Q- Can these Urban Ag growers make a living/supplement household income out of what they did/doing?
A- Several of the case study growers made their full income from their farms.

Q- What is the difference between access and security?
A- Access relates to enabling market access for smallholders, and to generate more income from cash crops, livestock products, and other enterprises.

Food security refers to the availability of food and one's access to it. The World Food Summit of 1996 defined food security as existing "when all people at all times have sufficient, safe, nutritious food to maintain a healthy and active life." Most often, the concept of food security is defined as including both physical and economic access to food that meets people's dietary needs as well as their food preferences.

Q- Is there any animal-agriculture integrated research regarding UA? If yes, may you please share your experience moving forward?
A- In Seattle, chickens are allowed in back yards -# and if roosters allowed.

Here in Florida, we recently hosted a workshop with UF's law school, UF research and Extension faculty, faculty from urban and regional planning, city/county planners, and attorneys in public and private practice.

One thing WCMER is working on is a paper for JOE on how Extension can be involved in urban policy development

Other:

Great to hear about growers making their full income! It is such a huge challenge and I thought that one of the presentation highlights was that most UA examples in the study were NOT able to make enough income from their produce/products. This is my concern about training programs sending people towards an un-profitable industry.

Aquaponic Training: NYC CUCE has an aquaponics program jointly with schools; UDC also has aquaponics.
Urban Agriculture: Needs, Opportunities, and Actions

Moderated by
Christopher B. Watkins, ECOP Chair, Cornell University

December 10, 2020
Learning for Leaders is...

• For Cooperative Extension Directors and Administrators of the land-grant universities
• Organized by the Extension Committee on Organization and Policy (ECOP)
• A member-oriented professional development benefit
• A networking opportunity
• Informative Virtual Meetings that are archived for the Next Generation Extension Leaders
• Held 6-9 times each year
Poll Results!

Extension Directors and Administrators, please respond: Is commercial urban farming of interest to clientele in your geographic area?

- **68%** Yes - strong interest in urban areas
- **24%** Yes - slight interest in urban areas
- **6%** Unknown
- **3%** No - I'm here to learn more
Strategies to Support Commercial and Community-Focused Urban Agriculture

Anu Rangarajan
Director, Cornell Small Farms Program
Assistant Director, Cornell Cooperative Extension
Picture an urban farm...
Three Projects

• Commercial UA
  • The Promise of Urban Agriculture
  • Accelerating Workforce Development for CEA

• Commercial/Community UA
  • Expanding Specialty Mushroom Production on Urban and Rural Small Farms (NIFA-Small Farms, NE SARE)
A Study Focused on Commercial Urban Ag

- Objectives:
  - Evaluate factors that have contributed to or inhibited the success of commercial urban agriculture
  - Determine policy, investment and community actions that could foster development of commercial urban agriculture
  - Identify strategic research, training, extension and education needs to advance commercial urban farming

- Case study-based, qualitative and quantitative data
  - Goal: profile farms diverse in their geography, demography, business structure and strategy, AND meet definition of commercial
    - 3 years in business, $10,000 in gross revenue
    - 360-degree view: talk to urban planners, funders, non-profit organizers, customers, and neighbors of farms

https://smallfarms.cornell.edu/projects/urban-ag/promise-urban-agriculture/
### Case Study Farms at a Glance

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Farms Profiled:</strong></td>
<td>14</td>
</tr>
<tr>
<td><strong>Farm Manager Gender:</strong></td>
<td>6 Male, 8 Female</td>
</tr>
<tr>
<td><strong>Farm Manager Race:</strong></td>
<td>4 Black, 1 Asian, 9 White</td>
</tr>
<tr>
<td><strong>Founder Gender:</strong></td>
<td>6 Male, 5 Female, 3 Groups</td>
</tr>
<tr>
<td><strong>Founder Race:</strong></td>
<td>10 White, 1 Black, 3 Groups</td>
</tr>
<tr>
<td><strong>Years in Business:</strong></td>
<td>3 – 23; Average: 7; Median: 6</td>
</tr>
<tr>
<td><strong>Production Type:</strong></td>
<td>11 in-ground, 2 CEA, 1 Rooftop</td>
</tr>
<tr>
<td><strong>Farm Acreage Range:</strong></td>
<td>0.1 – 3.25</td>
</tr>
<tr>
<td><strong>Median Farm Acreage:</strong></td>
<td>1.75</td>
</tr>
<tr>
<td><strong>Land Tenure:</strong></td>
<td>6 Lease, 8 Own, 1 also farms on land neither leased nor owned</td>
</tr>
<tr>
<td><strong>Legal Structure:</strong></td>
<td>3 Sole Proprietors; 1 Partnership; 1 Cooperative; 6 LLCs; 1 Nonprofit; 2 For-profit/Nonprofit Hybrids</td>
</tr>
<tr>
<td><strong>Range of Total Earned Revenue:</strong></td>
<td>$12,000 - $1.5 million</td>
</tr>
<tr>
<td><strong>Farm Product Sales as % of Total Earned Revenue:</strong></td>
<td>44-100%; Average: 81%</td>
</tr>
<tr>
<td></td>
<td>Median: 83%*</td>
</tr>
</tbody>
</table>
How can urban farmers realize the promise of commercial viability?

