

# Managing your shellfish farm business



Dale Leavitt

# Why do farm's fail?

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## ◎ Production Management\*

- Lack of management
  - Poor production planning
- Lack of awareness of existing conditions on the farm
  - Site differences
- Lack of flexibility in production management
  - Technology selection
- Inability of anticipating/planning for natural disasters
  - Adverse weather
  - Disease
  - Other losses

\* Hopefully, we have covered much of this in the previous weeks!

# Why do farm's fail?

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## ○ Finances

- Poor money management
  - Failure to control living/operating expenses
  - Trying to support too many with the operation
- Insufficient monitoring of finances
- Overdependence on collateral
  - It's not borrowing money that gets people in trouble, it's borrowing for things that can't pay for themselves!
- Improper loan structuring

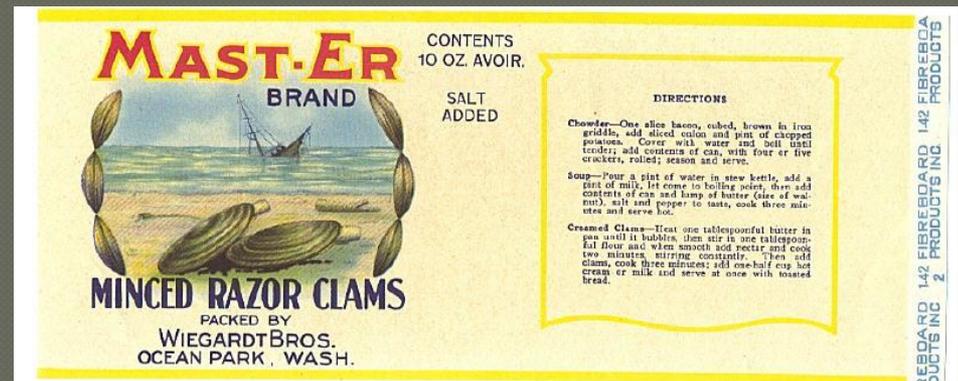
# Why do farm's fail?

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- ◎ Other potential problems
  - Lack of planning for start-up or expansion
  - One person show
    - No plan for back-up management
    - Poor recordkeeping
  - Poor time management
  - Lack of marketing

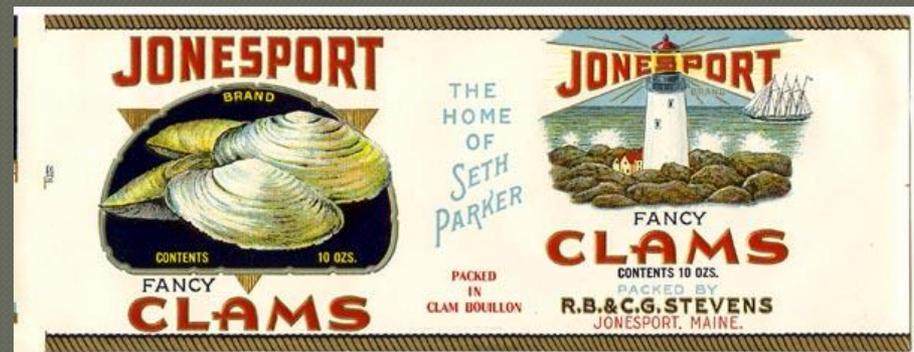
# Aquaculture Businesses

- It has been suggested that greater than 75% of the aquaculture businesses that fail - do so because of business management practices rather than for technical reasons
- As an industry, we need to become better business managers
- It can't be a case of managing your business by "the visor method"



# 7 steps to consider for a successful start for a new business

- 1) Identify the mission of your business
- 2) Outline your strengths and weaknesses
- 3) Set long-term goals
- 4) Be sure your dreams are clear
- 5) Develop a task list (or many lists)
- 6) Generate a financial report card
- 7) Establish commitment



# 12 biggest mistakes you can make when starting a new business!

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- 1) **Jump in without understanding the business**
- 2) **Be afraid of the competition**
- 3) **Undertake no or poor marketing**
- 4) **Rely on not enough capital**
- 5) **Spend too much**
- 6) **Pay no attention to the “bottom line”**
- 7) **Only listen to the positive**
- 8) **Partner with friends or relatives**
- 9) **Hire “no-help” staff**
- 10) **Rest on your laurels**
- 11) **Fail to formalize your business**
- 12) **Operate with no business plan**

# Business Plan?

- A tool to access capital, acquire business partners, and/or attract employees
  - Focuses attention on important issues
  - Helps clarify and communicate your goals and objectives
  - Becomes a means of assigning priorities
- Establishes a framework for daily decision making and better management



# Business Plan?

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- A business plan forces you to develop your thoughts and concepts on paper
- It gives you a chance to think through:
  - Who you and your partners are and what you will contribute
  - What you have to put into the business
  - What you know about the product(s) or services you will sell
  - What you want to do in creating your business
  - How you are going to get your business started and growing

# Business Plan? (cont'd)

- Helps maintain a “proactive” business attitude
- Serves as a benchmark to track performance
- Stimulates development of new/future business opportunities
- Forces you to look at the whole business
- This ROAD MAP increases your chance of success



# Shellfish Farm Business Planning

## Developing a Business Plan for the Maryland Shellfish Aquaculture Financing Program

Developed by

*University of Maryland Extension*

*Maryland Agricultural and Resource-Based Industry Development Corporation*



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MARYLAND  
EXTENSION  
*Solutions in your community*



MARBIDCO  
*growing rural ventures™*

## Small-Scale Oyster Farming for Chesapeake Watermen

## A Sustainable Business Marketing Plan

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Prepared for the Campbell Foundation for the Environment,  
Towson, MD

by

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# What are the parts?

- 1) Executive Summary
- 2) Business Description
- 3) Products & Markets
- 4) Production
- 5) Marketing
- 6) Personnel and Management
- 7) Financial Information
- 8) Appendices and Supporting Documents



# Executive Summary

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- This section is written after the plan is finished
  - Placed at the front of the document before the Table of Contents and after any Cover Sheet that may be used
  - In it you briefly describe what you are going to do and how you will operate
- The Summary should not take more than a few paragraphs and must highlight the strong points of your business
  - It should provide the reasons for what you are doing
  - Why you believe you are going to be profitable
- This is what everyone that sees your business plan will read first
  - It has to hook them to get them to continue to read further

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# Business Description

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- In this section you will want to describe your operation, including:
  - Introductory historical information on how you came to identify this as an area where you can make a profit
    - Experiences that you have had that will serve to make you more potentially successful
  - Mission statement:
    - A mission statement succinctly defines your business
      - It describes what you are trying to accomplish and what you value
    - Mission statements must reveal more than a motive of profit
      - A mission should contain values, activities, and identity of the farm
    - Write your statement in a short paragraph with enough detail to provide clear direction while still being flexible
    - A mission statement is like a book cover
      - It provides the reader with a glimpse of what story lies ahead

# Business Description

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- **Business Contact Information**
  - This should include your business name, address, phone number, and email
  - The type of business structure you are setting up
    - i.e. sole proprietor, partnership, corporation, and coop
- **List the experiences you have had in learning about shellfish**
  - Such as:
    - Working as a harvester, buyer or shipper;
    - Working in a shellfish hatchery or on a shellfish farm
  - Knowledge you have gained about aquaculture through practical experience, workshops or courses, or online study
- **Provide the current status of your employment**
  - Whether you will go into shellfish farming on a full-time or part-time basis

# Business Description

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- Describe the product(s) that your company will produce and sell
  - Whether they will include farmed shellfish, equipment, or industry-related services
  - State if you will be raising shellfish for human consumption to market size or producing seed for sale
  - Determine whether you will operate a shellfish hatchery as a stand-alone business or as part of a vertically integrated operation
  - State whether you will provide custom planting, harvesting or management services to others in the industry or operate solely on your own

# Business Description

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- Describe where your business will be located
  - The body of water, local port facilities
  - Advantages of certain transportation types available to you and your product(s)
  - The location of centers of consumption for your products
- Determine the advantages that your company or product(s) will exhibit over other competitors
- Describe how you will position yourself to promote your products or services
- Determine any disadvantages your company or product(s) will exhibit when compared to other competitors
  - Describe how you will position yourself to promote your products and services to overcome them.

