

# **SHELLFISH FARMER OPERATIONAL ANALYSIS**

## **Instructions**

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by

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# SHELLFISH FARMER OPERATIONAL ANALYSIS

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The **Shellfish Farmer Operational Analysis (SFOA)** builds financial projections and performs “what if” analysis for a shellfish farm operation.

- *Always wanted to be a shellfish farmer, but couldn't figure out if you could make a go of it financially?*  
**SFOA** guides a user through revenue and costs inputs - acquiring a site, buying equipment and gear, purchasing spat, farm and processing labor, etc. - to see if it really pencils out.
- *Want to diversify your existing operation with another species or production technique?*  
This tool allows the addition of new species or production techniques to an existing operation to determine the financial impacts on the bottom line.

## ABOUT SHELLFISH FARMER OPERATIONAL ANALYSIS

**SFOA** is a simple user input program designed in Microsoft Excel. (For first time users of Microsoft Excel, read insert box **A Quick Guide to Excel**.) The entire workbook consists of nine sheets. The **Pro Forma sheet** is the final product. Pro forma's are statements of projected revenues and expenses for planning purposes and presentation to a bank or other financial institution when seeking financing.

The other eight sheets allow for data entry in clearly identified **User Input Fields**, which are outlined in green. The entered data is automatically posted to the Pro Forma sheet and to other worksheets as required. As data is enter, the shellfish farming operation model is built “step by step” in the Pro Forma sheet.

## GETTING STARTED

The first step is to “Save” the excel file under a different name. It is important to not enter information directly into the original **SFOA** file in case other analyses are performed in the future. It is possible to damage **SFOA's** internal programming through inadvertent operator entry.

### A Quick Guide To Excel

Excel is a “*spreadsheet*” software package. Spreadsheets allow a user to input numerical data and “crunch” the numbers quickly with reduced human error.

An Excel “*file*”, like **SFOA**, is made up of several “*sheets*”. Each sheet is made up of rows (1, 2, 3, 4, etc.) and columns (A, B, C, D, etc.) “*Cells*” are created where the rows and columns intersect. For example, when row 4 crosses column C, the cell is “C4”. Just above each sheet, the cell number and the cell contents are listed.

These sheets can be designed to link together. For instance, if you enter information in a cell on one sheet, that information can appear in another cell in a separate sheet and be included in a separate calculation. This happens a lot with **SFOA**.

Excel performs mathematical and financial functions. When using **SFOA** the only thing a user needs to do is research the requested input information and enter the date into the green user input fields.

Excel is an excellent tool for business owners. If you have not used Excel, take the opportunity to study **SFOA** to see how you might use Excel to design your own business related analysis.

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### REVENUE SHEET Instructions

- 1. Revenue Sheet.** Click on the green “Revenue” sheet tab.
- 2. Species.** The Revenue sheet allows project earnings for up to three species or production methods. In Cell A8 titled *Species 1* type in the name of the first species – like “Oysters”. That title is entered on all other sheets where required. Do the same for *Species 2 (Cell A22)* and *Species 3 (Cell 36)* if analyzing more than one species or production method<sup>1</sup>. Without entries, the corresponding lines on the Pro Forma sheet and elsewhere will remain blank.
- 3. Harvestable Production Units.** Starting in Cell B10, enter the *Harvestable Production Units* expect for each year. This is how much is expected for sale in a given year, and may include dozens or bushels of oysters or pounds of clams. Just remember that pricing must be in the same unit (e.g. \$ per dozen, \$ per pound). For startups, either new species or production methods, there is a lag between seed planting and harvest. Enter zeros (“0”) for the years from planting until first harvest.
- 4. Average Unit Value.** Starting in Cell B11, enter the values for *Average Unit Value* – ie. price per pound, per dozen or per bushel. Make sure the pricing corresponds to the production units listed above. *Gross Sales Value* on Row 13 is automatically calculated.
- 5. Returns Percentage.** Starting in Cell B15, enter the percentage figure expect for returns. *Returns* is the amount of sold product returned as rejected by buyers. This calculates a deduction from Gross Sales and is transposed on Rows 17 and 19, and the Pro Forma sheet.
6. Repeat Steps 1 through 5 as needed for each Species.
- 7. Other Business Revenue.** There is a final revenue calculation area starting on Row 54 for other business revenue. This section is for income generated from activities closely related to the shellfish farming business. Entry fields include *Co-op Dividends, Equipment Rentals, Space Rentals or Leases, and Other*. Do not enter business income from separate operations like a separately owned laundromat, fishing operation, or stock market earnings. Enter only income derived from assets related to the shellfish farming operation.
- 8. Save.** Save the file before moving on.

