BOOK OF ABSTRACTS

FIRST URBAN AGRICULTURE INNOVATIONS DAYS

URB Agr'inn DAYS

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19–21 MAY 2025
LIEGE, BELGIUM

RESOURCE-SMART FARMING | SUSTAINABLE PROFITABILITY | INNOVATIVE UA GOVERNANCE | RESILIENT TERRITORIAL POLITICS | COLLABORATIVE ECOSYSTEM

Organized by
IIS WASABI 2.0

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URBAgr'Inn DAYS

ABSTRACTS

RESOURCE SMART FARMING

Innovative solutions for optimizing resource use in urban food production

SUSTAINABLE PROFITABILITY

Ensuring economic viability while promoting environmental sustainability

INNOVATIVE UA GOVERNANCE

New governance models to scale urban farming

RESILIENT TERRITORIAL PLANNING

Fostering urban resilience through strategic agricultural integration in territorial planning

COLLABORATIVE ECOSYSTEMS

Discover the role of living labs and clusters in fostering innovation and collaboration

Introduction to the First Urban agriculture innovation days

Prof. M. Haïssam Jijakli

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It is our great pleasure to welcome you to the 1st urban agriculture innovation days, the Urbagr'inn days. These days are organized and host by the University of Liège and more specificity by the Center of research of Urban agriculture from the Faculty of Gembloux Agro-Bio Tech. The event is held in Liège, Belgium from 19 to 21 May 2025.

Innovation as a Cornerstone of Urban Agriculture

Innovation has always been a driving force in the evolution of agriculture—from the earliest domestication of plants and animals to the transformative leaps of the 20th century. Rooted in observation, experimentation, and adaptation, innovation encompasses new ideas, methods, technologies, services, and systems that add value and catalyze change. While mechanization and chemical inputs revolutionized productivity in conventional agriculture, they also triggered far-reaching environmental and social challenges. Today, innovation in agriculture is increasingly aligned with the principles of sustainability, addressing not only productivity, but also equity, resilience, and ecological responsibility. Within this context, urban agriculture emerges as a fertile ground for innovation. Confronted with spatial, environmental, and social constraints, urban agriculture invites creative solutions that transcend traditional farming paradigms. It fosters new models of food production, distribution, and governance that are closer to citizens and more responsive to urban realities. Whether through technological advances, circular practices, or community-driven approaches, innovation in urban agriculture is not only about growing food in cities—it is about reimagining the future of food systems for a more sustainable and inclusive world.

Five Axes of Innovation for Sustainable Urban Agriculture

This congress is structured around five key themes that reflect the diversity and richness of innovation in urban agriculture. The **first theme** explores resource-smart farming, highlighting technologies and practices that optimize water, energy, and nutrient use through circular and symbiotic approaches. The **second theme** addresses collaborative strategies for sustainable profitability, focusing on the socio-economic contributions and trade-offs of urban agriculture in rapidly urbanizing contexts. The **third theme** investigates territorial integration, examining how urban agriculture can enhance resilience through strategic planning, policy instruments, and reconnection between urban and rural systems.

The **fourth theme** focuses on governance and policy innovation, showcasing supportive frameworks, cross-sectoral collaboration, and institutional mechanisms that embed urban agriculture in public agendas. Finally, the **fifth theme** highlights collaborative ecosystems, such as clusters and living labs, as platforms for co-creation, experimentation, and systemic innovation across disciplines and sectors. Together, these five themes offer a holistic vision of urban agriculture as a driver of sustainable, inclusive, and forward-looking urban food systems.

A Dynamic and International Forum for Exchange

This congress brings together 112 participants from across Europe, the Americas, and Africa, reflecting the truly international dimension of innovation in urban agriculture. Of these, 56% represent universities, colleges, and research institutions, while 14% come from the private sector, 5% from NGOs, and 25% from public organizations, including cities, federations, and governmental bodies. The program is designed to foster interaction and knowledge exchange through a rich and diverse format: 8 keynote speakers and 23 oral presenters will share cutting-edge insights, complemented by interactive workshops and roundtables embedded in each thematic session. A dedicated poster session features 31 contributions, further enriching the dialogue. To connect theory with practice, participants will also take part in a guided visit to the WASABI platform at Gembloux Agro-Bio Tech, as well as thematic tours of urban and peri-urban farms across Wallonia. This dynamic format aims to spark meaningful exchanges between research, practice, and policy, and to strengthen collaborative pathways toward sustainable urban food futures.

Towards Shared Futures in Urban Agriculture

As urban agriculture continues to evolve at the crossroads of science, policy, and practice, this congress offers a unique opportunity to reflect collectively on its potential, its limits, and the innovations that will shape its future. By bringing together diverse actors and perspectives, we aim not only to share knowledge but to co-construct solutions that respond to global challenges while being rooted in local realities. We hope this event will inspire new ideas, foster lasting collaborations, and contribute meaningfully to the transition toward resilient, inclusive, and sustainable urban food systems.

Resource smart farming

by Veronica Arcas Pilz & M. Haïssam Jijakli

Urban agriculture, the practice of cultivating, processing, and distributing food within city limits, has become a vital response to the challenges of modern urbanization. With rapid population growth and increasing environmental concerns, cities are exploring innovative ways to ensure food security, reduce carbon footprints, and reconnect communities with the origins of their food. From rooftop gardens and vertical farms to community plots and hydroponic systems, urban agriculture is transforming urban landscapes. However, it is important that urban agriculture prioritizes sustainable and resilient innovations to tackle the pressing global challenges outlined by Johan Rockström's nine planetary boundaries. Technologies such as vertical farming, aquaponics, and closed-loop systems should be designed to minimize environmental impact. Embracing renewable energy sources, circular economy principles, and smart urban planning can help reduce greenhouse gas emissions, and protect biodiversity. Urban agriculture techniques should also reduce freshwater consumption through rainwater harvesting, efficient irrigation methods like drip systems and hydroponics, and greywater recycling. Use and transformation of organic waste should be encourage to create circular nutrient systems.

During the session, the symbiosis with urban ecosystems will be also explored to obtain resources for urban agriculture. Accordingly, this symbiotic strategy emulates natural flows, recovering nutrients, materials, heat and energy from being wasted to act as local supplies for urbans agriculture. With this principle, urban agriculture could act as a link to increase urban circularity and optimize waste management strategies, as well as avoid increasing the environmental burden of local agricultural production with the demand and use of external or imported resources. This session aims to engage researchers and key societal actors in a collaborative dialogue to explore the uses of city resources and scale up successful models.

Within this session existing methodologies will be introduced for the determination of material flows and environmental footprints, with existing case studies.

WASABI Platform: Advancing Circular Urban Agriculture at Gembloux Agro-Bio Tech

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Urban agriculture, which encompasses the cultivation, processing, and distribution of food within city limits, has emerged as a critical response to the challenges of rapid urbanization and environmental degradation. To ensure its sustainability, urban agriculture must incorporate resilient innovations aligned with Johan Rockström's nine planetary boundaries. Integrating renewable energy, efficient water management, and organic waste recycling as circular economy principles, is essential to minimize environmental impacts and enhance urban food systems. In that context, the WASABI Platfom (Walloon Platform for Innovative Systems in Agriculture and Urban Biodiversity), situated on a five-hectare site at Gembloux Agro-Bio Tech, exemplifies a pioneering approach to sustainable urban agriculture through the integration of circular economy principles. This platform serves as a living laboratory, showcasing diverse production systems designed to optimize resource efficiency, minimize waste, and promote ecological resilience.

A central feature of WASABI is the Serr'ure greenhouse architecturally engineered to enhance passive energy conservation. Build on the rooftop of a university building, its unique design reduces energy demand of around 15 It is expected in the near future to connect the Serr'ure greenhouse to fatal energy of the building, thereby annulling reliance on external energy inputs for the global functioning of the greenhouse, including climate control. The WASABI platform integrates also agrivoltaic systems to reduce environmental impact by producing decarbonized energy. For example, solar panels are installed on the Grewfarm greenhouse and across agroforestry plots, enabling the simultaneous cultivation of crops and generation of renewable electricity. This dual-use approach is studied and some promising results will be also presented.

The Sapristi and Paff Box aquaponic systems embody the essence of circularity by synergistically combining aquaculture and hydroponics. In this closed-loop system, nutrient-rich effluents from fish cultivation are repurposed to fertilize plants, which in turn purify the water before it recirculates back to the fish tanks. This method not only preserves water but also decreases (and in certain conditions eliminates) the need for synthetic fertilizers. Bioponics is also an innovative form of soilless agriculture exemplifies circularity by preserving water and recycling organic waste. We are studying the viability of using locally sourced organic materials, such as chicken manure, to create effective bioponic nutrient solutions. Until now, our results indicate that these organic inputs can yield lettuce crops comparable in quality and quantity to those produced with conventional hydroponic systems, while significantly reducing reliance on synthetic fertilizers.
Through its multidisciplinary approach, WASABI contributes to a model for urban agricultural development aimed at enhancing food security and environmental sustainability.

Uncovering circular strategies to maximize local resources

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In recent years the concept of circularity has been linked to the integration of urban agriculture, analyzing its potential to use waste material such as organic waste and quantifying its impact reduction through environmental assessments such as life cycle analysis (LCA).

The growing interest in the recovery of nutrients and materials is reflected in the increase of European and non-European projects focused on this topic (e.g. Fertilecity (www.fertilecity.com), ReNu2Farm, BINAFET, Focuse) as well as emerging businesses and start-ups (e.g. Ostara Nutrient Recovery Technologies, Vuna GmbH), also being promoted through the sustainability development goals on responsible consumption and production, striving to “do more and better with less” as well as the European Green Deal with the objective to “mobilize industries for a clean and circular economy”.

The idea of waste valorization is not new, as well as its potential to be integrated in agriculture being natural systems the principal inspiration behind circular flows. Wastes from animal husbandry have been linked to agricultural production for many years, as well as food wastes in the form of animal feed or compost. The novelty in recent years has been rather linked to urban waste valorization, targeting not only the reduction of waste itself for environmental reasons but also the use of said materials to increase local self-sufficiency. Therefore, while much work has been done on nutrient recovery from waste streams, there is still room to research its application and environmental benefit.

Within the theme of Resource-Smart Farming, the symbiosis with urban ecosystems will be explored to undercover practices that help us identify and re-use resources for urban agriculture.
This symbiotic strategy emulates natural flows, recovering nutrients, materials, heat and energy from being wasted to act as local supplies for agriculture. With this principle, urban agriculture could act as a link to increase circularity and optimize waste management strategies, as well as avoid increasing the environmental burden of local agricultural production with the demand and use of external or imported resources.

This principle not only affects potential producers in urban and peri urban areas but existing businesses that could generate byproducts of value, municipalities on waste management strategies and civil society on the social outlook on waste recovery and repurposing for crop production.

Tectum Garden: Resource-Efficient Technologies for Urban Agriculture

Pietro Tonini

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Tectum Garden is a consulting firm specialized in urban agriculture, offering both technical services and innovative products to support the design, implementation, and maintenance of green infrastructure in cities. Our core expertise lies in the efficient use of resources—water, energy, nutrients—and in our interdisciplinary capacity to adapt projects to diverse urban contexts and stakeholder needs.

This presentation aims to introduce the key projects developed by Tectum Garden, with a particular focus on the technologies employed to reduce resource consumption and the tailored approaches applied in collaboration with public institutions and private actors. The discussion will explore the flexibility of our methodologies and the capacity to integrate ecological, social, and therapeutic objectives into multifunctional urban spaces.

Three flagship projects will be presented to illustrate our strategies. Hort en el Terrat, developed in collaboration with the Ajuntament de Barcelona, is an urban horticulture initiative with a strong focus on therapeutic gardening (hortotherapy) and social inclusion. “Máquina Climática”, developed in collaboration with Barcelona Regional, is an exhibition hosted in a historic greenhouse located in Parc de la Ciutadella, Barcelona’s central urban park. The “REGREEN” project, carried out in partnership with CETAQUA, showcases our contributions to enhancing urban ecosystem services and promoting greywater reuse within the broader context of circular economy models. Through these case studies, we will demonstrate how Tectum Garden contributes to shaping more resilient, equitable, and sustainable urban environments.

Environmental impact and opportunities of vertical farming in urban areas

Leo Marcelis

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Vertical farming is a novel technology where plants are grown indoor on many stacked layers or vertical walls with LED light.

Vertical farming offers a new route that could fit future urban food systems. Vertical farming allows production of fresh vegetables in a standardized way at any place including the most urbanised regions of the world or places with extreme climate (desert, arctic).
The use of LED light and the full control of both the aboveground and belowground conditions in combination with the right cultivars, enables growers to produce products with extra added value, which appeal to the demand of consumers for safe, reliable, and tasty food.

Vertical farming is extremely sustainable with respect to water, fertilizers, pesticides and land use, but has a high usage of electricity.

In this presentation I will provide quantitative data on productivity and environmental performance, with a focus on resource use efficiency.
Based on quantitative data I will discuss the environmental impact of vegetable production in vertical farms and compare it with open-field and greenhouse production.

Agrotopia: Integrating Urban Farming and Greenhouse Horticulture

Maarten Ameye

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Agrotopia is Europe's largest rooftop greenhouse.
As a research greenhouse of Inagro, we aim to explore the integration of agriculture, industry, and (peri-) urban functions. With the reuse of urban residual heat and , we create a circular symbiosis with the environment. To also focus on optimal space usage in the city and its outskirts, the rooftop greenhouse is built on top of industrial warehouse, with the integration of a facade greenhouse.

Because of climate change, drought periods are expected to become more frequent and more severe. This poses the risk for greenhouse owners to deplete their water buffers during summer time. To avoid using non-sustainable water sources such as surface-, ground- or tap water, we need to look at alternative sources of water. However, quality and sufficient supply or storage need to be ensured.

Here, we will study the effect of local alternative water sources on yield and plant physiology during tomato cultivation. We will investigate, amongst others the use of condensate from CHP installations and run-off water from impervious surface in an urban environment (e.g. roofs, parking lots) and process water from the agrifood industry. These results will lead to new insights in how professional horticulture may be integrated in an urban environment.
Finally, we explore how we can combine vertical farming with greenhouses.

Sustainable profitability

by Jan Eelco Jansma

Although (peri-) urban agriculture (UA) has co-existed with urban life ever since the expansion of early human settlements, current UA is considered a new branch of activities strongly linked to the present urban interest in the provenance of food. Moreover, the recent urban interest in agriculture in (peri-)urban areas corresponds to the expectation that it can counterbalance the pressure on liveability and sustainability in an era of urbanisation. A growing body of evidence suggests that UA fulfils a multitude of valuable functions in the dense urban zones. Hence, UA is valued not only for its food production at local scale but also for the variety of economic, social, health and ecological benefits it provides. Moreover, food production in urban areas itself is being re-evaluated in the light of geopolitical tensions.

