Continuous Productive Urban Landscapes: A Sustainable Design Option to Growing Urban Communities in Iowa

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ABSTRACT

As designers and planners of urban landscapes, landscape architects hold a vital tool in the growth of any Iowa community. Both locally and globally food has become a common theme in many discussions. Motivations include the lack of productive urban land, lack of societal knowledge of food growing and preparation, urban/rural conflict at the urban fringe, food insecurity, lack of stable urban markets, and uncontrolled urban growth.

As a senior thesis in landscape architecture, the goal was to research and design based on the theory Food Urbanism: the study of how food relates the organization of a city and how it can become infrastructure that can transform the urban experience. Continuous productive landscapes could become a tool and/or mechanism to sustainable growth in urban communities. As infrastructure in a city or town, continuous urban agriculture (UA) has the potential of being a thread that is sewn through a community creating a rigid and ecological backbone to growth that connects neighborhoods, open spaces, and urban markets. Research is based on case studies, interviews of producers, and city officials in Ames, IA, and studies of UA in London, UK. Productive landscapes as tools to sustainable growth have only recently been written about in the United States and Canada (see Figure 1). This research demonstrates that urban food systems have a potential of creating environmentally, socially, and economically productive communities in Iowa.

Figure 1. Typical section of continuous productive urban landscape

Key words: landscape architecture—planning—sustainable agriculture—urbanism—urban food systems—urban land inventory
As designers and planners of urban landscapes, landscape architects hold a vital tool in the growth of any Iowa community. Both locally and globally, food has become a common theme in many discussions. Motivations include the lack of productive urban land, lack of societal knowledge of food growing and preparation, urban/rural conflict at the urban fringe, food insecurity, lack of stable urban markets and uncontrolled urban growth. As a senior thesis in landscape architecture, the goal was to research and design based on the theory how food relates to the organization of a city and how it becomes infrastructure that transforms the urban experience. Continuous productive landscapes could become a tool and mechanism to sustainable growth in urban communities. As infrastructure in a city or town, continuous urban agriculture (UA) has the potential of being a thread that is sewn through a community creating a rigid and ecological backbone to growth that connects neighborhoods, open spaces, and urban markets. Research is based on case studies, interviews of producers and city officials in Ames, IA, and studies of UA in London, UK. Productive landscapes as tools to sustainable growth have only recently been written about in the U.S. and Canada. This research demonstrates that urban food systems have a potential of creating environmentally, socially and economically productive communities in Iowa. As designers and planners of urban landscapes, landscape architects hold a vital tool in the growth of any Iowa community. Both locally and globally, food has become a common theme in many discussions. Motivations include the lack of productive urban land, lack of societal knowledge of food growing and preparation, urban/rural conflict at the urban fringe, food insecurity, lack of stable urban markets and uncontrolled urban growth. As a senior thesis in landscape architecture, the goal was to research and design based on the theory how food relates to the organization of a city and how it becomes infrastructure that transforms the urban experience. Continuous productive landscapes could become a tool and mechanism to sustainable growth in urban communities. As infrastructure in a city or town, continuous urban agriculture (UA) has the potential of being a thread that is sewn through a community creating a rigid and ecological backbone to growth that connects neighborhoods, open spaces, and urban markets. Research is based on case studies, interviews of producers and city officials in Ames, IA, and studies of UA in London, UK. Productive landscapes as tools to sustainable growth have only recently been written about in the U.S. and Canada. This research demonstrates that urban food systems have a potential of creating environmentally, socially and economically productive communities in Iowa. As designers and planners of urban landscapes, landscape architects hold a vital tool in the growth of any Iowa community. Both locally and globally, food has become a common theme in many discussions. Motivations include the lack of productive urban land, lack of societal knowledge of food growing and preparation, urban/rural conflict at the urban fringe, food insecurity, lack of stable urban markets and uncontrolled urban growth. As a senior thesis in landscape architecture, the goal was to research and design based on the theory how food relates to the organization of a city and how it becomes infrastructure that transforms the urban experience. Continuous productive landscapes could become a tool and mechanism to sustainable growth in urban communities. As infrastructure in a city or town, continuous urban agriculture (UA) has the potential of being a thread that is sewn through a community creating a rigid and ecological backbone to growth that connects neighborhoods, open spaces, and urban markets. Research is based on case studies, interviews of producers and city officials in Ames, IA, and studies of UA in London, UK. Productive landscapes as tools to sustainable growth have only recently been written about in the U.S. and Canada. This research demonstrates that urban food systems have a potential of creating environmentally, socially and economically productive communities in Iowa.
The Inspiration + Why urban food systems?
CPULs CONTINUOUS PRODUCTIVE URBAN LANDSCAPES designing urban agriculture for sustainable cities

