Pot and field experiments

Experiments are set up to solve specific tasks which are specified by UKZUZ or the Ministry of Agriculture according to current needs. Existing experiments include the following:

Verification of pheromone lures content – is carried out using the gas chromatography method. The biological efficiency is also verified through the field experiment.

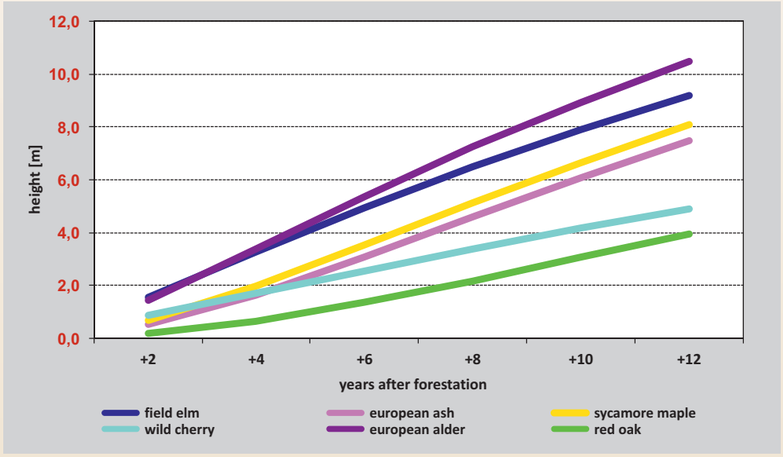
Soil water sampler set

Post-registration experiments of growing- and seed substrates – they are established to verify the suitability of substrates for silvicultural purposes in forest nurseries.

Soil water sampling – enables repeated sampling for analysis. For instance, it is suitable for detection of undesirable soil nitrogen eutrophication after liming or in places where animals occur frequently (game preserves).

Cultivation of energy crops

Growth curves of planted tree species

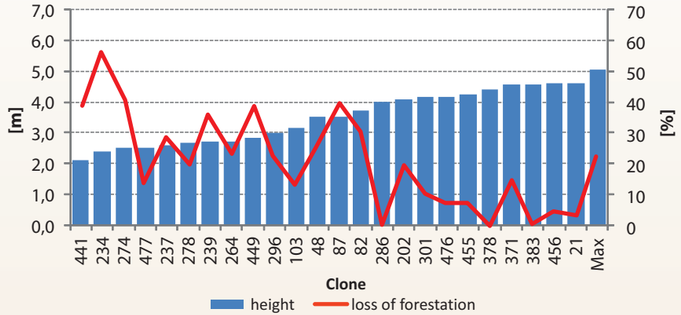


Within the frame of research of less productive agricultural soils utilization, experimental plots were established in foothill area close to Stachy. The tree species structure and the land management of plots vary depending on the objectives to be studied.

Tree species test is the oldest plot. It was established in 1995. The aim is to study height- and thickness increment and health condition of six tree species in total.

Fast-growing trees plantation has been run in Stachy since 2010. Annual observation provides relevant findings on possibilities of fast-growing trees cultivation on mountain pasture lands. The experiment is accompanied by a study of soil.

The average heights and the loss of forestation identified in 3rd year after plantation



The plantation consists of a clone test and a biomass production test:

- **The clone test** was established in a range of 25 clones of black poplar. The aim is to study rooting and growth rate of selected clones, i.e. the suitability for cultivation under mountain conditions.
- **The biomass production test** involves tree species grown from cuttings of three clones: S-195, S-218 and J-105. Besides the annual measurement of clones height the raw mass of trees has been measured after 5 years of cultivation as well. The aim is to determine the amount of biomass production of these clones.

The clone of J – 105 one year after planting and before logging

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CENTRAL INSTITUTE FOR SUPERVISING AND TESTING IN AGRICULTURE

FORESTRY

FERTILISERS AND SOIL

Introduction

Forestry activities of Department of Soil and Forestry are carried out according to Act No. 147/2002 Coll. on Central Institute for Supervising and Testing in Agriculture (UKZUZ), Act No. 156/1998 Coll. on fertilizers and Decree No. 275/1998 Coll. on agrochemical soil testing, as amended by later regulations.

