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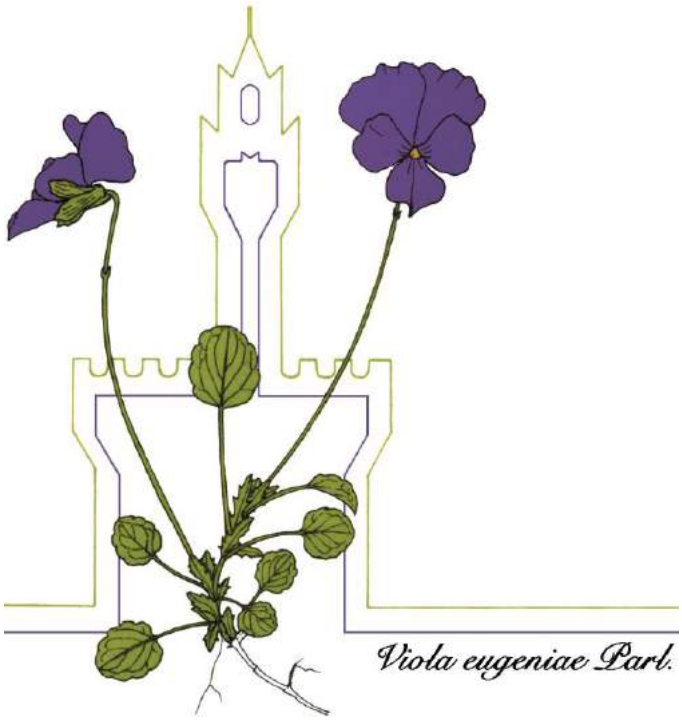

ABSTRACTS

KEYNOTE LECTURES, COMMUNICATIONS, POSTERS

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6 = Screening of mosses for potential application in urban ecosystems

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Mosses can survive in unfavorable environmental conditions thanks to their ecological needs in terms of growing substrates, low amount of water and nutrients required, ability to absorb liquids up to 20 times their weight and vegetative desiccation tolerance. Although they were considered main buildings' enemy, recent studies (1, 2) highlighted their potential use to cover and protect buildings and other urban surfaces.
Several studies are needed to clarify this point and to understand the most performing species able to sustain stressful conditions as the ones given by building surfaces of cities (e.g., wind, solar radiation, air pollution, etc.). Therefore, the main aim of this work is to select the best species able to survive to severe desiccation, and to grow on main building surfaces.
Several *taxa* were collected from different substrata and in different environmental conditions (e.g., from soil to plaster, from low to high water availability, from shadow to full sunlight): *Barbula unguiculata* Hedw., *Brachythecium salebrosum* (Hoffm. ex F. Weber & D. Mohr) Schimp., *Hypnum jutlandicum* Holmen & Warncke, *Isothecium myosuroides* Brid., *I. alopecuroides* (Lam. ex Dubois) Isov., and *Rhynchostegium confertum* (Dicks.) Schimp. At the end of the screening phase, *B. unguiculata* was the species chosen for subsequent growing experiment.
A mixture of gametophytes of *B. unguiculata* and deionized water was placed on different materials used as vertical or horizontal growing support: lime plaster or cement plaster, bricks, slate, quartzite and irrigation felt. Half of them were covered with cheese cloth, 8 replicates each growing surface (covered or uncovered).
Gametophytes mixture was incubated in a growth chamber at 18±2°C, 20 μM/m²s light intensity, 60% of relative humidity, both on horizontal and vertical support. Mixture was daily hydrated by spraying 6,5 ml of water each spot and submitting them to weekly dehydration of two days.
After two months of incubation new biomass was produced. The first results shown that the growing support is important for physical but not chemical characteristics because of its high-water retention and homogeneous water distribution ability.
This interdisciplinary study between plant biology and architecture provide a more comprehensive way to identify new low-cost materials for greening urban surfaces.

1) Kaufman, M.A. (2016) A Feasibility Growth Study of Native Mosses Associated with Self-Sustaining Flora on Vertical Infrastructure. In: International Conference on Transportation and Development 2016: Projects and Practices for Prosperity - Proceedings of the 2016 International Conference on Transportation and Development, 683–95
2) Park, J.-E., and H. Murase (2008) Evapotranspiration Efficiency of Sunagoke Moss Mat for the Wall Greening on the Building. In American Society of Agricultural and Biological Engineers Annual International Meeting 2008, ASABE, 6, 3612–21