Trending Topics in Farm to School: Kids Win and Farms Win: What We Know About the Impacts of Farm to School

November 2019
Webinar Housekeeping

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OUR NETWORK
NATIONAL FARM TO CAFETERIA CONFERENCE

April 21-23, 2020 | Albuquerque, NM

www.farmtoschool.org/conference
WHAT IS FARM TO SCHOOL?

CORE ELEMENTS OF FARM TO SCHOOL

- EDUCATION
- SCHOOL GARDENS
- PROCUREMENT
WHY FARM TO SCHOOL?

KIDS WIN

FARMERS WIN

COMMUNITIES WIN
Today’s Presenters

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Kids win and farms win: what do we know about the impacts of farm to school

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National Farm to School Network Webinar
November 7, 2019
Rural Community Impacts of Farm to School: Food Supply Chains, Educational Programming, and Household Food Purchases [Award # 2017-67023-26246]

RESEARCH QUESTION: What are the impacts of farm to school programs on farmers and food supply chain businesses, household consumption patterns, and school food choice, consumption and food plate waste?
Research & Extension Team

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• Rachel Spencer, USDA FNS
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• Thompson, Weld District 6, and Poudre School Districts
• Wendy Peters Moschetti, LiveWell Colorado
• Kim Niewlonny, Virginia Tech
• Brian Roe, Ohio State University
42% of districts surveyed by USDA say they participate in farm to school activities.

That’s 5,254 districts and 42,587 schools bringing the farm to school for the benefit of an estimated 23.6 million children.

USDA The United States Department of Agriculture
Food and Nutrition Service

https://farmtoschoolcensus.fns.usda.gov

LocalFoodEconomics.com
FARM TO SCHOOL GRANT PROGRAM // BY THE NUMBERS (2013-2017)

365 GRANTEES
$25M IN FUNDING

OVER 29K SCHOOLS
APPROX. 13M STUDENTS
IN ALL 50 STATES

1,632 APPLICATIONS RECEIVED
$120M REQUESTED

ON AVERAGE 1 IN 5 APPLICATIONS FUNDED

LocalFoodEconomics.com
Purported Benefits of Farm to School

KIDS WIN

FARMERS WIN

COMMUNITIES WIN
Purported Benefits of Farm to School
Let’s start with ‘kids win’
Kids Win

Why are we focusing on schools?

SNAP-households acquired almost twice as many calories from school meals than non-participant households.
Kids Win

Why are we focusing on schools?

Schools are the only acquisition location where SNAP households had a higher nutrition score than non-SNAP households.

Notes: SNAP = Supplemental Nutrition Assistance Program. FPG = Federal Poverty Guideline. Healthy Eating Index-2010 scores run from 0 to 100, with a higher score indicating a healthier diet. Light-colored bars indicate difference from SNAP households is not statistically significant at p < 0.05.

Source: USDA, Economic Research Service estimates using data from the 2012-13 National Household Food Acquisition and Purchase Survey (FoodAPS).
Students participating in the NSL and SBP meals get a lot of their daily calories from schools.
Kids Win

Why are we focusing on schools?

Some research suggests that the National School Lunch Program may reduce food insecurity.

More than four in five food-insecure households with school-age children receive free or reduced-price school lunches.

- 46% Received free or reduced-price school lunches and SNAP
- 38% Received free or reduced-price school lunches only
- 10% Received SNAP only
- 6% Did not receive SNAP or free or reduced-price school lunches

SNAP = Supplemental Nutrition Assistance Program.

Note: Food insecurity and program participation measured during the 30-day period ending in mid-December for households with annual incomes below 185 percent of Federal poverty line and school-age children (ages 5-17).

Kids Win: What are the activities that can be successfully implemented support kids?

- Local procurement?
- Experiential learning?
- Nutrition education?
- Promotion activities?
- School gardens?
What are the activities that can be successfully implemented to support kids?

