

## Integrated Financial Planning Model for Kelp Aquaculture

Sea Grant's **Integrated Financial Planning Model for Kelp Aquaculture** is a 15 page Microsoft Excel Workbook that walks you through the process of providing inputs that generate financial projections. The mechanics of generating financial projections are standardized (and are taken care of for you within the model), but **only you can provide the inputs that make sense for your business**. This model is designed to provide those starting a business or already running a business with information that will allow them to make a "go /no-go" decision. It will help a potential entrepreneur project operating profit, develop a projected income statement, balance sheet and cash flow forecast.

It is designed for a wide variety of users, from those who have little or no accounting or Excel experience to those who may be well versed in finance, accounting and the use of Microsoft Excel.

The workbook contains a number of worksheets, each documented two ways. Extensive directions and guidance for a particular page or on a specific topic are found in text boxes (like this one) on pages that are not self-explanatory.

The second way this workbook is documented is using Excel notes in a given cell. Notes are normally hidden from sight. **If you see a red triangle in the upper right corner of a cell, you can hover your mouse over the triangle to see the note.** As your mouse moves away from the triangle, the note will disappear. *(If you can see that there is a note, and it's not showing for you when you hover over the cell, right click and select show/hide note or go to the Review menu and select the drop-down menu from Notes and select show/hide note.)*

Many cells and formulas in this workbook are locked. If changes are needed, you can unprotect the sheet by going to the "Review" tab and clicking "Unprotect Sheet". The unlock code is "1234." Please use caution when unlocking the spreadsheets. If you want to change a formula, we strongly recommend that you save a copy of this spreadsheet under a different name

**Want a guide?** This workbook is part of a comprehensive business planning guide available at this link.

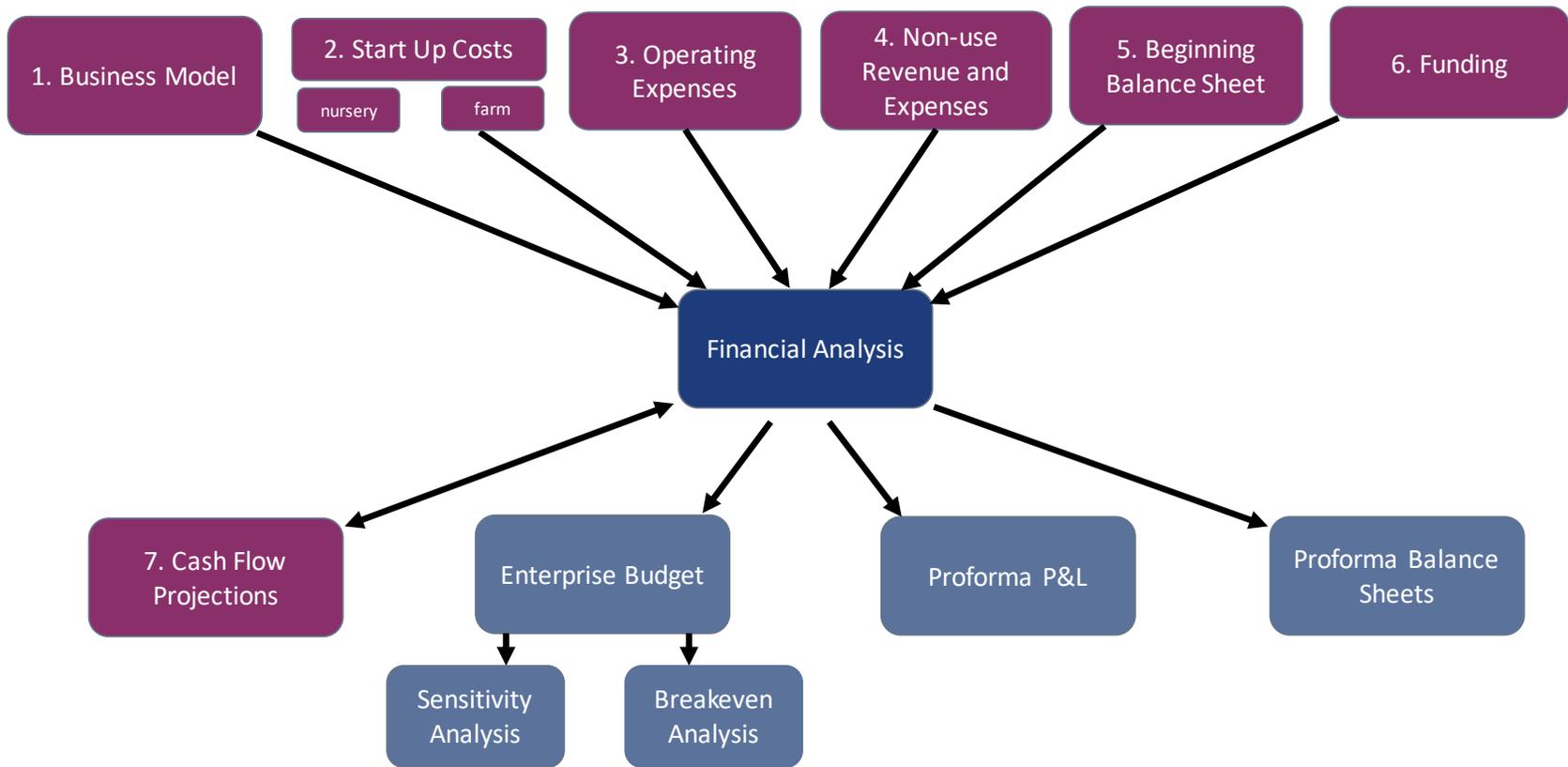
<https://seaweedhub.extension.uconn.edu/resources/business/>

**Before you begin** Save this workbook as a new file before you make any changes. That way, if you make mistakes or do something that impedes the functionality of this file, you will have the original model to refer to!

