

Economics of Hoop House Construction and Fall/Winter Production

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Overview

- Project Background
 - Goals
 - Activities
 - Hoop House Details
 - Data Collection Methods
- Preliminary Results
 - Construction Times and Costs (N=5)
 - Production Costs and Revenues (N=2)
- Conclusions, Discussion

Michigan Hoop House Project Goal

To build on and inform efforts to support education and outreach in season extension technologies
Specifically, to determine if using hoop houses to extend the vegetable growing season makes *economic sense* for small and medium scale farmers

Project Activities

- Provide hoop house and trainings/consultations to three farmers in each of three areas of Michigan— 9 total farmers
- Measure production costs, times and revenues (via Enterprise Budgets)
- Measure consumers' willingness to buy out of season local produce
- Compare environmental impacts with imports'
- Document farmer experiences adopting this technology



The Hoop houses (details)

Rimol "Nor'Easter" (*not an endorsement!*)

<http://www.rimol.com/noreaster.aspx>

30'x96' (=2880 sq ft)

- Louvered end walls
- Double Ply with Inflation Fan
- Internal Row Covers

Cost per House: approx \$8,000
(buying 10 at a time!)

The Hoop houses...



The Hoop houses...



The Hoop houses...



The Hoop houses...



Data Collection Methods

- Farmers track
 - Revenues from sales
 - Labor times (paid/wage and unpaid/family)
 - Input costs (seeds, compost, etc.)
 - Marketing costs (mileage, labor, etc.)
- Assume existing farm, so not tracking unrelated "fixed costs"
 - Mortgage, taxes, buildings, equipment, etc.
- Farmers grow what they think best, not told by us...they know their markets better than we do!

Data Collection

Farmers given materials:

- Waterproof notebook
- Permanent pen
- Watch
- Various Forms

Farmers send me monthly reports by email or fax of that month's activities, expenses and income

**Ideal Unit of Analysis: \$/square foot-day

Data Collection

Input Form: item, date, cost

Labor Form: date, crop*, activity, start/end times, labor type (paid/wage, or unpaid)
*Note square foot when planting crop

Marketing Form: date, mileage, labor times, other costs (bags, stall fees, other)

Marketing costs only for hoop house produce: would you make this trip without HH produce?

Results to Date

So, what have we found out?

Not much yet!

But, I will talk about results so far in:

- Construction times and extra costs
- Production times and expenses
- Revenue and efficiency



Preliminary Results: Construction

Construction Times, Person-hours
(N=5)

- Average: 228
- Median: 250
- Min: 124
- Max: 340

Manufacturer says ~100...Count on 200+!

Construction experience and teamwork help



Construction Times "Low End" Example

Activity	Person Hours Per Task
Groundposts	16
Bow Assembly	2
Bow Assembly	3
Bow Assembly And Placement, Ridge Purlin Attachment	6
Truss Supports Installation and Baseboard Attachment	10
Endwall Construction, Baseboard and Hipboard Installation, Windbracing Attachment	24
Purlin Installation	18
End Wall Construction	9
Plastic	24
Roll Up Sides	6
Make and Install South Door and Frame	3.8
Cut 3/4" Conduit For Inner Frame Posts	3.3
Install Frame Posts	3.3
Make and Install North Access Door	2.2

Construction Expenses

Selected Expenses:

- ✓ Trencher Rental \$180
- ✓ Installing Electricity: \$295
- ✓ Installing Water: \$110
- ✓ Various Tools: \$38

Note: these vary greatly, depending on farm...

Production Times and Expenses 2 cases

Case 1. Western Michigan (WM) area, very experienced, full time, professional farmer.

Case 2. Upper Peninsula (UP), very dedicated and knowledgeable part time farmer (with day job)

Production Times and Expenses

Case 1 (WM) Hoop House Times (person-hours)

- Bed Preparation
(tillage, fertility, etc): 23
 - Planting: 13
 - Harvest and Packing: 19
- Plus...Seeds (\$138) and Pinpoint
Planter (\$172)



Production Times and Expenses

Case 2 (UP) Hoop House Times (person-hours)

- Bed Preparation (tillage, fertility,
etc): 38
 - Planting: 4
 - Harvest and Packing: 98
- Plus...Seeds, \$19

Harvest Data...as of Dec 31, 2006:

WM: Selected Harvest Data
Spring Mix, 4 oz. bags: 43
Spinach, 4-5oz. Bags: 78
Radishes, bunches: 91
Fall Mix (5 oz. bags): 80
Scallions (bunches): 33
Total=325 pieces
*other smaller qty items harvested too



Harvest Data...as of Dec 31, 2006:

UP (all 8 oz bags)
Loose leaf Lettuce: 83
Romaine: 18
Spinach: 62
Mix: 109
Total=272 bags



Revenues as of Dec 31, 2006

Gross Revenue to Date

- WM: \$832 (mostly farmers' markets)
- UP: \$654 (wholesale to grocers)

Efficiency

\$/hour of total production labor:

- WM: \$15.27
- UP: \$4.62



Other Efficiency Comparisons

\$/pick-pack hour

- WM: \$44
- UP: \$6.70
➢ ~7 fold difference

Packages/hour of harvest-pack

- WM: 17
- UP: 2.8
➢ ~6 fold difference

Conclusions

- Just Getting Started! Stay Tuned...
- Construction:
 - Wide variation
 - Construction experience helps
 - Community Building Experience
 - Hidden Expenses (electric and water)
- Harvest: possible even in Dec. in UP!
- Revenue and Returns:
 - Retail > Wholesale
 - Efficiency of WM Farmer: experience, equipment, both?

Super Bowl 41 Winner?

My Prediction...

Colts 30

Bears 13

MVP: Dwight Freeney



Discussion

Questions?
Comments?
Suggestions?



Thank you!

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