written by Andre Viljoen, Katrin Bohn, and Joe Howe
FOOD ACCESS

Story County, IA Stores
Grocery stores.............13
Convenience stores.......36
Specialty stores.........6

Residents/Store
Grocery Stores..........6,446
Convenience Stores......2,328
Specialty Stores........13,967

2006 U.S. Census Bureau

Commissioned by LaSalle Bank
HEALTH


Estimated Percentage of the Population Story County, IA

Overweight.................................................................34.4
Obese.................................................................24.9
Diabetic.................................................................5.0
ENVIRONMENTAL HEALTH

Figure: Comparison of CO₂ emissions for different transportation options. The map illustrates the journey from various farm locations to Iowa City, with the chart showing the CO₂ emissions in millions of lbs/year.

LAND USE

There are three times more acres of lawns in the U.S. than irrigated corn. This means lawns could be considered the single largest irrigated crop in America in terms of surface area, covering about 330,000 square miles in all. NASA Earth Observatory

City of Ames
2000 productive acres
HOW can a urban food system organize a city?
PHASE ONE
Located within an urban park occupied by soccer and football fields, the allotment is adjacent to residential homes. At the front of the residential area is located a high traveled commercial arterial. Located in one park of a much larger network of open spaces and wilderness areas, along the Lea River Navigational Channel, the allotment is connected by a bike trail and a historical water edge. The trail on a daily basis serves as a highly traveled route north and south. Aside from the trail along the water edge, the water serves as well as a home and travel route for boats and canoes. Long boats line the edge of the river as far as you can see. These boats both serve as homes and transportation vehicles. The allotment is at the edge of the park, located in the most private corner of the park away from the heaviest traveled routes.

The plots themselves are created by 2"x10" planks and are served by one large steel container for storage. Outside the fence, surrounding the plots, are a few fruit trees in an unknown area.
MILE END PARK

- Victoria Park
- Regent's Canal
- Roman road market
- Tow path trail follows canal
- Climbing wall
- Ecological wetland
- Queen Mary University of London
- School
- Green bridge
- Athletic fields
6 MILE END PARK

The historical site of Mile End park serves as a pedestrian and cyclist linear corridor from north of Victoria Park to south of Mile End Stadium. With the addition of the green bridge over Mile End Road the park is not interrupted by any street crossings. Along the park’s edge flows the Regent’s Canal. The canal at one time was an important route between greater London and the River Thames today serves as a leisurely waterway for long boats that pass through the historical locks along the canal. Aside from the park and producing food it serves as environmentally and sociologically productive. The trails and ball fields allow groups to socialize. The park serves as a green open lungs to East London. The constructed wetlands are natural sponges in the urban landscape and create habitat for many forms of wildlife.

The park is a great corridor for urban dwellers with its pedestrian and cycle paths that are separated by a vegetated median. Along the corridor are places for temporary markets and vendors to set up shop for special occasions. At the green bridge over Mile End Road one can stop for a refreshment, eat a meal, or pick up groceries on the way home. To add to the diversity within the park a small school is housed near the green bridge and opposite the Regent’s Canal is Queen Mary University of London.
9 MUDCHUTE FARM (32 acres)

- financial business center
- grazing pasture (sod, clover, bean)
- productive allotments
- farm kitchen
- tube station
- mill wall park
- river Thames
9 MUDCHUTE FARM (32 acres)

As the largest urban farm in London at 32 acres one can lease morning brunch, work in their plot in one of the two allotments or walk with the animals grazing in the pasture. Mudchute farm is in a very diverse and ever changing part of London. From the Tube station a person can walk from a modern financial district to a rural farm landscape and still be able to see the skyscrapers in the background.