### You should plan on completing

1. The Business Model page first,
2. Then the Startup costs corresponding with your production model,
3. Then the Operating Expenses corresponding with your production model.
4. An estimate of any Non-use Revenues and Expenses you anticipate,
5. And finally the Beginning Balance Sheet and
6. Funding pages where you look at your capital needs and determine how you will pay for it all.
7. The Cash Flow Projections page is where you enter information about

**Attribution:** This workbook is based on the Financial Projections Template provided through the U.S. Small Business Administration's SCORE program. The original template can be found at the following link: <https://www.score.org/resource/template/financial-projections-template>



# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 1. Business model

**Instructions:** This sheet is where you will enter the fundamental information that will flow throughout the entire Financial Planning Model. You can come back to this page again and again as you work through and refine your plans.

- Begin by indicating your company name in the in the white cell toward the top of the business model input area.
- In the **Your Production Model** input area, enter the type of the nursery and/or kelp farm operations you are currently considering. You will notice that if you move your cursor to the lower right-hand side of the cell where you are to select the nursery model (and all other white cells in the this worksheet's business model input area), a drop-down menu appears which gives you your choices for the type of your nursery and/or grow-out operations.
- In the **Your Revenue Model** input area, indicate how you will be selling your kelp seed string and/or wet kelp, and how (if at all) you intend to derive revenues from activities other than producing kelp seed string or wet kelp.

**After you have defined your revenue model(s), move on to the Revenue Model Details area below.**

- In the **Revenue models: Sale of Seed String** input area, enter your estimate for the price per spool that you will be able to sell your seed string for. Make sure that your estimates and the data that you enter are consistent with the revenue model you chose on the "Start Here" section - that is, if your nursery revenue model is "none" then don't enter a non-zero value for the percent of production being sold.
- In the **Revenue models: Sale of Kelp** input area, enter your estimate for the price per pound that you will be able to sell your wet kelp for. Make sure that your estimates and the data that you enter are consistent with the revenue model you chose on the "Start Here" page - that is, if your Grow out revenue model is "Bulk sale at the dock" then don't enter a non-zero value for the percent of production being sold directly to restaurants/farmers' markets.
- You will enter data about anticipated revenues and cost associated with non-use activities in a separate worksheet.

**When you have finished this page,** move on to the Start up nursery or Start up farm worksheet associated with your business model by selecting its tab below.

<b>Business Model Input Area</b>	
Company name	<input style="width: 100%;" type="text"/>
<b>Your Production Model</b>	
Nursery model:	<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 10px;"></div> <div style="border: 1px solid black; padding: 5px; font-size: 0.9em;">                     This workbook supports two basic scales of kelp seed nursery. The difference between them is in the method for getting seawater into the nursery, and the differences in the nursery building itself. One option would be <b>transporting seawater in containers</b> to a space that has been adapted or retrofitted to the purpose ( a shipping container, garage, etc.). The second option is to have a purpose-built space with <b>pump and plumbing capacity</b> to pull seawater directly into the facility.                 </div>
Farm model:	<div style="border: 1px solid black; width: 100%; height: 40px; margin-bottom: 10px;"></div> <div style="border: 1px solid black; padding: 5px; font-size: 0.9em;">                     The scale of your farm becomes important when considering your revenue model, below. The cutoff "more than two lines" is how we differentiate between a small scale and larger scale commercial kelp farming operation. This workbook offers cost estimates for three sample arrays - a 2 line array, a 10 line array, and a 15 line array. These three specific line count options are simply to provide a starting point, and a sense of scale. You will enter your own estimates for the costs associated with your kelp farming operation in the Start up farm worksheet.                 </div>

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 1. Business model

Your Revenue Model		Notes and Comments
Nursery Revenue model (1):	<input type="text"/>	<input type="text"/>
Nursery Revenue model (2):	<input type="text"/>	<input type="text"/>
Farm Revenue model (1):	<input type="text"/>	<input type="text"/>
Farm Revenue model (2):	<input type="text"/>	<input type="text"/>
Non-use revenue model (1):	<input type="text"/>	<input type="text"/>
Non-use revenue model (2):	<input type="text"/>	<input type="text"/>
Non-use revenue model (3):	<input type="text"/>	<input type="text"/>

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 1. Business model

### Revenue Model Details: Seed String - revenues occur in Q4 (Oct. time frame)

**Model 1: Provide some or all string to growers free of charge**

**Model 2: Sell seed string by the spool or foot**

Price per spool	
Price per foot (calculated)	\$ -
Percent of production being sold	

If you are providing some of your string to growers free of charge, or if you are holding back some of your seed string for your own use, then this percentage should reflect that. Example: provide half of your production to growers for free, hold back a quarter for yourself, then this percent of production being sold should equal 25%.

### Revenue models: Sale of Kelp - revenues occur in Q2 (May time frame)

**Model 1: direct sales to restaurants/farmers' markets (farmer delivers)**

Price to farmer (per pound)	
Percent of production sold through this channel	

Direct sales wet weight to end consumers, restaurants, markets, where the farmer is responsible for distribution and logistics. Typically lower volume. Good for startup operations, growers looking to produce up to 5,000 pounds, farms operated by 1-2 individuals, and independent farmers who may want to process all the crop themselves.

