

2016 Kentucky Grape Costs and Returns: Budget Summaries and Assumptions

Tim Woods, Extension Professor, Department of Agricultural Economics, Matt Ernst, agribusiness writer/analyst, and Patsy Wilson, Extension Specialist, Department of Horticulture

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Production budgets for American, hybrid, European (*vinifera*), and table grape varieties were updated to estimate grape profitability in Kentucky for 2016. This analysis indicates that wine grapes can be economically feasible in Kentucky when best production practices are followed that maximize yields and when market prices approach \$1,200/ton for *vinifera* wine grapes and \$1,000 per ton for French-American and American hybrid wine grape varieties. Sound management that maximizes wine grape yields and minimizes input costs, with marketing that captures top grape prices, is absolutely necessary for economically viable wholesale grape production in Kentucky.

These budget estimates assume the producer incurs 100% of the expense of grape establishment. While prior budget estimates indicated a mixed outlook for profitability potential from wholesale grape production, increased plant populations and yield expectations now project French-American Hybrids and American varieties to have a 6- to 10-year economic payback period. Higher prices or establishment cost savings, such as distributing equipment costs over multiple crops or farm enterprises, increase chances for long-term profitability. Sound management is always necessary for profitable grape production as poor production management can easily result in negative cash flows during full-bearing years.

Prices paid for *vinifera* grapes in Kentucky, through the 2015 season, frequently fell in the range for profitable wholesale production; the budget estimates assume a price of \$1,350 per ton for *vinifera*. This profitability should be weighed against production risks present for *vinifera* grapes in Kentucky's climate. Prices paid for hybrid wine grape varieties, which are more conducive to Kentucky's growing climate, were also bearing prices within or above the \$850-\$1,000/ton needed for long-term profitability. New producers considering grape production should know their costs and attempt to acquire price contracts covering all costs of production. Grape prices are extremely sensitive to crop quality, again reiterating the need for good management.

Table grape production is an economically viable option in Kentucky; however, production requires a higher level of production and harvest labor and management. Furthermore, the market for locally produced table grapes is very thin and is currently concentrated at the farmers market and fine dining levels. Areas with higher metropolitan populations (specifically Louisville and Northern Kentucky) have the most potential for table grape production.

Grapes can be a profitable alternative crop for Kentucky producers. However, producers should carefully examine their own costs and whole farm situation before beginning production, as grapes require much labor and some production expertise. In addition, Kentucky's climate and weather patterns can still lend considerable risk for producers who do not give the utmost care to both managing and marketing their grape plantings.

Grape cost estimates for Kentucky were first generated in 2002, and special thanks is due to Kaan Kurtural and John Strang, Department of Horticulture, who provided initial production assumptions. Insecticide and fungicide spray assumptions were based on information originally provided by Ric Bessin (Extension Entomologist) and Nicole Ward Gauthier (Extension Plant Pathologist).

Table 1. Estimated Grape Producer Profitability Summary: Kentucky, 2016

Variety	Estimated Establishment Cost (Cash outlays until Positive Cash flows are generated) -per acre-	Estimated Annual Return to Land, Labor, & Management (Full Production) -per acre-	Estimated Present Value of 10-Year Cumulative Return (5% Discount Rate) -per acre-	Estimated Payback Period (Land, Labor & Management) -per acre-
American & French-American Hybrids	\$ 8,738	\$1,207	\$1,620	9 Years
Vinifera (European Hybrids)	\$11,761	\$2,592	\$7,446	5 Years
Table Grape	\$9,691	\$3,172	\$8,792	6 Years

Table 2. Estimated Vinifera Wine Grape Annual Return to Land, Capital & Management (\$) Full Production Year Varying Price/ Yield Combinations: Kentucky, 2016

Yield/A (Tons)	Price Per Ton							
	\$900	\$1000	\$1100	\$1200	\$1300	\$1350	\$1400	\$1450
2.0	-1955	-1755	-1555	-1355	-1155	-1055	-955	-855
3.0	-1225	-925	-625	-325	-25	125	275	425
3.5	-860	-510	-160	190	540	715	890	1065
4.0	-495	-95	305	705	1105	1304	1505	1705
4.5	-130	320	770	1220	1670	2592	2120	2345
5.0	235	735	1235	1735	2235	2485	2735	2985
6.0	965	1565	2165	2765	3365	3665	3965	4265

Table 3. Estimated French-American Hybrid and American Varieties Annual Return to Land, Capital & Management (\$) Full Production Year Varying Price/Yield Combinations: Kentucky, 2016

Yield/A (Tons)	Price Per Ton							
	\$750	\$800	\$850	\$900	\$950	\$1000	\$1050	\$1100
3.0	-1133	-984	-834	-683	-533	-383	-233	-83
4.0	-553	-353	-154	47	247	447	647	847
5.0	27	277	527	777	1027	1277	1527	1777
5.5	317	592	867	1142	1417	1692	1967	2242
6.0	607	907	1207	1507	1807	2107	2407	2707
6.5	897	1222	1547	1872	2197	2522	2847	3172
7.0	1187	1537	1887	2237	2587	2937	3287	3637

Table 4. Estimated Table Grape Return to Land, Capital & Management, Full Production Year Varying Price/Yield Combinations: Kentucky, 2016

Yield/A (Lbs)	Retail Price Per Pound*							
	\$0.80	\$0.90	\$0.95	\$1.00	\$1.25	\$1.30	\$1.40	\$1.50
7000	-78	447	709	972	2284	2547	3072	3597
7500	197	759	1040	1322	2340	3009	3572	4134
8000	472	1072	1372	1672	3172	3472	4072	4672
8500	747	1384	1703	2022	3615	3934	4572	5209
9000	1022	1697	2034	2372	4059	4397	5072	5747
9500	1297	2009	2365	2722	4503	4859	5572	6284

*Based on Following Assumptions: ¾ yield at full retail price; ¼ yield at 80% of retail price

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Planting: Assumed plant cost varied according to the variety planted: \$3.00/vine for American and hybrid varieties, \$5.00/vine for European varieties, and \$3.25/vine for table grape varieties. Trellis establishment was estimated based on estimated materials for each production system at current post and wire prices.

Production: University of Kentucky recommended cultural practices (fertilization, pesticides, cultivation, etc.) were followed in these budgets. Labor estimates were developed using data from current growers and comparable production budgets.

Equipment costs (irrigation and machinery) were estimated using recent fuel price trends. A trickle irrigation system was assumed during the first three years, for initial growth and establishment.

Grape harvest lugs for wine grapes were assumed for purchase in first and full production years. Summary tables assume no cost of lugs in subsequent years. A daily electricity cost for cooling table grapes was assumed during the harvest season.

Labor: Labor costs were assigned at a wage rate of \$10.00 per hour for untrained labor due to the care needed in many of the ordinary duties of grape production. Management, pesticide application, and other more specialized tasks were assigned a rate of \$15.00 per hour. Due to the labor intensity required in grape production, profitability can be very sensitive to changes in wage rates. Increasing labor costs are the main reason for a decline in profitability estimates for 2016 over the 2010 estimates.

Fixed Costs

Fixed machinery costs were also calculated using recommended cultural practices and the Iowa State machinery cost generator. A \$275 annual cost for bird and wildlife pest control was assigned per acre of fruiting grapes. Table grape production included a \$550 annual fixed cost for refrigeration. Annual fixed irrigation cost was assumed at \$248; costs for irrigation can vary greatly depending on type of system and water source.

Further budget assumption details may be obtained by contacting Tim Woods at tim.woods@uky.edu.