

# Cultchless (Single-Seed) Oyster Crop Budgets for Virginia:

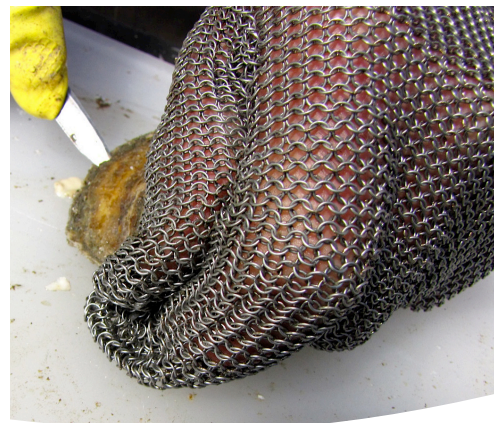
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## 2013 User Manual



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Cover photos: Dan Kauffman and Kathryn Greves, VASG.

## Virginia Oyster Culture Background

There are two aquaculture production methods for oysters in Virginia: intensive culture (off-bottom, containerized) and extensive culture (loose on bottom). Intensive culture is also referred to as “cultchless” production because the oyster seed used is single-seed.

Cultchless production is containerized for protection from predators and to improve growth rates and quality control. Containerization varies but most commonly consists of oysters deployed first in bags within cages that sit off the bottom. Then, when the oysters grow bigger, they are placed in cages without bags.

Some producers grow their nursery oysters big enough so they can go directly into the cages without bags. Other methods include bags attached to rebar racks or bags within oyster floats. Intensive culture is more expensive because it requires more labor for gear and product maintenance. However, the end result is a single, more uniform product that sells at a higher price in the “boxed” or “half-shell” markets.

The second aquaculture production method, extensive culture, is referred to as “spat-on-shell” or “cultched” production. This method is more traditional in that oyster larvae from a hatchery are set on clean oyster shells (cultch), planted directly on the bottom, and grown out in clusters. This production method is relatively less expensive because once the oysters are planted, there is little to no maintenance. However, mortality is higher overall for extensive culture, and the product is destined for the shucked market, which generally garners a lower price.

Both production methods typically use sterile (triploid) oysters, which achieve fast growth, making the time to first harvest approximately 12 to 18 months. However, depending on where they are sited, oyster growth rate can be faster or slower than that timeframe. For the purposes of these crop budgets, only the intensive or cultchless method is considered.



Photo courtesy of Janet Krenn, VASG

## Virginia Oyster Culture Background

## What Is an Oyster Crop Enterprise Budget?

Farm enterprise budgets have a long agricultural history. They are a projection of costs and revenue for one activity on a farm — like raising corn or calves. Many different kinds of enterprise budgets can be found on the websites of nearly all land-grant universities. On most state agricultural colleges' websites, there are budgets adapted to local conditions. They contain representative costs obtained from farmer surveys, interviews, and other sources. As the name suggests, enterprise budgets help plan for only one type of production on the farm. Generally, farms produce more than one product, so multiple enterprise budgets may be needed to complete the financial plan of the farm.

Because of their long history, agricultural enterprise budgets have some unique features not found in pro forma (projected) income statements. For instance, they are constructed on a per-unit basis, like a cow producing calves or an acre of wheat, then scaled up appropriately. However, they are essentially a representative projected income statement for one enterprise on the farm.

These enterprise budgets are designed to be modified by individual users to more accurately depict their costs and financial situations. They will not only help the farmer project whether or not an enterprise might be profitable, they will also produce a document that may be helpful in seeking operating lines of credit and capital financing from financial institutions. Lenders may also require a monthly cash flow budget. If the farmer knows the timing of costs and revenues, the enterprise budget can be a great help in constructing the cash flow budget.

Growing single (cultchless) oysters from seed to maturity is a relatively new enterprise. While there have been other discussions of oyster aquaculture enterprise budgets, to our knowledge, this is the first time an oyster enterprise budget in the more-or-less standardized agricultural enterprise budget format has been produced. It will likely change in the future as methods of production become more standardized and better information becomes available.