Once completed, this sheet provides projected revenue for each of species and/or culture techniques and displays them on the *Pro Forma sheet*.

Now it's time to move on to estimating your expenses.

#### Think About Inflation

It is advisable to add inflation into revenue and cost variables. Inflation, the increase in cost of goods over time, historically occurs in the US at 2 – 4%. This means item(s) that cost \$100 last year may cost between \$102 – 104 this year. If a dozen oysters sold for \$5 in one year, it might sell for \$5.10 - \$5.20 the next year.

To calculate inflation in excel, enter your base amount in Year 1. For instance, in “Revenue Cell B11” enter \$5. In Cell C11, enter an equals sign “=”. Formulas in Excel begin with an equal sign. Using the arrow keys, push the left arrow key once. This enters B11 into the formula. Without leaving the formula, type “\*1.02”. This means 2% is the inflation figure. (For 3% inflation, the entry is “1.03, 4% is “1.04”, and so on.) The total entry looks like this – “=B11\*1.02”. That cells may then be copied into the follow years and the price per unit will automatically increase by the chosen rate of inflation.

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<sup>1</sup> Alternatively, the divisions may be used to describe different production techniques. For example, the Species 1 section may be used for “Oysters – Lantern Net” while the Species 2 section measures “Oysters – Tray”. In this way one can readily track the impacts of adding something new to an existing operation.

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### PRODUCTION COSTS SHEET

#### Instructions

Click on the green Production Costs tab. This sheet tracks the variable “on farm” production costs.

9. **Seed/Spat Purchases.** The first variable is the cost of the seed or spat. Starting in Cell B9, enter the estimated cost per year for each species or culture technique.

10. **Production Supplies.** Production supplies include gloves, knives, and other tools that generally must be replaced at least annually. There are two methods for entering *Production Supplies*. Production Supplies may be entered for each species, starting in Cells B10, B20, B30, or lumped in the *General (Shared)* section starting in Cell B50. Do not enter information in each species section and the general section unless the costs are separate.

11. **Labor.** Labor costs are imported automatically from the *Labor* sheet. Instructions to follow.

12. **Other Production Costs.** *Other Production Costs* is an all-inclusive “fudge factor” entry to cover the miscellaneous small costs that accrue. Estimates are by species (starting on Cells B12, B22, and B32) or in the *General (Shared) section* (starting on Cell B53). Do not enter the same costs in the species specific and General (Shared) categories unless they are separate.

Figures entered into *species* specific sections are added together in the “*Sub-Totals – Species Specific Production Costs*” section, and calculated in the *Pro Forma* sheet.

13. **General (Shared) Production Costs.** There may be common costs if farming multiple species or tracking more than one culture technique. *General (Shared) Production Costs* covers these common costs. If dealing with a single species and technique, this section can be used for all expenses other than *Seed / Spat Costs*.

14. **Save.** Save the file before moving on.

### PROCESSING COSTS SHEET

#### Instructions

Click on the green Processing Costs tab. This sheet tracks costs associated with processing and marketing shellfish. This section is not necessary for operations that only sell shellfish off the farm with no ongoing requirement to track processing and marketing.

15. **Processing Supplies.** *Processing supplies* include inputs necessary to process the shellfish. Supplies might include disinfectants, protective wear, equipment with a limited life and other incidental supplies. Processing supply entry begins in Cell B9.

16. **Packaging.** *Packaging expenses* generally include boxes and other shipping containers, binding tape, coolants and other related expenses. Entry starts in Cell B10.

