

Urban Agriculture

By Chance Johannsen, Erica Baier, Kendall Hennig, and Ruidong Wang

Introduction

Describe Urban Agriculture:

Cities across the world have had trouble properly providing local and sustainable food practices to their residents. The UN estimates that by 2050, “6.5 billion people will be living in cities, nearly double what it is today creating many changes in the agricultural landscape” With the shift away from agricultural areas, this is putting a strain on the agricultural industry and forces farmers to produce more than ever before, as well as increasing travel distance to the table. By integrating agriculture within urban environments, this helps begin to alleviate some issues. Essentially the practice of urban agriculture is used to “provide fresh food, generate employment, recycle urban waste, create greenbelts, and strengthen cities resilience to climate change” (FAO n.p.). More cities have been adopting this practice. Current practices will be discussed in this Case Study along with the future of this program.

Pros & Cons

What are the pros and cons of urban agriculture?

Benefits

1. Lower the Urban heat island effect and greenhouse gas emissions
2. Provide food security in developing regions

Urban population is still growing significantly fast around the world, especially in the developing countries. Besides, food security within the urban areas becomes an increasing concern along with the growing the urban population. In developing countries such as Malaysia, an experiment has conducted by examining the accessibility and availability of nutritional foods among urban dwellers (Rezai and et al. 39-45). The results show that urban agriculture provided positive contribution to urban dwellers in terms of affordable food price, sufficient of food and good nutrition.

3. Job creation

Problems

1. In general, the concentration of large city populations has created the issue of having to farm over 100% of urban areas in order to feed the population demographic.
2. Due to heavy traffic, paints, roads and more, soil could easily become contaminated, making the food grown be at food safety risk
3. Some systems, such as hydroponics, can be very expensive to get started with. Even for natural gardens, potting soils and the tools to maintain those small urban gardens can be costly.

Classes and Career

Is there a career in urban agriculture? If so, are there classes provided at Iowa State to prepare their students?

There are courses here at Iowa State University that can further your education on this topic in one way or another. I will provide a list of ten these courses and how they tie to urban agriculture. Of course, the list is always expanding and the solutions and issues will continue to evolve, hence why continuous education on the topic is necessary.

Classes

1. EnSci 201 - Intro to Environmental Issues

a. 201 discusses issues of “*human population growth, energy use, loss of biodiversity, water resources, and climate change*” (Catalog n.p.). Urban gardens are discussed as one solution to these issues.

1. EnSci 250 - Environmental Geography

. This class talks about the distribution of Earth’s physical and spatial relationships with humans. This can be discussed with the food crisis.

1. EnSci 301 - Natural Resource Ecology and Soils

. 301 goes over the “*effects of environmental factors on ecosystem structures using forest, prairie, and agricultural ecosystems. Special emphasis to soil-farming*” (“). By using urban agriculture, we can downsize this massive ecosystem destruction.

1. EnSci 360 - Environmental Soil Science

. As an Agronomy course, they analyze “*impacts that different management strategies have on short- and long - term environmental quality and land development*” (“). Urban agriculture down plays the runoff epidemic modern farming practices contribute to. By condensing the soil and not allowing it to seep into the natural soil, society can surpass the whole contamination involving pesticide runoff within the city limits.

1. EnSci 404 - Global Change

. This dual listed class finds the “*impacts of global change on agriculture, water resources and human health, and ethical issues of global environmental change*” (“). This course is the closest in relation to learning about urban agriculture. Global change discusses how as a result of where the world stands today on global issues, our generation must target the sources of these issues and dissolve them as best as possible.

1. EnSci 406 - World Climates

. World Climates meets the International Perspective by analyzing the “*effects of climate on human activities including society, economy and agriculture*” (“). The following effect involving all of those aspects would be urban agriculture providing jobs, creating social connection and creating a solution to the lack of agriculture near cities.

1. EnSci 466 - Ecosystem Service Management

. This 400-level class looks at land use techniques for “*improving ecosystem services like pollination of crops, biological control of pests, and prevention of erosion and water quality improvement*” (“). According to the Population Reference Bureau, in 2008 “*more than 74 percent of developed nations were urban centered*” (PRB n.p.). Therefore, a majority of the food created while contributing to ecological destruction goes to those people in the cities. By creating an urban garden, society can control these management systems easier.

