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

Baptiste Grard<sup>1</sup>, Sophie Joimel<sup>1</sup>, Laure Vieublé<sup>1</sup>, Giulia Giache<sup>2</sup>, Anne-Cécile Daniel<sup>2</sup>, Claire-Sophie Haudin<sup>1</sup>, Apolline Auclerc<sup>4</sup>, Sabine Houot<sup>1</sup>, Antoine Lagneau<sup>3</sup>, Geoffroy Séré<sup>4</sup>, Nastaran Manouchehri<sup>5</sup>, Valérie Camel<sup>5</sup>, Jean-Noël Consalès<sup>6</sup>, Patrick Stella<sup>4</sup>, Christine Aubry<sup>4</sup>, Claire Chenu<sup>1</sup>

(1) UMR ECOSYS, INRA-AgroParisTech, Université Paris-Saclay, 78850 Thiverval-Grignon, France ; (2) Exp'AU, AgroParisTech, 16 rue Claude Bernard, 75231 Paris Cedex 05 ; (3) Agence Régionale de la Biodiversité, département de l'Institut d'Aménagement et d'Urbanisme, 75 015 Paris ; (4) Laboratoire Sols et Environnement, UMR 1120, INRA, F-54518 Vandoeuvre-lès-Nancy, France; (5) UMR Ingénierie Procédés Aliments, AgroParisTech-INRA, Université Paris-Saclay, 91300 Massy, France; (6) Aix Marseille Univ, CNRS, TELEMME, MMSH - 5, rue du Château de l'Horloge - BP 647 - 13094 Aix-en-Provence Cedex 2 and (7) UMR SAD-APT, INRA, AgroParisTech, Université Paris-Saclay, 75005, Paris, France.



## 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

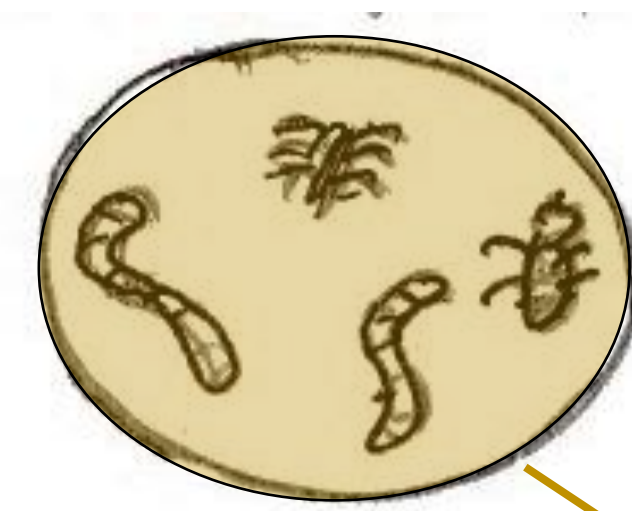
### Main characteristics of the six micro-farms

Age (years)	2 to 12
Importance of food production (for the farmer)	Minimal to essential
Agricultural land (m <sup>2</sup> )	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

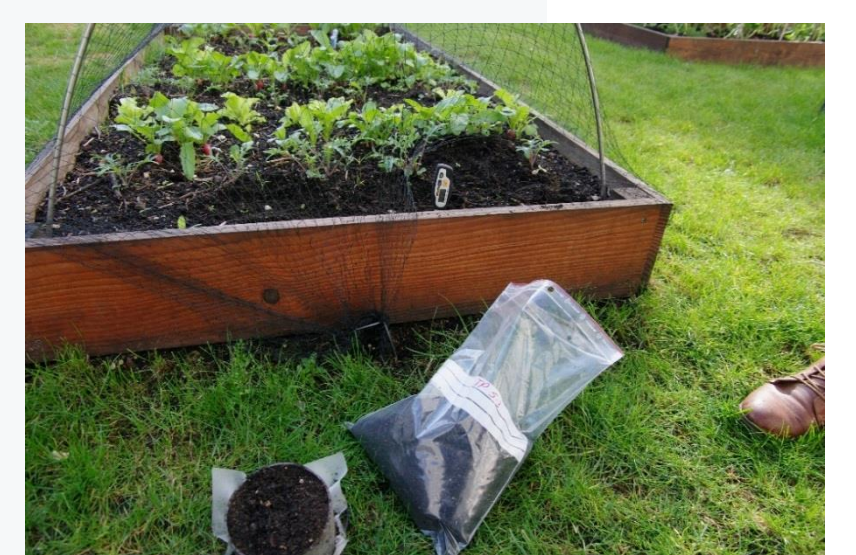
### Biodiversity

- 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)



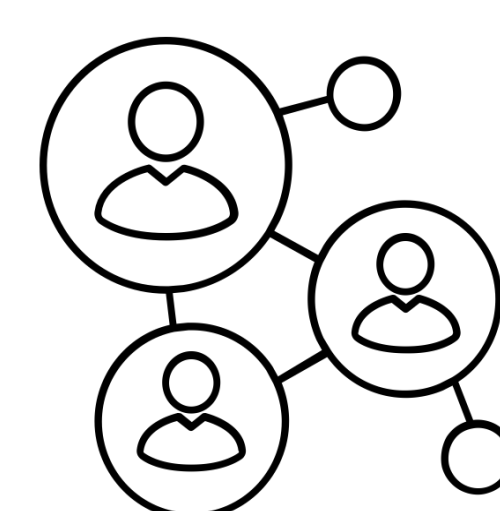
### Food production

- 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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