

MINUTES

of the 3rd Meeting of the Foliar Expert Panel
held in Vienna (Austria) on 7th and 8th of November 1995

The meeting was attended by experts from the following countries: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Norway, Portugal, Russia, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. The European Commission (EC) was also represented (see list of participants, Annex I).

The meeting was opened by Mr. K. STEFAN (Austria), chairman of the Foliar Expert Panel. Mr. F. RUHM, director of the Federal Research Centre for Forestry of Austria welcomed the participants on behalf of the host country. The agenda was adopted (Annex II).

Item 2: Discussion and establishment of limit (threshold) values

Since very different terms are used for the same values or fields of values in the European countries, and in order to avoid misinterpretation or wrong conclusions, it was decided that, for the evaluation at European level, classifications of only 3 classes and without more specific names or descriptions should be determined. After that basic decision the following classification values of the main nutrients for spruce, pine, beech and oak (which are the main tree species on the level I and level II plots in Europe), were determined:

CLASSIFICATION VALUES

SPRUCE	N	P	K	Ca	Mg
lower value (mg/g)	12,0	1,0	3,5	1,5	0,6
upper value (mg/g)	17,0	2,0	9,0	6,0	1,5

PINE	N	P	K	Ca	Mg
lower value (mg/g)	12,0	1,0	3,5	1,5	0,6
upper value (mg/g)	17,0	2,0	10,0	4,0	1,5

BEECH	N	P	K	Ca	Mg
lower value (mg/g)	18,0	1,0	5,0	4,0	1,0
upper value (mg/g)	25,0	1,7	10,0	8,0	1,5

OAK	N	P	K	Ca	Mg
lower value (mg/g)	15,0	1,0	5,0	3,0	1,0
upper value (mg/g)	25,0	1,8	10,0	8,0	2,5

SULPHUR	Spruce	Pine	Beech	Oak
lower value (mg/g)	1,1	1,1	1,3	to be determined
upper value (mg/g)	1,8	1,8	2,0	

The sulphur values for oak still have to be determined. In this respect the results from the foliar analysis notably in the Mediterranean region in Spain have to be taken into account as there are a lot of oak plots. The classification values of micronutrients should be determined as well (determination is optional on level I and level II plots). The participating countries are invited to submit proposals for classification values for sulphur (oak) and micronutrients (spruce, pine, beech, oak; following the structure in the above tables) to Mr. Stefan (FFCC, c/o Forstliche Bundesversuchsanstalt, Seckendorff-Gudent-Weg 8, A-1131 Vienna) as soon as possible.

Item 3: Ring analysis of 1995

Mr. U. Bartels (Germany) provided information on the 2nd ring analysis. Four samples (spruce and pine from Slovakia, oak from Spain and spruce from Germany) were ground with the help of a centrifugal mill with Cr/Ni gauzes of about 80 μ m. When using X-ray fluorescence spectroscopy for analysis, it may be necessary to grind the material even finer (particle size about 60 μ m).

After discussion it was agreed that the participating countries (laboratories) should

- submit the results of the 2nd ring analysis to Mr. Bartels (c/o Landesumweltamt Nordrhein-Westfalen, Wallneyer Str. 6, D-45133 Essen) by December 31, 1995.
- use for submission of ring analysis results exclusively the provided forms (Annex III),
- consider that, in the case of manganese, four places are needed before the point instead of three, as required in the form for submission of results.

The results of the ring analysis will be evaluated by Mr. Bartels by the end of March 1996. The results of the evaluation will then be distributed to all participants of the ring analysis as well as to EC and the Lead Country of ICP Forests.

Mr. Bartels clarified a statement made in his letter of July 20, 1995 sent to the laboratories: The drying of the material for the analysis has to be performed at 80°C, the calculation, however, is on the basis of 105°C dry weight.

The meeting recommends to the participating laboratories to analyse permanently-regardless the 2nd ring analysis-certified reference material (BCR 100, BCR 101, NIST standards, etc.) in order to guarantee the quality of their work. It's also possible to get BCR-Reference materials from the Institute for Reference Materials and Measurements (Annex III).

In this context and for quality control Mr. A. Clement (France) distributed oak reference samples with results of analysis to interested participants (Annex IV). Additional material can still be obtained from him (Mr. A. Clement, c/o INRA, Centre de Nancy, Champenoux, F-54280 Seichamps).

