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A Relationship with Urban Farming

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A RELATIONSHIP WITH URBAN FARMING

By

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Abstract

A Relationship with Urban Farming

Tracey A. Adams

Supervised by David Lambe and Paul Read

As the world's population grows and cities expand into mega cities, so does poverty and the need for better food security. Barthel and Isendhal "define food security broadly as the situation when people have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs." (2013) Along with this growth, urban farming is gaining more and more interest. The drive behind the interest is a desire to know where food comes from as well as, a way to rekindle a relationship with our history, the land, and our health. "A consumer base is building for local and quality foods." Lyson et al. (2008) The purpose of this research is to evaluate the implications of our changing food system and attempt to discover if urban farming practices are in fact, the future for food security in the mega cities to come. The two main research questions are: What are the implications of our relationship with urban farming? And how will urban farming transform the future of agriculture on a larger scale? This is done primarily by examining literature on urban farming, but also through working on small farms. One of the things that stood out the most in this research was poverty stricken areas. To see if this was also relevant in a place well known for plenty of rural farm country, I created a map to find out where community gardens were located in Omaha, Nebraska in comparison to the city's median income. Urban farming is prevalent even in a place with plenty of farm land surrounding its cities.

Introduction

Growing food within city limits has become a lucrative venture for many entrepreneurs all around the world. Lyson et al.'s "analysis of the market of the twenty-first century tells us that people increasingly will want to have relationships as part of their purchasing experience." (2008) Urban farms can create this relationship by location and presence in the metropolitan atmosphere. Beyond a visual aspect, urban farms contribute to the community by using unwanted spaces while providing educational opportunities. "Urban farming is largely driven by the desire to reconnect with food production and consumption" (Lyson et al., 2008) and while urban farming can contribute great social, economic, and educational values; many will argue that the city is simply no place for a farm.

This research claims that urban farming could help close the gap of food deserts, defined by the USDA as typically poor areas that lack access to fresh fruit and vegetables within a 10 mile radius. Urban farming would close that gap with it's proximity to these food deserts, so that all people have equal access to fresh, nutritious food. With this change there is a chance for institutional awareness and to effect additional change. Urban farming has the potential to influence economic, environmental, social, and health benefits in the mega-cities (a population of 8 million or more) of the future, by boosting local economy, lowering pollution levels, repurposing blighted areas, creating better food security through more equal distribution, and providing educational opportunities and new jobs.

In the book *Food and the Mid-level Farmer* the authors' state, "Traditional expectations

of farmers: take care of land for future generations, care for animals, protect the environment, good citizens, and supply food with unique attributes, food security. All of these public aspects contribute to a healthy landscape, healthy communities, pleasurable eating and a sustainable future.” (Lyson et.al, 2008) This is an example of how people feel more secure about their food when they directly know the farmer, there is a level of trust and worthiness of character that people expect of farmers.

Somewhere along the line, food changed from being a living necessity to a machine of maximum output for the highest dollar. Lyson et al. give an example of this change, “Since 1990, the retail sector of the food industry has seen the emergence of five major players: Kroger, Wal-Mart, Albertsons, Safeway, and Ahold USA. These five firms now account for over 40 percent of food retail sales.” (2008) This change of control into profit over social justice grew surmountable inequality in food distribution and access, so much that our voice and food decisions now have great power of influencing a needed change. Besthorn explains the importance of human and food connection by “the environment exclusively denoting the social dimension of human existence.” (2013)

This desire for connection can be seen in the increasing number of farmers markets, educational programs, community gardens, farm to school programs, cooperative markets, and other urban farms. Lyson et al. claim that “the food and farming industries are slowly waking up to a twenty-first-century reality that the increasingly globalized food system, while providing inexpensive products, does not address many of the latest food safety and health concerns of consumers.” (2008)

Urban farming is described in the literature review as growing and distributing food

within or around a city. The economically focused urban farms would be owner operated growing produce for a profit. These are typically done as farmer's market or community shared agriculture (CSA), but also selling directly to a restaurant or retail store. The socially focused urban farms would be community or school gardens.

CSA's are weekly deliveries of whatever is in season to be harvested. Sharing risk for crop failure with the consumer and paying in advance are ways that help the farmer succeed in CSA shares. There are also benefits to the consumer like exposure to new vegetables you wouldn't normally try, creating a relationship with your food through farm visits and educational opportunity, keeping your money local as well.

