Fresh market vegetable farms at three scales of production

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Growing produce is not the biggest hurdle facing most fresh market vegetable growers; earning a reasonable living poses the greatest challenge. One way for farmers to analyze their operations in order to better meet their financial goals is to share information through farmer networks, conferences and coffee shop talk. Farmers may feel reluctant to share financial information, however.

From 2002-2004, the Center for Integrated Agricultural Systems worked with a group of 19 growers on a participatory, farmer-led case study. The growers collected data on their sales, labor and other aspects of their businesses. They then created financial ratios that allowed them to compare small, medium and large operations in a way that respected their confidentiality.

Their goal was not to provide a complete economic analysis, but to create a basis for comparisons between farms and discussions of how to forge a quality livelihood from farming. Growers wanting a standard economic analysis of their farms can use traditional balance sheets, financial statements, and cash flow statements.

This is a summary of a longer report titled *Grower to grower: Creating a livelihood on a fresh market vegetable farm*. The report and this summary can help guide growers as they set financial and quality of life goals for their farms and structure their operations to realize those goals. There is no ideal size for a fresh market vegetable farm; growers need to use their management skills and economic analysis tools to figure out the scale and level of mechanization that makes the most sense for them.

This case study involved a small number of farms that were not randomly selected. The results, therefore, may not be generalized to other operations.

Participating Farms

Most of the farms in this project were located in Wisconsin, although a few were in neighboring states. All but one used organic production practices. They ranged from less than one acre to over 70 acres, and were divided into three scale categories:

Market gardens had fewer than three acres in active production, not including fallow or cover cropped areas. There were six market gardens in this project, with 0.5 to 2.7 acres in active production.

Market farms had between 3 and 12 acres in active production, not including fallow or cover cropped areas. There were eight market farms in this project. Some of these farms were struggling with issues of mechanization versus hand labor, while others were among the more successful and stable in the study.

Vegetable farms produced crops on more than 12 acres, not including fallow or cover cropped areas. There were five vegetable farms in this project. Four were diversified organic operations. An additional non-organic farm that followed low-input, integrated pest management (IPM) practices participated. Its numbers are not included in the stated averages or ranges. Acres in production ranged from 15 to 80.

At all scales, growers used a variety of strategies for marketing, equipment, crop and labor needs.

Marketing: Selling produce directly to customers was the cornerstone of most growers' marketing plans. Most sold product through farmers' markets, restaurants and retail outlets and Community Supported Agriculture (CSA); pick-your-own and on-farm sales were less common. Many growers used one dominant marketing outlet along with a variety of secondary outlets.

Equipment: Equipment value was defined as the growers' estimate of current (resale) value of all farming equipment of lasting or enduring quality, excluding farmers' personal dwellings and land. This is an imprecise measure that should be treated as a rough guide. Investment in equipment per acre ranged from $2,011 to $26,784; the smallest farms with no tractors had the lowest investment.

Crops: All of the organic farms in this study grew a wide variety of crops, although some were more specialized than others. Diversification prevented pest buildups and provided some insurance against crop failure. But learning to grow many different crops was challenging, and growers with a wide array of crops often could not justify specialized equipment purchases.

Labor: Labor hours on the market gardens with fewer than three acres ranged from 933 to 2,994 hours per acre, and averaged just under 2,000. Payroll amounted to between 0% and 42% of gross sales. Labor on the 3 to 12 acre market farms ranged from 402 to 1,443 hours per acre and averaged just under 850. Payroll expenses consumed as much as 34% of gross sales on these farms. Labor on the four large-scale organic vegetable farms ranged from 462 to 613 total hours per acre and averaged 554. Payroll expenses consumed between 19% and 41% of gross sales.

Farm finances

The growers participating in this case study tracked their expenses, sales and labor hours over the three years of this project. The averages and ranges for some measures and ratios are shown in the table (opposite). The growers used additional ratios, described in the full report.

