

Agricultural perspectives in the Metropolitan Area of Barcelona

ICTA - Metropolitan Science-Practitioners Exchange

Results report

22-12-2022

The poster is divided into two main color sections: a light beige left side and a dark blue right side. The left side features the word 'EVENTS' in blue, followed by the title 'AGRICULTURAL PERSPECTIVES IN THE METROPOLITAN AREA OF BARCELONA' in large, bold, black letters. Below the title is the subtitle 'Metropolitan Science Practitioners Exchange' and the organizer 'ORGANIZER: URBAG'. The right side, in blue, displays the date and time 'NOV 25 2022 9:30AM-2PM', the location 'sala antoni rosell z/023', and the series name 'ICTA WORKSHOPS 2022' with three white chevrons pointing right. At the bottom of the poster is a photograph of a lush green urban garden with various plants and raised beds. Logos for ICTA, URBAG, and the Universitat de Barcelona are visible in the bottom left and right corners of the photo.

1. Background

In the Metropolitan Area of Barcelona (AMB) we observe two contradictory developments in relation to urban agriculture that reflect a current global trend: while urban horticulture is booming and has the support of municipal actions, in recent decades the agricultural surface has been reduced from 20% to 8-9% of the AMB. It is important to understand the constraints and obstacles that urban agriculture has faced so that new initiatives that encourage local food production can be successful. The increase in urban agriculture would constitute a nature-based solution to various societal challenges, especially in the context of global climate change, heat-related events, and improved food security. However, there are also trade-offs that need to be assessed, for example the environmental and social impacts due to increased needs for land, water and fertilizers. What is the way forward in relation to urban agriculture in the AMB? This was the general question we addressed during the ICTA - Metropolitan Science-Practitioners Exchange workshop with 23 stakeholders on November 4, 2022. More specifically, the workshop, which brought together a wide variety of stakeholders in urban agriculture, including the sector private, government bodies at different scales, NGOs and academia, addressed the following two questions: (a) What are the desired and feasible future scenarios for urban agriculture in the AMB? And, (b) What are the ways to alter its decline and overcome the current obstacles in order to increase urban agriculture?

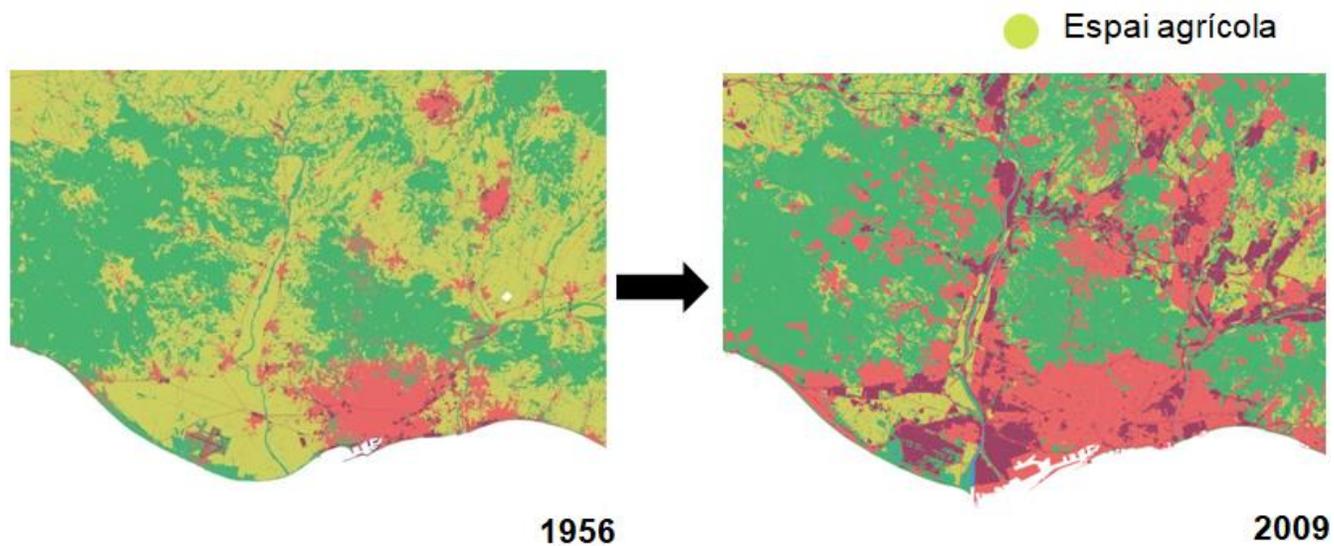


Fig. 1: Changes in the agricultural area in the Metropolitan Area of Barcelona, 1956-2009

2. Workshop introduction

The workshop began with a series of presentations on the current state of urban and peri-urban agriculture from different perspectives.