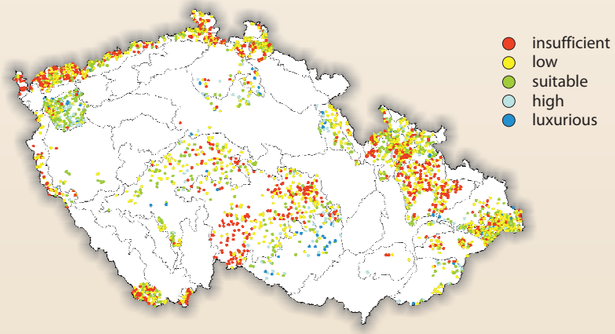
Survey of soil properties of forest land

The main purpose of the survey is to inform landholders of forest land about soil-chemical properties of forest soil. The survey includes sampling of soil and assimilatory organs of tree species, their chemical analysis and evaluation of the results. The basic territorial units of the survey are the Natural Forest Regions of the Czech Republic (NFR). The systematic research started in 1993.

NFR SURVEY
LAYOUT MAP

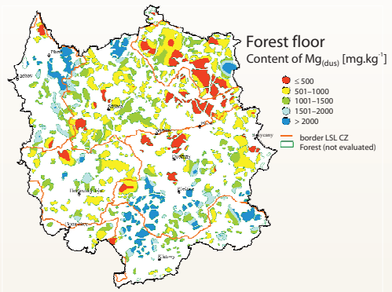
The soil properties survey is particularly carried out in: regions where the symptoms of growth, maturation or health disturbances have been observed on forest stands, regions affected by atmospheric pollution and/or regions with seed production stands.

Content of calcium in the one year old needles of Norway spruce



The survey is performed at the sampling sites. The samples of forest floor, mineral horizons and assimilatory organs are taken at each site. The laboratory analysis of the samples includes the following:

- **forest floor:** amount of dry matter, soil reaction, combustible matter, total nitrogen, oxidable (organic) carbon, soil skeleton, phosphorus, potassium, calcium, magnesium, aluminium, cadmium, chrome, copper, iron, manganese, lead, zinc and any other characteristics possibly required,
- **mineral horizons:** soil reaction, exchange acidity, total nitrogen, oxidable (organic) carbon, available and pseudo-total forms of phosphorus, potassium, calcium, magnesium, aluminium and iron, pseudo-total forms of cadmium, chrome, copper, manganese, lead, zinc and any other characteristics possibly required,
- **assimilatory organs:** nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, aluminium, boron, cadmium, chrome, copper, iron, manganese, nickel, lead, zinc and any other characteristics possibly required.



Content of $Mg_{(dus)}$ [$mg.kg^{-1}$] in forest floor in NFR No. 6 The Západočeská pahorkatina

The laboratory results are statistically processed. A geographical and geostatistical software enables to identify localities with either insufficient or high element content in soil or assimilatory organs of forest tree species.

Supervision of quality and efficiency of aerial liming

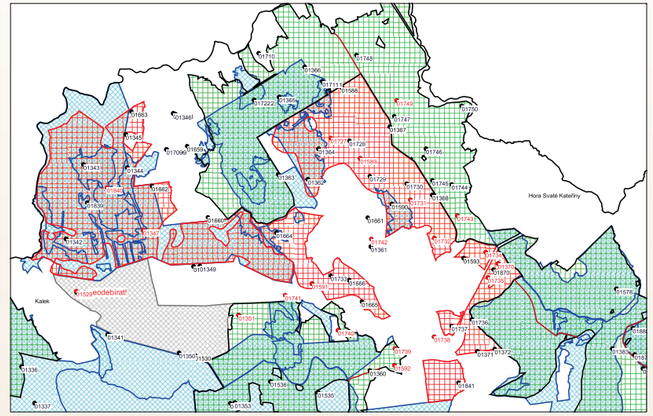
Field airport for the application machinery

The supervision of liming quality is based on repeated sampling of soil at identical sites. Content of Ca and Mg before- and after liming of forest land is compared. The uniformity of spreading of the limestone is evaluated through the comparison of data from different sampling sites at the same time.

The supervision of the liming efficiency is based on sampling of soil and assimilatory organs from limed- and non-limed plots. Subsequently, a comparison of chemical properties of the samples is carried out. The supervision is performed within 2, 5 and 10 years after application.

Basic statistical parametres (mean, median, minimum, maximum, etc.) are obtained through the analysis of chemical properties of samples. Data are used for evaluation of the liming effect in particular soil horizons and for evaluation of the liming influence on forest stands nutrition (t-tests, M-W U test, ANOVA, etc.).

Scheme of limed plots and sampling sites in the territory of interest



The register of performed melioration areas is connected with the supervision of the liming efficiency. The largest data amount of performed liming and fertilization is connected to NFR No. 1 The Krušné hory Mts. but the Department of Soil and Forestry manages records from other NFRs as well.

Content of magnesium 10 years after liming
European beech – leaves