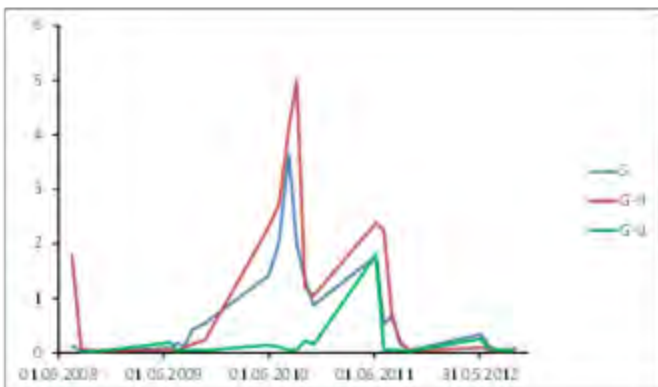


# Ecological effects of intensive biomass harvesting in the Nordic and Baltic countries

**The aim of the project is to compile available Nordic and Baltic experimental data and published results on effects of intensive forest biomass harvesting on soil nutrient stores, soil carbon stocks, soil structure, surface and ground water, and biodiversity, and to evaluate the possible influence of factors like i) forest type, ii) harvesting type (e.g. stem-only, whole-tree), etc.**



*NO<sub>3</sub>-N concentrations (mg/l) in soil water in a Norway spruce forest at Gaupen, Norway, after stem-only harvesting (S), whole-tree harvesting piles (G-H) and whole-tree-harvesting where slash was removed (G-U)*

## **What is the effect of intensive forest harvesting on the forest ecosystem?**

In conventional timber harvesting, branches, tops and stumps are left in the forests. Removal of these parts for bioenergy may have ecological consequences. As a large part of the nutrients in trees are located in the needles and branches, removing these during whole-tree harvesting will reduce nutrient supply to the soil. In the long term, this might both increase the risk for nutrient imbalance and reduced forest production and affect biodiversity by changing species composition. However, field experiments have found contrasting results for

both soil chemistry and ground vegetation. There is a need for more knowledge about which factors determine these differences, and of how variation in these factors affects long-term site sustainability.

## **Nordic and Baltic results provide much knowledge**

In the Nordic and Baltic countries, much work has already been done on these problems. A number of field experiments have been carried out, and further integration of the knowledge obtained from these experiments has the potential for greatly increasing our understanding of the mechanisms responsible.

The project aims to:

- (1) compile available Nordic and Baltic data on experiments and published results on effects of forest biomass harvesting on soil nutrient stores, soil carbon stocks, soil structure, surface and ground water, and biodiversity;
- (2) evaluate the possible influence of factors like i) forest type, ii) harvesting type (e.g. stem-only, whole-tree), etc.

In the first year, we have compiled data about relevant experiments. A meta-database has been constructed with information about experiments carried out in the Nordic and Baltic countries, as well as in other countries in the boreal and north temperate zones (above 45°N latitude). Experiments with removal of forest residues during thinning and final felling, as well as stump harvesting, have been included.

The meta-database includes spreadsheets with overviews of the experiments included, as well as more specialized information about for example biodiversity and soil properties.



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## Next steps

After checking the completeness of the meta-database, the possibility for meta-analysis of the data will be considered. If there are enough data, this meta-analysis will be carried out and a paper written on the results; otherwise a review paper will be written.

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Author name(s) and affiliation Nicholas Clarke, NFLI

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