Johannes Langemeyer, a researcher at ICTA-UAB, presented the results of a study that evaluated the decline of urban agriculture in the last decade and the corresponding drivers of change (see Fig. 1). Langemeyer highlighted that the factors of change are multifaceted and range from the modernization of agricultural practices, through the uncertainty of economic investments, to the lack of political frameworks that preserve agricultural land.

Annalisa Giacolo, a member of the AMB's Urban Master Plan (PDU) development team, highlights the dependence on food imports and the consequent vulnerability of the Metropolitan Area. She stresses the need to protect agricultural production areas, but also highlights the need to strengthen local supply chains that allow for the marketing of local products and, supposedly, raise awareness for the production of local and healthy food.

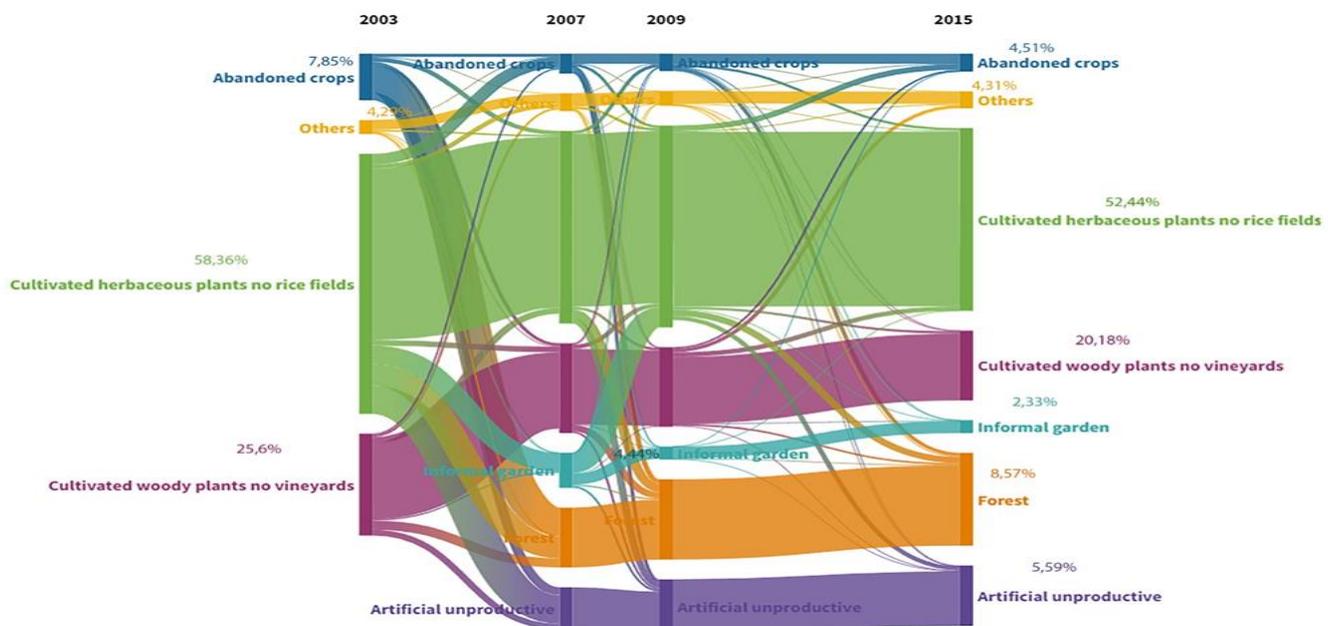


Fig. 2: Changes in agricultural area in the Metropolitan Area of Barcelona, 2003-2015.

Montse Lligadas, Coordinator of the Territorial Area of the Unió de Pagesos, highlighted the difficulties for professional agriculture related to the lack of investment (by municipalities) and territorial fragmentation (due to built infrastructures, such as roads) and the partial incompatibility between professional and recreational agricultural activities, especially in relation to issues related to irrigation, since non-professional gardeners often take advantage of the institutions established around the distribution of water, without respecting their rules.

