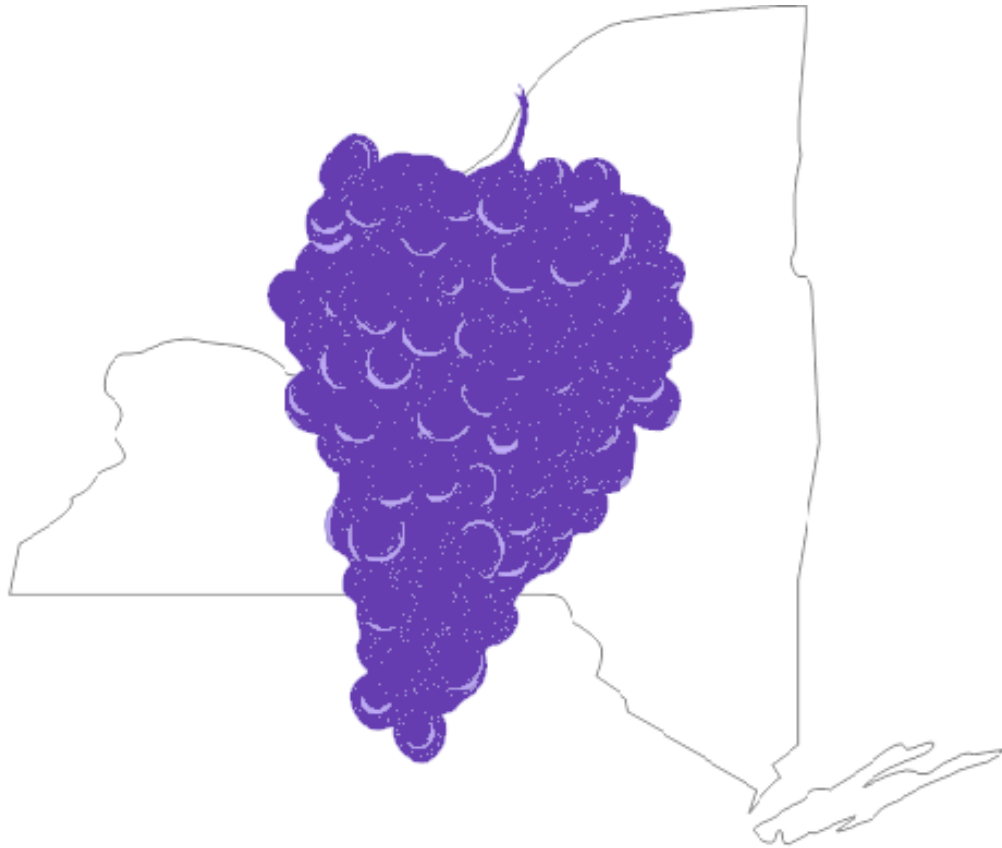


Sensitivity Analysis of Profits for *V. Vinifera* Grapes in the Finger Lakes Region of New York - 2019



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Introduction

In 2019 a study was conducted modelling the costs and revenues of a new, 50-acre bearing, *V. Vinifera* vineyard in the Finger Lakes region. You can view the full study [here](#). Land costs, machinery/equipment, and vineyard development cost estimates were developed working with local stakeholders, vineyard managers, and Cornell University faculty.

Four varieties of *V. Vinifera* were used for the study; Riesling, Cab Franc, Chardonnay, and Pinot Noir. For each of the four varieties used in the study it was assumed the vineyard was producing higher than average quality of grapes allowing for potentially receiving higher than average price/ton for their grapes at the point of sale. It was also assumed that vineyard managers were using recommended production practices which may limit the total yield per-acre the vineyard realizes resulting in a higher quality grape. After discussing with a local panel of growers expected yields per-acre, price per ton, and costs per acre were developed for the four varieties as shown below:

Table 1: Estimated Assumption of V. Vinifera Varieties - 2019
Estimated Yield

Variety	Per Acre	Estimated Price/Ton	Estimated Costs Per Acre
Riesling	4	\$ 1,600	\$ 7,259
Cab Franc	3.3	\$ 1,600	\$ 7,186
Chardonnay	4	\$ 1,350	\$ 7,209
Pinot Noir	2.6	\$ 1,900	\$ 7,081

Sensitivity Analysis

Conducting a sensitivity analysis show what potentially minor changes in yield and sales prices can have on the overall economic profitability per-acre of a *V. Vinifera* vineyard. Using this analysis, understand quickly what market or production changes can have on income, understand how a vineyard can take advantage of opportunities, and to potentially make plans to mitigate the possibility of market down turns.

Below are four tables showing the sensitivity analysis looking at economic profit/loss of the four varieties of *V. Vinifera* looked at in the 2019 study. The top row of the tables demonstrate the estimated yield (bolded) per-acre of each variety. The bolded number shows the estimated yield per-acre used in the full study while the two numbers to the left indicate a 10% and 20% decrease in estimated yields and the numbers to the right indicate a 10% and 20% increase in estimated yields. The left most column shows the estimated price per-ton. The bolded number indicates the estimated price per-ton used in the full study, while the numbers above indicate a 10% and 20% drop in price per-ton and the numbers below the bolded price per-ton indicate a 10% and 20% increase in price per-ton.

The numbers in parenthesis in the table indicate that at the estimated yield and price per-ton the *V. Vinifera* is making an economic loss per-acre. If the number is not in parenthesis then the *V. Vinifera* variety is making an economic profit given the measured estimated yield and price per-ton.