## Budget Introduction

The cultchless oyster crop enterprise budgets are intended as guidelines in the estimation of the production costs and returns for Virginia aquaculture farmers growing triploid oysters and were designed using industry input. These budgets should be used as a guide for decision-making and to reinforce the importance of budgeting for individual enterprises. It is important to recognize that farm operations vary considerably and the budgets developed do not describe every situation. Cost of production will vary from farm to farm based on location (fuel), management (labor and mortality), product sales channels (market price), and grow-out practices (gear).

These budgets can be used as a guide to the standard costs incurred with oyster production in Virginia. The spreadsheets are designed to encourage users to make changes based on their farm practices. Users have the option of changing the variables on the spreadsheet; however, those that have the most impact and those considered most variable farm to farm are noted by maroon-colored shading or font with a diagonal line hatch.

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**An important note of caution to the user:** These budgets stop “at the farm gate” and do not include marketing costs. The budgets assume that a wholesale distributor does the marketing. Thus, marketing costs, such as additional refrigerated transportation, shipping costs, and packaging materials, are not considered in this budget. Also not included is the sales time dedicated to establishing and retaining markets. Growers should consider these costs in addition to budget costs presented here if targeting markets beyond the farm gate.

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Photo courtesy of Dan Kauffman

## Budget Worksheets

The small- and medium-scale budgets each contain four worksheets:

1. **Menu** – An abbreviated set of instructions.
2. **Oyster Crop Budget** – The main budget spreadsheet.
3. **Line Item Notes** – A further breakdown of costs of specific line items in the budget spreadsheet. Operating costs, such as labor, fuel, and supplies, and fixed costs, such as capital expenses to be depreciated, are itemized. Changes to the cost of capital items will need to be made in this worksheet and those changes will in turn update the depreciation value in the main budget worksheet. Maroon shading with a diagonal line hatch indicates where changes can be made.
4. **Budget Evaluation** – The percentage of the total budget each line item represents, as well as the cost of the line items per market oyster sold. This worksheet is a helpful tool to determine the biggest expenses in the farm budget. In both representative farm budgets, labor is by far the largest expense. It will automatically update based on user inputs from the budget worksheet, so it is recommended that the worksheet be evaluated after all the necessary changes have been made.

You will find tabs with these names at the bottom of the screen. To open a worksheet or move between worksheets, simply select the tab of choice at the bottom of the screen.

### Tools Needed to Use the Budgets

The budget spreadsheets posted online use Microsoft Excel version 97-2003. This software allows the user to make changes that will be reflected automatically throughout the spreadsheet. If you don't have Microsoft Excel, a PDF version of these spreadsheets can be printed. The user can fill out this spreadsheet the old-fashioned way — using a pencil and a calculator.



Photo courtesy of Will Sweatt, VASG

### Step 1. Choosing the Spreadsheet to Use – Small-Scale or Medium-Scale?

The user must first determine the target number of oysters to market each year and then choose the appropriate budget spreadsheet. Two different budget sheets are provided based on two scales of cultchless production.

1. Small-scale production is defined as selling 50,000 to 250,000 market oysters per year.
2. Medium-scale production is selling 250,000 to 1 million market oysters per year.

Production on a larger scale is not considered in these spreadsheets.

The main differences between the two budgets are the size of seed purchased and the infrastructure required with production scale. The small-scale budget assumes purchasing larger (6 to 12 millimeter), more expensive seed. The larger seed means the small-scale grower does not need nursery equipment like upwellers.

The medium-scale budget assumes purchasing smaller (2 to 4 millimeter), less expensive seed, but it requires nursery equipment as well as other infrastructure, such as an automated sorting system, to cut down on handling time (labor). Both budgets change as production increases or decreases.

## Step 2. Enter the Target Annual Oyster Sales

Open the Oyster Crop Budget worksheet by selecting that tab at the bottom of the screen and enter “Target annual oyster sales” in the upper, right-hand cell shaded in blue with a diagonal line hatch. This single entry will produce revenues and costs for a representative farm vetted by industry. However, if the user knows his or her costs or revenues are different than those for the representative farm, changes should be made to reflect this information by using the steps below.

## Step 3. Adjust Key Assumptions

Key assumptions are located in the box at the top left of the budget worksheet and are shaded in maroon with a diagonal line hatch. These variables drive the budget worksheet, and changes will result in changes to the budget calculations. The variables are explained below.