1. Env S 160 - Water Resources of the World

. Environmental Studies 160 studies the basic hydrological ideas behind water policy, its use, the role of water in the environment and society. By creating retention ponds in urban agriculture to retain rainfall, cities can solve their water crisis. Policies can be formed to make this a successful program

1. Env S 220 - Globalization and Sustainability

. This course “*focuses on interconnected roles of energy, materials, human resources, economics, and technology in building and maintaining sustainable systems*” (Catalog n.p.). The reasoning for reference to urban agriculture can be similar to my explanation for EnSci 466.

1. Env S 270 - Foundations in Natural Resource Policy and History

. Although the focus of this course is over normal policy practices with conservation, these ideas can be applied to preserving urban agriculture if it were to be installed. This applies to both private and public use of urban agriculture.

Career

There is a whole industry of careers and job positions under urban agriculture. It can act as any corporate ladder from drivers and harvesters, to HR representatives looking to expand the business. There are consultant positions, internships, technical assistant, social media managers, and general hands on positions. The potential for this business and sustainability practice is infinite.

Current Practices

Provide some examples of urban agriculture in current society.

With the trend of rapid urbanization partnered with the shift to a more environmentally conscious society, many cities have implemented any number of urban agricultural practices. Many large cities such as London, Detroit, Singapore, and many more have developed some of the most notable urban community agriculture projects. Detroit, for example, implemented a farm in the heart of the city for all to enjoy, whether that be through eating the fresh produce or volunteering. Another look into urban farming can be seen in an old storefront in London. This site called Farm: London boasts small scale fish aquaponics, high-tech indoor growing, a polytunnel, as well as a rooftop chicken coop and café. The founders of this farm have goals to develop a 3,000-square meter rooftop farm soon.

Sky Greens in Singapore is an example of reducing imports and being self-reliant. They created the world's first low-carbon hydraulic water-driven urban vertical farm that reduces the amount of energy and land needed for traditional farming techniques. Sky Greens has multiple story high systems that *"can produce five to ten times more per unit area compared to conventional farms"* (Salshutz n.p.).

Big urban cities are not the only places to be affected by urban agriculture. Urban agriculture in Des Moines offers to bridge the gap between typical "suburban" life and the prominent surrounding farming culture. Many community plot farms in the area offer plots of land for rent to farm on their own. There are also many learning farms such as Cherry Glenn Learning farm in Polk City used to *"educate novice farmers about the many aspects of farming"* (Ta n.p.). While actual farms and small business offer one route to urban farming, another opportunity to farm in urban areas is with personal potted plants and smaller-scale rooftop gardens.

Besides just offering food, rooftop gardens have a vast number of benefits that range from regulating temperature, offering recreational space, and providing aesthetic enhancement. Chicago City Hall can be seen as a recent example. Implemented in 2000 in part to demonstrate the City's Urban Heat Island Initiative, the garden had over 150 species and has proven itself in many ways. It has shown to *"improve air quality, conserves energy, reduces stormwater runoff, reduce heat from black tar roofs, and helps lessen the urban heat island effect"* (Fleet and Facility Management n.p.). The many benefits of rooftop and urban agriculture have since been proven and we can only assume that the trend will continue.

Future of Urban Agriculture

How would you preserve urban agriculture on a local, state and global level?

On a local and national scale, land zoning laws often are what keep both agriculture and city growth progressing. Through implementing laws which allow for the use of urban areas for agricultural production and gardening, this could move cities away from becoming a food desert. Globally, government subsidies would be an option and should continue to increase to curtail the costs of urban production systems. Like conservation programs for a large-scale farmer, financing options or stipends for producing a given amount of food would be beneficial.

Conclusion

What have you learned from this exercise?

Now that urban agriculture has been explored, the group is able to see a solution to the growing population crisis and how to solve some hunger issues at least in urban sprawled areas. Society must accept that something much change for food freshness and availability to their citizens. There is the potential to solve problems society has not even faced yet if they start this project early on. By early, it means now, before it is too late.