Innovation Processes in Urban Agriculture

Best Practice Examples

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Introduction

The best practice examples summarized below introduce a number of urban agriculture (UA) organizations and enterprises in the United States. These organizations are currently applying innovative concepts or prototypes that could be considered as potential solutions to societal and environmental challenges.

This brochure has therefore been prepared specifically for those interested in UA, as well as those political and administrative groups responsible for it. The particular innovative solutions also have the potential to address societal issues at different levels within Germany, including social participation, resource efficiency, education and open space design. The scope of innovative features consequently reflects the potential of UA beyond just production alone. Local governments and society can actively support and utilize these potentials. The best practice examples provided can be the stimulus to explore new ways to achieve social, environmental and entrepreneurial goals. They also demonstrate that a part of the effort made within UA is directed towards enabling urban agricultural in the first place, and this through knowledge transfer and funding concepts. Targeted support measures should therefore focus on synergies between the gardeners and societal objectives.

This compilation of best practice examples is the result of field research performed in the United States in June 2012 within the framework of the INNSULA "Innovations and Sustainability Analysis of the Urban Agriculture" under the auspices of the German Federal Ministry of Education and Research. Based on a literature and internet analysis, a total of 19 gardens, farms, organizations and enterprises in New York City, Amherst (MA), Philadelphia and Chicago were selected and examined on-site in terms of their innovation activities. Particularly outstanding projects were then compiled following an evaluation of the semi-structured interviews carried out.

In the next section, certain underlying understandings of UA and innovation shall be explained in simplified form along with the definition of some important terms.

Urban Agriculture

In economic or non-profit contexts, UA is the cultivation of food, especially fruits, vegetables and herbs in urban areas. Gardeners and gardener communities deal with the spatial, economic, environmental and social confines of cities. For instance usable land close to home is in many cases a rare commodity. The (potential) contamination of soil created by previous usage is a further issue that gardeners have to deal with in the city. The defining points of UA are therefore not limited to it being a garden located in a city or an urbanized area, but three characteristics that have been identified by the INNSULA project:

- Flexible handling of durability and space: Examples include mobile gardens; concepts to share the small amount of usable space, as well as the use of vacant land as temporary usage areas.

- Greater independence of local site conditions: Examples are the use of raised beds, gardens on roofs, and the implementation of hydroponic techniques.

- Social and economic integration into the social fabric of cities: Examples here are the integration of various groups of people such as neighbors, students, associations and enterprises, as well as activities including education projects, farmers markets or readings that go beyond the actual normal scope of gardening (Hartmann et al 2014).

Since the conditions for the cultivation and (potential) marketing of the harvested produce can differ greatly from traditional and industrial agriculture, actors within UA have less chance to fall back on proven solutions that are more oriented towards production processes based on large areas. New solutions have been sought by experimenting and testing possibilities via a "Do-it-yourself" approach. This has resulted in new products, concepts and practices that can be understood as an expression of innovation processes in UA.

Innovation processes

An innovation is not a sudden or randomly occurring event, but the result of a process. Different groups of people within a network develop an idea by weighing, adapting and discarding aspects until the new product, concept or practice is commonly applied.

Such an innovation process can proceed in the research and development division of an automobile manufacturer, for example, ending with a new car model as an innovation that is then introduced onto the market. An innovation process can also occur in civil society, however. In this case the resources and values that the actors involved bring to the system they are developing are important. Innovation is therefore seen as a systemic process creating and adapting something new by social learning in actor networks (Brunori et al. 2008).

An innovation process is also accompanied by changes in behavioral patterns and value structures that are associated with the structure and function of the new product, concept or practice (Ploeg et al. 2004). Because the creation and implementation of a novelty fundamentally alters thought and action, innovation processes are considered to be key drivers of entrepreneurial, economic and societal development.

Sub-processes

To better understand the complexity of an innovation process, it may be divided into the sub-processes of invention, adaption and adoption. Since these sub-processes have been defined in the best practice examples to illustrate the innovation performance of organizations and enterprises, the terms below are briefly explained.

Invention: An invention is the creation of an idea or novelty and occurs at the beginning of each innovation process. For example, the idea may be the concept of a mobile garden that could address the problem of only temporary space availability. The novelty could therefore be viewed as a new way of thinking or acting, including the potential to become a new and improved approach to social or business problems (Ploeg et al. 2004). A novelty can be a concept, a method or a prototype.

Adaption: If a novelty is adopted by other gardeners and adapted to their own needs and requirements, it is called an adaption. Widely-applied concepts, methods and products generally have a longer learning process behind them, during which time the idea is extensively tested, discussed and adjusted in technical, social or regional networks. The sub-process of adaption is therefore concerned with the improvement of a novelty, which nevertheless may not always be achieved since errors and setbacks can hinder it.

