ENTERPRISE MANAGEMENT

A. BUSINESS PLANS

Preparing a business plan is the single most important step in starting an aquaculture venture. A business plan should address each of the technical aspects described in each of the chapters of this handbook as well as a detailed description of the expected markets for the products of the aquaculture operation. The market for what the farm produces is the single most important business aspect. A business plan should clearly identify the specific product that will produced, who else will compete with you for this market, and the prices that you expect to receive for the product compared to your expected costs to provide this product. The business plan should also provide a sensitivity analysis describing what would happen to the business if key costs (feed, labor, utilities) should increase by certain amounts or if key buyers or prices were to decrease (sales drops of 10 or 20%). Most importantly the business plan should demonstrate some key commitments from potential buyers. It should be noted that letters of interest from potential buyers are nice to have, but that they cannot be depended upon as firm commitments. Investors, banks and other lenders will want these in a business plan but they realize that buyers will rarely sign a firm commitment for purchase of product at a set price before a project is

started. The buyers will almost always be pleased to have potential new suppliers enter a market.

The next most important aspect of the business plan will be the financial projections. The financials should include a detailed description of the all the capital expenditure costs to get the farm built and the operational costs that will carry the business forward. Having sufficient capital and operating funds to carry the business forward through the time that sales income consistently exceed the operating costs is critical and is frequently overlooked or underestimated. This is probably the single most common cause of business failures. Operating costs frequently increase more rapidly than sales income for new firms. This has been especially true for aquaculture operations as costs are tied to large international markets for feed ingredients (soy, wheat, corn, and fish meal), utilities, and labor, while fish sales must compete with wild caught fish which go up and down in price and with competing new aquaculture ventures.

A business plan should also incorporate critical financial issues including interest rates, loan origination fees, management fees, insurance, municipal, state and federal taxes, depreciation rates and schedules, rental fees, and alternative opportunities for funds, equipment, labor and land devoted to the business. These are all important to the final decision to pursue a particular investment or project.

B. ENTERPRISE BUDGET

An enterprise budget is a valuable shortened version of a business plan. In an enterprise budget the project is usually considered for a single year or crop. The intent is to examine all the input costs and sales income that can be expected from that particular crop. An enterprise budget may be determined for a particular pond, crop, or

farm. This will allow the farmer to examine a simplified version of the potential business.

a. Input costs

In a typical enterprise budget the input costs will include feed, labor, fuel, utilities, chemicals, fingerlings, rented equipment, services, advertising, and other expenses directed related to that particular crop. The businessman farmer will be using this tool as a way to determine if it is advisable to proceed with a potential venture. If it is obvious that the expenses will exceed the costs of production, the rest of the financial aspects will almost certainly fail.

b. Sales

The income from expected sales should be a conservative number based on historic prices obtained in the same markets into which a farmer will be selling, preferably, for the same product, sold in the same outlets, to the same consumers in recent times. It is easy for farmers to exaggerate the anticipated prices they expect to receive, especially when they are bringing new volumes of product into a market. Additional supply will almost always depress product prices unless demand is increased in some way. Advertising may help to increase demand and thus prices and income, but the advertising costs will then need to be added to input costs. Again, if sales income in an enterprise budget does not exceed the input costs, there is little reason to proceed as the basics of the business will be probably be undesirable.

c. Income-Expenditure Sheets

Book keeping in an old fashioned ledger-book is always a good idea in addition to more sophisticated business software. A careful recording of all costs and income on a daily basis is necessary for the farm owner or manager to understand the fundamentals of his or

her aquaculture business. Business software with spreadsheet programs and/or professional accounting and tax advice are necessary for virtually any business now, but simple accounting procedures as part of an enterprise budget are always advisable so that basic operations of the farm operation are not overlooked. All of the data from a ledger, double entry, or account book will need to be entered into a software program eventually, but having an on-farm hard copy collected by staff that can be referred to in order to confirm expenditures and income is the best way to avoid clerical errors.

C. PERSONNEL (Human Resources and Record Keeping)

Staff members of an aquaculture operation are critical to the eventual success or failure. In general, farm staff members with agricultural backgrounds, especially with animal husbandry, have proven to adapt to rearing fish with minimal effort. Fishermen have a less successful record, although some have done fine especially with marine caged fish. Livestock farmers often have a better understanding of the need for constant attention to the needs of the fish. They are also often better at judging feeding levels, reaching satiation and developing a feel for when the fish are not in optimal condition.

At any size operation, the human resources of the farm are as important as the fish resources. The staff members should feel that the welfare of the fish and the enterprise will be related to their benefits and that the success of the farm will improve their welfare as well, whether in salary bonuses, improved housing or diet. It is important to follow all legal requirements for employment and social welfare and corporate responsibilities. Increasingly, international buyers are requiring that these conditions are met through certification programs.