Matching the two years of F2S Census Data
7,330 School districts could be matched (out of ~9,900 in first Census)

<table>
<thead>
<tr>
<th>Number of Districts</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Not adopting F2S 2011/12 &amp; 2013/14</td>
<td>3,348</td>
</tr>
<tr>
<td>2) Adopting F2S in 2011/12 not in 2013/14</td>
<td>862</td>
</tr>
<tr>
<td>3) Adopting F2S in 2013/14, not in 2011/12</td>
<td>1,021</td>
</tr>
<tr>
<td>4) Adopting F2S in 2011/12 and 2013/14</td>
<td>2,099</td>
</tr>
<tr>
<td>Total (Matched)</td>
<td>7,330</td>
</tr>
</tbody>
</table>

2,961 School districts had F2SP in 2011/2012; about 29% declared not to participate in F2S in the school year 2013/14 (groups 2 + 4)
Relationship between F2S activity and program continuation across F2S Census

Share of F2S activities implemented

Relationship between F2S activity and program continuation across F2S Census

Share of school districts cont. vs disc. F2S activities by number of F2S activities implemented

Kids Win

Farm to School Activities and Student Outcomes: A Systematic Review

Melissa Pfugh Prescott, Rebecca Cleary, Alessandro Bonanno, Marco Costanigro, Becca B R Jablonski, Abigail B Long

Advances in Nutrition, nmz094, https://doi.org/10.1093/advances/nmz094

Published: 05 September 2019  Article history ▼

FIGURE 1  PRISMA flow diagram of the study selection and exclusion process. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.
Kids Win

Farm to School Activities and Student Outcomes: A Systematic Review
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FIGURE 2  Euler diagram depicting the degree of overlap in farm to school activity categories investigated in the 21 included studies. Each farm to school activity category is numbered from 1 to 6 and is also identified by a color. The size of each circle states and is scaled according to the number of studies it represents. The set (or combination) of farm to school activity categories represented by each circle is listed in parentheses.
Main Findings:
• Consistent evidence that farm to school programming is associated with increased nutrition-related knowledge
• Most studies also suggest positive relationships with healthy food selection, nutrition self-efficacy, and willingness to try FV
• Inconclusive: FV consumption and preferences
Kids Win

Healthy Planet, Healthy Youth: A Food Systems Education and Promotion Intervention to Improve Adolescent Diet Quality and Reduce Food Waste

by Melissa Pflugh Prescott 1,* Xanna Burg 1, Jessica Janick Metcalfe 1, Alexander E. Lipka 2, Cameron Herritt 3 and Leslie Cunningham Sabo 3

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Nutrients 2019, 11(8), 1869; https://doi.org/10.3390/nu11081869

USDA NIFA Award: 2017-67023-26246
Main Findings:

- Intervention group increased FV consumption relative to baseline, while the control group decreased.
- Intervention group wasted less FV
  - Driven by less salad bar waste
- Teachers reported that having curriculum aligned to academic standards, curriculum outline, and freedom to adapt intervention was essential for feasibility and acceptability.
Kids Win: Doing research/evaluation in-school settings is hard!

Selected challenges:

- Difficult to get time in the classroom giving competing needs (test prep!)
- Need a control school, difficult to favor some schools in a district over others.
- Willingness of teachers to participate varies.
- Lunch is fast! And, many factors impact what kids eat in the school setting.
Kids Win: Doing research/evaluation in-school settings is hard!

<table>
<thead>
<tr>
<th>Products</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td></td>
<td>Cherry Tomato</td>
<td>Baby Carrot</td>
<td>Bell Peppers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatments</th>
<th>(C)</th>
<th>(L)</th>
<th>(LL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td></td>
<td>Local</td>
<td>Local+info</td>
</tr>
</tbody>
</table>

- **Local**: unidentified snacks sourced from within CO.
- **Local+ info**: Each snack with “CO Proud sticker” and an informational sheet about the source farm was included in the tote for teachers to read to students.
Kids Win: Doing research/evaluation in-school settings is hard!

