

WVU Organic Farm – Economic Comparison of Low Input vs. High Input Market Garden Treatments, 2001

(Total area: approximately 0.2 ha. or 0.5 acres)

	Low Input (Kg/plot)	High Input (Kg/plot)	Additional Cost	Additional Return	Net Return
Romaine Lettuce	53.4	73.3	\$60.44	\$69.17	\$8.73
Iceberg Lettuce	56.6	91.2	\$60.44	\$132.45	\$72.01
Spinach	0.9	6.8	\$60.44	\$25.96	(\$34.48)
Fall Romaine	20.9	17.9	\$60.44	(\$10.43)	(\$70.87)
Peas	21.4	26.6	\$60.44	\$11.44	(\$49.00)
Green Beans	50.2	65.2	\$60.44	\$41.25	(\$19.19)
Zucchini	79.9	91.7	\$60.44	\$25.96	(\$34.48)
Pumpkins	43.7	72.4	\$60.44	\$17.05	(\$44.39)
Peppers	140.6	205	\$60.44	\$141.68	\$81.24
Tomatoes	256.7	359	\$60.44	\$281.33	\$220.89

Source of production data: WVU Organic Farm production records (yield data for summer/fall 2001).

Assumptions:

1. The total area of 0.2 ha. was split evenly among the 10 vegetable crops analyzed.
2. The main difference between the low input treatment and high input treatment was compost application @ 25 tons/ha. for the high input treatment.
3. Additional labor for the high input treatment was 64 hours.
4. The cost of compost assumed for this analysis is \$40/ton, and the assumed cost of labor is \$6/hr.

Preliminary conclusions: Based on this analysis and given the crops included in the market garden trial, it appears that from an economic standpoint, it only pays to use compost for lettuce, pepper and tomatoes.

FINANCIAL FEASIBILITY ANALYSIS – MARKET GARDEN ½ ACRE UNIT

Based on conditions assumed in the budgets (Tables 1 and 2), the market garden is financially feasible. The net present value is a relatively large positive value, and the internal rate of return is fairly high, both of which are desirable characteristics of an investment.

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

Assuming a 10-year planning horizon:

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%

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Estimated Establishment Costs for the Market Garden, WVU Organic Farm Project, 2000

area: 0.5 acres
crops: Tomatoes, Snow Peas, Bell Peppers, Green Beans, Pumpkins, Lettuce, Zucchini, Spinach

ITEM	UNIT	QTY	PRICE (\$/unit)	AMOUNT	Your farm
Site Preparation (varies with site):					
(a) Disking & ploughing	tract hrs	40	\$12.80	\$512	
(b) Bull-dozing	bull-dozing	5	\$58.40	\$292	
(c) Compost application	tract hrs	1	\$27.00	\$27	
(d) Cover crop	acres	0.5	\$11.30	\$6	
Irrigation system (incl. pipes, labor)*				\$1,768	
Tool shed (10X10) *				\$750	
Tools*				\$2,500	
Fencing (incl. wire, posts, gate, labor)*				\$2,000	
Plastic, straw, other supplies				\$454	
Cover crop (seed, machinery, labor)*				\$250	
Compost	tons	5	\$40.00	\$200	
Labor:					
(a) Surveying & Mapping	hrs	40	\$6.00	\$240	
(b) Preplanting insect monitoring	hrs	26	\$6.00	\$156	
(c) Tree removal & hauling	hrs	58	\$6.00	\$348	
(d) Disking & ploughing	hrs	65	\$6.00	\$390	
(e) Red clover seeding	hrs	0.5	\$6.00	\$3	
Farm planning time*	hrs	40	\$15.00	\$600	
TOTAL ESTABLISHMENT COST (excluding land)				\$10,494	

Assumptions:

1. Total costs are rounded off to the nearest \$
2. A combination of WVU - AES experimental data, expert opinion, and informal telephone surveys (for selected input prices) is used.

