Community Supported Agriculture Cost-Offset Intervention to Prevent Childhood Obesity and Strengthen Local Agricultural Economies
Background and Objectives
Community supported agriculture (CSA) & Cost-Offsets

• “Share” of a farmer’s crop, typically paid in full at the beginning of the season
  • Provide economic benefits to farmers

• “Cost-offset” CSA (CO-CSA) is purchasing support paid by a variety of mechanisms
  • Some members opt to pay extra towards subsidized shares

• May have potential to improve access to fresh produce and dietary behavior among low-income families
  • Lack of (high-quality) data examining impact on dietary outcomes
Fruit and vegetable intake and childhood obesity in non-urban settings

- Chronically low intake of fruits and vegetables (FV) is a risk factor for obesity and chronic disease\(^7\)
- FV intake is only about half of what is recommended by the Dietary Guidelines for Americans\(^8\)
- Higher rates of obesity and more screen time in low-income and rural and micropolitan (<50,000) populations\(^4-6\)
  - Yet higher rates of shared family meal daily
Complementary intervention approach: purchasing support (CO-CSA) plus skill-based education

• Purchasing support (discounts) encourages individuals to consume more fruits and vegetables\textsuperscript{16-21}

• Some research indicates purchasing support plus education may enhance dietary behavior change but studies are limited and often lack rigorous design and methods

• Our hypothesis: changing the economics and food environment of the household through the CO-CSA combined with tailored education to build knowledge, skills, and self-efficacy will help create long-term dietary behavior change
Our overall goal is to leverage the integration of research, extension, and education to examine cost-offset CSA participation as a strategy to improve dietary quality, help at-risk children achieve and maintain healthy body weights, and support vibrant agricultural economies.
Project objectives

• Examine whether CO-CSAs *plus* tailored nutrition education improve dietary intake and quality in low-income households with children aged 2-19

• Examine the influence of CO-CSAs and tailored education on KABSS* related to nutrition, meal planning, and meal preparation

• Contrast CSA models to understand if and how variability in operational characteristics affect participation and intervention effectiveness

• Estimate the economic impact of a CO-CSA program on the local economy

*knowledge, attitudes, beliefs, skills, self-efficacy*
Project objectives:

• Evaluate options for farmers to sustain the CO-CSA, and work with an advisory board, extension, and other stakeholders to disseminate findings through development of a tool kit and related electronic resources to maximize impact.

• Develop and evaluate short-course modules and lectures for undergraduate and graduate students related to local food system innovations that are synergistic with the goal of obesity prevention.
Project Team and Sites
Project team: Investigators

Rebecca Seguin
Principal Investigator
Cornell University
Division of Nutritional Sciences

Alice Ammerman
Co-Investigator
University of North Carolina

Karla Hanson
Co-Investigator
Cornell University
Division of Nutritional Sciences

Stephanie Jilcott Pitts
Co-Investigator
Eastern Carolina University

Jane Kolodinsky
Co-Investigator
University of Vermont
Center for Rural Studies

Marilyn Sitaker
Co-Investigator
Battelle Memorial Institute
4 Performance States (2-4 sites per state)

Washington

New York

Vermont

North Carolina

Obesity among low income children ages 2-4 years (2009-2011)
Approach
Overall Approach

Research

• Conduct extensive formative research
  • Qualitative and quantitative
• Implement and evaluate a randomized CO-CSA plus tailored education intervention trial
• Assess economic impacts

Extension

• Support development of business plans for economic sustainability through a tool kit and web-based resources

Education

• Develop and evaluate educational modules
### Formative research: qualitative

<table>
<thead>
<tr>
<th>Key informant interviews:</th>
<th>Number per state (total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CSA farmers with a current cost-offset</td>
<td>3 (12)</td>
</tr>
<tr>
<td>• CSA farmers without a current cost-offset</td>
<td>3 (12)</td>
</tr>
<tr>
<td>• Cooperative extension educators</td>
<td>5 (20)</td>
</tr>
<tr>
<td>• Full paying CSA members</td>
<td>5 (20)</td>
</tr>
<tr>
<td>• Adults in low-income households</td>
<td>10 (40)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Focus Groups*:</th>
<th>Four Focus Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Children in low-income households</td>
<td>5 - 10 children per group</td>
</tr>
</tbody>
</table>

*This may be changed to interviews instead
Formative research: quantitative

• Dietary data collection for children and adults in households that participate in the Northeast Organic Farming Association of Vermont (NOFA-VT) CO-CSA program
  • Sample: approximately 120-140 eligible households
  • Online data collection using Qualtrics survey system (NCI FV screener; variety of other data items)
  • Online collection of (3) 24-hour dietary recalls, via the NCI ASA24 system
Intervention Curriculum Development