Today, UA encompasses a high variety of innovative practices which are continuously evolving. However, the rise of UA concomitantly evokes the question if a certain level of regional food supply is sustainable, economically viable or feasible and socially acceptable given the limited availability of land in and around cities, the limited and sub-optimal production conditions in urban areas, the lack of supportive infrastructures, the fact that peri-urban agriculture has to compete with better equipped food-producing rural areas and the competition with other functions which demand space in urban areas.

Especially in this complex situation, one cannot take a position based on priory assumptions what is efficient and what not, and what is economically viable and socially acceptable and what not. We have the responsibility to appraise if and how UA contributes to social-economic viability in the setting of rampant urbanisation. This responsibility should be borne collaboratively by businesses, policies, research, and civil society, emphasising the importance of collaboration in addressing the contribution and trade-off's of modern urban agriculture!

Session overview

During this session, we will dive deeper into the economic and social contribution of urban agriculture. Firstly, we will set the scene by providing a broad outline of urban agriculture. What are we talking about when we talk about urban agriculture? A sharp definition and typology will bring the playing field into focus. Next, three speakers will highlight the socio-economic contribution (and possible trade-off's) of urban agriculture, based on their experiences with tangible examples in The Netherlands.

Cultivating Change: urban agriculture beyond the idealism narrative

Jan Eelco Jansma

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Although (peri-) urban agriculture (UA) has co-existed with urban life ever since the expansion of early human settlements, modern UA is considered a new branch of activities strongly linked to the present urban interest in the provenance of food. Today, UA encompasses a high variety of practices which are continuously evolving.

I will use the six typologies of urban agriculture of Efua to systematize and understand the multi-faced and ever evolving nature of current urban agriculture practices.

This typology will be elaborated using tangible examples from the city of Almere, the Netherlands. However, a common understanding of the typology of urban agriculture is only a first step towards positioning the diversity of UA in the urban fabric. UA operates in a highly competitive environment given the limited availability of land in and around cities, which evokes the question if UA's position in the urban fabric is (always) economically viable or feasible, environmentally sound and socially effective.

A growing body of evidence suggests that UA fulfils a multitude of valuable functions in the urban zones. UA is valued not only for its food production at local scale but also for the variety of economic, social, health and ecological benefits it provides. Moreover, food production in urban areas itself is being re-evaluated in the light of current geopolitical tensions. Still, further and critical exploration is needed to clarify the exact direction(s) of the contribution (and unwanted side-effects) of urban agriculture in the urban zone. Against this backdrop, the Efua project appraised the contribution of UA, linking the 6 typologies to benefits (and unwanted side-effects).

Although many studies have been conducted, the appraisal by Efua highlights that few studies come with measurable benefits and quantitative approaches to assess them, as well as analysis of unwanted effects.
I will conclude that we have the responsibility to evaluate if and how UA contributes to social-economic viability in the setting of rampant urbanisation.

This responsibility should be borne collaboratively by businesses, policies, research, and civil society, emphasising the importance of collaboration in addressing the contribution and trade-off's of modern urban agriculture!

Short and ultra short food supply chains, a typology

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Introduction

In several EU member states there is a growing gap between what consumers expect and what farmers can deliver. Against this background growing food inside or close to cities, urban and peri urban agriculture, seems a good idea. Short proximity allows for different kinds of engagement between producers and consumers, for example where consumers in effect act as co-producers, such as in community supported agriculture. Or still consumers shop in supermarkets but are able to push these supermarkets into purchasing from farmers directly at more transparent prices, as in short food supply chains.

Knowledge fragmentation

Even though there are many cases of urban and peri urban agriculture / short food supply chains documented as a success, there are also many initiatives which run into problems or even do not exist anymore. Furthermore, it is not always clear to what extend the cases that are presented as successful do in fact provide a positive impact on societal goals such as biodiversity, CO2 emissions, etc. There is too little systematic research about which forms of urban and peri urban agriculture are a success, how to learn from experiences, and how to exploit their potential. Also there is too little guarantee that advisors have too little knowledge about short food supply chain, and are sufficiently self-critical and un-biased.

CORDEnet

CORDEnet is an EU funded project in which we are Connecting advisors toward a European network for consumer-producer chains. CORDEnet tries to overcome fragmentation in short food supply chain knowledge production and distribution. It is building a network of experts as well as a repository of case studies and a short food supply chain advisory guide. One of the first steps in the process to build up an online learning module is to develop a typology. Without a typology it is not possible to compare different cases, and to learn from what is different and what is in common. Without a typology it is difficult to give farmers and their advisors an overview of all possibilities and also which possibilities are likely to be successful in their particular situation. Without a typology it is more difficult for governments to make effective policies, as it is not known in advance where there is still significant potential and where the market is already saturated.

Typologies

We will start from the typology already developed in earlier projects about urban and peri urban agriculture. This typology has two dimensions, one is about the spatial location agriculture has in the urban fabric (building related, inner city, city fringe, peri-urban). The other is about the level of control that can be exercised over the production proces (open, mixed and controlled).

While this typology gives a good insight in what would be technically possible at a certain location with a particular technology, it doesn't say anything on the chances of being competitive in a particular market.

For this reason we turned to a more market driven rather than supply dominated typology. There are three dimensions we focus on. 1/ supply channel, which includes farmer based retail, farmer friendly retail, farmer friendly out of home. 2/ there are three levels of scale: farm, region, national. 3/ lastly, it is important to check who took the initiative: the consumer, an intermediary, the producer or some public party.

This typology, we argue, is comprehensive rather than partial. It includes both the new farmer based business models, as well as the existing business models who are farmer friendly. Each entry can be considered a target market with very concrete challenges to work on. This is where farmers can benefit from advisory services that are rather generic (covering many cells) or more or less specialised (aimed at certain cells). .

Our presentation will conclude by exploring two cases from the COREnet Golden Cases repository. First we present Herenboeren, a consumer initiated form of community suported agriculture in NL which operates at the national level. Then we present Groene Hart cooperatie, a farmer cooperative which developed together with a supermarket chain called Hoogvliet a farmer friendly local product assortment under private label STREEK.

Social effects of urban agriculture: expectations versus reality

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Smaller, more inner-city forms of urban agriculture or urban gardening (such as community gardening and DIY gardening, to stay with the typology presented by Dr. Jansma) is often perceived to lead to social cohesion. Also, these types of urban agriculture are generally believed to help people lead healthy and sustainable lifestyles. In this presentation I draw upon a number of studies performed in the Netherlands to unravel the extent to which these assumptions are valid.

First, I explain the difference between 'place-based' and 'interest-based' gardens, based on a study of seven Dutch gardens. I show that while gardening generally leads to social cohesion, this effect is much smaller when gardens are populated by people whose first aim is to garden – as compared to gardens that mainly try to create a better neighbourhood, in which gardening plays a smaller role.
Second, drawing upon a study on people growing and eating their own food, I show that while health and environment are considered nice side effects, they are hardly ever people's main motivation for taking up growing activities. Enjoying being outside and the joy of producing one's own food are much more important drivers.
Third, I add to these findings a study in which we compare Dutch and Czech gardeners and see that their motivations and actual gardening activities are not so far apart – even though urban gardening is often framed rather differently in both contexts (i.e. as innovative versus something from the past).

Taken together these studies show that despite urban agriculture in the western context often being framed as an activity that is taken up for one or more altruistic reasons or motivations beyond the direct here and now (showing a 'higher morality'), in the end most gardeners simply enjoy gardening (for various, intertwined reasons). In other words, most gardeners are first of all driven by mundane reasons.

Nevertheless, it is important to highlight that this does not devalue the activity of gardening: it remains an activity that improves both physical and mental health, and creates a greener urban environment. Besides, the finding that gardening is first of all enjoyable, will increase its sustainability as an activity performed by citizens.

Business Models in Urban and Peri-Urban Agriculture: Typologies, Challenges, and Strategic Recommendations

M. Haïssam Jijakli
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Urban and peri-urban agriculture (UA/PUA) has gained increasing attention as a strategic response to the intertwined challenges of food security, environmental sustainability, and urban resilience. As cities expand and global socio-economic pressures intensify, innovative business models in UA/PUA offer new opportunities to integrate food production within urban ecosystems. This study aims to systematically explore and categorize the existing business models in urban farming, providing strategic insights to foster the sustainable development of the sector.

This study, conducted by the Urban Agriculture Research Centre (C-RAU) at the University of Liège, examines the diversity of business models (BMs) operating within urban and peri-urban agriculture (UA/PUA). Combining an extensive literature review with qualitative data collected through interviews with 24 companies worldwide, the study identifies seven distinct business models: Cost-Reduction, Diversification, Differentiation, Shared-Economy, Experience, Experimental, and Farm Management.

Each model exhibits specific characteristics regarding investment requirements, profitability horizons, scalability potential, and alignment with urban socio-economic contexts. Economically-driven models, such as Cost-Reduction and Farm Management, demonstrate high scalability but necessitate significant initial capital, whereas models such as Diversification and Differentiation emphasize social value, market specialization, and moderate capital needs. Conversely, Shared-Economy and Experience models prioritize social, environmental, and educational externalities over financial returns, depending largely on public or philanthropic funding.

The study highlights the necessity for UA enterprises to align their business strategies with local market demands and urban ecosystem dynamics, rather than relying on standardized frameworks. To foster the sustainable development of UA/PUA initiatives, the study recommends reinforcing public sector engagement, increasing investment in technological research and development, enhancing capacity-building for skilled human resources, and raising public awareness about the multiple benefits of urban farming.

Resilient territorial planning

by Guillaume Morel-Chevillet

Fostering Urban Resilience through Strategic Agricultural Integration in Territorial Planning

This session will explore how urban agriculture can be integrated into territorial planning to enhance resilience, involving diverse stakeholders and approaches.

1. **Planning Tools**: local authorities and elected officials often rely on zoning mechanisms to facilitate urban agriculture. In France, tools like ZAP and PAEN, alongside specific PLU zoning, protect agricultural spaces. Nantes demonstrates adaptive zoning for agri-urban spaces, while cities like Philadelphia implement farm-specific zoning tailored to various urban agriculture forms. In China, collective urban agriculture zones provide unique models. Additionally, cartographic work, such as mapping wasteland rehabilitation in Marseille and across Europe, highlights the potential for reactivating vacant spaces for agricultural use.
2. **Spaces of Reconnection**: civil society and project leaders foster reconnection between urban and agricultural systems through initiatives like agricultural third places, collective farms, and agri-urban districts. Examples include Doulon-Gouhars and Quincé in France, as well as Almere in the Netherlands. These spaces also promote agro-tourism and cultural integration, creating opportunities for communities to engage with agriculture directly.
3. **Political Strategies**: strategic policies and tax systems encourage urban agriculture. Programs like Pariscultures in Paris and GoodFood in Brussels exemplify UA integration. Local governments monitor agronomically significant land and develop mechanisms to transition land back to agricultural use, ensuring long-term availability for cultivation.
4. **Food Planning**: researchers and educators emphasize the role of UA in food system planning. Initiatives like Parcel in France focus on territorial food industries, linking production to broader urban planning strategies.
5. **Territorial Metabolism**: understanding material flows, circular economy practices, and nutrient cycles—such as nitrogen flows analyzed by Sabine Barles and UMT FUP—is crucial for integrating agriculture into territorial planning.

More generally, questions arise about how to incorporate these insights into education (e.g., Melimed) and disseminate agricultural considerations into broader territorial development.

Through these lenses, UA emerges as a vital tool for fostering resilience, promoting sustainability, and bridging the gap between urban and rural systems.

How urban agriculture can be integrated in the city's fabric?

Guillaume Morel-Chevillet

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In a context marked by urban sprawl , priority is to limit artificialization of agricultural land . In addition, the societal demand for ""nature in the city"" is growing and plants are involved in the recreation of ecosystems in the city. The challenge is to redesign the city by no longer thinking of agricultural space as a space distinct from urban space but as a full and complete component of cities and their evolution . Today, new urban spaces are giving rise to the establishment of farms. As with other forms of nature in the city such as parks, wastelands or urban gardens, does urban agriculture promote the renaturation of the city? What are the cultural and landscape services they produce for urban territories? Faced with these questions, three transversal scales will be considered: the scale of the urban farm, that of the neighborhood and finally that of the territory.

At the scale of urban farms, the landscape design approach makes it possible to envisage the inclusion of farms on a given site, considering the diversity of the urban fabric: design of plots and circulations, positioning in relation to the slope, plot and intra-plot boundaries, relationship to the built neighborhood, etc.

At the neighborhood level, studies on the landscape perception of urban agriculture projects and field analyses make it possible to understand and propose improvement solutions for the design and conception of urban farms, by sharing with multidisciplinary teams, in particular architecture, the approach of the landscape project which makes it possible to take into account the links to the physical context, ecological and social, the sizing of projects and their implication with the notions of ""commons"" and the making of ""the city on the city"" .

At the territorial level, we are slowly observing the consideration of forms of urban agriculture in territorial policies, particularly in the Territorial Food Plans in France or via national public policies with the Fertile Neighborhoods Plan led by the National Agency for Urban Renewal. The question also arises of the relationships between urban farms, peri-urban farms, and rural farms, the architectural continuity between these objects is questioned or even allowed and implemented.

Cultivating the commons

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We will make a focus on the experience of the association Vergers Urbains, which, for over 12 years, has been supporting the development of urban agriculture and aims to make the city edible by enhancing common spaces, by implementing contextual agriculture that adapts to various situations. Creating alternative spaces by urban gardening and fostering a third way embodied by urban commons. A third way situated between the market system and the state system, both of which struggle to embody a sustainable alternative, following different logic, and different mode of intervention and involvement—a concrete, visible, and shared action. Demonstrating, that through action and engagement, individuals can directly connect with each other and with their environment, allowing urban commons to emerge beyond social and cultural differences.

Urban agriculture, through the act of greening, can helps reestablish a relationship with the street and public space that modern urbanism has eliminated and with derelict spaces, or spaces in transition. Cultivating the city can be a right to the city, a way for residents to regain a form of power, a springboard to conquer this right.

This dynamic around the development of urban agricultures and urban commons can be supported by establishing resource centers. These centers serve as hubs for mutual support, sharing, experimentation, co-production, and training, taking the form of third spaces that encompass both production areas and shared activity spaces. The presentation will give examples of several temporary occupations, permanent occupations on former wastelands, or rooftop such as the Jardin Espérance, the Jardin des Traverses and Rooftop Centre Jean Dame, projects located in the Northeastern Paris region.

The role of ANRU in promoting urban agriculture in France, especially within disadvantaged neighborhoods

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The French National Agency for Urban Renovation (ANRU) plays a central role in promoting urban agriculture in France, especially within Priority Urban Policy Districts (QPV) undergoing regeneration. Mandated to increase urban agriculture significantly in these areas, ANRU launched the "Quartiers Fertiles" program in 2020.
This initiative capitalizes on the transformation through the National Urban Renewal Program (NPNRU), which provides unique opportunities like available land and spaces created by renovation works. It aims to address specific QPV challenges, such as high unemployment, low income, and lack of attractiveness, by leveraging urban agriculture as a powerful tool for sustainable economic, social, and environmental development.