# Business Description

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- State the goals for your business
  - It is important to accurately state where you want to see your business at certain periods of time in the future
  - This allows you to track your progress and provides a guideline for how you are doing in relation to your plan.
  - Goals should be:
    - Short term (from getting the business started to years 1 & 2 where some initial harvest could occur)
      - If not, this should be based on the point at which you would place product on the market and gain cash flow in the business
      - For instance, your goals to develop a shellfish aquaculture business could include renovating acreage in the beginning years, with spat production and initial planting, and monitoring of the crop until first market harvest
    - Long term (3-5 years):
      - These include further targets and reflect the continued growth of the business and, ultimately, profitable operation
      - In shellfish, this could include more ground placed in stable production with additional plantings along with the monitoring required to assure a healthy and quality crop

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# Products & Markets

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- In this section you will describe the products and/or services to be provided by your company
- These may include, as examples:
  - Shellfish to be sold for human consumption
  - Shellfish seed that you raise in a nursery for sale or excess seed that you have available
    - This can provide additional income to your business or get a cash flow started before your market oysters are ready for sale
  - Larvae from your hatchery
  - Transportation services you provide for other planters with your vessel or vehicle
  - Bottom maintenance services you provide for other growers
  - Growout equipment that you fabricate for sale to others
  - Services you provide such as the filling of shell bags for sale to other growers

# Products & Markets

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- Also in this section would be a description of licenses that you have in your business
- These could include
  - Aquaculture license
  - Shellfish sales license
  - Shellfish dealer/Shippers license
  - or other government provided documents or permissions to conduct a business.
- Do not forget the most important one – your lease(s) assent
  - Identifies you with the areas needed to carry out your business

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# Production

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- This section provides an overview of the production methods that you are going to use in your business
- **Methods**
  - Describe the production techniques that you will use for your business, such as
    - Bottom culture of oysters
    - Bottom culture of hard clams using predator nets
    - Any other methods
  - Use details to show how each phase of the operation will be used in the business
    - For example, if you are going to produce your own seed from larvae purchased from a hatchery
    - Describe the methods you will use to rear the larvae and nursery culture it prior to planting, or plant it directly from the setting tanks
  - Cover the management that you will use to track the success of your production, as well as monitor disease and to deal with any potential outbreaks in your crop
- This should include a discussion of why these methods were chosen and how they present an advantage over other methods that you may not have decided to use
  - It is important to show that you have investigated these methods and determined that they will be best for your production and marketing plans
- Can provide the basis for your Operations Plan, should that be required

# Production

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- List the items that will be required in your business.
  - Obviously you will need to include any vessels that will be owned and operated by you
  - You can also state the number of boats and trucks that you will need to hire to do specific tasks where additional input will be needed
- Some items that may be part of your business may include:
  - Setting tanks with their associated gear (cover, water pump, piping and valves, blower or air pump, and heater)
  - Containers for holding cultch (bags, cages, or other containers)
  - Measurement equipment (salinity meter or test kit, thermometer, dissecting scope or other magnifying device)
  - Vehicles (trucks, trailers, etc.)
  - Operations equipment (tumblers, graders, etc.)
  - Quality enhancement equipment (refrigeration, coolers, etc.)

# Production

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## ◎ Quality Control

- Explain how you will control the quality of your product
- It is important to note how you will keep the crop cool in warm months to prevent the growth of bacteria
  - Describe the storage and handling characteristics of your business so as to enhance the appearance and quality of your product to the consumer
- These practices will be important due to recent mandates of the US Food and Drug Administration for states to develop programs to ensure that potentially harmful bacteria are kept under control during warm months of the year

# Production

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## ● Inventory

- What inventory will you expect in each of the years that you are forecasting?
    - In shellfish, how many animals will you expect to have on your grounds and what is the growout period that you are expecting?
  - Having an idea of your inventory will help in planning your cash flow
    - So that you know when to expect income from your operation, as well as calculating your ultimate profitability
  - Inventory in oyster aquaculture can be calculated by knowing the number of seed acquired from the hatchery
  - Counts can be made to estimate the number of individuals in a bag along with the number of bags
  - Periodic checks of the crop can help you determine the ultimate survival of the seed, as well as its growth
  - It is also important to take samples for analysis of disease prevalence and intensity in order to make informed decisions about when to market your crop.
- The more accurate the numbers are, the better your management information will be and the higher the probability that you will become profitable and, ultimately, successful

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# Marketing

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## ◉ Market Analysis

- Understanding the market(s) that you are going to target is extremely important for success
- This is one of the most critical parts of developing your business and some time should be given to gathering information, analyzing it and developing a strategy for selling your products or services
  - Don't wait until you have market-ready animals before selecting your market outlet
- A key factor is to realize that by properly marketing your products you can maximize your income and retain more profit in your business

## ◉ Industry

- Briefly describe the industry that you are going into, in terms of
  - What it is
  - The size of the competition
- The outlook for the future
  - How you will position yourself for that future market

# Marketing

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## ○ Customers

- Identify the demographics of the customers that you are going to reach
  - There is a great deal of data that can be obtained from state and federal agencies, as well as chambers of commerce
- It is important to understand who you are trying to reach with your products and services so that you can develop an effective market strategy
- You should understand the regional and ethnic differences in patterns of consumption of certain food products
  - So that you can take advantage of these and tailor your production practices and marketing approaches to those that will offer you the best potential for growth.

# Marketing

## ○ Customers (cont'd)

- Factors you should consider for potential customers include:

<b>Retail</b>	<b>Wholesale</b>
<i>Age</i>	<i>Industry Segment</i>
<i>Gender</i>	<i>Location</i>
<i>Ethnic Background and Neighborhoods</i>	<i>Firm or business size</i>
<i>Location</i>	<i>Preferences for quality, production practices or price</i>
<i>Income level</i>	
<i>Education</i>	

# Marketing

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## ○ Market Size and Trend

- Market size can be estimated by finding the number of potential consumers for your product in the area or areas that you are going to sell them and figuring out when their patterns of consumption rise and fall
  - For example, oyster markets are especially strong in the period before Thanksgiving and extending to Christmas
  - These are seasonal consumption patterns and there are others that affect shellfish production
- A key factor in marketing is trying to find areas where your products will be salable throughout most of the year and tuning your production to meet the demand in those areas
- One of the benefits of aquaculture is that you have the potential to market products on a year-round basis instead of the seasonal availability that affects most wild harvest crops
  - Provided you have been strategic with your supply availability

# Marketing

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## ◉ Location of Business

- The location of your business can mean a lot to your bottom line
- Being near your ultimate markets can help cut your transportation costs
  - Which, in these days of increased energy prices, can mean a lot to your bottom line.
- There are also benefits from being located in areas where there is a lot of traffic to your area
  - This can be effective if you are going to sell directly to consumers
- Properly sizing the vehicle with the load can also help cut costs

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# Personnel & Management

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## ● Personnel Management

- The management of your business is very important and will affect the ultimate success or failure of it
- Even in a small operation, you should have well thought out roles for each of the employees who will be involved in the operation
- If you are going to have more than ten (10) employees you should create an organizational chart showing the relationships of the employees and the supervisory roles of the managers

## ● Owners and Management Personnel

- Key to the operation of any business is the owners and managers
  - In most small businesses, these are the same individuals
- Describe who these will be, as well as the experience and skills that they bring to the business
  - Include any special competencies they may possess or licenses they may have that will be used in the conduct of the operations
- It is also crucial to think about what will happen if any of the key managers becomes incapacitated or unable to continue working
  - Having a contingency plan will help the company continue
  - Make sure other company members know that plan

# Personnel & Management

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## ● Personnel Responsibilities and Duties

- Describe the personnel in the company and what their roles and responsibilities will be
  - In most cases, this will be necessary for only a few positions
  - In larger companies, it will require more assistance and therefore more carefully thought out job descriptions
  - Seasonal, as well as full-time, employees should be considered when developing this section
- Provide the resumes for key employees when developing this section so that investors can see the experience that they bring to it

## ● Support

- There are many support staff needed in even a small business unless you are going to do all jobs yourself (not advised!)
- Consider the following that are a part of your business since you may employ all or some of them in the overall operation:
  - **Attorney**
  - **Accountant/Bookkeeper**
  - **Insurance Agent**
  - **Consultant/Advisor**

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# Financial Data

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- This will be one of the most important sections in your business plan
  - Since it is here that you will project
    - What you require
    - What you will spend
    - What you envision being made as income
    - How that will affect the overall performance of the operation.
- It is important for your aquaculture business to project financial statements for the next 2-5 years depending on a loan application, long-term goals, or a new enterprise decision
  - Projected financial statements are also referred to as pro forma budgets
  - By projecting your business's financial statements you discover whether your business will anticipate a profit over the long term

# Financial Data

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- The three financial statements show different financial measures for a business.
  - **Balance Sheet (Solvency).**
  - **Income Statement (Profitability)**
  - **Cash Flow (Liquidity)**

# Financial Data

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- The three financial statements show different financial measures for a business.
  - **Balance Sheet (Solvency)**—a detailed listing of assets, liabilities, and net worth at a given point.
    - It answers the basic question, “How much is your aquaculture business worth?”
    - Importance
      - Net worth is the best measure of an aquafarm’s financial position
      - It organizes what the business owns (assets) and what it owes (liabilities), which ultimately determines farm solvency
      - *What is your business’ financial position?*
  - **Income Statement (Profitability)**—a listing of income, expense, and profit for business operation in a calendar year.
  - **Cash Flow (Liquidity)**—records time and size of cash inflows and outflows that occur over a calendar year

# Financial Data

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- The three financial statements show different financial measures for a business.
  - **Balance Sheet (Solvency)**—a detailed listing of assets, liabilities, and net worth at a given point.
  - **Income Statement (Profitability)**—a listing of income, expense, and profit for business operation in a calendar year.
    - This statement includes inventories and depreciation
    - Importance
      - Profitability is the summary of all resources that have come into the aquafarm (revenue) and all resources that have left it (expense)
      - This equals the net income or net loss
      - *How did the aquafarm business do last year?*
  - **Cash Flow (Liquidity)**—records time and size of cash inflows and outflows that occur over a calendar year

