

Maine Aquaculture Risk Management and Crop Insurance

Risk and farming go hand-in-hand. This report addresses several methods to manage risk on your farm, such as crop insurance.

I. Risk Management

Risk has always been a part of farming and aquaculture alike. While all farmers find different ways to respond to risks, the nation's most successful farmers are now looking at a deliberate and informed approach to risk management as a part of their business plan. A farmer's ability to deal with the risks that come along with aquaculture and the new, attractive opportunities it presents could determine whether or not their business succeeds. For those who wish to succeed, risk management means farming with strategy, intent, and a plan in a rapidly changing world. The uncertainties in weather, yields, prices, government policies, markets, and other factors can cause large swings in farm revenue, and are a part of what make farming such a challenging process. The existence of risk and uncertainty adds complexity to many problems and to the entire decision-making process. Risk management involves choosing among alternatives to best reduce the negative effects of such uncertainties. For a shellfish farmer, for example, risk management strategies could look like siting a farm in a sheltered area (to reduce the likelihood of losing gear and product during a storm), only using disease-resistant seed (to lower the risk of disease), selling to a mixture of wholesalers, restaurants, and fish markets (to diversify the impact if one outlet stops purchasing product), or purchasing crop insurance (to receive indemnity payments when yields fall below a certain level).

Few farm management decisions are made under conditions where the outcomes are known with certainty. This means that each decision made comes with a certain level of risk, or the possibility that an unfavorable event will occur. In aquaculture, the main risks lie within stock losses, often due to equipment damage or failure, human injury, and liability. Anything that disrupts the growing of your product, such as storms or damaged gear, is likely to jeopardize the production and thus the sale of the final product. In other words, you lose money. Effectively managing these risks could be the difference between an aquaculture business that stays open and an aquaculture business that is forced to close. Operating an aquaculture business presents an additional layer of risks, as living products grow in a volatile environment that can take several years to produce a market-size product. The product is highly perishable, and may only be accessed or sold for a portion of the year. As a beginning industry, aquaculturists can also face restricted access to capital, social pushback, or area closures due to water conditions. There are multiple categories of risks that must be considered by business managers, and the strategies used to control and mitigate them. While this report does briefly touch upon all of these strategies, it focuses on managing risk production and financial risk through aquaculture crop insurance. Aquaculture goods are inherently risky, as are many other crops and livestock, as they are often high-value, and can be lost overnight. The fact that aquaculture goods are often slow-growing products raised in a volatile environment further increases their risk for loss. Crop insurance, which has been used by corn, potato, blueberry farmers and the like for decades, has in many cases been the only reason farms were able to continue operating. Crop insurance for aquaculture can serve the same purpose: to minimize risk and provide relief when either a downturn or tragedy strikes your farm.

There are five general types of risk that any farmer must consider. Production risk, which is the main focus of this report, is based on the uncertainties associated with growing aquatic animals and vegetation. Weather, disease, pests, and other environmental conditions affect both the quantity and quality of crops grown. Crop insurance, which provides risk management strategies for production and sometimes revenue. Marketing risk refers to the uncertainty in transforming your product into a final sale. This risk includes the prices producers will pay for their input, and the prices they will receive for their products. Financial risk encompasses risk that threatens the financial health of the business such as: capital availability, ability to meet cash flow needs, ability to maintain and grow equity, and ability to absorb short-term financial shocks. Rising interest rates, credit restrictions, lenders calling loans, and access to capital are all aspects included as well. Legal risk derives from uncertainties surrounding various taxes, policies, rules, and regulations that could change and have major impacts on a farm. Human risk refers to factors such as problems with human health or personal relationships that can affect the farm business, and includes legal risks as well.

Farmers have many options for managing the risks they face, and it is recommended to use a combination of strategies and tools. Some strategies only address one type of risk, while other strategies address multiple risks at once. Much like a business or a marketing plan, farmers should develop a comprehensive risk management plan that covers all the various types of risk to which their business may be susceptible.

- (1) The first, and most important, step in managing your risks is to identify your risks (e.g. ice in winter, low market prices, limited startup capital, predators). However, before you can begin to identify your risks, you should begin by setting goals for you and your business that reflect your values, interests, resources, and capabilities. Setting goals will help you to see your priorities, provide a means for measuring your progress, and begin to better see where risks will arise. It also provides your employees the chance to create their own goals within the company.

- (2) The next step is establishing your risk tolerance – or the amount of risk you are willing to withstand. This is typically determined by how you choose to approach your risks. Are you willing to invest a large amount of money in your business up front, before you have tested your growing methods, with a chance of losing it? Would you rather start small and grow your business slowly? In assessing your risk tolerance, you should consider both the likelihood of the risk and what level of impact the risk will have on your business if it occurs. As you address each of your goals try to identify the risks involved in your pursuit of achieving them.

- (3) Identify each risk. Once identified, you must determine how to handle each risk; either retain the risk – meaning that you do not protect yourself from the risk; shift the risk – enter a contract where someone else takes on some of the risk i.e. insurance; reduce the risk – keep gear in good, working order, follow best management practices ; self-insure – maintain emergency reserves from previous years' profits; or avoid the risk – elect to not purchase new equipment, or not increase debt-to-asset ratio. Each risk on the farm should be considered in this context, written down, and shared with other farm members and risk management professionals. This process, while it may at first seem daunting, allows you to evaluate how you handle risks and see if any changes are necessary for the future.

