

Enterprise Budget In-Class Exercise Advanced - KEY

Andy has been working for his neighbor, growing tomatoes, for the past 3 years. Now, Andy is thinking that he would like to start producing and selling fresh-market tomatoes at the local market. But he isn't quite sure whether he can make money at this or not. So, he has come to you for help.

You told Andy to make a list of all the inputs (fertilizer, transplants, mulch, etc.) that he would be using to produce tomatoes and what they will cost. He came up with this production information as shown on the attached enterprise budget. Please help him complete the budget and help him make the decision whether he should start growing tomatoes or not.

1. Calculate the **Revenue** (sales income) that Andy can earn by selling 500 cartons of tomatoes at \$10/carton. Enter your answer in the Total column of the budget.

$$(500 \text{ cartons} \times \$10/\text{carton} = \$5,000 \text{ revenue})$$

2. There are no other sources of revenue for the tomato enterprise. Calculate the **Total Revenues** that Andy can earn from growing and selling 1 acre of tomatoes. Enter your answer in the Total Column.

$$(\text{Total Revenue} = \$5,000 + \$0 \text{ other revenues} = \$5,000)$$

3. Andy thinks he will need 80 lbs. of nitrogen for his acre of tomatoes. Nitrogen costs \$0.45/lb. How much will Andy need to spend on **nitrogen** for his one acre of tomatoes? Enter your answer in the Total Column of the Nitrogen row of the budget.

$$(80 \text{ lbs/acre} \times \$0.45/\text{lb} = \$36/\text{acre})$$

4. Andy will have to borrow the money to buy the inputs necessary to grow one acre of tomatoes. He thinks it will cost him \$4,239 to grow one acre of tomatoes (by adding up the variable costs in the total column). He can borrow the money at a 6% annual interest rate from his lender. He will only need to money for 3 months, after which he will repay all of the money, plus interest, to the lender. Calculate the amount of interest Andy will owe for borrowing the money for 3 months at 6% interest. Enter your answer in the Total Column on the **Interest on Operating Capital** row of the budget.

Interest on	=	Amount	x	Interest	x	Portion of the Year the
Operating Capital		borrowed		rate		money is borrowed

$$(\$4,239 \times 6\% \times 3 \text{ months} / 12 \text{ months in a year}) = \$63.59$$

5. Calculate the Total Operating Costs for this tomato enterprise by adding all of the variable costs on the budget.

$$(\text{TVC} = \text{sum of all the operating costs} = \$4,302.59)$$

$$(\text{Shortcut method} = \$4239 \text{ from question 4} + \$63.59 = \$4,302.59)$$

6. Calculate the Return Above Variable Costs. This will tell you if Andy is making profits in “the short run”. We always want this to be a positive number if possible!

$$(RAVC = \$5,000 - \$4,302.59 = \$697.41)$$

7. Using the results of your calculations, do you think Andy should try to grow tomatoes this year or not (for the “short run”)? You can assume that he can borrow the equipment from his uncle for the upcoming year and that his uncle will let him use 1 acre of land for no charge. Explain your decision.

Yes, Andy should do it. He will be earning \$697.41/acre above the variable costs (RAVC). Assuming he has no fixed costs all of this \$697 can go towards paying himself. In the short run, you only focus on the variable costs – so you want your RAVC to be greater than \$0.

8. Andy needs your help determining whether he should get into this tomato enterprise for the long run (the next 5 years or so). He will have to purchase the necessary equipment and pay his uncle \$150 to rent the one acre of land, as shown on the budget in the Fixed Costs section. Calculate the Total Costs and the Return Above Total Costs for this enterprise.

$$(\text{Total Costs} = \$5,077.59; \text{RATC} = \$5,000 - \$5,077.59 = (\$77.59) < \$0)$$

$$\text{Minimum Yield} = \$5,077.59 / \$10/\text{carton} = 508 \text{ cartons}$$

$$\text{Minimum Price} = \$5,077.59 / 500 \text{ cartons} = \$10.16/\text{carton}$$

9. Using your budget, would you recommend that Andy get into the tomato enterprise for the long run? Explain your answer.

His RATC is less than \$0. This means he is not covering all of his costs; therefore, he should not get into tomato production for the long term. He will be losing money every year that he operates, and he won't be able to replace his equipment over time. He needs to make changes in his operation to be able to produce tomatoes for the long run.

10. What are 3-4 actions that Andy can take to improve the profitability of the tomato enterprise?

Try to charge a higher price

Try to get more cartons of tomatoes from his acreage

Try to reduce the top 5 expenses (Harvest labor, cartons, transplants, irrigation fixed costs, mulch) without hurting production of tomatoes.

Fresh-Market Tomatoes						
		25 lbs/carton				
Revenues		Quantity	Units/Acre	Price		Total
	Tomatoes	500	cartons	\$10.00	/carton	\$5,000.00
	Other					\$0.00
	Total Revenues					\$5,000.00 /acre
Variable Costs:						
	Fertilizer					
	Nitrogen	80	lbs	\$0.45	/lb	\$36.00
	Phosphorus	100	lbs	\$0.32	/lb	\$32.00
	Potassium	150	lbs	\$0.30	/lb	\$45.00
	Lime	0.5	tons	\$30.00	/ton	\$15.00
	Custom Applicator	1	acre	\$21.00	/acre	\$21.00
	Pest Scouting	8	times	\$10.00	/time	\$80.00
	Herbicides	1	acre	\$95.00	/acre	\$95.00
	Fungicides	1	acre	\$500.00	/acre	\$500.00
	Insecticides	1	acre	\$207.00	/acre	\$207.00
	Land Preparation	1	acre	\$53.00	/acre	\$53.00
	Plastic Mulch instal	1	acre	\$70.00	/acre	\$70.00
	Plastic Mulch	1	acre	\$300.00	/acre	\$300.00
	Drip Irrigation (tape	1	acre	\$150.00	/acre	\$150.00
	Tomato Transplants	5000	acre	\$100.00	/1,000	\$500.00
	Stakes	2500	acre	\$100.00	/1,000	\$250.00
	Labor					
	Planting transplant	1	acre	\$90.00	/acre	\$90.00
	Staking & tying	16	hours	\$8.50	/hour	\$136.00
	Marketing & advert	1	acre	\$50.00	/acre	\$50.00
	Hand harvest	1	acre	\$800.00	/acre	\$800.00
	Pest Control	1	acre	\$17.00	/acre	\$17.00
	Cartons, lids, shippin	500	cartons	\$1.50	/carton	\$750.00
	Fuel	15	gallons	\$2.20	/gallon	\$33.00
	Repairs - Tractors & i	1	acre	\$9.00	/acre	\$9.00
	Interest o	6%	3 months	\$4,239.00	/acre	\$63.59
	Total Variable Costs					\$4,302.59 /acre
	Return Above Variable Costs					\$697.42 /acre
	Minimum Yield Necessary to Cover Variable Costs					430.3 cartons/acre
	Minimum Price Necessary to Cover Variable Costs					\$8.61 /carton
Fixed Costs						
	Tractors & Implemen	1	acre	\$125	/acre	\$125.00
	Drip Irrigation Equipr	1	acre	\$500	/acre	\$500.00
	Land Charge	1	acre	\$150	/acre	\$150.00
	Total Fixed Costs					\$775.00 /acre
	Total Costs					\$5,077.59 /acre
	Return Above Total Costs					(\$77.59) /acre