# Financial Data

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- The three financial statements show different financial measures for a business.
  - **Balance Sheet (Solvency)**—a detailed listing of assets, liabilities, and net worth at a given point.
  - **Income Statement (Profitability)**—a listing of income, expense, and profit for business operation in a calendar year.
  - **Cash Flow (Liquidity)**—records time and size of cash inflows and outflows that occur over a calendar year
    - Liquidity differs from profitability because the cash flow statement only includes cash income or expenses, whereas the income statement also includes non-cash items such as depreciation and inventory adjustments
    - Importance
      - Liquidity is the ability of your aquafarm to generate enough cash to meet financial obligations as they come due without disrupting the normal operation of the farm business
      - The cash flow statement is a critical component of the business plan and will be reviewed by lenders
      - *Where was the cash used?*

# Income vs. Cash Flow Statements

Projected Income Statement	Cash Flow Budget
Cash income	Beginning cash balance
- Cash expenses	+ Cash income
- Depreciation	+ Capital sales
<b>= Profit (Loss)</b>	- Capital purchases
	+ Loan receipts
	- Loan principal payments
	+ Nonfarm receipts
	- Withdraws
	<b>= Ending cash balance</b>

# Financial Data

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- Most often the income and/or cash flow statements are used to make projections.
  - Projections are your best estimate of income and expenses over a period of time
  - Being conservative and realistic with your projections will help your business in the end
- The best way to start making any projections is to review your enterprise budgets and financial statements
  - From there you will be able to predict average costs and expenses over time
  - Your implementation strategy and sales projections should be reflected in the pro forma financial statement

# Enterprise Budgets

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- Farm enterprise budgets have long agricultural history
  - They are projections of costs and revenue for single activities on a farm, like raising corn or calves
  - On most state agricultural college websites, there are budgets adapted to local conditions that contain representative costs obtained from farmer surveys, interviews and other sources
- As the name suggests, enterprise budgets help plan only for one type of production on the farm
  - Farms generally produce more than one product, so the enterprise budget helps financial planning for only a portion of the farm activities

# Enterprise Budgets

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- ◉ Enterprise budgets are designed to be modified by individual users to more accurately depict their costs and financial situation
  - These budgets help the farmer project whether or not his or her enterprise might be profitable
  - 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 his costs and revenues, the enterprise budget can be a great help in constructing the cash-flow budget

## 2012 Cultchless (Single seed) Oyster Crop Budgets for Virginia

User Manual



Karen Hudson<sup>1</sup>, Dan Kauffman<sup>2</sup>, Thomas J. Murray<sup>1</sup> and Alexander Solomon<sup>3</sup>

<sup>1</sup>Virginia Institute of Marine Science, Virginia Sea Grant Marine Extension Program

<sup>2</sup>Virginia Tech, Virginia Seafood Agriculture Research and Extension Center

<sup>3</sup>Independent Economic Consultant

**VIMS** | WILLIAM & MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE

**Sea Grant**  
Virginia

 VirginiaTech

# Financial data

- 2012 data from Virginia
  - Needs to be tweaked for northeast
- Use as an example for reference

[https://www.vims.edu/research/units/centerspartners/map/aquaculture/docs\\_aqua/2012OysterBudgetUserManual.pdf](https://www.vims.edu/research/units/centerspartners/map/aquaculture/docs_aqua/2012OysterBudgetUserManual.pdf)

# Enterprise Budgets

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- The cultchless oyster crop enterprise budgets are intended as guidelines in the estimation of production costs and returns for Virginia aquafarmers growing triploid oysters
  - 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

# Enterprise Budgets

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- An important note of caution to the user—these budgets stop at the “farm gate”
  - The budgets assume that a wholesale distributor does the marketing.
- Thus marketing costs are not considered in the budgets
  - such as additional refrigerated transportation, shipping costs and packaging materials
  - 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
- It is reasonable to expect a retail sales channel for the lower end of the small-scale budget
  - However, as production increases, a percentage of products will likely be diverted to the wholesale channel

# Assumptions

## ESTIMATED COSTS AND RETURNS PER CROP OF OYSTERS

<u>Item</u>	<u>Key Assumptions</u>	<u>Target Annual Oyster Sales</u>	<b>100,000</b>
Avg Market Price	\$0.60	Oyster Seed Planted	200,000
Oyster Mortality Rate	50%	Year 1 Harvest (crop 1)	20,000
% of Total Oysters Harvested in year 1	20%	Year 2 Harvest (crops 1 & 2)	100,000
% of Total Oysters Harvested in year 2	80%		

MY FARM

# Labor Calculations

<u>No. Planted</u>	<u>No. hrs per yr</u>		<u>Total Number</u>	<i>FT = 2080 hrs, PT = 960 hrs</i>	
	<u>no. hrs FT</u>	<u>no. hrs PT</u>		<u>No. Planted</u>	<u>No. Employees</u>
1 to 100,000	0	960	960	1 to 100,000	1 part time
100,000 to 200,000	2080	0	2080	100,000 to 200,000	1 full time
200,000 to 300,000	2080	960	3040	200,000 to 300,000	1 full time, 1 part time
300,000 to 400,000	2080	1920	4000	300,000 to 400,000	1 full time, 2 part time
400,000 to 700,000	4160	960	5120	400,000 to 700,000	2 full time, 1 part time

# Estimated Costs per Crop

## ESTIMATED COSTS AND RETURNS PER CROP OF OYSTERS

Item	Key Assumptions
Avg Market Price	\$0.60
Oyster Mortality Rate	50%
% of Total Oysters Harvested in year 1	20%
% of Total Oysters Harvested in year 2	80%

Target Annual Oyster Sales **100,000**

Oyster Seed Planted	200,000
Year 1 Harvest (crop 1)	20,000
Year 2 Harvest (crops 1 & 2)	100,000

### MY FARM

ITEM	UNIT	QUANTITY of UNITS	PRICE/Cost per Unit	YEAR 1	YEAR 2
<b>1. Gross Receipts</b>					
Market Oyster Revenue	Single Oyster	100,000	\$0.60	\$ 12,000.00	\$ 60,000.00
<b>2. Operating Expenses</b>					
Triploid Oyster Seed	1,000	200	\$ 20.00	\$ 4,000.00	\$ 4,000.00
Full Time Labor	Hours	2,080	\$ 12.00	\$ 24,960.00	\$ 24,960.00
Part Time Labor	Hours	0	\$ 9.00	\$ -	\$ -
Employment Tax (FICA)	Taxable Total Wages (\$)	24,960	7.65%	\$ 1,910.00	\$ 1,910.00
Workers Compensation	Annual Expense per \$100 of payroll	250	\$ 4.00	\$ 998.40	\$ 998.40
Boat Fuel	Annual Gallons	0	\$ 3.50	\$ -	\$ -
Truck Fuel	Annual Gallons	100	\$ 3.50	\$ 350.00	\$ 350.00
Boat Maintenance	Annual	0	\$ 500.00	\$ -	\$ -
Truck Maintenance	Annual	1	\$ 200.00	\$ 200.00	\$ 200.00
Misc. Equipment Maintenance (upweller, sorter, pumps, etc)	Annual	0	\$ 500.00	\$ -	\$ -
Expendable Supplies (baskets etc)	Start-Up Cost	1	\$ 2,940.00	\$ 2,940.00	
Misc. Supplies	1 lot per cage	84	\$ 1.00	\$ 84.00	\$ 84.00
Ice for summer harvesting	Annual	1	\$ -	\$ -	\$ -
Other (office supplies, electricity, etc)	Annual	1	\$ -	\$ -	\$ -
<b>Total Operating Expenses</b>				<b>\$ 35,442.40</b>	<b>\$ 32,502.40</b>
<b>3. Return over Operating Expenses</b>				<b>\$ (23,442.40)</b>	<b>\$ 27,497.60</b>

# Estimated Costs per Crop

ITEM	UNIT	QUANTITY of UNITS	PRICE/Cost per Unit	YEAR 1	YEAR 2
<b>4. Fixed Costs</b>					
Annual interest on loan (Boat, Motor, Trailer)	Sum of 12 monthly payments	1		\$705.00	\$ 611.00
Boat Insurance	Annual Expense	0	\$ 884.00	\$ -	\$ -
Truck Insurance	Annual Expense	1	\$ 400.00	\$ 400.00	\$ 400.00
Business Liability Insurance	Annual Expense	1	\$ 400.00	\$ 400.00	\$ 400.00
Legal Fee (Business Entity Structuring)	Start-Up Cost	1	\$ 500.00	\$ 500.00	
LLC Registration Fee	Annual Expense	1	\$ 50.00	\$ 50.00	\$ 50.00
Accounting Fees (Tax Accounting)	Annual Expense (est)	1	\$ 300.00	\$ 300.00	\$ 300.00
Business Property Tax (Boat)	Annual Expense	0	\$ 400.00	\$ -	\$ -
<b>Depreciation Expense (Non - Cash)</b>					
Boat (includes motor & trailer)	Annual Expense (non-cash)	0	\$ 2,806.00	\$ -	\$ -
Hoist -hand winch	Annual Expense (non-cash)	0	\$ 343.00	\$ -	\$ -
Truck	Annual Expense (non-cash)	1	\$ 5,000.00	\$ 5,000.00	\$ 5,000.00
Cages	Annual Expense (non-cash)	84	\$ 20.00	\$ 1,680.00	\$ 1,680.00
Bags - seed	Annual Expense (non-cash)	200	\$ 1.00	\$ 200.00	\$ 200.00
Bags - grow out	Annual Expense (non-cash)	200	\$ 1.00	\$ 200.00	\$ 200.00
Refrigeration Unit - truck	Annual Expense (non-cash)	0	\$ 1,815.00	\$ -	\$ -
Refrigeration Unit - cold room (10'x10')	Annual Expense (non-cash)	0	\$ 1,352.00	\$ -	\$ -
Floating Upweller	Annual Expense (non-cash)	0	\$ 1,215.00	\$ -	\$ -
Sorter	Annual Expense (non-cash)	0	\$ 1,429.00	\$ -	\$ -
<b>Total Fixed Costs</b>				<b>\$ 9,435.00</b>	<b>\$ 8,841.00</b>