• CSA-tailored education curriculum delivered by extension educators in convenient community settings and/or at the farm
• Nine lessons in 3 lesson clusters (early, mid, and late CSA season)
• Education will focus on low-income parents as well as targeted materials and activities for kids:
  1. Address knowledge, attitudes, and beliefs
  2. Improve self-efficacy
  3. Problem solve to address barriers
  4. Increase skills
  5. Allow for peer observation/learning
Farm/CSA eligibility

To be eligible, farms must:

• Have a CSA program but **without** a cost-offset; will receive half payment upfront from the grant

• Be willing to negotiate payment plans for low-income members

• Accept, or be willing to accept, SNAP benefits/EBT

• Agree to participate in the creation and implementation of a sustainability plan
Participant eligibility

To be eligible, participants must:

• Meet income requirements (<185% of Federal Poverty Level)
• Have at least one child in the household between 2 and 19 years old
• Have not participated in a CSA in the past five years
• Be willing to use their SNAP benefits or their own money to purchase the 50% CO-CSA share
• Agree to attend CSA-tailored extension education classes
Randomized trial

Each performance state:
• 60 participants within 2-4 communities with new CO-CSAs

Participants:
• Enrolled for two seasons
• Weekly CSA share at 50% discount (1/2 paid by grant funds)
• Participate in the CSA-tailored education (9 classes)

Intervention and Control Group Assignment:
• 1:1 randomization of participants into either intervention or control (delayed intervention) group within state sites
## Timeline of intervention

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50% CO-CSA + CSA-tailored education</td>
<td>50% CO-CSA</td>
<td>CO-CSA at sustainability level</td>
</tr>
<tr>
<td>Phase II: Control Families</td>
<td>Data collection only</td>
<td>50% CO-CSA + CSA-tailored education</td>
<td>50% CO-CSA</td>
</tr>
</tbody>
</table>
Outcomes
# Key intervention outcomes

| Household and parent level | • Household food security  
|                          | • Kitchen inventory  
|                          | • F&V knowledge, attitudes, beliefs  
|                          | • Diet quality  
|                          | • Ability to select, store, and prepare CSA share produce  
|                          | • Preparation to minimize added fat, sugar, and salt  
|                          | • Strategies to substitute F&V for energy-dense foods  
| Child level               | • Quantity and variety of F&V; diet quality  
|                          | • Quantity of sugar-sweetened beverages (SSB) and processed snacks  
|                          | • Body weight and height  
|                          | • Physical activity  
| Economic level            | • Total economic impact on employment, labor income, value added, and output  
|                          | • Direct, indirect, and induced effects  
|                          | • The multiplier (extra amount added to, or subtracted from, the economy when the CSA sector spends one dollar in the economy) as the summary measure  

# Process evaluation components

<table>
<thead>
<tr>
<th>Recruitment</th>
<th>Fidelity</th>
<th>Dose Delivered</th>
<th>Dose Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locations</td>
<td>Targeted Education</td>
<td>Targeted Education</td>
<td>Targeted Education</td>
</tr>
<tr>
<td>Strategies</td>
<td>Location of session</td>
<td># Sessions offered</td>
<td>% Sessions attended</td>
</tr>
<tr>
<td># Contacts</td>
<td># Sessions planned</td>
<td>Length of sessions</td>
<td>% Duration attended</td>
</tr>
<tr>
<td># Enrolled</td>
<td># Participants attending</td>
<td>CO-CSA</td>
<td>CO-CSA</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Session topics &amp; activities</td>
<td># Shares delivered</td>
<td>% Shares received</td>
</tr>
<tr>
<td></td>
<td>Length of sessions</td>
<td></td>
<td>Contents prepared</td>
</tr>
<tr>
<td></td>
<td>CO-CSA</td>
<td></td>
<td>Contents consumed</td>
</tr>
<tr>
<td></td>
<td># Shares available</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Development of CSA farmer business supports

• **Business support tools and resources will be:**
  • Informed by best practices
  • Menu of strategies for subsidizing 50% of cost-offset shares
  • Report on the cost threshold full-price members are willing to pay
  • Disseminated through a project website and cooperative extension

• **CO-CSA chat group**
  • Provide real-time support for farmers preparing for and implementing the CO-CSA program

• **Annual interactive webinar**
  • Featuring extension agents, agripreneurs, and others with expertise in running CO-CSAs
Education modules related to food systems and obesity prevention

*Education modules for undergraduate and graduate students will:* 
- Examine the role of food systems in the development and prevention of obesity
- Focus on implementing and evaluating food systems innovations
- Meet an increasing demand as students express interest
- Be incorporated into existing courses and provide a spring board for new courses

*Service-learning course and a single integrated one-hour lecture for:* 
- Community-based public health advocates and policy makers
- Undergraduate and graduate students in nutrition and public health programs
- Medical and other health professions students
Dissemination plan: Peer-reviewed papers and presentations

Topics to include:

