

Feasibility Analysis of a

Prototypical Chestnut Cooperative

Prepared by:

Virginia Foundation for Agriculture, Innovation & Rural Sustainability

P.O. BOX 27552
RICHMOND VA 23261
804-290-1158
VAFAIRS.COM

VAFAIRS

EXECUTIVE SUMMARY

This analysis reviews the economic and technical possibilities of a prototypical, Virginia-based chestnut selling cooperative venture. Matson Consulting has completed the analysis on behalf of the Virginia Foundation for Agriculture, Innovation and Rural Sustainability (VA FAIRS).

The American chestnut was once common, but the first half of the twentieth century saw it in severe decline due to a devastating chestnut blight. Though chestnut production in the United States is low in comparison to other countries in which chestnut trees grow, recent years have seen a growth in the American chestnut industry.

The Virginia chestnut industry has also been growing in recent years. Over Virginia, 50 farms are currently growing chestnut trees, and nearly half of those farms have mature trees capable of producing nuts. Between 2007 and 2012, the number of acres devoted to chestnut production increased from 157 to 228, placing Virginia sixth in the nation. With continued growth in this industry, Virginia could be a potential area for a cooperative serving chestnut producers.

It is important to the venture's long-term viability that it be able to source steady and consistent supplies from chestnut farmers to maintain operations. With certainty of sufficient supply and demand established, the proposed venture will sell fresh chestnuts from local producers to wholesale buyers. The cooperative will aggregate chestnut crops purchased from local farmers, then package, store, and sell the chestnuts.

The business will receive revenue from membership fees, chestnut sales, and donations. The facility will operate only part of the year, from August to January, as chestnuts are harvested between August and November of each year and have only a three month shelf life. The venture will hire a combination of salaried labor and part-time seasonal labor for optimal efficiency.

As the United States is responsible for less than 1 percent of total worldwide chestnut production, very little competition in the chestnut market exists; however, this venture may face a series of risk factors and uncertainties that will need to be surmounted to establish a successful enterprise. A list of several potential risks is included in this report.

The analysis in this report is based on market research and the best estimates of the client and the consultants. There will be differences between the projected and actual results, due to unforeseen events and circumstances. Numbers may not always exactly add or compare due to rounding errors, but the small differences do not affect financial results.

A break even analysis was performed to highlight the necessary level of revenues and expenses for the cooperative to cover its costs and move towards financial viability. Estimated sales for the cooperative to break even would be about $985,000 million in year one, rising to $1.44 million in year three. Net income levels for year one would be just below $4,500 while net income for years two and three would be $85,000 and $112,000, respectively.

While the cooperative could not operate under the current size of the chestnut industry in Virginia, with supported industry growth, the cooperative has the potential to be a viable business venture.

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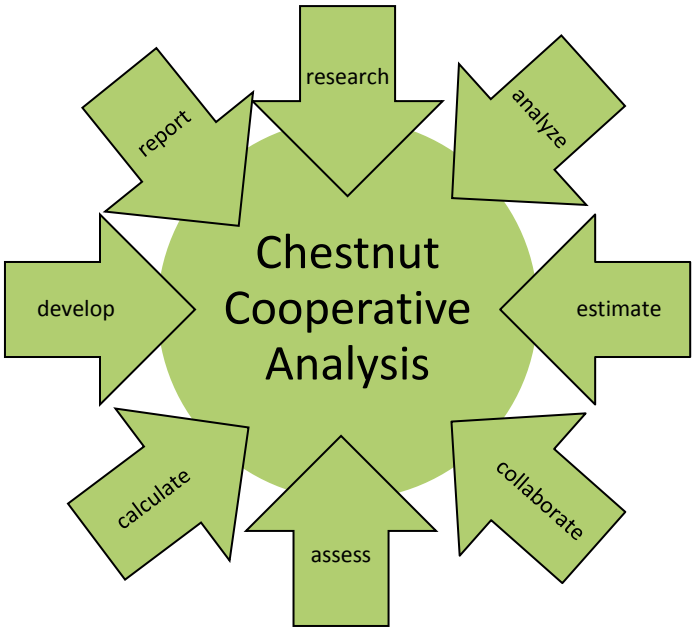
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INTRODUCTION

In 2015, the Virginia Foundation for Agriculture, Innovation, and Rural Sustainability (VA FAIRS), supported by Matson Consulting (collectively referred to hereafter as "the consultants"), performed an analysis for a prototypical cooperative chestnut marketing venture to be located in the state of Virginia.

Over the course of the document's creation, the consultants undertook many tasks and activities, including research and data collection, business planning, and financial modeling. To make the analysis of a Virginia chestnut cooperative as realistic as possible, Matson Consulting has completed the following:

a) Conducted industry research and interviews
b) Determined critical factors for success
c) Assessed management and operation options
d) Estimated operating costs for the operation
e) Developed financial model for sensitivity studies
f) Created analysis report



This report presents the results of these efforts along with Matson Consulting staff observations and recommendations.

Research and Data Collection

To determine the ability of the region to supply a chestnut marketing operation, research was conducted to establish the current and possible future supply of chestnuts from area farmers. As part of this information, the consultants used recent, credible studies and high quality resources to serve as a starting point for this study. Claims are supported by data gathered from sources on market structures, government statistics, current and future supply estimates, and the knowledge of the consultants. The consultants also conducted calls and

interviews with industry experts. Photos used throughout the document were sourced from readily available stock photos and pictures available at USA.gov. Pictures obtained from other third party sources have been cited with the appropriate source.

Financial Model

A financial model for the venture was developed, which will allow sensitivity scenario assessments to be used in the business decision process for the chestnut marketing venture. This model was created to meet USDA business and industry loan program specifications and standards. The model reports monthly data for the first year of operation and then quarterly thereafter. It contains a detailed sales breakdown, labor, profit and loss statement, depreciation schedule, cash flows, and balance sheet. These standards are also comparable to those required by other lending institutions.



GENERAL SETTING AND NEED FOR THE PROJECT

Project Definition and Objectives

The goal of this project is to assess the feasibility of establishing a chestnut marketing cooperative within Virginia. The marketing venture intends to operate as a cooperative, purchasing chestnuts from area farmers, then processing and marketing those chestnuts to consumers. This study is based on input from industry analysis information and research.

This study will assume a level of staff and equipment necessary to maintain an efficient operation in the future. Constructing this study required that certain questions be asked:

1. What is the current supply of inputs available?
2. What end-products will the facility produce?
3. At what level does the facility need to operate in order to be profitable?
4. What are the major costs considerations?
5. What amount of capital may be needed?

This study will evaluate the conditions under which the business could become commercially viable and profitable.

Evaluation Criteria

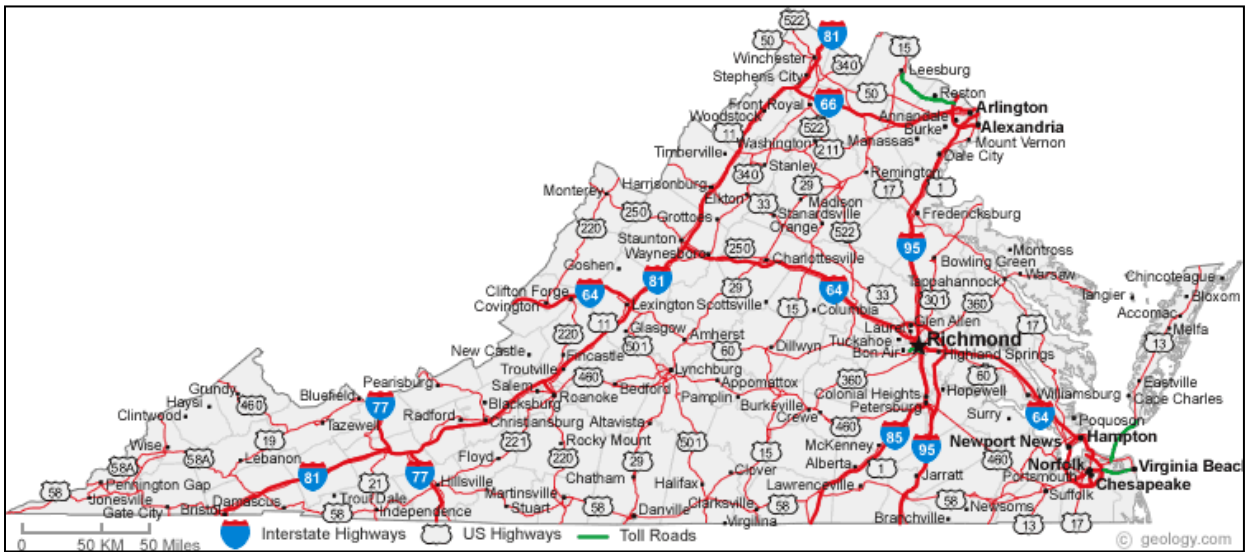
The success of the proposed cooperative project will be judged on two criteria: 1) the evaluation of the potential market for a chestnut marketing venture organized as a cooperative, specifically growth and potential feasibility, and 2) an assessment of the capability of the venture to perform services profitably.

The Consumer Marketplace

This project is set within the state of Virginia, but no specific county has been determined. Virginia is home to an extensive transportation system, complete with an efficient interstate system, commercial airports, and ports, providing opportunities for marketing and distribution to large population centers not only within the state, but in the surrounding states as well.

Virginia features a well educated and upwardly mobile populace with ethnic and cultural diversity which can create numerous potential customer demographics. The following map shows the major roads and interstates for Virginia's overall transportation system.

Figure 1: Map of Virginia



According to the U.S. Census Bureau, Virginia's population grew an estimated 4.1 percent between April 1, 2010 and July 1, 2014, resulting in a total estimated population of 8,326,289 people.[1] The following section provides general information about some of the larger areas in Virginia and gives a representation of different areas throughout the state. This information comes from The United States Census Bureau State & County Quick Facts.

Tidewater area of Virginia As defined by the Chesapeake Bay Preservation Act, Tidewater includes major cities such as Virginia Beach and Norfolk. This area is located on the Southeast coast of the state, less than an hour from the North Carolina border. Virginia Beach's population was estimated at 448,479 for 2013, with an estimated median annual household income of $65,219 between 2009 and 2013. There were approximately 165,000 households for the same time period. Norfolk had an estimated population of 246,139 in 2013, with over 85,500 households between 2009 and 2013 and an estimated median annual household income of $44,747.

Chesapeake Chesapeake is also located among the Tidewater area, just south of Norfolk. This area's estimated population in 2013 was 230,571, or approximately 2.8 percent of Virginia's population. The estimated population for the city experienced an increase of 3.8 percent between 2010 and 2013. Between 2009 and 2013, Chesapeake had over 79,000 households with a median household income of $69,743 a year.

Richmond The city of Richmond is located centrally within Virginia, about two hours south of Washington, D.C. The city has an estimated population of 214,114 as of 2013, represented a nearly 5 percent increase since 2010. Between 2009 and 2013, Richmond had almost 85,000 households with a median annual household income of $40,496. The land area of the city is almost 60 square miles with over 3,400 people per square mile.

[1] US Census Bureau (2015). "State & County Quickfacts: Virginia." http://quickfacts.census.gov/qfd/states/51000.html

Alexandria Alexandria is located in northern Virginia, just south of Washington D.C. The city has an estimated population of nearly 149,000 people as of 2013. The city had over 65,000 households between 2009 and 2013, with an estimated median income of $85,706 a year. This area occupies a land area of 15 square miles, with over 9,000 people per square mile.

Roanoke This city is located in the southwest area of Virginia, about three hours from Richmond. In 2013, the city had an estimated population of 98,465. The estimated population increased by 1.6 percent since 2010, and had almost 42,500 households, with a median annual household income of $38,145 from 2009 to 2013.

Charlottesville The city of Charlottesville is also located centrally in Virginia, about an hour and a half to the west of Richmond. The 2013 estimated population for Charlottesville was 44,349. Between 2009 and 2013, Charlottesville had over 17,000 households, with a median household income of over $44,600 a year.

ORGANIZATION

Initial Steps

Before addressing technical issues, the main issues to address are the organizational and marketing questions facing the project. The answers to these questions can also help in determining the business model and legal structure of the venture. As a first step, the organizing committee should consider the following questions to determine the project's overall possibility of success.

- Has the underlying goal of the project been determined?
  Starting any new business is a complex project. A small group of prospective members should discuss a common need and develop an idea for how to fulfill it. Depending on the situation generating the idea, a new business may be welcomed with enthusiasm or may be met with competitive opposition.
  - Is the goal an improved outcome or more control? Both?

- Is there leadership present that is willing to champion the project?
  - Does the leadership group have the passion to do what is required to succeed?
  - Does the leadership group have the expertise to succeed?
  - Does the leadership group represent the view of all stakeholders?

- Is the project actually addressing an underserved market?
  - Has a survey of potential producers and customers been conducted?
  - Is the market underserved or simply perceived as underserved?
  - Does a comparative or competitive advantage exist?

- Will existing competition factor into the project's supply or demand?
  If opposed, leaders must be prepared to retain potential business by reacting to various strategies of competitors such as price changes; better contract terms or canceled contracts; attempts to influence lenders against providing credit; and even publicity, misstatements, and rumors attacking the cooperative business concept.

- What are the primary business risks?

- Can the firm gather enough equity money to sustain the business?

Additionally, the USDA has established procedures for the development of successful cooperatives; see www.rurdev.usda.gov and for more detailed information. The following section is excerpted and adapted from USDA organizing documents, and can be used as a planning tool for the formation of other types of legal organization as well.

Regardless of the business climate for the proposed cooperative, leaders must demonstrate a combination of expertise, enthusiasm, practicality, dedication, and determination to see that the project is completed.

Cooperatives

Cooperatives provide an opportunity for effective coordination that improves marketing system performance by unifying and exerting power to raise total returns to agricultural producers. System rewards from improved coordination have been most visible through efforts of farm input cooperatives at the regional and inter-regional levels in the plant food, crop protectant, petroleum, farm credit, and energy sectors.

Types of Cooperatives

Many different types of cooperatives exist. Structurally, cooperatives may vary as much as the products or services they provide, therefore classification is not standardized across all cooperative ventures. Below are several short descriptions of selected cooperative structures.



Marketing Cooperatives: Marking cooperatives handle most types of farm product and enable producers to 1) correct market failure where prices are too low or buyers have left the market, 2) provide a service not available otherwise, 3) gain market power (negotiating power) against much larger buyers, 4) spread risks and costs, and 5) have enough volume to operate on a large enough level to meet the demands of buyers or a greater level of efficiency[2]. This classification of agricultural cooperatives is the largest segment by sales value.



Niche-Market Cooperatives: A subset of Marketing Cooperatives, some local cooperatives seek to serve a specialized clientele. These cooperatives do not strive to become large because their small customer base wants specialized products and/or services. Others are small by nature of the product they handle and the territory where it can be grown. While some of these cooperatives may be very successful, the opportunities they represent and their overall impact are both limited.



Marketing Agencies-in-Common (MACs): MACs are a strategic alliance among marketing cooperatives that join to market under a common agreement. MACs serve as marketing agents for their members to achieve economies of size in marketing similar or complementary products. They also share large costs associated with developing brand names and provide a way to acquire and sell nonmember products to expand product lines. The agency will usually have exclusive rights to sell members' products in some or all markets.



Supply Cooperatives: Supply Cooperatives derive most of their business volume from the sale of production supplies, machinery and equipment, and building materials. Many also handle farm, ranch, and home items, such as heating oil, lawn and garden supplies and equipment, and food.



Service Cooperatives: The smallest of all agricultural cooperative types by number, Service Cooperatives provide specialized services related to the business operations of farmers, ranchers, or cooperatives, such as trucking, storing, and drying. Cooperatives that provide these services to their members offer a way for producers to become more productive by lowering their costs.

[2] United States Department of Agriculture Rural Business–Cooperative Service Cooperative Understanding Cooperatives: Agricultural Marketing Cooperatives *Cooperative Information Report 45, Section 15*



Joint Ventures: Joint ventures exist across all classification types, and offer another alternative coordination among cooperatives. As shown in a USDA Agricultural Cooperative Service Research Report,[3] "A joint venture is a business entity, created and supported by other businesses, that has a limited objective related to solving a problem facing each of its owners." Cooperatives are, in this sense, joint ventures. Formed by members to provide quality goods and services the members need at the lowest possible cost, joint ventures may be organized as Limited Liability Companies (LLC), partnerships, corporations, cooperatives, unincorporated associations, or merely contractual arrangements.[4] A joint venture not meeting its objectives may be disbanded without becoming a major disruption to the participants.



New Generation Cooperative: A New Generation Cooperative, a complex legal structure rather than a type, is often formed by producers who perceive the best opportunity for continued economic success hinges on their ability to retain more of the value-added dollars generated from their production, and is not legal in all states. Distinguishing features include:

- Limited and defined membership
- Delivery rights and obligations that have specified quantity and quality
- Substantial up-front producer equity;
- Tradable equity shares that can fluctuate in value
- The right to deliver product to the cooperative is linked to a legal responsibility for the producer to provide that product. This is accomplished through a stock purchase and legally binding agreements.

New Generation Cooperatives are based on significant up-front investment of producer equity as opposed to equity retained over time in traditional cooperatives. Producers provide up-front investment to capitalize the business through the purchase of delivery rights, which would also ensure the cooperative's supply. In return, producers receive compensation based on contracts entered into by the cooperative on their behalf.

This particular form of operation requires complex legal decisions in the organizational phase. Because the new generation cooperative requires stock, businesses formed under this structure require oversight by state regulatory boards at a minimum, and in some cases by the Federal Security and Exchange Commission. However, some New Generation Cooperatives have organized under the Internal Revenue Service 521 code, which allows limited exemption from Federal SEC regulations.[5] In many cases, more than one class of stock is issued for reasons of functionality.

[3] Frederick, Donald A., *Successful Joint Ventures Among Farmer Cooperatives*, USDA, ACS Research Report No. 62, 1987

[4] United States Department of Agriculture Rural Business–Cooperative Service Cooperative Information Report 60

[5] Income Tax Treatment of Cooperatives: Internal Revenue Code Section 521, Cooperative Information Report 44, Part 4, 2005 Edition, Donald A. Frederick

Why become a cooperative?