Historically there has been a relationship between cities and agriculture. Most of the first cities in the United States were built around farms and markets. "Farmers were about one-third of the US population in 1900 but less than 2 percent by 2000." (Lyson et al., 2008) This continued throughout our history for food security. The Meso-American also based their city landscape around rivers and farm land. Isendahl and Smith elaborate on, "Maya and Aztec urban farmers retained control not only over their farming, but of other aspects of social life as well. This kind of local control has been hypothesized as one of the traits of urban governance that promotes resilience and sustainability." (2013)

The industrial revolution changed the face of transportation and in turn the face of agriculture. Today cities primarily import most of their food and a lot of prime farm land is being used as urban sprawl. World population is expected to reach over 9 billion by 2050, the majority of which lives or will live in urban areas. The journal reviewed, *Vertical Farm* stated that "70% of the worlds' population will live in urban areas. Urban

migration and mounting population will create ever increasing demands for housing, health and sanitation services, employment and transportation." (2013)

As population density rises and urban footprints grow, food insecurities will worsen. "A significant factor associated with food insecurity in urban areas is the lack of access to healthy foods." (Besthorn, 2013) In his research, urban farming was often an answer to some of the problems in poverty stricken areas. "Studies have shown that poor and low-income urban neighborhoods have diminished access to healthy foods in comparison to higher-income communities." (Besthorn, 2013) Providing healthy food options, community involvement, and possibly job opportunities could give these poor communities hope.

Materials and Methods

This research was done as a literature review and also by working on urban farms, providing qualitative information on the social, economic, and environmental impacts of urban farming.

The first farm that I worked on was Strongland Farm, located in Raymond, Nebraska just north of the state's capital Lincoln. This was a rural setting consisting of two sections, several acres for the use of growing and baling hay for other farms and then one acre dedicated to their CSA members. I worked on the second one acre garden, planting, weeding, harvesting, sorting, cleaning, packaging, and delivering to the Omaha members.

The second farm that I worked on was Fork N Farm, located in Omaha, Nebraska on

68th and Maple in the Benson neighborhood. I have the same jobs as the first farm with the additional duties of planning, seed starting, farmer's market sales, crop rotation and overall management.

Finally, I did a map analysis of Omaha, Nebraska to compare the median income levels with proximity to community gardens found on the map (Appendix A). The majority of community gardens were found in lower income neighborhoods, while the urban farms were primarily in median income areas.

Literature Review and Results

Interest in our food system and how it works has been increasing over the past decade. Besthorn attributes this to an environmental awakening stating that in the latter part of the 20th century the farming "profession began to recognize that a holistic understanding of person-in-environment necessitated consideration of the natural environment." (2013) With that awakening, urban farming is rapidly growing as well; the reason for this is that urban farming provides the opportunity of participation. Lyson et al. states that "Buy Fresh Buy Local campaigns have sprung up around the country, this grassroots local food movement offers an opportunity for rural and coastal growers to reengage with urban consumers and develop new markets close to home." (2008)

Educating the public about where their food comes from creates advocacy for change to the current conventional agriculture/food system. Besthorn says that, "A significant factor associated with food insecurity in urban areas is the lack of access to healthy foods." (2013) Access to food is a social justice issue that is also addressed with urban farming, creating better equality of access to nutritional produce. Plakias reminds us in

her book *The Farm on the Roof* that "Urban agriculture addresses problems in a neatly symbiotic way, reducing the amount of energy needed to transport food to consumers and providing usable green spaces for city dwellers to enjoy." (2016)

Diversity has been the key for many species survival throughout time, there is no special seclusion to urban farming. "Farmers tend to combine different types of supply chain, rather than specializing in a single one." (Aubry & Kebir, 2013) Urban farming comes in multiple forms.

A classification system was developed by Taylor and Lovell from the journal found in **Landscape and Urban Planning** about mapping urban agriculture in Chicago.

- Residential garden: a single plot garden on the same lot as a home.
- Vacant lot garden: a vacant lot next to a home.
- School garden: a garden on school grounds.
- Urban farm: a large garden comprising more than one vacant lot, with no apparent internal divisions except those created by crops, suggesting unified management by a single gardener/farmer or group.
- Community garden: a garden apparently divided into individual plots. (2012)

Conforming to Besthorn, as he explores the social work that can collaborate with vertical farming (a method of farming up instead of out), some of these types of urban farms are considered socially driven while others would be considered economically driven. Either way, they all seem to have the same effect of satisfying that desire to

have a relationship with our food. (2013)

There are a lot of environmental benefits to urban farming and a few risks in certain circumstances to soil health. Most of the literature read boasted the benefits like storm water management, lower emissions, better air quality, and waste reduction by composting. Plakias says, "The rooftop farm had measurable positive impacts on the city's ecological health. It could quantify in pounds the amount of fresh produce it made accessible to its local residents, without the use of any fossil fuels whatsoever." (2016)

Another benefit would be minimizing the Heat Island Effect, a rise in temperatures due to higher energy activities and primarily hard surfaces. Adding plants to rooftops, for example, adds insulation and relieves the building of extra work in heating or cooling, as stated by Plakias in *The Farm on the Roof* (2016).