# Estimated Costs per Crop

ITEM	UNIT	QUANTITY of UNITS	PRICE/Cost per Unit	YEAR 1	YEAR 2
<b>5. Permitting &amp; Ground Leasing Costs (start-up costs)</b>					
<b>Shellfish Ground Leasing</b>					
Application Fee (NONREFUNDABLE)		1	\$ 25.00	\$ 25.00	\$ -
Advertising Cost In the Newspaper		0	cost varies	\$ -	\$ -
Surveying: VMRC Survey for Lease Assignment		1	\$ 250.00	\$ 250.00	\$ -
Additional Plat Charge (if needed)		0	\$ 75.00	\$ -	\$ -
Recording Fee for Each Assignment & Plat		0	\$ 12.00	\$ -	\$ -
Assignment Fee for Each Assignment & Plat		1	\$ 1.50	\$ -	\$ -
Rental Amount (Per Acre/Per Yr)		4	\$ 1.50	\$ 6.00	\$ 6.00
<b>Shellfish Aquaculture Permits</b>					
Commercial Fisherman Registration License	per year	1	\$ 190.00	\$ 190.00	\$ 190.00
Oyster Aquaculture Product Owner's Permit	per year	1	\$ 10.00	\$ 10.00	\$ 10.00
Oyster Aquaculture Harvester's Permit	per person per year (hired labor)	1	\$ 5.00	\$ 5.00	\$ 5.00
Joint Permit Application for Floating Upweller		0	\$ 25.00	\$ -	\$ -
<b>Total Permitting &amp; Ground Leasing Expenses</b>				<b>\$ 486.00</b>	<b>\$ 211.00</b>
<b>Total Annual Expenses</b>				<b>\$ 45,363.40</b>	<b>\$ 41,554.40</b>
<b>6. Estimated Pre-Tax Return to Land, Risk, and Management</b>				<b>\$ (33,363.40)</b>	<b>\$ 18,445.60</b>

**SENSITIVITY TABLE**

The following table uses the information in the spreadsheet to provide a range of returns in year two based on mortality and market price. Red numbers in parenthesis refer to negative returns. Keep in mind cost for marketing is not included in the calculations.

Year 2 Pre-tax Return Sensitivity: Mortality and Market Price						
Mkt Price	Mortality Rate					
	30%	35%	40%	45%	50%	
\$ 0.10	(\$29,234)	(\$29,676)	(\$30,206)	(\$30,825)	(\$31,554)	
\$ 0.11	(\$28,234)	(\$28,676)	(\$29,206)	(\$29,825)	(\$30,554)	
\$ 0.12	(\$27,234)	(\$27,676)	(\$28,206)	(\$28,825)	(\$29,554)	
\$ 0.13	(\$26,234)	(\$26,676)	(\$27,206)	(\$27,825)	(\$28,554)	
\$ 0.14	(\$25,234)	(\$25,676)	(\$26,206)	(\$26,825)	(\$27,554)	
\$ 0.15	(\$24,234)	(\$24,676)	(\$25,206)	(\$25,825)	(\$26,554)	
\$ 0.16	(\$23,234)	(\$23,676)	(\$24,206)	(\$24,825)	(\$25,554)	
\$ 0.17	(\$22,234)	(\$22,676)	(\$23,206)	(\$23,825)	(\$24,554)	
\$ 0.18	(\$21,234)	(\$21,676)	(\$22,206)	(\$22,825)	(\$23,554)	
\$ 0.19	(\$20,234)	(\$20,676)	(\$21,206)	(\$21,825)	(\$22,554)	
\$ 0.20	(\$19,234)	(\$19,676)	(\$20,206)	(\$20,825)	(\$21,554)	
\$ 0.21	(\$18,234)	(\$18,676)	(\$19,206)	(\$19,825)	(\$20,554)	
\$ 0.22	(\$17,234)	(\$17,676)	(\$18,206)	(\$18,825)	(\$19,554)	
\$ 0.23	(\$16,234)	(\$16,676)	(\$17,206)	(\$17,825)	(\$18,554)	
\$ 0.24	(\$15,234)	(\$15,676)	(\$16,206)	(\$16,825)	(\$17,554)	
\$ 0.25	(\$14,234)	(\$14,676)	(\$15,206)	(\$15,825)	(\$16,554)	
\$ 0.26	(\$13,234)	(\$13,676)	(\$14,206)	(\$14,825)	(\$15,554)	
\$ 0.27	(\$12,234)	(\$12,676)	(\$13,206)	(\$13,825)	(\$14,554)	
\$ 0.28	(\$11,234)	(\$11,676)	(\$12,206)	(\$12,825)	(\$13,554)	
\$ 0.29	(\$10,234)	(\$10,676)	(\$11,206)	(\$11,825)	(\$12,554)	
\$ 0.30	(\$9,234)	(\$9,676)	(\$10,206)	(\$10,825)	(\$11,554)	
\$ 0.31	(\$8,234)	(\$8,676)	(\$9,206)	(\$9,825)	(\$10,554)	
\$ 0.32	(\$7,234)	(\$7,676)	(\$8,206)	(\$8,825)	(\$9,554)	
\$ 0.33	(\$6,234)	(\$6,676)	(\$7,206)	(\$7,825)	(\$8,554)	
\$ 0.34	(\$5,234)	(\$5,676)	(\$6,206)	(\$6,825)	(\$7,554)	
\$ 0.35	(\$4,234)	(\$4,676)	(\$5,206)	(\$5,825)	(\$6,554)	
\$ 0.36	(\$3,234)	(\$3,676)	(\$4,206)	(\$4,825)	(\$5,554)	
\$ 0.37	(\$2,234)	(\$2,676)	(\$3,206)	(\$3,825)	(\$4,554)	
\$ 0.38	(\$1,234)	(\$1,676)	(\$2,206)	(\$2,825)	(\$3,554)	
\$ 0.39	(\$234)	(\$676)	(\$1,206)	(\$1,825)	(\$2,554)	
\$ 0.40	\$766	\$324	(\$206)	(\$825)	(\$1,554)	
\$ 0.41	\$1,766	\$1,324	\$794	\$175	(\$554)	
\$ 0.42	\$2,766	\$2,324	\$1,794	\$1,175	\$446	
\$ 0.43	\$3,766	\$3,324	\$2,794	\$2,175	\$1,446	
\$ 0.44	\$4,766	\$4,324	\$3,794	\$3,175	\$2,446	
\$ 0.45	\$5,766	\$5,324	\$4,794	\$4,175	\$3,446	
\$ 0.46	\$6,766	\$6,324	\$5,794	\$5,175	\$4,446	
\$ 0.47	\$7,766	\$7,324	\$6,794	\$6,175	\$5,446	
\$ 0.48	\$8,766	\$8,324	\$7,794	\$7,175	\$6,446	
\$ 0.49	\$9,766	\$9,324	\$8,794	\$8,175	\$7,446	
\$ 0.50	\$10,766	\$10,324	\$9,794	\$9,175	\$8,446	

**Table 1. Evaluating the Line items based on Percentage of Total Cost of the budget**

*\*Shows that Labor (including workers comp) and seed are the two biggest expenses*

	Percentage of Total Annual Expenses
	YEAR 2
<b>2. Operating Expenses</b>	
Triploid Oyster Seed	9.6%
Labor (FT &PT, FICA & Workers comp)	67.1%
Fuel (boat and truck)	0.8%
Manitenance (vehicle and equipment)	0.5%
Misc Supplies	0.2%
<b>TOTAL</b>	<b>78.2%</b>
<b>4. Fixed Costs</b>	
Debt Servicing (Barge, Motor, Hoist)	1.5%
Insurance (boat, truck, business)	1.9%
Legal Fees (structuring, LLC, accounting)	0.8%
Business Property Tax (Boat)	0.0%
<b>Depreciation Expense (Non - Cash)</b>	
Barge, Motor, Hoist	0.0%
Truck	12.0%
Gear (cages and bags)	5.0%
Refrigeration Unit - truck	
Walk-In Cold Room (10'x24')	
Nursery Equip (flupsy, sorter)	
<b>TOTAL</b>	<b>21.3%</b>