17. **Processing Labor.** Just as with Production Labor, processing labor costs are calculated on the *Labor* sheet and imported automatically.

18. **Shipping & Freight.** *Shipping and freight costs*, starting in Cell B12, are costs associated with shipping product to market.

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19. **Promotion.** Starting in Cell B13, *Promotion* costs refer to advertising and promotion expenses.
20. **Per Unit Processing Charges.** *Per Unit Processing Charges* apply for costs incurred in a custom processing arrangement. Entry begins in Cell B14.
21. **Co-op Fees.** This section covers fees paid to a co-op for processing and marketing product. Entry begins in Cell B15.
22. **Other Processing Costs.** *Other Processing Costs* is an all-inclusive “fudge factor” entry to cover the miscellaneous small costs that accrue during processing. Entry begins on Cell B16.
23. **Save.** Save the file before moving on.

## LABOR SHEET Instructions

Click on the green Labor tab. This sheet calculates labor costs for production, processing and office / other separately, and enters those costs in the Pro Forma sheet.

24. **Labor Rates: Average Rate Per.** Enter the hourly cost for each labor category in Cells B10-B12. Hourly wages are entered as averages. If there are several workers, an appropriate average wage must be calculated.
25. **Labor Rates: FICA Contributions.** Enter the percentage for *FICA Contributions* (federal withholding) in Cells C10-C12.
26. **Labor Rates: Other Benefits.** Enter the percentage of *Other Benefits* paid to workers starting in Cell D10-12.
27. **Production Labor: Hours.** Starting in Cell K8, enter the estimated total hours expected to generate the product required for sale. For example, two workers at 1,000 hours each = 2,000 hours total.
28. **Production Labor: Percent with Species.** This line determines how much time is portioned to each species or production method. If growing one species, enter 100 percent on the *Est. % of total hours* line, starting in Cell K10. If tracking more than one species or culture technique, enter the estimated percentage of total hours spent on each species each year. For instance, perhaps 2,000 hours of work is split 60% and 40% between oyster and clams. The labor costs for each species are calculated, and carried over to the *Production Costs* sheet and the *Pro Forma* sheet.
29. **Processing Labor: Hours and Percent with Species.** Following the same process on Steps 28 and 29, enter the *Estimated Total Hours of Processing Labor*, starting on Cell K23 and percentage by species, starting on Cell K25.
30. **Office/Other Labor.** Enter the total hours of office or other labor starting in Cell K38. Resultant figures are carried directly to the *Pro Forma* sheet under Fixed Costs.
31. **Save.** Save the file before moving on.

### Error Check

The Labor Sheet contains error checks on rows 19 and 34. Do not enter anything on these rows. They add the % totals entered in the preceding rows. If they total is over 100%, an “Error” notice is given and adjustments must be made to bring the % totals back to 100%.

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### UTILITIES SHEET Instructions

Click on the green Utilities tab. This sheet estimates the utility costs for farm and processing operations. Several factors affect utility costs. First, production and processing utilities may come from different power sources. Utility costs are also likely based on the level of production. For instance, fuel used on a farm site will increase with the amount of cultivated product. Users should revise their utility calculations for increases in production and changes in methods from year to year.

32. **Power Cost Calculator.** The *Power Cost* calculator allows the entry of local utility and gas generator expenses. Data generated through the calculator must be manually entered into the yearly cost amounts. Utility costs may also change as a function of changing operations and/or increases in product.

- **Local Utility Calculator.** Starting in Cell B9. Enter the projected monthly charge expected for each production species, production method, or processing line from the local utility provider. Enter the number of months charges accrue in Cell D9 to arrive at a total charge for that activity.
- **Genset Fuel Calculator.** Starting in Cell B16, enter the *Fuel Cost Per Gallon*. In B17, enter an estimate percentage for Lubricants, etc. Three percent is a good rule of thumb for this calculation if better information is unavailable. Calculate the genset's daily fuel consumption by entering the generator's *kW Output* in Cell D20. This generates the consumption of gas per hour based on a load factor of 80%. (The Load Factor is set at 80% in Cell D22, but can be changed if necessary.)<sup>2</sup> Finish by entering the number of hours worked in a day in Cell D25. The daily fuel consumption number is transferred to Cell B13 to arrive at a monthly figure. Enter the number of months expected to operate the generator to arrive at an annual figure.