Forming as a cooperative can provide a wide variety of advantages for this venture. While the type of organization can affect some of the more specific benefits, overall it will provide valuable support to smaller chestnut farmers and allow them to consolidate their efforts. Through the cooperative's operations, they will have access to a larger number of buyers, have support in their marketing and sales efforts, and have opportunities to expand their business into a wider area. Some producers may not be aware of or be able to implement various marketing opportunities that are available, and the cooperative can support these efforts.

In addition to state and federal statutes and regulations that must be complied with for a business to qualify as a cooperative, the USDA lists three principles and their accompanying descriptions as being widely recognized and practiced for cooperatives:

The User-Benefits Principle - Members unite in a cooperative to get services otherwise not available - to get quality supplies at the right time, to have access to markets or for other mutually beneficial reasons.

The User-Owner Principle - The people who use a cooperative own it. As they own the assets, the members have the obligation to provide financing in accordance with use to keep the cooperative in business and permit it to grow.

The User-Control Principle - As owners, a cooperative's members control its activities. This control is exercised through voting at annual and other membership meetings, and indirectly through those members elected to the board of directors. Members, in most instances, have one vote regardless of the amount of equity they own or how much they patronize the organization.

Advantages and Disadvantages of Cooperatives

- Earnings from business with members are taxed once, either as income of the corporation when earned or as income of the members when allocated to them.
- A cooperative usually has a perpetual existence.
- Members can routinely join or resign without disrupting ongoing operations.
- Rules governing its establishment can be complex.

Possible Legal Structures[6]

It is important for the venture to determine the best legal and organizational structure for efficient operation. The following presents examples of legal organizations, as well as some advantages and disadvantages associated with each.

[6] Adapted from: Virginia Business Legal Structures. http://www.vafairs.com.

Limited Liability Company
The purpose of an LLC is to combine the limited liability for its members usually found in the corporate structure (and to limited partners in limited partnerships) with the pass-through tax advantages of the general partnership. (Any profits/losses pass through to the individual investor and appear on the individual's tax return). So, an LLC has some, but not all, of the characteristics of each entity. An LLC may be formed by just one person, but it more commonly requires two or more persons.

LLC formation and liability characteristics are similar to that of a corporation. To form a corporation or LLC, the necessary documents must be filed with the designated state agency. Unlike a general partnership, shareholders are not personally liable. Other characteristics may be similar to or different from corporate characteristics, depending upon how the LLC members wish to structure the entity and comply with IRS regulations to receive favorable tax treatment.

Advantages and Disadvantages of LLCs

- Provides its members limited liability.
- Allows members to escape double taxation.
- Any "person," either natural (an individual) or legal (another legal entity, such as a partnership), can be a member.
- Members may actively manage the LLC without incurring personal liability.
- Uncertain tax status.
- Drafting the agreement can be fairly complex.

C-Corporation
C-Corporations are the most common form of organization for large businesses in the United States. The structure offers the investor (stockholder) limited liability protection – any liability is limited to the value of the stock held in the corporation. Businesses formed under this structure require oversight by state regulatory boards at a minimum and in some cases by the Federal Security and Exchange Commission. A Corporation has a perpetual existence. Owners can routinely sell or reassign stock (or ownership) without disrupting ongoing operations.

B-Corporation
Also known as a benefit corporation, B-corporations' goals include positive impacts on society and the environment in addition to making a profit. The authority of B-corporation directors and officers encompasses the same responsibilities as in a traditional corporation, but includes the added dimension of considering societal and environmental impacts. Not all states have legislation in place to recognize C-corporations within the states.

S-Corporation
The S-corporation is not really a different type of corporation; it is a special tax designation applied for and granted by the IRS to corporations that have already been formed. To become an S-corporation, the business first must form a general or professional corporation, and the

company must complete Form 2553, Election by a Small Business Corporation, and file it with the IRS.

Many entrepreneurs and small business owners take advantage of the S-corporation structure because it combines many advantages of the sole proprietorship, partnership, and corporate forms of business.

Advantages and Disadvantages of S-Corporations

- Restrictions on the number and type of ownership.
- S-corporations have the same basic advantages of the general corporation. (see above)

INDUSTRY BACKGROUND

Understanding the past and present state of the chestnut industry in the United States and around the world can provide context as to how this project fits into the industry overall.

U.S. Chestnut Industry

The chestnut has a long history of importance as a food and wood source in the Northern Hemisphere. Native to North America, Europe, and Asia, commercial chestnuts in the U.S. are available in four species:

Japanese: The Japanese chestnut is native to China and Japan. It has limited resistance to chestnut blight and is generally considered the least flavorful.

American: The American chestnut is native to the eastern United States and is regarded as producing the best tasting nut, but it is extremely susceptible to chestnut blight.

Chinese: Native to China, the Chinese chestnut is the most resistant to diseases, making it desirable for hybridization with other species; it is commonly planted in the United States where blight is prevalent.

European: The European chestnut, native to western Asia and Europe, produces the largest chestnuts but is fairly susceptible to blight.

A large number of chestnut varieties have been developed through hybridization and selective breeding programs in order to create chestnuts which can combine the taste, disease resistance, and yield of the different species.[7] The figure below shows side by side comparisons of the leaves and nuts of each species. On the left, from left to right, are the American, Chinese, European, and Japanese chestnut leaves. On the right, from left to right, are the American, Chinese, Japanese, and European chestnuts arranged in order of general size.

Figure 2: Chestnut Species Identification[8]



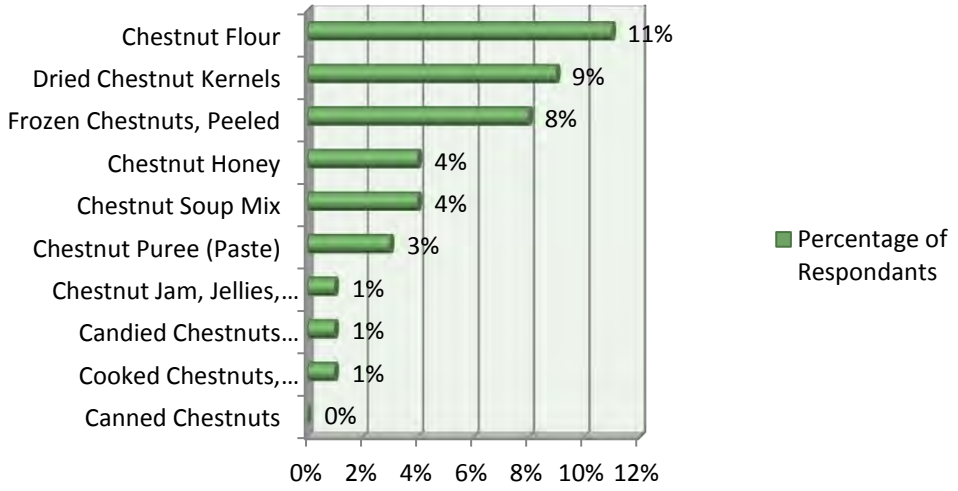
[7] Vossen, Paul. (2000). Chestnut Culture in California. University of California Division of Agriculture and Natural Resources.
[8] (July 2015). Species Overview. The American Chestnut Foundation. www.acf.org/Tree_ID/5species.php

Chestnuts in North America have traditionally been a novelty food, mainly restricted to use in holiday treats and cold-weather savory dishes. However, chestnuts are gaining popularity for their nutritional value. They are high in vitamin C and fiber, and are comprised mainly of low-calorie starch, making them a preferable choice for those looking to avoid the fats in ordinary nuts.

Chestnuts are also gaining popularity for being gluten-free, which makes chestnut-based recipes an optional substitute for people with a gluten allergy or celiac disease. According to the Celiac Disease Foundation, "Celiac disease is an autoimmune disorder that can occur in genetically predisposed people where the ingestion of gluten leads to damage in the small intestine."[9] There currently no other treatment for celiac disease other than a strict gluten-free diet.

The industry for value-added chestnut products exists, though it represents a much smaller portion of the overall industry than fresh chestnuts. A survey conducted by the University of Missouri found that, compared to the 77 percent of growers who were selling their chestnuts fresh in bulk, only 19 percent were producing value-added products. These include chestnut flour, dried kernels, frozen chestnuts, chestnut honey, and other chestnut-based items.

Figure 3: Value-added Activities Performed by Chestnut Producers[10]



Among value-added chestnut items, chestnut flour and dried peeled chestnuts are the most popular items. Chestnut flour is especially popular with people who have gluten intolerance, as its composition and consistency is similar to that of typical wheat flour, making it an ideal substitute for use in baking and cooking. It is typically sold in small amounts in retail and specialty stores. Dried chestnuts, widely available online, but also found in markets and specialty stores, are also commonly used in savory dishes such as soups, stews, or with other roasted winter vegetables.

[9] (2015). What is Celiac Disease? Celiac Disease Foundation. https://celiac.org/celiac-disease/what-is-celiac-disease/
[10] Ibid.

Chestnut Blight



Source: chestnuts.msu.edu/pest_management/major_diseases

Once prevalent throughout the forests of the eastern United States, the American chestnut population was devastated by the chestnut blight during the early 20th century. The fungus infects trees by growing under the bark and killing the area around the infection, forming a canker. The infection slowly spreads across the tree, often taking years to kill larger trees. Chestnut blight was first seen in New York in 1904. By 1940, more than 3.5 billion trees had been killed, with blight being spread through weather as well as animals.

It is believed that the disease came from imported Chinese and Japanese chestnuts, which were rising in popularity towards the end of the 19th century. These trees have higher resistance to the disease, and so were able to become infected but not die. The American chestnut, isolated from the other species by the Atlantic and Pacific Oceans, had not experienced such a fungus and had no natural resistance.

Efforts to preserve the American chestnut and curb the spread of the blight have come from breeding practices as well as targeting the blight itself. The development of an inoculation for in the 1960s allowed for infected trees to be treated with a weakened strain of the blight and develop a resistance to the disease before it can kill them. A more practical effort has been hybridization. Blight prone American chestnuts have been crossbred with more resistant Japanese and Chinese chestnuts. The results have been trees with more of the desirable American chestnut properties such as size and wood quality, as well as the blight resistance from its Chinese and Japanese counterparts.[11]

Production

Chestnut production in the United States is extremely low compared to other countries in which the trees grow. This is due in large part to the devastation of the once common American chestnut in the first half of the twentieth century by the chestnut blight. In recent years, however, the United States has experienced a growth in the small chestnut industry. From 2007 to 2012, the total acreage devoted to chestnuts rose from 3,334 to 3,784, or 13.5 percent.



Because of the long period between planting and nut production, only 2,406 of the total acres in 2012 had reached bearing age. Michigan and Florida are

[11] Rellou, Julia. (2002). Chestnut Blight Fungus. Columbia University. www.columbia.edu/itc/cerc/danoff-burg/invasion_bio/inv_spp_summ/Cryphonectria_parasitica.htm

the top two states in terms of the number of farms and acreage for chestnuts with Florida slightly edging out Michigan in acres of chestnuts which have reached bearing age.[12] While U.S. chestnut production is on the rise, it is only a fraction of the world total, less than one percent.[13]

Table 1: Top Chestnut Producing States 2012[14]

State	Total Number of Farms	Total Number of Acres	Bearing Age Acres
Michigan	115	617	442
Florida	111	592	447
California	59	507	428
Oregon	70	358	274
Ohio	41	239	128
Virginia	53	228	157

Chestnut trees are typically planted in orchards to attain an ideal scenario for growth. The Chinese chestnut is the most popular species of chestnut tree grown in the United States. This species is the most resistant to blight and therefore is the safest route for healthy nut production. While there is still the possibility the Chinese chestnut tree may become infected with blight, it is unlikely. The location of chestnut trees is not as important as the conditions in that area in which they are grown. Four factors come into play when growing chestnuts.

1) Light- Chestnut trees need direct sunlight to grow.
2) Temperature- While chestnuts can survive in the cold, they are susceptible to frost damage just like many other trees.
3) Rainfall- Chestnuts typically need about 40" in rainfall per year to survive. Irrigation may be used in lieu of adequate rainfall.
4) Other chestnuts- Chestnut trees are not self-pollinating, and thus require other chestnut trees for pollination. For this reason, chestnuts are typically grown in orchards to ensure proper pollination.



It is conceivable that chestnuts, though ordinarily grown in orchards, may also be grown as an over story for a forest farming arrangement. Forest farming is the practice of cultivating and harvesting Non-Timber Forest Products (NTFPs) from a natural, manipulated, or disturbed forest. Forest farming takes advantage of the space underneath a canopy of trees by using this ground to grow profitable shade-loving forest botanicals such as ginseng and goldenseal.

[12] (2012). Fruits and Nuts: 2012 and 2007. 2012 Census of Agriculture. USDA. www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_031_031.pdf

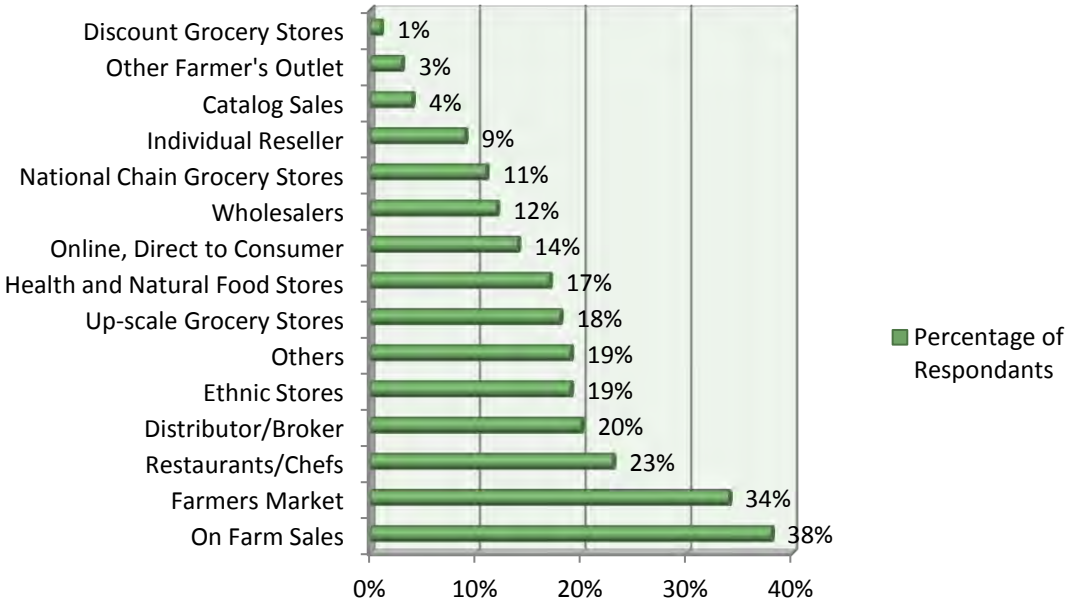
[13] Geisler, Malinda. (April 2012). Chestnuts. Agricultural Marketing Resource Center. http://www.agmrc.org/commodities__products/nuts/chestnuts/

[14] Op. cit. Fruits and Nuts: 2012 and 2007.

Market

Chestnut growers in the U.S. predominantly sell their fresh products locally, but sales also occur regionally and nationally. According to a 2004 nationwide survey of chestnut growers by the University of Missouri, on-farm sales accounted for 38 percent of local sales, while farmers market sales made up 34 percent. Other avenues for sales include restaurants, retail locations, local grocery stores, health food stores, chain grocery stores, and wholesalers. Most of the sales reported in the survey were of fresh chestnuts either in bulk or packaged.

Figure 4: Outlets for Fresh Chestnut Sales[15]



Most agricultural operations have an element of waste associated with their operations, so secondary markets are helpful in reducing waste and increasing income. A market for chestnut waste products exists that works in conjunction with the primary market for regular chestnuts. Human error, infestation, cracks, and rot are all a part of the chestnut harvesting operation, but these lower quality or damaged nuts may still be sold. The cooperative could capture a portion of this waste market and use it as an additional source of income.

Chestnuts that are unsellable in their current form due to rot, infestation, cracks, or low quality can be sold near the wholesale price per pound to different business entities that can make use of them. Any nuts with rot (about 5-10%, which is typical for many chestnut orchards) are picked out from the harvested nuts to be sold to brewers/distillers. These entities then grind the chestnuts up and use them in chestnut alcohol products such as chestnut beer or cider. Using chestnuts instead of more common brewing grains allows the brewer to create a gluten-free product. Chestnuts that are cracked or have weevil exit holes can also be sold in the waste market. Some of these chestnuts can be sold to hunters who use them in their deer bait mix. The rest of these cracked/infested chestnuts can be sold to farmers for use in their animal feed.

[15] Gold, Michael A.; Cernusca, Mihaela M.; Godsey, Larry D. (2005). Chestnut Market Analysis Producers' Perspective. University of Missouri Center for Agroforestry. Op. cit. Michael A. Gold.

A third market exists for chestnuts and that contains value-added chestnuts products. These products include items such as chestnut flour, roasted chestnuts, or frozen chestnuts. Typically, lower grade nuts are used to make these products. However, these value-added products, especially chestnut flour, are often more trouble than they are worth due to the time and effort required creating it. Value-added chestnut products are typically avoided by growers, especially small ones without large-scale production capabilities.

