

A TYPE OF PEATLAND RECULTIVATION: ESTABLISHING ARABLE LAND FOR THE CULTIVATION OF ARABLE CROPS

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This type of recultivation involves the transformation and adaptation of former peat extraction sites or recultivated areas into agricultural land for the cultivation of arable crops and the active management of these lands according to the new land use type.

The purpose of the real estate's use — land on which the main economic activity is agriculture, the type of land use — arable land.



Figures 1 and 2 Ploughed peatland (carrswetland.wordpress.com)

Table 1 Conditions under which the recultivation scenario is possible

The type of the top peat layer	Transitional and fen type peat (the remaining thickness of transitional mire type peat <0.25m)
Thickness of the remaining peat layer	<0.5 m
pH values of the top peat layer used	5.0 - 7
Average groundwater level	<0.7-1.0 m
Number of days per year when the area is flooded (days per year)	The area should not be flooded
Degree of peat decomposition	Medium and well-decomposed peat
Peat deposit stumps	Low coverage of stumps (0.5-2.0%). A high coverage of stumps (2.0-3.0%) and very high coverage (more than 3.0%) will make it difficult to establish arable land

Suitable for agricultural use are fen (grass) mires, because their soils are rich in minerals, carbonates and nitrogen, their environment is neutral or alkaline (pH = 5.0-7.0). Relatively fertile soils, which are particularly useful for cultivating grasslands (meadows and pastures) as well as for growing vegetables, can be attained by cultivating fen type peat. It is also possible to use a transitional mire type peat under which a fen type peat is shallowly located. Transitional mire peat soils can be slightly acidic (pH<5). Depending on the requirements of the plants to be planted, they may have to be calcined.

For the successful implementation of this recultivation type, it is preferable that the top layer in this area is formed by fen type peat with a higher amount of minerals and potentially higher soil fertility, lower soil acidity. If the creation of arable land is planned at a peat extraction site, where peat extraction has been interrupted without all of the useful peat layer being extracted and transitional mire peat can be found above the fen type peat, then it is recommended that the remaining layer of transitional mire peat is less than 0.25m, which as a result of agrotechnical work would mix with low bog type peat and create more favourable growth conditions for selected plant species.

The recommended maximum peat thickness to be left above the peatland bottom is 0.5m. At peat extraction sites where the extraction has taken place historically and has been discontinued without recultivation of the extraction site, the thickness of the remaining peat layer may be higher. In this case, the possibility of developing the remaining peat deposit layer up to the 0.5m mark, promoting the rational and efficient use of natural resources, should be considered when assessing the economic benefits.

When planning to create arable land in the developed peat extraction site, the location of the drainage system should be such as to guarantee the necessary moisture conditions for the crops in the growing season. In the area of recultivation one must ensure that the average groundwater level is below 0.7-1.0 m.

When transforming the peat extraction area into arable land, preference should be given to creating an open ditch network that discharges surface water faster, catches shallow groundwater and has lower installation and maintenance costs.

As an alternative to arable land drainage, it is possible to set up a drain system, which will result in a more homogeneous humidity regime and make possible the unhindered movement of agricultural machinery and which will not occupy the usable land area.

Completion of restoration works

The requirements and technical solutions (restoration work) should be included in the extraction project of mineral resources or in the restoration plan that has been implemented in the territory. The peat extraction site is prepared for planned land use after peat extraction is completed.

An act should be drawn up and signed in accordance with the procedures specified in regulatory enactments regarding completed restoration works.

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 creation of arable land and the cultivation of field-crops. Further actions must be taken by the landowner.



Figure 3 Cultivation of arable crops (carrswetland.wordpress.com)

Signs indicating that a restoration scenario is implemented.

The planned drainage system in the area to be restored has been created and is capable of providing the optimal water - air regime in the soil for crops cultivation and field treatment. The field is maintained and various cultivated plants are grown or ornamental plantations are established.

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 fertile low bog type peat. Following the implementation of the scenario, GHG emissions will increase by 14,6 tonnes CO₂ eq. ha⁻¹ per year compared to the initial situation. Total GHG emissions in this scenario over the calculation period correspond to 20.9 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 the 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.

Economic use

The complex of restoration measures will promote the reasonable use and management of territories.



Latvijas Kūdras asociācija