Logistical (supply chain) challenges curtailed ability to follow experimental design

<table>
<thead>
<tr>
<th>Date</th>
<th>Product</th>
<th>Source</th>
<th>Information</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/2/18</td>
<td>Apple</td>
<td>Local</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/3/18</td>
<td>Baby Carrots</td>
<td>Local</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/4/18</td>
<td>Bell Peppers</td>
<td>Local</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/5/18</td>
<td>Cherry Tomatoes</td>
<td>Local</td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td>10/9/18</td>
<td>Baby Carrots</td>
<td>Local</td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td>10/11/18</td>
<td>Cherry Tomatoes</td>
<td>Conventional</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/16/18</td>
<td>Apples</td>
<td>Local</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/17/18</td>
<td>Baby Carrots</td>
<td>Local</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/18/18</td>
<td>Bell Peppers</td>
<td>Conventional</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/19/18</td>
<td>Cherry Tomatoes</td>
<td>Conventional</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>10/23/18</td>
<td>Apples</td>
<td>Local</td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td>12/19/18</td>
<td>Apples</td>
<td>Conventional</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>12/20/18</td>
<td>Baby Carrots</td>
<td>Conventional</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Non-fatal
- Same product delivered to all schools each day
- 2 schools dropped out
  - Still had 4 schools, 86 classrooms

Fatal
- Long time period of experiment
- Local products offered early, conventional products offered close to winter break holiday
- Several missing treatments:
  - no LL pepper
  - no L tomatoes
# Results: Focus on tomatoes (LL-C results)

## Preliminary findings:
We see no significant differences in waste weight when the tomatoes are identified as local, but we see a significant and negative difference in consumption.

<table>
<thead>
<tr>
<th>Key variables</th>
<th>Conventionally sourced</th>
<th>Locally sourced identified</th>
<th>Difference: (2)-(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obs</td>
<td>mean</td>
<td>s.d</td>
</tr>
<tr>
<td>Waste weight for per student</td>
<td>110</td>
<td>30.31</td>
<td>13.51</td>
</tr>
<tr>
<td>Percentage of waste for per class</td>
<td>110</td>
<td>0.51</td>
<td>0.22</td>
</tr>
<tr>
<td>Consumption weight for per student</td>
<td>110</td>
<td>29.59</td>
<td>13.42</td>
</tr>
<tr>
<td>Percentage of consumption for per class</td>
<td>110</td>
<td>0.49</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Data source: Author's survey.
* significant at 10%; ** significant at 5%; *** significant at 1%.
‘Farmers win’
How do farmers and ranchers respond to school markets?

• Is new market increasing price point? Enabling producers to scale up? Creating a market for seconds?
• Can the intended producer respond to the market opportunity? Do they have the right food safety protocol in place? Do they have access to appropriate infrastructure?

Many local food policies focused on local procurement

Schools have limited food budgets

NSLP Reimbursement Rates for the 2019-20 School Year:

- Free: $3.41
- Reduced Price: $3.01
- Paid: $0.32
- Schools certified as meeting the new nutrition standards receive an additional $.07 per lunch.
- An additional $.02 per lunch is provided to schools in which 60 percent or more of the second preceding school year lunches were served free or reduced price.

SBP Reimbursement Rates for the 2019-20 School Year:

- Free: $1.84
- Reduced Price: $1.54
- Paid: $0.31
- An additional $0.36 is provided for each free or reduced price breakfast served in “severe need” schools, where at least 40 percent of the lunches served during the second preceding school year were served free or reduced price.
Opportunity for seconds?
Different business models will work for producers based on competitive advantage.

Source: https://dyson.cornell.edu/outreach/smart-marketing-newsletter/
FINANCIAL PERFORMANCE IMPLICATIONS OF LOCAL FOOD ENTERPRISES
Marketing Profit Margin Percentiles, Intermediated Channels

Other is mostly farm to school!
Supply chains used by school districts

[Bar chart showing the percentage of school districts using different supply chains.]