**Model 2: Dockside sales**

Tier 1: Price to farmer (per pound)	
Percent of production sold at this price	
Tier 2: Price to farmer (per pound)	
Percent of production sold at this price	
Tier 3: Price to farmer (per pound)	
Percent of production sold at this price	
Tier 4: Price to farmer (per pound)	
Percent of production sold at this price	

Dockside sales to buyers/processors/distributors ("farmgate"), where the farmer is not responsible for distribution and logistics. Typically higher volume. Prices can vary due to market conditions.

If the farmer does need to transport the harvest to processors, enter the cost of transportation as part of your operating expenses in the "Post Harvest" portion of the Operating Expenses page.

**Model 3: Farmer retains the product for themselves**

Price to farmer (zero)	\$ -
Percent of production kept back	

Farmers may choose to hold back some portion of their harvest for later use.

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

**Start up costs for a kelp nursery operation: Please read this text box before you begin.**

**Instructions:** This sheet is where you will enter the information about the costs associated with getting your small scale kelp nursery operation up and running. This worksheet is meant to be a comprehensive checklist for every contingency; YOU MAY NOT NEED EVERY ITEM ON THE LIST. If there is an item you will not need, simply leave the "how many" column blank or complete it with a zero.

- The **Business Model** area is there to remind you of the choices you made previously. This area is locked for input; if you want to make any changes you need to go back to the "Business Model" page to do so.
- In the **Key Inputs and Outputs** area, enter the number of grow tanks you plan to use, and the number of spools per each tank. If you have a particular number of spools you want to produce and are unsure at this point how many tanks and spools that would entail, you can enter your desired number of spools and then play with the numbers of tanks and spools per tank until you reach your desired production level. These key inputs flow through the rest of the model on this page and others. This section also provides an at-a-glance estimate of the annualized start-up costs per spool and per foot of seed string based on the inputs you provide on this page (the total cost per spool and per foot can't be estimated until you've completed your operating expense worksheet).
- This page generates error messages (in red text) if your input details are not consistent with your prior choices for your business model and/or your production goals. **You need to address those inconsistencies** or else the model will not provide accurate results.
- The remainder of this worksheet consist of ten input areas associated with each unique aspect of building and fitting out a kelp seed nursery operation. Each of these areas has its own more detailed instructions. These are:
  1. Nursery facility and capital expenditures
  2. Seawater transport and containment system
  3. Seawater filtration/sterilization system
  4. Collection of Sorus Tissue
  5. Nursery Tank Culture system
  6. Light system
  7. Aeration system
  8. Seed Spools
  9. Laboratory Equipment
  10. Nutrient Media and Seawater Additives

**Business Model**

Nursery production model:	<input style="width: 100%;" type="text"/>	Farm production model:	<input style="width: 100%;" type="text"/>
Nursery revenue model (1):	<input style="width: 100%;" type="text"/>	Farm revenue model (1):	<input style="width: 100%;" type="text"/>
Nursery revenue model (2):	<input style="width: 100%;" type="text"/>	Farm revenue model (2):	<input style="width: 100%;" type="text"/>

**Key Input and Output**

Desired feet of seedstring produced	<input style="width: 100%;" type="text"/>	Feet of seedstring produced (calculated)	<input style="width: 100%;" type="text"/>
Number of tanks	<input style="width: 100%;" type="text"/>	Spools per tank	<input style="width: 100%;" type="text"/>
Feet per spool	<input style="width: 100%;" type="text"/>	number of spools (calculated)	<input style="width: 100%;" type="text"/>



# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 1. Nursery facility and capital expenditures

Purpose: You will need to have a physical space suitable for growing kelp spores to the level where they can be planted out.

Things to Consider:  
Does your proposed space have the necessary electrical, plumbing, drainage, climate control, wastewater treatment capacity to handle this type of use? Are special permits required?

"Water transported in" kelp nursery: Capital expenditures and equipment purchases	Cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy (years)	Annual cost	What year to repurchase?
Small special purpose building (i.e. shipping container)							
Building permits and licenses							
Cooling/temperature control system							
Renovations to existing building							
Pick up truck							
"Water pumped in" kelp nursery: Capital expenditures and equipment purchases	Cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy (years)	Annual cost	What year to repurchase?
Land (0.5 acres)						n/a	n/a
Building permits and licenses							
Building (2000 sf, including internal systems suitable for this purpose)							
Pick up truck							
Boat, engine, trailer, winch, safety equipment							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 2. Seawater Transport and Containment System

Purpose: Transport seawater to nursery tanks

Things to Consider:  
Volume of water being used in system, ability to handle weight of filled containers, frequency of water transport, proximity to seawater source, necessity of seawater reservoir, available space for seawater reservoir, sterilization of water before or after reservoir storage

**System Components: "Water transported in" kelp nursery**

Seawater transport containers (watertight containers that can be lifted out of the water and transported to your facility)

- \*Plastic carboys (low volume)
- \*Gas containers (low volume)
- \*Insulated bulk fishing container (high volume)

Seawater reservoir containers

- \*Plastic holding tank(s)
- \*Trash can (not recommended for storage after sterilization)

**System Components: "Water pumped in" kelp nursery**

Seawater transport system

- \*Pipes
- \*Pumps
- \*Insulated bulk fishing container (high volume)
- \*Seawater reservoir containers

In addition, you may need to purchase various equipment including a boat etc. and incidentals to allow you to physically get the water into containers and to your nursery facility

"Water transported in" kelp nursery: Equipment for Seawater Transport and Storage	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy (years)	Annual cost	What year to repurchase?
Buckets							
funnels							
rope							
pump							
small generator to run the pump							
plastic carboys/jugs							
Waders							
Gloves							
Boat, engine, trailer, winch, safety equipment							
storage reservoir/tank							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 2. Seawater Transport and Containment System (cont'd)