The average produce purchased in a grocery store has traveled 1500 miles (Thomaier et. al, 2014). Barthel and Isendahl claim that, "Large cities mainly feed themselves by global food systems relying on fossil fuels to sequester food stuffs from the farthest reaches of the planet, often with detrimental environmental impacts." (2013) Another journal reviewed on zero acreage farming supported this by saying, "The spatial distance between the people and the agricultural land that supports them alters ecosystems because it prevents nutrient recycling and creates high costs and emission problems of long distance transport." (Thomaier et.al. 2014)

Urban farming provides this same produce at a much smaller distance which eliminates the need for trucks travelling miles and miles using fossil fuels. According to Despommier in the book *Vertical Farming*, "Farming uses 20% of all fossil fuels in the

United States annually.” (2010) He continues by dreaming of an agreement by Ohio, Indiana, Illinois, and Iowa converting their farmland back into hardwood forests, claiming it would have the capability of “absorbing 10% of the US emissions annually, once they were at full growth within 30 to 40 years.” (2010)

Waste has been a problem in major cities from day one, historically causing the spread of disease and often death. “In the 12th century trash attracted hordes of rats harboring a plague that started the Black Death, killing one third of all the population in London.” (Despommier, 2010) He claims that much of the waste can be recycled back into the ground as compost. Just as we have fought this battle with waste in our history of plagues and won, we can now turn our trash into something that will nourish and sustain life.

A number of studies have shown that urban agriculture has a positive impact on the citizen’s mental and physical health. Access to fresh food provides nutrition, knowledge, and food security. Community gardens in particular can provide the neighborhood with a sense of social connection and cultural expression.

The only negative health issue I found was potential of lead or heavy metal found in soil. Due to urban areas being heavily polluted over many years, it is no surprise that soils would be holding toxic materials. Thomaier et al. states, “One critical aspect of ground-based urban farming is the high level of air pollutants in urban settings, which may lead to crop contamination and health risks.” (2014) Several of the studies in my research, claim the answer is indoor and rooftop gardens that bring in good clean soil.

Farming in the city can be an economically viable option to provide new jobs and skill

sets. In the book *Vertical Farming*, Despommier explains the financial stability urban farming could potentially add to a metropolitan area. Explaining the possibility of “new jobs for managers, indoor control agriculture specialist, waste to energy specialist, as well as all the farm duties of planting, harvesting, sorting, and selling.” (2010)

Primarily all of the journals and books reviewed for this research were in agreement that urban farming is in most cases a good thing for the future. However, Powers argues for the preservation of history in rural communities in his book *Saving the Farm*. Powers says, “According to a National Study in 2007 farmland loss was at an epidemic proportion, from 1982 to 2007 over 23 million acres of agricultural land was gone.” (2013)

This and more is defended in the book *Food and the Mid-Level Farm* where the authors explain the detriments of pushing out rural farmers. "As farmers increasingly enter into contractual arrangements with highly consolidated firms, such considerations will be ignored. On farm decisions will no longer be made to benefit the long term sustainability of the farm, community, or health of natural resources. Decisions will be made for profit only." (Lyson et al., 2008)

Over the past three years I have worked on two small farms looking for what Lyson et al. say is a "New market climate emerging that consists of 3 distinct elements: memory, romance, trust." (Lyson et.al, 2008) The days worked on the rural farm were romantic with its quiet and peacefulness outside of the city's hustle and bustle. This made it easy and efficient to get my work done but lacked the connection with the CSA members.

In the city, I still find it peaceful in the fields but quiet is not a part of the urban setting.

Everyone that goes by wants to know what you are doing or if you can give them gardening advice. It's a great connection with the community and potential future customers creating trust. Time management proves to be a little more difficult on the urban farm. This relationship with each other is needed to create food citizens, describing by Lyson et al. as, "someone who not only has a stake but also a voice in how and where their food is produced and processed." (2008) This is the face of our changing agriculture system.