The total of each utility cost is calculated in Cell B28. Use this number for entry instruction on Step 35.

33. **Production and Processing Utilities.** By each species and/or production method, and processing unit, enter the information developed in the Power Calculator and adjust annually if necessary based on changes in production methods and quantities.

34. **Save.** Save the file before moving on.

### MISCELLANEOUS FIXED COSTS WORKSHEET Instructions

Click on the green *Misc Fixed Costs* tab. This sheet compiles a variety of costs encountered by shellfish farmers. Each item calculated is carried forward to the appropriate line on the Pro Forma sheet under Fixed Costs. On the *Pro Forma* sheet these fixed cost figures are automatically multiplied out over the whole projection by the *Fixed Cost Inflation Factor* you entered there.

35. **Port and Harbor Costs.** Starting in Cell F7, begin by entering moorage fees, crane fees, and electricity costs. There are fields for additional harbor costs.

36. **Professional Fees.** The cost of accountants, lawyers and other professionals may be entered in the cells starting in Cell F19.

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<sup>2</sup> Load factor is a term to describe how hard the engine or generator is run during usage. If the engine is set on full throttle, it is running at 100%. If it is idling, it may be running below 10%. Determining a suitable load factor over the course of a workday is a best guess calculation.

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37. **Insurance Expense.** Insurance includes facilities, general liability, product liability and other. Note that “crop insurance” is included under Production costs, not in this section.

38. **Local Tax.** Operations located in a city, county or borough may pay *Local Property Tax* and other assessments.

39. **Permit Costs.** *Site and Permit* costs covers lease payments to the Department of Natural Resources and other annual permit fees to various government agencies.

40. **Product Testing Fees.** *PSP & Other Product Testing* is for the estimated costs of these items, including test kits and any charges from the Department of Environmental Conservation or other labs.

41. **Maintenance.** Maintenance covers the general maintenance and repairs on the principal building, equipment and gear categories, as well as *Other* for other small items.

42. **Other.** The Other section adds any items not covered in the listed categories.

43. **Save.** Save the file before moving on.

## EQUIPMENT SHEET Instructions

Click on the green *Equipment* tab. The *Equipment* sheet calculates all equipment needs for the operation for twenty years and establishes a schedule of owner contributions versus financing contributions. The level of owner contributions calculated on this sheet are transferred to the *Pro Forma* sheet. Loan values are transferred to the *Pro Forma* sheet after they run through *Loan Calculator* sheet to account for financing costs.

It is recommended the user run through all the other sheets in the file before performing the *Equipment* sheet. Equipment costs are “Capital” purchases and do not represent “Operating” costs. It is important to determine operating costs separately because bankers make operating loans separate from equipment loans. Further, understanding the expected cash position at the end of each year will give an understanding of how much money is available for reinvestment.

44. **Equipment Purchases.** Starting in Cell B9, entry is provided for the value of equipment expected in each of the twenty years by species, and starting in Cell B41 entry begins for processing equipment values.

45. **Percentage Financed.** Starting in Cell B10 there is a field that determines how much of the equipment purchased will be financed. This results in the amount of cash the operator will need to pay out of pocket. That number appears just below the *% Financed* entry and is transferred to the *Pro Forma* sheet.

46. **Save.** Save the file before moving on.

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### LOAN CALCULATOR / TRACKER SHEET Instructions

Click on the green *Loan Calculator* tab. This sheet calculates the payment costs for multiple loans – both Operating Loans, and Facility & Equipment Loans. The loan values are cumulated separately for both categories and carried forward to the Pro Forma sheet.

47. **Loan Entry.** Each loan has four variables, years, interest rate, year the loan starts, and amount. Enter each of these figures for all loans. Results will tabulate in each appropriate area and be calculated on the *Pro Forma* sheet.

The loan amounts should correlate with information entered on the *Equipment* sheet.

48. **Save.** Save the file before moving on.