"Water pumped in" kelp nursery: Equipment for Seawater Transport and Storage	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Main Pumps							
PVC pipes							
Water intake structure							
Valves/fittings/screens							
Other #1							
Other #2							
Other #3							
Other #4							

## 3. Seawater filtration/sterilization system

Purpose: Eliminate potential contaminants (bacteria, diatoms, microalgae) in natural seawater used in the system

Things to Consider:  
 Cost of sterilization methods (low volume can use heat to sterilize water), ability of seawater to flow-through system, access to electrical outlets to run UV light/water pump

System Components:

- Seawater filters – 3 cartridge system
  - \*Filter cartridges (20, 5, 1 micron)
  - \*Cartridge housings
  - \*Tubing or PVC connectors
- UV light
- Submersible water pump
  - \*MD3 pump, mag drive pump, 350 gph, 35 W
- Water tubing and connectors

Equipment for Seawater Filtration/Sterilization	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Storage reservoir/tank/structure							
Peristaltic pump/tubing/valves							
Sand filters (pool filters)							
PVC pipe and fittings/pipe supports							
Filter cartridges							
Filters (fine) – 2 (0.45 micron and 0.2 micron)							
PVC pipe and fittings							
UV sterilizer							
PVC pipes and fittings/digital flow meters							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

### 3. Seawater filtration/sterilization system (cont'd)

PVC pipes and fittings							
digital flow meters							
Racks/table							
Freshwater inflow/PVC pipe/fittings							
Hose							
5 Gal plastic carboys/jugs							
Other #1							
Other #2							
Other #3							
Other #4							

### 4. Collection of Sorus Tissue

Purpose: Obtain the kelp spores which will form the basis for your nursery operation

Things to Consider:

Depth of kelp blades may necessitate SCUBA gear; fresh kelp must be transported immediately back to your facility and kept cold.

You may need to hire a contract diver to obtain your sorus tissue. Enter this cost as "Other"

Equipment for Collecting Sorus Tissue	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Dive gear							
Snorkeling gear							
SCUBA gear package							
Dive bag							
Coolers for transport of sorus tissue							
Ice packs							
Waterproof notebook							
Knife							
Scissors							
Collection bag/burlap bag							
Waders							
Other #1							
Other #2							
Other #3							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 5. Nursery Tank Culture system

Purpose: Cultivate seed spools in a temperature- controlled environment

Things to Consider:  
Number of spools desired, volume of water in system, additional tanks for weekly water changes, methods for sterilizing tubing and containers, method for keeping water chilled

System Components:

- Nursery tanks
- External water pump
- Aquarium chiller (system set at 50F) OR whole-room refrigeration/temp control system (Coolbot)
- Rack to hold settling tubes and spools upright
- Temp and power alarm alert system
- Water tubing and connectors
- Insulated room

	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Tanks							
Plexiglass lid							
Water Chillers (1/aquaria)							
Cutting board							
Storage cabinet							
Fine file							
Tank syphons							
Sandpaper							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 6. Light system

Purpose: Provide seed spools with adaptive light for growth

Things to Consider:  
Light requirements at different nursery stages (0-1 weeks, 1-2 weeks, 2+ weeks), access to reliable electrical outlets to run lights.

Components:

- Light bulbs and fixtures
- Photoperiodic timers (12hr:12hr)
- Light intensity screening as needed
- Staging for light fixtures
  - PVC piping
  - PVC primer
  - PVC cement
- Mirrors

	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Light bank							
Fluorescent ballasts							
Switch box							
Timer							
Mesh screening to control light intensity							
Zip ties							
PVC piping							
PVC primer							
PVC cement							
Mirrors							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 7. Aeration system

Purpose: Provide seed spools with adequate aeration; maintain system pH

Things to Consider:  
Amount of aeration required based on tank system design, some air pumps are suited for more or less gallons in a tank or can pump water deeper, sterilization of tubes and air entering water (filters recommended)

System Components:

- Aquarium aeration pumps
- Aeration tubing
- Air filters
  
- Air stone

	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Air pumps							
Air hoses							
Submersible pumps and plumbing							
Flow regulation valves							
Flow meters							
Air filtration							
Air stone							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 8. Seed Spools

Purpose: Provide substrate for juvenile kelp spores to attach and grow

Things to Consider:  
 spool size, desired length of seeded line, number of spools able to be contained in culture tank system, maintenance of sterile spool conditions before and during culture, time required to seed spools

System Components:

- PVC pipe
  - For spools
  - For settling and transport (as needed)
- Synthetic twine
- Mechanized spooling machine (can DIY)

**PVC Pipe calculator**

Desired number of spools       Length of PVC pipe per piece (feet)       PVC pipes needed   
 Length of spools (inches)       Spools per piece (calculated)

	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
PVC pipes for seed spools							
Settling Tubes							
Racks							
Food grade rubber bands							
Spooling Machine							
PVC cutting tool							
Seed string (1mm nylon string (tufting twine #9))			-				
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 9. Laboratory Equipment

