

ERASMUS IP „Soil & Water“ field trip 05.09.2013 Tartu – Järvelja – Tartu

Aim of the trip: to study Estonian forest ecosystem and volatile compounds measurements in the forest

Time table:

8:00 departure from Tartu at EMÜ sport hall

9:00 Arrival to Järvelja, visit forest, gas measurement station

12:00 departure to Tartu

Forests cover about 50% of the territory of Estonia, or around 2 million hectares, and so make out an important and dominating landscape type in the country. About 70% of Estonian forests are commercially used (circa 1.5 million hectares), with another 30% enjoying some kind of protection. Estonia is situated on a border area where the coniferous Euro-Siberian taiga opens onto a European zone of deciduous forests. There are 87 native and more than 500 introduced tree and bush species recorded. Pine, birch, spruce and aspen are the most common Estonian trees.

SA Järvelja Study and Experimental Forest District has an area of 10,618 ha, of which 6,040 ha is forest land. The deposit covers an area of 1,391 ha of forests, protection forests in the area is 1,220 ha. Breakdown of stands by dominating species: 47.3% birch, pine 20.7%, 11.9% spruce and black alder tree species grow by 6.3%.

Järvelja Primeval Forest Reserve covers 19.3 ha. It is one of the oldest protection areas in Estonia. Already in 1924, forest scientists decided to maintain this part of this intact forest area as a sample of genuine virgin forest. In addition to the highest known spruce (43.1 m, diameter 71.7 cm), silver birch (36.0 m, diameter 64 cm), pine (46.6 m, diameter 67 cm) and Eurasian aspen (40.8 m, diameter 53 cm) in Estonia, the students of the Estonian University of Life Sciences also discovered Estonia's highest known white birch (27.6 m, diameter 54 cm), grey alder (31 m, diameter 32 cm), black alder (33.3 m, diameter 63 cm) and European ash (35.2 m, diameter 60.5 cm) in Järvelja forest (Figure 1).



Figure 1. Järvelja Primeval Forest and highest spruce of Estonia.

The SMEAR-station will be established in Järvelja forest (Figure 2). It will help scientists of Estonian University of Life Sciences and University of Tartu to study which substances are emanated by scrubs, mosses and trees; how these volatilize; and how this transpires during days,

weeks or years. The station is quite a unique scientific project for North-Europe. Among other things, information provided by the Järvelja mast (130 m high) may benefit the forestry sector: with insight into which kind of forest planted would yield the best results in 80 or 100 years' time.



Figure 2. The SMEAR-station in Järvelja.

Participant of the Erasmus IP were able to discuss measurements on the field site operated by the Estonian project partner (Leader Prof. Niinemets). Smaller towers (about 15 m of height) allowed insight into the structure of forest canopy. The main objective was the discussion of the currently measured atmospheric constituents as well as plant photosynthesis.