Price

Chestnut prices vary according to a number of factors including nut size, quality, brand name, organic status, and the buyer. Sellers using a brand name or marketing certified organic chestnuts will fetch a much higher price for their product, and prices for products sold directly to customers, restaurants, and health food stores will be higher those sold wholesale.[16]



Wholesale prices range from $0.75 to $2.50 per pound, and retail prices can reach $10 for online sales. Local on-farm sales are generally closer to $5.00 per pound.[17] These price ranges have generally stayed consistent in recent years, with growers split on where they see prices headed.[18]

Imports

Although chestnuts lag behind other more common tree nuts in popularity, foreign imports must still be used to make up the difference between domestic production and demand. The U.S. was ranked number seven of top chestnut importers in 2011 by the United Nations Food and Agriculture Organization, importing 3,761 metric tons of chestnuts.[19] The majority of imported chestnuts originate from Italy, China, and South Korea, all three being top five world producers.[20]

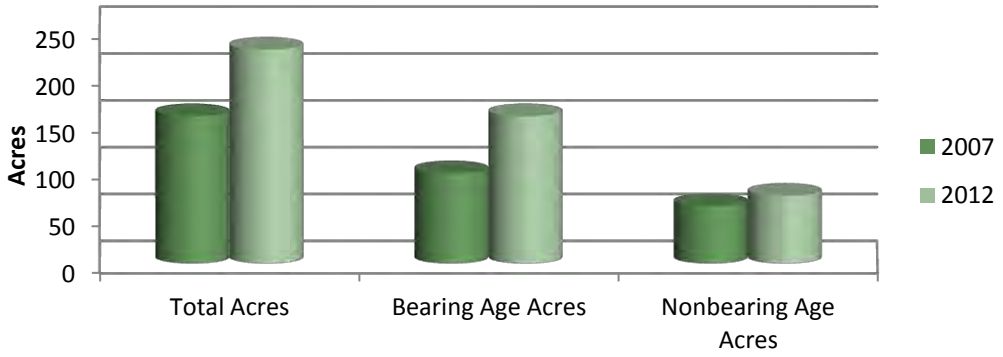
Virginia Chestnut Industry

The Virginia chestnut industry has been growing in recent years. Currently, there are over 50 farms growing chestnut trees, with almost half of those farms having mature trees capable of producing nuts. Between 2007 and 2012, the total number of acres devoted to chestnut production has increased from 157 to 228, placing it sixth in the nation behind Ohio. It ranks in fifth, above Ohio, in number of acres which have reached bearing age.[21]

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[16] Ibid.
[17] Hochmuth, Robert; Wallace, Robert; Van Blokland, Peter; Williamson, Jeffery. (August 2012). Production and Marketing of Chestnuts in the Southeastern United States. University of Florida IFAS Extension.
[18] Op. cit. Michael A. Gold.
[19] (2012). Top imports – Chestnut – 2011. Food and Agriculture Organization of the United Nations. faostat.fao.org/site/342/default.aspx
[20] Op. cit. Malinda Geisler.
[21] (2012). Specified Fruits and Nuts by Acres: 2012 and 2007. 2012 Census of Agriculture. USDA. www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Virginia/st51_1_039_040.pdf

Figure 5: Growth in Virginia Chestnut Production: 2007 to 2012[22]



Though American chestnuts were once prevalent throughout the forests of the Appalachian region, the blight destroyed this major source of food and wood. There are multiple efforts ongoing in Virginia to restore the chestnut's status in the state and encourage people to plant them. The American Chestnut Foundation, the American Chestnut Cooperators Foundation, and the Virginia Department of Forestry are all working on cross breeding and inoculation programs in order to fight the chestnut blight without giving up on the American chestnut species as a viable crop.[23]

International Chestnut Industry

Production

Many countries around the world produce chestnuts. The largest grower is China, which produced an estimated 1.65 million metric tons of chestnuts in 2012. The Republic of Korea, Turkey, Bolivia, and Italy make up the rest of the top five producing countries, though with significantly smaller industries than China.[24]

Table 2: 2012 International Chestnut Production by Volume[25]

Country	Production (Metric tons)
China	1,650,000
Republic of Korea	70,000
Turkey	59,789
Bolivia	57,000
Italy	52,000

Imports and Exports

In 2011, Japan was the largest chestnut importer with 11,690 metric tons brought into the country that year. China ranked second with 9,267 metric tons. The top five are rounded out by

[22] Ibid.
[23] (Accessed June 2015). American Chestnut – History and Restoration Efforts in Virginia. Virginia Department of Forestry. www.dof.virginia.gov/research/chestnut-amer-hist-rest-in-va.htm
[24] (2012). Top production – Chestnut – 2012. Food and Agriculture Organization of the United Nations. faostat.fao.org/site/339/default.aspx
[25] Ibid.

Italy, France, and Thailand. China is also important in the world export market as well. They ranked number one in 2011 with 37,847 metric tons of chestnuts exported. Italy exported 17,120 metric tons, the Republic of Korea exported 10,190, while Portugal and Spain both exported a little over 7,300 metric tons that year.

Table 3: 2011 International Chestnut Importers and Exporters[26]

Top Importers	Quantity (Metric Tons)	Top Exporters	Quantity (Metric Tons)
Japan	11,690	China	37,847
China	9,267	Italy	17,120
Italy	9,034	Republic of Korea	10,190
France	8,352	Portugal	7,356
Thailand	5,279	Spain	7,346

China's Chestnut Industry



China is the world's largest grower of chestnuts. Producing over 1.6 million metric tons in 2012, the nation is responsible for over 80 percent of the supply of Chinese chestnuts. Along with walnuts, chestnuts comprise almost all of China's tree nut production. The tree nut industry in the country has grown rapidly in the past few decades, with both production and consumption on the rise. Production of tree nuts rose from one million metric tons in 2000 to almost four million metric tons in 2013. Alongside the rise in production came a rise in China's share of the world tree nut consumption, from 10 to 25 percent of 2012. Much of this growth has been due to government programs aimed at reducing poverty in mountainous areas of the country by replacing subsistence crops with higher value tree nuts in exchange for food and subsidies. In addition, the Chinese State Forestry Administration has created plans to meet the demand for nuts in the nation by 2020. This includes a proposal to increase chestnut production by 80 percent. [27]

[26] Op. cit. Top imports – Chestnuts – 2011.
[27] Yang, Zhengzhou; Gale, Fred. (March 2015). China's Potential as an Export Market for Tree Nuts. USDA Economic Research Service. www.ers.usda.gov/media/1811357/fts358sa.pdf

SALES AND MARKETING

Cooperatives must consider the marketing differences between selling to wholesale clients and retail clients, maintaining awareness of its image to producers, buyers, and end-consumers, and keeping each group in mind when developing marketing strategies and sales practice.

It can be useful for a cooperative to market itself is by focusing on increasing the connection between producers and consumers. The cooperative has the ability to craft the image of their producers, impacting the way end consumers ultimately perceive the product and the farmers behind it. Print materials or website features highlighting farms and presenting farmers' biographical information and history may be used to create a closer connection for the cooperative's customers, especially in retail sales. This particular marketing strategy takes advantage of the cooperative's position as the middle man, creating trust with both producers and consumers.

Cooperatives targeting wholesale buyers should keep in mind that wholesale customers can encompass a wide variety of organizations, such as restaurants, grocery stores, and manufacturers that could use chestnuts to make other products. Cooperative should take stock of the market to determine which wholesale buyers to target, keeping in mind that each buyer looks for different specifications in the product they buy. Restaurants, for instance, may demand a higher grade of chestnut than a manufacturer of chestnut products. This difference in demand is key to successfully reaching the wholesale market.

Online sales are a viable possibility for a cooperative; many chestnut farmers are selling their crops online with much success, and there are a number of companies online selling a variety of nuts and other goods in bulk. Convenient internet access has simplified the process of shopping for specialty foods, and individuals and wholesalers alike frequently look to internet sellers first to meet their needs.

Case in Point: Chestnut Growers Inc. (CGI)
As the top producer in the United States, Michigan's large chestnut industry is Vital to national production. Chestnut Growers Inc. is a producer run cooperative located in Michigan which works with a number of farms in the state to help with processing and marketing. Its members have access to a commercial chestnut peeler, work closely with Michigan State University, and build relationships with local consumers. CGI growers market not only fresh chestnuts, but frozen and dehydrated chestnuts as well. In addition, they market chestnut flour as a value added product.[28] A 2012 survey of member growers by Michigan State University faculty found that while members were generally supportive of the co-op and the help it provides them, most felt that it placed too much emphasis on community involvement and relationships instead of the business aspects of the operation.[29] Generating higher revenues is important to a producer group which sees years before its first harvest. Balancing the traditional ideas of a cooperative with profitability and business growth is a must for a similar chestnut entity.

[28] (2012). About CGI. Chestnut Growers, Inc. www.chestnutgrowersinc.com/about.shtml
[29] Ross, Dr. Brent; Victor, Nathaniel. (2012). Survey of Midwest Chestnut Growers: A Qualitative Overview. Michigan State University. chestnuts.msu.edu/uploads/files/SurveyofMidwestChestnutGrowers.pdf

Product Packaging and Labeling





In general, packaging simply consists of appropriate containers for handling and storing the product. A cooperative selling only to wholesale buyers will need product packaging that can withstand shipping and can hold larger amounts of product. Typically, a wholesale client will repackage the product for sale or use the product in bulk from the box. Wholesale packaging labels have little need to be as detailed and visual as for retail packaging.

Whole fresh chestnuts are typically sold by the pound in plastic packaging, which may be perforated to help maintain freshness. Chestnuts sold in bulk may also be packaged in mesh bags or burlap sacks. Any further processing to the chestnuts would dictate the type of packaging required, for instance, peeled and roasted chestnuts often come in foil and plastic standing pouches.

Source: http://www.quitecurious.com/baked-chestnuts-and-purple-yams/
Source: http://sacatomato.com/roasted-chestnuts-roasting

Cooperatives often take advantage of local and state food promotion programs in order to create awareness or participate in branding and marketing activities on behalf of producers. State designations, such as certified "Virginia Fresh," are often used to designate products that have met certain requirements to be labeled as local. Local labeling may be more beneficial to the cooperative depending on the targeted market. While some wholesalers may desire a local product, typically labeling a product as local is most valuable when selling retail.

Branded Products

A cooperative may generally decide whether or not they want to sell their products under the producers' brands or under their own brand as a cooperative. However, as this project requires crops to be pooled together for processing and then sold, it will be more effective for the cooperative to sell under the cooperative's brand name than to differentiate the products by farmer under their individual brands.

The cooperative may choose to promote farm brands as part of their marketing strategy. This is an advantage to farmers over selling wholesale, as the farm name usually ends with wholesale buyers – consumers will not hear the name of the farm from which the product has come. When selling to cooperatives who promote producers in their marketing, everyone wins: the cooperative has an effective marketing strategy, the farmers gain brand exposure, and the consumer knows exactly where the product comes from.

Having an established brand is important as effective branding generates consumer confidence and trust. Once cultivated, brand loyalty follows goes beyond the actual product sold to representing the intangible value of the brand.

Federal registration of a trademark, while not mandatory, should be considered. The time and effort placed into the establishment of a business's brand and story cannot be well protected without it. Federal registration demonstrates the registrant's ownership of the mark, legal presumption of ownership nationwide, and exclusive right to use the mark on or in connection with the goods/services listed in the registration.

The brand and trademark ultimately chosen by the cooperative should be used in all communication materials to set up a positive association between the customer and the branding. This brand should strive to become synonymous with fresh local product supply, and seek to be the first source for customers looking for these products.

Promotion

Promotion and marketing are necessary parts of creating a sustainable business. Face to face sales often form the core of the business's initial promotional plan. Surveys and pilot programs can be valuable tools to capitalize on this interaction, and can be especially useful when attempting to gauge demand and determine the best course of action to take in establishing a marketing plan and entering the food sales and distribution market.

Building relationships with customers is vital to the viability of the venture and should be one of the main focuses of marketing activities. It is important to establish clear communication channels with the customer in order to respond to changing needs as well as to keep the customer informed regarding products available and any specific attributes relating to that product.

The marketing activities should be strong and contain focused approach to back up the identified sales plan and goals. Dollars should be carefully spent, and appropriate budgets and activities should be selected and organized in accordance with the businesses expansion goals.

Typical promotional budget items often include:

- Webpage upgrade
- Brochures and other collateral material
- Photography
- Trade activities
- Consumer activities

Website and Social Media



Depending on the type of marketing approach chosen, a website and social media campaign may prove to be key channels for communicating with customers, increasing media coverage, and conducting other marketing activities.

Frequently, consumers of all types begin their search for a product or service online. Social media platforms are also an important avenue of reaching consumers, and sites such as Twitter, Facebook, and Pinterest make it easier to present a brand in each of the places people typically visit on a regular basis. This type of guerilla marketing is especially advantageous when connecting with individuals, families, and various other retail type customers.

Businesses should be aware of advancements in social media and should ensure that their sites are updated on a regular basis so customers can get accurate and timely information on business activities. When establishing an online presence, simplicity of navigation, professional appearance, and conveying the mission of the business in a precise and attention-grabbing manner are key.

Guerrilla Marketing

Because of the inherent flexibility of the food cooperative concept and its focus on mission and community oriented goals, there are often ways to market "on a shoestring" that can be very effective. These "guerrilla" marketing tactics are often marketing disguised as other activities, but also raise awareness of the business, its activities, and mission. The cooperative should actively seek out opportunities for newspaper stories, community events, tours, and clever use of social media sites to communicate its message, often with little or no cost to the business itself.

Implementation

After choosing a marketing strategy, the business must consider the requirements for implementing a promotional strategy and related activities. These considerations include the money or budget for the marketing strategy, materials or physical components necessary to implement it, and the manpower or personnel are required to successfully conduct activities that support the strategy.

Because food cooperatives often operate with limited funding, every strategy related to marketing will carry with it decisions related to budgeting, prioritization, trade-offs, and evaluation. When creating a budget, the business will need to ensure that its strategy can be implemented in a way that limits its impact on cash flows. Prioritization will involve deciding which activity to engage in and in what order. Because the funding is limited, there will necessarily be tradeoffs that will need to be made, as the business will not necessarily have all resources necessary to engage in every good idea.

A convenient way to think about the inherent trade-offs in choosing marketing activities is the trade-off triangle between Quality, Price, and Time. It is rare for an activity to be high-quality, cost-effective, and quick. At most, two of the three points of the triangle can be achieved successfully at any one time, and it is more likely that achieving two points of the triangle will prevent achieving the third.



One key strategic component that is often overlooked is evaluation. Without establishing ways to measure the results of a strategy, it is difficult to determine how effective the strategy has been, and whether or when the strategy must be changed.

COMPETITION

It is important to monitor the activities of other providers of similar products and services with similar characteristics such as price, varieties of product, and distribution to keep up with competition in the marketplace.

However, as the United States is responsible for less than 1 percent of total worldwide chestnut production, very little competition in the chestnut market exists. Though U.S. consumption of chestnuts mainly revolves around their popularity as a seasonal/holiday food item, demand for chestnuts in the U.S. continually exceeds supply, with many small chestnut producers in the states selling out of chestnuts quickly once the harvest arrives.

Nevertheless, there are a number of small businesses selling chestnuts both locally and nationally through online venues. The majority of these are farmers, growing and selling their own crops; there are also a number of chestnut cooperatives, populated by chestnut growers who pool their crops and sell through marketing coordinators.

Identified Regional Competition

Competition for selling chestnuts in Virginia is very limited, as the Virginia area produces relatively few chestnuts and market demand customarily exceeds chestnut availability. One producer and seller of chestnuts has been identified in Virginia whose sales appear to be largely online-based.

Virginia Chestnuts **virginiachestnuts.com**

Virginia Chestnuts is a family owned and operated chestnut orchard on Black Oak Farm in Nelson County, VA. The orchard was established by owners David and Kim Bryant in 2009, and in 2012, they began a chestnut growers group of 5 chestnut orchards in Nelson County. Their chestnuts are sold through online ordering at their website. A statement from the company's Facebook page indicates that the expected 2015 fall harvest will be their first commercial sized crop.

National Competition

The presence of national chestnut business is more significant, especially in consideration of online sellers and chestnut cooperatives.

Correia Chestnut Farm **www.chestnuts.us**

Correia Chestnut Farm, a small family farm located in Isleton, California, began growing colossal chestnuts in 1999, and has sold chestnuts direct to consumer since 2003. They grow using sustainable farming practices and harvest entirely by hand. In 2007, they grafted all of their trees to the Italian Marroni variety after success with experimentation, and their success has only grown since.

Correia Chestnut Farm sells nationally from their website, which features glowing reviews from satisfied customers all over the U.S. The demand for Correia's chestnuts is so high that the farm's entire crop consistently sells out within a few weeks of harvest.

Route 9 Cooperative store.route9cooperative.com

Route 9 Cooperative was formed in 2010. It is made up of several local chestnut growers in Carrolton, Ohio, including Empire Chestnut (one of the very few commercial sized chestnut orchards in the U.S.) who produce not only fresh chestnuts, but chestnut seed for planting, chestnut trees, and other chestnut food products

In 2004, founder Greg Miller began processing and marketing his own chestnuts and those from neighboring orchards; the need for the cooperative was realized 5 years later in 2009, when chestnut production from the combined orchards reached 60,000 lbs, exceeding the capacity for one person to process and store. Shipments begin in early October, with chestnuts usually selling out by mid November.

Chestnut Growers, Inc. chestnutgrowersinc.com

Chestnut Growers, Inc. is a producer owned and controlled agricultural processing and marketing grower cooperative. This cooperative is comprised of Michigan growers specifically looking for a larger market for their chestnuts and chestnut products. The cooperative processes and markets the growers' chestnuts, selling them fresh and in a variety of value-added forms such as chestnut flour. Sales are conducted online to all U.S. states with the exception of California, Oregon, and Washington.

Allen Creek Farm chestnutsonline.com

Allen Creek Farm is family operated chestnut farm in Ridgefield, Washington, featuring a commercial kitchen. Owners Ray and Carolyn Young produce fresh chestnuts, dried chestnuts, and other chestnut products, shipping throughout the United States, Canada, Western Europe and Australia. Their business has garnered much positive feedback, and Wine Country International magazine has called them "a national leader in producing and promoting quality chestnuts."

Southeast Iowa Nut Growers Cooperative

Southeast Iowa Nut Growers Cooperative is a group of about 40 chestnut growers who pool their crop and sell through a marketing coordinator. The cooperative began in 2000 when chestnut growers banded together to assist those among them who had neither time nor skills to market their crops.

As of 2002, this cooperative produced and marketed approximately 3,000 lbs of chestnuts, practically the only edible chestnuts available in Iowa to meet the large consumer demand. Half of this crop was sold direct to consumer, and the other half marketed in bulk to retailers such as grocery stores. These stores are given pamphlets containing information on the cooperative and how to store and prepare chestnuts, which they are encouraged to share with customers.
In the first four years of the cooperative's operation, chestnut sales grew rapidly from 400 lbs the first year to 10,000 pounds.

CHESTNUT COOPERATIVE NARRATIVE

A number of factors must be considered to gain perspective on how the various parts of a potential operation will work together. A "castle in the air" approach, delineating likely procedures and outcomes for each aspect of the business, can be useful for determining areas of improvement and creating deeper understanding of how the business will operate into the future This approach has been used to construct the following narrative, which will serve as a basis for implementation as the business is made real.