**Table 2. Cost of line items per market oyster**

**Total cost of production based on budget = \$ 0.42**

	Cost per market oyster
<b>2. Operating Expenses</b>	
Triploid Oyster Seed	\$ 0.04
Labor (FT &PT plus FICA)	\$ 0.28
Fuel (boat and truck)	\$ 0.00
Manitenance (vehicle and equipment)	\$ 0.00
Misc. Supplies	\$ 0.00
<b>TOTAL</b>	<b>\$ 0.33</b>
<b>4. Fixed Costs</b>	
Debt Servicing (Barge, Motor, Hoist)	\$ 0.01
Insurance (boat, truck, business)	\$ 0.01
Legal Fees (structuring, LLC, accounting)	\$ 0.00
Business Property Tax (Boat)	\$ -
<b>Depreciation Expense (Non - Cash)</b>	
Barge, Motor, Hoist	\$ -
Truck	\$ 0.05
Gear (cages and bags)	\$ 0.02
Refrigeration Unit - truck	
Walk-In Cold Room (10'x24')	
Nursery Equip (flupsy, sorter)	
<b>TOTAL</b>	<b>\$ 0.09</b>

# SHELLFISH PRODUCTION METHODS AND ECONOMICS- EASTERN OYSTER

MARC J. TURANO, PH.D  
NC SEA GRANT

2013 NC Aquaculture Development Conference

[https://www.ncaquaculture.org/pdfs/2013\\_marine\\_session/turano\\_economics.pdf](https://www.ncaquaculture.org/pdfs/2013_marine_session/turano_economics.pdf)

Developing tools for the growth of the North Carolina Shellfish Industry: Site Condition Assessment and Economic Impacts PI/Co-PI: Marc J. Turano, Martin Posey, and Troy Alphin  
Collaborators: Brian Efland, Douglas Wakeman

# Floating Bags

- **Stocking**
  - ¼ bag full
  - Appropriate mesh size
- **Sorting/restocking**
  - 1/3 bag full
- **Cleaning**
  - Flipping bags during fouling season
  - Changing bag sizes when needing

• ***ITS MORE WORK THAN IT SOUNDS!***



# Assumptions

## FLOAT BAGS-ECONOMICS

- **Assumptions**
  - Lease Size= 3 acres
  - Center lines attached to sand anchors- no pilings
  - 300' lines, ~100 bags/line
  - Facilities/boat necessary to harvest/maintain operation are already owned
  - Permitting/licenses/application fees ARE included
  - Labor and maintenance are NOT included
- **Assumptions (Cont.)**
  - Based on desired gross income (\$40K)
  - 2 year cycle
    - 20% harvested in year 1
    - 80% harvested in year 2
  - 60% overall survival
  - Oyster price (\$0.35/oyster)
  - Final density per bag= 110

Desired Gross Income	\$40,000.00
Price of oysters sold (\$/oyster)	\$ 0.35
Survival rate for crop	60%
Final # oysters/flip bag	
Total oysters needed to produce gross \$\$	190,476
Oysters produced in year 1	20%
oysters produced in year 2	80%
Final # oysters/flip bag	110
Lease size	3

Note by authors:  
 Cost estimates are  
 over-estimated –  
 number of bags  
 required will be  
 less!

Input	UNIT	Price/unit	# units	YEAR 1	YEAR 2	
Gross Revenue	Single oyster	\$ 0.35	114290	\$ 8,000.30	\$ 32,001.20	
Supply Expenses						
2mm oyster seed	per 1000	\$ 7.75	200000	\$ 1,550.00	\$ -	
Spat Bags	per bag	\$ 5.00	10	\$ 200.00	\$ -	
1" Rope (200')	per 100'	\$ 75.00	2	\$ 150.00	\$ -	
3/8 Rope (3600')	per 1200' roll	\$ 162.00	3	\$ 486.00	\$ -	
Buoys	per buoy	\$ 24.00	50	\$ 1,200.00	\$ -	
Shackles	per shackle	\$ 9.00	48	\$ 432.00	\$ -	
Anchors	per anchor	\$ 12.00	48	\$ 576.00	\$ -	
Cage Floats	per float	\$ 4.00	2078	\$ 8,312.00	\$ -	
4mm nursery bags	per bag	\$ 4.75	25	\$ 118.75	\$ -	
9mm Cage Material	per bag	\$ 4.75	200	\$ 950.00	\$ -	
13mm Cage Material	per bag	\$ 4.75	800	\$ 3,800.00	\$ -	
SS cage clips	per clip	\$ 0.35	2000	\$ 700.00	\$ -	
Hog Rings	per box of 5000	\$ 85.00	1	\$ 85.00	\$ -	
Longline Clips	per clip	\$ 1.00	2000	\$ 2,000.00	\$ -	
Cable straps	per 1000	\$ 60.00	4000	\$ 240.00	\$ 240.00	
Permitting fees/Licenses						
Application fee	one time	\$ 200.00	1	\$ 200.00		
Rental Fee	per acre (annual)	\$ 10.00	3	\$ 30.00	\$ 30.00	
Renewal Fee	(every 5 yrs)	\$ 100.00	1	\$ 100.00		
Water column addendum	one time	\$ 100.00	1	\$ 100.00		
Water column yearly rental	per acre (annual)	\$ 100.00	3	\$ 300.00	\$ 300.00	
Dealer fee (per species)	annual	\$ 50.00	1	\$ 50.00		
Shellfish license	annual	\$ 25.00	1	\$ 25.00		
Lease Survey	one time	\$ 1,500.00	1	\$ 1,500.00	\$ -	
				<b>Total expenses</b>	<b>\$ 23,004.75</b>	<b>\$ 570.00</b>
				<b>Total Net</b>	<b>\$ (15,004.45)</b>	<b>\$ 31,431.20</b>

# Bottom Cages

- Single and double stacked cages
- Footing on bottom to keep out of sediment
- Cages attached to bottom line



# BOTTOM CAGES-MAINTENANCE

- Stocking/Restocking
  - Oyster seed stocked into spat bags, inside cages
  - Resorting and restocking into 4mm, 9mm bags, then cages directly
- Fouling
  - Must be pressure washed
  - Heavy gear
    - Requires refitting of vessel



# Assumptions

(based on Chesapeake Bay Oyster Company)

- **Assumptions**

- Lease Size= 3 acres
- Center lines attached to sand anchors- no pilings
- Facilities/boat necessary to harvest/maintain operation are already owned
- Permitting/licenses/application fees ARE included
- Labor/maintenance is not included

- **Assumptions (Cont.)**

- Based on desired gross income (\$40K)
- 2 year cycle
  - 20% harvested in year 1
  - 80% harvested in year 2
- 60% overall survival
- Oyster price (\$0.35/oyster)
- Final density per bag= 1000

Input	UNIT	Price/unit	# units	YEAR 1	YEAR 2
Gross Revenue	Single oyster	\$ 0.35	114290	\$ 8,000.30	\$ 32,001.20
Input	Unit	Price/Unit	# units	Total cost	
Triploid Seed (2mm)	per 1000	\$7.75/1000	200000	\$ 1,550.00	
Spat Bags	per bag	\$ 5.00	20	\$ 100.00	
3/16" mesh bags (4mm)	per bag	\$ 4.50	120	\$ 540.00	
3/16" mesh bags when using 1/2x1/2 seed cages	per bag	\$ 4.50	24	\$ 108.00	
3/8" mesh bags (9mm)	per bag	\$ 4.50	250	\$ 1,125.00	
Double stack 3x4 cages	per cage	\$ 105.00	67	\$ 7,035.00	
sinking longline rope(ft.)	per foot	\$ 0.12	400	\$ 48.00	
bridle line(ft.)	per foot	\$ 0.08	1700	\$ 136.00	
pre-assembled tag lines	per line	\$ 5.00	67	\$ 335.00	
hex anchors	per anchor	\$ 40.00	2	\$ 80.00	
<b>Permitting fees/Licenses</b>					
Application fee	one time	\$ 200.00	1	\$ 200.00	
Rental Fee	per acre (annual)	\$ 10.00	3	\$ 30.00	\$ 30.00
Renewal Fee	per app (every 5 yrs)	\$ 100.00	1	\$ 100.00	
Water column addendum- app fee	one time	\$ 100.00	1	\$ 100.00	
Water column yearly rental	per acre (annual)	\$ 100.00	3	\$ 300.00	\$ 300.00
Dealer fee (per species)	annual	\$ 50.00	1	\$ 50.00	
Shellfish license	annual	\$ 25.00	1	\$ 25.00	
Lease Survey	one time	\$ 1,500.00	1	\$ 1,500.00	\$ -
		<b>Total expenses</b>		<b>\$ 13,362.00</b>	<b>\$ 570.00</b>
		<b>Total Net</b>		<b>\$ (5,361.70)</b>	<b>\$ 31,431.20</b>

# Summary of Turano Financials

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Technology	Year 1	Year 2
Floating Bag	-\$15,004.45	\$31,431.20
Bottom Cage	-\$ 5,361.70	\$31,431.20

- My thoughts:
  - Hard to believe that floating bag set-up is that much more expensive than bottom cages!
  - Be very careful as to what information you glean from these reports!

