SAMPLE PREPARATION FOR CELLULOSE ANALYSES

In order to create a representative sample for an inhomogeneous biomaterial like chipped small trees, crushed stumps or logging residues the method for taking samples and how samples are treated is crucial. For evaluation of the chemical composition in sample analysis the sample size must also be reduced in a correct way. It is also extremely important that the methods of chemical analysis are adapted to the final sample size. This is because of the importance of reducing the standard deviation in the results. In this work a model for sample preparation and sample size reduction has been developed.

OPERATION BEFORE SAMPLING

In this "Forest Refine" work samples from forest included:

- Stumps: Pine and spruce stumps starting with a weight of 500 kg/sample
- Small trees from thinning: Pine, spruce and birch with a weight of 500 kg/sample

After first particle size reduction by chipping (small trees) or crushing (stumps) samples were dried in low temperature air to w.c. of ≈ 12 %. During the chipping and crushing samples were taken continuously in the flowing stream for chemical analysis. Sample size was ≈ 1,0 kg.

Fig 1. Crushing of stump samples (left) and chipper used for the reduction of particle size, Ø 8-12 mm, of the small tree sample (right).

SAMPLE SIZE REDUCTION

After gravimetric fractioning and sieving A+B samples were taken out with a weight of 1 kg/sample. These samples were reduced and milled down to particle size of Ø 1 mm and sample size was now down to 100 g/sample.

For the chemical analysis samples have reduced to 1 g/sample. All sample size reduction is done after thorough mixing of the sample.

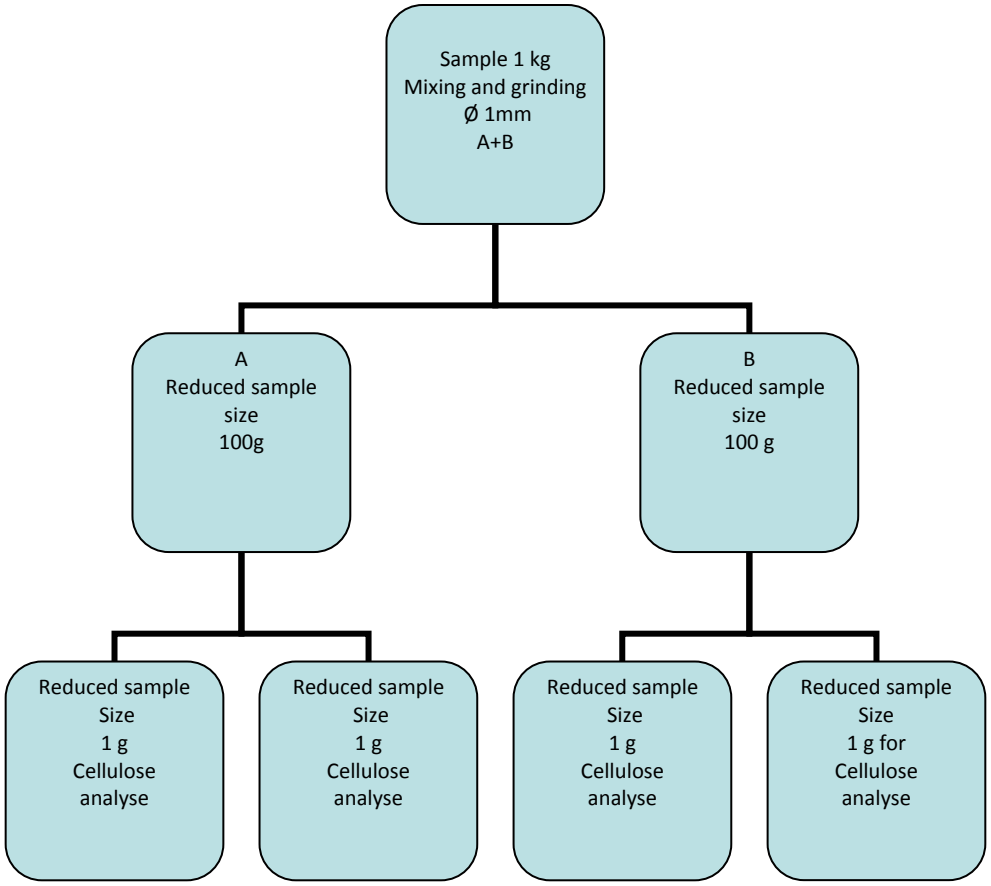

Fig2. Sample size reduction for chemical analyses

AUTHOR

Håkan Örberg

Swedish University of Agricultural Sciences

Department of Forest Biomaterials and Technology

hakan.orberg@slu.se

2.2.2014

European Union
European Regional Development Fund
Botnia-Atlantica
Cross-border cooperation over mountain and sea
REGION VÄSTERBOTTEN
Länsstyrelsen Västernorrland
Österbottens förbund
Pohjanmaan liitto
REGIONAL COUNCIL OF CENTRAL OSTROBOTHNIA