



Novel peatland management practices - key for sustainable bioeconomy and climate change mitigation

Raisa Mäkipää, Mikko Peltoniemi, Heikki Lehtonen, Aleksi Lehtonen, Regina Kristiina, and Raija Laiho
Natural Resources Institute Finland, Helsinki, Finland (raisam.makipaa@luke.fi)

Peat soil of croplands and forests is currently the largest emission source in the LULUCF sector and climate-smart peatland management has large potential to mitigate emissions. We aim to develop ecologically and economically sustainable climate change mitigation options for forest and cropland management. The emissions from managed peat soils may be mitigated by limiting depth of actively decomposing peat layer by raising the soil water table closer to soil surface. In managed peatland forests we test continuous cover forestry with elevated water table as an alternative to rotation forestry with clear-cutting and ditch network maintenance. On croplands, other potential means to mitigate emissions are no-till, catch crops and addition of biochar. We will measure GHG exchange on experimental study sites and develop dynamic models for predicting GHG exchange for different management practices. The data will feed economic analyses, i.e. static gross margin and profitability calculations. Microeconomic dynamic models with optimization will be used to quantify the required incentives for a farmer to choose climate-smart management options. For forest sites, cost-efficiency of mitigation options is assessed by comparing net present value - GHG ratios of the management alternatives. We will compile GHG emission scenarios needed for evaluation of the climate policy options in Finland. Our results will have an important impact on the economic optimization of climate change mitigation in the agriculture and LULUCF sectors and they help to meet the agreed emission reduction targets.