	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Work Tables - metal							
Storage cabinets (for lab equipment and chemicals)							
Refrigerator							
Fluorescent lights inside refrigerator with ballasts outside							
Temperature alarm monitoring system							
Digital Thermometer							
Submersible thermometer							
Microscopes (40-100X)							
Microscope slides							
Microscope cover slips							
API nitrate test kit							
pH meter							
Calibration solutions							
Dissolved oxygen meter with thermometer							
Refractometer							
Light meter							
Analytical balance that can read to four decimal points							
Hemocytometer							
Cell counting chambers							
Deionized water							
10% hydrochloric acid solution							
Beakers (various sizes)							
Flask (various sizes)							
Graduated Cylinders (range of sizes 10ml to 500ml)							
Large plastic garbage cans							
Sponges							
Garden hose							
Cutting board							
Squirt bottle							
Tongs							
tweezers							
Forceps							
Spatula							
Plastic tub/container with lid							
Paper towels							
Plastic weigh boats to measure out chemicals for GeO2 solution							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 9. Laboratory Equipment (cont'd)

Sodium thiosulfate (sterilizing equipment)							
Clorox bleach							
Laboratory detergent							
Cleaning brushes							
70% isopropyl alcohol							
Ethanol 70%							
Aluminum foil							
Pipettes							
Micropipetes							
Lens paper							
Calculator							
Cheese cloth or canning mesh (32 microns)							
Germanium Dioxide (10g) (diatoms control)							
Goggles							
Exam gloves							
Lab coats/apron							
Notebooks (waterproof)							
Plastic bags							
Biohazard disposal plastic bags							
Razor or scalpels (sorus)							
Containers							
Trays							
3% iodine solution (sorus)							
Scissors							
Chemical Storage Container							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(a). Start up nursery

## 10. Nutrient Media and Seawater Additives

	Average cost	Notes/Justification/Product Details	How many?	Total up front cost	Life expectancy	Annual cost	What year to repurchase?
Commercially available culture media solution							
Germanium Dioxide							
Other #1							
Other #2							
Other #3							
Other #4							

## 11. Office equipment

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy	Annual cost	What year to re-
Computer and printer (new purchase)							
Other #1 (specify)							
Other #1 (specify)							
Other #1 (specify)							
Other #4 (specify)							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

**Start up costs for a kelp farm operation: Please read this text box before you begin.**

Instructions: This sheet is where you will enter the information about the costs associated with getting your kelp farm up and running. This worksheet is meant to be a comprehensive checklist for every contingency; YOU MAY NOT NEED EVERY ITEM ON THE LIST. If there is an item you will not need, simply leave the white cell next to the item name blank or complete it with a zero.

- The Business Model area is there to remind you of the business model choices you made previously. This area is locked for input; if you want to make any changes you need to go back to the "Business model" page to do so.
- In the Key Inputs and Outputs area, enter the number of lines you plan to deploy, the length of each line, and the pounds of usable kelp harvest per foot you anticipate. If you have a particular number of pounds of kelp you want to produce and are unsure at this point how many lines and the pounds per line that would entail, you can enter your desired number of pounds and then play with the other inputs until you reach your desired production level. These key inputs flow through the rest of the model on this page and others. This section also provides an at-a-glance estimate of the annualized start-up costs per pound of wet kelp (the total cost per pound can't be estimated until you've completed your operating expense worksheet).
- The remainder of this worksheet consist of eleven input areas associated with each unique aspect of building and fitting out a kelp farm operation. Each of these areas has its own more detailed instructions. These are:
  1. Design and Permitting/application
  2. Materials for your grow out array
  3. Storage facility for gear (owned or rented)
  4. Boat, engine, equipment
  5. Truck
  6. Containers/totes to hold longline
  7. Protective clothing/equipment (boots, coat, pants, gloves, PFD)
  8. Gear for Transport and out planting of sporophytes
  9. Gear for Harvesting
  10. Gear for Off-season maintenance
  11. Office equipment

**Business Model**

Nursery model: <input style="width: 100px; height: 20px;" type="text"/> Nursery revenue model: <input style="width: 100px; height: 20px;" type="text"/> Nursery revenue model (2): <input style="width: 100px; height: 20px;" type="text"/>	Farm model: <input style="width: 100px; height: 20px;" type="text"/> Farm revenue model (1): <input style="width: 100px; height: 20px;" type="text"/> Farm revenue model (2): <input style="width: 100px; height: 20px;" type="text"/>
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# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

Key Input and Output					
Desired first year production level (pounds)		Pounds of usable harvest per foot  Total pounds harvested (calculated as lines*length*pound per foot)	Year 1	Year 2	Year 3
Number of lines					
Length of lines (feet)					

## 1. Design and Permitting/application

Enter any costs that will be incurred prior to setting up your array that are related to local requirements for permits, filing fees, site lease costs, etc. (You will enter recurring costs for these items into your operating expenses in the second year and beyond). Work with your Sea Grant specialist to estimate these costs which vary widely on a state-by-state basis.

Because licenses and permits are long-term assets, the up front cost for multi-year permits is amortized (depreciated) similarly to the way any other long term asset would be. You allocate the cost over the life of the permit. That is, if a 10 year permit costs \$10,000; you recognize \$1,000 annually as a non-cash expense.

Because the cost and requirements for permitting are going to vary by state and change over time, and can be quite substantial, we have included several "other" lines for users to complete.

	Cost	Notes/Justification/Product Details	Annual expense?	Life of permit (years) - enter 1 for annual payments even if the permit is for more than one year)	Annual cost	What year to renew?
Site permit application fees						
Recurring lease fees						
Legal/Engineering						
Other #1 (specify)						
Other #2 (specify)						
Other #3 (specify)						
Other #4 (specify)						

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

## 2. Materials for your Grow Out Array

A kelp farm system consists of four general components - the grow lines where your kelp will be seeded and grow, a mooring/anchor system which holds the grow lines in place, a depth control system which maintains the growing kelp at the proper depth in the water, and a system for site marking for navigational purposes. The following table provides prompts for you to consider as you design your system.