Table 2 - Riesling - Sensitivity Analysis - Economic Profit - 2020 - Per Acre					
Sales Price \$/Ton	Estimated Yield Per Acre				
	3.2	3.6	4	4.4	4.8
\$ 1,280	\$ (3,063)	\$ (2,601)	\$ (2,139)	\$ (1,677)	\$ (1,215)
\$ 1,440	\$ (2,551)	\$ (2,025)	\$ (1,499)	\$ (973)	\$ (447)
\$ 1,600	\$ (2,039)	\$ (1,449)	\$ (859)	\$ (269)	\$ 321
\$ 1,760	\$ (1,527)	\$ (873)	\$ (219)	\$ 435	\$ 1,089
\$ 1,920	\$ (1,015)	\$ (297)	\$ 421	\$ 1,139	\$ 1,857

Table 3 - Cab Franc - Sensitivity Analysis - Economic Profit - 2020 - Per Acre					
Sales Price \$/Ton	Estimated Yield Per Acre				
	2.64	2.97	3.3	3.63	3.96
\$ 1,280	\$ (3,724)	\$ (3,343)	\$ (2,962)	\$ (2,580)	\$ (2,199)
\$ 1,440	\$ (3,301)	\$ (2,867)	\$ (2,434)	\$ (2,000)	\$ (1,566)
\$ 1,600	\$ (2,879)	\$ (2,392)	\$ (1,906)	\$ (1,419)	\$ (932)
\$ 1,760	\$ (2,457)	\$ (1,917)	\$ (1,378)	\$ (838)	\$ (298)
\$ 1,920	\$ (2,034)	\$ (1,442)	\$ (850)	\$ (257)	\$ 335

Table 4 - Chardonnay - Sensitivity Analysis - Economic Profit - 2020 - Per Acre					
Sales Price \$/Ton	Estimated Yield Per Acre				
	3.2	3.6	4	4.4	4.8
\$ 1,080	\$ (3,653)	\$ (3,271)	\$ (2,889)	\$ (2,507)	\$ (2,125)
\$ 1,215	\$ (3,221)	\$ (2,785)	\$ (2,349)	\$ (1,913)	\$ (1,477)
\$ 1,350	\$ (2,789)	\$ (2,299)	\$ (1,809)	\$ (1,319)	\$ (829)
\$ 1,485	\$ (2,357)	\$ (1,813)	\$ (1,269)	\$ (725)	\$ (181)
\$ 1,620	\$ (1,925)	\$ (1,327)	\$ (729)	\$ (131)	\$ 467

Table 5 - Pinot Noir - Sensitivity Analysis - Economic Profit - 2020 - Per Acre					
Sales Price \$/Ton	Estimated Yield Per Acre				
	2.08	2.34	2.6	2.86	3.12
\$ 1,520	\$ (3,854)	\$ (3,492)	\$ (3,129)	\$ (2,766)	\$ (2,404)
\$ 1,710	\$ (3,459)	\$ (3,047)	\$ (2,635)	\$ (2,223)	\$ (1,811)
\$ 1,900	\$ (3,064)	\$ (2,603)	\$ (2,141)	\$ (1,680)	\$ (1,218)
\$ 2,090	\$ (2,669)	\$ (2,158)	\$ (1,647)	\$ (1,136)	\$ (625)
\$ 2,280	\$ (2,274)	\$ (1,713)	\$ (1,153)	\$ (593)	\$ (32)

Discussion

Yearly market prices for *V. Vinifera* grapes as well as yield variability due to yearly fluctuation of growing conditions, both play a significant role in how much economic profit vineyards in the Finger Lakes can make. As shown above the only time Cab Franc or Chardonnay cultivation results in an economic profit is if both yields per-acre and price per-ton increase by 20%. Pinot Noir on the other hand does not make any economic profit at the estimated yields or prices. Riesling can make an economic profit if yields stay constant at 4 tons per-acre as long as price increases by 20%, or can make an economic profit if the current estimated price per-ton stays constant but yield increases by 20%.

OTHER A.E.M. EXTENSION BULLETINS

EB No	Title	Fee (if applicable)	Author(s)
2020-06	Sensitivity Analysis of Profits for V. Vinifera Grapes in the Finger Lakes Region of New York - 2019		Davis, T., and Gomez, M.
2020-05	Progress of the Dairy Farm Report Selected Financial and Production Factors Dairy Farm Business Summary New York State, 2019 153 Farms		Karszes, J., Hill, L., and Knoblauch, W.
2020-04	Business Tools for NYS Berry Growers		Williams, K., Kalaitzandonakes, M., Gómez, M.
2020-03	Regional Grass Fed Beef Supply Chain		Kalaitzandonakes, M., Gómez, M., and Peters, C.
2020-02	Cost of Establishment and Production of Cold Hardy Grapes in the Chautauqua Region of New York - 2019		Davis, T., Gómez, M., Moss, R., Martin, K., and Walter-Peterson, H.
2020-01	Cost of Establishment and Production of V. Vinifera Grapes in the Finger Lakes Region of New York - 2019		Davis, T., Gómez, M., Moss, R., Walter- Peterson, H.
2019-06	Adapting Your Labor Strategies to New York's Revised Farm Employment Laws		Eiholzer, L., Ifft, J., Karszes, J., and Stup, R.
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