Nova Scotia Wine Grape Cost of Production and Cash Flow Analysis

Nova Scotia Department of Agriculture

NOVA SCOTIA CANADA

Contents:

I. Highlights

- The total economic cost of production associated with a 10 acre and 20 acre vineyard in a typical production year is estimated to be $7,970/acre and $7,003/acre, respectively.
- The total cost of establishing a 10 acre and 20 acre vineyard over a 4 year establishment period is estimated to be $38,146/acre and $34,315/acre, respectively.
- Discounting the owner's net cash flows for a 10 acre vineyard over a 30 year period, at a rate of 5.0% annually, yields a net present value (NPV) of -$5,941/acre with 50% debt financing, and -$6,574/acre without debt financing (100% owner's equity financed).
- The NPV analysis shows that when the owner's net cash flows for a 20 acre vineyard are discounted over a 30 year period at 5.0% annually, the NPV is $6,610/acre with 80% debt financing, $6,243/acre with 50% debt financing, and $5,681/acre with no debt financing (100% owner's equity financed).
- A scenario was constructed involving a new entrant acquiring custom growing and harvesting services from an established producer. The results suggest that a 5 acre vineyard is financially viable under the scenario, and that both producers benefit from the arrangement.
- The new Vineyard Development and Expansion Program was shown to significantly improve the investment outlook for a 10 acre vineyard, with the farm meeting a 5% rate of return after receiving full program funding.

II. Nova Scotia Grape Industry

Nova Scotia is gaining recognition in Canada and around the world for high quality wines. With the increase in awareness of Nova Scotia as a wine producing region, there is also increased interest in the production of grapes. The growth in NS's wineries has spurred a 12% average annual growth in grape production, increasing from 56 tonnes produced in 1987 to 1,147 tonnes in 2013. According to the 2011 Census of Agriculture, there are 94 farms in Nova Scotia with a total of 658 acres planted with grape vines. The majority of these farms have very small grape acreages, with only 10 farms having 10 or more acres.

There is substantial capital investment required for the establishment of a commercial vineyard, and it takes many years to recover these costs. The purpose of this report is to provide those interested in the production of grapes with an understanding of the costs associated with the establishment and operation of a vineyard.

III. Methodology

The establishment and production costs in this report were compiled from consultations with selected grape producers in NS, industry specialists, and NS agribusinesses. The results reflect the recommended management practices for a typical grower in Nova Scotia at the present time and economic conditions. It is important to keep in mind that revenues and expenses will vary depending on the producer and their management decisions.

The two financial considerations regarding the establishment and operation of a vineyard in Nova Scotia include, 1) profitability and 2) cash flow analysis.

1) Profitability is addressed through an enterprise budget, or cost of production, which incorporates all costs, cash and non-cash, during an average production year (i.e. after the vineyard is established). Non-cash costs represent the ownership costs, such as the investment in machinery and equipment, as well as the amortized establishment costs. The enterprise is profitable if operating or cash income is great enough to recover the capital investment made to establish and operate the business. The net returns after accounting for all of these economic costs is generally referred to as economic profit, and a positive economic profit of any amount is an indication that the business is a good investment.

2) Cash flow analysis looks at the cash flowing in and out of the enterprise for a fixed amount of time and is represented in a cash flow budget. Cash flow analysis is used to determine whether an investment is desirable, or even feasible, under various financing arrangements. A desirable investment usually has a positive Net Present Value (NPV). The NPV is the sum of all expected future net cash flows less the initial cost of the investment. A general rule of thumb is to invest only if the NPV is greater than zero. A second common metric used for investment decision-making is the Internal Rate of Return (IRR). The IRR is the discount rate that equates the NPV to 0, i.e. when the present value of the cash flows equals the initial investment. A general rule of thumb is to invest only when the IRR is greater than the required rate of return, which is usually a rate of return desired by the investor that factors in the riskiness of the investment.

IV. The Nova Scotia Vineyard Model

Most wineries in Nova Scotia are interested in producing a premium quality wine, not a bulk wine, and therefore are concerned with securing the highest quality grapes. The model farms in this analysis represent 10 and 20 acre grape vineyards producing an average yield of grape varieties that are currently growing and in demand by Nova Scotia wineries. These varieties include a

combination of 80% hybrid vines and 20% vinifera vines. For further information on grape varieties that are suitable for production in Nova Scotia consult your regional extension specialist.