ANRU's innovation primarily stems from the "Quartiers Fertiles" program's strategic and integrated approach:

- Massification: The program's goal is to support urban agriculture in approximately 100 QPVs, scaling up its deployment within the urban renewal framework. This specific focus on QPVs in renewal is a distinguishing factor.
- Multifunctional and Productive Focus: It supports diverse forms of urban agriculture, primarily focusing on productive and market-oriented initiatives to create local jobs and insertion opportunities for residents.
- Integration into Urban Projects: The program ensures projects are closely articulated with the broader urban renewal strategy and local context, using urban agriculture to enrich the urban intervention.
- Social and Environmental Benefits: Projects are encouraged to deeply involve residents and demonstrate positive environmental impacts.
- Comprehensive Support System: ANRU provides substantial financial aid and technical/operational support, facilitates networking and knowledge sharing, and provides methodological tools to help ensure project viability.

As a catalyst and facilitator, ANRU, through "Quartiers Fertiles," drives the revitalization and attractiveness of QPVs by fostering dynamic and beneficial urban agriculture initiatives.

How spatial design shapes human behavior to influence health and well-being

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Agnès is a researcher and lecturer in Landscape Architecture at Wageningen University, where she explores how spatial design shapes human behavior to influence health and well-being.

She contributes to the Bachelor and Master programs in Landscape Architecture and Planning (BLP/MLP), which prepare students to engage with complex spatial challenges such as climate adaptation, urban livability, and sustainable development through integrative, systemic, design-based approaches. Within the broader academic environment of Wageningen University—renowned for its leadership in food systems, ecology, and urban sustainability— BLP and MLP students have opportunities to explore themes such as urban agriculture through interdisciplinary courses and collaborations on research projects. In her teaching, Agnès primarily focuses on the human side of urban agriculture : How do people experience and use food-producing landscapes in cities? What role do such spaces play in restoring attention, encouraging healthy behavior, or building social cohesion?

Mélimed: Living on agricultural fringes at the urban interface

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The contact between town and agriculture raises questions about the intensification or diversification of an existing agricultural environment, which is specifically Mediterranean and necessarily undergoing climatic transition. The aim here is to question the existing conditions for the project, in order to anticipate the agricultural changes brought about by climate change and the need to re-localise agricultural production.

The interfaces between the suburbs and the agricultural fabric are unique opportunities to rethink and develop agri-urban projects including: logistics, short circuits, permaculture, agroforestry, etc. by proposing new forms of agriculture with social functions: collective gardens, urban micro-farms, educational farms, collective orchards.
The agricultural fringes of the Mediterranean peri-urban countryside are the source of a project-based reflection in which we have proposed preserving the characteristics of this countryside by enhancing the coexistence of living and farming on the site. Our hypothesis for the transformation of this anthropised territory is the 'Negotiation' scenario proposed by Sébastien Marot in his exhibition 'Taking the countryside' (Marot 2019-2024). The aim is to 'integrate agricultural space as a fully-fledged component of cities or urban territories that have been rethought with them, or even designed on the basis of them (Marot 2018)'. With our students, we have developed an agricultural urban design process that takes the countryside rather than that of the city, reversing the planning perspective. In this way, we have defined a laboratory space in which to reflect on the forms of resilience in these situations, on the fringes of towns and interwoven with plots of intensive monoculture.

Teaching the agroecological spatial project as lever for transforming urban territories

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This contribution will focus on the pedagogy I developed during my PhD, with students of architecture, landscape architecture, urban planning and geography. The common objective of these courses is to help students understand that food is an urban issue and a major project challenge for renewing the relationship between cities and agriculture, which has unfortunately been overlooked for too long. Indeed, the climate change effects and the potential difficulties of feeding the population by 2050 mean that we need to think differently about the role and spatiality of food production in planning practices, both in rural and urban areas.

Three main dimensions of my pedagogy will be highlighted: the spatial description of agro-urban situations, the conceptualization of agro-urban issues and finally the agricultural spatial project.
I will explain how my teaching is closely linked to practical fieldwork to describe urban agricultural landscapes. For this, I use a variety of survey methods (landscape reading, transect walks, farm visits, stakeholder interviews, etc.) and restitution methods (transect cutting, mapping). The aim is to address the positive and negative externalities of agriculture, using key concepts such as ecosystem services or nature-based solutions.
I'll come back to my more theoretical teaching, which invites students to think about the future of urban territories from the point of view of agro-food and rural issues, and key concepts (such as systemic approach, urban metabolism, multifunctional soils, territorial co-benefits...).
Finally, I'll be presenting how I train students in the agricultural spatial design, with a view to reterritorializing city-agriculture relations. My aim is to get students to explore the hypothesis of a agro-ecological urbanism (Tornaghi & Dehaene, 2021), which opens up conceptual and projectual avenues for renewing urban planning practices. To this end, we are exploring the hypothesis of metropolitan agriculture as a gateway to the territorial project, and the agricultual park as a particularly fertile project theme.
The aim of this pedagogy is to question our ability to structure the metropolitan project through agricultural open space, and to develop an analytical and forward-looking approach to the transformation of our landscapes and our food and farming practices.

Teaching Urban Agriculture: example of practices and outcomes

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In France, education on urban agriculture (UA) is quite recent. Three levels can be distinguished: non certificative, undergraduate (public education, several localisations) and graduate (see the AFAUP 2021 census for more details). Only three schools offer a graduate program on UA in France: AgroParisTech, Institut Agro Angers and Unilasalle. Other public or private schools also offer short courses either in 1st or 2d year of MSc. The candidate pool is very variable from one year to the next even as positions are being created to employ them. It is difficult today to keep those programs open for a small number of students. At AgroParisTech, the specialization year (MSc) «Ingénierie des Espaces Végétalisés Urbains» (Urban Green Spaces Engineering) was created in 2013 and taught 15-20 students/year coming from the school (50%), other MSc (20%) or resumption of studies (30%, non certificative, increasing). We started with 10 students and had up to 24 in 2017. However, in 2023, only 7 students choose this MSc and in 2024 we only had 4 candidates (no resumption of studies for technical reasons). This change surprise us and we are currently rethinking the program, considering the needs of future employers and the wants of the students This seems to us like a good time to also thing about collaborations in France and in Europe.

A first internal assessment of the 8 first promotions for 130 students (including 70% having chosen the UA option) gives the following: 26% worked for public authorities, 28% for private farming companies (theirs or others'), 10% for consulting companies, 5% for research or advisory and 7% pursued studies (doctorate or complementary courses. Based on these results and discussion with experts, it seems that UA may be a stepping stone to farm establishment, whether in intra-, peri-urban or rural contexts. An internship is currently looking into the trajectories of farmers with a first experience in UA.

As for how we integrate UA in our teachings, it is, as said before, the main object of a last year program including a week-long metropolis study, engineering projects at the demand of professionals, but also more standard courses with teachings and discussion by and with researchers, public and private UA stakeholders but also alumni. These teachings include UA but also urban ecology and forestry as well as cross-cutting competencies like GIS or pest management. UA is also a case study in some optional courses for 2d year students (MSc year 1) like on Food Safety or Mediterranean agriculture. It can also be the main subject of optional courses like that on «Periurban context: agriculture and landscape planning». New modules might also emerge in the years to come at this same 2d year level to raise awareness of more students on this subject and increase the number of candidates to MSc.

Teaching Urban Agriculture in higher education: sowing ideas to bloom innovation

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According to projections, the global population will reach 10 billion by 2050, with nearly 70% living in urban areas. This rapid urbanization will pose significant challenges, particularly in developing and enhancing sustainable food systems. Key strategies include improving circularity, integrating alternative food production methods, and bringing agricultural activities closer to urban environments. From an urban infrastructure planning perspective, citizens must once again become the focal point. Designing climate-resilient neighborhoods and buildings is essential, given the anticipated rise in extreme weather events. Urban infrastructure must also integrate nature, providing recreational spaces and fostering strong community connections.

At Gembloux Agro-Bio Tech, we prepare the next generation of bioengineers to meet these challenges through a combination of theory and hands-on practice. Our urban agriculture (UA) course, taught during the first and second years of the master's program, covers everything there is to know, from typologies to the economic, ecological, and social benefits of UA. A significant portion is devoted to techniques that support urban food production (soil based and soilless systems and their integration into food chains). A newly established course will guide students in evaluating the sustainability of urban farms using a dedicated framework, while encouraging critical analysis of the assessment process.

Our programs are not limited to bioengineers—future landscape architects at Gembloux Agro-Bio Tech also learn to design, plan, and manage both urban and rural environments. UA courses teach students about suitable crops, their protection, and growing techniques suited for urban settings. We strongly believe in experiential learning. That's why our students go through various group projects rooted in real-life projects, from redesigning community gardens to planning large-scale UA systems, all while engaging with local stakeholders. Site visits and discovery activities are also integral to our educational approach.

More broadly, we aim to instill a deep understanding of sustainable land management, biodiversity, and agroecological practices. Through interdisciplinary coursework, fieldwork, and research, our students develop the skills to design resilient agricultural systems that support both food security and ecosystem health. We foster critical thinking and collaboration, empowering graduates to become proactive leaders in building a sustainable future—both locally and globally.

Innovative UA governance

by Jess Halliday & Eric Duchemin

Urban agriculture is a feature in many towns and cities around the world, but the type and governance model of initiatives varies considerably – as does dominant narrative framing and policy support in different local, regional, and country contexts.
This theme explores various governance forms for supporting the embedding, proliferation, and scaling of urban agriculture, including:

- policies, programmes, and integrated strategies that recognise the contribution of urban agriculture to the goals of multiple departments or policy areas (including environment, social welfare and inclusion, education, economic development, etc);
- urban agriculture as part of wider urban food strategies;
- inclusion of urban agriculture as a viable land use in urban planning;
- models of collaborations between community groups, governments, businesses, that support urban agriculture through access to land, inputs and training, markets;
- the role of universities in research and data on the multifunctional benefits of urban agriculture, to support advocacy over policy support;
- supportive multi-level policy frameworks that foster an enabling environment for the institutionalisation and scaling of urban farming practices;
- trans-local governance, such as networks and city-to-city knowledge exchange, for sharing techniques and experiences, policy models and data, and for collective advocacy.

By the end of the session, participants will:

- understand different forms of governance of urban agriculture that have been deployed in various contexts
- understand the gaps, barriers and challenges faced by urban agriculture practitioners and advocates
- be aware of strategies to promote support for food growing in cities – both within local contexts and as a global movement
- be able to identify the role of urban agriculture in addressing various urban issues, and be prepared to engage stakeholders and advocate for governance support

Enabling urban agriculture to flourish through governance

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This keynote will set the scene for the session on innovative governance by explaining what we mean by governance of urban agriculture, and will address questions of who should be responsible for UA, at which level of government, how to create space, food safety and sanitation, and articulation with wider urban food strategies.

It will introduce a range of governance mechanisms, including supportive policies and programmes, to inclusion of urban agriculture in urban planning, multilevel governance, community governance, and collaborative governance.

The presentation will identify common entry points through which urban agriculture gains support in city agendas, and why some are more likely to facilitate the move from individual policies and programmes to integrated governance.

Informal to formal : urban agriculture movement during the last two decades

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Based on a recent study conducted by the Laboratoire sur l'agriculture urbaine on the implementation of urban agriculture policies in Quebec, this presentation will draw the evolution of the movement over the last two decades.

Québec is taken as an example of what occurs also in North America or Europe.

How urban agriculture has passed from an informal movement with guerrilla gardening actions to a more formal framework in which local, regional and national governance and authorities are directly involved.

Planning for Urban Agriculture in peri-urban Almere Oosterwold (NL)

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This abstract explores Almere Oosterwold, a new peri-urban district in the Netherlands, as a unique case of innovation in planning of urban agriculture. Almere Oosterwold is situated in Almere, a Dutch New Town built on reclaimed land in the 1970s to relieve housing pressure in the Amsterdam region. Oosterwold reflects the city's evolving identity—from meticulous top-down planning towards participatory Do-It-Yourself urbanism. This new district challenges conventional models of urbanisation by placing urban development directly in the hands of future residents and embedding food production as a legal requirement: at least 50% of each residential plot must be allocated to food production.

The innovation of Oosterwold lies in its effort to decentralise urban development. Rather than traditional top-down planning, the zoning plan provides broad parameters, or living-rules, for land use and infrastructure, allowing residents to co-create the district. The Oosterwold planning was motivated by multiple, interlocking policy goals: growing demand for housing, creating a gradual transition between the city and its hinterland, realise a neighbourhood that attracts a different type of resident, establishing a certain level of food self-sufficiency and the aim to reconnect food systems with urban life. It was also aligned with Almere's broader ambitions to re-invent city's original ambition of "people make the city".

Despite these tempting policy goals, Oosterwold has faced major challenges from the moment the first residents arrived in 2016. These challenges include land (price) policies, unclear and unshared future vision, major and expensive infrastructural modifications, unclear division of responsibilities, capacity gaps among residents, and weak monitoring mechanisms. Many residents struggle with the demands of co-production, raising questions about long-term viability and supportive infrastructures. Nonetheless, the Oosterwold planning has delivered notable benefits: mainstreaming urban agriculture in planning, a new perspective at the urban rural interface, encouraging civic innovation, and generating valuable institutional learning.

As a spatial and governance experiment, Oosterwold thus offers important lessons for other cities. It shows that agriculture can be treated as urban infrastructure, that legal tools can be used to embed it into urban planning, and that bottom-up development can yield creative outcomes when coupled with overarching support mechanisms & infrastructures, and clear division of responsibilities. However, the experience also highlights the importance of equity, oversight, shared vision and adaptability when transferring planning capacities to citizens.
Oosterwold stands as a provocative model for food-sensitive urbanism, calling into question the boundaries between public and private, urban and rural, and planned and emergent space. It illustrates both the promise and complexity of planning agriculture as a vehicle for transformative urban development.

Urban Agriculture in Montreal: Governance Challenges and Perspectives

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In September 2021, the City of Montreal introduced its **2021–2026 Urban Agriculture Strategy** designed to promote the development of urban agriculture throughout its territory. The strategy outlines **four strategic orientations, seven objectives**, and **thirty-four actions**, reflecting the City's commitment to both **consolidating existing practices** and **facilitating the emergence of new initiatives**, whether **community-driven or entrepreneurial** in nature. The implementation of this strategy, however, is challenged by **complex governance** issues, prompting the City to explore and adopt various approaches to ensure its effective deployment across all boroughs.

One voice : building a federation for UA professionals in the Brussels Region

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The Brussels Region consists 19 municipalities, subordinated to a regional authority. The region is relatively small (1.3 million people) and has a dedicated Minister for Agriculture. Over the last ten years, that Ministry has led a policy called “Good Food” which supported the growth of regional agriculture. Projects multiplied in a very fragmented landscape, each project looking outside the region for inspiration.