# Financial Data

---

- Can use an enterprise budget such as shown to
  - Develop the financial projections required for your business plan
  - Describe farm profitability anticipated
  - Look at scale required to provide the level of income that you need

# What are the parts?

- 1) Executive Summary
- 2) Business Description
- 3) Products & Markets
- 4) Production
- 5) Marketing
- 6) Personnel and Management
- 7) Financial Information
- 8) Appendices and Supporting Documents



# It's done!

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## Options:

- 1) Put it on the shelf and never look at it again!
- 2) Pull it out whenever someone needs to see it, e.g. lending institution
- 3) Implement the plan and stick to it come "hell or high water"
- 4) Use it as an dynamic and evolving plan that you change as your business changes

# Management - Recordkeeping

## Importance and Uses of Farm Records

These are written statements or collection of facts and figures on a subject for a definite purpose. These records arise from the day-to-day transactions made by the farmer and should be accurate. They are used in identifying the strong as well as the weak areas of the farm business, in recognizing problems, and in determining solutions to those problems. They are used as the bases for the farmer's key decisions concerning farm operations.

**Gef Flimlin**

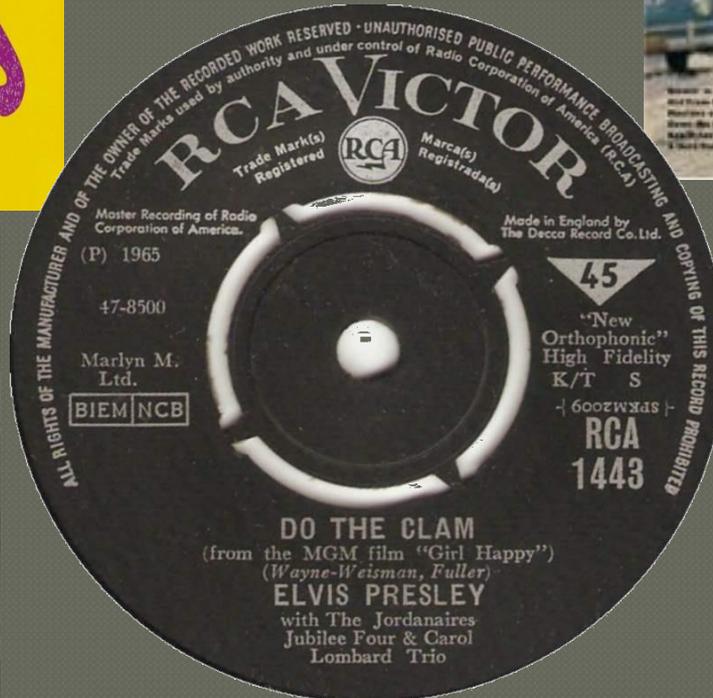
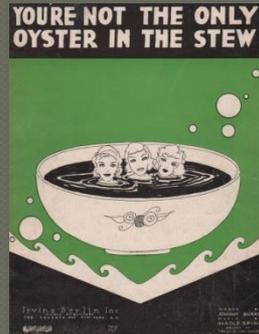
(Rutgers Cooperative Extension)

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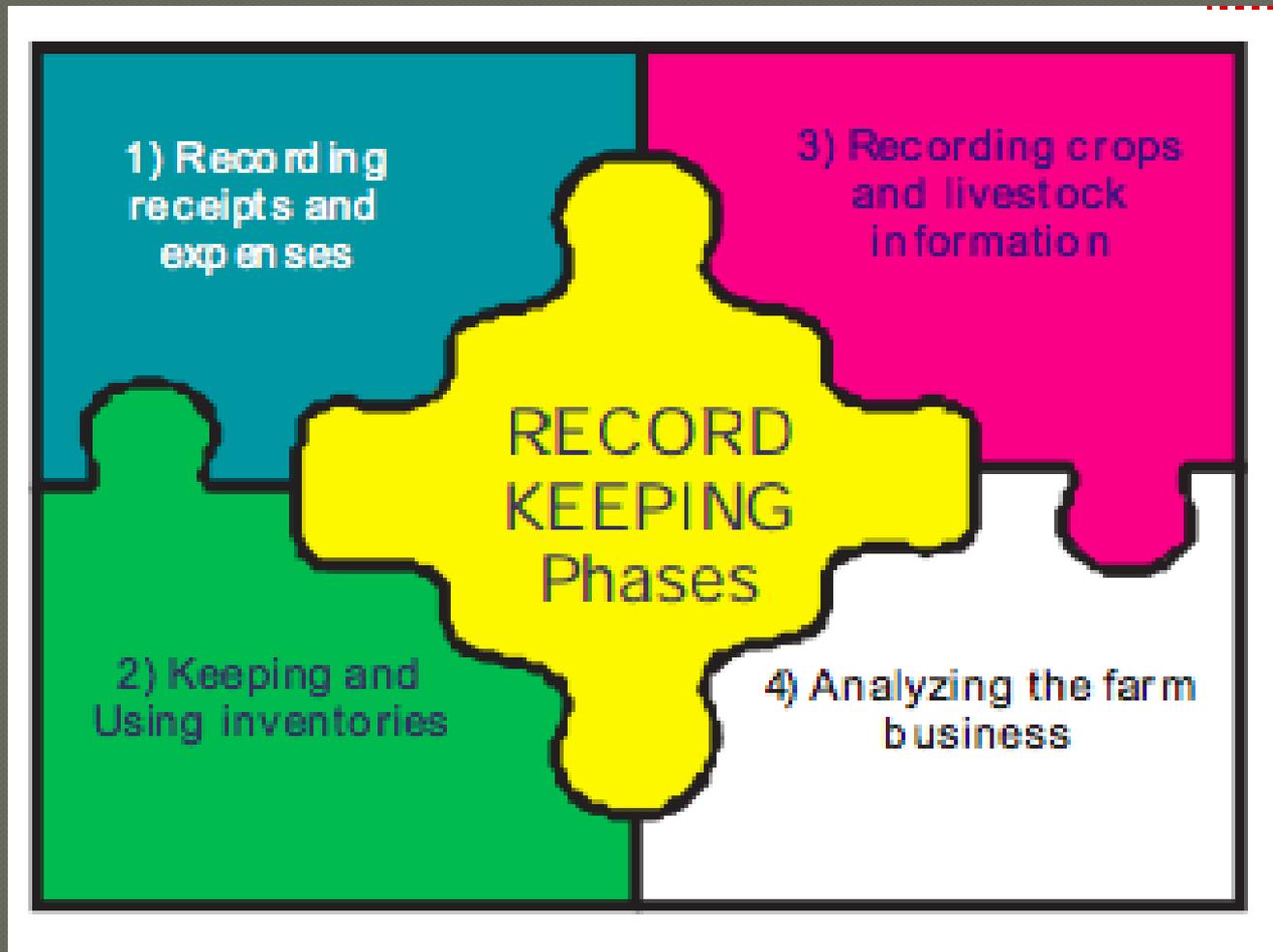
**Dale Leavitt**

(Roger Williams University)

