

Research topic: Environmental assessment through the Emission (BVOCs) Factor of soilless crops in RTA (RoofTop Agriculture)

Research lines: Modular ventilation system integrated with urban food production in educational buildings (MOVE4EDU); Sustainable Food Systems (FoodE)

Research group: Sostenipra

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Assessment of the indoor air quality on the emissions released by plants cultivation

The implementation of green installations in existing buildings is rapidly increasing to re-shape more sustainable and livable ecosystems in the city . However, extensive greening may lead to a consistent amount of biogenic volatile organic compounds (BVOCs) that can affect the air quality of indoor environments. Since few studies on indoor BVOC levels have been conducted and poor data is provided by official EU guidelines there is a **call for data generation for the environmental performance assessment of indoor spaces**.

The objective of the research is therefore the quali-quantitative determination of such emissions that in the case will be performed in a rooftop agriculture system (RTA). The student will be in charge of the activities related with both the volatiles collection and the post-collection analysis utilizing and comparing two eligible techniques (solvent and thermal extraction). Results will be finally exploited for the calculation of the BVOC **emission factor** related to the investigated crop.

Main aim: BVOC levels monitoring in RTA to assess the safety of indoor spaces

MAIN TASKS:

- 1) Literature review on the emissions related with the species cultivated and on updated works related with indoor plants emissions
- 2) Carry out the field work (experiment set-up, crop maintenance, emission sampling) and flank the post-sampling activities (sample extraction and GC-MS analysis)
- 3) Process and analyze data to:
 - I. Compare quantified BVOCs levels with reference EU-LCI values
 - II. Provide their corresponding emission factors
 - III. Compare the results obtained with the two analytical techniques (solvent vs thermal extraction).
- 4) Elaborate a scientific article