Summary of financial measures for three different farm sizes

	Market gardens under 3 acres		Market farms 3 to 12 acres		Vegetable farms over 12 acres	
	Range	Average	Range	Average	Range	Average
Gross sales/acre	$8,888-$25,605	$15,623	$6,267-$15,276	$11,121	$6,750-$14,466	$10,810
Net cash income/acre	$1,892-$9,487	$5,664	$1,331-$8,547	$4,679	$1,103-$7,430	$3,757
Net cash to gross	9% - 57%	36%	16% - 57%	40%	16% - 51%	31%
Hourly wage for owner	$3.32-$6.57	$4.96	$2.26-$16.92	$7.45	$3.46-$14.90	$11.36

Gross sales per acre: Small plantings of organic, fresh market vegetables, herbs, flowers and berries can garner large gross sales. The farms in this study realized three-year average annual gross sales between $6,267 and $25,605 per acre. The most impressive gross sales per acre were seen at the smallest scale. These gross sales per acre figures are based only on the land being used for cash crops in a given year. If land in cover crops or fallowed were included, these figures would be lower for most farms. Some farms had additional farm income from other enterprises, which were not included.

Net cash income per acre: Expenses, especially labor costs, can quickly eat into gross sales on a vegetable farm of any size. Net income matters most in terms of financial sustainability. The term 'net cash income' is used here to describe a farm's gross sales minus all current year cash expenses. In the growers' own words, they wanted to know "how much cash they had at the end of the season to provide for themselves and their households—and perhaps take a vacation." Factors such as prescribed machinery use and land costs, depreciation and opportunity costs were not included.

Three-year average net cash income for the farms in this study ranged from under $2,000 to over $8,000 per acre. Under 3-acre market gardens experienced more year-to-year variation in net cash income per acre than the two larger farm types.

Community Supported Agriculture (CSA) appeared to help stabilize income. CSA farms are assured relatively steady sales because members pay for their share of the harvest at the beginning of the year. Other marketing strategies are subject to the vagaries of the marketplace and weather.

Comparing net cash income to gross sales: Dividing net cash income by gross sales results in a net cash to gross ratio. Higher net cash to gross ratios were strongly associated with farms that concentrated on CSA. The smaller farms with higher net cash to gross ratios had lower payroll expenses, with the farmer doing the bulk of the work and keeping more money. Some larger farms maintained high net cash to gross ratios through careful training and management of labor crews.

Hourly wage: Hourly wages were calculated by dividing the growers' reported net cash income by hours worked. Grower average hourly wages were as low as $3.32 on a small farm and as high as $14.90 on a large farm, averaging $7.45 for all farms.

Livelihood and quality of life

Most of the small market gardens provided part-time livelihoods for the growers. For most of the market farmers with 3 to 12 acres in production and all of the vegetable farmers with over 12 acres in production, farming represented a primary or full-time livelihood.

All of the growers in this study reported that they were generally, but not overwhelmingly, pleased with their quality of life. They said that they would like more personal time, health insurance and retirement security. The mid- and large-scale growers also felt that dedicated, skilled employees would improve their quality of life.

There is no universal recipe for success as a vegetable grower. Farmers who excel have a passion for growing and often have business and marketing savvy. Employee management skills are also important. Keys to financial success included increasing work efficiency and utilizing techniques and tools to keep expenses low. Four of the five farms that focused on CSA as their sole or primary marketing outlet were among those with the highest net cash income per acre in the study.

Special challenges

There are many challenges faced by vegetable growers that may vary with scale of production. Some of the most common are:

1. Finding affordable land near urban markets, including enough for crop rotations.
2. Achieving a scale of production and marketing that meets net cash income needs and goals without extensive paid labor.
3. Balancing hand labor with scale-appropriate, inexpensive tools and machinery.
4. Finding and managing employees who are a good match with a farmer's management style and who will stay longer than a season.
5. Balancing the demands of a farm with personal time, health considerations, personal and social relationships, raising children, and, in some cases, off-farm jobs.

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Applying the findings to your operation

If you would like to learn more about the financial information and ratios described here, please see Appendix A and B of the full report *Grower to grower: Creating a livelihood on a fresh market vegetable farm*. This report is available from CIAS at the address below and at www.cias.wisc.edu. If you have questions, contact John Hendrickson at the Center for Integrated Agricultural Systems: telephone: 608-265-3704, e-mail: jhendric@wisc.edu.

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UW-Madison College of Agricultural and Life Sciences • February, 2006