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The Inno-Farming project: innovative urban farming applications for future urban farmers

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Abstract

Urban Agriculture (UA) is spreading around the world thanks to its capability to bring together the current knowledge and advances from rural agricultural sector with a set of new skills, innovations and technologies, enabling to pursue a large set of ecosystem services within the cities (e.g., provisioning, regulating, habitat and cultural services). In the coming years, thousands of new-incomers in the UA sector are expected, including not only students of agriculture or professional farmers but also unemployed youth, social and educational bodies, environmental actors, general public, each of them requiring specific technical competences in UA. The European project Inno-Farming, founded in the framework of Erasmus+ program, have implemented an innovative methodology and online training tools to foster the acquisition of key competences in the interdisciplinary context of UA. In the present work, the main outcomes of the project will be illustrated, in order to provide an interdisciplinary framework to strengthen the role of UA for the target groups of professional actors (e.g., teachers/trainers on agro-food VET schools, agricultural consultants & academics), agro-food students in formal education and professional farmers, new-incomers (e.g., new project leaders in UA, employees in redevelopment, unemployed youth), supporting organisations for incomers (e.g., incubators, cooperatives or any supporting organisation involved in UA), local administrations as they need to understand better the development stakes of UA and the supporting tools proposed, citizens organisation (e.g., local NGO's, neighbourhood associations, consumer associations).

Keywords: education; urban agriculture; teaching tools; innovation

INTRODUCTION

Global population is projected to continue to grow older and, by 2050, the world's population will approach 10 billion (2/3 of whom will live in cities). Considering the food demand of this aging and urban population, Urban Agriculture (UA) has become of great interest in finding new answers related to how cities can master recent agricultural, social, economic, and ecological challenges. UA can take place in different forms (e.g., community gardens, allotment gardens, rooftop farm, vertical farm, community supported agriculture), and through the involvement of many different kinds of stakeholders (Orsini et al., 2020). Thousands of new-incomers to UA are expected, including not only agricultural students or professional farmers but also unemployed youth, social and educational bodies, environmental actors, general public (who have concerns on aforementioned issues) each of them requiring specific technical competences in UA.

Innovative Indoor Farming Applications for Future Urban Farmers (Inno-Farming) is an ERASMUS+ strategic partnership for vocational education and training (2019-1-FR01-

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KA202-062337) funded by the European Union and the French national agency for the ERASMUS+ Programme, with a wide-ranging set of aims: 1) bringing together existing knowledge in UA; 2) supporting the educational processes of agricultural students and new-incomers in UA; 3) developing the teaching skills of agricultural VET (Vocational Education and Training) actors in UA while developing VET skills of related stakeholders as regards to the innovative UA sector; 4) creating a sustainable VET environment & network for of local, regional, national and European stakeholders' interaction, exchange of ideas, experiences and good practices.

The project aims to develop some key skills and competences in the target groups including entrepreneurship spirit, sense of innovation, practical urban farming skills, research, problem solving and learning to learn. In this regards the target groups are: i) Professional actors: teachers/trainers (on agro-food VET schools), agricultural consultants and academics; ii) Agro-Food students in formal education and professional farmers; iii) new-incomers, new project leaders in UA, employees in redevelopment, unemployed youth; iv) supporting organizations for incomers incubators, cooperatives or any supporting organization involved in UA); v) local administrations as they need to better understand the development stakes of UA and the supporting tools proposed; vi) citizens organization (local NGO's, neighborhood associations, consumer associations) as potential prescriptors and consumers of the production developed in UA.

Inno-Farming project has been undertaken in 2019-2021 by a partnership of organizations and institutions coordinated by CDE Petra Patrimonia Alpes de Sud (CDE PP) from France, and also composed by the Department of Agricultural and Food Sciences of the University of Bologna (Italy), the AgriFood Institute of Aragon within the University of Zaragoza (Spain), and the Bureau for EU and Foreign Affairs (BEUFA), a sub-unit of the Governorship of Kocaeli (Turkey).