In 2021, several nonprofits came together to create the Federation for Urban Agriculture Professionals (FedeAU) in order to:

- Present a united front to advocate for the sector
- Provide a single point of contact
- Ensure the coherence of long-term policies
- Mutualize resources and knowledge while exchanging with international partners

Our 50 members represent a wide variety of projects, amongst which food production, education, reinsertion, research and consultancy.
We are active on two main fronts:

- Internal : FedeAU supports, informs, organizes trainings and events for its members, and sets up practical solutions to their issues. Members inform us of their needs, the state of the sector, provide advice and criticism.
- External: FedeAU advocates at the municipal and regional levels, works on transversal urban projects, organizes events, liaises with the press. Regional institutions inform us of policy updates, send enquiries for data, and ask for assistance.

In order to feed our work, the FedeAU

- Collaborates with nonprofit partners
- Liaises with international partners
- Collects qualitative and quantitative data on our members to build a searchable database that acts as the bedrock of our advocacy.

After four years, FedeAU is now recognized as a primary partner and point of contact. Membership is growing and so is the satisfaction level of our members. The latter spend less time on advocating for their needs and receive support in fundraising and insurance. The FedeAU had an impactful presence in the last municipal and regional campaigns, securing promises from political figureheads.
A couple remarkable achievements have been: securing funding for AU projects in a time of austerity; securing compensation for ovine and caprine populations affected by a fever epidemic; organizing a conference at the Brussels Parliament to brief more than fifty stakeholders on the ins and outs of urban agriculture. A number of frailties were built in from the start. The wide diversity of members is a strength, but also means that some “minority” stakeholders from less-represented sectors might feel overlooked. In the past years, sister federations have emerged, with which we welcome future collaborations.
Our Federation is publicly funded at 60%. This exposes us to the vagaries of political budgeting, which has come to a head in 2025 as the region delays voting for subsidies. Private funding is poorly adapted to advocacy work, and self-funding is impossible for such a precarious sector. Finally, we are fighting for long-term, structural solutions for the support of urban agriculture, and coming up against the short-term timelines of the political cycle.

Growing Opportunities in Utility Corridors in Toronto, Canada

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The Community Engagement and Entrepreneurial Development (CEED) Gardens in Toronto were established to address three concerns: access to land for urban farmers, onerous approval processes for public lands, and the need for a model that valorises the community benefits provided by market gardens. Four years after the lengthy approval process was completed, two low-income communities in Toronto have vibrant urban farms that act as an incubator for aspiring farmers (including recent immigrants), provide outdoor education for youth and access to culturally relevant, fresh and local produce. The farms are a success, but would we do it again?

What does this process mean for establishing new farms in Toronto? Is there an ethical concern with allowing private farmers to sell produce grown on public land? We will discuss the roles of a spectrum of partners from provincial and municipal governments to community-based NGOs and individual farmers. As trade disruptions spark greater interest in local food, can the current moment offer opportunities to leverage support for urban farms?

Collaborative ecosystem

by Monika Onyszkiewicz & Marga Vintges

As the world grapples with pressing global challenges – from climate change and resource depletion to food insecurity and energy transition – the need for innovative, systemic, and sustainable solutions has never been more urgent. Rising temperatures, shifting weather patterns, and increasing pressure on ecosystems are not only affecting the environment but also endangering global food production, energy systems, and livelihoods. Addressing these interconnected issues requires collective action, interdisciplinary collaboration, and a focus on resilience.

Clusters and Living Labs (LLs) have emerged as powerful frameworks to tackle these challenges by fostering collaboration across industries, sectors, and regions.

A **cluster** brings together a geographic concentration of interconnected organizations, including businesses, research institutions, policymakers, and other stakeholders. Clusters drive innovation by enabling resource sharing, collaborative problem-solving, and the development of solutions tailored to sectoral challenges. By pooling expertise and fostering synergies, clusters enhance competitiveness and promote sustainable transformation within their ecosystems. The cluster can have some Fieldlabs and the cluster, or a part of it, can be used as a living lab.

Living Labs, meanwhile, serve as dynamic, open-innovation platforms where real-world experimentation and co-creation take center stage. These ecosystems provide opportunities for diverse stakeholders to work together, test new solutions in real-life settings, and refine them through iterative feedback. Living Labs not only accelerate innovation but also ensure that these innovations are relevant, user-centered, and sustainable, integrating social, economic, and environmental dimensions.
Together, clusters and Living Labs form the backbone of collaborative ecosystems that address systemic challenges. By connecting diverse actors, enabling knowledge sharing, and encouraging cross-border cooperation, they create the conditions necessary for transformational change in sectors such as agriculture, energy, and urban planning.

Cluster cooperation in Controlled Environment Agriculture

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The Dutch horticulture sector has a worldwide reputation as an innovative cluster that cultivates, processes and transports top quality products such as vegetables, fruit, flowers and plants, develops innovations and exports knowledge and expertise. This position is achieved due to the unique combination of production, marketing and sales, trade, logistics, related
services and knowledge.

To meet the societal challenges nowadays and create a license to produce in the way of sustainability, spatial policy, climate mitigation, etcetera, a further triple or quadruple helix collaboration is essential.
When all actors of this triple helix are present within the region there is a great opportunity to strengthen a sector by stepping beyond the cooperative model.
Michael Porter defines clusters as 'a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities'.

Greenport West-Holland is the largest international horticultural cluster in the
world. This Greenport is an extensive cluster of greenhouse horticultural farms, suppliers and buyers, logistics companies, knowledge and research institutions and service providers. Within the Greenport West-Holland, all the major and key players in the field of intensive horticulture are concentrated and connected to knowledge and research institutions and service providers, but moreover also to different levels of government.

Within the cluster we have different ambitions and programmes.
One of the ambition on leading on knowledge and innovation with a designated Innovation Pact leading to an agenda for the research programmes withing the Greenport Horti Campus. The agenda lead to an ERFD project building a Fieldlab and showlabs on indoor (vertical) farming.
The energy programme of the cluster started with an agreement of the partners that the cluster will be climate neutral in 2024.
There are also programmes on circularity and water use.

The retail and consumers should also play an important role in the future of food production. And to create a license to produce that is also relevant for the social environment, we are nowadays much more in contact with consumers and NGO's.
The triple Helix cluster is evaluating to a Quadruple Helix cluster.

Wrocław as a Living Lab in the Food System Transformation

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The living lab concept is at the heart of all transformative work. This concept has evolved over the last years, and the focus has now shifted to the active role of users as co-innovators and co-creators. Users working in real environments are actively involved in data collection, solution design, and solution testing.

A Living Lab can cover any area: a city, a region or a local community. The same applies to the actors: consumers and food producers, city officials and grassroots activists, local entrepreneurs, artists or vulnerable groups such as senior citizens, independent parents, teenagers, etc.

Wrocław, one of the largest cities in Poland (after Warsaw, Krakow and Poznań), is a significant university centre, known in the country for its strong civic society and well-conducted policy promoting the city. From the point of view of the food system, the urban agglomeration has sufficient resources to be self-sufficient in terms of food. The climate in the Silesian Lowland is the mildest in the country, which is conducive to agricultural activities. In terms of substantive success, in 2022, the City Council signed the Milan Urban Food Policy and the Wrocław Food Manifesto. The most recent Since 2024, the City Farm has been run by the Municipality in collaboration with the University of Life Sciences.

The described natural conditions combined with the skillful use of the potential of projects mean that Wrocław is seen in Poland as a progressive leader taking action in food policy. The current geopolitical situation, however, requires more coherent actions and bold decisions, which the current authorities in Wrocław are not ready or competent to do. Looking at the potential of the whole Living Lab that is Wrocław, there is a very weak level of cooperation between actors and low mutual trust. The potential for synergies could be created with (political) goodwill and an integrated strategy covering the different key areas for the agglomeration: public health, food security and sovereignty, climate and social crisis mitigation.

The current experience of working with other Living Labs and examples from other conurbations and regions is an excellent opportunity to constructively and clearly assess what untapped opportunities we have now and what the costs of inaction will be in the near future.

Wagralim, driving forward growth and innovation in the food and agricultural industries

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Wagralim is the agri-food innnovation cluster of Wallonia - Belgium. Its mission is to booster the creation of added value in agro-industrial companies.
To this end, it relies on three tools : innovation, development of partnerships and international actions. It oversees innovative and ambitious partnership projects involving R&D, investment, internationalisation and training.

RE-Greenhouse an Interreg project on Reneweable Energy in Greenhouses; a project in which clusters, living labs and fieldlabs play there roles.

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The Greenport West-Holland GPWH), together with other clusters, Applied Research Institutes, applied universities and user groups work together in the North-West Europe Interreg project RE-Greenhouse.

Clusters in which the whole ecosystem is represented, like Vegepolys and Greenport West-Holland have an easy way to connect knowledge, users and governments. This is very helpful in this subject on renewable energy.

GPWH is the network organization of the greenhouse ecosystem in the Province of Zuid-Holland. Partners of this organizations are regional governments, greenhouse entrepreneurs (both organized and individual) and research and education organizations.

Thematic competencies relevant for the project: communication and promotion to growers, governments, education and research and stakeholders; domain knowledge of GH energy configurations (data, energy source, infrastructure, storage, usage); organisation, governance and lobby in all relevant settings; program management on different projects and cross-disciplined teams; interaction between themes like energy, spatial planning and economic strategies.

December 9 2020, approximately 50 partner signed the new Greenport West-Holland Energy Agreement. The target in this ambition is to be climate neutral in greenhouse horticulture, before 2040 for the region of GPWH, which is 4500 ha of greenhouses. This makes a cluster an important partner in such a project.

Within the region of the Greenport different Living Labs of Greenhouse area are working together on different challenges, like spatial planning, water supply and energy supply. The cooperation Broekpolder is such a Living Lab.
Within the Living lab a group of greenhouses is using the energy coming from the Pilot within the RE-Greenhouse study, the Heath Grid Westland.

The main goal of the project is to design a tool for Greenhouse holders and greenhouse area to help them to choose the most preferable energy source or organization.

SUAVE Eurocluster project, meant to support SME's in Urvan Farming projects

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The presentation will examine the results, main result and expected impacts of the SUAVE EuroCluster project on SMEs, clusters and the Urban Agriculture (UA) ecosystem throughout its execution period (30 months).

We will also make an analysis on the potential of Urban Agriculture thematic and the actions to be taken to ensure this sustainability, both at the level of public and private stakeholders and by the clusters themselves within their organization. It includes a sustainability strategy to ensure a long-term effect of SUAVE actions (follow-up with other projects, partnerships agreements, etc.).

This report measures the impact of SUAVE on:

- European SMEs
- Clusters – consortium and other European partners
- At the European and International level

The sustainability of SUAVE will integrate short and mid-term perspectives SUAVE partners worked on for 2025 and intend to work on for 2026 and for the years to come.

SUAVE's impact and sustainability report was based on SUAVE's results, feedback from SMEs via direct exchanges (email, telephone), publications and deliverables submitted by each SME at the end of its project, as well as exchanges with other stakeholders such as Regions, other clusters, networks and European and international representatives. Besides, throughout the project, each Work Package leader developed studies and reports that allowed us to monitor, evaluate and measure the different impacts of the project. These also served as a basis for thinking about the continuity of SUAVE. Achievements were measured by comparing the results achieved in comparison with the objectives established by the project. They are based on the constant monitoring of the project as well as the deliverables of each Work Package (WP). As for the impacts, they were measured based on the deliverables of the SMEs, the feedback from each partner and an analysis, at the end of the project, of the dimension taken by it, particularly at the network level.

URBAgr'Inn DAYS

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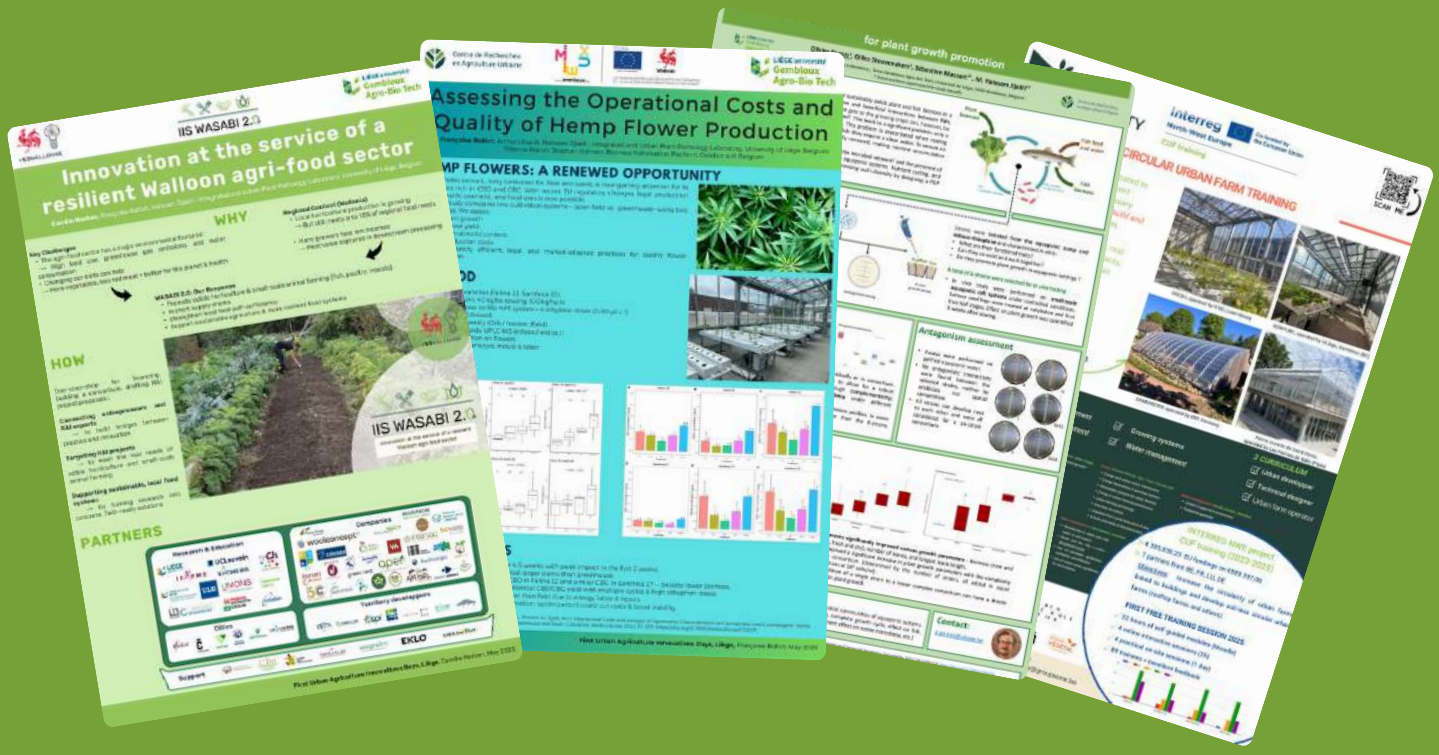

POSTER SESSION - MAY 20 - GEMBLOUX / BELGIUM

31 posters
4 themes

- Resource smart farming
- Sustainable profitability
- Resilient territorial planning & innovative UA governance
- Collaborative ecosystem

Building Integrated Plant Cultivation: ALTMARKTgarten

Dr.-Ing. Felix Thoma, Simone Krause, Volkmar Keuter, Dr.-Ing. Dennis Schlehuber, Annette Somborn, Miri Park

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Urban Agriculture, Circular Economy, Hydroponics, Building Integrated Farming, Nutrient Recovery

The rooftop greenhouse ALTMARKTgarten is based on the platform of inFARMING® and aims to integrate building-based plant cultivation into urban environments. The goal is to maximize resource efficiency, close material loops, and develop innovative agricultural solutions that contribute to sustainable food production. The research also investigates smart lighting, nutrient recovery, and energy integration to improve urban farming feasibility.