Gara Villalba, UAB professor and ERC fellow at ICTA-UAB, recalled the need for a more holistic understanding of the metabolism of urban agriculture. Providing data from recent studies carried out within the framework of the URBAG project, she estimates the use of fertilizers (N) by agricultural production at 174 tons per year for the AMB, while estimating an emission of almost 700,000 equivalent tons of CO₂. According to her, this should be considered in the context of potential emission reductions elsewhere and the high potential for nutrient recycling in the AMB.

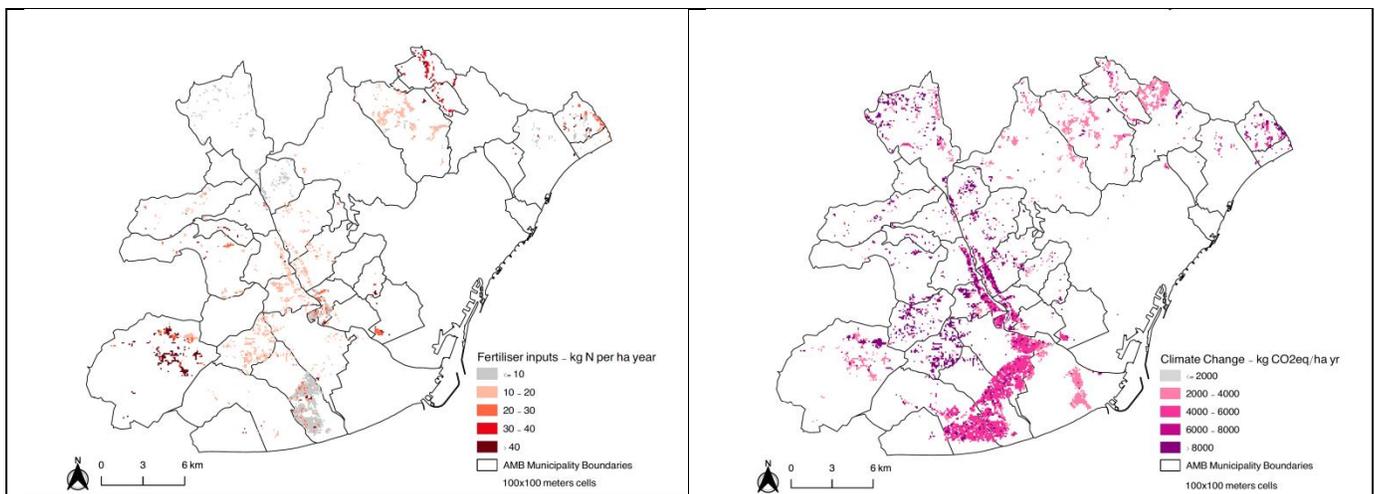


Fig. 3: Use of fertilizer and impact of climate change by agriculture in the AMB (Mendoza Beltran et al., 2022).

3. Workshop results

The participatory workshop has been carried out in four groups and has been divided into two separate exercises. The first exercise aimed to identify desired and feasible future scenarios for urban agriculture in the Barcelona Metropolitan Area and consisted of a participatory and deliberative weighting exercise using the “pebble distribution method”. The second exercise sought to identify ways to alter the decline and increase urban agriculture; To this end, current obstacles and strategies to overcome them were discussed.

3.1. Desired scenarios for urban agriculture in the AMB

The desired future of urban agriculture in the AMB was discussed and evaluated along a list of criteria that this future agriculture had to meet, and which are listed and explained in the following table 1.

| Criteria | Explanation |
|--|---|
| Regulation of local temperatures | Regulation of microclimatic conditions during heat episodes |
| Flooding, runoff and soil erosion mitigation | Increased water catchment, reduction of erosive effects on the soil and support for the sewer system |
| Improvement of air quality | Decontamination and reduction of pollution in the city |
| Self-sufficiency of food and provision of resources | Increase of the production of local food, medicinal resources and aromatic plants. |
| Provision of spaces for recreation | Areas for the development of cultural and recreational experiences, related to leisure and entertainment |
| Opportunities for social cohesion and placemaking | Meeting points where residents and neighbors can gather and interact, thus promoting the creation of social ties and commitment to local spaces. |
| Opportunities for nature connection and environmental education | Spaces that promote the affinity with natural environments and incentivize environmental awareness |
| Improvement of landscape aesthetics | Changes in the urban and environmental scenery that provide enjoyment to residents. |
| Maintenance of biocultural heritage | Preservation of local and historic knowledge related to agricultural practices. |
| Biodiversity support | Enhancement of functional biodiversity and species diversity. |
| Ecological connectivity | Provision of ecological corridors that allow the mobility of species across different areas. |
| Climate change mitigation | Overall reduction of greenhouse gas emissions related to the production of food consumed in the AMB (either by reducing food imports to the AMB or by improving agricultural practices within the AMB). |
| Efficient use of water | Improvements in irrigation and water distribution systems, as well as considerations on the use of water when selecting and rotating crops |
| Improvements in nutrient use | Prevention of global depletion of non-renewable nutrients (such as phosphorus and nitrogen) in agricultural activities. |