Discussion

While there are many benefits to urban farming, there are significant problems as well, like public health risk, zoning issues, and threat of losing many family owned rural farms. However, urban farming environmental benefits seem to outweigh the risk by shortening the distance the food has to travel, utilizing blighted city areas, and lowering otherwise high temperatures. Besthorn compares traditional with urban saying it uses "90% less water than a conventional farm, vertical farms have been able to achieve yields that are nearly three times greater than the average soil-based production system." (2013)

Looking ahead Besthorn states, "Future mega cities will experience many of the same health and social issues associated with today's fast-paced urban environments but on a much larger scale." (2013) Collectively my research concludes that urban farming is an answer to many of these issues and should be considered in the planning of future growth. Supporting that statement the research shows how this can be done through social connectedness and new job opportunities added with urban farm businesses.

The risk is clear as Aubry and Kebir express that "Local urban agriculture is severely threatened by global competition and urban sprawl." (2013) The question stands of city land value being for human occupancy or grow space. While Plakias urges that, "An urban farm has value beyond the produce it bears. That often means functioning as a gathering space or in ways you don't even imagine when you're building it out." (2016) Both of these statements show the urgency of acceptance needed for urban farming to embrace and balance our desire for a food relationship.

With our society's growing need to know their food and socially connect in a disconnected digital world. Isendahl and Smith show a historic prevalence in urban farming worldwide in their research. (2013) While in the same year Barthel and Isendahl claim that "Since the environmental history of the West demonstrates how urban gardens saved millions of people from starvation in cities during the 1900s, the social amnesia about the value of local solutions is surprising." (2013)

Perhaps this hidden drive to connect with nature comes from a historic line of farmers and as a society we yearn for the security of self-reliance that our cities of the past had. The research shows that patterns repeat and successful urban planning should include local food sources. There are positive social implications with community and school gardens, as well as, positive economic implications through direct and market sales keeping money in the local market.

However, the argument could be made of whether or not all agriculture, needs to be within city limits. Maybe a more realistic outlook would be for cities to start by cutting their food purchasing distance down by half. This would encourage the growth of mid-

level rural farms and still comes with a lot of the environmental benefits of urban farming.

Conclusion

In my opinion, urban agriculture will continue to grow and I will talk about those reasons in this conclusion, along with giving some suggestions for urban agriculture acceptance and future research that needs to be done on the topic. It should be stated that every city has a different geographical location and different societal needs from one another. Because of this it would be suggested that continued research be done on a city by city basis instead of an overall “mega city of the future” context.

Food insecurity is a current issue for many countries and with our growing population, the majority of this population living in cities, this compacts the problem to what seems like urban sprawl with little to no access to food for the poor or low income areas. Education and access to healthy food options will be key for the mega city of the future.

This research has explored the many environmental benefits of urban farming like a smaller fossil fuel footprint and a larger green space to clean the air or even potentially the city's solid and water waste. Our desire to have a food relationship could also heal the earth of the damage we have done. City planners should include urban farming into future plans of growth to encourage environmental improvements for many city programs like wastewater and landfills.

Most cities have blighted areas in need of growth or change and urban farming represents another option of use for these vacant buildings or land. Imagine driving past

those empty strip malls no more, instead they are full of hydroponic indoor farms and the roofs are lush with green produce. The problem is a lack of political or municipal support and a need for change in zoning regulations to include urban farming as an option for rehabilitating the deteriorating parts of town. Provoking change for these poor neighborhoods would provide hope for the future and pride shaping their civic life.

Storm water management is done simply by providing a place for the storm water to be used, in the plants. If the water that falls is used, then it does not need to run off into drains picking up every particle of road litter and pollution along the way. This can be done either on the ground or higher up on rooftops. Suggested use of rain barrels to collect rain for yard use would help with storm water management as well. Advocate for change in the city department to implement homeowner incentives to add rain barrels for tax breaks.

Many people are now separating their waste into recyclable items. If the government would provide separate containers for each waste product, as they did with recycling containers, people would also separate out the waste that can be composted. Better yet, wouldn't it be cool if the city provided each home with its own worm compost waste bin? Then waste could become a profit for the city, selling the compost back to the urban farmers.

Most of the suggestions made above would need city approval and government officials would need to be contacted in each city to see if these changes are possible. Petitioning for change is one way to promote change. Being involved and knowing your city is key. Submitting the details of how each project can save the city money and overall improve

the city would need to be done on each project to the correct city departments. All of this information can be found on the government website for each location.

Further mapping on a city by city basis could help identify other urban farming activities such as residential or school gardens. Mapping could show trends and potential areas of improvement or growth. I believe a key to urban agriculture will be future site placement in poor urban areas. Besthorn points out that, "Poor urban neighborhoods have a disproportionately high number of fast food eateries, which historically serve highly processed and less nutritious food. These neighborhoods also tend to have fewer grocery stores and quicker stop type convenience stores." (2013) Mapping fast food and grocery stores in comparison to household income could further collaborate the need for access to healthy food in low income areas.