The project employs a rooftop greenhouse that utilizes multiple hydroponic and soil-based cultivation systems. Crops include lettuce, herbs, and strawberries grown using deep-flow techniques, ebb-and-flow, and drip irrigation. Energy efficiency is enhanced through heat recovery, rain and greywater use, and CO_2 integration from the building's metabolism. The rooftop greenhouse is divided into a production area and a R&D area. A key research focus is sensor-based optimization for plant growth, light management, and data-driven decision-making. Additionally, the SUSKULT project explores how nutrients from wastewater (phosphorus, potassium, nitrogen) can be recycled into hydroponic farming systems. The ALTMARKTgarten serves as a scalable model for urban food production and contributes to discussions on sustainable city planning.

The platform inFARMING® and the showcase ALTMARKTgarten demonstrate the viability of resource-smart urban farming using circular economy principles. By integrating building-based agriculture, waste-to-nutrient recovery, and innovative sensor technologies, they showcase scalable solutions for sustainable food production. This approach reduces resource consumption, enhances urban resilience, and promotes local, fresh food production. Future research will further optimize these systems for broader implementation.

Smart Farming for Sustainable Urban Food Production

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Urban Agriculture, Smart Farming, Sustainability, Circular Resource Management

In the face of rapid urbanization, resource-efficient and sustainable urban food production systems are becoming essential to ensuring food security, reducing environmental impact, and fostering resilience. This project explores smart farming solutions and sustainable profitability in urban agriculture, integrating permaculture principles, nature-based solutions, and circular resource management.

The main objective is to develop a replicable model of urban micro-agriculture that optimizes natural resources, enhances biodiversity, and minimizes environmental impact while ensuring economic viability. Our approach prioritizes natural, resource-efficient methods such as plant-based fertilizers, companion planting, and composting. By optimizing irrigation and organic waste recycling we create a closed-loop circular nutrient system. Additionally, our approach helps reduce food supply chain emissions through zero food miles, while potentially mitigating urban heat island effects and setting the material basis for urban carbon farming, reducing the urban environmental footprint.

The results demonstrate the feasibility of urban food ecosystems that are both ecologically sound and economically viable. Over a course of 3 years, we achieved peak yields of 0.8 kg/m², species richness at 26 annual and 19 perennial species, species abundance at 4 individuals and 60 native species. Polycultures, companion planting, vermiculture and mulching, enabled efficient resource while maintaining high productivity. Collaborations with local restaurants highlighted the potential of farm to fork initiatives, cutting supply chain emissions. We achieved up to 7% in food cost savings and 59% reduction in inputs and production costs during key weeks. Furthermore, this prototype of modern urban micro-farming installation has been successfully replicated in at least five other locations across the city, demonstrating its scalability.

Beyond production, the project highlights the socio-economic benefits of urban agriculture by fostering local engagement and transforming urban spaces. Our urban farm acts as a cultural and social hub with environmental initiatives. This intersection of urban ecology, community involvement, and consumer awareness promotes sustainable food behaviors and enhances food traceability. This research offers a replicable model for integrating smart farming with sustainable profitability, reimagining cities as centers of sustainability, resilience, and food sovereignty.

Bioponic Cultivation with Organic Fertilizer from Chicken and Fish Manure

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Bioponics, Organic fertilizer, Nutrient recycling, Circular economy

In Europe, hydroponics techniques - soilless plant cultivation using water-based mineral nutrient solutions - are gaining popularity for their high yields, water and land efficiency. Nevertheless, these systems remain heavily dependent on chemical fertilisers, which deplete finite resources like phosphate rock, generate high carbon emissions, and contribute to water pollution.
The BIOBOOST PRO project has been developed to address these issues by promoting a circular agricultural system. Specifically, the project seeks to recycle essential nutrients such as nitrogen (N) and phosphorus (P) from animal manures, thereby preventing their loss in linear agricultural models. This method adopts the concept of bioponics, which involves the cultivation of crops in water using organic fertilisers derived from animal manures, thereby offering a sustainable and environmentally friendly alternative to traditional hydroponics.

The main objectives of this project are :
1) The implementation and demonstration of the feasibility of bioponics in both on-site and off-site systems
2) The development of a business model with replicable tools that can be adapted to regional agricultural strategies
3) The increase in capacity uptake and the raising of awareness among all stakeholders (growers, manure producers/suppliers, authorities and policy makers, umbrella organisations)
In Gembloux, a pilot project will be implemented, focusing on the digestion of chicken droppings and fish sludge, transforming them into organic liquid fertilisers for bioponic systems. These solutions will be tested on lettuce, basil and tomatoes, in order to analyse and optimise the utilisation of these organic fertilisers.
The expected outcomes of the project include:
- A clear methodology for implementing small-scale bioponics installation
- Development of business models to support the adoption of bioponics
- Creation of hands-on tool kits for growers and manure producers/suppliers
- Training schemes to build capacity among all the stakeholders

The BIOBOOST PRO represents a new step towards transition from linear to circular agricultural systems. By recycling nutrients from animal manures, this project aims to reduce the reliance on imported chemical fertilisers, lower operational costs for growers, create new sources of incomes for manure producers/suppliers and contribute to a more sustainable agricultural sector.

Modeling Biological and Chemical Interactions in Soilless Systems

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Hydroponic , bioponic , aquaponic , modeling , python

This research aims to model the biological and chemical interactions in aquaponic, bioponic, and hydroponic systems to evaluate their efficiency in plant growth, nutrient cycling, and overall system stability. The study focuses on three key components: pisciculture, biofiltration, and plant growth, with an emphasis on nitrogen dynamics, microbial activity, and biomass production. Understanding these interactions is crucial for optimizing resource use, minimizing waste, and improving the sustainability of soilless agricultural systems.

To achieve this, a hybrid approach combining mathematical modeling and machine learning is employed. Differential equations describe the transformation and flow of nitrogen compounds ($NH_4^+ \rightarrow NO_2^- \rightarrow NO_3^-$), while machine learning algorithms help optimize parameters that are difficult to model explicitly, such as microbial efficiency and nutrient uptake rates. This combined approach ensures that the model can capture both the predictable and complex, nonlinear behaviors of the system.

The next step is to collect data to verify that the model accurately reflects the reality of the system and to assess the degree of precision with which it can replicate observed behaviors. Data collection is crucial for validating the model and adjusting its parameters to ensure it aligns with real-world observations. By comparing model outputs with collected data, the model can be fine-tuned for better accuracy and functionality under real conditions.

To achieve this, regular measurements of fish biomass, plant growth, and nitrogen compound concentrations (NH_4^+, NO_2^-, NO_3^-) are taken at different time points. Additionally, water quality parameters such as pH, dissolved oxygen, temperature, and electrical conductivity are monitored using real-time sensors to assess their influence on nutrient cycling and plant health.

For plant growth assessment, destructive sampling methods are used to measure fresh biomass, providing a precise evaluation of growth dynamics. Environmental factors, such as light intensity, humidity, and water availability, are also considered to determine their impact on system performance and plant growth.
By integrating these modeling techniques and collecting detailed data, the research aims to provide a comprehensive, quantitative comparison of aquaponic, bioponic, and hydroponic systems. This will offer valuable insights into system optimization and inform decisions for large-scale implementation and sustainability.

Impact of urban agriculture Cultivation Systems on Batavia Lettuce

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Organoleptic, lettuce, soil-less, soil, cultivation

The quality and composition of food products have been increasingly well-documented in processed foods over the past years. However, there is a growing interest in vegetable quality, particularly regarding the presence of pesticide residues, plant diseases, and heavy metal accumulation. Several studies highlight the challenges of ensuring the quality of vegetables cultivated in environments exposed to various pollution risks.

These risks are particularly pronounced in urban agriculture systems, where land availability is increasingly constrained. At the same time, consumer skepticism and criticism of soilless cultivation systems persist.
This study aims to monitor the production of Batavia lettuce (Amaroza variety) in four cultivation systems, including both soilless and open-field methods. We compare agronomic yields, chemical composition, and organoleptic properties of the harvested lettuce.

Results from the 2024 production cycle are available.

The studied cultivation methods included conventional hydroponics in a greenhouse, aquaponics in a greenhouse (with Koi carp), open-field soil cultivation under a photovoltaic greenhouse with 33% of the roof covered by solar panels, and outdoor open-field soil cultivation.

The aquaponic system produced the largest lettuces, with nearly 400g of fresh matter. However, specific mineral deficiencies were observed in soilless systems. The organoleptic test revealed that the public significantly preferred the greenhouse-grown lettuces and rated the outdoor open-field lettuce the lowest. No significant differences were perceived between the lettuces grown in the greenhouse systems.

Greenhouse crops & solar power in Belgium, multisite and pluriannual study

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Photovoltaic greenhouse, agrivoltaic projects, solar pannel, horticultural crops, photosynthetically active radiation (PAR)

The Grewfarm project is a photovoltaic greenhouse development initiative in the Walloon Region, supported by three competitiveness clusters (Wagralim, MecaTech, GreenWin) and led by a consortium bringing together academic research institutions (UMons, ULiège, HEPH Condorcet) and private companies (Green Energy 4 Seasons, DHK).

The main objectives are: (i) to develop an innovative range of photovoltaic greenhouses, (ii) to design production auxiliaries controlled by new software, and (iii) to develop services for the study and implementation of agrivoltaic projects.
ULiege and HEPH Condorcet are responsible for assessing the agronomic performance of these greenhouses based on the shading rate generated by the installation of solar panels on the roof. The production of a variety of vegetable crops - both summer and winter, as well as mid-season crops - will be monitored over two years at two sites: Ath (BE-7800) and Gembloux (BE-5030). A pilot photovoltaic greenhouse has been installed at each site, with two levels of solar panel coverage: 30% (moderate coverage) and 50% (high coverage). Additionally, the Gembloux site includes an open-field plot, while the Ath site has a conventional tunnel greenhouse.
Results from the first year of monitoring indicate a reduction in photosynthetically active radiation (PAR), measured as daily light integral (DLI), of approximately 30%, 50%, and 60% under the conventional tunnel greenhouse, and the zones with moderate and high solar panel coverage, respectively, compared to an open-field plot.

For the summer crops tested in 2024, average production decreases of approximately 23% were observed between the zone with moderate and high solar panel coverage. More specifically, for certain crops (cucumbers, tomatoes, peppers, strawberries), yield reductions compared to a reference tunnel greenhouse averaged 28.5% and 44.4% in the photovoltaic greenhouse under moderate and high coverage conditions, respectively.
Those observation need to be continued in 2025. In the long term, the collected data on crop production will be compared with the solar energy production of the photovoltaic greenhouse to determine the optimal solar panel coverage rates that enable vegetable production and energy generation within the same space.

Innovative Urban Agriculture Sustainable Solutions for Key Urban Challenges

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Urban Agriculture, Innovation, Sustainability, Challenges

Urban agriculture (UA) is increasingly seen as a driver of innovation, responding to agronomic, economic, environmental, social, and territorial challenges in urban food systems. Innovative UA practices—defined as existing, impactful, sustainable, and novel combinations of techniques—offer new approaches to enhance urban resilience and sustainability.

This study aims to identify and analyze such innovations across five dimensions. Agronomic innovations include space-efficient systems like hydroponics, rooftop farms, and the integration of smart technologies to improve productivity and system resilience. Economically, UA faces high operational costs and limited funding access, addressed by emerging models based on circular economy, short supply chains, and environmental service compensation. Environmentally, resource circularity, low-impact technologies, and sustainable water use strategies help mitigate pollution and ecological pressures. Social innovations in UA strengthen inclusion, education, and health through open farms, care farming, and participatory food initiatives. Finally, territorial integration requires legal recognition, land access mechanisms, and governance models that embed UA into urban planning.

A general literature review was conducted to understand the intersections between innovation and UA and to identify concrete examples of innovative systems. Concurrently, we analyzed the main challenges UA faces to better frame innovation needs. In parallel, applied research was carried out via a stakeholder survey and interviews with international experts. This qualitative approach allowed us to identify emerging innovative practices, collect on-the-ground data, and uncover new research directions from active UA actors globally.
This combined methodology helps build a comprehensive understanding of innovation in UA and supports its strategic development.

Participatory development of a one-on-one irrigation management support

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Irrigation, vegetable production, participatory collaboration, decision support

The IrriLux project, entitled: “Grand Duchy of Luxembourg’s national study on resilient possibilities of access to and use of irrigation for horticulture” was born out of the concerns of a growing consumption of water resources, a desire to expand horticulture, and conflicts between available resources and agricultural demand. This context is further exacerbated by uncertainties associated to climate change. The aim of the project is to study historical and future interactions between irrigation water requirements and available water resources in order to support a sustainable agricultural development. To achieve this, the project aims: (1) to create an irrigation potential map at national level; (2) to economize irrigation water at plot level; and (3) to optimize water allocations and study impacts of water conservation techniques at catchment level.

Concerning the irrigation efficiencies, around fifteen producers are for the moment being monitored, some are urban or peri-urban gardeners. Their proximity to the city is both a strength (proximity to markets) and a weakness (water competition). Saving (agricultural) water therefore has both social (limiting conflicts), environmental (fluvial ecosystem maintenance, groundwater depletion) and economic (irrigation costs) implications. Irrigation advice has been set up with, by and for growers to help them reason out their water use. Using soil probes to measure soil water content, water balances of all the plots are drawn. An automatic email is sent to growers on a daily basis. In addition, through WhatsApp discussions, theoretical irrigation advice is confronted with practical realities. The key is to allocate the right amount of water at the right time. This avoids drainage, run-off, and crop water stresses. Even more, for outdoor production, the incorporation of weather forecasts is of vital importance in the decision-making process.