Table 1: Criteria for future urban agriculture in the AMB.

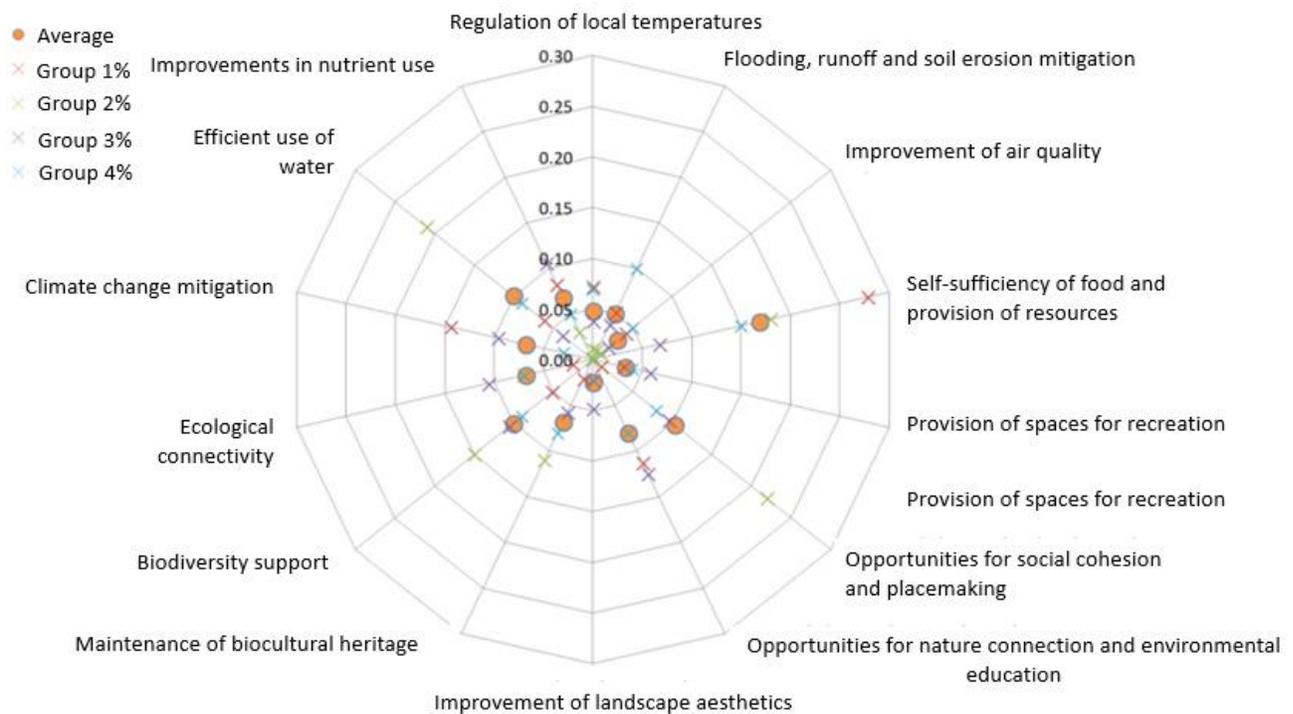


Fig. 4: Weighting of the criteria for future urban agriculture in the AMB.

3.2. Strategies to promote urban agriculture in the AMB

The obstacles of urban agriculture in the AMB and the strategies to overcome them were discussed in relation to sociopolitical, regulatory, economic, as well as infrastructural and technological aspects.

