An evaluation of ecosystem services delivered by urban micro-farms: the research project SEMOIRS [2018-2020]

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Introduction

- There is a growing interest for urban agriculture and its amenities,
- Among the various forms of urban agriculture, urban micro-farms (Daniel 2017; Chang and Morel 2018) received little attention,
- Few studies focus on ecosystem services delivered by urban agriculture (Clarke and Jenerette 2015; Langemeyer et al. 2017; Lin et al. 2015),
- No study has yet directly looked at urban micro-farms and ecosystem services.

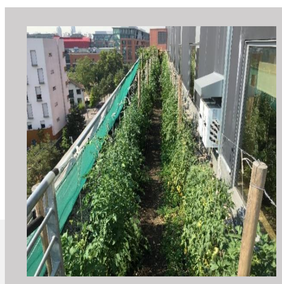
Urban micro-farms?

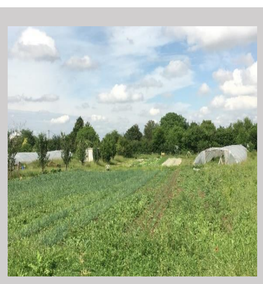
Urban micro-farms (Daniel 2017; Chang and Morel 2018) are :

- small scale production units (<1.5 ha per farm),
- based on organic production,
- multi-functional spaces that provide a diversity of activities (e.g., recreational, educational, or cultural)

Aims of the project

- Define an adapted framework for the **quantitative assessment of ecosystem services ;**
- Test the **hypothesis that soil organic matter plays a major role in ecosystem services delivery ;**
- Propose how to **optimize ecosystem services delivery.**






Methodology

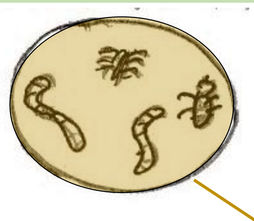
- Investigations during two years on six micro farms in the Paris Metropolitan Area
- Measurements on micro-farms will involve a **participatory research** (by stakeholders) in parallel to **direct measurements** by researchers.
- The study will last 2 years with continuous and/or one-time measurements.
- Study scales: soil, micro-farms and neighbourhood

Main characteristics of the six micro-farms	
Age (years)	2 to 12
Importance of food production (for the farmer)	Minimal to essential
Agricultural land (m^2)	80 to 15 000
Type of organisation	Association
Presence of volunteers to help for food production	In all
Sale of the produce	In all (except one)
Pedagogical activity	In all (except one)

Ecosystem services studied

Biodiversity

- Micro-organisms (bacteria and fungi), mesofauna (Collembola and Acaria), macrofauna (earthworms...): abundance, diversity, activity
- Flora (cultivated and spontaneous)
- Pollinators

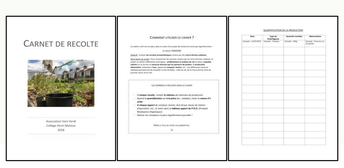


Regulation

- Soil fertility (nutrients, soil structure)
- Water infiltration and storage, water quality)
- Urban waste recycling
- Local climate (T°)
- Global climate (C storage)

Food production

- Quantity
- Quality (ETM, HAP)



Cultural and social services

- Vision, perception and contribution for users (well-being, accessibility, education, aestheticism etc.)
- Representation of city stakeholders (property value, urban planning document, co-visibility)

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