

STSM - REPORT  
Short Term Scientific Mission, COST Action FP1202

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International Beech Provenance Trials:

Study of the adaptation, growth and forest management of European Beech seed sources growing in the Spanish Pyrenees. New measurements and analysis of obtained data. height, normal diameter, survival and form characters. Evaluation of forest management system”.

1. Purpose of the visit

The main purpose of my Scientific Mission was focused in getting new data and related information of “Burguete Beech Provenances Experimental Trial Site” placed in north of Navarra -Spain-, in order to analyse the total variability and comparing the adaptability of different European beech provenances to dryer and water stress climatic conditions as well as establishing an updated database with current data. The second important point of my STSM was to obtain information about the silviculture, which is applied there to manage beech stands. The planned work was carried out as it follows:

- First, new measurements, directly in the provenance trial sites, of the surviving trees were taken: height, normal diameter, survival, growth form, health overview and symptoms of efficiency of hydraulic conductivity. Order and record these data to establish a database, which is using in the next future to compare them with the obtained data in other similar European trial sites. Analyse these obtained data and develop a statistic analysis of them. To complete this part of my STSM: different measurement instruments were used: tape measure, tugs, calliper, measuring pole and hypsometer (Vertex). In relation with this last instrument, Vertex, as I had never worked with it before, during my stay I had to learn to use it and I became familiar to work with it, thanks to the explanation and indications given to me by workers of the keepership.
- Second, to get direct information of the forest management system which is used for this and similar Beech stands in this region. The aim of this second point is focused on studying in the next future the viability of this system in case it can be established in central and northern European latitudes, due to the warmer expected climate conditions, as well as comparing it with the system currently applied in these other sites.

I am satisfied with the collaboration that I could achieve during the time of my visit. I could carry out successfully the planned points. In order to get better knowledge about the trial sites and the original COST Action in which this STSM is included, I reviewed literature and different articles disposed by the Host Institute in Pamplona. This part of the work has involved self-learning in order to get acquainted with the computer program SPSS and remember concepts on statistical analysis.

The visit of my STSM has elapsed with good work conditions due to the collaboration of the Host Institute as they have provided me in every moment material, help, required information and permissions to develop my work. It has been really notable the behaviour of the Host Institute that I have received in every moment during my stay. Particularly I am grateful to Miguel Ángel Labiano. Iñigo Villanueva and to different workers of the keepership, by the material, help and provided clarifications given to me in every moment that I needed them.

## 2. Description of the main result obtained:

Before describing the main results that I obtain, it is really important to clear up that all the obtained data as well as all the related information about the sites belong to the Government of Navarra. They have been used under its express authorization. Also the different visits to the plots have been benefited with the appropriate permission of the Government, which has been really interested in this STSM and its collaboration is essential to be taken into account to the correct development of the work.

All the statistic analyses were performed using the statistic program SPSS 17.0.

Once I have recorded all the Data in an Excell file, then I have calculated, ordered and analysed mean values per provenance of the following parameters: total Height in cm, normal diameter in mm and survival. I evaluated the growth and development of these provenances, planted in 1995, which of them had a better development in these years and which worse. I have compared the results of those provenances with the best and with the worst rates of growth and survival with those of the two Spanish provenances, also planted in this trial site. To be able to carry out this analysis, different statistic tools were used: non parametric Test for several independent samples to compare means, *Post Hoc* analysis to group values and analysis of correlation between two parameters.

By this comparison, with provenances already adapted to the local climate conditions, it is able to find out the adaptation of beech provenances, coming from central and north European regions, to stress climate conditions such as drought, as it is expected to occur more frequently in Europe in next years due to Climate Change.

In relation with the second purpose of the STSM, I have collected and researched about related information on the beech forests management system currently used in the Navarra Pyrenees. This information was directly given to me by forestry workers in the field and by reviewing administrative documents. In this point is important to indicate that many of these forestry masses are changing their typical exploitation, turning it from commercial or industrial values (mainly crown wood fit to get veneer and fire wood), into ecological (enhance CO<sub>2</sub> sinks and better adaptation to new climate conditions, increasing biodiversity, fight against desertification) and social values. But also, at the same time, producing certificated high quality timber focused on new industrial uses is the aim of this change in the management system of these stands. The objective is getting an *uneven-aged stand* to improve forest stands quality and more biodiversity. This new management tries to answer to the current change in the social and market demands. To achieve these objectives the origin of many beech forests in Navarra is changing from low forest into seedling forest.

In further studies this change in silvicultural treatments can be taken into account to establish similar management policies in those European beech forest placed over central, northern Europe, which show clear symptoms of decline state of preservation.

### 3. Future collaboration

I strongly hope to maintain further collaboration with Thünen Institut for Forest Genetics in next future projects in order to deepen in the study of differences among European beech provenances. This collaboration can be enlarged with the study of the adaptation and response to climate change of other forest species with important commercial and environmental value.

I would like to express my sincere thanks to the COST Action and to my hosts, Federal Research Institute for Rural Areas, Forestry, and Fisheries -Thünen Institute for Forest Genetics-, Gestión Ambiental de Navarra and Government of Navarra- for facilitating in every moment a productive and stimulating work.

You can find attached to the email the letter of the Host Institution that confirms the successful execution of the mission.