The following describes the 10 and 20 acre vineyards modelled in this report, as well as the assumptions made for the enterprise budget and cash flow analysis:

Vineyard Assumptions:

- Vineyard spacing: 10 vineyard rows, 500 ft. in length with vines at 4 ft. spacing and a row spacing of 9 ft. This will allow for approximately 1,200 vines/acre at $2/vine;
- The vineyards are 80% hybrid plants and 20% vinifera plants;
- The trellis system is a vertical shoot positioning system (VSP);
- Grapes are hand harvested;
- The vineyards are in full production in year 5;
- The vineyards return an average yield of 3 tonnes/acre;
- The combination of grape varieties return an average price of $2,500/tonne;
- The vineyards have a 28'x32' farm structure priced at $35/ft^2 for storage of equipment and machinery;
- The capital requirements (e.g. machinery, equipment, tools, bird control) for the modelled 10 acre vineyard include:

30-40 HP Tractor (used)	$15,000
Airblast Sprayer (500 - 1000L)	$10,000
Herbicide Sprayer	$3,000
Backpack Sprayer	$200
Rotary Mower (6-8')	$4,500
Hedger	$10,000
Fertilizer Spreader	$2,000
Trailers	$2,500
Hand Equipment (pruning, weeding, max tapener)	$500
Harvesting Equipment	$500
Bird Netting/Walers/Cannons	$5,000

- The capital requirements (e.g. machinery, equipment, tools, bird control) for the modelled 20 acre vineyard include:

50 HP Tractor (used)	$25,000
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

Cost of Production Assumptions:

- The productive life of the vineyard/trellis system is 30 years;
- The building, equipment, and bird control will be useful over the 30 year productive life of the vineyard. The salvage value of these items is $0;
- The useful life of the tractor is 15 years, with a salvage value of $0;
- The cost of capital items, as well as the costs incurred during the establishment period, are amortized over the productive years using the capital recovery method with a 5% interest rate; and
- Land preparation costs are based on land previously in pasture.

Cash Flow Analysis Assumptions:

- All future cash flows of money are in real dollars;
- The purchase price of land is $5,000/acre;
- The tractor is replaced with another used tractor in year 16;
- The salvage value of the land after 30 years of producing grapes (the productive life of the vineyard) is $5,000/acre;
- An annual rate of 4.5% for a 20 year loan is used, which is based on Farm Loan Board rates as of February 15, 2016; and
- A discount rate of 5.0% is used in the cash flow analysis for the required rate of return on investment (equity).

Table 1: Cost of production and breakeven analysis for the 10 and 20 acre vineyards

Production Costs	Cost per Acre 10 Acre	20 Acre
Variable Costs		
Labour		
Vineyard Management	3,000	2500
Harvesting Labour	800	800
Bird/Pest Control Labour	200	200
Vine Replacement, 2%	48	48
Tying Material	20	20
Pesticides/Herbicides	300	300
Soil Amendments & Testing	140	140
Building Maintenance	63	31
Tractor Expenses (maintenance & fuel)	500	500
Total Variable Costs	**$ 5,071**	**$ 4,539**

	Cost per Acre 10 Acre	20 Acre
Fixed Costs		
Administrative Costs (accounting, insurance, membership, etc.)	250	125
Ownership Costs		
Equipment Interest & Depreciation	248	175
Tractor Interest & Depreciation	181	150
Building Interest & Depreciation	204	102
Trellis/Vineyard Interest & Depreciation	472	472
Land Rent	250	250
Tile Drainage Interest & Depreciation	228	228
Amortized Establishment Costs	1,066	970
Total Variable & Fixed Costs	**$ 5,321**	**$ 4,664**
Variable, Fixed and Ownership Costs	**$ 6,904**	**$ 6,041**
Total Costs Shown	**$ 7,970**	**$ 7,003**
Gross Revenue		
3 tonnes/acre X $2,500/tonne	**$ 7,500**	**$ 7,500**
Profitability		
Return over operating costs	**$ 2,179**	**$ 2,836**
Return over operating and ownership costs	**$ 596**	**$ 1,459**
Return over total costs shown	**$ (470)**	**$ 497**

Breakeven Price ($/tonne) Yield (tonnes/acre)	10 Acre	20 Acre
2.75	**$ 2,898**	**$ 2,546**
3.00	**$ 2,657**	**$ 2,334**
3.25	**$ 2,452**	**$ 2,155**