Mr. Bartels announced of having organized that a catalogue of the company "Promochem" is available to all participants of the ring analysis. This catalogue, inter alia, contains information on available certified reference material; thus everybody who might have difficulties in providing himself with the required material has a contact address at his disposal.

Item 4: Influence of sample washing on the foliar chemical composition

Mr. H. Raitio (Finland), presented his report on a literature study about the "influence of sample washing on the foliar chemical composition" carried out as requested by the Foliar Expert Panel at its 2nd Meeting (Annex V). Based on the results of the study Mr. Raitio made the following recommendations:

In general washing of needles and leaves is not recommended. However, if in a special situation washing is felt to be necessary, the following recommendations should be taken into account: "According to the literature reviewed it is recommendable that the foliage samples should be washed for a short time in distilled water or chloroform in order to distinguish between superficially absorbed and biomass incorporated, i.e. physiologically active, elements. The washing is necessary for the chemical analysis of Al, Fe, Pb and other heavy metals, but for most of the major elements, such as N, P, K, Ca, Mg, and S, for B, Mn, and Zn of the micronutrients, no significant change in concentrations after washing has been observed. By washing the needles or leaves with distilled water, only part of the surface deposition could be removed. On the contrary, almost complete removal of the surface deposition will be achieved by washing the samples with chloroform."

After short discussion and taking into account the aim of the programme (monitoring of air pollution effects) the meeting in general does not recommend to wash foliar samples.

Item 5: Transfer of level I foliar data to FFCC/EC

Mr. T. Haußmann (Germany) pointed out that according to the ICP Forest Manual and the respective EC Regulation the results (data and reports) of the optional foliar survey on level I will have to be submitted before June 30, 1996. After receiving the results the Forest Foliar Coordinating Centre (FFCC) will have to verify,

validate and evaluate the results as well as to prepare a draft report which has to be discussed at the next Foliar Expert Panel meeting.

Submission of level I data should be made in digital format using the following forms (see Annex IV):

Form 5a PLF

Plotfiles shall be identical with those from the soil and crown condition survey (16x16 km grid; Greenwich coordinates are to be used).

Form 5b FOM

Results of the macronutrients (mandatory)

Form 5c FOO

Results of the micronutrients (optional)

The tree species code should be present on the forms 5b and 5c (column "OBSERVATIONS"). Supposed that the results exceed the provided format, it is recommended to enter "99" into the column and to write the actual results into the column "OBSERVATIONS". Data should be submitted on diskette (format "3.5"). For security reasons a copy of the submitted files should be stored at the National Focal Centre.

The determination of the weight of 1000 needles and/or 100 leaves should be carried out after drying (105°C) of the sample material.

Regarding the results of the analysis, it is important to be aware that the results are expressed in terms of 105°C, although the real drying temperature has to be 80°C.

The following countries are expected to submit results of foliar analysis from (parts of) their level I plots from 1995/96 before June 30, 1996: Austria, Belgium - Wallonia, Bulgaria, Croatia, Czech Republic, Finland, France, Germany, Ireland, Italy - Southern Tyrol, Lithuania, Norway, Russia, Slovakia, Slovenia, Spain, United Kingdom.

Items 6 and 7: Draft Report/Level I and Future Activities of the Foliar Expert Panel

The collection, screening, storage, evaluation and classification of the data from Level I plots will be done by the FFCC. The FFCC will prepare a draft report on the results (data and reports) received from the participating countries. For this work the results of the ring analysis are important.

The FFCC intends to prepare the draft report by the end of 1996. In addition to the data to be submitted, the FFCC would welcome to receive from the National Focal Centres a "preliminary" national interpretation of its results and information on e.g. drought and special site-related conditions which might be useful for the interpretation of the results at European level.

In order to permit an evaluation of the temporal development of foliar analysis results during the years before 1995/96, it was agreed that also data from previous foliar surveys on level I plots should be submitted to the FFCC, whenever possible.

In order to accelerate the processing and the interpretation of level I data FFCC would welcome to receive the general plot data (form 5a) as soon possible for test runs.

The next meeting of the Foliar Expert Panel is planned to be held in Vienna at the beginning of 1997. This meeting will focus on the foliar survey on level I (discussion of draft report prepared by FFCC) but will also give the possibility to discuss items concerning the progress on level II (possibly together with the consultant for the level II data management).

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7./8.11.1995

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