Quantifying Urban Agriculture: A Case Study from Baltimore

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What Is Urban?

Urbanized Areas and Urban Clusters: 2010

Source: U.S. Census Bureau, 2010 Census Urban Area Delineation Program
First Test City: Baltimore
What is a Farm?

- A farm is any place from which $1,000 or more of agricultural products were produced and sold or normally would have been sold during the year.
  - Examples, some special cases:
    - Christmas trees
    - "government payment" farms
    - "pasture only" farms (at least 100 acres)
    - nurseries and greenhouses
    - exotic livestock
    - large garden

- Point Farm: a farm that does not produce or sell $1,000 or more of agricultural products, but has the potential for that much production.
Farms vs. Urban Agriculture

- Each farmer is surveyed
- Total area may qualify as a farm, but individual plots may not
- Farm definition may not fully capture extent or importance of urban ag activity

http://www.fiveboroughfarm.org/urban-agriculture/
Agriculture Included
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Urban Agriculture Defined

For the purposes of this project, Urban Agriculture includes:

• Minimum 36-square-foot area* of growing space
• Types of urban agriculture:
  – Urban Gardens
  – Private Gardens
  – Rooftop Gardens
  – Urban Farms
  – Other (such as hydroponics, livestock, beekeeping, etc.)

*any garden space that contains individual grow containers smaller than a 36 sqft container will be included in the study as long as the aggregate size is greater than 36 sqft.
First Test City: Baltimore

• 30,000 vacant properties
  – 16,000 vacant buildings
  – 14,000 vacant lots

• Permit Examples
  – Big City Farms has 1.5 acres in Sandtown
  – Real Food Farm has 1.5 acres in South City Park

• Online Presence
  – www.baltimoresustainability.org
Baltimore Permits

• **Bees:** Must have a permit with Office of Animal Control if have three or more hives; Must be registered with the Maryland Department of Agriculture

• **Chickens:** Must have a permit with Office of Animal Control; Must be registered with the MDA’s Agriculture, Domestic Poultry, and Exotic Bird Registration Division.

• **Goats:** Must have a permit with Office of Animal Control

• **Rabbits:** Must have a permit with Office of Animal Control
MACE Identified Potential Areas of Agricultural Activity

Data sources:

• Social media, e.g., facebook, twitter, etc.
• Information on permits from city and state governments
• Lists available from various sources
• High definition satellite imagery

Goals and products:

• Developed algorithms that combine the information from these diverse sources to identify areas likely to have agricultural activity
• Provided GIS boundary files with the identified areas as well as name of business, if accessible, address, latitude and longitude
Satellite vs. Aerial Resolution

0.5-m Satellite

15-cm Aerial
Potential Urban Agriculture in Baltimore
Major Steps To Be Completed

- Questionnaires developed
- OMB Approval
- Addresses assigned to agricultural activities
- Record linkage to identify any duplicates
- Draw sample of 266
- Conduct field survey (identify areas as non-agricultural, agricultural but not a farm, farm)
  - Summarize results for internal use
Preliminary Results
What Did MACE Miss?

On the NASS List Frame, consider those with an operation in Baltimore County and a City of Baltimore zip code.

- 51 Verified Farms
- 76 Potential Farms

MACE identified 505 potential areas of agricultural activity, of which

- 2 Verified Farms
- 10 Potential Farms
What Was Missed?

2013 List from the City of Baltimore of urban agricultural sites

- 159 non-school garden sites
- 1 on the NASS list frame
- 89 on the MACE list
The Sample

• 266 areas of potential agricultural activity randomly selected from 505 potential agricultural areas

• In community gardens, efforts were made to sample the plots within a garden. Twelve (12) plot interviews were conducted from 6 community gardens.

• 188 of 266 sites (71%) completed interviews

• 73 of 266 sites (27%) operator could not be found

• 5 of 266 sites (2%) interview refusals
Presence of Agricultural Activity

- 52% Ag
- 43% No Ag
- 5% Unknown
Types of Agricultural Operations

- 108 Unique Operations (From the 188 Completed Interviews)
  - 34 Backyard or Home Gardens
  - 29 School Gardens
  - 20 Community Gardens
  - 9 Demonstration Gardens
  - 8 Urban Farms
  - 5 Vacant Lot Gardens
  - 4 Roof Top Gardens
  - 1 Aquaponics
  - 1 Commercial Enterprise
  - 1 Hydroponics
  - 7 Other Types
Types of Products

• 108 Completed Surveys Reporting Agriculture
  – 83 Grow or harvest vegetables, potatoes, or melons
  – 51 Grow or harvest fruits, nuts, or berries
  – 27 Grow or harvest greenhouse or nursery crops
  – 5 Grow or harvest gains, hay, legumes, or field crops
  – 37 Raise or keep farm animals
  – 32 Produce farm animal products
  – 2 Produce certified organic products
Area Devoted to Agricultural Activity

- 39%, <200 Sq Ft
- 27%, 200 – 1000 Sq Ft
- 25%, 1K – 10K Sq Ft
- 8%, 10K – 50K Sq Ft
- 2%, > 50K Sq Ft

Based on 88 Reporting Area
Total Number of Decision Makers for an Operation

54%, 1 Person
23%, 2 People
12%, 3 People
6%, 4 People
5%, > 4 People

Based on 110 Reports
Total Number of Female Decision Makers for an Operation

- 55%, 1 Person
- 22%, 0 People
- 13%, 2 People
- 5%, 3 or 4 People
- 5%, > 4 People

Based on 110 Reports
Total Number of Male Decision Makers for an Operation

Based on 110 Reports

- 45%, 0 People
- 41%, 1 Person
- 8%, 2 People
- 4%, 3 or 4 People
- 2%, > 4 People
Decisions Based on Baltimore

• Drop the minimum of 36 square feet requirement in the definition of urban ag
• Separate operations qualifying as a farm from those producing only for home use
• Treat a community garden as a single operation
• Refine questionnaire to allow respondents to report area and yield more accurately
Next Steps

• Validate/refine algorithm with pilot studies in Seattle and Austin
• Refine questions quantifying area and yield from urban agriculture
• Begin preparing for national implementation
Thank You!