MAIN PHASES AND ACTIVITIES

In order to reach the objectives, the project went through 4 main steps (Figure 1):

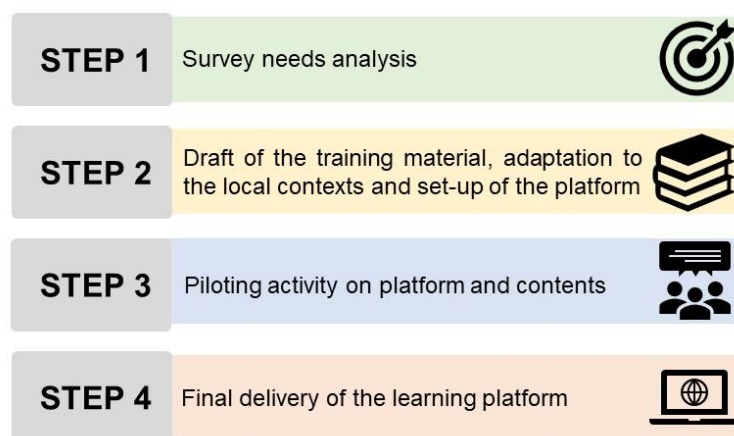


Figure 1. Four main steps and activities of the Inno-Farming project.

Step 1) Survey needs analysis

The first output of the project is the development of a training methodology aimed at acquiring the needed technical skills and knowledge on UA. Accordingly, specific data to deeply examine the focus groups, the exact needs and expectations were needed. To collect these data, in the first phase of the project all partners conducted a specific training needs assessment studies (based on a common survey template) with representatives from three main focus groups at local/regional levels. The three main focus groups of the project were agro-food students, VET-actors and new-comers to UA.

The survey was submitted both via web platform, and by telephone and face-to-face interviews with the aim to reach at least 45 replies, 15 from each target groups. In total 190

survey replies have been received, 10 more than the target set, divided among the partners as follows: 27 from France, 53 from Italy, 45 from Spain, and 65 from Turkey.

In the first part, the survey investigated the general interest in learning more and acquiring new knowledge in UA. The large majority of interviewed people declared an interest in a specific “Innovation in Agriculture” training and likewise a high interest in learning more about innovations in agriculture. In the second part of the survey, more specific questions were asked in order to investigate interest in specialized soft and hard skills.

Among the explored soft skills (e.g., communication, empathy, analytical competence, self-confidence, teamwork, trustworthiness, creativity, self-control, curiosity, handle conflicts, time management and flexibility), communication skills and teamwork capacity resulted to be the more important for the interviewed population, in the four considered local contexts. Concerning the hard skills, the most cited among the interviewees were plant management, ecology, biodiversity and project planning.

Step 2) Draft of the training material, adaptation to the local context and set-up of the platform

Based on the results of the needs analysis, Inno-Faming project proposed a course structure composed by five modules (Figure 2), each of them covering some topics and skills highlighted as relevant for the sector:

- Module 1: *Introduction to Urban Agriculture*; the module provides an overview of the urban agriculture sector, giving a general introduction to the background in which urban farmers operate today, of the evolution of urban agriculture throughout human history and the purposes with which it has evolved, and of the potential beneficiaries of urban agriculture activities and an analysis of the urban context, highlighting opportunities and challenges facing urban agriculture.
- Module 2: *Technical aspects of Urban Agriculture*; the module introduces and illustrates various urban agriculture typologies found in cities around the world, with a distinction among traditional and innovative systems. Among the traditional systems, urban community supported agriculture is taken as an example and described. Among the innovative systems, rooftop farms, urban aquaponics and vertical farms are described and analyzed in detail in terms of characteristics, location, functions, technical aspects, development challenges and support needs.
- Module 3: *Social and environmental sustainability of Urban Agriculture*; the module describes the social and environmental benefits of urban agriculture, by using the ecosystem services approach to frame the benefits that the society obtains from urban agriculture (provisioning, regulating, supporting and cultural services).
- Module 4: *Environmental impacts and economic implications of Urban Agriculture*; the module follows up from Module 3 on ecosystem services approach, complementing the views with other perspectives and indicators, and tries to link it more to the economics and public policies, introducing methodologies available to assess environmental sustainability and economic implications of urban agriculture.
- Module 5: *Legislative aspects and business models in Urban Agriculture*; the module focuses on the importance of governance, policy schemes and regulations for the development of an urban agriculture (UA) project, furthermore exploring the significance of an effective communication with private and public stakeholders, and a valid social network community for successful UA initiatives.