This means you will be more likely to select the best combination of risk management strategies, identify and exclude alternatives that expose you to unacceptable risks, and ensure that your insurance dollars are spent wisely. Since we are discussing aquaculture, a crop that could quickly be lost or killed,

we must remember that having these strategies in place, such as selling to diversified sellers and purchasing a crop insurance policy, could be the difference between you operating your business next year and you shutting down your farm with bills left to pay.

Determining your risk profile, as described above, is a great way to begin thinking further about managing risk on your farm. The next step is to think about specific management strategies, which typically differ by each grouping of risk.

Resources

[USDA - Risk Management Checklist](#)

[Extension Risk Management Education \(ERME\) and Risk Management Agency \(RMA\) - Introduction to Risk Management \(pp. 1-8\)](#)

[University of California Cooperative Extension - Risk Management](#)

[USDA - How Risk Tolerant Are You?](#)

[USDA - Risk and Resilience Assessment](#)

Production Risk

When it comes to production risks, crop insurance is often touted as a leading risk management strategy since it protects against losses and offers the opportunity for more consistent gains. Crop insurance safeguards a reliable level of cash flow and allows more flexibility in your marketing plans. If you can insure a portion of your expected production, that level of production, or an insurance indemnity payment, can be carried forward in planning a more predictable level of revenue. Without crop insurance, for example, you could have just one crop failure, lose all positive cash flow, default on payments, and be forced to close. Another strategy that helps to manage production risks is enterprise diversification, which includes combining different production processes, different combinations of crops, multiple growing locations, or selling products of different sizes. Another consideration in production risks is new technologies. For each technology, such as a new type of seed or gear, while there is the potential that you could benefit from its advancements, you must assess the potential tradeoffs by asking yourself what is the potential economic benefit of adopting this new technology, how much will it cost, and how much does it reduce my risk. It is at these crucial stages that we must remember the balance of acting on opportunities while trying to minimize losses. One last strategy to reduce risks is to learn from others. One way to do this is by reaching out to your aquaculture association to see what advice they can provide you, and to receive a copy of best business and management practices – a set of guidelines put forth by the industry help guide you towards your business' best performance. Speaking with those who have done it before, whether it be other farmers or extension agents, can help you as well.

What does production risk planning and mitigation look like on a farm?

Farmers Joe and Jane are considering expanding their oyster farm. So far, they have been growing oysters part-time in surface bags and cages on their experimental lease. They ask themselves: what risks could prevent us from reaching our goals, which can we manage on our own, which do we need help managing, and which can we avoid?

Joe and Jane quickly identify that they will need additional space to grow enough oysters to reach their future sales targets. They also are concerned that a storm, disease, or closure could cause product losses, or prevent them from harvesting the oysters from their original site. They apply for, and are granted, 2 nearby, yet separate, LPAs to find the best growing conditions. After an additional growing season, they find that their 2 LPAs are suitable, protected, growing sites. Joe and Jane talk with the surrounding residents of each LPA, apply for two experimental leases, and are granted them.

Although Joe and Jane have planned to mitigate their risk by adding additional leases, they realize that they still cannot prevent catastrophe. Joe and Jane then decide to reach out to Farm Service and crop insurance agents to weigh their options. They then purchase a crop insurance policy to prepare their farm to face adverse events.

Joe and Jane then budget to purchase additional bags, cages, and disease-resistant seed to begin their farm expansion. They consider the possibility of adding a very large number of bags and cages for their coming expansion, but opt to grow slowly instead, and avoid the risk of taking on a large loan in their early stages. Last, Joe and Jane purchase the equipment, and settle on a mixture of disease-resistant diploid and triploid seed to diversify the risk of a single crop failure and identify which seed performs best on their operations.

Resources

[ERME & RMA - Managing Production Risk \(pp. 8-14\)](#)

[University of California Extension - Production Risk](#)

[Food and Agriculture Organization \(FAO\) - Production risk](#)

[Sustainable Agriculture Research and Education \(SARE\) \(pp. 4-7\)](#) (Includes 2 tools + a grower example.)

Marketing Risk

Risks will arise as you try to convert your product from a living organism in the water to money in your bank account. Much of these will be driven by uncertainty in demand, supply, and prices. The first step in managing these risks is to have created a marketing plan that aligns with your goals, and to review it at least annually. The marketing plan should include an identification of potential risks associated with specific marketing and sales strategies and how you plan to manage those risks. For example, if you only sell directly to three local restaurants, what will you do if one restaurant closes? How will you make sales if your truck breaks down? How will you make sure you receive the money the restaurants owe you?

The marketing plan should also be a part of a business plan, which is arguably the most critical document to your business' success. Your marketing plan should consider options for who you will sell to (wholesaler, distributor, restaurants, direct to consumer, etc.), how (delivery, pick-up at your farm, etc.), when, what specific product form you plan to sell (species, size ranges, de-clumped, etc.), and for what price. Alternatives should be considered and documented in the event there are changes in demand, supply, and prices.