### Average Market Price

The budgets assume the half-shell market oysters are sold to a distributor at \$0.25 per oyster.<sup>1</sup> It is reasonable to expect a higher price if product is sold at retail at the farm gate or in nearby markets. These budgets don’t cover such marketing costs. When production increases, it is likely a larger percentage of products will be sold through a dealer/distributor.

<sup>1</sup>Average wholesale price reported by industry in the 2011 Virginia Shellfish Aquaculture Crop Reporting Survey (Virginia Institute of Marine Science/Virginia Sea Grant Marine Extension Program).

### Oyster Mortality Rates

Oyster mortality rates vary year to year and are dependent on a variety of factors that are both husbandry-based (experience) and environmental. Some examples to consider are quality of seed, stocking densities in both nursery and grow-out, and weather events. A rate of 50 percent mortality was chosen for both production scales because of industry recommendations. While the mortality rate of an experienced farmer can be less than 50 percent, experienced industry participants say prudence requires limited optimism when it comes to mortality. A mortality rate of more than 50 percent is not uncommon.

The small-scale budget mortality rate only considers grow-out-associated mortality because seed purchased is

large enough to be deployed directly to grow-out. Mortality in the medium-scale budget includes both nursery and grow-out-associated mortality. Seed, in this case, starts much smaller. It is assumed the medium-scale user would have adequate experience in nursery and grow-out to minimize mortality. Experience plays an important part in the mortality rate. To keep oyster mortality low, it is critical to provide enough gear and labor to maintain adequate stocking densities throughout the process. Trying to get by with too much product in too little gear is a common rookie mistake and will result in mortalities that can exceed 50 percent.

### Percent of Total Oysters Harvested – Year 1 and Year 2

Both budgets assume 20 percent of the surviving crop will be harvested in Year 1, with the remaining 80 percent harvested in Year 2. The majority of the Virginia culture industry uses triploid (sterile) oyster seed, which grows faster than diploids (natural) and does not diminish in quality with seasonal spawning. The typical grow-out timeline for triploids is 12 to 18 months from planting versus the 24 to 36 months it takes diploids. Timing of seed purchases, environmental site conditions, farm management, and marketing strategy all play a factor in the percentage ready for harvest in Year 1. As production increases, seed purchases are typically staggered throughout the season; therefore, the crop is at different stages of growth.

Some farms report that a percentage of the crop may not be ready for market until Year 3. This is not accounted for in these budgets but may occur with triploid culture and would certainly be the case if the grower were using diploids. If product is held into Year 3, it is even more crucial to ensure enough gear is purchased to account for the additional oysters on the farm.



Photo courtesy of Mike Oesterling, VASG

## Make Your First Spreadsheet Adjustments in the Blue and Maroon Areas

Estimate oyster price and mortality and maturity rates in these cells.

Choose your target quantity sold here.

Item	Key Assumptions	Target annual oyster sales	1,000,000
Average market price	\$0.25	Oyster seed planted	2,000,000
Oyster mortality rate	50%	Year 1 harvest (crop 1)	20,000
% of total oysters harvested in Year 1	20%	Year 2 harvest (crops 1 and 2)	1,000,000
% of total oysters harvested in Year 2	80%		

### STEP 4: Adjust Critical Variables to Fit Your Farm

The most critical variables that drive the budget costs and those considered most variable farm to farm should be adjusted first. They can be found on both the Oyster Crop Budget worksheet and Line Item Notes worksheet. On the Oyster Crop Budget worksheet, these are operating expenses noted in maroon with a diagonal line hatch. On the Line Item Notes worksheet, they are capital items to be depreciated and recovery periods denoted in maroon shading with diagonal line hatch. They are described below.

**Note:** While many cells can be changed, some are locked to protect the integrity of the formulas and proper functioning of the spreadsheet. If you encounter a locked cell, you will receive an error message stating the cell you are trying to change is protected and read-only. Locked cells are only used in areas where changes are not recommended.

**Note:** Changes to the Oyster Crop Budget worksheet will primarily take place in columns C and D under the items "Operating Expenses" and "Fixed Costs." Changes to the Line Item Notes worksheet will take place in columns C and G under Capital Items to Be Depreciated.

