GREEN ROOFS IMPLEMENTATION AND ASSESSMENT IN COASTAL AREAS

Silva, V.[1,2], Mucha, A. P.[1], Arenas, F.[1], Almeida, C. M.[1], Palha, P.[3], Calheiros, C. S. C.[1]

[1]CIIMAR - Interdisciplinary Centre of Marine and Environmental Research of the University of Porto, Terminal de Cruzeiros do Porto de Leixões, Avenida General Norton de Matos, S/N, 4450-208 Matosinhos, Portugal
[2]FCUP – Faculdade de ciências da Universidade do Porto, Rua do campo alegre S/N, 4169-007 Porto, Portugal
[3]Neoturf - Rua das Amoreiras, 155, 4460-227 Senhora da Hora, Portugal

INTRODUCTION

Green roofs, as nature based solutions (NBS), play important roles concerning the ecosystem services and functions that provide in urban context. Their implementation depends on geographic location, climate, construction detail and components selected. Herein, our research is developed taking those variables in consideration.

The main focus of the present study is to assess the establishment of three autochthonous drought-tolerant plants in extensive pilot green roof systems. The systems, implemented on a building in the northern Portuguese coast line, are subject to extreme climate events. They are characterized by a thin substrate layer and low maintenance and are designed with plants (Fig.1.1), commercial substrate (Landlab (Fig.1.2)), a filter membrane (Fig.1.3) and a cork agglomerate (Green Urban Living board (Fig.1.4)) working as a water retention and drainage layer.

OBJECTIVES

- Performance evaluation of autochthonous plants under the selected substrate and conditions of the coast line;
- Characterization of taxonomic groups of substrate biota;
- Analysis of water runoff and infer about its possible reuse.

APPROACH

❖Microbiota analysis through molecular biology tools;

❖Microclimate and thermal variation assessment through sensors;

❖Water runoff evaluation through chemical and physicochemical parameters;

Fig.1 Green roof pilot systems components.

❖Survey of plant performance and survival rate of plant monocultures and polyculture:

Corema álbum (L.) D. Don | *Helichrysum italicum* subsp. *picardi* | *Ammophila arenaria* subsp. *arundinacea*

❖ Soil biota characterization;

Fig.2 Example of biota found in the pilot green roof systems.

FINAL CONSIDERATIONS

Since green roofs are a combination of biotic and abiotic factors interacting with the surrounding environment, it's important to evaluate green roofs succession over time. Herein, the proper plant selection is a key factor. Hereupon, we intent to gather valuable information regarding our selected components under the extreme conditions of the coast line. However, more research is needed to select suitable constituents for each geographical location. It will allow to extend the life of green roofs and encourage the application of green roofs worldwide.

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