As such, the many interactions in the field with committed growers make it possible to move beyond theoretical considerations. Practical irrigation advice can then be provided. These considerations are reinforced trough discussion tables organised between the IrriLux project team, administration and growers. Finally, the interest in this ‘personalized’ monitoring has met a more than satisfying degree of enthusiasm from the growers. They particularly appreciate the added value of advice and ensuing discussions above data acquisitions without any advice.

From fish to lettuce: a journey through an aquaponic system

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Aquaponics, fish, nutrient cycling, food, bacterial consortium

Traditional agriculture faces multiple challenges, including climate change, global population growth and soil degradation. Agricultural alternatives must be developed and improved to complement the intensively exploited soil-based production systems. Aquaponics is a soilless food production system that sustainably yields plant and fish biomass in a closed loop, thus presenting itself as a suitable alternative. The term aquaponics is based on the contraction of aquaculture and hydroponics, the system works on water circulation and beneficial interaction between fish, bacteria, and plants. This technique might overcome global rising challenges by reducing water input, optimizing resource use and lowering the space footprint while increasing yields. However, this system can present challenges such as imbalance in nutrient availability and vulnerability to waterborne diseases. Development and application of microbial treatment combining multiple strains with biostimulant and biocontrol activity could increase the durability of soilless agriculture.

Our lab previously isolated, selected, and characterized various bacterial strains from an aquaponic system. Using colorimetric assays, we identified key biostimulant traits in these strains, such as the production of siderophores and indole acetic acid (IAA), along with the ability to solubilize potassium and phosphorus. Based on these traits, six promising strains were chosen. Compatibility tests using cross-streaking on solid media showed no antagonistic interactions among them, supporting the development of a multi-strain bacterial consortium. This consortium was then applied in vivo to enhance the growth of lettuce (Lactuca sativa var. Lucrecia) cultivated in nutrient solutions derived from the effluents of Oncorhynchus mykiss (rainbow trout) and Cyprinus carpio carpio (koi carp) farms. In most trials, the bacterial treatment led to significant improvements in growth parameters such as fresh and dry shoot mass and dry root mass. However, some variability was observed, highlighting the need for further experiments to optimize the consortium's effectiveness and consistency across different conditions and cropping systems.

GREENUP - CPAS BXL : Urban Farming for Professional Integration

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Urban Farming, Professional Integration , Feasability study, Technical support

The pilot project for urban farming was initiated in 2022 by the CPAS of Brussels City on a 1500 m² plot in Uccle. This initiative aims to merge sustainable agriculture with socio-professional integration. Green SURF served as a consultant for the CPAS, assisting in the development and design of this innovative initiative. The main objectives of the project are to enhance the technical skills of individuals distanced from the job market, to promote harmonious integration within the urban landscape, and to set up a healthy and sustainable food circuit for vulnerable populations, in line with the “Good Food for All strategy”.

Green SURF’s mission which complements a legal study performed by ERU Urbanisme focused on the technical potential of the field and urban constraints.
The methodology adopted was progressive and collaborative, responding to the specific needs of Brussels CPAS at the different project stages. After identifying the project's priorities, several studies were conducted simultaneously, including a legal-urban planning assessment, a nature diagnostic, a technical soil quality analysis, and the development of a cultivation and business model. The findings from these studies were compiled into a final report that presented an integrated design for the project.
During the implementation phase, Green SURF also provided targeted advice on managing water resources on-site, including rainwater management, irrigation strategies, and greywater treatment. Green Surf, with the support of the CRA-W , also offered guidance on selecting appropriate fruit tree species for cultivation.

Since the spring of 2024, the project implementation has started with two trainers and one apprentice, followed by two new apprentices since April 2025. The first year focused on the installation of greenhouses and initial production while outdoor field cultivation is now underway.
It is important to note that the project has faced delays due to administrative procedures, and the permit application for the installations (such as the hangars) is still pending today.

This initiative raises promising perspectives on how Urban Farming could act as a catalyst for skills development and the improvement of living conditions for vulnerable public. Nonetheless, a complete assessment of its replicability will only be possible once all facilities are fully operational, and the project is fully realised.

Developing research into urban plants

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Urban plants, Water management, Bioponics, Plants production, Greening solutions

Presentation of several current and future research projects concerning plant production in city:

OPTIM'EHAU: aims to develop technical tools and virtuous methods for optimising water management in the context of urban agriculture and horticulture. The program is led by ASTREDHOR with various French partners and is funded by by CasDar (a French national agricultural research founds). The methodological approaches adopted will be developed in a participatory and iterative way, combining data collection and experimentation under real conditions. The program has only just begun and does not yet have any concrete results, but a survey is currently being carried out among urban horticulturists and farmers to gain a better understanding of their habits in terms of water management.

BIOBOOST: aims to address the barriers to the adoption of bioponics by involving all actors in the value chain: growers, farmers, authorities, etc. It will implement this practice through 11 pilot installations (Germany, Belgium, France, Italy, and the Netherlands), enabling its replication and deployment, while strengthening the skills of the involved actors. The project is led by University of Liege, Belgium, and financed by Interreg North-West Europe.

PENSTEMON: aims to propose greening solutions that will limit or even eliminate the use of inputs. The method consists of setting up empirical gardens including experimental plots representing themed gardens. The project is led by ASTREDHOR and funded by Ile de France Region.

ARBRES EN VILLE: aims to address 3 main goals: i) Develop new nursery plant products predisposed for urban implantation, facilitating their establishment and meeting the specifications of urban planners; ii) Assess different compositions of urban planting pits by developing new technosols to address emerging challenges (lack of natural soil, valorization of urban co-products); iii) Promote the transfer of these technical production processes and encourage their adoption by growers. The project is led by ASTREDHOR and financed by CasDar (a French national agricultural research founds).

VEGET'EAU II: aims to assess the resistance of woody species to water stress using a range of measuring devices, and to propose solutions for maintaining plantations in towns and cities while optimising water resources. The project is led by SENURA and financed by Plante & Cité, Urbasense and Auvergne Rhône-Alpes Region.

Optimal Management Solar Greenhouse for Energy and Crop Production

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Agrivoltaisme, Solar greenhouse, Optimisation, Energy management

The GrewFarm project aims to develop an innovative solution for solar greenhouses. It investigates connected greenhouses that adapt to the grower's needs and increase his sustainability, notably in regard to climatic conditions.
The objectives are:

- study the impact of roof covering on the development of the crops,
- design effective greenhouses according to the needs (do we need heating, lighting, etc.),
- optimize the operation of the auxiliary equipment

to maximize the crop production and minimize the energy consumption, in an individual and energy community context. The first motivation is to reconnect agricultural and renewable energy productions which both require large surface areas.

Permaculture Raised-Beds: Impacts on Agricultural Productivity and Soil

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Permaculture, soil quality, urban agriculture, circular economy

Conventional agriculture has reached a critical turning point, facing an unprecedented economic, social, and environmental crisis amid climate change, biodiversity loss, and rapid soil degradation. In this context, innovative approaches such as permaculture and constructed technosols could offer resilient alternatives. Raised beds in permaculture, primarily composed of organic matter, may sustain long-term soil fertility, enhance biological activity, and improve yields

This study assesses the fertility of four types of raised beds with different compositions (sandwich beds, lasagna beds, hugelkultur, ground beds), alongside control beds, over a four-year period. Addressing a gap in the scientific literature, it evaluates soil quality indicators across two horizons, considering physical, chemical, and biological properties.

By the fourth year, all raised beds containing organic matter exhibit higher levels of available nutrients, organic carbon, and microbial respiration than beds made of ground. These beds also produce higher yields than soil-only and non-raised control beds, outperforming the regional average for conventional crops in Wallonia—particularly for scallions and fennel. While non-raised control beds retain more moisture than raised beds, those rich in organic matter maintain higher moisture levels than soil-only beds. However, raised beds composed solely of carbon-rich residues face nitrogen deficiency in the first two years, leading to significantly lower yields during that period.

After four years, emerging trends confirm that raised beds rich in organic matter foster more fertile soils, supporting both productivity and biological soil quality. Monitoring will continue over the coming years in order to determine, for each bed type, the duration of this 'fertile period' before reaching a drop in fertility. In general, these results improve our knowledge of technosols and open up their prospects for use in food production in urban and peri-urban contexts.

Spin Farming: recycling local organic waste to produce vegetables

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SPIN farming, soil fertility, amendments, soil microbiology, organic matter, sustainable agriculture

Since early 20th century, the link between cities and agriculture has significantly weakened in industrialized countries, increasing their dependence on imported goods and exposing them to potential shortages. Simultaneously, soils—essential for food production—have been degraded by intensive agricultural practices, reducing their fertility and ability to support sustainable production. Today, cities face the dual challenge of securing their food supply while preserving increasingly threatened soils.

The rise of various forms of urban and peri-urban farming presents a potential solution by bringing agriculture closer to urban centers. However, these farming systems are often intensive and may threaten soil fertility. Implementing appropriate practices, such as incorporating organic matter, can help mitigate these negative effects and enhance agricultural sustainability.

This study examines the impact of applying three locally produced organic amendments, following the principles of SPIN (Small Plot Intensive) farming, on plant growth (lettuce and spinach) and the physical, chemical, and biological properties of the soil, compared to an untreated control and a commercial compost. The tested amendments included brewery spent grain, aquaponic sludge, and bokashi juice derived from brewery spent grain, all sourced locally within the study area and applied according to availability, at doses recommended in the literature.

The results indicate that lettuce and spinach yields were significantly higher when treated with brewery spent grain. The other amendments—aquaponic sludge, bokashi juice, and commercial compost—did not lead to greater yields than the untreated control. Chemically, the spent grain treatment brought a significant increase in total nitrogen percentage in the soil. Additionally, biological fertility indicators revealed higher enzymatic activity in the spent grain treatment, lower microbial respiration in the commercial compost, and a predominance of microbial over fungal populations across all treatments.

Assessing the Operational Costs and Quality of Hemp Flower Production

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Industrial Hemp, Operational Costs, Cultivation methods, Flower Production

In Europe, industrial hemp (Cannabis sativa L.) is primarily cultivated for its fibers and seeds due to regulatory restrictions on flower use, although the flowers present untapped valorization potential. This study assesses the economic viability of cultivating hemp for its inflorescences and examines the quality impact of different cultivation methods by testing two varieties, Santhica 27 for its cannabigerol content and Félina 32 for its cannabidiol content, across distinct growth environments. It compares open-field cultivation, traditionally used for hemp production (excluding flowers), with greenhouse-based cultivation specifically focused on flower production. While open-field cultivation is primarily used for fiber, seed, and straw, greenhouse cultivation offers more controlled conditions that may enhance flower yield and cannabinoid content. In the greenhouse, a growth regulator, ethephon, is applied to test its effect on plant size and cannabinoid levels. The objective is to assess the potential of incorporating flower production into open-field cultivation, in contrast to a dedicated greenhouse system, and to evaluate differences in yield, agronomic characteristics, and the economic feasibility of both systems.

The Gardens of 'Coin de Terre': Social, Environmental and Cultural Benefits

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Community gardens, transdisciplinary research, Sustainable agriculture, Urban gardening, Social integration & cohesion

Community gardens have existed since the 19th century, with the first worker gardens created in England and Germany. In the 1890s, similar initiatives appeared in France and Belgium. During the World Wars, “victory gardens” encouraged personal cultivation in response to food shortages. Since the late 1990s, shared gardens have spread across Europe, inspired by North American models. Despite the competition for land use in urban areas, community gardens still arouses interest from urban and rural dwellers today, in particular to adress contemporary challenges such as environmental sustainability, participatory democracy, and the creation of social connections.

The “Coin de Terre” community garden in Bressoux is the largest collective garden in Wallonia, covering nearly 6 hectares with around 290 cultivable plots, one per family. Established in 1925, it promotes sustainable and inclusive food practices, bringing together local actors to encourage healthy, environmentally respectful gardening. Located in the urban Bressoux district, it offers affordable yearly plot rentals to local amateur gardeners. The garden also serves as a socio-cultural laboratory, with partnerships from various organizations like La Bobine, the Centre d'Action Laïque de la Province de Liège, Arsenic2, the Adoc theater company, the Maison de l'Alimentation durable et inclusive de Liège (MAdiL), the Ceinture Aliment-Terre Liégeoise (CATL) and the University of Liège. Additionally, there are two community plots for shared gardening and social integration.

Participant observation was used in a scientific study. It emerges first and foremost that community gardens promote interactions between neighbors and create a sense of belonging. Gardeners share advice, seeds, and harvests, which strengthens social cohesion. Furthermore, it appears that for many socially vulnerable families, growing their own vegetables provides access to fresh and healthy produce. Additionally, community gardens are places of learning where both children and adults can discover gardening techniques, biodiversity, and the importance of sustainable agriculture. Finally, many retired individuals highlight that gardening is a beneficial physical activity for their health, helping to reduce stress and promote an active lifestyle.

To preserve this remarkable site from real estate pressure, the partners secured the inclusion of the “Coin de Terre de Bressoux” in the regional heritage inventory of Wallonia in early 2025.

Brazilian Urban and Periurban Agriculture Program

Kelliane Fuscaldi, Jaqueline Lima, Carolina Ferraz, Verônica Oliveira, Leslie Almeida, Diogenes Bolwerk, Rafael Porto, Ligia Alves, Laila Simaan, Elisa Lauer, Caroline Moreira, Vanessa Manfre Garcia de Souza, Edglênia Nascimento, Patricia Gentil, Lilian Rahal

General Coordination of Urban and Periurban Agriculture / National Secretariat for Food and Nutrition Security - Ministry of Development and Social Assistance, Family and Fight Against Hunger

Interministerial Program; Civil Society Engagement; Sustainability, Food and Nutrition Security; Innovation

The Brazilian Urban and Periurban Program was created in 2018, by the Ministry of Social Development. Its main goal was to stimulate agroecological food production in cities and, therefore, to promote access to healthy food for families in social vulnerability situations. Over the last few years, the Brazilian Government has encouraged the establishment of vegetable gardens, the donation of inputs and equipment to urban farmers and the development of instruments and methodologies that could support municipalities, states and civil society entities in the implementation of urban agriculture initiatives.

Among these instruments, we highlight: The Pedagogical Gardens Project, that consists of a Food and Nutrition Security Strategy for the school environment; The Urban Agriculture Vision Platform; The Urban Agriculture Digital Library; Virtual courses to promote the culture of volunteering in urban and peri-urban agricultural practices; and a Guide to support municipal managers in the inclusion of agriculture in the urban planning process - Municipal urban and peri-urban agriculture agendas: a guide to insert urban agriculture into urban planning processes.

Between 2018 and 2022, 18 states and the Federal District have received resources from the Federal Government to support UPA.

The consistency of the agenda was further strengthened from January 2023.