In addition, this workbook provides several example farm systems that were developed using Greenwave's Ocean Farm Design Tool (<https://www.greenwave.org/hub>). The equipment lists provided on the sample farm arrays worksheet are based on expert recommendations for three different scales of kelp farm operations. Use the hyperlink below or select the Sample Farm Systems tab to view the examples.

Grow Lines	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Cost of seed string, per 200' spool							
Long lines (3/8", 7/16", etc. poly)							
Grow line spreader (aluminum, pvc, etc.)							
End line spreader (aluminum, pvc, etc.)							
Holdfast line (3/4, 1 inch poly, etc.)							
Shackles and hardware							
Hog rings and pliers							
Zip ties							
Other #1							
Other #2							
Other #3							
Other #4							
Mooring/Anchor System	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Moorings concrete							
Anchor type 1							
Anchor type 2							
Mooring chain							
Mooring line							
Mooring shackles and hardware							
mooring balls/markert							
Deadeye tensioners							
Breakaway links							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

## 2. Materials for your Grow Out Array (cont'd)

Depth Control (Droppers)	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Polyline (5/16 in) to go in dropper							
Styrophone buoys							
Spindle washers							
Counter weights							
1" pvc pipe (7-10 ft/dropper)							
Other #1							
Other #2							
Other #3							
Other #4							
Site Marking and Navigational Aids	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Site marker buoys							
reflective tape, radar reflectors, etc.							
Paint/Markers							
Other #1							
Other #2							
Other #3							
Other #4							

## 3. Storage Facility for Gear

Keep in mind that these are start up costs, not recurring (operating) costs. If you will be renting a storage facility for your gear, the up front rental deposit (if any) should be included on this sheet. Your recurring rental fees should be entered in the Operating Expenses sheet.

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Up front cost to secure or purchase a storage facility							
Rental deposit for a rented storage facility						n/a	
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

## 4. Boat, engine, equipment

Include only NEW purchases of boat, engine, equipment here. If you are bringing existing equipment into the business, enter its value in the "5. Beginning Balance Sheet" worksheet. Also, be careful not to "double count". If you are planning a combined nursery/farm operation and need to purchase a boat etc., you should only enter that cost in one of these sheets. (Or you could divide the cost between the nursery and farm operations if that makes more sense to you.)

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Engine, equipment, etc.							
Boat (e.g. 23 foot skiff - specify)							
Other #1							
Other #2							
Other #3							
Other #4							

## 5. Truck/Trailer

Include only NEW purchases of trucks for your kelp farming operation. If you are bringing existing equipment into the business, enter its value in the "5. Beginning Balance Sheet" worksheet.

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Dedicated truck							
Boat trailer							
Other #1							
Other #2							
Other #3							
Other #4							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

## 6. Containers/totes to hold longline for storage and/or transport

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Containers and totes for longline (on the boat)							
Containers for off season storage							
Other #1							
Other #2							
Other #3							
Other #4							

## 7. Protective clothing/equipment

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Protective clothing/equipment (boots, coat, pants, gloves) - for everyone on the boat							
PFDs - for everyone on the boat							
Other #1							
Other #2							
Other #3							
Other #4							

## 8. Gear for setting and seeding the farm

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Cooler or plastic totes to transport spools							
Ice packs or other method of cooling							
Transport tube/ Plastic Seed spool holders for cooler							
Cardboard or other packing material							
Other #1 (specify)							
Other #2 (specify)							
Other #3 (specify)							
Other #4 (specify)							

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 2(b). Start up farm

## 9. Gear for Harvesting

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Knives, sheathes/holders							
Gaff							
Totes/coolers							
Net bags/bulk bags							
Garbage bin							
Shovels							
Brooms							
Water pump and hose for clean-up							
Specialized harvest equipment (specify)							
Other #1 (specify)							
Other #1 (specify)							
Other #1 (specify)							
Other #4 (specify)							

## 10. Gear for Off-season maintenance

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Scissors							
Power washer							
Other #1 (specify)							
Other #2 (specify)							
Other #3 (specify)							
Other #4 (specify)							

## 11. Office equipment

	Cost	Notes/Justification/Product Details	How Many?	Total up front cost	Life expectancy (years)	Annual cost	What year to re-purchase?
Computer and printer (new purchase)							
Other #1 (specify)							
Other #1 (specify)							
Other #1 (specify)							
Other #4 (specify)							

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 3. Operating Expenses

Instructions: This sheet is where you will enter the information about your operating expenses. Operating expenses include the cost of what you need to buy and use during your operating season, and those overhead expenses that are incurred in the off-season or all year long. This model assumes that you are purchasing your supplies for a nursery operation in Quarter 3 (July, August, September), and the seed string and consumables for a farm operation in Quarter four (October, November, December). Because the initial value of your purchase of supplies and consumables flows from your start up expense page, you can't change that.

- The **Business Model** area is there to remind you of the business model choices you made previously. This area is locked for input; if you want to make any changes you need to go back to the Business Model input page to do so.

In the **Key Inputs** area, enter the rate that you would pay yourself for labor, and the rate that you pay your hired help for labor. Although your own labor is not a cash expense (and doesn't show up in the projected income statement), you do need to consider the true economic cost of spending your time in working in a kelp aquaculture operation rather than doing something else.

- The remainder of this worksheet consists of input areas for the direct and indirect expenses associated with operating your kelp nursery and your kelp farm operations. Both of these areas has its own more detailed instructions where needed.