The narrative below outlines the broad assumptions used to construct the chestnut cooperative financial model presented in this study and serves to examine the overall business idea and its realism. This narrative is a result of industry research, discussions, interviews, and the knowledge of the consultants, and does not represent any chestnut cooperative in business today.

Business Operations



The cooperative is a receiving, storage, and selling chestnut operation with its own character and story located in rural Virginia. The site has been properly zoned for the receiving and storage of fresh chestnuts, and the cooperative has addressed all necessary permits, licensing, and other legal requirements to receive and sell fresh chestnuts from producers.

All sales of the cooperative's chestnuts will take place within the state. The commercial strategy involves sales taking place via wholesale customer orders with delivery options available. All orders take place through the sales and marketing manager, with assistance from administrative staff and direction from the general manager.

A source of supplementary income for the cooperative is through member fees. An initial one-time fee will be charged to new members, along with a small yearly membership fee thereafter. This supplemental income does not provide significant revenues to the cooperative.

The cooperative facility is within driving distance of the source inputs required for its operation, ideally as close to as many growers as possible. The facility will also be within driving distance of major population centers within Virginia, which allows for prompt delivery and service to wholesale clients.

The success of the cooperative hinges on the membership and support of Virginia chestnut producers and the abilities of management and staff to properly run the facility. The general manager is the key figure and oversees all cooperative operations, including but not limited to receiving and delivery, marketing, staff management and hiring, financial operations, and facility upkeep.

Process

The following steps detail how the chestnuts will move through the facility after being received from growers to the final step of being sold. Should the cooperative decide to produce additional chestnut products, such as peeled or roasted, changes to this process would need to be made.

1) The chestnuts are delivered to the cooperative by participating producers.
2) Upon arrival to the facility, the chestnuts are put through a hot water tub to kill any weevils. This process also helps the chestnuts re-attain their sweetness after harvesting and transportation.
3) The product is then spot checked for any issues such as low quality nuts, excess damage, insects, etc.
4) Once inspection is complete, the chestnuts are put through a nut sorter and sorted according to their size.
5) The chestnuts are then packaged into one pound containers and put into cold storage until it is sold.
6) Once sold, the chestnuts will be removed from storage, loaded into delivery trucks, and delivered to the cooperative's clients.

Product

The only product received by the cooperative is fresh chestnuts, from member producers around the state. Chestnuts are received once harvesting begins (typically late August to early September), and continue to be received through September and October, ending sometime in November, depending on variable circumstances such as seasonal conditions, and changing year-to-year harvesting periods.

As a rural cooperative, higher operational costs require higher prices. To justify increased prices, product quality is of paramount importance and all chestnuts are checked by producers for defects, insects, or other issues that may affect nut quality prior to being received by the cooperative, as well as by cooperative staff upon arrival to the facility. All inspections are done prior to packaging and placement in cold storage. The cooperative's goal is to provide "value for the money" chestnuts.

Chestnuts are packaged in one pound, polyethylene containers, complete with a label containing cooperative branding and product information.

Marketing

A chief component of the cooperative's marketing strategy is the creation of a strong story to accompany why the cooperative exists, what its goals are, and stories of the member producers who participate and contribute to the cooperative's existence. Detailed information is provided to current and potential wholesale clients regarding the various aspects of the cooperative's operations, some personal history of member producers, and involvement with chestnut industry. The sales and marketing manager is responsible for these communications with clients with assistance provided by administrative staff and direction from the general manager.

This facility is unique to its area and does not have any other chestnut cooperative competition. The cooperative has chosen to target this area to fill the niche demands of target markets, with possible expansion to other locations in the future.

OPERATIONS

While the following section presents details about the basic procedures envisioned for the cooperative, the cooperative will need to examine and respond to its own unique business environment. All numbers presented here are meant for preliminary analysis only and should be considered no more than estimates. Actual environments for the cooperative are likely to be different once in operation. In order to remain a successful enterprise, the cooperative should continuously revise procedures as they discover new opportunities or obstacles.

Infrastructure and Transportation

The Commonwealth of Virginia possesses an extensive and efficient interstate highway system and numerous commercial airports, thereby providing marketing opportunities for high-value products and niche market products. It is possible to access the consumer demographics that are upwardly mobile in terms of income, cultural and ethnic diversity, and education.

The venture's ability to move product into and out of the surrounding areas is a crucial factor for this project to be successful. The cooperative will need to be easily accessible to growers and clients. Growers will drop off their harvested chestnuts and an easy to reach location is helpful to current producers and potential producers as well as enticing to customers who will want chestnut orders responded to quickly and efficiently.

The cooperative will be responsible for delivering end product to customers. Delivery trucks will make multiple deliveries per week depending on seasonality, product orders, and other factors.

Location and Site Specifications

The location is an important factor in the business's daily operations because it will affect the relative costs experienced by the cooperative. Labor, transportation, utilities, waste disposal, and other components of operations will be ultimately affected by the location of the business. From a marketing point of view, a good location is essential to establishing a successful business, and facilities would ideally be visible from a major roadway to generate interest from passerby.

For this study, the cooperative will lease a warehouse (approx. 6,000 sq. ft.) to house the receiving and sorting operations, packaging area, cold storage, break room and offices. The site will have sufficient space to handle the initial operations as well as some room for growth, should demand reach a level where this is necessary. The building will house normal operations as well as the administrative staff and managers so that warehouse operations and office operations may work closely together to ensure the cooperative's success.

Office space is a necessary component of this warehouse as it is expected current and potential member producers, as well as current and potential clients will be able to view the facility as well as interact with managerial staff to complete sales and member relations.

Although sales will not be conducted directly on site, visibility near traffic routes would be a potential boon to the facility to generate interest in the cooperative both from potential clients as well as producers.

The facility must be safe, clean, and follow all the requirements as designated by state and federal laws. The building must be inspected to ensure compliance, and management should begin inspections as early as possible in order to prevent any delays in opening the business.

Zoning – General Requirements

The cooperative will need to receive zoning approval from the town in which it is located. The guidelines for zoning will differ from area to area in rural Virginia. Information on zoning requirements can be found on county websites specific for the county in which the cooperative will be located.

At times, zoning can drastically delay the opening of a new business, especially since zoning boards can deny approval for a business to force the cooperative to change their location or building plans. It may prove difficult for the cooperative to establish a location within a rural county, either due to resistance from members of the community, or some regulation/law preventing its existence in that particular area. The best approach to overcoming zoning delays is to begin the process early while the business is still in its organizing phase.

All of the 50 states have zoning enabling legislation for municipalities, and many states also have zoning enabling legislation for counties. Zoning laws are found in virtually every municipality in the U.S., affecting land use, lot size, building heights, density, setbacks, and other aspects of property use.

Zoning regulations become especially important when a business seeks to expand its current operations, through either the addition of production or a physical increase in the building and/or property designed to change the use of the land and existing facilities. The current operations legality does not guarantee the right of the owner to expand or modify in the future and is subject to current zoning restrictions and codes.

Equipment

The cooperative should consider purchasing certified used/refurbished equipment for the warehouse where possible. This will allow the facility to keep costs down while maintaining safe and proper equipment. Management should consider all available options and manufacturers of necessary equipment to find the best balance between low cost and high quality. Some equipment will be necessary to obtain during startup while others may be purchased over time.

The cooperative will not need any specialized chestnut equipment, meaning the equipment is the same that could be used for any facility processing and storing nuts. There are five categories of equipment necessary for the facility: General Warehouse/Storage, Safety, Office, Break room, and Build-out. Depending on the level of the cooperative's operations, and the intended marketing approach, other items may be needed and the cooperative will make those purchases where required. The following table represents equipment the cooperative will need to perform business operations and this equipment may be new, used, or rented.

Table 4: Chestnut Cooperative Equipment

General Warehouse/Storage	Safety	Office	Break room	Build-out
Forklift	Fire Extinguishers	Office Desk and Chairs	Tables	Outdoor Floodlights
Delivery Truck	Smoke Detectors	Shelving	Chairs	Security Cameras
Pallet Jack	CO Detectors	Filing Cabinets	Microwave	Security System
Work Tables	Exit signs	AC Units	Refrigerator	Pallet Scales
Walk in cooler (800 sq ft.)	First Aid Kits	Telephone System	Coffee Maker	Portable Fans
Cooling Tunnel	Emergency Shower	Credit Card Processing	Water Cooler	
Hand trucks		Computer		
Roller Conveyors		Software		
Shelving		Printer/Scanner/ Fax Machine		
Janitorial Equipment				
Ladders				
Hot Water Pressure Cleaner				
Industrial Nut Sorter				

As described in the narrative section of this document, several pieces of equipment are necessary to ensure proper receiving, handling, and shipping of the chestnuts. Below are pictures of the general pieces of chestnut processing equipment and their use within the facility.

Water Pressure Cleaner	**Nut Sorter**	**Storage Unit**
		
This is an example of a hot water pressure cleaner that will be used to clean the chestnuts as well as to remove any weevils infesting the nut itself.	This picture a prototypical nut sorter. This machinery has the chestnuts put into the top portion, filters the chestnuts according to their size, and sorts them into respective holding areas so that chestnuts of the same size are packaged together.	Pictured is the refrigerated storage unit necessary to store chestnuts until they are sold. Chestnuts must be kept at a low temperature to ensure their sweetness and quality, as chestnuts stored at room temperature quickly go bad. Chestnuts may be kept up to three months in this cold storage unit.

Human Resources

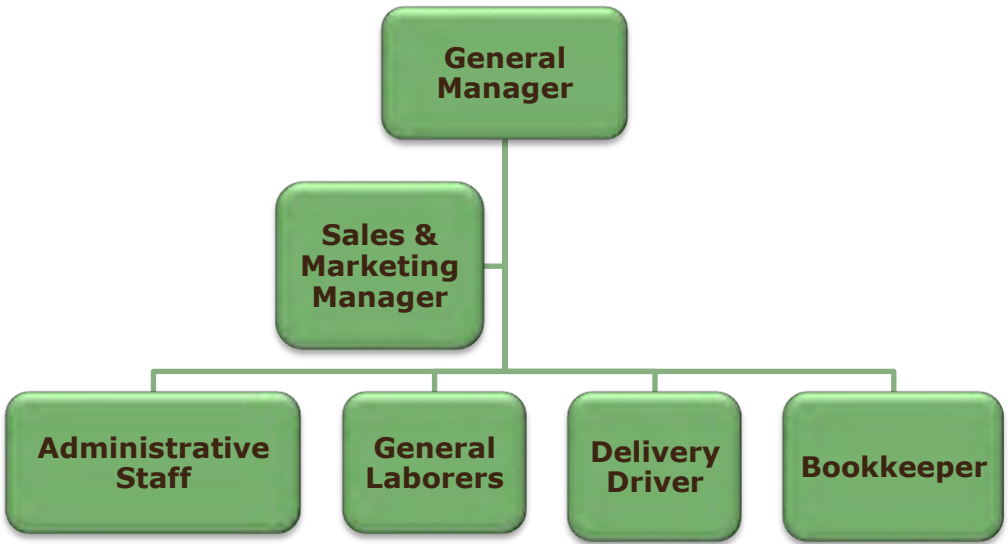
Efficiently operating a venture of this type requires numerous roles to be filled. In many cases, multiple roles are filled by one employee, which can help save on staffing costs. In addition, full-time staff is frequently supplemented with both part-time seasonal labor as well as volunteer staff. Because food cooperatives often function based on an underlying social mission, utilizing volunteer labor helps to engage the community and provide cost savings for the business.

The amount of staffing for a food cooperative will vary depending on the size of the operation. Typically, larger operations tend to hold more full-time employees while volunteers are more prevalent in smaller operations.[30]

Volunteer labor can help save on labor costs; however, utilizing volunteer labor can also have drawbacks related to efficiency and consistency. While volunteers may be willing and enthusiastic, they frequently lack the agricultural experience to take on key leadership roles that can affect business performance.

Another issue related to volunteer labor is that while it may provide a significant cost savings that can help the venture off to a successful start, sustaining consistent volunteer labor over long periods of time can be difficult as initial enthusiasm wanes, or as normal issues and complications arise. Particularly when a venture reaches a point of consistent sales and growth, having unstable or inconsistently available human resources can prevent the entity from reaching a new growth stage.

Numerous roles have been identified for efficient operation of this venture. The basic roles considered for the venture include a salaried managerial position and hourly general labor employees who will be paid a competitive rate in keeping with their experience and position.



[30] Fischer, M., Hamm, M., Pirog, R., Fisk, J., Farbman, J., & Kiraly, S. (2013). Findings of the 2013 National Food Hub Survey. Michigan State University Center for Regional Food Systems & The Wallace Center at Winrock International.

- **General Manager:** responsible for developing policies, managing daily operations, planning efficient use of inputs and human resources, and ensuring accuracy in financial reporting. This individual will be salaried, and hired at the beginning of the startup period to oversee activities and set-up, as well as to hire hourly employees.

- **Sales & Marketing Manager:** responsible for finding wholesale clients, establishing relationships, and ensuring business is well-known in the area. They will be responsible for limited promotional materials and their creation, simple website design, and managing client relations, comments, and questions. This individual will be salaried and hired during the start-up period.

- **Administrative Staff:** responsible for handling communication between the facility and clients, assisting the general manager with any office needs, and other duties as assigned. Administrative staff will be employed the entire year.

- **General Laborers:** responsible for conducting daily activities under the supervision of the general manager, receiving product from producers, packaging, loading, and other duties as assigned in conjunction with their skills. One general laborer will be employed year-round to assist warehouse upkeep. One or two more will be hired August-January.

- **Delivery Driver:** responsible for delivering chestnuts to wholesale clients in a timely and professional manner, and directing customer queries upon delivery to the general manager. Hours will vary based upon seasonality of sales, number of participating producers, and number of wholesale clients.

- **Bookkeeper:** responsible for working with the general manager to ensure all financial data is properly tracked, transcribed, and appropriately calculated in accordance with generally accepted accounting principles. A bookkeeper will be employed part-time approximately eight months per year.

Additional Human Resource Roles

As the venture grows over the years represented by this study and beyond, it will become necessary to add staff to maintain efficient operation. Additional roles that may become necessary include the following:



FOOD SAFETY AND QUALITY CONTROL PROCEDURES

The owners should consider product and food safety regulations, good manufacturing practices, and other regulatory safeguards required by law. The cooperative should proactively consider its approach to food safety, both from a market entry and a liability perspective. Good Manufacturing Practices (GMP), an understanding of microbiology, Standard Operating Procedures (SOP), safe procedures for cleaning and sanitizing, and a thorough understanding of the principles of Hazard Analysis and Critical Control Point (HACCP) development are all important components of the project.

Good Manufacturing Practices

Good Manufacturing Practices (GMP) has two meanings when used in the context of a food processing facility. The first refers to actual federal code sections of GMPs and the second is a set of operating procedures based upon these codes. The actual codes provide the basis for both the federal and state food processing regulations that serve as guidance for facility construction, equipment and utensil selection, sanitation, personnel hygiene, food handing, and production and processing controls. These are contained in the Good Manufacturing Practices as detailed in Title 21 of the Code of Federal Regulations Subpart E-- Production and Process Controls. The CFR is accessible on-line via www.ecfr.gov.

While these GMPs are fairly generic, it provides an excellent overview of most facets of sanitary facility operation. Once understood, a facility operator can use these codes to develop GMPs for their own facility. A typical GMP program consists of several parts, each of which has a written set of policies and a checklist based upon those policies.

A written GMP program should also include sanitation and pest control policies and documentation. The sanitation program should include information about the cleaning chemicals used in the plant, how effective they are handled and stored, and how the Material Safety Data Sheets (MSDS) are maintained. Additionally, the sanitation program should detail weekly, monthly, and periodic cleaning schedules and how that cleaning is to be conducted, monitored and recorded.

The pest control program should be developed in conjunction with a professional pest control operator who will assist in recordkeeping as well as making facility recommendations that will help to exclude pests and reduce harborage areas.

The GMP plan should include a section on “Production and Process Controls” that addresses the methods of preventing contamination, processing time, temperature controls, and other critical factors. The firm must have a means of lot coding each batch of product so that a product recall can be initiated, if necessary.

Hazard Analysis Critical Control Point (HACCP)

As defined by the USDA Food Safety and Inspection Service (FSIS) the Hazard Analysis Critical Control Point (HACCP) system is a scientific approach to process control. It is designed to prevent the occurrence of problems by assuring that controls are applied at any point in a food production system where hazardous or critical situations could occur. Hazards include biological, chemical, or physical contamination of food products.

HACCP is a widely recognized system for increasing safe food production. A HACCP Program is designed to identify the steps within a food process that contain the greatest hazards, identify scientifically validated steps that can reduce these hazards to an acceptable level, institute these control measures, and document their use and effectiveness.

The Food Safety and Inspection Service (FSIS) published a final rule in July 1996 mandating that HACCP be implemented as the system of process control in all inspected meat and poultry plants. HACCP plans are currently mandatory in the juice and meat industry, with compliance in other industries being largely voluntary. A plan should be prepared in accordance with the Code of Federal Regulations (CFR) Hazard Analysis and Critical Control Point section (Part 417).

A HACCP Plan is a written document that outlines a process, identifies the points in that process where contamination is likely to occur, and then outlines a procedure for addressing those identified "critical control points" and establishes a procedure for dealing with variances that may occur that are not covered by the plan. It also encompasses the recording and documentation of the procedures and their effectiveness.

It is important to recognize that a HACCP plan only works if an effective sanitation program and documented GMPs are in place. A HACCP program is not designed to compensate for generally poor practices, but rather to use solid practices as a basis for a food safety program that can provide the highest assurance of safety.

The writing and implementing of a HACCP plan involves a significant investment in time and planning. An approved plan will need to be in place prior to the facility beginning operations.

Worker Safety

OSHA guidelines provide the basis for worker safety policies and procedures, and will be in place upon commencement of the plant's operations.

RISKS, REGISTRATION, AND REGULATIONS

Any new venture must assess these key feasibility points, either formally or informally, in order to decide whether or not to proceed with a business idea. Such areas include whether or not the venture will be feasible in light of economic, technical, financial, market, and management conditions. These categories represent challenging issues related to the establishment of a chestnut marketing venture. Each of these will need to be addressed for the project to be feasible.

It is the responsibility of the owner of a business to familiarize themselves with the federal, state, county, and local laws governing their business. Failure to do so may result in penalties, fines, and cessation of business. The following sections are intended to provide a general overview in an attempt to highlight possible considerations that could affect a business; they are not intended to be exhaustive.