Record keeping of farm operations is critical to successful operations. In addition to the financial records described above, farm operating records are also important. Proper recording of amounts fed, fish feeding activity and feed inventory are important to control the single greatest cost of an aquaculture operation. Monitoring of water conditions (temperatures, dissolved oxygen, ammonia, nitrite, nitrates, pH, and alkalinity) is critical to maintaining the proper environment for the fish and ensuring that healthy conditions will allow for fast growth. Careful recording of growth rates and any mortalities and general condition and activity of the fish is necessary to ensure a high survival rate and to predict any disease or pathogen issues when they are easy to deal with and before they can become catastrophic. Even if the farmer does not recognize a developing health concern, a disease expert will need this information and records of the changes in order to diagnose a problem and recommend a course of action. With no records, a pathologist or epidemiologist will need to take time to conduct a series of tests that will delay any treatments or farm operational adjustments.

D. REGULATORY MANAGEMENT (Farming licenses, Environmental regulations, Food safety)

Pakistan has a series of rules and regulations pertaining to aquaculture, water pumping and use, and general farming activities. Each aquaculture farmer is responsible for ensuring that all legal requirements are met and that licenses and permits are obtained and kept current. There are also a series of environmental rules and regulations regarding which species of fish can be farmed in different parts of the country, how waters are discharged from farms and which chemicals and antibiotics can be used legally in the proper manner. Finally, there are regulations pertaining to food safety and the safe handling of animals bound for human consumption. The farmer and his or her processing and handling

partners are responsible for not only providing safe seafood products but also meeting the regulatory guidelines provided by the government. In Pakistan, several parasites infecting humans, with birds, fish, and/or snails as vectors are known to exist. Most farms attempt to exclude birds from the production systems as likely predators as well as potential vectors of fish and human parasites and pathogens. Snails are likewise considered both an annoyance to equipment as well as potential vectors. Predator control and snail control are both portions of an overall farm biosecurity program. Biosecurity and the wider ranging Best Management Practices (BMPs) also seek to reduce contamination of fish from environmental pollutants. BMPs or Best Aquaculture Practices (BAPs) include planning for how to reduce or avoid pollutants entering the farm through the water, air, feed, or even on the workers. Best management practices will be described in greater detail below. Some of these rules and regulations are mentioned in this handbook, however, this book is not meant to be a definitive list and the aquaculturist must be responsible for contacting Pakistani government representatives to ensure full compliance.

E. CERTIFICATION PROGRAMS

National governments, industry cooperatives, non-governmental organizations and the Food and Agriculture Organization of the United Nations (UN-FAO) have all determined that certification programs are useful to differentiate the most responsible growers and products from the farms with the weaker producers. Best management practices or best aquaculture practices have been codified by several groups including the UN FAO, the Chinese and Thai national governments and a host of non-governmental organizations, food retailers, and other institutions (Aquaculture Stewardship Council, Aquaculture Certification Council, Natural Land, Global Good Agriculture Practices, WalMart, Whole Foods, and Monterey Bay Aquarium). In each case the certification

program intends to reward the producer and/or the processor for implementing activities that provide a safe and productive workplace that is fair to workers, meets environmental safeguards and provides safe and healthy seafood to consumers. Each of the certifying organizations operates by reviewing sustainability of aquaculture practices and providing a certification and marketing logo that can be affixed to the product packaging, or at announcements at point of sale. The Monterey Bay Aquarium in the U.S. develops a list that is widely circulated with small "watch cards", posters for use at seafood counters and an extensive website.

Certification programs that indicate product and processing compliance with voluntary guidelines, national government regulations, or international standards have grown rapidly and have expanded to include farm operations, hatcheries, feed mills and processing plants. By working up and down the value chain, the programs seek to provide vertically integrated supervision. It was activity working back up the value chain from shrimp farms, to feed mills, to source of fish meal, back to the fishing fleet that discovered the problems with forced labor and mistreatment of immigrant fishers in Thailand in 2013. Proper use of drugs and chemicals is another focal point of certification. Historically, misuse of antibiotics in the salmon industry was a prime focus of certification programs. The wide application of vaccinations for fish has reduced antibiotic use in aquaculture by two orders of magnitude in recent years. Disinfection of nets and other equipment is an important part of the programs and is considered in BMPs and BAPs to protect both the aquatic animals and workers.

The International Standards Organization (ISO) has published guidelines for food processing plants that most seafood processors strive to meet. Most international importers and retailers of seafood require these certifications be in place. ISO 9100 provides for certification of Hazard Analysis at Critical Control Points(HACCP)

which covers product safety, plant and food hygiene, economic integrity, and product quality. ISO 22000, the food safety management system, applies to all kinds of food processors linked to Codex Alimentarius.