1. The quarterly operating expenses that are directly associated with operating your kelp **nursery**: these will most likely be incurred during Q3 and Q4 and are directly related to the operation of your kelp nursery.
2. Permitting and legal for your kelp farm
3. Building out your farm location
4. Seeding
5. Monitoring
6. Harvest
7. Post-harvest (gear retrieval)
8. The annual overhead: these expenses are incurred throughout the year and are not directly associated with the kelp aquaculture operation but are the cost of running the business. This includes items such as insurance and registration for your vehicles, administrative expenses, dockside services, and insurance for your business. This section also picks up the depreciation expense associated with your capital (startup) costs, which flows from your start up page. If you are operating a stand-alone nursery or kelp farm operation, then it must cover all these overhead expenses in order to be able to make a profit. On the other hand, if you are operating a combined business with both a nursery and grow out operation, many of your overhead expenses will be shared between the two businesses. Be sure not to double count overhead expense items.

When you have finished this page you can take a look at the Proforma P&L to see if you'll be profitable over the first three years with the plans you have in place.

**A note on the timing of expenses:** This model recognizes expenses when they are actually used in the operation of the business. For instance, an operator might purchase equipment for a kelp nursery several months before actually setting up the nursery. No matter when those supplies were purchased, the model is set up to account for them in Q3, while the nursery operations are occurring. This was a deliberate choice to minimize the opportunity for errors in financial outputs, and also to approximate the reporting requirements of Generally Accepted Accounting Principles (GAAP), the "rules of the game" for financial accounting in the United States.

Video walkthroughs of these worksheets, as well as other resources for business planning, are available at this link: <https://seaweedhub.extension.uconn.edu/resources/business/>

### Key Input Parameters :

Labor rate (\$/hr) - owner (implied):  Labor rate (\$/hr) - hired labor for nursery operations:

Labor rate (\$/hr) - hired labor for farming operations:

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 3. Operating Expenses

### Operating expenses: Nursery operations

	Year 1 of Operations				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Hours of work - owner's labor												
Hours of work - hired labor												
Utilities (nursery)			\$ -	\$ -			\$ -	\$ -			\$ -	\$ -
Vehicle costs (gas, mileage - boat and truck)			\$ -	\$ -								
Labor - owner's labor (hours times implied rate)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Labor - paid labor	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Supplies and consumables (nursery)												
Depreciation on nursery equipment												
Other 1 (specify)												
Other 2 (specify)												
Other 3 (specify)												

### Kelp Farm : Permitting and Leases (renewals)

Things to consider:  
 Are there annual legal/permitting requirements?  
 Please note that these are not the expenses associated with compliance commitments - compliance commitments are treated as overhead, below.

	Year 1				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Annualized/Amortized expense for multi-year permits (non-cash expense)												
One or two year license/permit/lease expenses												
Legal/Permit expense 2 (specify)												
Legal/Permit expense 3 (specify)												

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 3. Operating Expenses

### Build out farm location

Things to consider: Do you need to re-lay your array each year? Will you need to replace materials? Will you need to rent equipment?
---

	Year 1				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Hours of work - owner's labor												
Hours of work - hired labor												
Materials - new/replacement												
Materials (Array) - depreciation on original purchase												
Labor - owner's labor (hours times implied rate)												
Labor - paid labor												
Fuel												
Other 1 (specify)												
Other 2 (specify)												
Other 3 (specify)												

### Seeding

Things to consider: Seeding is an annual expense
---

	Year 1				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Hours of work - owner's labor												
Hours of work - hired labor												
Labor - owner's labor (hours times implied rate)												
Labor - paid labor												
Seed string (purchase)												
Annually recurring expenses												
Fuel												
Other 1 (specify)												
Other 2 (specify)												
Other 3 (specify)												

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 3. Operating Expenses

### Farm maintenance

Things to consider:  
 You will need to monitor your kelp plants several times over the growing season

	Year 1				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Hours of work - owner's labor		-										
Hours of work - hired labor												
Labor - owner's labor (hours times implied rate)												
Labor - paid labor												
Fuel												
Other 1 (specify)												
Other 2 (specify)												
Other 3 (specify)												

### Harvest

Things to consider:  
 There is a limit to how much can be harvested in a day, based on boat size  
 Will you need to rent a boat, barge, other equipment?  
 Do you need a harvest permit?

	Year 1				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Hours of work - owner's labor		-										
Hours of work - hired labor												
Labor - owner's labor (hours times implied rate)												
Labor - paid labor												
Depreciation on harvest-specific equipment												
Fuel												
Other 1 (specify)												
Other 2 (specify)												
Other 3 (specify)												

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 3. Operating Expenses

### Post-harvest

Things to consider:  Do you need to disassemble the growing array, and if so do you need to leave bouys in place? Do you need to transport your raw product to the buyer? What will it cost you to store any materials and equipment in the off season?
---

	Year 1				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Hours of work - owner's labor												
Hours of work - hired labor												
Labor - owner's labor (hours times implied rate)												
Labor - paid labor												
Fuel												
Other 1 (specify)												
Other 2 (specify)												
Other 3 (specify)												

### Throughout the year (annual overhead)

	Annual expense	Notes/comments
<b>Truck expenses</b>		
Fuel for Truck		(not included in above estimates)
Maintenance		
Truck insurance		
Truck registration		
<b>Boat</b>		
Boat storage		
Maintenance on Boats		
Boat insurance		
Boat registration		
<b>Communications</b>		
<b>Administration</b>		
Office supplies		
Electricity		
Water		
<b>Dockside services</b>		
<b>Fees for Dock Access</b>		
<b>Rental for off-season gear storage</b>		
<b>Marketing expense</b>		
<b>Legal/accounting services</b>		
<b>Ongoing monitoring and compliance costs</b>		
<b>Insurance expense (business insurance)</b>		
<b>Depreciation/Amortization not included above</b>		
<b>Other 1 (specify)</b>		