Labor

Having a lack of properly trained and educated management can significantly affect the potential business, particularly in the sensitive startup phase, when mistakes can be costlier than if the business were already established.

Capital

Depending on the level of construction needed to build and open a functional facility, any venture would require significant capital outlay. Capital funding will need to be sourced, whether from government sources, private or commercial bank loans, or ownership, and would be a main factor in determining the feasibility of the venture. Often a figure of 50 percent equity along with 50 percent in loan funding is used as a good general rule of thumb for financing new ventures.

Any capital invested would have a long term return based on the fact that processing facilities generally operate on slim profit margins per pound of processed product, and depend more on volume and throughput for operating capital. Particularly in start-up operations, the venture would be vulnerable to a lack of inputs and need for services, due to existing players and a lack of inputs.

The project will require capital outlay. Insufficient access to capital funds is a major reason for initial businesses to fail. Unexpected cost overruns could endanger the venture as well. The logistics of aggregation and delivery of large quantities of perishable products requires significant capital investment, especially in equipment.

General Business Risks

The venture faces many potential risks as it develops. Though it may be difficult to quantify a specific dollar value of these risks, it is useful to present them and permit the venture and its owners to determine their own level of risk tolerance.

Cash Flow Risks

Whether the venture is projected to be profitable in the first year of the expansion or not, there are periods during the year that a venture may experience negative cash flow. Business liquidity should be closely monitored. A small change in price or payment period could quickly turn a

profit into a loss or exasperate this cash flow risk. The venture has the potential to have large amounts of revenue lost through the spoiling or contamination of inventory.

Management Experience Risks

Businesses struggle or succeed based on the caliber of management. It is imperative that management has experience in the industry. The selection and oversight of management is critical for the successful operation of the venture.

Legal Liabilities and Risks

The venture will face legal liabilities and potential risks due to food safety risks, transport of the product, worker safety, and environmental risks. These issues need be addressed. Risk should be reduced with insurance and written policies where possible.

Pricing for insurance policies can often increase when companies are dealing with new ventures. General Liability in particular is subject to fluctuation, and is often based heavily on the volume of product handled by the facility.

Regulatory Risks

There are a large number of regulatory risks and hurdles that the venture must address as it moves forward. There is a potential that these factors could substantially constrict the ability of the venture to operate profitably. Additionally, regulations are in constant flux. Regulations that may not affect the operation today could have a dramatic impact on it in the future. See below for detailed Registration and Regulation Risks.

Operational Risks

Due to the newness of the venture, there could be several operational issues that do not proceed along the lines of the assumptions of this study.

Market Development Risks

It is assumed that producers or consumers actually have an interest in a chestnut marketing venture, and that these consumers are prepared to pay for a local agricultural product. This may not be a true assumption.

Price Risks

There is no doubt that the consumer is becoming far more interested in how and where food is produced. However, the Virginia local foods industry will continue to evolve according to consumer demand. For this type of growing market it is not unusual for prices to go through wide swings and periods of significant price depression. Likewise, local and national commodity prices may maintain or improve their price position.

Food Contamination Risks

Although agricultural production has been practiced for centuries, food contamination has been an area of great concern in the agricultural industry recently. Bacterial contamination could occur, causing illness, product recalls, and damage to the brand.

Product Supply Risks

If weather conditions for the next few years are within normal averages, this will allow normal production and sale of agricultural products from the region. Because quality outputs are dependent on the quality of inputs, the interaction of weather and terrain are very important. If the weather does not meet expectations, the operation may not be able to sufficiently source quality product.

Inventory Risks

While most businesses like to keep inventory, in these early stages of the venture, inventory represents a risk in terms of cash flow shortages. If sales are not as expected, then inventory may increase, and if negative cash flow occurs, then the cooperative may not be able to comply with short term obligations. In addition, because the cooperative will be dealing largely with perishable products, the holding of inventory carries the risk of product loss.

Business Registration

The registration needs of a venture can vary depending on federal, state, and local laws. Some registration processes are free of charge, but certain commodities and types of business are subject to various registration fees and permits.

The Corporations Division of the Virginia Department of the Secretary of State is responsible for the examination, custody and maintenance of the legal documents filed by more than 400,000 corporations, limited partnerships and limited liability companies. The duty of the Secretary of State is to ensure uniform compliance with the statutes governing the creation of these entities, record the information required to be kept as a public record, and provide that information to the public[31].

Businesses can form under the owner's name, or they can choose to do business under a fictitious name, which requires the filing of a Doing Business As Certificate (DBA). Sometimes known as an "assumed name" certificate, a DBA is a document that provides owner identification when a business is operating under any name other than their legal name.

Ventures organized as corporations may also need a DBA if they plan to use a different name than the one provided on their corporation paperwork (legal name).

For state by state requirements, please see: www.sba.gov.

Registration of Food Facilities

Facilities that process, store, or ship food for human or animal consumption are required to register with the FDA. First, a person must establish, at no cost, an on-line account at www.cfsan.fda.gov/~furls/ovffreg.html. Once an account is established, a person can register their farm or company, and edit the registration information.

The Food Safety and Inspection Service (FSIS) of USDA has prepared a guideline with good practices for food processors to take into account. It is available at www.fsis.usda.gov

[31] Virginia Department of the Secretary of State Website. Accessed 2-15-13.

Brand Registration and Trademark

According to the U.S. Patent and Trademark Office (USPTO)[32] a trademark includes any word, name, symbol, or device, or any combination, used, or intended to be used, in commerce to identify and distinguish the goods of one manufacturer or seller from goods manufactured or sold by others, and to indicate the source of the goods. In short, a trademark is a brand name.

Once a name is chosen for the cooperative as well as the name of the registered business entity, it will need to be trademarked and registered at the national level. Failure to get appropriate intellectual property protection invites others to pirate the ventures work. The practical purpose of a trademark is to prevent consumers from becoming confused about who provided the goods or services they purchased.

The International Trademark Class Numbers (ITCN) defines product categories with the use of a number system. For example class 029 corresponds to Meats and processed foods. The Trademark Electronic Search System of the USPTO (www.uspto.gov) allows trademark searches.

It is important to have an internet email address registered as soon as the name has been settled upon. The same applies to other social media such as Facebook.

Legal counsel should be sought for any trademark issues for overlapping business areas. This service typically runs approximately $5,000.

Taxes

Federal, state, and local level authorities all have tax requirements that affect the formation or expansion of a business.

Taxpayer ID and Employer Identification Numbers

The Federal (Employer) Identification Number, also known as a Tax Identification Number or EIN, is a number issued by the IRS for the purposes of identifying businesses. If the business has no employees or the business is a type other than a corporation, a Social Security number generally functions as the EIN. Nearly all business structures that employ individuals, as well as other business entities use EINs. To apply for an EIN use form *SS-4: Application for Employer Identification Number*, or over the phone by contacting the IRS at: 1-800-829-1040 or 866-816-2065, or online at: www.irs.gov.

It is necessary to do recordkeeping for tax purposes (bank deposits, sales receipts and other elements of support) and to have the record available for examination by IRS.

Some of the most complex issues facing small business owners today are the various taxes and tax structures. The business may be subject to, or responsible for, collecting or withholding:

- Taxes on the business itself

[32] USPTO Headquarters - Main Campus located at Madison Buildings (East & West)
600 Dulany Street, Alexandria, Virginia 22314. Tel: 1-800-786-9199. Email:
TrademarkAssistaVAeCenter@uspto.gov

- Sales and Use taxes
- Ad Valorem Taxes (Taxes on Property)
- Employment and Income Taxes.

Federal

For specific information regarding federal tax requirements, contact the Internal Revenue Service to obtain a copy of the "Small Business Resource Guide." This guide contains information on your federal tax obligations as well as various publications for starting a business.

Required Federal Employment Taxes

Federal Income Tax Withholding
Social Security and Medicare Taxes (FICA)
Federal Unemployment Tax (FUTA)

Forms and Employees

It is required that all employers have their employees fill out the following forms: Form I-9 and Form W-4. More information explaining the Federal tax responsibilities of the employers can be found in the IRS' Publication 15, "Circular E, Employer's Tax Guide".

Form I-9, Employment Eligibility Verification. This document is available from the Immigration and Naturalization Service or online at www.bcis.gov.

Form W-4, Employee's Withholding Allowance Certificate. This form is available from the Internal Revenue Service. Call FORMS/PUBLICATIONS at 800-829-3676, or INFORMATION at 800-829-1040. The form can also be downloaded by visiting www.irs.gov.

Certain agricultural employers are required to fill out specialized forms depending on their type of work or they may be exempt from certain laws. For more information see www.irs.gov.

State and Local

In addition to business taxes required by the federal government, some state and local taxes will normally have to be paid. Each state and locality has its own tax laws. Having knowledge of state tax requirement can help avoid problems and save money.

Tax Permit

In most states, business owners are required to register their business with a state tax agency and apply for certain tax permits. For example, in order to collect sales tax from customers, many states require businesses to apply for a state sales tax permit.

Income Taxes

Nearly every state levies a business or corporate income tax. The tax requirement depends on the legal structure of the business. For example, if the business is a Limited Liability Company (LLC), the LLC gets taxed separately from the owners, while sole proprietors report their personal and business income taxes using the same form. Consult a tax advisor/CPA for specific requirements for the business.

Employment Taxes

In addition to federal employment taxes, business owners with employees are also responsible for paying certain taxes required by the state. All states require payment of state workers' compensation insurance and unemployment insurance taxes. Also some states require a business to pay for temporary disability insurance.

Sales Tax and Resellers

In the case of a business purchasing items that are intended for resale, many states that collect sales taxes allow a business to purchase resale items tax free. The requirements and guidelines vary from state to state; check with the locality for specific information.

Business Regulation

USDA

The United States Department of Agriculture (USDA) is responsible for overseeing federal policy regarding farming, agriculture, and food. Among other things, it is responsible for food safety and inspection through the FSIS (Food Safety and Inspection Service), primarily of meat, poultry, and eggs. Distribution, labeling and packaging, quality, recalls, safety, and security are all functions governed by the USDA. Regulations and requirements of the USDA must be met in order to be in compliance with applicable laws.

Because of the current world climate, especially with concerns of terrorism, a plan regarding food defense may be required to prevent intentional contamination of the products handled by the facility.

Environmental Constraints (EPA)

The U.S. Environmental Protection Agency (EPA) and state environmental agencies regulate the impact of businesses on the environment. EPA develops and enforces regulations that implement environmental laws enacted by Congress. Likewise, state agencies enforce regulations that implement laws enacted by the state legislature.

The U.S. Small Business Administration divides the environmental regulations into different areas such as air pollution, basics of environmental compliance, cleanup, ecosystems, environmental management (odor control, etc.), environmental permits and planning, pollutants and chemicals, pollution prevention, storage tanks, waste and water (preventing contamination of water supplies, etc.). More specifics on each case are available at www.sba.gov

Owners of the venture need to consider environmental constraints related to their business activities. The Environmental Protection Agency, as well as FDA and Department of Agriculture coordinate efforts to enforce laws in agri-food activities.

FDA

The US Food and Drug Administration (FDA) oversee much of the nation's food supply as well as drugs and medical devices. The agency is also responsible for interpreting the law and writing regulations concerning specific food products and processes. Rules and regulations established by the FDA are published in Title 21 of the Code of Federal Regulations (CFR) which can be found at www.ecfr.gov. These laws are intended to assure that foods are safe to eat, pure, wholesome, and produced under sanitary conditions.

FDA inspectors have the authority to inspect any establishment where food is processed, packaged, or held for shipment in interstate commerce. They can also inspect products after shipment, vehicles used to transport food in interstate commerce, equipment, finished products, containers, and labeling.

OSHA

The Occupational Safety and Health Administration, or OSHA, is responsible for enforcing compliance with US laws regarding safety and workplace conditions. Compliance is expected to be voluntary, with inspections as a consequence for extended non-compliance.

Employers have the responsibility to provide a safe workplace. Employers MUST provide their employees with a workplace that does not have serious hazards and follow all OSHA safety and health standards. Employers must find and correct safety and health problems. OSHA further requires that employers try to eliminate or reduce hazards first by making changes in working conditions rather than just relying on masks, gloves, ear plugs or other types of personal protective equipment (PPE). Switching to safer chemicals, enclosing processes to trap harmful fumes, or using ventilation systems to clean the air are examples of effective ways to get rid of or minimize risks.

Exit signs, easy access in and out, fire extinguishers, evaluation, medical supplies and procedures are also important considerations. Other issues include hazard prevention and control, safety and health recordkeeping, and injury/illness records. Safety globes, hats, industrial aprons, boots and glasses should be available for workers in the processing areas. In this context, having accident insurance for workers is an important matter as well. It is important to develop an action plan to cover these types of situations. More details are available at www.osha.gov.

Consumer Protection Concerns

The Federal Trade Commission (FTC) is the nation's consumer protection agency. The FTC's Bureau of Consumer Protection works for the consumer to prevent fraud, deception, and unfair business practices in the marketplace. More information is available at www.ftc.gov.

The owner(s) is/are responsible to provide a safe environment both for employees and the general public. Examples include:

- security elements set in place such as clear exit signs at the store, fire extinguishers, access for disabled persons, first aid kits and emergency procedures
- laboratories providing designated areas for sample analysis where special ventilation systems must be in place if chemical substances are used
- using “caution hot” signs, after burners have been used
- using “caution wet floor” signs after floors are washed
- protecting processing facilities to prevent vermin entering the processing line
- ensuring customers do not become intoxicated during an alcoholic tasting
- Access/entrance to the farm. What was once acceptable as access to a farm for agricultural purposes may no longer be legal access for the general public.

Safety Certification

Safety certification is becoming more important in all areas of agricultural production. The rise of popularity of locally produced foods, along with numerous food safety scares, has made food safety of paramount importance to farmers as well as buyers and consumers.

In 1997, partially in response to the President's Food Safety Initiative, the Department of Health and Human Services, the U.S. Department of Agriculture (USDA), and the Environmental Protection Agency (EPA) presented a report that “identified meat as an area of concern.” Shortly thereafter, the "Initiative to Ensure the Safety of Imported and Domestic Meats and Vegetables" was announced, which included good agricultural practices (GAPs) and good manufacturing practices (GMPs) designed to provide guidance for farmers to voluntarily address health and safety standards for the meats and vegetables industry.
Over time, these guides have become more and more important to the food industry, beginning with farmers providing large scale quantities of commercially grown meat and working its way to smaller and smaller farmers.

Congress passed several laws specifically designed to address concerns over the safety of the nation’s food supply. One of these acts, the Bioterrorism Act of 2002, the groundwork for future legislation and regulations specifically addressing microbial and pathogenic contamination of foods, and the Food Safety Modernization Act of 2010 shifted the focus of food safety from response to prevention.

In response to the requirements of the Food Safety Modernization Act, the Food and Drug Administration has published two proposed rules for public comment: the “Standards for Meat Safety Rule,” and the “Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food.”

The “Standards for Meat Safety Rule” would, with limited exceptions, require farmers who grow, harvest, pack, or hold meats and vegetables to follow specific standards in order to prevent contamination.

The second proposed rule, “Current Good Manufacturing Practice and Hazard Analysis and Risk-Based Preventive Controls for Human Food” would primarily affect companies involved in the manufacturing, processing, storing, or packing of food, by requiring the enactment of controls that minimize and reduce contamination.

From the consumer side, safety certifications are primarily market driven. Intermediary purchasers, such as restaurants, regional retailers, and institutional purchases in certain industries have begun to require safety certifications for the food products they purchase, primarily to reduce their risk and liability in working with both small and large scale producers.

Any venture involved in this industry will need to familiarize themselves with additional legislation and regulatory controls. While defining the specific regulations affecting such a venture are beyond the scope of this study, the owners of the proposed venture will need to be aware of the fine line separating the various production activities and the specific legal and regulatory aspects tied to those activities.

It should also be noted that many of these regulations and necessary permits do require substantial paperwork and record keeping. This represents both a time and cost requirement for the business and should be taken into consideration.

While it would not be practical to attempt to outline and include every piece of legislation affecting the manufacture and sale of meat products, the following sections briefly highlight selected legislation and/or agencies and programs.

Food Safety Modernization Act (FSMA)

The FSMA, the broadest reform of the food safety laws in more than 70 years, was signed into law by President Obama on January 4, 2011. It aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to preventing it, and requires that food from abroad be as safe as domestically produced goods.

FDA has redesigned its webpage dedicated to the Food Safety Modernization Act (FSMA): www.fda.gov/FSMA. The agency encourages consumers, industry and food-safety professionals, local and state regulators, and international trading partners to get more involved in implementing the new law by learning what the FDA is doing, as well as providing feedback to help guide the FDA in the future.

Key elements of the page include:

- A link to the new web-based search engine for recalled foods,
- Frequently asked questions about the landmark food-safety legislation,
- Videos and graphics explaining how the law will be implemented, and
- Information about public meetings on these reforms.

A new rule strengthens the FDA's ability to prevent potentially unsafe food from entering commerce. It allows the FDA to administratively detain food the agency believes has been produced under unsanitary or unsafe conditions. Previously, the FDA's ability to detain food products applied only when the agency had credible evidence that a food product presented was contaminated or mislabeled in a way that presented a threat of serious adverse health consequences or death to humans or animals.

The implementation of the law will take time. However, beginning July 2011, the FDA is able to detain food products that it has reason to believe are adulterated or misbranded for up to 30 days,

if needed, to ensure they are kept out of the marketplace. The products will be kept out of the marketplace while the agency determines whether an enforcement action, such as seizure or federal injunction against distribution of the product in commerce, is necessary.[33]

Preventive controls, that is, systems that a manufacturer of foods would put in place to identify the hazards associated to the product, and the scientific controls to minimize the risk of occurrence of those hazards are the manufacturer's responsibilities, though FDA can provide guidance. The legislation provides some exemptions based on size, who the facility distributes to (for example to a retailer grocery facility, etc.), and low risk activities, especially those that occur at the farm that may be manufacturing but are still considered low risk.

This new law reinforces the need for farmers to tabulate and document procedures as well as evaluate the risks to human health from ingestion of the products they produce.

Food Quality Protection Act (FQPA)

Primarily affecting the production aspect of the cooperative chain, this act includes stringent safety standards and regulation for pesticide tolerances.