Breakeven Yield (tonnes/acre) Price ($/tonne)	10 Acre	20 Acre
$2,000	**4.0**	**3.5**
$2,500	**3.2**	**2.8**
$3,000	**2.7**	**2.3**

V. Cost of Production and Breakeven Analysis

Table 1 shows that the expected economic cost of production for wine grapes is $7,970/acre and $7,003/acre, for 10 and 20 acre vineyards, respectively. The projected revenue for the production years is $7,500/acre, based on an average yield of 3 tonnes/acre and a grape price of $2,500/tonne. The breakeven price analysis in Table 1 gives the price required to breakeven if yields rise or fall by 0.25 tonnes/acre. The breakeven yield analysis shows the yield that is required to breakeven if prices rise or fall by $500/tonne.

VI. Notes to Production Costs and Breakeven Analysis for a NS Vineyard

- Current growers that are 20 acres or less and do not fit the model in this report can compare their own costs with the variable costs presented in Table 1. Fixed costs will also vary depending on the acreage and equipment and machinery needs of the operation;
- Current prices of grapes in Nova Scotia range from $1,000 - $4,000/tonne;
- The estimates suggest that grape production is profitable at a farm size of 20 acres, with an economic profit of $497/acre;
- The modelled 10 acre farm generates enough operating income to recover the capital investment, but not enough to payback all the costs incurred during the establishment period[1]; and
- It should be noted that the operation in this report is a single commodity enterprise. If the farm produces more than just grapes, tractor maintenance and ownership costs could be shared across multiple farm enterprises.

VII. Establishment Costs for a Nova Scotia Vineyard

This section presents the cash costs associated with establishing the 10 and 20 acre vineyards modelled in this report. Table 2 presents all the cash outflows over a period of 4 years that are required to establish a 10 acre vineyard and bring it into production. Year 1 includes the purchase of the land, building, equipment, and tractor, and the costs associated with preparing the land for planting the grapes (including tile drainage), which totals to an estimated cost of $17,491/acre. Year 2 includes the cash outflows expected during the planting year at a total cost of $11,213/acre. Years 3 and 4 include the cost of cultural practices required to bring the newly established vineyard into production, at a

[1] From a replacement cost perspective, the expenses incurred during the establishment years to improve the land should be capitalized into the land value. Therefore, one may also take the view that the 10 acre farm does not generate enough income to cover the capital cost of established vineyard land.

combined cost of $9,442/acre. The total cost to establish a 10 acre vineyard and bring it into production over the 4 year establishment period is estimated to be $38,146/acre.

Table 2: Per acre expense summary to establish a 10 acre vineyard

	Year 1	Year 2	Year3	Year4	Total
Variable Costs					
Labour					
Vineyard Management		2,500	2,500	2,750	7,750
Bird/Pest Control Labour				600	600
Harvesting Labour				450	450
Vine Replacement, 2%			48	48	96
Cover Crop	32	30			62
Tying Material		220	20	20	260
Pesticides/Herbicide		250	300	300	850
Soil Amendments & Testing	140	140	140	140	560
Building Maintenance	63	63	63	63	252
Tractor Expenses (maintenance & fuel)	150	500	500	500	1,650
Sub-total	**385**	**3,703**	**3,571**	**4,871**	**12,530**
Fixed Costs					
Administrative Costs (accounting, legal, membership fees)	250	250	250	250	1,000
Land Preparation	400				
Total Variable & Fixed Costs	**1,035**	**3,953**	**3,821**	**5,121**	**13,930**
Capital Purchases					
Land Purchase	5,000				
Tractor & Equipment	4,820				
Building	3,136				
Pest Control				500	
Tile Drainage	3,500				
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	**16,456**	**7,260**	**-**	**500**	**24,216**
Total Cash Outflows	**$17,491**	**$11,213**	**$ 3,821**	**$ 5,621**	**$ 38,146**

Table 3 presents all the cash outflows over a period of 4 years for establishing a 20 acre vineyard. Compared to the establishment costs of a 10 acre vineyard, there are advantages to establishing a larger vineyard and scaling up the enterprise (for example, the fixed costs are spread over a larger number of acres). In particular, fixed costs and some machinery costs are lower on a per acre basis with the 20 acre vineyard. In addition, vineyard management efficiencies are achieved in the fourth year of establishment, and continue over the productive life of the vineyard. Overall, the total cost to establish a 20 acre vineyard and bring it into production over the 4 year establishment period is

estimated to be $34,315/acre, a cost savings of $3,831/acre over the cost of establishing a 10 acre vineyard.