1. Commercial urban farms often access land through exceptional or extraordinary circumstances, eliminating or reducing land costs that can be prohibitive to entering farming (urban or rural).

2. Commercial urban farms rarely depend upon the sale of agricultural products alone.

3. Commercial viability for urban farms depends upon continued demand for local food through farmer’s markets, CSAs, and locally-focused restaurants and retailers.

4. Commercial urban farms cannot be all things to all people.
Recommendations for Commercial Urban Farmers

Karen Fresh Gardens
Kansas City, KS

- Prior to starting a farm, understand and engage the communities where the farm could be located.
- Register and receive a farm number through USDA’s Farm Service Agency to participate in various loan and cost share programs.
- Maximize return per square foot by using short growing cycle, high flavor, and rapid turnover crops.
- Incorporate high tunnels and other season extension.
- Diversify farm income to include value added enterprises that celebrate the farm location, such as workshops, farm suppers, or farm tours for fee.
- Include personal and family labor in farm budgets and profit analysis.
- Participate in trainings that build skills for production, business, labor, and risk management, even if only available in rural areas.
Recommendations for UA Research, Extension and Education

- Invest in longitudinal studies to further explore factors contributing to commercial urban farm viability.

- Conduct research to place value on the ecological and social services performed by urban farms.

- Create a Small Farm Business Summary to support more extensive analysis of urban and rural farm sustainability and profitability.

- Reinvest in urban farm educators and service providers to strengthen education and business networks for CUA farmers.

- Conduct independent academic research on the costs, output, and environmental and social impact of CEA/vertical farms.

- Sponsor more critical analysis of existing UA policies and educate city planners on urban farm functions and best support strategies.
Realizing the Promise of Urban Ag

Building upon the findings, we will create training/courses for:

• Experienced urban farmers aiming to grow commercial

• Nonprofit employees growing for profit and programs

• Urban planners seeking to understand and improve support of UA

• Policy makers seeking to improve support of UA
Growing the CEA / Indoor Ag Industry through Workforce Development

Goals:

• Understand workforce development needs of the indoor ag industry.

• Develop a workforce training program targeting positions which are challenging to fill.

• Create industry-vetted microcredentials to document skills and competencies of trainees.

• Create new pipelines of diverse workers
The Most Difficult Role to Fill

Master Grower
Lead Horticulturist
Operations Manager
Greenhouse Manager

- New mixed role
- Engineering and plant science
- Rarely have previous CEA experience
Develop A Curriculum (DACUM) Process
### DACUM Research Chart for Indoor Farm Operations Manager

<table>
<thead>
<tr>
<th>DUTIES</th>
<th>TASKS</th>
</tr>
</thead>
</table>
| **A. Manage Crop Production** | A.1 Manage crop fertigation (e.g., mixing nutrients, monitoring pH, monitoring water temp)  
A.2 Perform visual crop assessment  
A.3 Implement IPM plan  
A.4 Implement crop-specific SOPs (e.g., propagation, transplanting, harvesting)  
A.5 Oversee preventative maintenance (e.g., sensor calibration, clean filters, sanitation)  
A.6 Manage production logs  
A.7 Manage incident logs  
A.8 Diagnose crop disorders (e.g., nutrient deficiencies, physiological disorders)  
A.9 Conduct sampling activities (e.g., tissue, water, substrate) |
| **B. Manage Farm Labor**      | B.1 Determine labor needs  
B.2 Create employee schedules  
B.3 Inform team of daily plans  
B.4 Delegate planned routine tasks  
B.5 Delegate non-routine tasks  
B.6 Supervise employee performance  
B.7 Perform end-of-day assessment  
B.8 Manage team goals and KPIs  
B.9 Organize team meetings |
| **C. Implement Product Safety Plan** | C.1 Oversee operations hazard analysis (e.g., HACCP, prerequisite, risk assessment)  
C.2 Inspect product safety control points  
C.3 Implement employee product safety training program  
C.4 Manage product safety audits (e.g., routine, annual)  
C.5 Implement food safety SOPs (e.g., hygiene, sanitation, PPE)  
C.6 Verify product safety compliance (e.g., documentation, logs, mediate)  
C.7 Verify facility safety compliance (e.g., logs, mediate, security)  
C.8 Review product safety plan (e.g., annually, continuously)  
C.9 Implement pest management program (e.g., rats, roaches) |
| **D. Manage Post-Harvest**    | D.1 Confirm customer order details (e.g.,  
D.2 Gather production data (e.g., usable)  
D.3 Overseer post-harvest QC  
D.4 Overseer post-harvest packaging  
D.5 Overseer post-harvest cleaning and  
D.6 Prepare product for hand-off to logistics  
D.7 Update ERP with production data  
D.8 Manage post-harvest production  
D.9 Monitor employee GMP/SOP |