The decisions that arise from your marketing plan must also align with your financial and business plan. For example, if you plan to grow and sell premium mussels, you must ensure that your business model and marketing plan aligns with perhaps less frequent, lower volume, high price sales. In marketing, this could also mean dealing directly with consumers or restaurants, rather than wholesalers. Working directly with consumer or restaurants could help you receive higher prices, but it also means that you will need to spend more time making smaller deliveries and collecting payments. You should also consider alternative plans in the event that your product does not receive the price you had anticipated. Over time, you can work towards branding, certifications, or a specific identity in your marketing. This can help to increase customer loyalty and possibly grow the demand for your product, increasing the price you receive in the process.

Options for managing price or marketing risk include: creating a formalized relationship, such as a contract, with quantities and prices to be purchased, spreading your planned sales over a number of different markets and customers, managing your accounts receivable to "high grade" customer accounts, developing specific product forms that are novel and that command a higher price point, direct consumer sales, and brand development. Depending on how you market, such as direct versus wholesaler, means you must consider additional legal or liability options as well. One other strategy for minimizing marketing risk is to form a marketing cooperative, which can provide members the opportunity to benefit from volume sales or purchases. Benefits could be in the form of receiving higher prices or incurring reduced costs. Smoked, dried, frozen, or canned seafood are forms used in various markets to reduce the risks associated with marketing time as well.

How to Handle Marketing Risk on the Farm – A Grower's Story

Farmer Jack has thought through how to handle the production risks on his farm but is unsure what to do to minimize risk between harvesting his scallops and receiving a payment. After doing some reading, talking to other growers, and speaking with the Maine Aquaculture Association and Sea Grant Extension, he finds his path forward. Jack, as a part of his business plan, creates a marketing plan. His first step is to do a market analysis and customer research. He goes around to different fish markets, talks with

wholesalers, looks at restaurant menus, and reads reviews. After his research Jack finds out that his product could fill a market gap by providing small, premium-quality whole scallops for several restaurants in both Portland and Portsmouth. These scallops will need to be cleaned, with roe-on, and sold by the dozen. Jack, as a component of creating his business plan, drafts a detailed marketing plan to flush out all of his ideas, and allow the document to serve as a reference over time.

Jack decides that in the first years of his farm he will have to purchase a reefer unit for his truck and drive the scallops to the restaurants himself. He will allow restaurants one week to pay for each delivery. Over time, Jack plans for production expansions that will allow him to profitably hire a delivery driver. As an alternative, Jack also finds 2 local fish markets that he passes on his way home that will both purchase his product whenever he has any. Although Jack is producing higher-cost scallops, he intends to share samples of his product with a distributor to open an opportunity for working with them down the road, if need be.

With the help of his family and a few YouTube videos, Jack opens an Instagram account and a Facebook account and begins marketing his products online as Saco Bay Scallops, which syncs with how they will appear on restaurant menus as well. He works with a local firm to create a logo, and then begins printing t-shirts, aprons, and mugs for sale.

Resources

[ERME & RMA - Managing Marketing Risk \(pp. 15-22\)](#)

[University of California Extension - Marketing Risk](#)

[FAO - Marketing Risk](#)

[SARE - Marketing Risk](#)

[UC Davis - Specialty Foods Marketing](#)

Financial Risk

Well-maintained farm records, while they may be the last thing you want to think about after a long day on the water, are an absolute necessity in maintaining the control of finances, production, and risk of your farm. Essential financial statements include a balance sheet and statement of owner's equity, an income statement (also called a profit and loss statement, or P&L), and projected and actual cash flows. While you must maintain a basic level of financial and production records yourself, an accountant can help you with any additional bookkeeping.

Although it may be easier to think "well, I have money in the bank account so I must be doing something right," even small farms need a basic level of record keeping both for business success and for avoiding the wrath of the IRS. These basic records can be used to make crucial calculations such as your cost of production, your break-even costs, your profitability, and your debt to asset ratio.

Planning to ensure a positive cash flow throughout the year is necessary to make sure your business can survive. Failure to do so can result in dumping product on the market at a lower price (which your fellow growers will not like either) or being forced to close your business because of overdue payments. This is especially challenging to avoid in the early years of a shellfish farm, as revenue is not typically seen in the first, or sometimes even second, growing season. This is precisely why many are told not to quite their day jobs. Income diversification can also be achieved by maintaining different income sources, such as off-farm employment for smaller farms. As we often hear on the water, "don't quit your day job," and be prepared to "kill your first million oysters."

Cash flow must be planned thoroughly, conservatively, and well in advance. An effective contingency plan should also be created for meeting cash flow needs after a crop failure, drop in price, or reduction in demand. Even with crop insurance, indemnity payments, while they will surely help your cash flow situation, may take some time to arrive. The first step to managing financial risk on the farm is for a farmer or farm manager to know their financial situation.

Good recordkeeping practices form the basis that allows for a better understanding of financial risks, financial standing, and what areas need improvement. There are several tools that can aid in this process such as those that help create and evaluate balance sheets, income statements, and cash flow statements. Additional financial analysis tools can help to monitor the farms finances and identify ways to improve profitability. By using these tools to calculate metrics such as debt-to-asset ratio, which can help to make improved decisions when securing loans or lower interest rates, and enterprise budget and benchmarking analysis, which can help to identify and analyze the most, and least, profitable aspects of your farm. Other strategies such as maintaining cash and credit reserves can also stand as a buffer under adverse financial situations.

