

# Transnational Access Report

## 1. General Information

Project Acronym (ID):	ALPFLORoot
Project Title	Quantification of the effects of root architecture of Alpine vegetation on soil stabilization
Name of Group Leader	Csilla Hudek
Name of organization	University of Torino

## 2. Duration of access

Begin of the project	End of the project
16/11/2015	27/11/2015

## 3. Project summary (max. 250 words)

Vegetation cover is vital for soil protection on mountain slopes and in reducing soil erosion, landslides and debris flows. Roots are particularly important when the aboveground vegetation is absent. Moraine sites are notoriously unstable and only a number of plant species can survive under these conditions. Plant effectiveness in soil stabilization depends mainly on the resistance of the roots to tension along with root density, orientation and distribution in the soil. However few studies have focused on the significance of the root system due to the difficulties in assessing roots in natural soil systems; little research exist on alpine plant species above the timber line.

The objective of the present ALPFLORoot project is to determine the morphological and functional traits of roots of the most dominant moraine species in natural soil systems by using state of the art phenotyping facilities at the University of Nottingham to determine the plants efficiency in soil stabilization and to provide unique visual data on a wide variety of natural moraine species root architecture under natural soil conditions.

## 4. Main achievements (max. 250 words)

It was the first occasion DISAFA at the University of Torino had access to results gained from the state-of-the-art MicroCT root phenotyping equipment of Nottingham University and establishes a new, successful working relationship between the two Universities. With the MicroCT scanner, we were able to visualize the 3D root architecture, gain data on the exact position, orientation and elongation of the entire root system of the studied alpine species under natural soil conditions. This allowed us to visualize the root-soil contact and to obtain data on intact root systems without damaging the roots.

We have identified the differences in root architecture between the studied species. Quantifying the differences between root architectures and root traits (root length, diameter, count, biomass and depth) is still an ongoing process.