### Operating Expense – Triploid Oyster Seed

The price of seed is an important factor in the budget. The small-scale budget assumes the grower is purchasing quarter-inch to half-inch seed (6 to 12 millimeters) at the 2012 average market price of \$20 per thousand. The medium-scale budget assumes the grower is purchasing 2 mm to 4 mm seed at the 2012 average market price of \$8 per thousand. The cost of seed can be changed by entering your cost per thousand in the "Price or Cost per Unit" (fourth) column. Once the user enters the target annual oyster sales and projects oyster mortality in the "Key Assumptions," the spreadsheet model automatically generates the quantity of seed that needs to be planted/purchased.

**Note:** The quantity of seed is rounded up to the nearest thousand to reflect industry selling practices with the method of measurement using volumetric counts.

## Operating Expense – Labor

Both budgets consider full-time employment to include management salary.

In the representative farm oyster enterprise budget, labor is by far the costliest item. The user will likely have a better idea of labor hours needed. The total number of hours for full-time and part-time labor can be entered in the “Quantity of Units” column. Also, the hourly wage will be particular to each operation and can be entered under the “Price or Cost per Unit” column.

The labor hours used to populate the budgets are based on four years (2008-11) of grower data from the Virginia Sea Grant Marine Extension Program’s annual shellfish aquaculture crop reporting survey. The number of oysters planted, along with the number of full-time and part-time employees, was compiled and a range of hours was determined for a given unit of oysters planted.

The data were further broken down into labor hours per block of production where it made the most sense. The breakdown of labor hours used in the budgets is outlined below (this list is also found in the Line Item Notes worksheet). Full-time employment is calculated as 40 hours a week multiplied by 52 weeks in a year for a total of 2,080 hours. Part-time employment is calculated as 40 hours a week, multiplied by four weeks a month, multiplied by six months, for a total of 960 hours.



Photo courtesy of Kathryn Greves, VASG

Table 1. Estimated labor hours required to grow varying quantities of oyster.\*

No. oysters planted	No. F-T hours	No. P-T hours	Total hours
1 to 100,000	0	960	960
100,000 to 200,000	2,080	0	2,080
200,001 to 300,000	2,080	960	3,040
300,001 to 400,000	2,080	1,920	4,000
400,001 to 700,000	4,160	960	5,120
700,001 to 800,000	4,160	2,000	6,160
800,001 to 1,000,000	6,240	960	7,200
1,000,001 to 1,500,000	6,240	3,840	10,080
1,500,001 to 2,000,000	6,240	5,760	12,000

\*From 2011 Virginia Shellfish Grower Situation and Outlook Survey.



## Operating Expense – Social Security and Medicare (FICA)

The employer must also pay 7.65 percent of employee wages to the federal government to cover Social Security and Medicare taxes. No changes need to be made to this line item because the total wages are automatically calculated based on values entered for the full- and part-time labor hour line items.

## Operating Expense – Workers’ Compensation

It is important to note that while workers’ compensation is a considerable cost in the budget, “Virginia law requires every employer who regularly employs three or more full-time or part-time employees to purchase and maintain workers’ compensation insurance. Employers with fewer than three employees may voluntarily come under the Act” (Virginia Workers’ Compensation Commission; [www.vwc.state.va.us/](http://www.vwc.state.va.us/)). Both representative farm budgets include workers’ compensation regardless of the number of employees. The small-scale budget user with fewer than three employees may wish to remove this cost by entering a zero in the “Quantity of Units” column of the Oyster Crop Budget worksheet.

## Make Changes to Expenses on the Oyster Crop Budget Sheet (below)

## Operating Expense – Fuel

The truck and boat fuel (gallons) estimates are static, meaning they do not change with the production scale. These numbers are placeholders and need to be changed by the user. The amount of fuel per farm is difficult to estimate because of unknowns such as distance to the growing grounds for both truck and boat travel and the number of vehicles used. If known, the user can enter the number of gallons used in a year in the “Quantity of Units” column.

Otherwise, in order to calculate, open the Line Item Notes worksheet by selecting that tab at the bottom of the screen and scroll down to “Fuel Calculations.” Enter the number of miles per week for both the boat and truck and the spreadsheet will automatically calculate your total annual gallons of fuel used and populate the budget sheet. To return to the budget, select the Oyster Crop Budget tab at the bottom of the screen.