Perishable Agricultural Commodities Act (PACA)

According to the Agricultural Marketing Service, "PACA facilitates fair trading practices in the marketing of fresh and frozen fruits and vegetables in interstate and foreign commerce."[34] The PACA program's main purpose is to help ensure fresh and frozen fruit and vegetable dealers receive the products they pay for and payments from their customers.

The USDA only requires a PACA license for those operating in the product industry, but states and other local governments may require additional licensing. Even if the business does not directly handle the produce, but it still acts as a broker between the buyer and seller, the business is still required to have a PACA license.

Traceability

The federal Bioterrorism Act (BTA) is driving significant changes in food regulation. This federal law mandates regulations regarding record-keeping and product traceability. The FDA has published a guidance document that summarizes the recordkeeping and traceability requirements. More information is available at www.fda.gov.

Farmers will be required to trace ingredients one step backward in the food chain and tie the ingredients to finished products one step forward in the chain if the products are being sold through retailers or wholesale distributors.

[33] "FDA issues first rules under Food Safety Modernization Act." (May, 2011). Institute of Food Technologists. www.ift.org

[34] AMS (2012). "Fair Trading Regulations." USDA www.ams.usda.gov/AMSv1.0/ams.fetchTemplateData.do?template=TemplateN&page=PACAFrequentlyAskedQuestions

Labeling

Depending on the product and packaging, the USDA or other regulatory agencies may require specific labeling procedures for various products. In many cases, information must be printed on the principal display panel of each shipping container.

Labeling is subject to multiple specifications depending on the product and its intended use. Labeling may include traceability, FSIS labeling requirements, and USDA grade marks if applicable.

According to the USDA Food Safety and Inspection Service a food label is required to have the following information:

- Product name
- Inspection legend and estimated number
- Handling statement
- Net weight statement
- Ingredients statement
- Address line
- Nutrition facts
- Safe handling instructions. .

Labeling is important because it lets the consumer know whether or not the product has been inspected.

Universal Product Code (UPC)

Universal Product Codes are a 12 digit identifier used mainly at point of sale devices to enable more efficient sales transactions. UPCs are constructed and sold by GS1 US, a non-profit group. Purchasing new UPC codes entails a $750 membership fee paid to GS1 US, as well as a maintenance fee of approximately $150 per year. Companies that resell previously issued UPC codes are available, and typically charge around $100 for each UPC purchased. Certain customers may require the use of UPC codes for product designation, inventory management, and sales. More information can be found at www.gs1us.org.

State Regulations

Depending on the product being handled, ventures dealing with food products may be required to adhere to various state level regulations as well.

Health Department Considerations

Businesses must consider state Department of Health regulations. These regulations, designed to protect the health of employees as well as the environment, must be considered if a business handles food of any kind, or if it involves sewage or drainage. Typically, there are specific licenses or permits required depending on the nature of the venture. For specific information, contact your local health department.

Food Handling Regulations

Any person that handles food should be aware of food legislation. The primary enabling legislation states the aims and objectives of the law. This provides the power to the relevant U.S.

Departments of State to introduce specific regulations. For example, the Food Safety Modernization Act is a legislation approved by Congress and later allows the Food and Drug Administration to write a regulation/s for that particular law.

In general food legislation has two objectives:

1. To ensure that the food offered is of the quality it is supposed to be.
2. To ensure that the food will not be harmful to the consumer.

For food processors, there are parameters for minimum standards with which products have to comply. For example, in bacteriological quality terms, tests done by laboratories have to follow the specifications as stated in the Bacteriological Analytical Manual (BAM) of the U.S. Department of Health & Human Services, U.S. Food and Drug Administration (FDA). This manual is available at www.fda.gov.

Labor Regulations



It is important to choose the right method for recruiting and selection that best adapts to a business venture. Having clear and defined objectives, duties, and responsibilities for each position will ensure the proper selection of personnel, as well as avoid costly lawsuits related to discrimination and sexual harassment.

If the proposed venture operates at a level that reaches 50 employees, many additional labor laws and regulation will begin to affect the business. It is important to monitor operations carefully to determine if the extra labor is feasible given the additional cost that new regulations may carry. Affirmative Action, Equal Employment Opportunity, the Family and Medical Leave Act, and the Affordable Care Act all have provisions and regulations that are triggered once a business reaches the "50 or more" employee mark.

Employment Eligibility Verification

Workers must have valid work permits if not U.S. citizens. Each farm labor contractor, agricultural employer and agricultural association which is subject to the MSPA and who employs any migrant or seasonal agricultural worker(s) shall post and keep posted in a conspicuous place at the place of employment a poster prepared by the Department of Labor which explains the rights and protections for workers required under the Migrant and Seasonal Agricultural Worker Protection Act (source: DOL).

I-9 and E-Verify

The Immigration Reform and Control Act (IRCA) of 1986 mandates that employers cannot knowingly hire illegal workers. As part of the hiring process, employers must record a prospective employee's identity and employment eligibility on Form I-9, "Employment Eligibility Verification". The form collects information such as name, date of birth, and supporting citizenship documentation.

E-Verify is an Internet-based system that verifies the information gathered on the I-9 form and compares it to information on file with the U.S. Department of Homeland Security and Social Security Administration in order to confirm its validity. For the most part, participation in E-

Verify is voluntary; however, some government contracts as well as certain states have made the use of E-Verify mandatory.

The government agency in charge of immigration is the U.S. Citizenship and Immigration Service (USCIS).More information can be found at www.uscis.gov.

Potential Issues

Following are several factors, components, and variations in addition to the risks, registration, and regulations factors already discussed.

General and Product Liability Insurance

The operation will need to have a product liability insurance policy in place. This type of insurance is available through most commercial insurance carriers and is would be included as part of a comprehensive policy approach for a business of the type proposed. Because of the significant potential for liability issues with the venture, insurance carriers should be contacted to provide actual quotes.

The likelihood of being sued for negligence can potentially be very costly. Whether a business sells, supplies, or delivers goods, insurance is necessary to cover against claims of goods causing injury, death, or damage. This insurance is available through commercial insurance carriers.

Licensing

Licensing and permits vary greatly with the type of business being considered, where the venture is located, and what type of product it produces. While many licenses and permits are local by nature, there are federal regulations that require specialized documents. Some businesses may also require state licensing. Businesses that may require special documents are those involved in food service and sales, distilleries, and nightclubs.

The food industry is regulated and subject to various state and federal licenses. A thorough investigation should be conducted, especially during the initial planning of the venture to ensure that licensing requirements are met in a timely manner to avoid costly delay in the start-up of the venture.

Written Procedures

Because the facility intends to handle, store, and move food products, there may be the need for substantial written documentation of procedures and policies in place. HACCP, GMP, Food Defense Plans, specifications regarding the acceptable weight deviations in packaging, transportation method, grading, examinations, and other procedures may need to be set forth in official documentation depending on the requirements of the end customer.

This written documentation, including the paperwork necessary for obtaining and maintaining permits and records, does represent a time and cost requirement for the business. Additional personnel may be required, either to handle increase in the preparation and records maintenance, or in order to properly prepare the required documents. These records may also include things such as product identifier numbers, which may be based on national or international nomenclature.

Internet

The Internet Corporation for Assigned Names and Numbers (ICANN) is responsible for managing and coordinating the Domain Name System (DNS) to ensure that every address is unique and internet users can find all valid addresses. For more information see www.icann.org.

Domain names can be registered through many different companies (known as "registrars") that compete with one another. A listing of these companies appears in the Registrar Directory available at www.internic.net/regist.html.

There are no special provisions for products sold on the Internet. Regardless of the sales channel, all foods sold in the U.S. must be in full compliance with FDA food labeling requirements that are specified in the U.S. Code of Federal Regulations. Thus, foods sold in farmers markets, on the Internet or any other retail store must be labeled with the five requirements for all foods: product identity, net contents, nutrition facts, ingredients/allergens, and company name/address.

Small businesses may be exempt from nutrition facts labeling, but the other four label components must still be displayed in the manner specified in the U.S. Code of Federal Regulations. [35]

The FDA monitors websites of companies on the internet so companies have to comply with all regulations and claims that are made about the foods and/or its ingredients.

[35] "Q&A." Food Consulting Company. www.foodlabels.com.

PRELIMINARY BREAK EVEN MODEL FINANCIAL PROJECTIONS, ASSUMPTIONS, AND METHODS

This analysis contains basic break even models for the first year of operations for a chestnut cooperative facility in Virginia. Estimations based upon similarly sized operations and industry research has been modeled in Excel spreadsheets to approximate the venture's potential expense and revenue.

These estimates have been used in a break even analysis to determine the amount of chestnuts the cooperative would need to process to cover its operational costs only and does not allow for room to cover any additional expenses or reinvestment of earnings. In addition, this analysis will be used to determine the amount of chestnuts that would need to be produced in the state of Virginia in order to supply this cooperative.

This model attempts to be as realistic as possible while still permitting ease in interpretation. Though attempts have been made to make the tables as transparent as possible, several key project descriptions will be presented here. Due to the unique nature and newness of this proposed venture, actual revenues and expenses are likely to be different were the facility put into operation. The analysis presented here is intended to be estimates only, based upon industry research, similar sized operations, and the consultant's knowledge.

General Information

The proposed venture will sell fresh chestnuts from local producers to wholesale buyers, with peak business occurring in the months of September, October, and November. The business will operate in an approximate six month period surrounding chestnut availability, and will thus be able to save costs associated with year-round operation.

Seasonality Because chestnuts are harvested between August and November of each year and have a three month shelf life in cold storage, the model assumes the facility will be in operation only part of the year, from August-January. As the cooperative will only be selling fresh chestnuts, the extended operating season that may be required in a value-added venture is unnecessary.

The following table outlines the estimated seasonality of the chestnut cooperative.

Table 5: Seasonality of Sales

Seasonality											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5%	0%	0 %	0%	0%	0%	0%	5%	25%	25%	25%	15%

Number of Chestnuts During the first year of operations, the chestnut facility will need to sell approximately 250,000 pounds of chestnuts. The number of chestnuts sold per month will vary depending on seasonal availability of chestnuts as indicated in the table above.

Waste It is assumed that 3% of chestnuts that come through the facility will be unsellable in their current form due to breakage, lower nut quality, errors in handling and transport from producer to cooperative, etc.

Project Timing

A six month startup period will be required before opening the facility. During this time, contact will be made with local chestnut producers and wholesale customers, the facility will be organized and prepared, and general operating plans will be laid with input from ownership and the general manager.

A general manager will be hired at the beginning of this time to oversee general startup activities, plant operations, employee training, and other responsibilities as needed. Towards the end of the period, delivery drivers, general labor, administrative staff, and marketing staff will be brought on to familiarize themselves with the equipment, the facility, and overall business operations prior to the opening. The goal of these startup activities is to minimize errors and hiccoughs so that operations may be begin as smoothly as possible. A strong beginning is vital to the cooperative's goal of reaching financial viability.

Revenue

The cooperative will obtain revenue through chestnut sales, membership fees, and donations. Membership fees and donations will be acquired before the operational opening of the venture and will be used as startup equity for the cooperative.

The facility will need to charge wholesale customers approximately $4.25 per pound to break even financially. The cooperative does not intend to conduct retail sales. The financial model reflects a 5% increase per year in price to account for inflation, changing economies, etc.

The cooperative will make use of chestnut "waste" products to further increase its income. Chestnuts that are unsellable due to breakage, rot, etc. may be sold as a secondary product line. These chestnuts will be sold to brewers/distillers to be used in chestnut alcohol, hunters to use as deer bait, and farmers to use as animal feed. It is assumed one pound of these chestnuts will be sold for $2.75 per pound. On average, about 12% of harvested chestnuts are in this secondary market condition but only account for about 8% of the cooperative's revenue.

Processing revenue from one month would be collected by the end of the following month. The total lag estimated, on average, for payment is 30 days at 8.5% interest in the model.

Expenses

Expenses are presented for both variable and fixed costs. Variable costs are those that change with production and are directly associated with sales. Fixed costs are the overhead costs that are required for the business to function, examples of which include loan interest payments and management salaries.

Variable Costs

Variable expenses are the largest expense category the cooperative will incur over the three year plan. The reason for this is that the variable expense category represents payment to producers, variable labor, delivery and transportation, packaging materials, credit card processing, and loss

of product due to shipping and handling errors; in essence, factors directly related to production during the facility's operational months.

The largest variable cost is revenue to producers. This category comprises about 52% ($510,000) of sales dollars. The revenue to producers is only sufficient enough so that they may cover the costs associated with establishment, management, and harvesting of chestnuts. This revenue does not allow for the producers to generate any additional income for their contributions. The second largest variable expense is product packaging. Packaging for the chestnuts accounts for 6% ($63,000) of sales dollars in year one. The last two categories take up smaller percentages; product loss in handling/transport errors (4%, $36,000), and variable labor and delivery expense (7%, $65,000).

1) Variable Labor: Efficiently operating a venture of this type requires numerous roles to be filled. In many cases, multiple roles are filled by one employee, which can help save on staffing costs. In addition, full-time staff is frequently supplemented with part-time seasonal labor as well as volunteer staff.

- **Delivery Driver** Part time delivery drivers will be paid approximately $15.00 an hour for around 25-80 hours a month from August-January, with varying hours based upon availability of product, number of deliveries required, and drive distance.

- **General Laborers** Over the three year period of the model, the facility will employ 1-3 general laborers. They will be responsible for receiving product from producers, packaging it, helping load delivery trucks, etc. This position will pay approximately $10.50 an hour in year one, with a $0.50 increase per hour per year thereafter. One general laborer will be employed year round to assist the general manager. One to two more laborers will be hired August-January, depending on processing needs.

- **Administrative Staff** An administrative position will be filled at the beginning of the three year period. This individual will handle communication between the facility and clients, assisting the general manager with any office needs, and other duties as assigned. The individual will be paid approximately $15.00 an hour. Administrative staff will be employed the entire year.

- **Bookkeeper** A part-time bookkeeper will be employed approximately eight months per year. The bookkeeper will be responsible for working with the general manager to ensure all financial data is properly tracked, transcribed, and appropriately calculated in accordance with generally accepted accounting principles. The bookkeeper will be employed July-February and will receive $12.00 an hour.

The labor positions, number of employees, and wages used in this study were determined using industry research. Employee expense assumptions are comparable to figures of operations which are similar in size and scale.

2) Salaried Labor: The chestnut cooperative would employ two salaried labor positions, general manager and sales and marketing manager. The general manager will be hired at the beginning

of the startup period to oversee early activities and plant setup, as well as to hire hourly employees. The general manager will receive a salary of $40,000 at the start of the model, increasing to $44,000 by the third year.

Due to the nature of selling exclusively to wholesale clients, a sales and marketing manager will also be hired during the startup period. This manager will be responsible for finding wholesale clients, establishing relationships, and ensuring the chestnut cooperative is well known throughout the area. He/she will be responsible for limited creation of promotional materials as well as simple website design and maintenance, management of client relations, comments, and service. This individual will be paid $30,000 per year. In terms of the financial model, the sales and marketing manager will be paid from funds associated with the marketing budget.

Fixed Costs

Once variable costs have been accounted for, around 31% of sales dollars ($310,000) remain to cover fixed expenses in the first year. Fixed expenses are the overhead costs that do not directly vary with production or sales. Some expense categories will be charged to the cooperative every month of the year, while others will be charged to the cooperative on a more seasonal basis. For the purposes of this study, the five main fixed expense categories are as follows:

1) General Administrative Expenses: Overhead and general administrative expenses make up the largest percentage of fixed costs, representing about 7% of sales combined.

- **Salaried Labor** Salaried labor is categorized as an administrative expense and is the largest single fixed cost, representing about 4% of sales. This category is comprised of the annual salary of the general manager.

- **Office Supplies and Telephone** Office supplies and computer service charges are estimated to be $75 a month. This figure is based upon moderate monthly usage. It is assumed that the management staff will also use cellular phones at a cost of $100 a month on. These costs are estimated to be a year-round expense.

- **Pest Control** This cost is estimated at $75 per month and will be a year-round expense. The chestnut facility will hire an outside service and will ensure that all chemicals and practices used comply with federal, state, and local regulations.

- **Software** There will be an initial startup expense of $2,000 for software. This purchase will ensure all administrative computers are able to run properly and that employees are able to adequately perform their assigned duties. It is assumed that there will be a $2,500 yearly expense for software after the initial startup period.

- **Legal and Accounting Fees** There will be an annual expense of approximately $4,650 to account for the cost of a yearly audit as well as legal fees, etc. During the startup period of the study, an additional expense of $5,000 will be incurred to account for trade marking and other legal costs tied to the initial opening of a business.

2) Facility Expenses: The second largest category of fixed expenses is facility expenses, representing approximately 5% of sales dollars. The venture will save on facility costs by

maintaining full operations only six months of the year. There are four subcategories within this section: rent expense, utilities, facility supplies, and facility insurance. Cost-effective strategies include leasing rather than buying, and cutting utilities use during non-operational months.

- **Rent** A 6,000 square foot facility will be leased by the cooperative. The warehouse will have sufficient space for the cool storage necessary for chestnuts, processing areas for receiving and shipping of product, docking areas for loading and unloading of trucks, as well as administrative and break room space. The rent payment is estimated to be $1,500 per month and will be a twelve month expense.

- **Utilities** Rates are calculated at an average of ($1,400) per month. Utility costs are expected to be higher during operational months ($1,800) as electricity and water usage will be more prevalent during this time. Utilities are expected to be lower during non-operational months ($1,000).

- **Facility Supplies** The cooperative will need basic warehouse supplies such as pallets, cleaning materials, hand trucks, ladders, and hoses. Facility supplies are expected to be $8,000 per year.

- **Insurance** The financial model includes an annual insurance expense of $5,000; this cost is meant to encompass items such as workman's compensation, general liability, property insurance, an umbrella policy, and product recall. The actual expense incurred by the facility may vary depending on such items as employee liability, and dependent on the employee position, but the cost included in the model falls in line with the charges incurred by similar ventures.

3) Marketing: The third largest fixed cost is marketing, at 4% of sales. The chestnut cooperative will primarily rely on word of mouth and agricultural industry contracts as a method of marketing. The salary of the sales and marketing manager is the largest portion of marketing expense at ($30,000), as discussed above. The rest of the marketing budget ($5,000) will be spent on promotional materials, advertisements, signage, web design, and other activities as designated by management.

