



## TEACHER ANSWER KEY

Students will use a farm enterprise budget tool to determine the profitability of a hypothetical oyster aquaculture business. They will work with an existing tool used by Virginia oyster farmers to answer the questions below. Some questions require the student to change values in the spreadsheet to arrive at the correct answer.

**1a.** What are the top three operating expenses, top three fixed costs and top three permitting and ground leasing costs to operate the hypothetical oyster aquaculture business? Name them and provide the dollar amount for year 1 and year 2 of the business.

<b>Operating Expenses</b>	<b>Dollar Amount in Year 1</b>	<b>Dollar Amount in Year 2</b>
1. Full-time labor	\$24,960	\$24,960
2. Part-time labor	\$17,280	\$17,280
3. Triploid oyster seed	\$8,000	\$8,000
<b>Fixed Costs</b>		
1. Truck	\$5,000	\$5,000
2. Cages	\$3,333	\$3,333
3. Boat	\$2,806	\$2,806
<b>Permitting/Ground Leasing Costs</b>		
1. Surveying	\$510	\$0
2. Commercial fisherman registration license	\$190	\$190
3. Advertising cost	\$35	\$0

**1b.** Are there any costs that surprised you? Which one(s), and why?

**Depreciation expenses could be surprising. Physical assets like boats, trucks and gear do not necessarily hold their value from one year to the next, depending on the level of wear and tear.**

**Permitting and ground leasing costs could be surprising as well. In North Carolina, oyster growers must secure a lease from the N.C. Division of Marine Fisheries, a process that involves search and surveying costs. An oyster grower can't begin operations until the lease is secured, so there also is a cost of time in which the business is not operating.**

**2.** In the enterprise budget tool, what are the key assumptions regarding average market price and oyster mortality rate?

**The average market price is assumed to be \$0.25 per oyster, and the oyster mortality rate is assumed to be 50%.**

**3a.** If you plant 400,000 oyster seed, what is the dollar amount of your oyster sales (market oyster revenue) in year 1 and year 2?

**Year 1: \$10,000      Year 2: \$50,000**

**3b.** What is the estimated pretax profit, or return on investment, in year 1 and year 2?

**Year 1: \$-67,779.60    Year 2: \$-23,675.60**

**3c.** Is your business profitable?

**No**

**4a.** Assume that the price of oysters increases from \$0.25 to \$0.50 per oyster. What is the dollar amount of predicted annual oyster sales in year 1 and year 2?

**Year 1: \$20,000      Year 2: \$100,000**

**4b.** What is the estimated pretax profit, or return on investment, in year 1 and year 2?

**Year 1: \$-57,779.60    Year 2: \$26,324.60**

**4c.** Is your business profitable?

**In year 1, no. In year 2, yes.**

**5a.** Assume the price of oysters is again \$0.25 per oyster, but that the oyster mortality rate increases from 50% to 75% and the price of boat and truck fuel increases from \$4/gallon to \$6/gallon. How do these changes affect total annual expenses in year 1 and year 2?

**Total annual expenses are now \$105,759 in year 1 and \$101,655 in year 2. Before they were \$78,057 in year 1 and \$73,953 in year 2. In other words, total annual expenses increased in year 1 and year 2.**

**5b.** What is the estimated pretax profit, or return on investment, in year 1 and year 2?

**Year 1: \$-95,759.40    Year 2: \$-51,655.40**

**5c.** Is your business profitable?

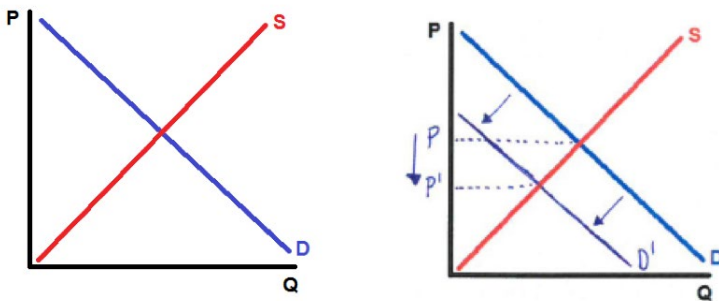
**No.**

**6.** List any additional costs not included in the budget tool. How might those costs affect the profitability of your oyster farm?

**Costs of land and marketing. An oyster grower needs access to the waterfront and, preferably, land near the waterfront to operate their business. Marketing is another ongoing operating expense. Both costs will reduce profitability.**

7. If consumer demand decreases for oysters, how are market prices likely to change? What is the effect on business profitability? Adjust the graph below to illustrate the effect of decreased demand on prices.

**If consumer demand decreases for oysters, market prices will decrease, which could adversely affect business profitability.**



8. If supply of oysters decreases, how are market prices likely to change? What is the effect on business profitability? Adjust the graph below to illustrate the effect of decreased supply on prices.

**If supply of oysters decreases, market prices will increase, which could positively affect business profitability.**