Photo courtesy of Kathryn Greves, VASG

Change expense estimates in the cross-hatched areas

	Item	Unit	Quantity of Units	Price or Cost per Unit
18	<b>2. Operating Expenses</b>			
19	Triploid oyster seed	1,000	2,000	\$8.00
20	Full-time labor	Hours	6,240	\$12.00
21	Part-time labor	Hours	5,760	\$9.00
22	Employment tax (FICA)	Taxable total wages (\$)	126,720	\$0.08
23	Workers’ compensation	Annual expense per \$100 of payroll	1,267	\$4.00
24	Boat fuel	Gallons per year	624	\$3.50
25	Truck fuel	Gallons per year	693	\$3.50

## Fixed Costs, Capital Expenditures, and Depreciation

Fixed costs are generally costs the business must or wants to bear, regardless of whether it operates or not.

Capital expenditure choices are critical in determining the success of the oyster business. Everyone wants to keep capital costs down because upfront money is required to purchase capital items. However, it is often possible to substitute capital for labor, and this is usually the less costly choice in the long run. The problem with capital, which is in the fixed cost section of the budget, is that it must be paid for even if it is not used. If it is financed, the bank will require payment even if the capital is not being utilized. Labor, which is in the variable cost section of the budget, is only owed for the time worked and can generally be terminated without additional costs. Thus, in the short run, variable costs change as the enterprise activity changes, but capital costs do not change because they are fixed in the short run.

An example of this capital/variable-cost tradeoff is whether a flat-bottom skiff or a barge should be used. With more labor, it is possible to get by with the skiff, which is less costly than the barge. However, long-time oyster growers say that barges have real labor advantages over skiffs. It is assumed both representative farms use skiffs but the user may choose to substitute a more expensive barge in the line item section of the budget. That substitution should decrease labor costs.

Other major capital budget items to be considered, in addition to the boat, include the upweller, the cold room, the sorter, and the cages. Successful growers advise new growers not to skimp on the number of cages in order to reduce costs. Maintaining appropriate densities avoids overcrowding, which in turn, will reduce oyster mortality. New growers will want to carefully consider their capital expenditure choices and make sure they are entered correctly in the spreadsheet. These choices will help determine how the farm operates and determine the fixed and operating costs.

Depreciation is not a cash cost, but it must be accounted for if the enterprise is to be an ongoing business able to determine profit and loss. Depreciation in this budget is calculated using the IRS “straight-line” formula assuming no salvage value. The recovery periods assumed here may be altered for specialized equipment where the IRS provides no recovery-period guidelines<sup>2</sup>.

<sup>2</sup> Currently, the IRS utilizes the Modified Accelerated Cost Recovery System (MACRS) as the proper depreciation method for most property. Additional information about MACRS and other components of depreciation are in IRS publication 946, “How to Depreciate Property.” It is wise to consult with an accounting professional when establishing depreciation schedules for assets.

For example, oyster cages typically last longer than one year, so they may not be “expensed” in Year 1. Personal property assets with no IRS-designated class life are assigned a seven-year class life under the IRS General Depreciation System. Because oyster cages have no designated class life, they are depreciated over seven years using the appropriate convention and method. That recovery period may be adjusted based on experience, and the spreadsheet will adjust the calculations.

Some economists argue that IRS schedules depreciate machinery too rapidly and, therefore, may dissuade new operators from going into business because they make yearly costs higher than need be. For instance, the skiffs in the budget are depreciated to zero in seven years. Often the useful life of a skiff is longer than that. If the user wants to lengthen depreciation times and thus lower annual depreciation costs, the recovery periods can easily be changed in column E (“Years for Cost Recovery”) of the Line Item Notes worksheet. Of course, if you make those changes, you are no longer using IRS depreciation schedules.

**The Bottom Line:** Machinery costs are substantial and accurate estimates (and control) of them are important. While depreciation is not a cash expense, it is a cost that the enterprise must support from net income once cash expenses have been paid because machinery wears out and must be replaced. Because these budgets are essentially projected income statements, they do not account for principal payments. However, principal payments, which are balance sheet and cash flow items, can be taken care of if cash flow is sufficient. Unless the enterprise generates sufficient income to cover all fixed costs, the income from other sources (off-farm or other enterprises) will be required to meet these total costs. If the enterprise does not cover all costs, it is not profitable and should not be initiated.