Adoption: If a novelty is taken on without further changes, it is known as an adoption. This can be done by purchasing a product such as a kit for a raised bed, but also by the implementation of, for example, an organizational concept.

Evaluating Innovativeness

The objective in compiling the best practice examples is not only to present interesting projects and enterprises alongside their novelties, but also to reveal their innovation performance and how it is evaluated. For this, the concept of innovativeness is used. This is the ability of organizations and enterprises to seek out and find new approaches. Two aspects are included in the evaluation of innovativeness:

a) the number of applied novelties and

b) the innovation sub-processes carried out within the organization or enterprise.

A simple criteria system was developed for the evaluation process, in which the number of novelties were factored against the innovation sub-processes carried out in the organization or enterprise. Inventions were given a factor of 6, adaptions 4, and adoptions 2. This means that if an urban garden with three novelties, whereby one novelty was an invention and the two others were adoptions, the garden would score 10 points for its innovativeness.

For an improved overview and to better compare the organizations and projects with one another they have been divided into three groups according to their number of innovativeness points. The signs for the groups are stars. One star symbolizes a low innovative capacity, two stars have an average innovation performance and three stars indicate a very high innovation performance.

Thanks

The examples at hand represent only a selection. Thus, we would like to thank all the people who committed their time and knowledge to support our research and we hope that they will carry on being forerunners of urban agriculture.

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Green Thumb, New York City

Green Thumb (www.greenthumbnyc.org) is a publicly funded program housed at the Department of Parks in New York City. Green Thumb supports community gardens in New York from founding to preservation by providing materials and workshops while further assisting them with contacts to other municipal administrations. In addition, Green Thumb manages the community gardens as an umbrella organization and documents the development and distribution of community gardens throughout the city of New York.

Foto: Ina Hartmann

Innovative Novelties

Train the Trainers

Multiplier concept where coaches are trained to pass on their knowledge and experience to gardeners and other interested people and then continue on as mentors.

"Gardenhaus"

Prototype of a multi-functional shelter established for less than $1000 that can be used as both a tool shed and a greenhouse.

Rainwater Collection System

Variable system that can be adjusted and installed according to site specific conditions. It consists of tanks for water collection and storage, plus filters and pipes.

Community Management System

Management concept in which a functioning gardening group and an elected representative are required for support and advice.

Innovation Performance and Problem Orientation

	Innovation Performance	Problem Orientation
Train the Trainers	Adoption	Social activation
Gardenhaus	Invention	Enabling gardening
Rainwater Collection System	Adaption	Resource efficiency
Community Management System	Invention	Social activation

Innovation Score: ★★★

Franklin Permaculture Garden, Amherst (MA)

Franklin Permaculture Garden (www.umasspermaculture.wordpress.com) is a public campus garden initiated and operated by students of the University of Massachusetts. In accordance with permaculture principles, different plants are combined in a plot together in a manner that supports mutual growth and co-protection against pests. Fruits, vegetables and herbs grown on the surface are delivered to the neighboring university cafeteria, where they are processed and sold.

Innovative Novelties

Canteen Supported Garden

Concept in which a university's cafeteria financially supports a student-run permaculture garden located on the campus grounds by processing and selling the food harvested from the garden.

Participatory University

Concept in which students and teachers jointly develop courses and course content based on the creation and ongoing operation of a campus garden.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Canteen Supported Garden	Invention	Strengthening producer-consumer relationships, Funding
Participatory University	Invention	Education

Innovation Score: ★★☆

Pennsylvania Horticultural Society, Philadelphia

Pennsylvania Horticultural Society (PHS) (www.pennsylvaniahorticulturalsociety.org) is a membership-based, nonprofit organization that supports and promotes horticultural activities through workshops, publications and programs at all levels. In addition to the greening of abandoned land and the annually held garden shows that focus on flowers, the PHS has in the past few years also supported the cultivation of fruit and vegetables in community gardens and urban farms. In this way they are able to draw on a wide UA network within Philadelphia.

Foto: Regine Berges

Innovative Novelties

Pop-up gardens

Concept in which a representative inner-city open space is designed and seeded as a publicly accessible vegetable garden for one season. Its appeal and multifunctionality is publicized through workshops and information material. Partner star-chefs use the produce in their restaurants.

City Harvest Program

A program that supports startups and community gardens with materials, contacts and seeds. The seed is produced as part of a prisoner rehabilitation program. The urban gardens and farms donate a portion of their harvest to an organization that provides the needy with fresh food.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Pop-up gardens	Invention	Open space design and education
City Harvest Program	Invention	Enabling gardening and health

Innovation Score: ★★☆

Greensgrow Farms, Philadelphia

Greensgrow Farms (www.greensgrow.org) is a company that produces vegetables alongside its nursery for flowers, seedlings and young plants. It sells its crops via direct marketing at the site's weekly market, Community Supported Agriculture (CSA) agreements, and directly to restaurants. Honey obtained through its own beekeeping facilities and eggs laid on the farm are also sold through these pathways.

