Economics of GAPs Certification

Jesse Strzok
Eastern New York Commercial Horticulture Program
Variety of reasons for food safety (GAP, GHP, FSMA, etc.) implementation

- Personal Commitment to Food Safety
- Buyer Demand for Food Safety
- Government Demand for Food Safety

Which farms will be impacted most by GAPs?

- Economies of scale/scope
- Benefits and costs
  - Decisions - ROI/NPR/BCR
Objectives and Motivation

Assess costs that growers incur when implementing GAPs on their farms (C) – Total Annual Costs

Assess the extent to which the food safety improvements accordingly allowed growers to maintain existing market sales and/or expand market sales in existing or new markets (MES). – Maintained and Expanded Sales
   Maintained sales = dollar value of pre-GAPs sales that would have been lost if a food safety plan was not implemented following the GAPs training.
   Expanded sales = increased sales to new or existing markets as a result of implementing the GAPs food safety plan

Determine relationship of firm size on Benefit-Cost-Ratio (BCR = MES/C)
New York data

Data used is from a long-term impact survey conducted in spring/summer 2014
GAP Training and Farm Food Safely Plan Writing Workshop – Elizabeth A. Bihn, Gretchen L. Wall, Elizabeth J. Newbold, Todd M. Schmit

Costs for certification varies greatly
2011 UVM study:
$37-$54 per acre on average (+ 7 hours labor/week)
No statistical difference between
Single crop and diversified farms
$500k or less rev./yr vs >$500k rev./yr
50% or less wholesale vs >50% wholesale
Farm Data

• 52 fruit farms
• 25 fruit farms with 3rd-party audits (3PA)
• Divided into 4 categories
  • < 15 Acres (13 farms – 2 with 3PA)
  • 15 acres – 99 acres (18 farms – 10 with 3PA)
  • 100 acres – 499 acres (16 farms – 9 with 3PA)
  • > 499 acres (5 farms – 4 with 3PA)
• Cost of $352 per acre on average
Total Annual Costs (C)

1. **Training Costs**: costs of training workers
2. **Implementation Costs Associated with Labor**: time per week workers spend on food safety practices
3. **New Staff Hired**: to develop or implement GAPs
4. **Testing**: water, soil and soil amendments testing
5. **Disposable Supplies**: soap, paper, rodent traps, etc.
6. **Modifications Costs**: for production, harvest, processing, or packing
7. **Additional Costs**: insurance, 3 party audit, etc.
Maintained & Enhanced Sales (MES)
Benefit-Cost-Ratio (MES/C)

Maintained Sales = dollar value of pre-GAPs sales that would have been lost if a food safety plan was not implemented following the GAPs training.

Expanded Sales = increased sales to new or existing markets as a result of implementing the GAPs food safety plan

Benefit-Cost-Ratio = MES/C

> 1 great!
= 1 a wash
< 1 ouch!
### Analysis

**Estimated relationship of food safety costs, maintained and enhanced sales, and benefit cost ratio on farm size.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Annual Costs</th>
<th>Maintained and Enhanced Sales</th>
<th>Benefit-Cost-Ratio$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS Full</td>
<td>OLS 3PA</td>
<td>OLS Full</td>
</tr>
<tr>
<td>Acres</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>156.712  **</td>
<td>226.346  *</td>
<td>2085.15  **</td>
</tr>
<tr>
<td></td>
<td>(46.701)</td>
<td>(84.133)</td>
<td>(369.105)</td>
</tr>
<tr>
<td>Acres$^2$</td>
<td>-0.108  *</td>
<td>-0.165  *</td>
<td>-1.281  **</td>
</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td>(0.078)</td>
<td>(0.368)</td>
</tr>
<tr>
<td>Prob &gt; F</td>
<td>0.002</td>
<td>0.024</td>
<td>0.000</td>
</tr>
<tr>
<td>N</td>
<td>52</td>
<td>25</td>
<td>52</td>
</tr>
<tr>
<td>Prob &gt; chi$^2$ (tobit)</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

$^a$ Intercept term is suppressed in all non-tobit regressions. Standard errors in parentheses. OLS = Ordinary least squares. 3PA=1 regressions only include farms with third party audits. ** and * represent statistical significance at the 99% and 95% significance levels, respectively.

$^b$ Benefit-Cost Ratio equals maintained plus expanded sales divided by total annual costs.
Thank you!

Questions? Comments?

Jesse Strzok
ENYCH Team
js3234@cornell.edu
518.429.1464