The new structure implemented by the Federal Government inserted the urban agriculture agenda into 3 new ministries.
In addition to the Ministry of Social Development, the Ministry of Agrarian Development, the Ministry of the Environment and Climate Change, and the Ministry of Labor and Employment also have powers related to the UPA agenda.
Based on this new configuration, there was a need to think about a new proposal for the National Program, based on the integration of these Ministries.
The New National UPA Program was built from a collaborative perspective involving 4 Ministries, research institutes, universities, civil Society and international organizations.
After an intensive process of collective construction, on September 12, 2023, the President of the Republic instituted the new Program with the signature of the decree which regulates it and in 2024 was published the law that creates de National Policy for Urban and Periurban Agriculture.

Effect of gardening space increase on domestic food production in Montreal

Penvern Logan[1], Leclercq Camille[2]

1 Université de Liège, 2 Haute École Louvain en Hainaut

Domestic food gardening ; food self-provisioning ; healthy diet ; Montreal Metropolitan area ; Arelerland

Urban agriculture (UA) has successfully established itself, especially in cities of industrialised countries, despite the constraints limiting its development, including limited space for gardening. Domestic food gardening, practiced by households to meet their own needs, is a long-established practice in Montréal, at home and in community or collective gardens. However, despite UA's popularity, political, financial and legal supports for such activities are limited. This poster presents recent estimations of the production of domestic gardening in the Montreal metropolitan area and evaluate the effect of an increase in gardening spaces in the city on food production.

According to a random survey disseminated in 2019 across five areas of metropolitan Montréal, gardeners' representation among the population and food self provisioning in fresh fruits and vegetables were estimated. Thanks to an innovative method, these data have been extrapolated at broader scale such as the studied territories and the Montreal metropolitan area.

In 2019, those who garden produce in aggregate 14,837 metric tons of fresh fruits and vegetables in 183 hectares in Montreal city. Our model reveals that increasing gardening space could increase production to reach 24,384 t per year in 397 ha if gardens of less than 10 square meters were expanded to 15 square meters (scenario 2a). Food production could even double to reach 30,499 t produced in 674 ha if people lacking collective gardening spaces accede to 15 square meters plots (scenario 2b).
Domestic gardening food production is generally underestimated in industrialized countries' cities. However, these activities occupy relatively restraints areas. According to city dwellers' will, implementing new gardening spaces on roofs or in earth would strengthen domestic food gardening potential.

Moreover, this poster also enlarges the discussion in presenting preliminary results of a survey about domestic gardening conducted in the municipalities of Arlon, Attert and Messancy (Belgium) in 2025. Indeed, according to a collaboration between the GAL Arelerland and the Arlon Campus Environnement of the University of Liège, the here above methodology is being replicated. Thanks to few refinements, we attempt to link domestic gardening data and food potential estimation to nutrition and health epidemiological study. As a first attempt, we will present this Belgian study preliminary results and few challenges to improve our methodology.

Supporting the development of urban agriculture projects in urban planning

Guillaume Morel-Chevillet, Charlotte Liborio-Cornet

Astredhor, Marseille, France

Urban agriculture, Project development, Territorial planning, Technical assistance

For 25 years, ASTREDHOR (French Institute for Plant Professionals) has been working with companies to meet the technical, economic and environmental challenges facing the plant sector. Recognised as a qualified agricultural technical institute since 2008, the Institute designs and implements research and innovation programs and supports 600 professionals in the development of their activities through expertise, training and advice. The Institute employs more than 70 technicians, engineers and doctors working in 6 territorial units across France which meet the needs of the sector and public policies.

Since 2015 ASTREDHOR has been conducting applied research projects on urban agriculture and nature in the city. This expertise has led to the creation of TechnAU, an engineering consultancy with expertise in urban agriculture and plants in the city. TechnAU's main skills include co-design of urban agriculture projects and cutting-edge agronomic expertise in production techniques adapted to urban environments, with a specialisation in soil-less agriculture. TechnAU is also a tool for networking partners, from urban farmers to agricultural sector producers, to anticipate future management and ensure sustainability.

The aim of the consultancy is to offer personalised technical support for the development of urban agriculture projects, designed for local authorities as well as other urban planning stakeholders (architects, landscape architects, town planners), and project owners who need technical support in setting up their operations.
The working methodology can be adjusted according to the needs of the project, the context and the requests, and is based on over 10 years' experience in agri-urban areas, green architecture and setting up urban farms. Indeed, with more than 20 projects carried out in France since 2015, ranging from support for the implementation of territorial strategies to technical studies on the co-design or development of urban farms, the consultancy has a good overview of the dynamics of urban agriculture in France. The ongoing link with the Institute's research activities on urban agriculture enables to improve our detailed knowledge of techniques and innovations on the subject, and to ensure that research projects meet the real challenges faced by urban agriculture stakeholders on the field.

Promoting urban agriculture: common challenges and mutual learning

Soledad Cuevas, Charlotte Gallagher-Squires, Daniel Lopez García, Anton Parisi, Beatrice Walthall

CSIC

Policy, governance, challenges, comparative analysis

This poster will present work carried out in the context of the FOODCITYBOOST project. , led by Vrije University Amsterdam, aimed at analysing how urban agriculture can be leveraged to address some of the key socio-environmental challenges that European cities are currently facing. These include climate change, but also biodiversity loss, social isolation, social inequality and a growing disconnection between urban and rural environments, as well as the impact of cities´ unsustainable use of resources.

The consortium includes 20 institutions and 6 living labs, situated in Valladolid (SP), Flanders & Brussels (BE), Almere (NL), Sofia (BG), Riga (LV) and Wroclaw (PL). Work package 4, co-led by Zalf and IEGD-CSIC analyses policy and governance contexts, identifying best practices to inform, together with living lab participates, the co-creation of future governance scenarios, dissemination devices and training activities.The present study aims to analyse the policy and governance landscape for urban agriculture in different cities, identifying the main types of support provided by State institutions to urban agriculture initiatives, and identifying common challenges in relation to key types of policy support.

We then analyse, for selected common challenges, the underlying structural factors (land distribution, ownership, property rights), sociopolitical processes (of decentralization and privatization, for example) and actor interactions and networks. This analysis supports a realistic, contextualised understanding of opportunities for mutual learning across cities and living labs that goes beyond simplistic recommendations for scaling up or replication. Key types of state support identified include mobilization of public land; connecting producers and consumers in short value chains (including through public purchase), environmental standards and input use regulation, promoting food and environmental education, multistakeholder collaboration, funding for multifunctional agriculture.

Related common challenges include long-term access to land and funding, adapting farmers market regulations to recognise the specificities of small producers and their role as social spaces, water use, competition for land, and a lack of recognition of the multifunctionality of urban agriculture.

Brussels Good Food Strategy

Marie Detienne, Evy Cornelis

Bruxelles Economie et Emploi, Service Public Régional de Bruxelles

Regional Food Strategy, Agro-ecological production, producer support

The Good Food Strategy 2 (2022-2030) was approved by the Brussels government on June 2, 2022. The development of this strategy mobilized over 300 players in the food chain in a co-construction process lasting over a year. The common ambition is to “requalify our food system, from production to consumption, towards a model that respects humans and other species, regenerates biodiversity and creates quality jobs”. Numerous projects and initiatives already exist in the Region, and their potential can only be amplified and multiplied.

Farmers are the key actors at the base of the food chain. However, these actors are currently experiencing financial insecurity due to market prices, which generally do not allow them to generate a wage worthy of their productive activities and the ecosystem services they provide to the population. In Brussels, the median income of farmers is 40% lower than the minimum wage. In addition, they suffer from land insecurity due to inaccessibility to land ownership, the unwillingness of public and private landowners to offer long-term land agreements - such as farm leases - and the lack of available land.

Axis 1.1 of the Good Food 2 strategy aims to improve conditions for Brussels farmers, and to intensify and support professional agro-ecological production in all its dimensions (political, environmental, social and economic) in Brussels and the surrounding area. It comprises 4 operational objectives broken down into 8 measures.

The 4 operational objectives are :
1. Preserve agricultural land and promote and secure access to professional agricultural production sites in the CBR.
2. To provide all farmers working in Brussels with a set of sustainable and structured services and tools to support their agroecological practices and promote the development of the sector.
3. To secure and organize long-term financial support for all farmers working in the Brussels area who meet or are moving towards agroecological practices.
4. Intensify exchanges between the CBR and other Belgian cities around primary food production, and forge partnerships with players on the periphery in order to preserve agricultural land and promote and secure access to production sites for agro-ecological metropolitan agriculture.

Grow the City: Training Urban Actors in Circular Farming for Sustainable Cities

Caroline Bini

Groupe One

Training, Circular Urban Farming, North West Europe

The CUF-Training project (Circular Urban Farming Training) is an innovative and impactful initiative funded by the Interreg North-West Europe program for a period of 18 months. It is designed to support the transition towards a circular and resource-efficient economy by equipping urban development stakeholders with the necessary knowledge and skills to implement and scale circular urban agriculture systems. CUF-Training operates within a transnational and interdisciplinary framework, bringing together partners from Belgium, France, Luxembourg, and Germany.

The programme adopts a hybrid pedagogical model, combining 46 hours of online learning modules with 24 hours of on-site practical training in each of the partner countries. This dual approach allows participants to acquire a comprehensive understanding of circular urban agriculture, merging conceptual foundations with field-based experience.

Key topics include various urban food production techniques (such as hydroponics, bioponics, and aquaponics), organic waste management and valorization, and the design and construction of circular rooftop or soil-less farms. Participants benefit from the expertise of leading professionals and researchers in the field of urban agriculture, ensuring high-quality knowledge transfer and alignment with the latest scientific and technical developments. Since its launch, CUF-Training has proven to be a major success, with over 91 participants enrolled across its modules. This strong participation demonstrates a growing interest in sustainable urban food production and circular practices in city planning and development.

Building on this momentum, the project consortium is now actively seeking to institutionalize CUF-Training within higher education programmes, with the ambition of offering it as a permanent academic component in universities and technical institutes. This would enable the long-term dissemination of circular urban farming knowledge and contribute to the structural transformation of skills and practices needed for more resilient and sustainable cities.

In conclusion, CUF-Training exemplifies how transnational cooperation and educational innovation can deliver concrete tools to foster ecological transition in urban contexts. It stands as a promising model for the future integration of circular principles into urban planning and food systems, and for the training of tomorrow's leaders in sustainable urban development.

4.1

FedeAU: Representation & Empowerment of UA professionals in Brussels

Laura Sylvia Herman
FedeAU

Professional Federation; Regional Advocacy; Ressource Mutualisation; Urban Agriculture; Resilient Ecosystem

Objective : Introduce participants to the process, successes and challenges of building a regional federation of urban agriculture professionals. Overview into the profile of UA pros in Brussels, our activities, our vision, tensions and experiences. Overview of our evolution over the past few years, lessons and best practices for similar networks at the city, regional or national scale.

4.2

Urban Agriculture as impulse for Local Food Circles

Anna Kirstgen, Björn Moller
Fraunhofer ISI

Innovation, Urban Agriculture, Foresight, Trend, Local Food Circles

Europe‘s cities are facing growing challenges, exacerbated by urbanization, climate change, biodiversity loss, unsustainable resource use and increasing alienation between urban and rural dwellers. These developments do not only threaten the sustainability of urban development, but also the stability and resilience of our food systems – two closely linked areas that are essential for a sustainable future. The growing world population and the threat of food shortages highlight the urgency of dealing with the complex problems of urban spaces. Cities are not only physical, but also social structures whose challenges are intertwined on several levels.

In order to understand these dynamics, physiognomic, functional and social indicators must be taken into account as well as economic, technical and political drivers. Only by taking a broad and multifunctional approach sustainable and effective solution strategies can be developed. At the same time, cities have enormous potential to make key contributions to overcoming these challenges. Many European cities are already demonstrating how innovative approaches to sustainable food production can be implemented, for example through community gardens, edible cities, local food circles, rooftop gardens and vertical farming.

These concepts do not only have the potential to improve the quality of life locally, but also to achieve positive effects on a broader scale. This is not just about growing food on rooftops or windowsills, but about a fundamental reorientation of how societies perceive, shape and sustainably use urban spaces. Through the targeted development and integration of such approaches, cities could not only become more resilient to the challenges posed by climate change and resource scarcity but also generate social, economic, and ecological benefits. To achieve this, it is essential to identify, combine, and promote trends from various fields early on, making them applicable to the urban context. This poster captures the essence of the future of urban agriculture through 100 carefully identified trends. As the boundaries between urban and rural blur, urban agriculture will play a critical role in shaping resilient and sustainable urban ecosystems. With this in mind, the trends and signals we explored were chosen for their potential to impact urban agriculture over the coming decades.

Nourrir Liège: A Festival for a Transition towards Sustainable Agriculture

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2 Centre d'Action Laïque de la Province de Liège
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4 Arsenic2, Adoc
5 SEGEFA, UR Sphères, University of Liège
6 RiCHES, UR Sphères, University of Liège

Professional Federation; Regional Advocacy; Ressource Mutualisation; Urban Agriculture; Resilient Ecosystem

The Nourrir Liège (« Feeding Liège ») festival, created in 2017, is an annual event aimed at raising public awareness about sustainable food and promoting environmentally friendly agricultural alternatives. This event, which is part of a broader transition towards more sustainable food systems, highlights solutions to ongoing urban agriculture challenges, such as natural resource management, food waste reduction, and access to local, high-quality food. In 2025, it is organized by the Ceinture Aliment-Terre Liégeoise ("Liège Food Belt" – CATL), the Centre d'Action Laïque de la Province de Liège, Arsenic2, the theatre company Adoc, the Maison de l'Alimentation durable et inclusive de Liège ("Sustainable and Inclusive Food House" – MadiL), and the University of Liège. Over 100 activities are offered by 150 partners during the ten-day festival, attracting around 6000 participants.

Nourrir Liège encompasses multiple aspects contributing to the evolution of urban and peri-urban agriculture through conferences, practical workshops, theatre plays, exhibitions and film screenings on topics related to agroecology, permaculture, and short supply chains. These discussions explore the role of cities in the agricultural transition, particularly through the enhancement of urban spaces for food production, and help identify innovations that promote the integration of agriculture into urban environments.

The festival stands out by promoting urban agriculture as a response to global food challenges. By showcasing practices such as community gardens, it encourages sustainable urban space management and supports local food production. These solutions not only enhance food resilience in cities but also contribute to reducing the carbon footprint associated with traditional food supply chains.

Moreover, Nourrir Liège fosters exchanges between local producers, researchers, and citizens, encouraging them to reflect on sustainable food models adapted to urban specificities. This approach strengthens social ties and promotes cooperation among various local stakeholders, a crucial factor for the success of urban agriculture.

In conclusion, Nourrir Liège positions itself as a key player in shaping the future of urban agriculture by contributing to the dissemination of sustainable food practices and encouraging citizen involvement in the transition towards more resilient and environmentally friendly food systems.