Task Analysis- ID steps to get a job done

Uses
- Develop training program/curriculum content
- Develop certification or knowledge test items
- Develop procedure manuals or SOPs
- Improve workflow or resolve bottlenecks

Details
- Performance standards
- Required skills
- Required knowledge
- Tools and techniques used
- Decisions to be made
- Cues/data needed
- Impact of errors

Manage crop fertigation (e.g., mixing nutrients, monitoring pH, monitoring water temp)

1. Record pH, EC, and water temperature of reservoir
2. Make adjustments to EC if needed
3. Make adjustments to pH if needed
4. Adjust water temperature as needed
5. Monitor EC, pH, and water temperature throughout the day
6. Add nutrients as needed to maintain plant health
7. Test plant samples to diagnose plant health issues if needed (see task A9)
8. Diagnose plant health as needed
3 CEA Positions
- CEA Assistant Grower
- CEA Head Grower
- CEA Farm Operations Manager

2 Formats
- 2 year college programs
- Online University-Industry Platform

Partners: Cornell, Ohio State, SUNY Broome, Agritecture, GLASE + 10 Industry Advisors
GOALS & APPROACH

PRODUCTION & MARKET RESEARCH: advancing the adoption of specialty mushroom production by developing viable economic models for small and medium scale production

- Grow trials with data collection on yields and quality that inform budget & modeling tools
- Marketing assessment of local and regional demand
- Analysis of industry gaps and barriers to entry to reduce inequities

EDUCATION: increasing the capacity of agricultural educators to offer mushroom production, handling and marketing education to their communities

- Online portal www.CornellMushrooms.org with videos, articles, and guidebooks
- Two annual online courses in production, bi-monthly webinars open to the public
- Launched the Community Mushroom Educator Network which has active participants from diverse communities
Community Mushroom Educator Program

- 76 educators from diverse communities (self identified as 49% White, 18% Black, 12% Latinx, 9% Asian, and 12% mixed race)
- 35 graduated as Community Mushroom Educators
Contact

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Director, Cornell Small Farms Program
Assistant Director, Cornell Cooperative Extension
State Specialist, Fresh Market Vegetable Production
PH: 607-255-1780
Email: ar47@cornell.edu
Poll Results!

Extension Directors and Administrators: Do you know who the National Urban Extension Leaders (NUEL) Urban Contact is for your institution?

- **51%** Yes – All is well - We communicate regularly
- **29%** Yes – But, there is a communication disconnect
- **15%** Do Not Know - Will contact NUEL to find out
- **5%** Neither Yes or No - More information is needed
Opportunities to Engage

Brad Gaolach
Washington State University, Director of Western Center for Metropolitan Extension & Research (WCMER)
Opportunities to Engage

**Western Center for Metropolitan Extension and Research (WCMER)**
- Membership: institutional, fee-based
- Developed by WEDA, hosted by WSU
- Open to membership outside the West
- [http://MetroExtension.wsu.edu](http://MetroExtension.wsu.edu)

**National Urban Extension Leaders (NUEL)**
- Membership: individual, no-cost
- Reports to ECOP Program Committee
- Organized into 5 ECOP regions
- [http://NUEL.extension.org](http://NUEL.extension.org)
Current Activities

Listening Sessions: NIFA Input (May 2020)

WDC53: Urban, Innovative, Emerging

1. Farmer Educ
2. Planning & Zoning
3. Eco, Soc, Env Impacts

Urban Priority (UP) Teams

Urban Agriculture Workshop (May 2021)

NUEC 21 (May ’21)

Opportunities to Engage

ERA: Urban, Innovative, Emerging

WCMER

Farm Bureau Urban County Group

NUEL

PIP: Food Access & Security

NUEC 21 (May ’21)
Contact Us

WCMER

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https://metroextension.wsu.edu/urbanag/
NIMSS / Multi-state teams
May 2021 Workshop

NUEL

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http://NUEL.extension.org
NUEL UP-Teams
NUEL – FB activities
May 2021 Workshop
2021 NUEC
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www.extension.org/ecop