# What recordkeeping isn't!



# *What is the purpose of keeping records?*



# What if I don't? (Scenario #1)

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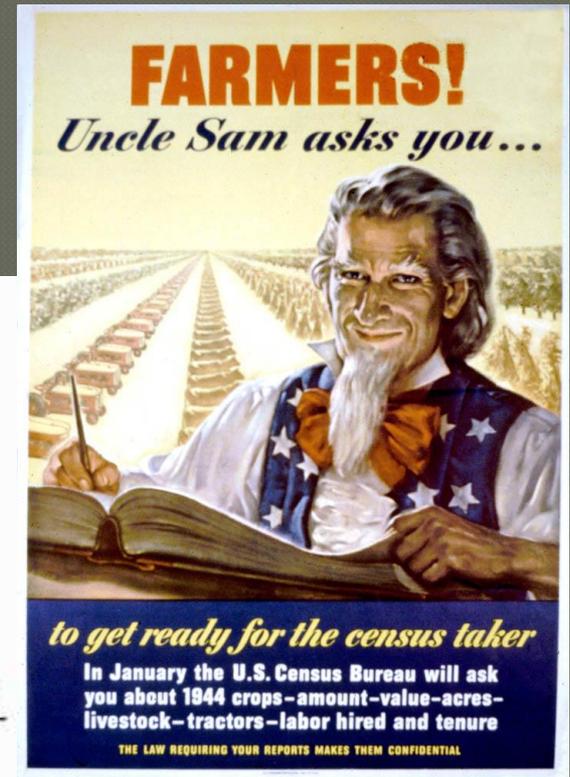
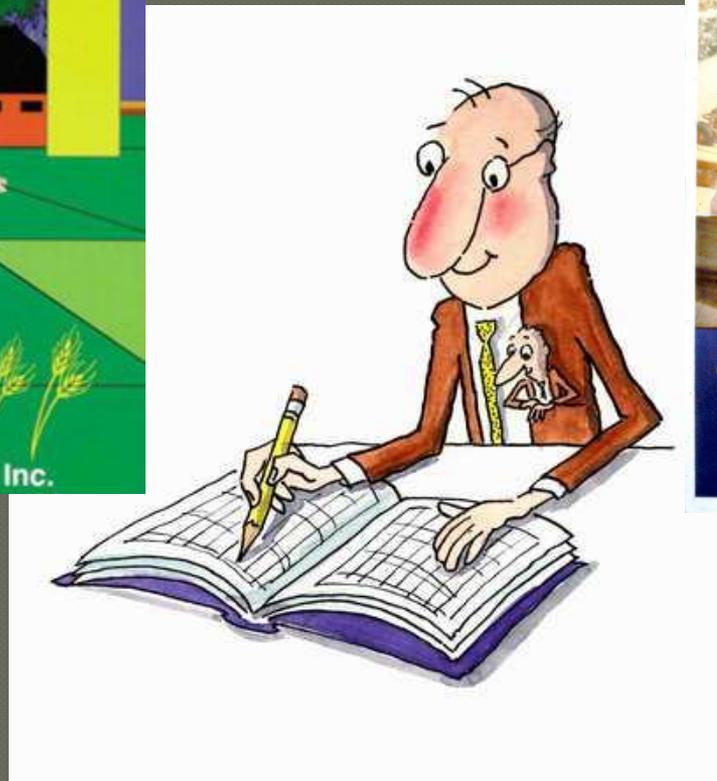
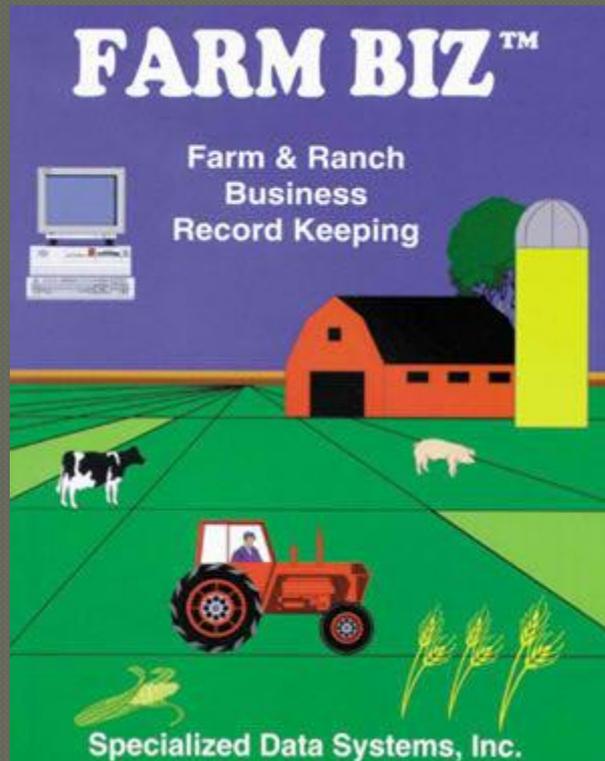
- Seed is ready to go to the field but you can't remember last year's densities
  - So you stock heavy because of time and # of oyster bags.
- If you had records, you might have noticed that overstocking your bags
  - Causes your growth rate to drop a little (say from 0.3 mm/day to 0.25 mm/day in the summer)
  - Your mortality jumps a little (from 1.0% to 3.0% in the summer and from 5.0% to 7.5% in the winter)
- If you started with 100,000 - 20mm oyster seed in July
  - You could market them during the next July
  - You'd have about 72,000 pieces for sale when you stocked them lightly (final density of 150 oysters per bag)
- However, if you stocked them heavier, (250 oysters per bag)
  - Then it would have taken you an extra month to get them to market size
  - Your harvest would only be about 53,000 oysters.
- **That is a difference of 1 month delay to market and a loss of 19,000 oysters!**

# What if I don't? (Scenario #2)

---

- Suppose you spent \$20 on something and didn't record it
  - This oversight raises your business' net income by \$20
- Overstating net income by \$20 causes
  - Your Social Security tax goes up by \$3.06 (\$20 times 15.3 percent for a self-employed person)
  - Your federal income tax to go up \$4 (assuming you were in the 20 percent federal income tax bracket)
  - Your state income tax to go up \$1 (assuming you were in the five percent state tax bracket)
  - The \$20 expense not recorded will cost you \$8.06 more in Social Security, federal income tax and state income tax.
- If you had recorded this expense in five minutes or 1/12 of an hour
  - You would have saved \$8.06 in 1/12 of an hour or \$96.72 per hour
- And it might not be the only \$20 that you didn't record!

Good farm records will not guarantee success, but success is very difficult to achieve without them!



# Types of Records to Keep

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- Financial records
  - Farm expenditures
  - Farm income
- Production records
  - Equipment inventory
  - Product inventory
  - Production measurements

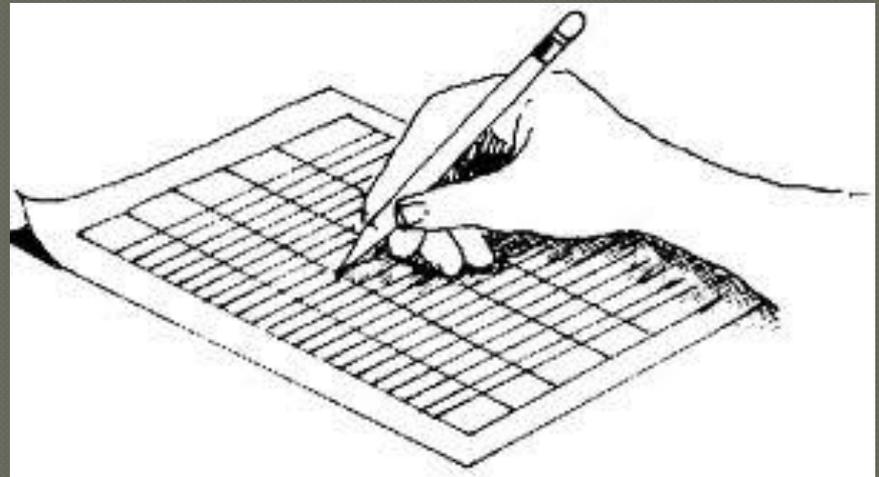
Record-keeping covers many different items of information to aid in all aspects of your farm, including:

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- Financial records for accounting, taxes, loans or insurance
- Meeting regulatory requirements
  - IRS income or production reporting to state agencies
- Eligibility for crop insurance or other farm programs
- Addressing requirements for organic certification or other farm certification standards
- Aiding in farm management decision-making, such as
  - performance of seed from different broodstock lines
  - stocking densities
  - equipment longevity, etc.

# What kind of info to keep?

- From a production standpoint, daily logbooks, detailing your activities for the day, are often a good way to start
- Logbooks can be augmented by pre-prepared forms of specific observations (e.g. water quality) that you intentionally record on a regular basis
- Information such as .... are all good things to record
  - daily weather conditions
  - daily water temperature
  - daily or weekly water transparency
  - weekly occurrence of predators
  - weekly biofouling conditions



# Production Records

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- ◎ Two general categories of information are important,
  - inventory of what resources you have on the farm (equipment and product)
  - accounts of those operations that influence the overall production of your farm

# Resource Inventories

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- Lists of gear or equipment on hand
  - Updated lists makes it much easier to determine your preparedness for production needs and future equipment purchases.
    - e.g., knowing your inventory of oyster growout bags of various mesh sizes allows you to plan for rapid expansion in volume of your seed during the summer period.
  - Running short of gear can set you back in execution of routine maintenance of your seed

# Resource Inventories

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- Identities of seed source and strains
  - Most important if you purchase seed from multiple hatcheries or nurseries
  - Keeping specific lots of animals separate and routinely inventorying the condition of those stocks will provide important information on performance that will aid you in future decisions about seed purchases and/or placements

# Resource Inventories

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- Amounts, size and distribution of each category of seed
  - Routine inventory of product amounts, size and holding location will provide, over the long term, critical data on survival and growth of specific groupings of product
  - In addition, generating diagrams or maps of product placement on the farm will reduce confusion as to source and year class of individual groups
  - While you may remember from one week to the next, tracking performance of your seed/fingerlings across the breadth of your farm from year to year is a near impossible task that is best recorded and archived for future reference

A resource inventory is usually recorded in your log book or entered into a computer program at regular intervals, on the scale of months

Field notes on paper should be used and transferred onto a good ledger or onto a computer

# Operations Records

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- ◉ Water quality measurements
  - Temperature, salinity, water transparency (Secchi disk), tide stage and a variety of other parameters that may be important to your operations should be recorded on a daily basis

# Operations Records

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## ◉ Weather conditions

- Weather plays a big role in the performance of your stocks
- It is important to record times of heat waves, major storms, severe rain, and ice conditions
  - May be critical for insurance purposes
- These influences on your production can be balanced against your shellfish and gear management decisions

# Operations Records

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## ● Stocking density

- Note stocking densities by mesh size
  - Two liters of seed per bag or four?
  - How many clam seed per plot?
  - How many oysters in my largest mesh bag?
- Can I overstock my bags and still get a reasonable growth rate?
- It may take multiple years of observation to measure what nursery/growout strategy works best for you at your site
- Remembering what happened two years ago is very difficult without good records to refer back to

# Operations Records

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- ◉ Watching for predators on site
  - Important to know both what predators show up AND when they tend to show up
  - Knowing when to look for starfish or crabs that have settled into your oyster bags are important things to track
  - When should you expect cow nosed rays?
  - It allows you to anticipate their impact and work to deter their predation on your stocks

# Operations Records

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- ◎ Observations of fouling on gear
  - Water supply and food flux to your shellfish can be restricted if fouling gets too heavy
  - However, fouling development varies with environmental conditions
    - so knowing the patterns of fouling development can help you plan fouling removal
  - Careful watchfulness will allow to anticipate backup growout gear requirements if it needs to be changed out

# Operations Records

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## ◎ Recognition of disease problems

- Disease is a common problem in high density monocultures
- Unexplained mortality or growth suppression may require outside assistance by an animal health professional
- Detailed accounting of the progression of the situation, along with details of the growing environment, are required to aid in a diagnosis or recommend a solution to the problem

# Operations Records

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- ◉ How long does it actually take to get something done?
  - You need good time awareness/knowledge to develop a predictable work schedule
  - Being able to anticipate required work and knowing the time needed to complete the job will allow the farmer to develop that work schedule to ensure that all essential tasks are completed

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Having data allows you to interpret  
and adapt your farm activities to  
ensure a successful operation.