## Fixed Costs / Depreciation Expense

The user will need to open the Line Item Notes worksheet tab at the bottom of the screen in order to make edits to this section. “Capital Costs to Be Depreciated” is based on purchasing new equipment. The “Unit,” “Price, or Cost per Unit” and “Years for Cost Recovery” can be viewed (and edited) in columns B, D, and E.

Money can be saved by purchasing used equipment or buying gear such as cages or bags in bulk. Some growers may choose to build their own grow-out cages or floating upwellers to save money. If this is the case, the capital cost (“Price or Cost per Unit”) of these items can be changed in column D of the Line Item Notes worksheet, which is shaded maroon with a diagonal line hatch. Changes here will carry over to the Oyster Crop Budget worksheet.

Stocking densities for the cages and bags are listed in column C of the Line Item Notes worksheet and determine the “Quantity of Units” on the main Oyster Crop Budget worksheet. If densities need to be changed — for instance, if your farm uses a different cage size — make the change here. Another common change could be the elimination of grow-out bags altogether, a farm practice mentioned in the Oyster Culture Background section in this guide. If this is the case, simply open the Oyster Crop Budget worksheet and change the “Quantity of Units” in column C to zero. This will remove the depreciation cost of grow-out bags.

Note that a refrigeration unit for a truck bed is listed in both the small-scale and medium-scale budgets but is not included in the budget calculations. These budgets stop at the farm gate, so refrigerated transport is not considered a necessity. The user must abide by the Virginia Marine Resources Commission’s warm-water harvest regulations,<sup>3</sup> and if refrigerated transport is needed, the depreciation expense can be included by opening the Oyster Crop Budget worksheet and changing the “Quantity of Units” column to 1.

<sup>3</sup> [www.mrc.state.va.us/regulations/fr1230.shtm](http://www.mrc.state.va.us/regulations/fr1230.shtm)

The Virginia Department of Health, Division of Shellfish Sanitation, requires land-based refrigeration for oysters held on shore. Refrigeration is included in the budget for medium-scale operations. It is listed in the small-scale budget but not included in the budget calculations because small operations may be able to use less costly refrigeration devices, like a household refrigerator

or reach-in cooler. In order to include this depreciation expense in the small-scale budget, open the Oyster Crop Budget worksheet and change the “Quantity of Units” to 1.

The medium-scale budget includes capital charges for a water-based floating upweller. Land-based upwellers can be used; however, county zoning regulations for land-based upwellers may restrict their use. Floating upweller systems are more common and require a Joint Permit Application.<sup>4</sup> As mentioned previously, the small-scale budget does not include the cost of an upweller in the budget calculations, but upwelling charges can easily be added. If a small-scale farmer wants to consider upwelling capabilities, the depreciation expense can be added by opening the Oyster Crop Budget worksheet and changing the “Quantity of Units” column to 1.

<sup>4</sup> *Details can be found at the Virginia Marine Resources Commission website at the “Habitat Permitting” link at [www.mrc.virginia.gov/forms/index.shtm](http://www.mrc.virginia.gov/forms/index.shtm).*

## Permitting and Ground Leasing Costs – Number of Acres of Leased Bottom

While the number of acres of leased bottom won’t significantly change the budget, the user should enter the correct number of acres leased. The placeholder works on the assumption of 2 acres per 100,000 oysters planted.



Photo courtesy of Kathryn Greves, VASG

## Step 5. Adjust Other Variables to Fit Your Farm

The user has the ability to adjust other costs in the budget spreadsheets, although they are not considered to have a critical impact to the overall budget. Some of the remaining variables not previously addressed are explained below.