At the farm a complex of buildings houses an award winning restaurant and catering business, education program and lease goose, horses, pigs, geese, cattle, hares, chickens, ducks and many more animals. In addition to the animals the farm has two allotments with a total of approximately 140 plots. The allotments are completely enclosed by fences. Many individuals have built small lean-tos and buildings to escape the elements and store tools and materials. In addition to the typical activities of the farm are education programs and a nursery for ages 0-5 years.
PHASE TWO

current food system flow diagram
PRIVATE RESIDENCE GARDEN
Typology of Continuous Productive Urban Landscapes

1. Rotational producing plots
2. Rainwater collection
3. Storage/chickens
4. Greenhouse/storage building
5. Fruit trees
6. Potted herbs/greens
7. Vertical productive trellis
ALLOTMENT/COMMUNITY GARDEN

Typology of Continuous Productive Urban Landscapes

1. greenhouse/storage bldg
2. rainwater collection cistern
3. shared composting bins
4. security gate
5. common plot (ex: asparagus)
6. 300 sq ft plot for single user

Grimm
INSTITUTION

Typology of Continuous Productive Urban Landscapes

1. Rotational production plots
2. Nut/berry trees and shrubs, filter strip
3. Indoor production greenhouses
4. Greenhouse/storage bldg
5. Fruit trees
6. Existing playground
7. Existing pine overstory
NEIGHBORHOOD FARM
Typology of Continuous Productive Urban Landscapes
URBAN FARM
Typology of Continuous Productive Urban Landscapes
proposed food system flow diagram
Typology of Circulation Future Urban Fabric Guidelines

CIRCULATION

- PEDESTRIAN
- BIKE
- TRANSIT
- AUTO
Typology of Circulation Future Urban Fabric Guidelines
WHAT is the potential of urban food systems?
11% of 5 acres will be dedicated to growing potatoes

\[
\frac{7333 \text{ lbs}}{37 \text{ lbs/capita}} = 200 \text{ capita}
\]

2% of 5 acres will be dedicated to growing potatoes

\[
\frac{4444 \text{ lbs}}{20 \text{ lbs/capita}} = 200 \text{ capita}
\]
1 acre yields 13333 lbs

.7 acres = 9333 lbs

9333 lbs / 37 lbs = 252 people capita

666

- 252

414 more people that I need to market my extra tomatoes to

1 acre yields 44444 lbs

.3 acres = 13333 lbs

13333 lbs / 20 lbs = 666 people capita
1 acre yields 13333 lbs
37 lbs/capita
\[
\frac{37 \text{ lbs}}{\text{capita}} \div \frac{13333 \text{ lbs}}{\text{acre}} = .002790 \frac{\text{capita}}{\text{acre}}
\]
= \frac{0.002790 \text{ capita}}{\text{acre}}

0.002790 \frac{\text{capita}}{\text{acre}} / 0.026430 \frac{\text{capita}}{\text{acre}} = 

11\% \text{ of 5 acres will be dedicated to growing potatoes}

= \frac{0.000448 \text{ capita}}{\text{acre}}

0.000448 \frac{\text{capita}}{\text{acre}} / 0.026430 \frac{\text{capita}}{\text{acre}} = 

2\% \text{ of 5 acres will be dedicated to growing potatoes}
URBAN FARM  5 ACRES

Potatoes
Sweet Potatoes
Asparagus
Tomatoes
Carrots
Green Beans
Eggplant
Garlic
Bell Peppers
Broccoli
Cabbage
Cucumbers
Collard Greens
Kale
Lettuce (leaf)
Mustard Greens

Spinach
Onions
Radishes
Cauliflower
Pumpkin
Squash
Basil
Snow Peas
Sweet Corn
Raspberries
Watermelon
Apples
Apricots
Cherries
Plums
Peaches