Table 3: 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	7,625
Bird/Pest Control Labour				600	600
Harvesting Labour				450	450
Vine Replacement, 2%			48	48	96
Cover Crop	32	30			62
Tying Material		220	20	20	260
Pesticides/Herbicide		250	300	300	850
Soil Amendments & Testing	140	140	140	140	560
Building Maintenance	31	31	31	31	124
Tractor Expenses (maintenance & fuel)	150	500	500	500	1,650
Sub-total	**353**	**3,671**	**3,539**	**4,589**	**12,152**
Fixed Costs					
Administrative Costs (accounting, legal, membership fees)	125	125	125	125	500
Land Preparation	400				
Total Variable & Fixed Costs	**878**	**3,796**	**3,664**	**4,714**	**13,052**
Capital Purchases					
Land Purchase	5,000				
Tractor & Equipment	3,435				
Building	1,568				
Pest Control				500	
Tile Drainage	3,500				
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	**13,503**	**7,260**	**-**	**500**	**21,263**
Total Cash Outflows	**$14,381**	**$11,056**	**$ 3,664**	**$ 5,214**	**$ 34,315**

VIII. Notes to Establishment Costs of a NS Vineyard

- Pesticides/herbicides costs can vary from $0-$600/acre;
- The land purchase price can vary from $1,500-2,000/acre in Cumberland County to over $10,000/acre in the Annapolis Valley for suitable vineyard land;
- Line posts can be steel or wood, depending on the grape variety;
- Grow tubes can vary from $0-600, depending on management practices and grape variety;

- Pest control capital is purchased in Year 4 when the vines begin to produce a crop;
- The tractor will need to be replaced after 15 years (this is included in the investment analysis); and
- Grape growers should contact a program specialist to inquire whether there are programs available to offset establishment costs (or expansion costs), e.g. tile drainage programs.

IX. Cash Flow Analysis: Net Present Value & Internal Rate of Return

Cash flow analysis is used in this report to further evaluate the investment in vineyard production, by calculating the operation's net present value (NPV) and internal rate of return (IRR).

The following tables (4 and 5) present summary results of the cash flow analysis for the 10 and 20 acre vineyards modelled in this report[2]. Three financing options were considered for the establishment (investment) of each vineyard: 80% debt financing, 50% debt financing and 0% debt financing (or 100% equity financing). The NPV and the associated IRR were calculated, as well as the break-even yield and break-even price for the investments. For the 10 acre vineyard model, the NPV is negative under each financing option and the IRR is less than the required rate of return of 5%. The 80% financing option is also infeasible due to the negative cash balance over the life of the loan. Overall, the 10 acre vineyard model, under the assumptions in this report, is not an economically viable investment.

The results are significantly different for the 20 acre vineyard modelled in this report. Under each financing option, the NPV is greater than 0 and the IRR is greater than the owner's required rate of return. Therefore, the results suggest that the 20 acre vineyard modelled in this report is a worthwhile financial investment.

Table 4: Cash flow analysis results for the 10 acre vineyard

Summary Table:	Debt Financing		
10 Acre Model	**0%**	**50%**	**80%**
Net Present Value	$ (6,574)	$ (5,941)	Insolvent
IRR (percent)	3.7%	3.3%	..
Breakeven Yield (tonnes/acre)	3.20	3.18	..
Breakeven Price ($/tonne)	$ 2,667	$ 2,651	..

[2] For detailed cash flow tables, contact the Nova Scotia Department of Agriculture.

Table 5: Cash flow analysis results for the 20 acre vineyard

Summary Table: 20 Acre Model	Debt Financing 0%	50%	80%
Net Present Value	$ 5,681	$ 6,243	$ 6,610
IRR (percent)	6.1%	6.8%	8.0%
Breakeven Yield (tonnes/acre)	2.83	2.81	2.80
Breakeven Price ($/tonne)	$ 2,356	$ 2,342	$ 2,332

The break-even yields for the 10 acre vineyard model are 3.20 tonnes/acre and 3.18 tonnes/acre for 0% and 50% debt financing, respectively. These yields are well above the estimated industry average of 2.25 tonnes/acre for 2013. The breakeven yields for the 20 acre vineyard model appear more reasonable at 2.83, 2.81, and 2.80 tonnes/acre under each of the financing options (0%, 50%, and 80% debt financing, respectively).