### Operating Expenses – Maintenance

Remaining costs under operating expenses cover annual maintenance on vehicles and equipment such as upwellers, sorters, pumps, etc. These estimates may not represent any given individual's costs. Differences in buying power, repair programs, average annual use, and overall replacement programs should be considered when making adjustments. It may be useful to record actual

expenses for at least major pieces of equipment and compare your costs to these estimates. These estimates will differ from the growers' actual records because they are estimates, but also because they are averaged over the use period and are expressed in today's dollars.<sup>5</sup>

<sup>5</sup> If these estimates are compared to recorded costs that include repairs or depreciation-based on historical costs, one adjustment that would be required for comparability would be to index the historical cost to current prices.

The small-scale budget does not include nursery equipment, so this cost is not included in the representative farm but can be added if the grower chooses, as described in the section on depreciation expenses in Step 4. To include equipment maintenance cost in the small-scale budget, enter the number 1 in the "Quantity of Units" column and adjust the "Price or Cost per Unit" if needed.

### Make Changes to Capital Structure and Depreciation Schedules (below)

B	C	D	E	F	G
Unit Description	Stocking Density (oysters per container)	Price or Cost per Unit	Years for Cost Recovery (item fully expensed)	Annual per Unit Depreciation Expense	Units Needed for This Operation
24' Carolina skiff w/small console, stainless-steel steering wheel, and 12-gal tank. 150 hp Yamaha davit crane with me	n/a	\$25,900.00	7	\$3,700.00	1
Tru	n/a	\$40,000.00	7	\$5,714.29	1
3' x 4' LowPro double-stack, 1/2" mesh, bridled	6,000	\$148.00	7	\$21.14	167
3' x 4' LowPro double-stack, 1" mesh, bridled	1,200	\$135.00	7	\$19.29	667
3/16"	1,000	\$4.50	5	\$0.90	2,000
3/8"	300	\$4.50	5	\$0.90	3,333
Hercules brand 8' slip in box/body (\$6,500) and refrigeration unit (\$6,200)	n/a	\$12,700.00	7	\$1,814.29	0
Basic model: 7' 6" H, 9' 8" W, 23' 1" L w/ floor; 1 hp, medium-temperature unit (+38°F); 26-gauge galvanized interior & exterior aluminum floor; 2 1/2"	n/a	\$17,506.35	10	\$1,750.64	1
8' x 20' floating dock w/ inflatable pump; includes assembly (holds 1M)	n/a	\$8,500.00	10	\$850.00	1
Quick tube sorter w/2 sorting tubes (seed & market/submarket)	n/a	\$13,000.00	10	\$1,300.00	1

Changing oyster stocking densities will change the number of cages required.

Changing oyster stocking densities will change the number of cages required.

Change capital costs in this column.

Depreciation periods can be changed here.

Decide here how many units of each you want. Don't want it? Put a zero.

## Operating Expenses – Supplies

Supply costs have been broken into two parts: expendable supplies and miscellaneous supplies. To see the detailed breakdown of these costs, select the Line Item Notes worksheet tab at the bottom of the screen. Expendable supplies are considered a startup cost and are items like bushel baskets, protective gear, coolers, etc. It is understood that these items will need to be replaced over time but not necessarily every year, so replacement costs along with supplies purchased on an annual basis for repairing and securing gear and tagging at harvest (cable ties, hog rings, line, tags, etc.) fall under the category of miscellaneous supplies. These cost estimates are important to include when considering your farm budget.

## Operating Expenses – Ice for Summer Harvest

This category was left open in particular for those who may use ice in order to comply with the Virginia Marine Resources Commission’s warm-water harvest regulations. Depending on how the grower chooses to harvest in the summer, ice may or may not be required to cool the oysters. Growers should evaluate the regulations and determine whether or not ice is necessary for their situation. If ice is required, the total cost of ice for the year should be estimated and entered under “Price or Cost per Unit.”

## Operating Expenses – Other

This category was left open for those users who choose to enter costs such as office supplies and electricity. These were not included in the budget due to farm-to-farm variability.

## Fixed Costs – Insurance

While insurance will vary by individual operations, the costs indicated are good ballpark estimates. It is important to stress that underwriting standards will vary by company and their disposition for risk. Finding an insurance agent who understands the shellfish aquaculture business is critical.

## STEP 6: Review the Sensitivity Table

At the end of the Oyster Crop Budget worksheet is a sensitivity table. This table outlines the Year 2 returns based on mortality rate and market price. Red numbers in parentheses refer to negative returns.