* Costs are estimated where actual costs are not available

Estimated Annual Maintenance Costs & Returns for the Market Garden, WVU Organic Farm Project, 2000

area: 0.5 acres (total)
crops: Tomatoes, Snow Peas, Bell Peppers, Green Beans, Pumpkins, Lettuce, Zucchini, Spinach

ITEM	UNIT	QTY	PRICE (\$/unit)	AMOUNT	Your Farm
ANNUAL SALES					
(a) tomatoes	lbs	1089	\$1.25	\$1,361	
(b) snow peas	lbs	116	\$1.00	\$116	
(c) bell peppers	lbs	151	\$1.00	\$151	
(d) green beans	lbs	654	\$1.25	\$818	
(e) pumpkins	lbs	1133	\$0.27	\$309	
(f) Romaine lettuce	lbs	593	\$1.58	\$937	
(g) iceberg lettuce	lbs	96	\$1.74	\$167	
(h) zucchini	lbs	3068	\$1.00	\$3,068	
(i) spinach	lbs	21	\$2.00	\$42	
Total Annual Production		6921		\$6,969	
Less deer damage and spoilage*		15%		\$1,045	
Total Revenue				\$5,923	
OPERATING COSTS					
Seed				\$100	
Straw, plastics, other supplies				\$455	
Water*				\$100	
Electricity & Gasoline*				\$200	
Labor:					
(a) Planting and transplanting	hrs	18	\$6.00	\$108	
(b) Watering and seed preparation	hrs	9	\$6.00	\$54	
(c) Weeding, raking & thinning, pruning	hrs	44	\$6.00	\$264	
(d) Pest scouting time	hrs	10	\$6.00	\$60	
(e) Applying compost	hrs	30	\$6.00	\$180	
(f) Tilling	hrs	79	\$6.00	\$474	
(g) harvesting*	hrs	60	\$6.00	\$360	
Total Operating Cost				\$1,500	
Interest on operating capital	%	10		\$150	
Returns above operating cost				\$1,350	
FIXED COSTS					
Property tax*	acre	0.5		\$300	
Interest on avg annual investment (excl. land)	%	10	\$5,246.83	\$525	
Repairs and depreciation	%	5	\$7,920.00	\$396	
Record keeping time*	hrs	40	\$15.00	\$600	
Total Fixed Cost				\$1,821	
TOTAL COST				\$3,321	
PRE-TAX RETURNS TO LAND & OPERATORS MANAGEMENT (total revenue - total cost)				\$2,603	
Break-Even Price (at current production level) =					
[fixed cost per pound + operating cost per pound]				\$0.48	

* Amounts estimated where actual numbers are not available.

Estimated Costs and Returns for Low vs High Input Market Garden Systems

Cumulative three-year totals		(\$ per acre)	(\$ per acre)
Item		Low Input	High Input
Total Income (Sales of Produce)		\$43,832	\$80,288
Operating Costs			
Year 1			
Seed		62	200
Compost		0	400
Water		0	200
Supplies (Straw, plastic, pest management, etc.)		0	900
Electric and gas		100	400
Labor			
Planting		208	416
Watering		0	216
Weeding		0	1,056
Pest scouting		120	240
Compost application		0	720
Tilling		1,896	1,896
Harvesting		0	1,440
Total Operating (year 1)		2386	8084
Year 2 or 3			
Seed		200	200
Compost		0	400
Water		200	200
Supplies (Straw, plastic, pest management, etc.)		900	900
Electric and gas		400	400
Labor			
Planting		416	416
Watering		216	216
Weeding		1,056	1,056
Pest scouting		240	240
Compost application		0	720
Tilling		1,896	1,896
Harvesting		1,440	1,440
Total Operating (year 2 or 3)		6964	8084
3-Year Total Operating		16314	24252
Interest on Operating (10 %)		1,631	2,425
Fixed Costs (3-year totals)			
Property tax		1,800	1,800
Interest on average annual investment (10 % of \$5,247)		1,575	1,575
Repairs and depreciation		2,250	2,400
Record keeping time		2,800	3,600
Total Costs		26,370	36,052
Net Return (Total for three years)		\$17,462	\$44,236
(Costs do not include cost of land, or marketing effort)			