4) Equipment Costs: Representing about 3% of sales, this cost will cover any necessary expenses associated with keeping the chestnut facility's equipment up and running. Based on equipment manufacturer estimates and other feasibility studies, for moderately heavy use, this expense is estimated to be $2,300 per month and will be a twelve month expense.

For the purpose of this study, the equipment is depreciated using the straight-line method. This equipment was valued at approximately $234,000, and the annual depreciation figure totals $14,000. The equipment is assumed to have a 10% salvage value and a fifteen year life.

A variety of equipment will be necessary for the facility to run. Examples of the equipment required are as follows:

Table 6: Sample Equipment List (Chestnuts)

Chestnut Equipment	Total
Processing and Facility Equipment	$ 187,415
Fire and Safety Equipment	$ 2,250
Office and Break room Equipment	$ 9,015
Facility Security Equipment	$ 11,872
Delivery fees, taxes, miscellaneous and unforeseen	$ 23,055
Total Equipment Purchase	**$ 233,607**

Equipment Rental (Forklift)	$ 9,357

Processing and Facility Equipment The processing and facility equipment represents the largest portion of equipment costs. Equipment within this category includes delivery trucks ($25,000 each), industrial nut organizer ($5,000 per unit), used walk-in coolers (800 sq. ft. $16,600 each), and shelving (12'x8'x42", 250 each), among other smaller equipment purchases. Equipment such as the walk in coolers will be purchased used while other items such as fire and safety equipment will be purchased new. The walk-in coolers will provide ample space for the storage of chestnuts while allowing for the amount the facility can hold at any one time to grow should the need arise.
The cooperative will also need to make use of nut cleaning and sorting equipment. This equipment will consist of: pressure washer, nut sorter, and water tanks for holding.

The cooperative will rent a forklift for the purpose of moving pallets of product, rearranging shelves and equipment as needed, as well as any other lifting and heavy transportation needs that may arise. The estimated cost for this rental is $9,350 per year.

The venture will be financed using both owner equity as well as loans. It is assumed that the equipment will be purchased utilizing 40% owner equity and 60% debt. The terms of the loan are 10 years at 6.50% interest. The monthly payment on this equipment will be approximately $1,600. If the equipment is 60% financed the owners will also need to provide an additional $91,000 at the time of purchase. The actual interest rate for the cooperative may be lower, but as this new venture begins with no credit history in a fledgling industry, lenders may be hesitant to offer standard rates until the facility is established.

Table 7: Equipment Financing

Chestnut Equipment	
Total Equipment Cost	**$233,608**
Percent by Debt	60%
Loan Amount	$140,165
Interest Rate	6.5%
Loan Length	10 years
Payment	$19,498
Monthly Payment	$1,625
Owner Equity	$93,443

It should be noted that the payments, lengths, and interest rates will vary based on how the venture chooses to finance each cost. The terms and interest rates that have been applied to this model are based upon industry averages. Depending on the economic conditions of the country, actual interest rates may be higher or lower at inception of this cooperative facility.

Equity Initial equity of $93,000 will be required during start-up to purchase the necessary equipment discussed above. The equity necessary will be provided by members of the cooperative. This cash infusion will be collected from membership fees and donations. Management will research grant funding that the cooperative may be eligible for to offset some of the equity amount required. This startup equity has been included in the financial model.

5) Unforeseen and Contingency: Unforeseen costs and contingency expenses are reported separately from the total fixed costs. These expenses are calculated as 5% and 5% of sales respectively, covering any unexpected costs that may arise or payment defaults from customers. These two categories are calculated at a minimal level. As this is a new venture and is unique for its area, actual rates may vary once the operation is underway.

Basic Break Even Analysis

In order to determine whether the formation of a Chestnut cooperative in the state of Virginia may be economically feasible, a preliminary break even model was created. Using the assumptions and information detailed above, the purpose of the model is to ascertain the amount of chestnuts and revenue necessary for the facility to cover its operational costs. Chestnut statistics, reasonable estimates of business expenses, and streams of revenue information were gathered from a multitude of sources and used in the formation of this model.

Break Even

This period, designated as “break even” is the first point at which the cooperative covers its operational costs, but still represents a precarious time for the organization. Without at least obtaining this level of funds, whether through sales, grants, or donations, the organization is unlikely to survive for long. While a cooperative is able to cover its daily operating costs with this level of sales, the business would not be able to maintain operations for a prolonged period. The venture would not be generating enough operational income to replace equipment, infrastructure, keep cash-on-hand to meet any emergencies, or to reinvest earnings towards the purpose of growth and further stability.

Attaining the break even point represents a milestone for the cooperative. Prior to this point, the cooperative would be losing money on every unit sold, but achieving break even in this analysis indicates that the cooperative is a workable business that is able to satisfy the needs of its customers and begin to look towards future financial viability.

Due to the seasonality of chestnuts and their lack of availability for more than half of the year, it is assumed the chestnut cooperative will be open August-January. This means that the cooperative will need to make sufficient revenue for the entire year during its operational period, which has been accounted for in the model.

Price (per unit) The average price the facility intends to charge per pound of chestnuts is $4.25. The price charged to customers comprises input costs of providing revenue to the producers as well as additional charges to cover the costs of the cooperative. The average price per pound of secondary quality chestnuts is about $2.75.

Variable Margin The variable or contribution margin is what the facility expects to receive for each pound of chestnuts after variable expenses have been accounted for. This percentage represents the sales dollars that remain that after variable costs such as hourly labor, packaging, and revenue to producers have been expensed. This amount represents the 31% of sales dollars which remain to cover other non-variable expenses.

Table 8: Variable Margin

Variable Margin	
Chestnuts per pound (%)	31%
Chestnuts per pound	$1.33

Supply The table below is used to showcase the total number of chestnut acres in Virginia as of 2012.

Table 9: Top Chestnut Producing States 2012

State	Total Number of Farms	Total Number of Acres	Bearing Age Acres
Michigan	115	617	442
Florida	111	592	447
California	59	507	428
Oregon	70	358	274
Ohio	41	239	128
Virginia	53	228	157

Detailed under each break even section is the number of acres necessary for a chestnut cooperative to break even. This break even acreage is compared to the total number of acres in Virginia to determine whether this cooperative is feasible in terms of available supply. It is assumed that an acre of chestnuts produces 750 pounds per year. The state of Virginia had 228 acres of chestnuts in the state in 2012. Of those 228 acres, 157 (69%) were of chestnut bearing

age. The estimated total amount of chestnuts available in Virginia during the 2012 season was about 120,000 pounds.

Break Even (Equipment and Variable Costs) The following table shows the number of chestnuts that must be received to generate enough revenue to cover variable costs as well as the cost of equipment. Other fixed costs such as the building are not included in this scenario.

To produce enough revenue to cover the monthly principal payment of $1,600 on the equipment, the venture must receive 600 pounds of chestnuts per week, or 2,400 pounds per operational month. This correlates to approximately 19 acres of chestnuts required, or 14,600 pounds. When this number is compared to total acreage in Virginia, it represents 12% of bearing age chestnut acres, and 9% of total chestnut acreage. In terms of dollars, the sales figure necessary for this scenario to break even is $62,000.

Table 10: Break Even - Equipment and Variable Costs

Number of Pounds Required to Break Even	
Per Year	14,600
Per Operational Month	2,400
Per Week	600

Break Even (Total Capital Costs and Variable Costs) The next scenario takes into account all capital costs, ranging from the building rent, equipment rental and equipment purchase as well as variable costs. The facility would need to receive and sell 1,350 pounds of chestnuts per week or 5,800 pounds of chestnuts per month. The estimated acreage required for this situation is approximately 47 acres (35,000 pounds), which accounts for 30% of bearing age chestnut acres and 21% of total chestnut acreage.

Table 11: Break Even – Total Capital and Variable Costs

Number of Pounds Required to Break Even	
Per Year	35,200
Per Operational Month	5,800
Per Week	1,400

Break Even (Capital Costs, Variable Expenses and Other Expenses) The following scenario takes into account capital costs, variable costs, and other expenses. These other expenses are generally fixed costs and include items such as manager salaries, insurance payments, and professional service fees. These are estimated yearly costs for the cooperative and are calculated given comparative needs of facilities of similar size and purpose.

Table 12: Other Expenses

Management/Administrative	$40,000
Fringe and Overhead	$12,000
General Expenses	$12,000
Total (Annual)	**$64,000**
Total (Monthly)	**$5,300**

The results show that to cover these three types of expenses, the facility would need to receive and sell 3,200 pounds of chestnuts per week, 13,900 pounds per month, or 83,000 pounds per operational year. The pounds listed above correlate to about 111 acres of chestnuts, which indicates that the chestnut cooperative would need to process 71% of all bearing-age chestnut acres (157) in Virginia to break even.

Table 13: Break Even – Variable, Capital and Fixed Costs

Number of Pounds Required to Break Even	
Per Year	83,100
Per Operational Month	13,800
Per Week	3,200

Break Even (All Costs) The last break even scenario takes into account all estimated costs associated with the cooperative. These costs include variable, capital, fixed, miscellaneous, marketing, and other yearly costs (such as salaried labor). For the cooperative to break even, it would need to receive and sell approximately 250,000 pounds of chestnuts per year, 42,000 pounds of chestnuts per operational month, or 10,500 pounds per week. This equates to about 317 acres of chestnuts that would need to be processed through the cooperative. Only 228 acres of chestnuts were grown in Virginia in 2012, and of that 228 acres, only 157 were of bearing age. This presents a significant problem for the proposed cooperative as the amount required is 202% of all bearing age chestnut acres produced in the entire state. Virginia had 53 chestnut farms in 2012, totaling about 228 acres; meaning the average size of a chestnut farm in Virginia is about 4.3 acres. For the cooperative to reach break even, it needs about 320 acres of chestnuts, therefore, at an average of 4.3 acres per farm, the state would need to double the current amount of farms to about 75 individual farms.

Not only does the amount of chestnuts required for break even represent a larger amount than is available, but also many chestnut producers would be unlikely to want to work with the cooperative. It is probable that these pre-existing producers already have profitable operations within well established markets. The cooperative would need to convince these pre-existing producers that joining the cooperative would be more profitable than their current sales strategies.

Table 14: Break Even – All Costs

Number of Pounds Required to Break Even	
Per Year	250,000
Per Operational Month	42,000
Per Week	10,500

Table 15: Break Even Table and Sales Requirement

	Weekly Pounds	Monthly Pounds	Yearly Pounds	% of Bearing Age Virginia Chestnuts	% of Total Virginia Chestnuts	Sales required
Equipment and Variable	600	2,400	14,600	12%	9%	$ 62,050
Equipment, Capital, and Variable	1,400	5,800	35,200	30%	21%	$ 149,600
Equipment, Capital, Variable, and Fixed	3,200	13,800	83,100	71%	49%	$ 353,175
All Costs	10,500	42,000	250,000	202%	139%	$ 1,009,800

The table above shows break even estimates for the various scenarios of this chestnut cooperative, percentage of chestnuts required compared to the number of chestnuts available in Virginia, as well as the estimated total sales figures to break even. As previously discussed, the amount of chestnuts necessary for the proposed cooperative to be successful is much higher than the amount the state of Virginia produces. Were the chestnut industry in Virginia to see a significant upturn in its planting and production of chestnut trees, this cooperative may be feasible.

SCENARIO ANALYSIS

The scenario analysis involves changing specified parameters within the baseline model while leaving all other variables unchanged and determining how the changes in input data affect the model's output. This demonstrates how subject the critical assumptions in the baseline model are to change. In addition, the scenario analysis will give a more detailed and accurate view of the project's potential. As the model is based on assumptions, scenarios allow for observation of what the project might look like, should certain variables change. Since it is hard to determine what the future will hold, it is probable that some assumptions in the model will turn out differently under real world circumstances.

In this analysis, two scenarios are presented with four different variations of each scenario. The first shows changes in prices charged to customers. The four variations of price are a 20% and 10% decrease, as well as a 10% and 20% increase. This will demonstrate the state of affairs for the cooperative should there be a change in price and its subsequent effect on net income. All other variables in the model will remain the same with the exception of price charged to customers.

The second scenario shows variations in revenue to producers. Changes are identical to those reflected above: the four variations are also a decrease of 20% and 10%, along with an increase of 10%, and 20%. These variations will drastically change income in the model, as revenue to producers is the single largest expense the cooperative will incur by a wide margin. All other variables within the model will remain the same with the exception of revenue to producers.

The percentages used in these variations are wide enough to show a varied range of possible outcomes, while not attempting to account for every possible outcome. Any percentage increase or decrease beyond these four points would only further serve to increase the size of the range. These variations depict multiple financial health states, from large net losses, to even larger net gains, and it is believed that these showcase the scope of this project well enough for this analysis.

Scenario One: Variation in the Price Charged to Customers

This scenario shows how changes in the overall prices charged to customers would affect the profitability of the venture. In the baseline model, $4.25 per pound is assumed; in this scenario price variations charged to customers will be:

Table 16: Variation in Prices

Net Income (Loss)			
	Year 1	**Year 2**	**Year 3**
Variation 1: 20% Decrease **$3.40 per pound**	**($135,395)**	**($93,041)**	**($94,802)**
Variation 2: 10% Decrease **$3.83 per pound**	**($64,724)**	**($3,132)**	**$10,092**
Baseline Model **$4.25 per pound**	**$4,304**	**$84,686**	**$112,546**
Variation 3: 10% Increase **$4.68 per pound**	**$74,794**	**$174,550**	**$217,440**
Variation 4: 20% Increase **$5.10 per pound**	**$144,002**	**$262,413**	**$319,894**

As shown in the table above, a 20% decrease in prices would result in the processing facility suffering losses throughout the entire period. If the price charged per pound were reduced to $3.40, the model shows that the facility would suffer substantial losses in all three years of the model. Total losses for this three year period would be approximately ($325,000). The cooperative would need to substantially increase the number of chestnuts processed through the facility each year to cover expenses and reach financial viability. Overall, it is unlikely that the chestnut cooperative would be able to operate at prices this low given the current state of the Virginia chestnut industry. Large-scale chestnut industry growth would be required, or significant amounts of product would need to be sourced from producers outside the state.

With a 10% decrease in price per pound, dropping the price to $3.83, the cooperative would continue to suffer losses each of the first two years, but at a much smaller scale than the previous variation. The cooperative would achieve a net gain in year three of about $10,000. Net losses for this three year period would be approximately ($58,000) as compared to net income of the baseline model of $200,000. While the cooperative would be in better shape financially than with the 20% decrease, and the rate at which the business approached break even would be much faster, the cooperative would still need to increase the number of chestnuts sold to compensate for this decrease in price. The chestnut cooperative would be unable to cover operating expenses or reach financial viability with product prices in this range for the first two years. If production projections are met, the business would break even and produce a small profit in year three of the model.

As discussed in the break even section of this document, the baseline model and price would see the cooperative essentially break even in year one, and make positive gains in years two and three. Total income for this three year period would be approximately $200,000. Years two and three would reach some level of financial stabilization, but would still represent a precarious time for the cooperative. As shown already, price variations can have a large impact on the earnings of the organization and, should the market change, income will fluctuate greatly.

If prices were to increase by 10% to $4.68 per pound, the venture would reach financial viability in year one, with approximately $75,000 in net income. This would allow the business to cover operating expenses, reinvest retained earnings for the purpose of growth, and keep sufficient cash on hand to cover any emergencies or unforeseen issues. Net income in years two and three would jump significantly, reaching $175,000 and $217,000, respectively. Total income for this three year period would be about $467,000. This total is about $267,000 higher than the baseline model.

If prices were to increase by 20%, the cooperative would have significant returns in all three years of the model as compared to the baseline model. Year one would see net income of about $144,000. Years two and three would reach about $260,000 and $320,000, respectively. Total earnings for this three year period would be about $725,000. This is $525,000 higher than the baseline model.

These variations discussed highlight an important consideration: price changes will greatly affect the success or failure of the proposed cooperative. Fluctuating market prices, changing economies, demand, seasonality, and other unforeseen factors could all play a large role in

determining the price the cooperative could receive, and thus the cooperative's overall success. An increase or decrease in price per pound of $0.85 could send the cooperative into large amounts of debt ($325,000) or financial success, $725,000.

Scenario Two: Variation in the Revenue to the Producers
A main factor affecting profitability is the amount of revenue the cooperative must pay producers for their chestnuts. In the baseline model, producers are paid $2.40 per pound of chestnuts. As stated previously, this expense is the single largest cost the cooperative incurs by a wide margin. The table below shows the variations in revenue per pound to producers as well as its associated net incomes for years one through three.

Table 17: Variation in Revenue to Producers

Net Income (Loss)			
	Year 1	**Year 2**	**Year 3**
Variation 1: 20% Decrease $1.92 per pound	**$106,304**	**$207,086**	**$255,346**
Variation 2: 10% Decrease $2.16 per pound	**$55,304**	**$145,886**	**$183,946**
Baseline Model $2.40 per pound	**$4,304**	**$86,686**	**$112,546**
Variation 3: 10% Increase $2.64 per pound	**($46,696)**	**$23,486**	**$41,146**
Variation 4: 20% Increase $2.88 per pound	**($97,696)**	**($37,714)**	**($30,254)**

As shown in the table above, a 20% decrease in revenue to producers would result in substantial net income for the three years of the project. With a price given to producers reduced to $1.92 per pound, the chestnut cooperative would attain about $106,000 in year one, rising to $255,000 by the end of year three. Total net income for this period would be about $570,000 compared to $200,000 for the baseline model, a difference of about $370,000. If this price were given, expenses would drastically decrease, allowing for the cooperative to reach financial viability in year one. Overall, it is possible for the cooperative to operate successfully at this level, provided it can receive the number of chestnuts required to reach these sales and net income levels.

With a 10% decrease in revenue to producers per pound, to $2.16, the model shows that the cooperative would have net gains in all three years. In year one, the venture would receive approximately $55,000 in net income, rising to around $185,000 in year three. At this cost, the cooperative would reach financial viability, although not as quickly as in the previous variation. This amount of earnings would allow for growth and stability in the chestnut industry, provided it can receive the amount of chestnuts required to reach these levels.