# Recordkeeping

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- ◎ What does this record keeping effort look like?
  - It can be as simple as writing notes in a daily diary or logbook that summarizes your activities and observations for the day
  - Or it can be as sophisticated as custom designed software that you install on your computer

# Recordkeeping

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- ◎ The final point about recordkeeping is to make sure that you use the information once it has been compiled
  - Maintaining your own details as to what worked and what didn't is essential for you to operate your farm in a productive and profitable manner
- ◎ Whatever the case, the effort required to maintain the records needs to be minimal and easy, to ensure that the records are consistently collected

No matter what records you keep, protecting those records from water damage, fire, theft or hungry dogs is a final important step, as those records are your key to a successful business.

A back up set is not a bad idea, either



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# Types of data collection sheets

## Record Keeping - Water Quality

### Procedure:

**Secchi Disk** - The Secchi depth should be measured once a week

- 1 Lower the disk vertically into the water until it is no longer visible
- 2 Raise it again until the black and white quadrants can just be made out
- 3 Note the depth of the disk at this point using the markings on the rope (markings are approximately 1m apart)
- 4 Be sure to note the date and time of each measurement, the time of that day's low tide, the total depth of the sampled water column, and the environmental conditions such as sea state, precipitation, air temperature, and other weather observations

**Temperature Logger** - You will receive a new logger every three months

- 1 Place the temperature logger in its waterproof container and affix it to an object in your work area, such as one of your cages
- 2 Note the location of the logger as well as its estimated depth or its estimated height off the bottom

20__	Date	Time	Secchi Depth	Low Tide	Total Depth	Environmental Conditions	Location and Placement of Logger
June							
July							
August							
September							
October							
November							

**Wildlife Observations (List Species of Fish, Invertebrates, Mammals, Reptiles Etc. Observed at Farm, include date, species, and abundance**

**Submerged Aquatic Vegetation Presence: Note presence of SAV species (kelp, eelgrass, wigeon grass or other) on or abutting your farm-included location, date observed, species, and abundance**

## Record Keeping - Predators

### Procedure:

- 1 Select one day per month to make observations of potential predators in your system
- 2 On that day, make observations as you tend your gear about what predators are present.
- 3 Record on the table below what predators you observe over the course of your day's work
- 4 If a specific predator is highly abundant, please note on the record sheet what percentage of the gear the predator is
- 5 If you observe any other creature that you think is a potential predator, please note the occurrence on this sheet, photograph it, and inform the Field Technician for identification

### Predators

Presence (+) with % age occurrence if abundant.

2006	Date:	June	July	Aug	Sept	Oct	Nov	Dec
<b><u>Invertebrates</u></b>								
	Green Crab							
	Lady Crab							
	Blue Crab							
	Spider Crab							
	Rock Crab							
	Asian Shore Crab							
	Mud Crab							
	Horseshoe Crab							
	Lobster							
	Whelk							
	Moon Snail							
	Oyster Drill							
	Sea Star							
	Oyster Flatworm							
	Milky Ribbon Worm							
<b><u>Vertebrates</u></b>								
	Cownose Ray							
	Flounder							
	Drum							
	Northern Puffer							
	Tautog							
	Waterfowl							
<b><u>Other</u></b>								

### Other Information:

**Photographs Taken** (Please record photo number and subject matter on back of sheet)

## Record Keeping - BioFouling & Nuisance Aquatic Species

### Procedure:

- 1 Identify one clean bag or tray as the test cage for the biofouling observations
- 2 Every other week, pull the same cage and record your observations on the fouling community on the bag
- 3 Take a photograph of the tray. Note Roll ID and exposure number below
- 4 Note the presence of any of the most common fouling organisms (refer to the Pests Brochure) by placing a (+) in the column
- 5 If present in abundance, estimate the percent of the bag or tray that is covered with the fouling pest and record that in the column
- 6 If you observe something that you do not recognize but could be a problem, note its presence, photograph it, and point it out to one of the field technicians when convenient
- 7 If the bag or tray becomes fouled to the point where you must clean it, note that in the record sheet, clean and continue as before

### Fouling Species/Pests

Presence (+) with % age coverage if abundant.														
2006	Date:	June	June	July	July	Aug	Aug	Sept	Sept	Oct	Oct	Nov	Nov	Dec
<u>Algae</u>														
Deadman's Fingers														
Sea Lettuce														
Hollow Green Weed														
Rockweed														
<u>Other Algae - 1</u>														
2														
3														
<u>Invertebrates</u>														
White Crust														
Star Tunicate														
Club Tunicate														
Sea Grape														
Mud Worm														
Hydroid														
Tube Worms														
Boring Sponge														
Acorn Barnacles														
Blue Mussels														
Eastern Oysters														
<u>Other Pests - 1</u>														
2														
<u>Bag or Tray</u>		<u>Mesh Size:</u>				<u>Material:</u>								

**Photographs Taken** (Please record photo number and subject matter on back of sheet)

**Other Information:**

# Recordkeeping

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Can it be a pain in the butt?

Yup.

Can it make you more productive?

Yup

Can it make or save you money?

Yup

Can it make you more profitable?

Yup

JUST DO IT.



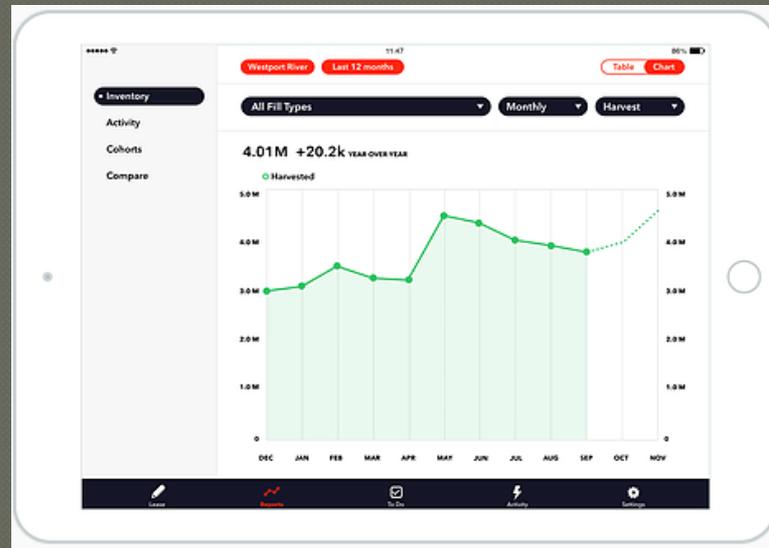
# A New Wave of Farm Management Software

○ Farm management software that streamlines data collection and analysis

○ For example:



- Cloud-based records
- Tablet/smart phone friendly
- Allows you to
  - Track inventory
  - Analyze data
  - Predict harvest



# Planning for losses

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- Can't really anticipate these!!!
  - Hedge your bets with insurance
- NAP (Noninsured Crop Disaster Assistance Program)
  - USDA Farm Services Agency (FSA)
  - Producers must annually:
    - Request NAP coverage by completing an application for coverage and paying a service fee by the CCC-established application closing date;
    - File a current crop-year report of acreage for the covered crop or commodity; and
    - Certify harvest production of each covered crop or commodity.
- Crop Insurance
  - USDA Risk Management Agency (RMA)
  - Only available for growing quahogs in certain areas
- Private Insurance
  - Recent discussion on ECSGA website/listserv

# Assisting Agencies

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## ○ USDA Farm Services Agency

- RI (Entire State)
  - 60 Quaker Lane Suite 49  
Warwick, RI 02886
  - Phone:
    - County Office: (401) 828-3120 Option 2
    - Farm Loan Office: (401) 828-3120 Option 3
    - Fax: 855-924-4567
  - Hours: 8:00 am to 4:30 pm
  - <https://www.fsa.usda.gov/state-offices/Rhode-Island/index>
- MA (Plymouth/Barnstable/Bristol Counties)
  - 8 Thatcher Lane  
Wareham, MA 02571
  - Phone
    - County Office: 508-295-5151
    - Fax: 855-596-7670
  - Hours: 8:00 am to 4:30 pm
  - <https://offices.sc.egov.usda.gov/locator/app?state=ma&agency=fsa>

# State Aquaculture Organizations

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## ○ Rhode Island

- Ocean State Aquaculture Association
- Matt Behan – President



## ○ Massachusetts

- Massachusetts Aquaculture Association
- Seth Garfield - President



# East Coast Shellfish Growers Association

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- Representing hundreds of growers from Maine to Florida
- Work on national issues closely with National Fisheries Institute, PCSGA and Gulf Oyster Industry Council
- Created the East Cost Shellfish Research Institute
- Communication
  - LISTSERV discussion group
  - [www.ECSGA.org](http://www.ECSGA.org)



May your business flourish!

