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P-095 - ENDOPHYTIC BACTERIA FROM AROMATIC PLANTS AND THEIR POTENTIAL FOR BIOINOCULATION ON GREEN ROOFS VEGETATION

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Background

Green roofs are a type of multilayer construction that uses vegetation on top of buildings. In the last decade, their use has become more frequent due to the environmental advantages they offer in impervious urban areas, regarding stormwater retention, removal of atmospheric pollutants, attenuation of the urban heat island effect, among others. Selection of vegetation able to growth on the harsh environment of a rooftop is of major importance for the successful establishment of a green roof. The use of plant growth promoting bacteria (PGPB) on green roofs is a sustainable alternative to aid plant establishment and growth.

Method

Endophytic bacteria were isolated from *Lavandula dentata* L. plants collected at random from "Cantinho das Aromáticas". These isolates were characterized for their *in vitro* growth promoting traits. Two green roofs pilot systems were further established, comprising inoculation with a selected mixture of four isolated endophytic bacteria. Four different aromatic plant species (*Santolina chamaecyparissus*, *Santolina Lemon Queen*, *Armeria maritima*, *Festuca glauca*) and a succulent species (*Sempervivum tectorum*) were used for experiments. Plant development is being followed.

Results & Conclusions

A total of 56 culturable endophytic bacteria were isolated from the plant tissues of *L. dentata* plants corresponding to 38 different bacterial strains. All endophytic strains exhibit growth promoting traits and 21% were found to produce more than 40 mg/L of IAA. The strains *Pseudomonas graminis* (LR 1-9), *P. congelans* (LS 2-1) and *Bacillus aryabhatai* (LS 1-2) were amongst those that exhibited higher IAA levels and were selected for inoculation. *Paenibacillus kribbensis* (LR 2-11) was selected due to its antifungal activity. The vegetation used presented in general successful establishment and growth. The potential of bacterial endophytes as bioinoculants in green roofs vegetation is under analysis.

References & Acknowledgments

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Keywords: green roofs, aromatic plants, endophytic bacteria, plant growth promoting bacteria