Managing Financial Risk on the Farm with Lisa

Farmer Lisa, a hobbyist mussel farmer with one raft, wants to expand her production once her sales begin, but knows that she cannot do it on her own. She reaches out to a bank, who asks for her financial records. Lisa, who had only scribbled notes on the back of a few envelopes while she was thinking about growing her farm, realizes that she is not ready to apply for financing. Over the course of the next year, Lisa has to work backwards to calculate all of her previous expenses, and then begin to implement a new

recordkeeping system that has her tracking all expenses and revenue on a monthly basis, saving her time and effort.

Lisa then uses tools from the Maine Aquaculture Association to develop a production plan and a 5-year business plan. Based on those projections and past calculations, Lisa drafts her first P&L, balance sheet, and cash flow projection. After seeing how much money Lisa has invested in just her one raft, boat, and gear, and calculating her debt-to-asset ratio, she realizes that, although she wants to grow her company rapidly, she can only add one raft at a time. The other issue is that, based on her current labor costs, Lisa will need 3 rafts before she can turn a profit. So, Lisa makes the decision that she will have to temporarily let go of one of her part-time workers and do the work herself for now, on top of her day job.

The bank's loan officer meets with Lisa, reviews her financial records, sees the planning on paper, compares it with benchmarking information, and approves her loan request. Lisa then continues to work with the Maine Aquaculture Association and the bank's advisor to identify her highest costs, areas for improvement, and develop a contingency plan in case price, harvest closures, or demand reductions impact her business.

Resources

[ERME & RMA - Managing Financial Risk \(pp. 23-29\)](#)

[University of California Extension - Financial Risk](#)

[FAO - Financial Risk \(pp. 65-73\)](#)

[SARE - Financial Risk \(pp. 25-29\)](#)

Human and Legal Risk

One easy way to remember human risk is that it arises from the four D's: disagreement, divorce, death, or disability of an owner, manager, or employee. Small farms are especially sensitive to these risks as there is often a strong reliance upon the family as the workforce. Another important area of human risk revolves around people management practices on the farm.

A first step in managing human and legal risk is to ensure that a farm safety and health plan has been created and shared with family members, business partners, and employees. This includes training and guidelines for machinery usage, safety equipment, and procedures for dealing with chemicals – all included in the farm's standard operating procedures document. A written standard operating procedure also helps improve everyone's consistency, efficiency, and safety.

Beyond safety concerns, it is important to talk about your goals and risk management with your family and employees and to discuss how plans are made, and to ensure everyone feels they have a fair chance to contribute to the planning process. Hiring good, productive workers is very important, but so is making sure that workers understand what you want them to do and how you want them to do it.

Managing people, and doing it well, can be tough. Do not be too proud to take a class to build your own skills or talk with an experienced farmer. Be sure to have a plan in place in case a worker is hurt, and how the operation will run in your or their absence. Last, purchase workers' compensation insurance, and prepare a will. While all of these tools and strategies pertain to human risk, they also begin to bridge the gap into another component of risk on the farm: legal risk.

For legal risks, it is crucial to ensure that your business is operating within legal parameters set forth by local, state, and federal programs. At the very least, this includes verifying your compliance with environmental regulations, labor regulations, fulfilling contracts and leases, and managing food safety, personal, and business liability. Insurance provides an option for managing your risks and liabilities here as well.

Legal risks associated with owning a farm are extensive, and include the possibility of being sued, fined, or penalized. A first step in owning a farm and selling your product is to determine your business structure. This impacts your taxes, estate planning, and exposure to liability. This is not a matter to be taken lightly and should be discussed with a professional. Once your business is structured, it is time to become protected legally – just in case. Farm or business liability and product liability provide just that buffer. Health and disability insurance for you and your workers. You must also know where and how you are allowed to sell your products, including all rules and regulations around quality and handling e.g. harvester's tags, time to ice, etc.

It cannot be stressed enough to keep your own detailed records. It is always recommended to obtain professional assistance when navigating legal risks, including insurance and tax. For the aquaculture and seafood industries especially, it is crucial to keep accurate records and report the correct information on landings, taxes, and lease records. Having a professional review contracts before your signature also provides another tool to manage your risk.

Human and Legal Risk Management on the Farm

After last season, when he had one employee quit after an injury, and a second quit after an argument over how to do a job, both when he was out on a delivery, farmer Jim realized that he better take this winter to improve his human resources management and decrease his stress. Jim's first step was to write standard operating procedures and safety plans. The standard operating procedures include the equipment needed, the steps to follow, and safety precautions to take for tasks to be completed on the farm. The safety plan also includes what to do, and who to contact if an injury occurs. Jim also enrolls in life and health insurance for himself, along with disability insurance, and ensures that all paperwork is in order for workers' compensation, business owner's insurance, crop insurance, and business and product liability as well. Thankfully, when Jim set up his company 3 years earlier, he worked with a lawyer to have his business structured as a limited liability corporation (LLC).

For the first day of the season, Jim plans a meeting with his family and employees in order to discuss his goals for the season, for the next five seasons, and to receive input from his family and employees on how they think these can be achieved. First, he points to where all labor laws are posted on the wall. Next, he goes over the new standard operating procedures with everyone and asks everyone, using one hour of paid time, to watch a video he shared with them at home pertaining to conflict management on the farm and with other people on the water. Jim underscores the importance of following best aquaculture practices, including making the least noise they can on the water, cleaning up gear, and being friendly with neighbors. Last, Jim introduces everyone to the previous and current regulations for operations on the farm and for record keeping. He instructs everyone on how to comply with the new standards, explains their reasoning, and shows them where to file them for Jim to finish.

