



2003 Grape Production Budget ^{1,2}
Summary
Table Grapes - 1 Acre

ITEM	YEAR					Through Life of Vineyard	YOUR BUDGET
	0	1	2	3	4 - 20		
INCOME							
Grapes	0	0	0	4,170	8,340	\$145,950	
Cull Grapes	\$0	\$0	\$0	\$1,500	\$1,000	\$18,500	
						164,450	
VARIABLE COSTS/A							
Cover Crop Seed	15					15	
Vines		1,635				1,635	
Fertilizer	20	50	50	50	50	1,020	
Lime	45	0	0	0	15	300	
Pesticides	30	275	294	825	825	15,449	
Harvesting Costs	0	0	0	950	520	9,790	
Machinery Costs	38	681	135	179	263	5,504	
Cooling Unit Utilities				250	250	4,500	
Bird Netting				165	165	2,970	
Miscellaneous	75	75	75	75	75	1,575	
Interest on Oper. Cap.	8	122	25	150	115	2,267	
TOTAL VARIABLE COSTS	231	2,839	579	2,644	2,278	45,025	
FIXED COSTS/A							
Operator Labor Charge	50	1,950	1,200	1,400	1,300	26,700	
Pickup Truck				1,250	1,250	22,500	
Land Charge	100	100	100	100	100	2,100	
Trellis		2,624				2,624	
Cooling Unit				1,600	1,600	28,800	
Liability Insurance		50	50	50	50	1,000	
Management Charge	100	100	100	100	417	7,489	
TOTAL FIXED COSTS	250	4,824	1,450	4,500	4,717	91,213	
TOTAL COSTS	481	7,663	2,029	7,144	7,395	136,238	
RETURN OVER VAR. COSTS	(231)	(2,839)	(579)	2,176	6,662	119,425	
RETURN OVER TOTAL COSTS	(481)	(7,663)	(2,029)	(2,324)	1,945	28,212	
PRESENT VALUE RETURNS ³	(481)	(6,966)	(1,677)	(1,746)	1,328	849	

¹ This budget is a summary of production budgets for the individual years of a grape production system. For a detailed listing of revenue, costs, and production items refer to Grape Production Budgets Year 0-4.

² The vineyard is expected to have a life of 20 years. Years 0-4 are listed individually. Years 5-20 are assumed to be the same as year 4. The final column is the cumulative revenues and expenses through year 20.

³ **Present Value Calculations, Explanation, and Interpretation**

Since a grape operation occurs over as many as 20 years, it is important to examine the time value of money associated with the enterprise. Time value of money is based on the premise that \$1 today is worth more than \$1 in the future. This is basically because the \$1 today can be invested and appreciate in value until some time in the future. Therefore in regards to the grape enterprise, \$1 of return in year one would be worth more than \$1 of return in year 20. Returns in future years need to be discounted to reflect the time value of money. The following table lists the future value and present value of returns from the enterprise. Explanations and interpretations of the table follow on the next page.

Year	Returns Over Total Costs	Cumulative Returns Over Total Costs	Annual Present Value	Cumulative Present Value
0	-\$481	-\$481	-\$481	-\$481
1	-\$7,663	-\$8,144	-\$6,966	-\$7,447
2	-\$2,029	-\$10,173	-\$1,677	-\$9,124
3	-\$2,324	-\$12,497	-\$1,746	-\$10,871
4	\$1,945	-\$10,553	\$1,328	-\$9,542
5	\$1,945	-\$8,608	\$1,207	-\$8,335
6	\$1,945	-\$6,663	\$1,098	-\$7,237
7	\$1,945	-\$4,719	\$998	-\$6,239
8	\$1,945	-\$2,774	\$907	-\$5,332
9	\$1,945	-\$829	\$825	-\$4,507
10	\$1,945	\$1,115	\$750	-\$3,758
11	\$1,945	\$3,060	\$682	-\$3,076
12	\$1,945	\$5,005	\$620	-\$2,456
13	\$1,945	\$6,949	\$563	-\$1,893
14	\$1,945	\$8,894	\$512	-\$1,381
15	\$1,945	\$10,839	\$466	-\$915
16	\$1,945	\$12,783	\$423	-\$492
17	\$1,945	\$14,728	\$385	-\$107
18	\$1,945	\$16,673	\$350	\$242
19	\$1,945	\$18,617	\$318	\$560
20	\$1,945	\$20,562	\$289	\$849

Discount Rate = 10.00%

Annuity Equivalent = \$100

Sensitivity Analysis of Discount Rate

	Discount Rate				
	6%	8%	10%	12%	14%
Cumulative Present Value	\$5,639	\$2,920	\$849	-\$740	-\$1,968
Annuity Equivalent	\$492	\$297	\$100	-\$99	-\$297

Cumulative Returns Over Total Costs = Running total of the ROTC generated by the enterprise (explained below).

Annual Present Value = ROTC (defined above) generated by the enterprise discounted to present values.