(a) Obstacles

Sociopolitical

- Time
- Reduction of prevented in agricultural places outside the city
- Resist change
- Globalization: Possibility of getting what you want in a cheap supermarket but from far away; devaluation, local production
- Education: the curriculum does not give enough importance to the issue of our dependence on the non-human world, it is not easy to enter the educational system as a volunteer giving workshops, etc.
- Lack of information, awareness of the population
- Ignorance of nature-society processes (temporality, availability, etc.)
- Contempt for agricultural work "study to not be a farmer"

- Lack of labor, generational change, fair harvester conditions
- Weight of the Green Revolution in public policies (subsidies, etc.) to the detriment of agriculture (e.g. PAC)
- Regulations and laws
- Lack of political determination to make decisive decisions
- Lack of public awareness of the issue
- Political will
- Different actors with different interests

Regulatory

- Participation of actors, inclusion mechanisms in the political sector
- Geographic information (multiple layers with metadata)
- Short-term decisions
- Allow to sell urban agriculture products
- Is the use of NPK necessary for urban agriculture? But farmers face many limitations in the use of these alternative fertilizers.
- Political practices that are unaware of the territorial reality and the needs of local people.
- Priority in the legal framework
- Legal planning framework does not integrate circular agriculture
- Slow pace of regulation of alternative measures (Use of reclaimed water)
- Lack of coherence between planning figures

Economic

- Economic profitability of agriculture (which can be created in different ways)
- Economic precariousness: Needs of people to move to urban areas in search of more income, less time, ROI
- Low prices or high and "unaffordable" of local / nearby production
- Low food prices due to large-scale production
- Profitability of the soil compared to other uses
- Investments in the sector
- Tourism as the only focus of the economic model
- Economic system based on cheap / fossil energy
- Competition with other economic interests: global markets, energy production, real estate
- Uncertainty about future viability
- Economic market and economic uncertainty
- Lack of variability in economically profitable products for local production.
- Difficult competitiveness with products that come from outside the metropolitan area.

Infrastructure / Technology

- Few or precarious public services (and infrastructure) in the rural area (roads, health center, etc.) drive rural-urban migration
- Vulnerability: Technological innovations for the adaptation of small-scale agricultural systems.
- Coastal planning for coastal flood zones
- Quality fertilizers
- Land to continue agricultural projects
- Surface available
- There is no quality reclaimed water
- Technology based on non-renewable resources
- Lack of investment
- Irrigation infrastructure, obsolete drainage

(b) Strategies

Sociopolitical

- Take part, get involved, willingness to change
- Slower society (need for calm space)
- Change in the way of producing and in the crops
- Training, techniques, schools, management
- Prioritization of agriculture at the political, economic and social level
- Education: more organic gardens and links with public school educators
- Manpower: regulatory framework with better conditions for agricultural futures
- Agricultural re-valuation: social values in agricultural spaces
- Protection of the local product and more awareness
- Long-term strategies
- popular pressure
- Concrete installation projects, not so many strategies

Regulatory

- New waste collection practices, regulation of compost
- Regulatory framework: promote local production, label for local products
- New legal framework promoting agriculture
- Inter-institutional coordination

Economic

- Grants, pilot projects

- Economic investment by farmer associations and subsidies
- Value informal agriculture
- Costs incorporating emissions
- Discourage global transport
- Diversification of agricultural aid, money for the producer, not the owner
- Economic diversification of the farmer: rural tourism, organic products

Infraestructura / Tecnología

- New architecture/vision integrating food, water, electricity, and social functions
- Share more knowledge
- Training and dissemination
- Infrastructure: Improvement of facilities in rural areas.
- Use of compost at the regional level
- Circularity solutions
- Recirculation and Regeneration of water
- Promote agroecology
- Public investment



References

- Beltran, A. M., Padró, R., La Rota-Aguilera, M. J., Marull, J., Eckelman, M. J., Cirera, J., ... & Villalba, G. (2023). Displaying geographic variability of peri-urban agriculture environmental impacts in the Metropolitan Area of Barcelona: A regionalized life cycle assessment. *Science of the Total Environment*, 858, 159519.
- Gervasi, G. (2022) Drivers of agricultural losses in the Metropolitan Area of Barcelona: A temporal, spatial, and qualitative approach. Master thesis. Universitat Autònoma de Barcelona.



This project has received funding from the EU Horizon2020 ERC consolidator grant (818002-URBAG): Integrated System Analysis of Urban Vegetation and Agriculture (www.urbag.eu)