Jim, being an older farmer, also meets with his lawyer to create a transition plan for the operation and a contingency plan as well.

Resources

[ERMA & RMA - Managing Legal & Human Risk \(pp. 30-40\)](#)

[University of California Extension - Human Risk](#)

[University of California Extension - Legal Risk](#)

[Standard Operating Procedures](#)

[Farm Security Checklist](#)

[FAO - Human & Personal Risk \(pp. 79-82\)](#)

[SARE - Worker & Legal Risk \(pp. 17-24\)](#)

II. Crop Insurance

Why Consider Crop Insurance?

Modern day crop insurance was created as a way to help farmers manage the risks of natural disasters and market fluctuations. It is, in part, a response to the question: what would happen if you were confronted with yield or revenue loss due to natural disasters or market fluctuations? Without crop insurance, you would be forced to shoulder the financial burden of the losses. Those who depend on your capital and your product could suffer as well, as you may be unable to pay your bankers, suppliers, or workers, and be forced to close.

For example, if farmer Zack did not purchase crop insurance, and a storm came in and wiped out his entire inventory, he could be forced to take on all the loss. He would be unable to pay workers or the bills, and would likely need to close the business. However, if Zack did purchase crop insurance and the same storm occurred, Zack would be covered by his insurance and would receive indemnity payments, allowing him to pay his workers, pay the bills, and continue operating his farm, despite the product loss.

Rural economies are largely dependent on farmers' ability to rebound after disaster strikes, and with no crop insurance, many businesses could close, jobs could be lost, future production could fall, and the cost of the natural disaster would fall directly on U.S. taxpayers. If you do not have crop insurance and you are struck by either a natural disaster or market fluctuations, both you and your neighbors could suffer.

This may explain why many of our nation's most successful farmers have called crop insurance their top risk management tool. Much like any other insurance, farmers pay a premium to be a part of a crop insurance program. The Federal government, to make crop insurance affordable to farmers, discounts farmers' premiums. If a natural disaster or volatile market fluctuations strike, farmers can use crop insurance indemnities to pay their bankers, suppliers, etc., purchase inputs for the next growing season, and have an increased confidence and ability to make long-term improvements and investments to increase their production efficiency. Crop insurance helps to mitigate risks by providing a safety net for farmers if tragedy were to strike. In the face of increasingly variable weather patterns, crop insurance could perhaps play an even larger role. For aquaculture farmers, who grow products in an already volatile environment, crop insurance could prove to be even more beneficial.

III. Federal Crop Insurance Policies

The modern-day crop insurance system is funded through the Federal Crop Insurance Corporation (FCIC) and carried out by the Risk Management Agency (RMA) of the USDA. The FCIC and RMA set program standards and procedures, develop and approve new products, improve existing products and programs, set premium rates, and provide general program oversight.

In the context of aquaculture, there are currently two plans available, the Noninsured Crop Disaster Assistance Program (NAP), and the Whole Farm Revenue Protection Policy (WFRP), which are detailed below.

NAP - Noninsured Crop Disaster Assistance Program

The U.S. Department of Agriculture's (USDA) Farm Service Agency's (FSA) Noninsured Crop Disaster Assistance Program (NAP) provides financial assistance to producers of non-insurable crops when a loss occurs due to a natural disaster. This includes protection against low yields, loss of inventory or prevented planting caused by a natural disaster. The coverage is available for crops where catastrophic risk protection level crop insurance is not available.

NAP is for producers who are a landowner, tenant, or sharecropper who shares in the risk of producing an eligible crop and is entitled to an ownership share of that crop. The producer's average adjusted gross income (AGI) cannot exceed \$900,000. Producers must also hold a Highly Erodible Land Conservation (HELC) and Wetland Conservation (WC) certification.

Eligible aquaculture crops include any species of aquatic organism grown as food for human consumption, fish raised as feed for fish that are consumed by humans, and ornamental fish propagated and reared in an aquatic medium. The crops must be placed, planted, or seeded by the producer in the designated grower's aquaculture facility and maintained in a controlled environment designed for the protection and containment of the seeded aquaculture species. There exists an exception to this rule for mollusks, such as oysters or mussels, that are bottom planted. If the mollusks are not maintained in a controlled environment, such as a cage or bag, and are instead planted directly on the bottom, the crops are only eligible for coverage if the cause of loss is the direct result of a NOAA-determined tropical storm, typhoon, or hurricane. Typically, these are storms that receive names.

Eligible causes include, but are not limited to, damaging weather, such as a drought, freeze, or hurricane, adverse natural occurrences, such as a flood, or conditions directly related to an eligible cause of loss, such as disease. Ineligible causes of loss are losses resulting from managerial decisions, natural mortality, the inability to market aquaculture species because of quarantine, boycott, or refusal of a buyer to accept production, or collapse or failure of equipment or apparatus used in the aquaculture facility.

NAP provides basic coverage equivalent to the catastrophic level risk protection plan of insurance coverage, which is based on the amount of loss that exceeds 50 percent of expected production at 55 percent of the average market price for the crop (50%/55%). Higher levels of coverage of approved yield can also be selected at the following levels: 55% coverage, 60% coverage, or 65%, each at 100% of the average market price. The option to buy up must be elected by the application closing deadline and will come with an associated premium on top of the original service fee.