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 4. Nonuse Rev & Exp

**Non-use Revenues and Expenses: Please read this text box before you begin.**

**Instructions:**

Some kelp farmers or kelp nursery operators intend to supplement their aquaculture income through activities that are not directly related to growing and selling kelp seed or wet kelp. These might include:

1. The sale of branded merchandise, food, or other physical products.
2. Providing services to the public such as education, tours, trainings, etc.
3. Gaining passive revenue through items such as farm subsidies, sale of ecosystem services, etc. These passive revenue streams do not have direct costs associated with them, but do potentially have hidden costs such as time and effort of setting up the payment arrangements, marketing and promotions expense, legal, etc.

Use this sheet to note any anticipated revenues and expenses that are not directly related to your aquaculture operations. The primary focus of this model and planning guide is on kelp aquaculture, and it is important for you to understand the costs and benefits of kelp aquaculture itself by keeping the non-use business separate in the analysis.

Finally, this non-use worksheet supports a very brief top level estimate for your plans. *Users who expect significant capital outlays for these activities, or for whom non-use revenue makes up a significant portion of their business model, should seek advice through their local SBDC or SCORE advisors in the development of a business plan for your specific ideas.*

Video walkthroughs of these worksheets, as well as other resources for business planning, are available at this link: <https://seaweedhub.extension.uconn.edu/resources/business/>

**Non-use revenue and expenses**

	Year 1 of Operations				Year 2				Year 3			
	Q3 (Jul-Sep)	Q4 (Oct-Dec)	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<b>Revenues</b>												
Revenue from sale of physical products												
Revenue from services, education, etc.												
Passive revenue												
<b>Expenses</b>												
Direct costs of goods sold												
Labor cost associated with non-use revenue												
Up-front costs for non-use revenue activities												
Other non-use expense 1 (specify)												
Other non-use expense 2 (specify)												
Other non-use expense 3 (specify)												

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 5. Beginning Balance Sheet

Values as of:  *please enter your starting date*

ASSETS	VALUE	NOTES/COMMENTS
<b>Current Assets</b>		
Inventory/supplies		
Other current assets		
<b>Total Current Assets</b> \$ <u>          -</u>		
<b>Fixed Assets</b>		
Real Estate -- Land		
Real Estate -- Buildings		
Leasehold Improvements		
Equipment (including tools and other equipment in excess of \$1000 value)		
Furniture and Fixtures		
Vehicles (including boats and trucks)		
Other		
<b>Total Fixed Assets</b> \$ <u>          -</u>		
<b>Total Assets</b> \$ <u>          -</u>		
<b>LIABILITIES &amp; EQUITY</b>		
<b>Equity</b>		
Owner's Equity Investment	\$ <u>          -</u>	<i>This is calculated as the total of the assets above. This flows to your projected balance sheets but is NOT included in your Funding page.</i>

# Integrated Financial Planning Model for Kelp Aquaculture Worksheet 6. Funding

Uses: Fixed Assets	Nursery	Farm	Justification: where and when did you come up with these numbers?
Real Estate-Land (and land improvements)			These values are calculated via your other inputs to this model
Real Estate-Buildings			Please see your data entry sheets
Leasehold and Building Improvements			
Equipment			
Furniture and Fixtures, Computers and Peripherals, and Tools			
Vehicles			
Other			
<b>Total Fixed Assets</b>			

Uses: Operating Capital	Nursery	Farm	Justification: where and when did you come up with these numbers?
Prepaid Insurance Premiums			
Legal and Accounting Fees			
Rent Deposits			
Utility Deposits			
Supplies (seed string and other consumables)			
Advertising and Promotions			
Licenses			
Other Start-Up Costs			
Working Capital (Cash reserves)			
<b>Total Operating Capital</b>			
<b>Total Required Funds</b>			

Sources of Funding	From whom	Amount			
Owner's Equity (cash)			<i>Calculate how much cash you need to invest as the difference between the total required funds and the sum of your loans plus any outside investors.</i>		
Outside Investors (cash)					
<b>Additional Loans or Debt</b>			<b>Loan Rate</b>	<b>Term in Months</b>	<b>Monthly Payments</b>
Commercial Loan					\$ -
Vehicle/Boat Loans					\$ -
Other Bank Debt					\$ -
<b>Total Sources of Funding</b>		<b>\$ -</b>			<b>\$ -</b>
<b>Total Funding Needed (balance check)</b>		<b>\$ -</b>			

# Integrated Financial Planning Model for Kelp Aquaculture

## Worksheet 7. Cash Flows 3 year

### 3 Year Projected Cash Flows for

	Year 1 of Operations				Year 2				Year 3			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<b>Beginning Balance</b>	\$ -											
<b>Cash Inflows</b>												
Cash Sales	\$ -											
<b>Total Cash Inflows</b>	\$ -											
<b>Cash Outflows</b>												
Investing Activities												
<b>New Fixed Asset Purchases</b>												
<b>Additional Inventory purchases</b>												
Operating Activities												
Cost of Goods Sold												
Operating Expenses												
Financing Activities												
Loan Payments												
<b>Owners Distribution</b>												
<b>Total Cash Outflows</b>												
<b>Net Cash Flows</b>												
<b>Ending Cash Balance</b>												