



Economics of Establishing a Grape Vineyard in Nova Scotia

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Overview

- Profitability Vs. Investment Analysis
- Model vineyard and assumptions
- Establishment Costs
- Cash Flow Analysis and Results
- What this information can be used for
- Going forward

Profitability Vs. Investment Analysis

- The profitability of an operation is estimated through an enterprise budget, or cost of production. Profitability analysis is used to calculate the yield and/or price required to break-even in a typical production year.
- Investment analysis uses the cash flowing in and out of the enterprise, including the initial investment, for a fixed amount of time to determine whether an investment is desirable.

Model Vineyard & Assumptions

- A vineyard with 10 rows, 500 ft in length with vines at 4 ft spacing and a row spacing of 9 ft. This will allow for approximately 1200 vines/acre at \$2/vine
- The vineyard is 80% hybrid plants and 20% vinifera plants
- The trellis system is a vertical shoot positioning system (VSP)
- Grapes are hand harvested
- Vineyard is in full production in year 5

Model Vineyard & Assumptions

- The vineyard returns an average yield of 3 tonnes/acre
- The portfolio of grape varieties return an average price of \$2500/tonne
- The vineyard leases a new 50 HP tractor every 5 years
- The life of the vineyard, as well as building and equipment, is 30 years
- The required rate of return is 4.80% (discount rate)

Model Vineyard & Assumptions

- The following lists the equipment required to establish a 20 acre vineyard:

| | |
|--|----------|
| Airblast Sprayer (1000 - 2000 L) | \$15,000 |
| Herbicide Sprayer | \$3,000 |
| Backpack Sprayer | \$200 |
| Rotary Mower (6-8') | \$4,500 |
| Hedger | \$10,000 |
| Fertilizer Spreader | \$2,000 |
| Trailers | \$2,500 |
| Utility Vehicle (Gator, Kubota, ATV) | \$5,000 |
| Hand Equipment (pruning, weeding, max tapener) | \$500 |
| Harvesting Equipment | \$1,000 |
| Bird Netting/Walers/Cannons | \$10,000 |

Establishment Costs

Per Acre Expense Summary to Establish a 20 Acre Vineyard

| | Year 1 | Year 2 | Year3 | Year4 | Total |
|---|------------|--------------|--------------|--------------|---------------|
| Variable Costs | | | | | |
| Labour | | | | | |
| Vineyard Management | | 2,500 | 2,500 | 2,500 | |
| Bird/Pest Control Labour | | | | 600 | |
| Harvesting Labour | | | | 450 | |
| Vine Replacement | | | 48 | 48 | |
| Cover Crop | 32 | 30 | | | |
| Tying Material | | 220 | 20 | 20 | |
| Pesticides/Herbicide | | 250 | 300 | 300 | |
| Soil Amendments & Testing | 140 | 140 | 140 | 140 | |
| Building Maintenance | 31 | 31 | 31 | 31 | |
| Tractor Lease Payment | 415 | 415 | 415 | 415 | |
| Tractor Expenses (maintenance) | 150 | 500 | 500 | 500 | |
| Sub-total | 768 | 4,086 | 3,954 | 5,004 | 13,812 |
| Fixed Costs | | | | | |
| Administrative Costs | 125 | 125 | 125 | 125 | 500 |
| (accounting, legal, insurance, membership fees) | | | | | |
| Total Operating Costs | 893 | 4,211 | 4,079 | 5,129 | 14,312 |

Establishment Costs – cont'd

| | Year 1 | Year 2 | Year3 | Year4 | Total |
|-------------------------------|------------------|------------------|-----------------|-----------------|------------------|
| Establishment Expenses | | | | | |
| Land Purchase | 5,000 | | | | |
| Machinery | 2,185 | | | | |
| Pest Control | | | | 500 | |
| Tile Drainage | 3,500 | | | | |
| Land Preperation | 400 | | | | |
| Vine Purchase | | 2,400 | | | |
| Trellis Supplies | | | | | |
| Line Posts | | 2,000 | | | |
| End Posts | | 350 | | | |
| Wire | | 750 | | | |
| Grow Tubes | | 240 | | | |
| Anchors | | 320 | | | |
| Steel Stakes for Vines | | 1,200 | | | |
| Sub-total | 11,085 | 7,260 | - | 500 | 18,845 |
| Total Cash Outflows | \$ 11,978 | \$ 11,471 | \$ 4,079 | \$ 5,629 | \$ 33,157 |

Cash Flow Analysis and NPV

Cash Flow Analysis for a 20 Acre Vineyard (per acre)

| Year | Beginning Cash Balance | Revenue | Est. Costs | Variable Costs | Fixed Costs | Total Costs | Net Cash Flow | Ending Cash Balance |
|------|------------------------|----------|------------|----------------|-------------|-------------|---------------|---------------------|
| 1 | \$ 29,407 | \$ - | \$ 11,085 | \$ 768 | \$ 125 | \$ 11,978 | \$ (11,978) | \$ 17,429 |
| 2 | \$ 17,429 | \$ - | \$ 7,260 | \$ 4,086 | \$ 125 | \$ 11,471 | \$ (11,471) | \$ 5,958 |
| 3 | \$ 5,958 | \$ - | | \$ 3,954 | \$ 125 | \$ 4,079 | \$ (4,079) | \$ 1,879 |
| 4 | \$ 1,879 | \$ 3,750 | \$ 500 | \$ 5,004 | \$ 125 | \$ 5,629 | \$ (1,879) | \$ - |
| 5 | \$ - | \$ 7,500 | | \$ 4,954 | \$ 125 | \$ 5,079 | \$ 2,421 | \$ 2,421 |
| 6 | \$ 2,421 | \$ 7,500 | | \$ 4,954 | \$ 125 | \$ 5,079 | \$ 2,421 | \$ 4,842 |
| 7 | \$ 4,842 | \$ 7,500 | | \$ 4,954 | \$ 125 | \$ 5,079 | \$ 2,421 | \$ 7,263 |
| 8 | \$ 7,263 | \$ 7,500 | | \$ 4,954 | \$ 125 | \$ 5,079 | \$ 2,421 | \$ 9,684 |
| 9 | \$ 9,684 | \$ 7,500 | | \$ 4,954 | \$ 125 | \$ 5,079 | \$ 2,421 | \$ 12,105 |
| 10 | \$ 12,105 | \$ 7,500 | | \$ 4,954 | \$ 125 | \$ 5,079 | \$ 2,421 | \$ 14,526 |

| | |
|-----|-------------|
| NPV | \$ 3,599.91 |
| IRR | 5.60% |

Results & Sensitivity Analysis

Effects of Price and Yield on NPV

| Price (\$/tonne) | Yield (tonnes/acre) | | | | |
|---------------------|---------------------|-----------|-----------|----------|----------|
| | 2.5 | 2.75 | 3.0 | 3.25 | 3.5 |
| \$ 2,000 | -\$29,483 | -\$22,867 | -\$16,250 | -\$9,633 | -\$3,017 |
| \$ 2,500 | -\$12,942 | -\$4,671 | \$3,600 | \$11,871 | \$20,142 |
| \$ 3,000 | \$3,600 | \$13,525 | \$23,450 | \$33,375 | \$43,300 |

- A positive NPV indicates a good investment
- Results are sensitive to the discount rate

What this information is used for

- Identifying opportunities for growth
- Investment decisions
- Business development
- Ad hoc requests
- Crises
- Risk assessment

Going Forward

- Collect information on a per unit basis
 - labour hours
 - machine hours
 - unit costs
 - cost per vine
- Collect historical prices and production
- Online budget tool

Contact Information

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