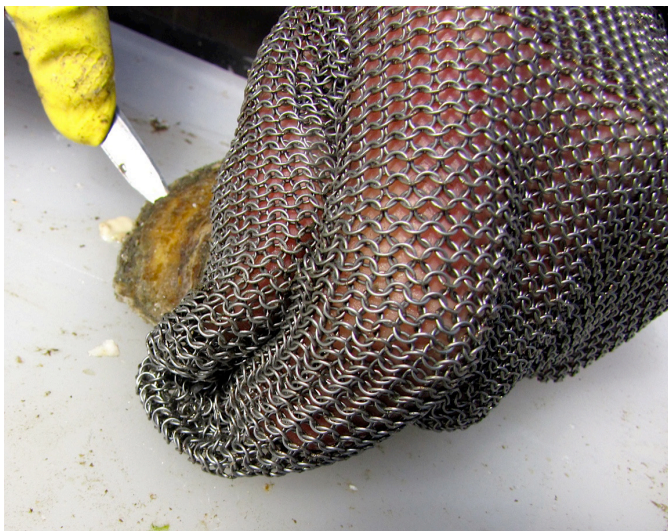


Photo courtesy of Dan Kauffman

## STEP 7: Review the Budget Evaluation

To open the Budget Evaluation worksheet, select that tab at the bottom of the screen. There are a table to review that show the percentage of each line item to the total budget (where the major costs are incurred in your revised budget) and a table of the cost of production per market oyster.

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Photo courtesy of Kathryn Greves, VASG

## Resources Used for Budget Assumptions

### Operating Expenses

- IRS – [www.irs.gov/publications/p15/ar02.html#en\\_US\\_2013\\_publink1000202402](http://www.irs.gov/publications/p15/ar02.html#en_US_2013_publink1000202402) (information on withholding requirements for social security and medicare taxes)
- Virginia Shellfish Aquaculture Crop Reporting Survey – [http://web.vims.edu/adv/aqua/MRR2012\\_4.pdf](http://web.vims.edu/adv/aqua/MRR2012_4.pdf)
- Virginia Workers' Compensation Commission – [www.vwc.state.va.us/portal/vwc-website](http://www.vwc.state.va.us/portal/vwc-website)

### Fixed Costs

- IRS – [www.irs.gov/publications/p225/ch07.html#en\\_US\\_2010\\_publink1000218238](http://www.irs.gov/publications/p225/ch07.html#en_US_2010_publink1000218238) (Table 7.1 for recovery period)
- McCaleb-Metzler Insurance Inc. – [www.mccaleb-metzler.com/](http://www.mccaleb-metzler.com/)
- Virginia State Corporation Commission – [www.scc.virginia.gov/publicforms/170/scc544.pdf](http://www.scc.virginia.gov/publicforms/170/scc544.pdf)

### Depreciation Expenses (gear)

- Chesapeake Bay Oyster Company – <http://chesbayoysterco.blogspot.com/2009/12/specials-deals-used-gearbottom-line-its.html>  
[http://bayoyster.com/equip\\_go.html](http://bayoyster.com/equip_go.html)  
<http://chesbayoysterco.blogspot.com/2010/02/upwelling-and-upwellers.html>  
<http://chesbayoysterco.blogspot.com/2009/03/quicktube-sorter.html>
- Jett's Marine Inc. – [www.jettsmarine.com/](http://www.jettsmarine.com/)
- Kolpak – [www.kolpak.com/products/chill-walk-ins/coolers-freezers/polar-pak-walk-in](http://www.kolpak.com/products/chill-walk-ins/coolers-freezers/polar-pak-walk-in)
- Southern Tool – [www.southern-tool.com/store/davit-5124\\_crane.php](http://www.southern-tool.com/store/davit-5124_crane.php)
- Thermo King – [www.thermoking.com/dealerlocator/NADresults.asp?state=VA&c=USA](http://www.thermoking.com/dealerlocator/NADresults.asp?state=VA&c=USA)

## Cultchless (Single-Seed) Oyster Crop Budget

### Excel sheets

<b>Small-Scale Cultchless Oyster Crop Budgets</b>	<b>Excel</b>
<b>Medium-Scale Cultchless Oyster Crop Budgets</b>	<b>Excel</b>