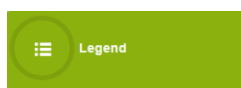
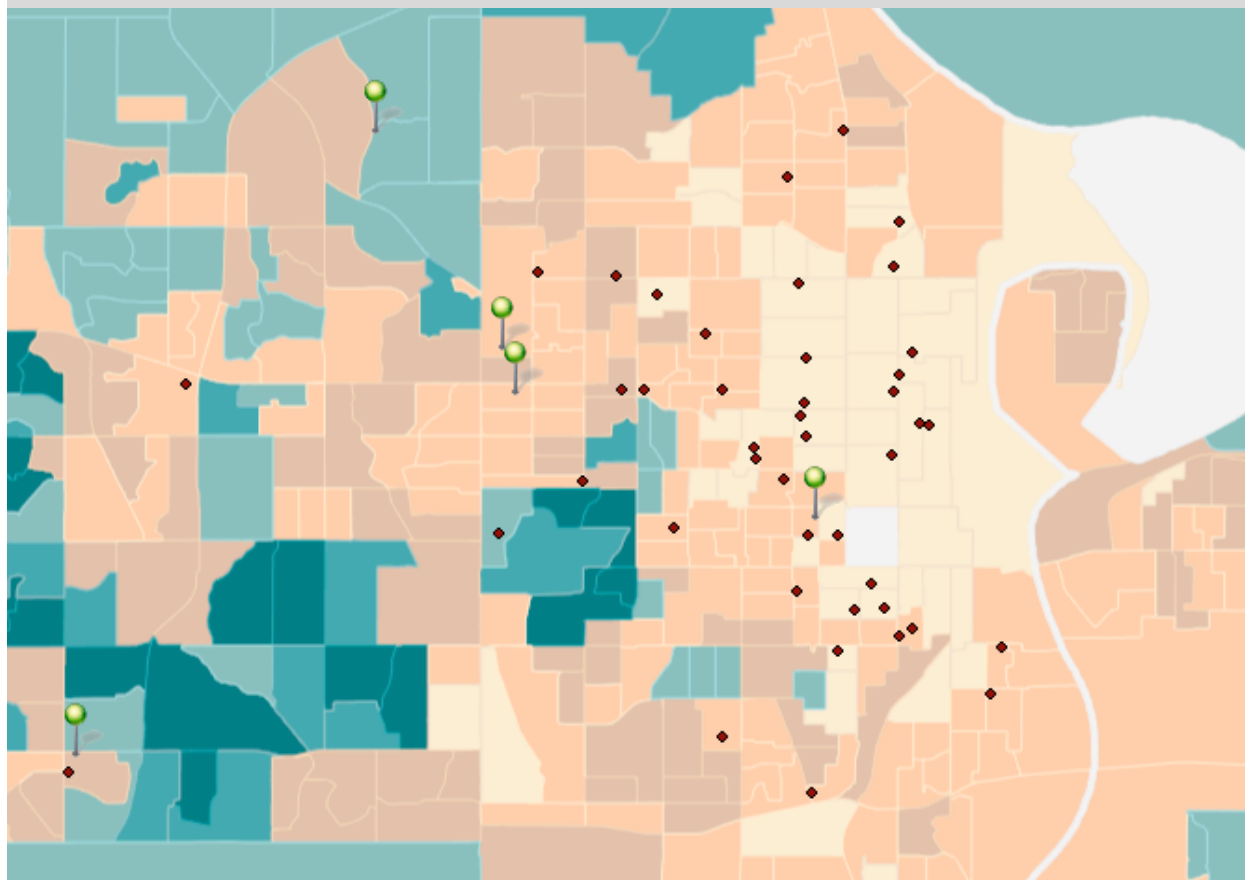
There are many benefits to urban farming and it is a great social and educational tool. While there is enough evidence to prove urban farming can be useful, it may be going too far to say it will be the only farming method of the future. With that being said, I believe urban farming will continue to grow and that it has a place in the future mega cities of the world.

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Appendix A: Map

Urban Farms in Omaha, Nebraska



Legend

CommunityGardens



2012 USA Median Household Income (Mature Support)

Median Household Income

Block Groups

- More than \$82,000
- \$68,001 to \$82,000
- \$53,001 to \$68,000
- \$39,001 to \$53,000 (US median: \$50,157)
- \$24,001 to \$39,000
- \$24,000 or less
- No households