The break-even prices for the 10 acre vineyard model are $2,667 and $2,651 per tonne for 0% and 50% debt financing, respectively. These prices are above the portfolio average of the vineyards modelled in this report and could be difficult to achieve, especially in the early years of production. The breakeven prices for the 20 acre vineyard model are $2,356, $2,342, and $2,332 per tonne for each of the financing options (0%, 50%, and 80% debt financing, respectively).

X. Notes to Cash Flow Analysis: NPV & IRR

- Owner's net cash flows in year 34 includes the salvage value of the land at the original purchase price ($5,000/acre);
- Under the 0, 50 and 80% debt financing scenarios, the owner is responsible for 100, 50 and 20% of the total costs for years 1-4, including fixed, variable, and establishment costs, minus the revenues earned from the crop harvested in Year 4;
- The loan is a 20 year loan with deferred payments for the first 2 years (interest added to the principal), interest-only payments for years 3 and 4, and a balance at the end of year 4 amortized over the next 16 years;
- Net present value is calculated on the owner's net cash flow from years 5 to 34, when the vineyard is established and in full production (i.e. 30 productive years); and
- It is important to note that these are benchmark numbers only. Each potential investor must evaluate their own situation and capital investment needs.

XI. Sensitivity Analysis: NPV and IRR

This section explores the effects of various prices and yields on the NPV and IRR calculations for each vineyard model. For simplicity, only 0% debt financing (100% owner's equity investment) is evaluated[3]. Tables 6 and 7 illustrate the sensitivity of NPV and IRR to changes in price and yield for the 10 acre vineyard.

Table 6: Effects of Price and Yield on NPV – 10 acres using 100% equity financing

Price	Yield (tonnes/acre)				
($/tonne)	2.5	2.75	3.0	3.25	3.5
$ 2,250	$ (31,224)	$ (23,829)	$ (16,434)	$ (9,039)	$ (1,644)
$ 2,500	$ (23,007)	$ (14,791)	$ (6,574)	$ 1,643	$ 9,860
$ 2,750	$ (14,791)	$ (5,752)	$ 3,287	$ 12,325	$ 21,364

Table 7: Effects of Price and Yield on IRR – 10 acres using 100% equity financing

Price	Yield (tonnes/acre)				
($/tonne)	2.5	2.75	3.0	3.25	3.5
$ 2,250	-3.7%	-0.8%	1.4%	3.2%	4.7%
$ 2,500	-0.5%	1.8%	3.7%	5.3%	6.7%
$ 2,750	1.8%	3.9%	5.6%	7.1%	8.5%

Tables 8 and 9 illustrate the sensitivity of NPV and IRR to changes in price and yield for the 20 acre vineyard.

Table 8: Effects of Price and Yield on NPV - 20 acres using 100% equity financing

Price	Yield (tonnes/acre)				
($/tonne)	2.5	2.75	3.0	3.25	3.5
$ 2,250	$ (18,970)	$ (11,574)	$ (4,179)	$ 3,216	$ 10,611
$ 2,500	$ (10,753)	$ (2,536)	$ 5,681	$ 13,898	$ 22,115
$ 2,750	$ (2,536)	$ 6,503	$ 15,541	$ 24,580	$ 33,618

Table 9: Effects of Price and Yield on IRR - 20 acres using 100% equity financing

Price	Yield (tonnes/acre)				
($/tonne)	2.5	2.75	3.0	3.25	3.5
$ 2,250	0.2%	2.3%	4.1%	5.6%	7.0%
$ 2,500	2.5%	4.5%	6.1%	7.6%	8.9%
$ 2,750	4.5%	6.3%	7.9%	9.3%	10.6%

[3] For sensitivity analysis for the 50 and 80% debt financing options, contact the Nova Scotia Department of Agriculture.

XII. A Small Farm Entry Scenario

The preceding results suggest that a vineyard under 10 acres is not financially viable as a single commodity enterprise due to the high capital investment cost. Given the interest in expanding NS grape production, and the high start-up cost of establishing 20 or more acres, it is worth investigating ways to accommodate smaller operations. It has been suggested that a partnership agreement with an established grape grower would be a financially viable approach for a small farm entrant. For example, an established grower could enter into a long-term agreement to establish and provide farming services to a new farm. This arrangement could benefit the new entrant through lower start-up costs, reduced production costs, and would provide the new entrant with the services of an experienced grower. The agreement would also benefit the established grower by providing an additional income to help recover their own capital investment.