‘Cultures en Transitions’: A Transdisciplinary Approach to Food Sovereignty

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1 Centre d'Action Laïque de la Province de Liège, Arsenic2, Adoc 2,RiCHES, UR Sphères, University of Liège 3

Food transition and sovereignty, Action research, Art and education, Collective action, Transdisciplinarity

The “Cultures en Transitions” initiative is based on a transdisciplinary approach that brings together art, lifelong education, and science to guide public policies towards food transition and strengthen food sovereignty. It aims to reinvent the narratives around sustainable agriculture by highlighting local, resilient, and environmentally and socially adapted solutions. The initiative is led by the Centre d’Action Laïque de la Province de Liège, Arsenic2, the Adoc theater company, and the University of Liège.
Art, through theater, exhibitions, films, and podcasts, raises public awareness about the challenges of the food transition. It critiques the current agricultural model by exposing the issues related to industrial agriculture and highlighting alternatives such as agroecology and short supply chains. These artistic creations make complex issues accessible and inspire new sustainable practices.
The initiative is built on action research conducted across all the provinces of the Walloon Region, with over 600 testimonies collected on the potential of the territory to boost access to food for all in a sustainable way. It operates on three levels.
The first level is individual. It highlights the capacity and power of action that each person can have individually.
The second level is more collective. It reveals ways to organize collectively to initiate and invent innovative, socially responsible economic alternatives.

The third level, finally, is the macro level, which affects society as a whole, addressing the political changes expected at various levels of government. Based on the discovery and/or deepening of certain dynamics, the goal is to consider priority measures that could accelerate the food transition process for all.

By combining art, science, and politics, “Cultures en Transitions” offers a new vision of agriculture, focused on food sovereignty and sustainability. This initiative demonstrates that food transition is possible through resilient agricultural practices, adapted policies, and citizen engagement, contributing to a more just and autonomous food future.

Nourrir l'Humanité: Promoting Local Food Systems for a Resilient Future

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1 Arsenic2, 2 Centre d'Action Laïque de la Province de Liège, 3 RiCHES, UR Sphères, University of Liège

Food resilience, Sustainable agriculture, Local food systems, Food security, Participatory project

The "Nourrir l'humanité" ("Feeding Humanity") project is an initiative aimed at strengthening the food resilience of Wallonia and Brussels by encouraging sustainable, local, and accessible agricultural practices. It is part of a transition towards a more autonomous and environmentally friendly food system, in response to global challenges related to food security, climate change, and biodiversity loss. The project is led by Arsenic2, the Centre d'Action Laïque de la Province de Liège, and the University of Liège, with the goal of hybridizing Art, Science, and Politics. The idea is to expand the Nourrir Liège festival to all provinces of Wallonia and Brussels. By 2024, more than 100 municipalities out of 262 in Wallonia and 19 in Brussels were involved in organizing a festival on food transition.

The main goal of the project is to support local agriculture by promoting short supply chains and encouraging food production within the region. The project highlights the need for agricultural solutions tailored to local realities while involving citizens in the transition process. It also aims to raise public awareness about sustainable food issues, promote the consumption of local and seasonal products, and encourage environmentally friendly farming practices, such as agroecology, permaculture, and crop diversification.

"Nourrir l'humanité" is also a participatory project that involves various stakeholders, including farmers, producers, associations, public institutions, and citizens. It fosters partnerships between these actors to build a resilient and inclusive food system that can meet local food needs while minimizing ecological footprints.

Finally, the project places particular emphasis on education and training to transmit skills related to sustainable agriculture, natural resource management, and food waste reduction, thus contributing to the emergence of a more sustainable food model for future generations.

A living lab: interdisciplinary knowledge for irrigated urban agriculture

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Irrigation, living lab, interdisciplinary, points of view analysis, local actors

Though an economical and environmental sound option, urban agriculture is likely to be impacted by a growing and limited demand of water for irrigation; due to climate change and increasing competing water users. Even more in (peri-)urban areas. To face these challenges, alternative water resources, such as harvested rain-water, and more suitable irrigation management techniques, such as participatory decision-making and mutual exchanges of knowledge and learning, are to be adapted.

To create this interdisciplinary knowledge for the development of sustainable irrigated agricultural practices, ULiège's Environmental Campus at Arlon created a living laboratory. On several small plots of the Campus (located in town), a collective of researchers, students and gardeners focus on: i) a participatory and shared governance of the Campus vegetable gardens as well as the co-construction of experiments; ii) the reuse of rainwater for irrigation; iii) an optimization of irrigation techniques through better technology and field management; iv) evaluate the potential contribution of domestic/urban agricultural production to the food supply of households in the region; and v) transfer of knowledge from the Campus experiments to territorial actors (Local Activity Groupe Arelerland).

Ultimately, all these activities will feed an analysis of the complementarity of "points of view": i) egocentric: accumulation of personal experiences; ii) technocentric: knowledge created based on technology by "experts"; iii) ecocentric: approach by experts and certain stakeholders based on a systemic understanding of environmental issues; and iv) holocentric: encouraging learning processes by stakeholders themselves to address systemic environmental issues. By defining a common research object, these "points of view" are to be combined for the production of interdisciplinary (or even transdisciplinary) knowledge.

By bringing together a group of researchers, students and gardeners, the main objective of this Living Lab is to create interdisciplinary knowledge for the development of sustainable irrigated urban agricultural practices by combining several research "points of view". As an expected outcome, the irrigation systems developed in the Arlon Campus Environnement could be replicated in Arlon's shared gardens or inspire other institutions (schools, universities, hospitals, etc.) to develop their own irrigated gardens for food production.

Food Aid and Social Justice: A Sociological Analysis of a Community Garden

Juliette Ozer
ULB

Alternative food aid / Community gardening / Food justice / Poverty / Multidimensional well-being

This research examines the capacity of "alternative" food aid initiatives to address the needs of food-insecure populations, through a case study of the ""PCS de là-haut"" community garden, located in a public housing district in Evere, Brussels. Embedded in a broader project of social cohesion and food democracy, this initiative seeks to foster community ties while promoting access to local, sustainable food.

Using a qualitative methodology (semi-structured interviews and participant observation), the study investigates how this initiative meets the material, relational, and decisional needs of participants, based on the five-dimensional well-being framework developed by the sociologist Christopher McAll (2020). The findings reveal that the garden serves as both a space for social bonding, a site for recognizing lay knowledge, and a partial mechanism for food autonomy.

However, the initiative also faces limitations: unequal access to resources between individual and collective plots, fragile participant commitment, and difficulty reaching the most marginalized populations. These tensions highlight the risk of reproducing social inequalities within participatory food systems.

In conclusion, the "PCS de là-haut" provides a meaningful local alternative to traditional food aid, promoting dignity and empowerment, yet it remains structurally fragile and highly dependent on institutional support to ensure long-term viability and inclusivity.

Wasabi 2.0: Innovation at the service of a resilient Walloon agri-food sector

Herben Camille, Bafort Françoise, Jijakli M. Haïssam

Integrated and Urban Plant Pathology Laboratory, Gembloux Agro-Bio Tech, University of Liège, Belgium

Horticultural Innovation, Sustainable Agriculture, Local Food Production, Network of actors, Wallonia

The agri-food sector has a significant environmental impact—it uses large areas of land, emits substantial greenhouse gases, and consumes the majority of the world's freshwater. Changing our eating habits can help reduce these effects while also improving human health, as research suggests cutting back on sugar and red meat and eating more vegetables as part of the solution.

In Wallonia, horticulture plays an essential role in the local food system. Although local production is increasing, the region remains only 18% self-sufficient in food, despite a strong and growing public demand for local products. At the same time, market gardeners often face low incomes, while much of the sector's value is generated downstream, especially in processing and transformation activities.

To support a shift toward more sustainable and resilient food systems, the IIS WASABI 2.0 (Strategic Innovation Initiative for the Walloon Development of Benevolent, Integrated, and Innovative Horticultural Agri-Food Systems) aims to strengthen the horticultural agri-food sector. The initiative promotes sustainable agriculture by encouraging edible horticulture and small-scale animal farming, including fish, poultry, and insects—to boost regional food self-sufficiency.

WASABI 2.0 bridges the entrepreneurial world with research and innovation, fostering collaborative projects that address key challenges in the sector. Led by the University of Liège, the initiative brings together 66 partners from across Wallonia, including 9 academic and educational institutions, 25 companies spanning the entire value chain (from production to logistics), 6 municipalities, and 9 territorial development organizations.

Living Labs as a Methodological Backbone in FOODCITYBOOST

Christopher Kennard

Project Manager Reframe.Food (TBD)

Living Labs, cross-sectoral approach, food safety, governance

FOODCITYBOOST employs Living Labs (LLs) as real-life, transdisciplinary innovation ecosystems to co-develop, test, and evaluate sustainable urban agriculture (UA) solutions. Grounded in the principles of the European Network of Living Labs (ENoLL), this approach fosters systemic user-driven innovation through active participation of diverse stakeholders. LLs are built on three pillars: real-life experimentation, multi-stakeholder collaboration, and continuous feedback loops, enabling iterative refinement of innovations that address the socio-environmental and economic challenges of urban food systems.

The project's method focuses on participatory co-creation, combining qualitative and quantitative assessment tools, foresight analysis, governance evaluation, and the development of a decision-support toolkit. This integrated assessment approach ensures that emerging UA models are not only environmentally and economically viable, but also socially inclusive and contextually adaptable.

FOODCITYBOOST directly benefits a wide range of target groups. For consumers and urban residents, the project promotes access to fresh, locally produced food, healthier urban environments, and improved food literacy. Policymakers and public authorities gain practical guidance through policy briefs and toolkits to inform effective UA strategies and legislation. Urban farmers, entrepreneurs, and SMEs are supported through co-designed, scalable models that enable sustainable business development. Researchers and educators benefit from open-access datasets and knowledge transfer opportunities, while civil society organisations and community groups are empowered to take active roles in shaping local food systems.

Six Living Labs across Europe serve as the operational core of the project, providing geographically and culturally diverse testbeds for innovation:

- Riga, Latvia – Sabiedriba Ar Ierobezotu Atbildibubc Manufaktura
- Sofia, Bulgaria – Gorichka
- Flanders/Brussels, Belgium – Vlaamse Landmaatschappij
- Wroclaw, Poland – Fundacja Ekorozwoju
- Valladolid, Spain – Fundacion Entretantos
- Almere, The Netherlands – Flevo Campus

These LLs facilitate hands-on collaboration between local communities, scientists, policy actors, and businesses. Together, they co-create context-sensitive urban agriculture models, fostering innovation while addressing pressing challenges such as food security, social cohesion, employment, and urban resilience.

Index of presenters

URBAgr'Inn DAYS

Site visits

Sur le Champ by InBW

Located in the peri-urban area of Brabant Wallon, Sur le Champ is an innovative ecosystem dedicated to local food production and job creation. This pioneering project for Wallonia combines sustainability, local economy, and healthy eating.

It brings together three dynamic hubs:

- The Incubator – a testing ground for aspiring farmers and food processors
- The Nursery – a launchpad providing support and production facilities
- The Eco-Hub – a space for production, logistics, and direct sale

With 3,300 m² of buildings and 21 hectares of land, Sur le Champ is a true accelerator of the transition towards local and sustainable food. Come visit this unique site and discover a project shaping the future!

https://economique.inbw.be/sur-le-champ

The Maison Administrative Provinciale of NAMUR (MAP)

The MAP is a prime example of sustainability and innovation in the public sector. By incorporating urban agriculture into its daily operations, the MAP in Namur has created a garden that provides its employees with a unique experience of growing local and sustainable food right in the heart of the city.

This project not only supplies fresh produce for the institution's kitchen but also promotes employee well-being by offering a space for relaxation and community around gardening.
Join us to explore this innovative project and discover how urban spaces can be transformed into sources of local food production. The MAP serves as an inspiring model for how public institutions can contribute to more sustainable food systems while engaging citizens. This visit will offer valuable insights into the synergies between urban planning, agriculture, and workplace well-being.

https://www.youtube.com/watch?v=GYIUN2W-FGU&list

URBAgr'Inn DAYS

Site visits

The Pousses Poussent & CRE@FARM

Pousses Poussent is an urban farming project located in the heart of Liège. Set on a 1.7-hectare plot provided by the CRE@FARM program, two young farmers, Félicie and David, have launched their farming initiative, *Les Pousses Poussent*. This project not only promotes sustainable, local food production but also offers a unique opportunity to support new farmers in the city.

In collaboration with Ceinture Aliment-Terre Liégeoise and Les Petits Producteurs, the project creates a hybrid model, combining farming with part-time work at a nearby store, ensuring income stability. The excess produce is sold locally, helping build a stronger, more sustainable food system. Pousses Poussent serves as a model for expanding urban farming initiatives and can be replicated in other neighborhoods and sectors.

CRE@FARM initiative supports aspiring farmers through access to land, training, and financial mechanisms designed to facilitate entry into sustainable agriculture.

https://alimentation-locale.liege.be/creafarm/creafarm#c6=faceted-cards
https://www.catl.be/2020/02/09/les-pousses-poussent-un-projet-emblematique-a-liege/
https://www.facebook.com/LesPoussesPoussent/?locale=fr_FR

Le coin de terre

Coin de Terre de Bressoux is Wallonia's largest collective urban garden with 6 hectares, and probably the largest in Europe, where 290 individual plots are cultivated by local residents. This vibrant space is not just about growing food—it's a laboratory for community-led agriculture, social cohesion, and food autonomy.

https://www.facebook.com/LaParcelleCollectiveBressoux
https://www.youtube.com/watch?v=j120XRJwUmU

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LOCAL FOOD LOGISTICS HUB

Thow the Ceinture Aliment-Terre Liégeoise (CATL) acts as a key driver of food system transformation in Liège. As a catalyst for local food resilience, CATL supports initiatives that strengthen urban and peri-urban agriculture, facilitate access to land, and create sustainable livelihoods for farmers.

During this session, we explored two of CATL's strategic projects:

- **CRE@FARM is a call for projects that aims to encourage the development of urban agriculture projects in Liège by making municipal land available. Initiated by the Department of Economic and Territorial Development of the City of Liège in partnership with the Ceinture Aliment Terre Liégeoise, it aims to promote access to land and stimulate self-creation of jobs, to meet growing consumer demand for quality local produce and to encourage short distribution channels with a view to strengthening the local food economy.**
- **The CPA (Conseil de Politique Alimentaire) is a democratic governance body dedicated to the actors·rices of the food system, on the scale of the 24 communes of the administrative Arrondissement of Liège Métropole. Its objectives are to**
  - **Intensify and make more inclusive the dynamic of transition towards a resilient and sustainable food system in the territory of Liège Métropole**
  - **Facilitate exchanges and coordination between actors·rices of sustainable food in a context of proliferation and emergence of many initiatives.**

CATL is also piloting other strategic projects for the development of cork's urban and peri-urban short circuits, such as the logistics hub. Efficient distribution is key to making local food accessible. At the Logistics Hub, innovative solutions connect small-scale producers with consumers through streamlined supply chains.

https://www.catl.be/
https://www.catl.be/le-cpa/

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