If buy-up NAP coverage is selected, payment for the premium will be calculated based on the maximum dollar value, the total dollar amount elected by the NAP covered participant for which assistance may be considered for value loss crop loss payment, times the coverage level, subject to applicable payment limitation, times the 5.25 percent premium. Premiums will be calculated separately for each crop, type, and intended use as reported or determined on the acreage report. Premiums are due 30 calendar days after the date of premium billing. Bills are sent on January 15th following the crop year for which coverage was obtained. The premiums are capped at \$15,750, the maximum payment limitation times the 5.25% premium factor. Premium reductions are also available, as detailed below in the fees section.

Losses are calculated as a comparison of the value of the crop immediately before the disaster (capped at the Maximum Dollar Value) to the value of the crop immediately after the disaster. Loss of value of any portion of the inventory is determined only if that portion of the inventory is not marketable now or in the future. The loss threshold is calculated by multiplying the pre-disaster value by the producer elected coverage level. The value loss is the loss threshold minus the post disaster crop value. The NAP payment is then the value loss times the producer share time the unharvested factor times the price coverage percentage. Normal mortality is used to account for the loss of fish or shellfish through natural occurrences unrelated to the disaster event. It can include disease, competition, predation, pollution, or any other natural factor. The rate is set annually by FSA State Committee for each size of mollusk by obtaining recommendations from reliable sources.

Farmer Charlie's Story:

Farmer Charlie raises oysters in cages in Casco Bay, farms alone, and owns 100% of the operation. Farmer Charlie purchases buy-up NAP coverage at the 65% coverage level and elects a Maximum Dollar Value of \$115,000, which is the number that will be used in loss and premium payments. Hurricane Berry decimates Charlie's farm. Charlie's records show that the pre-disaster value of the crop was calculated to be \$130,000 (value of inventory on hand less natural mortality). Even though Charlie's pre-disaster value is \$130,000, the Maximum Dollar Value, \$115,000, remains the same and is what is used in calculating loss. The loss adjuster determines the value of the crop immediately after the disaster is \$50,000. To see if Charlie's crops will be covered, the loss threshold is determined, which is the Maximum Dollar Value times the coverage level: \$115,000 Maximum Dollar Value x 65% coverage level = loss threshold of \$74,750. Charlie's post-disaster crop value is below this, so the farm will be covered. The loss value is the loss threshold minus the post disaster crop value (\$74,750 - \$50,000=\$24,750 value loss). The NAP payment that Charlie will receive is then calculated as: (value loss [\$24,750] x producer share [100%] x unharvested factor [93%] x price coverage percentage [100%] = \$23,017.50).

When a crop is affected by a natural disaster you must notify your FSA County office the earlier of either: 15 calendar days (72 hours for hand-harvested crops) after the disaster occurrence or date of loss or damage to the crop or commodity first becomes apparent, or 15 calendar days after the normal harvest date. Form CCC-576, Notice of Loss and Application for Payment, must be filled out, and will require supporting documentation including inventory records. There will also be a field visit of crop appraisal/loss adjustment along with County Committee Determination.

Eligible producers must apply before the September 1 deadline using the CCC-471 form to receive coverage for October 1 – September 30. Service fees are \$325 per crop, with a limit of \$825 per

producer per county, not to exceed \$1,950 per producer in multiple counties. The service fee does not apply if you meet the definition of a beginning farmer (a farmer or rancher, entity or joint operation, who has not actively operated and managed a farm or ranch for more than 10 years and materially and substantially participates in the operation. For legal entities, all members must be related by blood or marriage and be beginning farmers themselves), limited resource farmer (indirect farm sales do not exceed \$176,800 for each of 2 preceding calendar years, or a person whose total household income was at or below the national poverty level for a family of four in each of the same two previous year), socially disadvantaged farmer or rancher (American Indians or Alaskan Natives, Asians or Asian-Americans, Black or African-Americans, Hispanic or Hispanic-Americans, Native Hawaiians or other Pacific Islanders, women), or veteran farmer or rancher (served in the Armed Forces and has operated a farm for fewer than 10 years, or has first obtained status as a veteran during the most recent 10-year period), and have filed CCC-860 by the established closing date. Lease documentation, eligibility forms, and an annual acreage report must be submitted for each crop. The acreage report must include all planted acreage, your share at the time coverage begins, the crop, type, intended use, practice, the date the eligible crop/commodity was planted, acreage designated as organic or transitional based on certifying documentation, and the physical location of the acreage on which the facility resides. Premiums for buy-up NAP coverage is calculated as the producer's share times the Maximum dollar Value elected by the producer times the coverage level times the premium factor. For example, this could be: (producer's share [100%] x coverage level [65%] x premium factor [5.25%] = \$3,294 Premium).

Whole-Farm Revenue Protection

The Whole-Farm Revenue Protection (WFRP) policy is a new crop insurance program that protects the farmer from production losses or drops in market prices based on their adjusted gross revenue. Unlike other types of crop insurance, WFRP is an umbrella policy and provides a risk management safety net of all commodities on the farm under one policy. This plan is tailored to cover a farm with livestock in up to \$2 million in insured revenue.