189 PEOPLE
NEIGHBORHOOD FARM 2.5 ACRES

Potatoes                      Mustard Greens
Sweet Potatoes               Spinach
Asparagus                    Onions
Tomatoes                     Radishes
Carrots                      Cauliflower
Green Beans                  Pumpkin
Eggplant                     Squash
Garlic                       Basil
Bell Peppers                 Snow Peas
Broccoli                     Raspberries
Cabbage                      Watermelon
Cucumbers                    Apples
Collard Greens               Apricots
Kale                         Cherries
Lettuce (leaf)               Plums
                               Peaches

112 PEOPLE
<table>
<thead>
<tr>
<th>COMMUNITY/ALLOTMENT PLOT</th>
<th>300 SQ FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potatoes</td>
<td>Collard Greens</td>
</tr>
<tr>
<td>Sweet Potatoes</td>
<td>Kale</td>
</tr>
<tr>
<td>Asparagus</td>
<td>Lettuce (leaf)</td>
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</tr>
</tbody>
</table>
population 54,745 (2007)
- population in EU residence units: 8,580
= population minus EU units: 46,165

* calculations do not include community plots within community gardens
not head teams, plus private sustainable gardens
ACEnet Incubator Kitchen Athens, OH

12,000 sq ft
- 3000 sq ft Commercial Kitchen
- 300 sq ft Thermal Processing Area
- 400 sq ft Dry Goods Packaging Room
- 3200 sq ft warehouse space
  - 2 walk in freezers
  - 1 walk in cooler
- Shipping and Receiving docks
- Office and Conference Space
  - 800 sq ft retail

Commercial ovens, freezers, ranges, hobart mixers, jacketed kettles, electric tilt braising pans, industrial food processors, automated fill line

90 tenants – market gardeners, family farmers, local entrepreneurs, international businesses all coming from as far as the 5 surrounding states
WHO + HOW does the urban food system typology get implemented?
proposal of urban food system and circulation typology
NORTHRIDGE PKWY AND NORTHRIDGE LANE ALLOTMENT/COMMUNITY GARDEN
KINGSTON FOOD BLVD
STANGE MARKET BLVD+ KINGSTON FOOD BLVD
SOMERSET NEIGHBORHOOD FARM
HOW is this affecting the local food system policies & guidelines of city, county, and state planning and community development fields
City of Cleveland: urban garden district zoning

Passed in 2007 – meant to preserve urban agriculture and community gardens on private or city own land

“Gardens to Greenbacks” 2008 – provides grants & low-interest loans to for-profit urban farmers for capital expenses and infrastructure
City of Vancouver, B.C.: 2004 – Vancouver Food Policy Council

2004 – Vancouver Food Charter – Identifies five principles of a just and sustainable food supply

Urban Agriculture Guidelines for the Private Realm:
Southeast False Creek urban development

Example of guidelines based on the number & size of garden plots
where consolidated common outdoor amenity space is not provided, garden plots should be provided for 30% of the residential units that do not have access to private outdoor space of more than 100 sq ft
COUNTY

Story County, IA: Grow Story County Committee

Public education of local food issues
Institutional purchasing of local foods
Regional collaboration on food system issues and policies
Recruiting and retaining more local food growers;
Niche farming opportunities
Feasibility for a regional food processing facility
Allowing for small acreage farming
Fostering more equitable access to healthy foods
COUNTY

Story County, IA: Grow Story County Committee

2 Story County growers
2 Story County consumers
1 Iowa State University Extension
1 Leopold Center for Sustainable Agriculture
1 Practical Farmers of Iowa
1 Large grocery store(s)
1 Small grocery store(s)
1 School districts located in Story County
1 Story County Farm Bureau
1 Mid-Iowa Community Action, Inc. (MICA)
1 Prairie Rivers of Iowa RC&D
1 Local restaurants and cafes
1 Department of Family and Consumer Science from Iowa State University
STATE

Illinois: Amendment to House Bill 3990

By Nov. 1 2009 the IL Dept. of Ag. shall establish a not-for-profit that shall be known as the Local Food, Farms, and Jobs Council. The council will be to facilitate the growth of an Illinois based local farm & food product economy that revitalizes rural & urban communities, promotes healthy eating with access to fresh foods, creates jobs, ensures a readily available supply of safe food in an emergency event and supports economic development through making local farm or food products available to all Illinois citizens.