses used, can significantly increase N₂O emissions from soil. These emissions are counted in the agricultural sector using the unified calculation method for converting the applied amount of fertilizer into direct and indirect N₂O emissions.

Completion of restoration works

The requirements and technical solutions (recultivation work) included in the extraction project for mineral resources or the restoration plan have been implemented in the territory, the peat extraction site is prepared for the planned land use after the completion of peat extraction.

An act has been drawn up and signed in accordance with the procedures specified in regulatory enactments regarding completed restoration work.

By fulfilling these conditions, the peat extractor has, for his part, performed the tasks foreseen in the extraction project for mineral resources: to prepare the area for restoration; the site is ready for the cultivation of large cranberries. Further actions must be taken by the landowner.

Signs indicating that a restoration scenario has been implemented

The collecting ditch system is working. The area is free from weeds and other plants. The area to be restored is evenly covered with large cranberry plants, yields are harvested and planted.

Economic use

The area has been transformed after the implementation of the restoration measures and is used for agricultural production by installing orchards and berry bushes.

There is an economic activity that provides jobs and income.



Figure 5 Cranberries mulched with wood chips (D.Siliņa)



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