Foto: Regine Berges

Innovative Novelties

Compost toilet

System that converts fecal matter into a compost substrate via the use of solar energy within three months. The substrate is only used for non-edible plants, however.

Professional Community Kitchen

Concept in which a kitchen certified for food processing is established and leased to local micro-companies in the food manufacturing sector.

Low-budget cold storage

Refrigerated room that is operated by an air conditioner and serves to temporarily keep harvested products fresh before the sale.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Compost toilet	Adaption	Resource efficiency
Professional Community Kitchen	Adoption	Enabling business
Low-budget cold storage	Invention	Enabling business

Innovation Score: ★★☆

Growing Home, Chicago

Growing Home (www.growinghomeinc.org) is a social enterprise that operates two urban farms and a third farm in the countryside. Produce is mainly grown in greenhouses and sold on local markets in Chicago. Cultivation and distribution therefore represents the first (economic) pillar of this company. The second (social) pillar of Growing Home is a three-month vocational training program for young people who support the work on the farms.

Innovative Novelties

Vocational training program
Three-month training program with practical and theoretical aspects for young people with few opportunities on the labor market. The themes range from agricultural production, processing and marketing to healthy eating.

Organic certification

Label that certifies the controlled cultivation based on organic criteria. No mineral fertilizers or chemical pesticides are used, and all materials and soils conform to bio-standards.

Crowdfunding
Concept whereby small donations made by many people result in large sums of money being collected online. The amount already collected and the amount still required for the implementation of a specific project are always transparent.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Vocational training program	Invention	Education
Organic certification	Adoption	Resource efficiency
Crowdfunding	Adoption	Enabling business

Innovation Score: ★★☆

The Plant, Chicago

The Plant (www.plantchicago.com) is a social enterprise that has established an energy-neutral company-consortium within a building formerly used for meat processing. The consortium is made up of companies producing and processing food and beverages. Due to ongoing construction work planned to end in 2016, only a few of the future companies are currently active. The Plant itself already operates an aquaponic farm that has been integrated into the building.

Innovative Novelties

Building recycling

Concept for the re-use of a building in which up to 80% of building materials and components are used again and implemented in new contexts.

Energy-neutral building utilization concept

Concept that combines various building uses so that a value chain of matter and a closed energy and heat circulation is created.

Indoor aquaponic cultivation

System that combines plant production with fish farming so that fish waste is used for plant nutrition.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Building recycling	Invention	Resource efficiency
Energy-neutral building utilization concept	Invention	Resource efficiency
Indoor aquaponic cultivation	Adaption	Resource efficiency

Innovation Score: ★★☆

Phoenix Community Garden, New York City

Phoenix Community Garden (www.grownyc.org/openspace/gardens/bk/phoenix) is a community garden under the umbrella of Green Thumb. The garden is self-organized. The members, who lease their plots for one year, have divided themselves into working groups to organize any incidental tasks such as setting up shelters or composting. The harvest itself is consumed or given away to friends and acquaintances. One school in the neighborhood has a plot in the garden it uses for class lessons.

Innovative Novelties

Donation plot

Concept of a jointly operated plot in the communal garden, in which the entire harvested produce is donated to a neighborhood food distribution charity.

Rainwater collection system

Green Thumb developed a variable rainwater harvesting system that was adapted to the specific conditions in the Phoenix Community Garden, consisting of catch basins on the roof of a neighboring house, closed rain barrels, filters and pipes.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Donation plot	Adaption	Health
Rainwater collection system	Adoption	Resource efficiency

Innovation Score: ★☆☆

Brooklyn Rescue Mission Inc, New York City

The Brooklyn Rescue Mission, Inc. (www.brooklynrescuemission.org) is a community-based organization that has constructed a farm on a former vacant area in the Bedford-Stuyvesant neighborhood for local needy families and young people to give them access to fresh and healthy food while educating them about gardening, cooking and nutrition. The harvested products of the "BedSty-Farm" are sold at a local market and distributed free of charge via the Food Pantry program. Workshops complete the program.

Quelle: nyc.gov

Innovative Novelties

Food Pantry Program

Program in which a portion of the produce from the garden is distributed once a week to the needy in the neighborhood. Interested parties come directly to the site of the farm to collect an assortment of different fruits and vegetables and recipe suggestions.

Growing Success - program for young people

Internship program where young people from the neighborhood learn after school and on weekends how organic products are grown and harvested, how to save seeds, how fruits and vegetables are processed and how this process contributes to a healthy diet. They also help to operate the Food Pantry Program.

Innovation Performance and Problem Orientation

	Innovation performance	Problem orientation
Food Pantry Program	Adaption	Health, Strengthening producer-consumer relationships
Growing Success - program for young people	Adoption	Education

Innovation Score: ★☆☆