Eligibility in the WFRP policy means the farmer must be eligible to receive federal benefits, be a U.S. citizen or resident, and file either a Schedule F tax form or other farm tax forms that can be converted to a Substitute Schedule F that covers 100% of the farm operation. The farmer must also be engaged in the business of farming and derive revenue from farm production, and derive not more than 50% of expected revenue from commodities purchased for resale. You can buy WFRP as a policy on its own, or it can be purchased in addition to other Federal crop insurance policies. However, if you have other Federal crop insurance policies, they must be the buy-up option, as other Federal crop insurance policies at catastrophic coverage levels disqualify you for WFRP. If you buy WFRP with another Federal crop insurance policy, the WFRP premium is reduced. The premium will also be reduced if you meet the diversification requirements of the policy by having two or more commodities, if a commodity you are raising has revenue protection or actual revenue history insurance available.

For farmers who have not previously filed a Schedule F, now is a great time to consider doing so for the current tax year, as multiple years of records are required for WFRP. A United States Federal income tax return, including farm tax forms, must be on file for each of the five years of the whole-farm history period for the same tax entity and farm operation as the insured person for the policy year. There are,

however, exceptions, listed in 3.b. The likely most aquaculture-applicable exception is that if you qualify as a beginning farmer or veteran farmer, and have fewer than five years of farm tax forms in your whole farm history period, you may proceed with three years (excluding the lag year) of farm tax forms and provide them for each year in which you reported farm revenue. The lag year, which does not count towards the total years of reporting, is the previous year's tax records. For example, for coverage in 2020, 2019 would be considered the lag year. Other documents include 5 years of verifiable sales records, which are used to verify Schedule F revenue, to justify intended yields and income of commodities, and to justify final production for the insurance year. Sales figures must be tracked per commodity and include information on the commodity sold, name of buyer or market, price per unit, quantity, and date sold. Verifiable records include accounting records, farm management records, warehouse receipts, ledger sheets, sales receipts, records developed at time of direct market sales, such as at a farmer's market or stand. Applicants must also submit an intended farm plan for the insurance year to list crops to be produced and the intended yield and revenue from each for the insurance year. A revised report is due during the insurance year if the intended plan changes, and a final report is due at the end of the insurance year. Last, an inventory report is needed at the beginning and end of the insurance period for all insurable commodities that are stored, unharvested, held for sale, or held for on-farm use but are not used by the end of the insurance periods. If your farm is expanding and you want it to be considered as such, include information supporting the expansion you want included due to the farm operation physically expanding (last year or the coming year) including increased acres, added equipment, new varieties or planting patterns, or anything else that expands production capacity. Operations that have been expanding over time may be allowed to increase their approved revenue amount based on an indexing procedure, or, if you can show that your operation has physically expanded so it has the potential to produce up to 35% more revenue than the historic average, your insurance company may reflect that growth in your insurance guarantee.

How coverage works

WFRP protects your farm against the loss of farm revenue that you earn or expect to earn from commodities you produce during the insurance period, whether or not they are sold, and commodities you buy for resale during the insurance period. The approved revenue amount is based on your Schedule F tax records and is the lower of that year's expected revenue or the whole-farm historic average revenue (adjusted for growth). The whole farm historic average can be calculated as either a simple average of the years included, as an indexed average, if the allowable revenue in either of the two most recent tax years in the whole-farm history period are greater than the average allowable revenue, or by the expanded operation calculation, in which operations that have been growing over time or will physically expand during the insurance year may be allowed to increase their approved revenue by up to 35%. If, as the season is underway, the farmer revises their intended plan then they will need to fill out a revised report, due by July 15. The coverage of expected revenue from animals is limited to \$2 million.

The farm's premium subsidy and coverage level options will be based on the number of farm commodities produced. As the number of commodities increases, so does the subsidy, meaning the farmer's premium becomes reduced. This incentivizes farmers to diversify their farms with multiple crops. There are ongoing, albeit unresolved, discussions around whether shellfish, such as oysters, could

be considered different commodities when in the nursery/upweller phase versus the grow-out phase. Additional commodities also increase the number of coverage levels available. The WFRP premium will also be reduced if the farmer has a buy-up policy from another Federal crop insurance program. Each commodity must make up a significant portion of the total farm revenue to be counted as a commodity.

Coverage level	50%	55%	60%	65%	70%	75%	80%	85%
1 Commodity	67%	64%	64%	59%	59%	55%	N/A	N/A
2 Commodities	80%	80%	80%	80%	80%	80%	N/A	N/A
3+ Commodities	80%	80%	80%	80%	80%	80%	71%	56%

Table 1. Percentage of the total premium that is subsidized.

Farmer Sam’s Story:

Farmer Sam has an approved adjusted revenue of \$100,000 with a coverage level of 75%. This means Sam’s income trigger, or where the insurance is triggered, is at \$75,000. Sam is growing two commodities, and has a premium of \$9,235. Since Sam has two commodities and selected the 75% coverage level, 80% of the total premium is subsidized, leaving Sam only to pay a \$1,847 premium ($\$9,235 - [\$9,235 \cdot .80] = \$1,847$). In this year, Sam only earned \$70,000, meaning Sam receives \$5,000 in indemnity payments ($\$75,000 - \$70,000 = \$5,000$).

