BULGARIAN DATA

ACCOMPANYING REPORT

Sampling and Analysis of Needles and Leaves

Field survey work was conducted in the three Level 2 sample plots – Vitinia, Staro Oriahovo and Yundola. The leaf/needle samples were taken in August of deciduous and September of conifers.

- **Collection and analysis of leaf and needle samples**

The number of trees determined for leaf/needle sampling in the sample plot is 5. The determination of the dry mass of 100 leaves or 1000 needles was done by drying at 105 ^{0}C.

Samples of current year and second year needles were collected in Yundola station. The sampling was done in September and samples were submitted for analyses to the ExEA Laboratory. Leaf sampling in Vitinia and Staro Oriahovo was carried out in August. The samples were submitted for analyses to the ExEA Laboratory too.

The leaf/ needle samples of were analyzed for all mandatory and optimal parameters except Cd and B (optimal). The analytical method and the units of measurement for each parameter are shown below:

Sequence number	Parameter	Units	Standardized internal methods for analysis
1	**Ntot**	mg/g	ISO 11261
2	**S**	mg/g	XR – x-ray fluorescence spectrometry
3	**P**	mg/g	ISO 11466
4	**Ca**	mg/g	XR – x-ray fluorescence spectrometry
5	**Mg**	mg/g	XR – x-ray fluorescence spectrometry
6	**K**	mg/g	XR – x-ray fluorescence spectrometry
7	**Corg**	g/100g	БДС ISO 14235:2002
8	**Zn**	µg/g	XR – x-ray fluorescence spectrometry
9	**Mn**	µg/g	XR – x-ray fluorescence spectrometry
10	**Fe**	µg/g	XR – x-ray fluorescence spectrometry

11	**Cu**	µg/g	XR – x-ray fluorescence spectrometry
12	**Pb**	µg/g	XR – x-ray fluorescence spectrometry

- **Leaf /needle analysis**

Vitinia field station - The comparative assessment of the results as compared to 2009 and 2010 for the of macro-and micronutrient contents in leaves of beech indicates, that there are increased amounts of nitrogen reaching the limit of optimum. The Mn and Fe contents are reduced, but nevertheless, the manganese values are significantly higher than the regional values.

The general assessment of the nutrition status as a whole is balanced, despite some differences in the limits of minimum and maximum values, it.

Staro Oriahovo field station - Analysis of the results shows that, in one of the samples, potassium and calcium are above the upper limit for a normal stocking with those elements. The other elements have quantities which are considered sufficient for the normal functioning of the species. The overall assessment of the nutritional status is that, as a whole, it is balanced.

Yundola field station - The data show that in comparison with 2009 and 2010, in 2012 were indicated higher values for nitrogen and total phosphorus and lower values for potassium, manganese and copper in the 1-year needles. In two of the samples wer registered higher amounts of nitrogen compared to regional values for optimal stocking. Calcium and manganese are within the optimal stocking. The zinc content is low, below the minimum value for the optimal stocking.The general assessment of the nutrition status regarding the analyzed elements is that, as a whole it is balanced.