Cumulative Present Value = The running total of the ROTC generated by the enterprise discounted to annual present values (explained above).

Discount Rate = the degree to which the future values are discounted to reflect current values. It is the amount you expect to earn in alternative investment opportunities.

Annuity Equivalent = An annuity equivalent is the average amount of net revenue that the enterprise must generate every year to produce the total present value equivalent. For example, the grape enterprise must average \$100 in net revenue every year in order to generate \$849 in present value revenue over the life of the enterprise.

The annuity equivalent also provides an excellent means of comparing the average return of various enterprises that may have different lengths of production lives. For example, a producer could use annuity equivalents to compare the average annual return on grapes with a 20 year life (\$100) versus raspberries with a 10 year life (\$561 to \$1,255). The raspberries, with a larger annuity equivalent, are expected to be a more profitable investment than the grapes.

ROTC vs. Annual Present Value Returns: Over the life of the vineyard, the enterprise will generate \$20,562 in total returns. However, since much of the cost comes in early years, it is not the same as having \$20,562 in the operator's pocket today. The cumulative present value column indicates that if the operator was given the equivalent return in one lump sum today, it would be worth \$849. The difference between the ROTC and the cumulative present value is a result of considering the time value of money.

Sensitivity Analysis of discount Rate: This table gives the cumulative present value and annuity equivalent for four different discount rates. It allows the user to examine the implications of alternate discount rates.

Internal Rate of Return(IRR): The IRR is found on the interactive versions of this budget by adjusting the discount rate until the annuity equivalent is equal to \$0. The sensitivity analysis table can be used as a starting point. The IRR will be between the two discount rates where the annuity equivalent goes from positive to negative, in this case 10% & 12%. If the annuity equivalent is positive then adjust the discount rate up and visa versa. For this example, the IRR is 11%. If the IRR exceeds the required rate-of-return established by the producer then the enterprise should be engaged in or continued, if the IRR is less than the required rate-of-return then the enterprise should not be engaged in or discontinued.

Income Taxes

Income taxes are not computed in the budgets because of the wide range of possible tax rates and options, but are important in the final analysis. Most operators will need the help of an accountant knowledgeable about Uniform Capitalization rules to help them look at the tax implications of establishing a vineyard. This person may also assist with the analysis of the financial impact of the projected vineyard.

In brief, taxpayers electing to comply with the Uniform Capitalization rules will be allowed **no deductions for preproductive costs**, except Section 179 expensing, until the time that a marketable quantity is harvested, but can then depreciate all preproductive costs over a **10-year** period commencing with the first year of production.

Taxpayers electing out of the Uniform Capitalization rules **must still capitalize the cost of the initial planting but may deduct all other preproductive costs**. However, to offset the benefit of deducting other preproductive costs they must **depreciate** the initial planting costs on a **straight-line basis over a 20-year** period commencing with the first year of production. In addition, the taxpayer, and any person related to the taxpayer, **must use the alternative depreciation system for any property used predominantly in a farming business** that is placed in service in a taxable year for which the election is in effect. (Reference, Agricultural Tax Issues and Form Preparation, Fall 2000 by Phil Harris and Zoel Daughtrey, pp. 258-266)

Calculation Formulas:

Interest on Operating Capital =

$$(\text{Sum of expenses accruing interest}) \times \text{interest rate} \times (\# \text{ months accruing interest}/12)$$

Returns Over Variable Costs = Total Revenue - Total Variable Costs

Returns Above Total Costs (ROTC) = Total Revenue - Total Expenses

Cumulative ROTC = ROTC for year 1 + ROTC for year 2 + ROTC for year 3 + ...

Present Value Returns = $ROTC / (1 + \text{discount rate})^{\text{year}}$
 Example for Year 5 = $\$1,945 / (1 + 0.10)^5 = \$1,207$

Annuity Equivalent =
$$\frac{\text{Discount Rate} \times \text{Cumulative Present Value in Final Year}}{1 - \left[\frac{1}{(1 + \text{DiscountRate})^{\text{Years in analysis}}} \right]}$$

$$\frac{0.10 \times \$849}{1 - \frac{1}{(1 + 0.10)^5}} \approx \$100$$

Formula Template: Enter data in yellow boxes for results in blue boxes.

Interest on Operating Costs:

Sum of expenses accruing interest =
 Interest Rate (%) =
 Months accruing interest =
 Interest on Operating Costs =

Returns over Variable Costs:

Total Revenue =
 Total Variable Costs =
 Returns over Variable Costs =

Returns over Total Costs :

Total Revenue =
 Total Costs =
 Returns over Total Costs =

Present Value Returns:

Returns over Total Costs =
 Discount Rate (%) =
 Year of Analysis =
 Present Value Returns =

Annuity Equivalent:

Cumulative Present Value in Final Year =
 Discount Rate (%) =
 Years in Analysis =
 Present Value Returns =