

Economics of an Organic Market Garden
during the Transition Phase:
A Preliminary Analysis, Spring 2003

by

Gerard D'Souza

The author is Professor of Agricultural & Resource Economics, Division of Resource Management, Davis College of Agriculture, Forestry, and Consumer Sciences, West Virginia University. gdsouza@wvu.edu

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Objective: To determine the **economic and financial feasibility** of an organic market garden (consisting of a combination of different vegetables marketed to a combination of outlets, including grocery stores, restaurants and/or directly to consumers) during the 3-year transitional period from conventional to organic. Crops grown for sale include tomatoes, snow peas, bell peppers, green beans, pumpkins, zucchini, lettuce and spinach. The study area is West Virginia.

Methods: Standard economic and financial tools are employed. Enterprise budgets are used to determine the initial establishment costs and subsequent annual maintenance costs and revenues from the market garden. A half-acre unit is assumed for the analysis. Capital investment (or capital budgeting) analysis is used to evaluate the long-term financial feasibility of a market garden; and an input-output (or IMPLAN) model is used to illustrate the potential statewide economic development impacts from growth in the market garden sector.

Results – 1/2 acre market garden unit

Based on conditions assumed in the budgets, preliminary analysis of the data reveals that the market garden is financially feasible. The initial establishment cost for the 1/2 acre garden unit (including costs for items such as site preparation, irrigation system, tools, compost, and labor) amounts to \$10,500. Total annual sales, beginning in year two are estimated at \$7,000, and total annual costs are estimated at \$3,300.

Extrapolating these estimates over an extended planning horizon (a 10-year horizon is used in the following illustration; however, other time periods can be evaluated as well), we observe a favorable return on investment (in financial terms, this is measured by two concepts, the net present value and the internal rate of return, both of which are calculated and presented below).

1. NET PRESENT VALUE (NPV) FOR THE MARKET GARDEN

Assuming a 10-year planning horizon and different interest rates:

Cost of Capital	Net Present Value
8%	\$6,972
10%	\$5,500
12%	\$4,213

2. INTERNAL RATE OF RETURN (IRR) FOR THE MARKET GARDEN

20%

The NPV is a relatively large and positive number (across a range of different interest rates), and the IRR is fairly high, both of which are desirable characteristics of an investment. To facilitate interpretation, these two terms are defined below:

Definition of terms: *Net present value (NPV) is defined as the discounted value of a project's net annual cash flows less the initial investment cost. Simply put, it gives the difference between returns and costs when compared in today's dollars; thus, if the NPV is zero, then the investment will exactly break even. A higher NPV indicates a more profitable investment.*

Internal rate of return (IRR) is basically the compound interest rate of the investment. If the IRR equals the borrowing rate, then the investment will exactly break even. Like the NPV, the higher the IRR, the more desirable the investment.

POTENTIAL ECONOMIC DEVELOPMENT IMPACTS

According to WV Department of Agriculture data, vegetable sales across the state amount to approximately \$6 million annually (sales at farmers' markets, roadside stands and other forms of direct sales are probably not represented in this total; in addition, the proportion of organic sales in this total is not known). However, vegetable sales do appear to be growing over time.

By virtue of its linkages with other sectors of the economy, a \$1 million increase in total vegetable production (organic or otherwise), will increase total output in the state by an estimated \$1.4 million annually, generate \$1.8 million in income and add 36 jobs.

Conclusions

- Preliminary analyses show that, using fairly conservative price and yield assumptions, the market garden is profitable even on a small scale (the 1/2 acre unit investigated in this study). A larger area will be needed if the market garden is to represent the main income source.
- A market garden can be operated profitably as a “stand-alone” activity, or as an “add-on” in conjunction with existing enterprises such as livestock (desirable, both from a diversification standpoint, and as a source of compost), fish farming or other such activities.
- Additional study over a longer time period is needed to reinforce these conclusions for other parts of WV (the study area). In addition, this study can be extended to investigate such aspects as the profit-risk tradeoffs of a market garden as a “stand-alone” activity versus an “add-on” activity.