- Distributor: 70%
- Individual food producer: 60%
- Processor/Manufacturer: 40%
- DOD Fresh Program vendors: 30%
- USDA Foods: 20%
- Producer cooperative: 10%
- Food buying cooperative: 5%
- Food service mgmt. company: 3%
- Farmers market: 1%
- State Farm to School Program office: 1%
- CSA program: 1%
- Food hub: 1%
- Other: 1%
Objective 1: Evaluate if FTSPs result in increased market access and profitability outcomes for farmers

Integrated Farm to School Intensity metrics:
• Farm to School Index (FTSI): county-level number of school districts with FTS activities divided by the number of school districts that responded to the FTSC in the same county

Used Unconditional Quantile Regression technique to allow us to look at effects across a range of producers.
• Grouped by financial performance
Objective 1: Evaluate if FTSPs result in increased market access and profitability outcomes for farmers

# of schools in FTS census implementing a FTS activity weighted by total # of school districts in a county

- Farm size
- economic variables
- managerial choices
- technical skills
- Farmer demographics
- spatial fixed effects
Relationship between farm to school intensity and ROA (profitability)

- We see that Farm to School Activity levels have positive influence on the operating margins of farms performing well, while local food assets (farmers markets and food hubs) are most influential on improving profits for lower performing farms.
- Scale is very important, but how size is measured (sales vs. land) matters.

Datasets used:
- USDA’s Agricultural Resource Management Survey (ARMS) 2013-2016
- USDA Food and Nutrition Service’s FTS Census – 2013-2015
Varying Influence of Farm to School, Enterprise, Marketing and Location Factors on Operating Profit Margin

<table>
<thead>
<tr>
<th>Operating Profit Margins</th>
<th>Producers Segments by OPM Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25th and below</td>
</tr>
<tr>
<td>Farm to School Intensity</td>
<td>+</td>
</tr>
<tr>
<td>Scale (measured by sales)</td>
<td>+</td>
</tr>
<tr>
<td>Scale (measured by acres)</td>
<td>-</td>
</tr>
<tr>
<td>Primary Commodity:</td>
<td></td>
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<tr>
<td>Fruit/Vegetable</td>
<td></td>
</tr>
<tr>
<td>Livestock</td>
<td>-</td>
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<tr>
<td>Dairy</td>
<td>+</td>
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<tr>
<td>Marketing Channels/Choices:</td>
<td></td>
</tr>
<tr>
<td>Farmers Market (Share)</td>
<td>-</td>
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<tr>
<td>Other Direct (Share)</td>
<td>-</td>
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<tr>
<td>Retailers (Share)</td>
<td>-</td>
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<td>Institutions (Share)</td>
<td></td>
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<tr>
<td>Distributors (Share)</td>
<td>-</td>
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<tr>
<td>Contracts (0/1)</td>
<td>-</td>
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<tr>
<td>Diversity</td>
<td>-</td>
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<td>Location Characteristics:</td>
<td></td>
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<tr>
<td>Metro</td>
<td>-</td>
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<tr>
<td>Metro-adjacent</td>
<td>-</td>
</tr>
<tr>
<td>Farmers Markets./000</td>
<td>+</td>
</tr>
<tr>
<td>Food Hub</td>
<td>+</td>
</tr>
</tbody>
</table>

Rural and Commodity Sales are Reference Groups for Location and Channel Variables
Impact of gross cash farm income on operating profit margin by quantile and market channel
Impact of farm to School intensity on operating profit margin by quantile by market channel

- Local food
- Direct-to-consumer only
- Intermediated only
- Both
Takeaways

1. Farm to School programming is yet another local food ecosystem dynamic that could be affecting farm strategies and performance.

2. Scale is still a major driver of financial performance
   a. It appears farms of all types and market orientation may benefit from Farm to School programming
   b. Complement to more traditional local farm assets (FM and hubs)?

3. Continued work needed on how farms of different scale, market strategy and location are influenced by a variety of farm to school indicators, using a variety of financial outcomes.
UNDERSTANDING IMPACTS
Research to help increase profitability, better food choices, and guide policy making decisions in rural communities.
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