Taxes must be filed for a given insurance year before any claim can be made for that year. A loss under the WFRP policy occurs when the WFRP revenue-to-count for the insured tax year falls below the WFRP insured revenue. Revenue-to-count for the insured tax year is the ‘approved revenue’ from the tax form, adjusted by excluding inventory from commodities sold that were produced in previous years adjusted by including the value of commodities produced during the tax year that have not yet been harvested or sold, and any other adjustments required by the policy such as those from uninsured causes of loss. If the farm does not have expenses of at least 70% of the ‘approved expenses’ during the insurance period the insured revenue amount will be reduced by one percent for each percentage point the actual approved expenses are below 70% of the approved expenses.

The deadline to enroll in the WFRP is March 15.

Current Efforts Underway

The Maine Aquaculture Association is in the process of meeting with members of the USDA’s Risk Management Agency (RMA) to ensure that the policies mentioned above are both applicable and useful in Maine. The Association is working to provide the Agency with feedback on the most up-to-date growing methods, successes, troubles, and data. The aim is to provide accurate, cost-effective plans to be a part of Maine farmers’ risk management plans.

The Maine Aquaculture Association is also working with crop insurance consultants to draft a new crop insurance program for oyster aquaculture in Maine. This concept proposal will include updated data for Maine production and revenue metrics along with a Maine-specific risk pool insurance product for oyster aquaculture in Maine. This formal proposal process will involve the Maine Aquaculture

Association and the crop insurance consultants drafting a concept proposal, presenting it to the USDA, and going through a formal review of the proposal. Upon final review of the proposal with policymakers, administrators, and actuaries, it will be determined if the new program will receive funding from the USDA to launch the new insurance product.

Insurance Agents

The Whole Farm Revenue Protection can be purchased through an insurance agent, who can be found using the RMA Agent Locator Tool (<https://www.rma.usda.gov/Information-Tools/Agent-Locator-Page>). While there are several crop insurance agents in Maine, there are not currently any confirmed agents for the Whole Farm Revenue Protection policy. However, there exists a private market aquaculture crop insurance policy offered through Cross Insurance.

Cross Insurance, headquartered in Bangor, Maine, has partnered with Mitchell McConnell Insurance Ltd. of Saint John, New Brunswick to offer crop insurance for aquaculture operations in Maine. Mitchell McConnell Insurance has been an integral partner to the Canadian aquaculture industry for over 30 years. It offers a comprehensive, adaptable insurance program that can serve: mariculture farming, early fish rearing facilities, research facilities, aquariums, personal valuable species collections, finfish, mammal, crustacean, and shellfish operations, along with live animal transfer services. Cross Insurance also provides all the offering of a full-service insurance agency including workers compensation and Jones Act coverage. Derek Cashman can be contacted at Cross Insurance at either dcashman@crossagency.com or 207-404-5324.

Allen Insurance and Financial, although it does not offer crop insurance, has expressed a willingness to work with aquaculture businesses in Maine. Allen Insurance, a 100% employee-owned business, has been operating in Maine for more than 150 years and offers and services a full suite of insurance policies including personal, business, marine, and employee benefits. Allen and business insurance specialist Sally Miles (email: smiles@allenif.com, office: 207-230-5817, cell: 207-975-1425) offer to help you identify risk and formulate solutions to address those risks while developing insurance coverage appropriate and specific to your business. Their risk management guide can be found at this [link](#).

Who to Contact?

These plans work best with feedback from growers. You are always welcome to reach out the Maine Aquaculture Association via phone (207) 622-0136 or through www.maineaqua.org to provide your thoughts on both the successes and shortcomings of the policies.

Other available resources include Erin Roche, the Crop Insurance Education Program Manager for the University of Maine Cooperative Extension program, who can be reached at either 207.949.2490 or erin.roche@maine.edu. The regional Risk Management Agency office for Maine, located in Raleigh, North Carolina, can be contacted by phone at (919-875-4880) or by email at rsonc@rma.usda.gov.

Crop Insurance Programs

	NAP (Noninsured Crop Disaster Assistance Program)	WFRP (Whole Farm Revenue Protection)
Purpose	Financial assistance to producers when a natural disaster causes losses	Revenue-based risk management safety net for all commodities on a farm
Eligible causes of loss	Damaging weather (e.g. hurricane), natural disaster, disease, infestation *If planted directly on bottom, must be a NOAA-determined storm	If actual revenue falls below insured revenue due to natural causes of production loss, decline in market price
Coverage levels	Catastrophic: 50%/55% Buy up: 55%/100%, 60%/100%, 65%/100% (coverage level %/percent of average market price %)	50%, 55%, 60%, 65%, 70%, 75%, 80%*, 85%* *only available if growing 3 or more commodities
Fees	\$325 per crop, \$825 per county Capped at \$1,950 Premiums: for buy-up coverage only, calculated based on Maximum Dollar Value and coverage levels	Premiums calculated based on insured revenue, coverage level, and number of commodities. Premium is decreased for additional crops grown.
Cap	Adjusted Gross Income (AGI) of \$900,000	\$2 million livestock cap
Documents	Application form CCC-471, lease documentation, eligibility forms	Schedule F tax documents and verifiable sales records (5 years unless beginning farmers, then 3), intended farm plan for insurance year, inventory report
Application deadline	September 1	March 15

This work was completed in partnership with:

