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**STSM title:** Development of Hydro-Physical Parameters and Soil Structure of Induced Biological Soil Crusts (IBSCs)

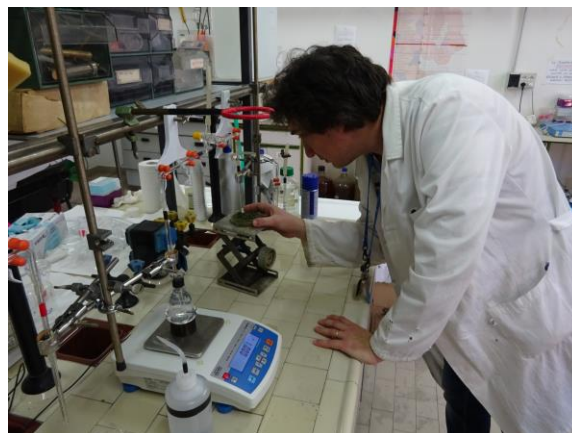
**STSM Host scientist:** Prof. Dr. Roberto De Philippis and Dr. Federico Rossi, Department of Agrifood Production and Environmental Sciences (DISPAA), Florence University, Florence, Italy

**Five Keywords:** Biological soil crusts, desertification, ecosystem rehabilitation, soil stabilization, hydrophobicity

**Topic summary:** This STSM aims at exploring the potential of IBSCs as tools in ecosystem restoration and the combat of desertification. Therefore, it is important to have detailed knowledge about the development of their hydro-physical characteristics, especially during the initial growth phase, in order to predict their effect on soil properties.

**Methods summary:** We installed a mini tension infiltrometer at the host institution to monitor the development of hydrophobicity during the growth of induced BSCs. Further, we are currently developing a method for the determination of crust stability (breaking point) in the lab, which is particularly suited for small and very fragile aggregates of the young IBSCs.

**Results and implications for restoration:** One main finding of this STSM was that the stability of IBSCs after 3 weeks of growth in a Petri dish under controlled lab conditions is not sufficient to be determined with a micro-penetrometer or breaking point test. Therefore, we are planning to characterize the crust stability after 12 weeks of growth at the final stage of currently ongoing experiments. Because these experiments have only recently started, we do not have the final results yet, but we are expecting to generate important new insights for the application of this tool in restoration practice.



Dr. Rossi operating the infiltrometer and measuring the sorptivity of an IBSC in the lab