• Findings from formative work
• Description of intervention and baseline measures
• Effects of CSA participation on dietary behaviors
• Findings related to project impacts on farmers and economy
Dissemination plan: Websites and webinars

<table>
<thead>
<tr>
<th>Approach</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Websites:</td>
<td>• Findings</td>
</tr>
<tr>
<td>• Project website</td>
<td>• Extension curricula</td>
</tr>
<tr>
<td>• NOPREN website</td>
<td>• Business planning resources</td>
</tr>
<tr>
<td>• SNAP-Ed and EFNEP</td>
<td>• Toolkit for CO-CSAs</td>
</tr>
<tr>
<td>Webinars on eXtension</td>
<td>Details on implementation and sustainability strategies for CO-CSAs</td>
</tr>
</tbody>
</table>
(Very) Preliminary Themes From CSA Farmer Interviews
Preliminary Results: CSA Farmer Interviews

Social Justice:
Farmers who offer CO-CSAs (or don’t currently but want to) have a strong social justice orientation, as they typically have to put in extra effort to get the program up and running.

“But I really love the idea of getting local, healthy food to a wider audience...my budget is super tight so I'm not able to personally subsidize shares to a lower income group. But I'd love to be able to do it somehow.”
–NY Farmer

“...I always let people know if they need to work out a payment plan they can let me know and, and we'll figure it out from there.”
–NY Farmer
Benefits of a CO-CSA Model:

• Healthier kids and communities
• Support for local farms and farmers
• Spending money locally has a multiplier effect on the wider community economy

Challenges of a CO-CSA model and/or accepting SNAP/EBT:

• Need to focus on running the business
• Time to learn, add something new

Preliminary Results: CSA Farmer Interviews

“It’s just the lack of time and mental energy...and obviously the pros are boundless, in my mind...getting everyone access to good food is really important for making change in our world. But we’re also running a business and there’s the reality of time management. I do definitely think it has to do with being a new business too because it just takes so much more time to do everything when you’re just learning.” –new VT CSA farmer

“I don’t really know [why I don’t accept food stamps]. I think ...it is like for me a barrier. Anything that I have to do that is new for me, it’s like I need someone to hold my hand. Like, okay, I’m gonna come to your farm, I’m gonna set it up, and this is how you do it. I think that’s what I need... someone from NOFA to come here and set it all up for me, and show me, and give me orientation for it.”

–experienced VT CSA farmer
More thoughts on SNAP benefits to support a CO-CSAs:

“I would never build a business model on EBT or SNAP, because the government could change its mind [about providing SNAP benefits].”
–WA Farmer

“It'd be great to have a training in how WIC and food stamps work. And how to incorporate that in a CSA model....So it'd be great to have like a training on different payment options and how to make that work for a CSA model.”
–NY Farmer
Preliminary Results: CSA Farmer Interviews

Opinions on using a sliding fee scale to support CO-CSAs:

Farmer who uses a sliding scale

“I price on a sliding scale... I haven't really done much, ya know, analysis on it. I don't ask my members what their income is or anything... [but] people who care about organic, local foods also care about getting it to other people.”

Farmer who does not use a sliding scale

“...if some of us were trying to do that [sliding scale], and other CSA farms weren’t, and if my price went up fifty dollars because of that...would [it] affect if people came to me, [or] went to somebody that wasn’t subsidizing low-income...”
Grant, donations, and work shares to support a CO-CSA:

• In Washington State, the NW Agricultural Business Center helps farmers apply for grants that could potentially support a CO-CSA
  • Farmers reluctance to seek grant funding is related to time and paperwork

• Having full-price members cover cost of the CO-CSA could be incentivized if they could use it as a tax write-off

• Full price member contributions must be a firm commitment—otherwise the low income family wouldn’t get their box

• Some have used fundraisers in the past and are willing to try it to fund a CO-CSA

• Some farmers don’t support work shares as a CO-CSA option:
  • “I feel that one of our greatest resources is time and I feel like there’s a lot of families who are working a lot of jobs and I just don’t think it’s fair that we ask people who can’t afford things to give up their time. I don’t feel like it’s equal value...time can be spent with their kids. If people want to come work for the experience, that’s one thing...”

Preliminary Results: CSA Farmer Interviews
Formative data collection: progress to date

- Farmer interviews nearly complete; transcriptions in progress
- Low-income parent and child interview guides close to finalized
- Extension educator interview guide in development; interview guide with full paying CSA members to be developed during summer 2015
- NOFA-VT observational study data collection instruments finalized and tested; list of participants for 2015 now available; data collection launch set for June/July 2015
- Rapid analysis of both qualitative and quantitative data to occur summer and fall 2015 to inform intervention curriculum development
Acknowledgements & Thank you!

This work is supported by the United States Department of Agriculture (USDA), Agriculture and Food Research Initiative (AFRI) Childhood Obesity Prevention Challenge Area.
References Cited