The lack of activity-based costing information makes it difficult to calculate competitive rates for specific services from the information presented in sections VI and VII.[4] However, it is possible to estimate the total cost of providing all grape establishment and growing activities to a new entrant. Table 10 gives the enterprise budget for new a 5 acre farm under the following assumptions:

- an established 20 acre farm provides establishment, growing and harvesting services to the new entrant for 34 years:
    - the custom grower charges a service fee that covers the per acre variable, administrative and capital costs.
- the new entrant pays for all operating expenses and land improvements over the establishment years; and
- administrative costs for the new entrant are estimated at $250/acre

By partnering with an established grower, the new 5 acre farm is able to cover its total cost of production, generating an economic profit of $381/acre (see table 10 below). The results of this scenario support the idea that a small vineyard can be viable under a custom grower arrangement with an established grape grower. In addition, by increasing farmed acreage from 20 to 25 acres, the established producer is able to reduce average total cost by $133/acre, and receive an additional income of $5,037/acre on the 5 acres owned by the new entrant. It is also worth noting that the custom rate in Table 10 is useful information for prospective growers, as it is likely close to the fair market annual rate for total vineyard production services.

[4] While there are a few operations that provide custom grape growing services in the Maritimes, anecdotal evidence suggests that the custom rates offered are above a competitive market rate.

Table 10: Cost of production for a 5 acre farm with custom establishment, growing and harvesting services

Production Costs		Cost per Acre
Custom Service Charge		
Variable Costs		4,533
Administrative Costs		100
Amortization of Capital Costs		404
Total Custom Service Charge	**$**	**5,037**
Administrative Costs		250
Ownership Costs		
Land Rent		250
Other Capital Interest and Depreciation		700
		-
Amortized Establishment Costs		
Land Rent		70
Other Establishment Costs		812
Total Costs Shown	**$**	**7,119**
Gross Revenue		
3 tonnes/acre X $2,500/tonne	**$**	**7,500**
Profitability		
Return over operating costs	**$**	**2,463**
Return over total costs shown	**$**	**381**

As an alternative to the arrangement described above, a landowner might prefer to rent the land to an established grower. One of the advantages of a rental agreement is that the landowner would face less risk in comparison to the custom grower arrangement scenario. However, the landowner foregoes any return on investment in the vineyard, other than the land. Based on the estimates in Table 10, a 20 acre farm expanding to 25 acres would be willing to pay $735/acre/year for land, over a 34 year lease.

XIII. Profitability under the Vineyard Development and Expansion Program

The Government of NS recently introduced the Vineyard Development and Expansion program, to assist the wine grape industry by better positioning it within the market place. Funding up to a maximum of $6,550/acre is available to help increase production, enhance competitiveness and capture new markets. At a 50% assistance level, tile drainage, vines and the trellis system can account for $5,400 (82%) of the funding cap, based on the estimates from this study. Therefore, given the other eligible activities such as contract labour and land preparation, it is likely that an applicant can successively acquire maximum funding. For the modelled 10 acre farm in this study, receiving full funding would reduce per acre establishment costs by 17%, which should substantially alter the economic outlook of a 10 acre vineyard.

Table 11 summarizes the main results of the cash flow analysis for the 10 acre farm, given full funding from the Vineyard Development and Expansion program. Under the 0% and 50% financing scenarios, the 10 acre farm essentially meets the required rate of return of 5%. This is an improvement over the 3.7% and 3.3% IRRs for a 10 acre farm without program funding. As evident from the breakeven prices and yields, with program funding the decision to invest in a 10 acre vineyard rests on a knife's edge. A slight decline in price or yield would push the IRR below the required rate of 5%. While the scenario does not give clear guidance on the investment decision, it does clearly illustrate that program funding significantly improves the outlook on investing in grape production.

Table 11: Cash flow analysis results for the 10 acre vineyard under a $6,550/acre development grant

Summary Table:	Debt Financing		
10 Acre Model	**0%**	**50%**	**80%**
Net Present Value	$ (24)	$ 489	Insolvent
IRR (percent)	5.0%	5.2%	..
Breakeven Yield (tonnes/acre)	3.00	2.99	..
Breakeven Price ($/tonne)	$ 2,501	$ 2,488	..

Disclaimer:

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