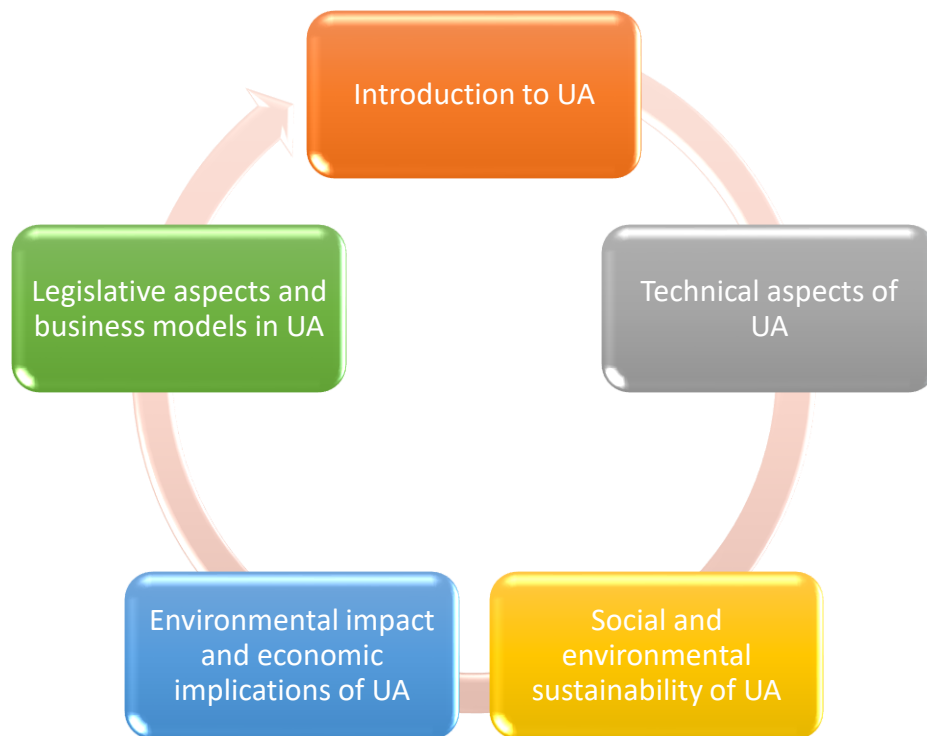


Figure 2. Course structure of the Inno-Farming project.

Each module is enriched and completed by other sections related to key concepts and vocabulary, an evaluation section, a series of exercise and practical activities, useful external resources to deepen the topics, and bibliography.

After a first draft prepared in English language and revised by the whole consortium, the materials produced were adapted to the local contexts (by making translations of the texts, by adding description of local case studies, by proposing external materials in national languages) and the five versions of the resources were uploaded to the final platform, chosen for delivering the course (app.myskillcamp.com/).

Step 3) Piloting activity on platform and contents

The produced learning materials and the platform have been tested through a piloting section organized in each partner country. The target objective was to involve 6 people per country, for a total of 24 people. At the end of the piloting section, comments and feedbacks from 26 people were collected, involving 10 teachers, 7 students and 9 professionals or future professionals in the field of urban agriculture, covering the main target groups of the project.

People involved in the piloting activity was asked to evaluate the content of the developed learning materials and the usability of the platform, and feedbacks were collected through an ad hoc developed questionnaire.

Step 4) Final delivery of the learning platform

The analysis of the feedbacks collected during the piloting section allowed the partners to improve and finalize the whole course structure and the platform.

CONCLUSIONS

The Inno-Farming project succeeded in developing a complete training course and several educational resources supporting new entrepreneurship in urban agriculture. Training offers in urban agriculture should take into account the great varieties of existing urban agriculture activities and business models, types of actors involved and their different

needs in terms of knowledge, soft skills and hard skills, and also the multidisciplinary of the topic.

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Literature cited

Orsini F, Pennisi G, Michelin N, Minelli A, Bazzocchi G, Sanyé-Mengual E. & Gianquinto G. (2020) Features and Functions of Multifunctional Urban Agriculture in the Global North: A Review. *Front. Sustain. Food Syst.* 4, 562513. doi: 10.3389/fsufs.2020.562513