As discussed in the break even section of this document, the baseline model and current revenue to producers figure would see the cooperative break even in year one, and make positive gains in years two and three. Total income for this three year period would be approximately $200,000. The facility would be able to reach some financial stabilization in year two and three but it would still represent a precarious time for the cooperative. As shown already, variations in revenue to producers can have highly volatile effects on profitability. Should prices change, income will fluctuate considerably.

If revenue to producers were to increase 10% to $2.64 per pound, the cooperative would see net losses for the first year of the project and net gains for years two and three. Year one would see

losses of about ($47,000) while years two and three would see small gains, $23,000 and $41,000 respectively. Total net income for the period would be approximately $17,000. It is possible the cooperative would be able to operate at this level.

Were producer revenue raised by 20% to $2.88 per pound, net losses for the three year period would be small. Year one at this cost point would have the cooperative experience net losses of about ($98,000). Years two and three would have smaller losses than year one at ($38,000) and ($31,000) respectively. Total losses for this period would be about ($166,000). An increase in price, or significant increases in the number of chestnuts received, would be necessary for the cooperative to reach break even at this cost point.

As shown above, variations in revenue to producers greatly affects net income. Variations of only $0.48 from the baseline model revenue to producers could return net income of around $570,000 or losses of ($166,000). These numbers are quite volatile, and because of the newness and uniqueness of this venture, a large amount of inherent uncertainty is involved.

Scenario Analysis Summary

Table 18: Range of Incomes

Change in Price	High/Low	Range	Change in Revenue to Producers	High/Low	Range
$0.85	$725,000	$1,050,000	$0.48	$570,000	$736,000
($0.85)	($325,000)		($0.48)	($166,000)	

As shown in the scenarios, the model shows the profits of the venture are volatile. Changes of plus or minus $0.85 in price per pound has a net income range in the three year period of ($325,000) to $725,000. This is a wide range of possible incomes and highlights just how unknown the outcomes of this project are. A change of $0.48 in revenue to producers per pound has a net income range of ($166,000) to $570,000. While not as varied as the change in price per pound, the range of outcomes is still considerable. Care should be taken in the early stages of the cooperative to closely monitor these variables and make necessary adjustments to resolve problems as they arise. Preparedness for possible fluctuations in these variables is necessary for the cooperative's financial health, as even slight changes can have a big impact on earnings.

The scenarios in this report represent a few of the possible situations the cooperative may find itself in and will most likely be different in reality from the conditions presented in the baseline model. It is possible that changes in other factors could result in more optimistic or pessimistic outcomes than those presented in the model, but these were not reviewed because they do not appear to have impacts as significant or as easily recognized as the two scenarios presented here.

These scenarios demonstrate how small changes in just one factor can dramatically impact the profitability of the venture. To help ownership make decisions, and for reasons of simplicity, only one variable was changed for each scenario, while all other variables within the model were kept constant. It is quite possible that more than one factor could change simultaneously. This would combine or even magnify the effects shown under the current scenarios presented.

OBSERVATIONS

I. United States Chestnut Industry

While chestnuts were once popular in the U.S., the Chestnut Blight of the early 1900s infected and killed an estimated 40 billion chestnut trees, nearly wiping out the existing chestnut industry. However, chestnut production has been increasing in recent years, demonstrating some measure of industry re-growth.

The U.S. chestnut industry is still fairly insignificant on an international scale, accounting for less than 1% of chestnut production worldwide. China leads in international chestnut production, producing about 1.7 metric tons in 2011 – about 84% of the world's chestnuts overall.

The United States produced about 1,300 metric tons of chestnuts in 2012, while U.S. demand stands at about 4,000 metric tons per year, with international markets meeting the majority of that demand. This level of demand has remained steady for years and is anticipated to continue until a major industry change occurs. Ideally, the U.S. chestnut industry would grow to meet a much larger percentage of its own market demand.

Although the number of chestnut farms in the U.S. has decreased, the acreage of chestnut trees has grown, indicating an upward trend in farm size and resulting nut production. According to the 2012 Census of Agriculture, the number of chestnut farms in the United States decreased (1,200 farms to 919 farms) from 2007 to 2012, with the average number of acres per farm at 4.11 in 2012. Acreage rose from 3,334 acres in 2007 to 3,784 acres in 2012, pointing to an increase in farm size. Michigan produces the most chestnuts in the U.S., with about 615 acres of farmland devoted to chestnut production. In comparison, Virginia produces much less, with chestnut farming at about 228 acres.

II. Virginia Chestnut Industry

Although Virginia is not the top chestnut producing state, the commonwealth had about 55 chestnut farms in 2012, totaling 228 acres. Virginia currently ranks 7th among chestnut producing states, with average farm size at about 4.3 acres. This number reflects an average of 2.9 bearing-age acres per farm and production of about 2,200 pounds of chestnuts per farm each year.

Many Virginia chestnut farmers produce chestnuts out of personal interest in preservation and promotion of chestnuts for the sake of their unique, historical value. Many growers produce chestnuts as more of a hobby or side venture than a profitable business model. The income of most (88%) chestnut farmers in the state consists of only 0-10% revenue from chestnuts, with the remainder of their income sourced through other farming efforts or non-farm businesses.

As chestnut sales are typically used for supplemental income because of low production volume, significant industry growth would be necessary for a chestnut cooperative to succeed in its current form. Growers within Virginia would need to increase the number of chestnut-growing acres to 435, almost doubling current production. However, Virginia's current trend, with 228 acres reported in 2012 from 157 in 2007, indicates that it would take about 15 years for the industry to reach a production level that would support this cooperative venture.

III. Cooperative Success

Considering the current price point of chestnuts and expense level of operating a cooperative, a minimum of 325,000 pounds of fresh chestnuts must be sold yearly to cover costs.

Due to the high volume of chestnuts required for success, and the small average farm size in Virginia, cooperative management will need to create and maintain close working relationships with producers in order to meet demand efficiently and consistently. Management and producers will need to settle on a competitive price for chestnut crops. If revenue to producers is set at $2.40 per pound, this expense to the cooperative would constitute over 56% of the venture's total revenue as depicted in the current break even model.

To meet the current projections of quantity and price, more than 100 chestnut farmers would need to sign on as members, each supplying at least 3,250 pounds of chestnuts (4.3 acres). This is just under double the amount of producers in the state in 2012. As the industry grows, the need for 100 members may not pose a problem, but may cause difficulties for the cooperative at inception.

Even if the amount of chestnut growers in the state increased, it is unlikely that the cooperative will gain 100% participation from all chestnut growers in Virginia. Additionally, growers who participate may choose not to commit their entire crop to the cooperative. Many pre-existing chestnut growers in the state have already established sales outlets and receive retail prices for their products, and many others prefer to retain their chestnut harvests for personal or familial use only.

Since the amount of chestnuts required for the cooperative to break even would be about double Virginia's total chestnut production in 2012, chestnuts may need to be sourced from out-of-state producers in order to fill the necessary number of pounds. As the current industry stands, Virginia growers cannot supply the amount of chestnuts needed for this project. There are at least two other states in the region that produce more chestnuts than Virginia does (Ohio and Michigan); the cooperative could reach out to growers in these states in to fill the required quota.

An advantage this cooperative offers to producers is that it provides a steady sales outlet to those small-scale growers who are using chestnuts as a minimal source of income. Selling to the cooperative would remove the pressure on farmers to worry about time and cost associated with marketing their product or selling at markets and on-site farm stores.

By sourcing chestnuts from multiple small farmers, the cooperative will avoid depending on only a few large-scale growers. Were the cooperative to only have 3-5 major suppliers, if even one were to leave or suffer some unforeseen issues, the cooperative may be out by as much as 33% of their chestnuts. This cooperative, however, will be dealing mainly with small-scale producers, which creates in inherent safety-net, as the loss of one producer has a less devastating effect on the business.

The drawback to sourcing from multiple small-scale growers is the increased variance in product quality, and more complex management of multiple grower/cooperative relations. Successfully

managing this type of project will require experienced staff. Personnel must be familiar with the operations of a cooperative, and skilled marketing and labor staff would be essential.
A cooperative selling only fresh chestnuts will likely need to restrict operations to six months out of the year due to seasonal availability. During these six months, the business would need to earn sufficient revenue to both cover year-round expenses and turn a profit.

There is some inherent risk in selling only one product. Should projections fall lower than expected, expected demand shift downward, or some other issue arise, the cooperative would have no other outlet with which to conduct sales. Conversely, should growth exceed projections, the facility may experience size and/or equipment constraints. Proper planning will help alleviate these problems should growth appear higher than expected

Almost all chestnut waste products are able to be sold in some fashion for just under a wholesale price, but a small percentage (about 2.5% loss) is still being accounted for in the model. Human error, damage in transportation or packaging, and other unforeseen circumstances are accounted for in this loss percentage.

A market for chestnut waste products exists in conjunction with what the cooperative is already doing. Moving into this market would not take a significant time or financial investment and would serve as a good source of secondary income.

Selling multiple product lines, such as value-added products in addition to fresh chestnuts, would result in greater diversity for the cooperative as well as allow sales to be conducted at times of the year beyond chestnut season. The shelf life of some value-added chestnut products, especially frozen ones, is much longer than that of fresh chestnuts, and demand for these products does not end with the seasonal demand for fresh chestnuts.

Additionally, value-added chestnut products such as chestnut flour, frozen chestnuts, dried chestnuts, and sliced chestnuts, often sell for a much higher price per pound – sometimes double or triple that of fresh chestnuts. Chestnut flour, for example, may be used as an alternative to wheat flour for those with a gluten allergy. Considering the recent rise in popularity of gluten-free foods, value-added products may be a large potential market for the cooperative. This could be a profitable angle for the cooperative to use in marketing campaigns and chestnut education, as selling these value-added products at this price range would reduce the necessary size of the industry and the required number of pounds to break even.

Similar organizations have shows that a medium-sized cooperative/food hub can be feasible under the right conditions. The proposed cooperative has an advantage in that they are the “first-movers” in this region for chestnut products and a chestnut cooperative would be entirely unique to the Virginia area. While competition would be minimal at inception due to the current nature of the industry, the cooperative would still be competing with individual growers and out-of-state or international chestnut organizations.

Key factors for success include location and marketing. The location of the cooperative will be vital to its success, as being too far from any number of growers will reduce their willingness to participate. Fortunately, the cooperative will possess some inherent advantages due to the

growing demand for locally grown and natural foods. This demand may be used to advantage in chestnut marketing campaigns. Marketing should also focus on the distribution of information to potential growers and customers, focusing on the positive impact the cooperative could have on the local community. The cooperative will provide jobs in the area and give farmers more revenue with which to grow their businesses, thereby bringing more money to the area and keeping more money within the community.

The cooperative's marketing strategy will be paramount, because, while research indicates some growth in the chestnut industry, and data suggests that a market for this product may exist, there will be some level of difficulty with awareness of chestnuts. Chestnuts are not among the popular and well-known nuts, and breaking into this market may prove problematic. In comparison to other nuts, demand for chestnuts is significantly smaller, and very little is known about them among the general public.

Reducing expenses will also be a priority for the cooperative's initial and long-term success. One potential cost-saving move would be to lease an oversized warehouse with one or more other entities to reduce costs associated with warehouse upkeep and fees. The space would be shared, and the lease payments split. However, the cooperative would not share equipment with its counterparts within the warehouse – there are too many risks associated with equipment sharing for that option to be feasible. Leasing also has the advantage of minimizing risks associated with purchasing a building in the event the cooperative not prove successful. Concurrent with this line of thinking, the cooperative will lease a truck in its first two years once a measure of risk has been reduced. After two years, the cooperative is more likely to reach sustainability, thus it would make sense for the organization to purchase delivery trucks instead of leasing.

RECOMMENDATIONS

This report is intended for the use of a future board of directors and its advisors in planning for a successful chestnut cooperative business. Much work remains to be done. It is recommended that the leadership of the cooperative view this report and decide whether or not to continue with the project. If the future board of directors decides to proceed with the project, the consultant provides the following specific recommendations:

I. Coordinate out-of-state

At the current growth level, the Virginia chestnut industry would not be able to fulfill the cooperative's needs for approximately 15 years. To remedy the supply shortage, the cooperative should coordinate with producers in the surrounding region, particularly Ohio and Michigan, to fulfill their needs. The existence of this cooperative, combined with marketing campaigns to increase potential producer and customer awareness, would help grow the state's industry. This would increase possible earnings and be good for the industry as a whole.

II. Complete a business plan

It should include:

- ***a strategic plan,***
  This should include a 5-year outline of the cooperative's goals and steps for accomplishing them.
- ***identification of markets and customers for the facility,***
  - targeting of the upper demographic segment of the identified market
  - identification of a high volume market to compensate for seasonality limitations

  A comprehensive strategy should be developed to determine a list of potential interested producers and customers. These should be identified as to their need and possible pricing points for the products.
- ***3-5 year pro forma financial projections,***
  These are necessary to project the marketing cooperative's operating results, cash flow needs, loan repayment schedules, and other items. They can be used to compare results as well, and lenders will need this information to evaluate the project's merits.
- ***operating plans and policies,***
  These would include details of payments, transportation costs, deductions for quality concerns, work schedules, number of employees, hours of operation, production quality management, accounts receivable policies, interaction between the manager and board of directors, and other items.
- ***a site analysis for the proposed facility,***
  The preliminary site location determined by the committee would need to be evaluated for suitability. Details such as proximity to roads and customers, facility design, and cost of real estate, plant, and equipment, would be needed. *The significant issue of zoning will need to be addressed.*
- ***plans for receiving the required operational permits,***
  Federal, state, and local regulations will need to be met and proper permitting completed to comply with all pertinent laws, which could be a time consuming procedure for the facility.
- ***financing and capital requirements,***

A loan schedule, financial structure, investment schedule and other items would be needed. If a joint venture arrangement is finalized, details of this are needed.

- ***job descriptions,***
  The cooperative would need to hire facility and administrative personnel. A job description should be developed for each intended position or role, which also includes how they would be evaluated and rewarded for performance.
- ***a plan for hiring expert management,***
  The board of directors is responsible for the long-term management of the venture; however, for day-to-day operations, a manager would be needed. This person should know how to run the facility, as well as how to coordinate the flow of product to the facility and finished product to buyers, as well as how to supervise other employees.
- ***plans for implementing an accounting system,***
  This would be needed to provide information to the board of directors in evaluating financial performance and should adhere to GAAP standards.
- ***and plans for securing capital.***
  A detailed plan for obtaining start-up funding and capital, whether from traditional lending sources or from community and non-traditional program sources such as the ones outlined in this study, would provide a framework for efficient acquisition of capital.

III. Find a facility location

The leadership of the potential facility project should seek to find a location that will provide clarity to the exact target region for the operations. Until a central location is identified, it is difficult to try to establish reliable estimates of supply.

IV. Pursue financial stability

Since the cooperative is only operating during a portion of the year, it should ensure it is generating enough funds during its operational period to cover expenses year-round.

To help stabilize sales, the cooperative should diversify its markets and consider additional product lines. The cooperative should consider moving into the secondary chestnut product market for waste products as it is a great way to increase income without changing current operations. The cooperative should increase the duties of the general manager/sales and marketing manager to include secondary chestnut products.

To generate sufficient revenue, the cooperative should offer pre-sales to consumers who want to guarantee they will receive high-quality chestnuts in time for the holidays. However, should any unexpected loss of crop events occur such as a hard freeze, insects, or chestnut blight, the cooperative would not have enough cash on hand to cover operational expenses, and would also need to return any revenue generated by pre-sale.

The cooperative should seek member fees, donations, or grants in the range of $90,000 at startup just to purchase equipment. It is highly unlikely a new, unproven, and unique venture such as this would be able to receive the full amount of a loan at inception.

V. Find additional inputs and build relationships with producers

The chestnut industry in Virginia needs to grow significantly, in number of farms, number of acres, or both. As most chestnut farms are very small, the cooperative would need a large

number of members to contribute their product and sell it through the cooperative. To obtain the necessary amount of chestnuts for this project, the cooperative should look to source chestnuts from producers in other states as well as to educate Virginia's general population of the health benefits, potential profitability, and overall basic information about chestnuts.

Care should be taken to build relationships with producers to encourage them to utilize the facility's services. It appears that the riskiest aspect to the venture is establishing sufficient initial inputs and having those inputs remain stable throughout the course of the cooperative's operational life. A problem faced by other similar entities is not receiving enough product to generate sufficient revenue for the organization.

VI. Comply with food safety regulations

The consultants strongly recommend that the owners of the project contact Virginia food safety personnel to maintain awareness and compliance with food safety related rules. This is particularly important for the venture's future growth and ability to capture institutional customers that require safety certifications.

VII. Furthering chestnut education

It is recommended that the cooperative spend a portion of its marketing budget on furthering chestnut education. Two areas should be focused on:

1) Educating the public about chestnuts, their health benefits (such as helping those with Celiac disease), and
2) Educating potential growers on the financial benefits and income associated with chestnut production

VIII. Attracting members

One of the organization's goals should be allowing easy access to cooperative membership. This can be accomplished through low membership fees, as well as making it simple for growers to receive revenue for their chestnuts. The process of selling to the cooperative should be simplified and offer sufficient revenue, as this will keep participating producers satisfied as well as attract new members. Most chestnut farms are small, and having a guaranteed sales outlet for their chestnuts could be incentive to increase orchard size.

IX. Shared warehouse operations

An easy way for the cooperative to reduce expenses is to lease warehouse space with other businesses/organizations. While initial procedures and methods could be complicated, long-term potential financial benefits of sharing warehouse costs would prove worth the extra complication. When taking the cooperative's shortened operational year into account, sharing a warehouse space makes even more financial sense. One option here could include renting the cooperative's warehouse space to another seasonal business during the six months they are not in operation. This would cover their costs and ensure the cooperative is not incurring losses during non-operational months.

X. Trademarks and branding

Management should consult with a trademark attorney. This attorney can help propose methods of obtaining a trademark, as well as help the cooperative work through any issues

that may arise associated with it. Nationally registered trademarks are generally considered to reduce business risk. Ownership should also contact a marketing expert to help create a brand identity for the proposed cooperative. Brand recognition should be a goal of the organization.

XI. Establishing procedures

A consistent receiving and distribution schedule should be established before operations begin. This may be modified as the organization moves forward, but pre-established patterns will help with consistency for growers and employees of the cooperative. In conjunction with this schedule, labor schedules, work hours, and shifts should also be established.

XII. Quality control

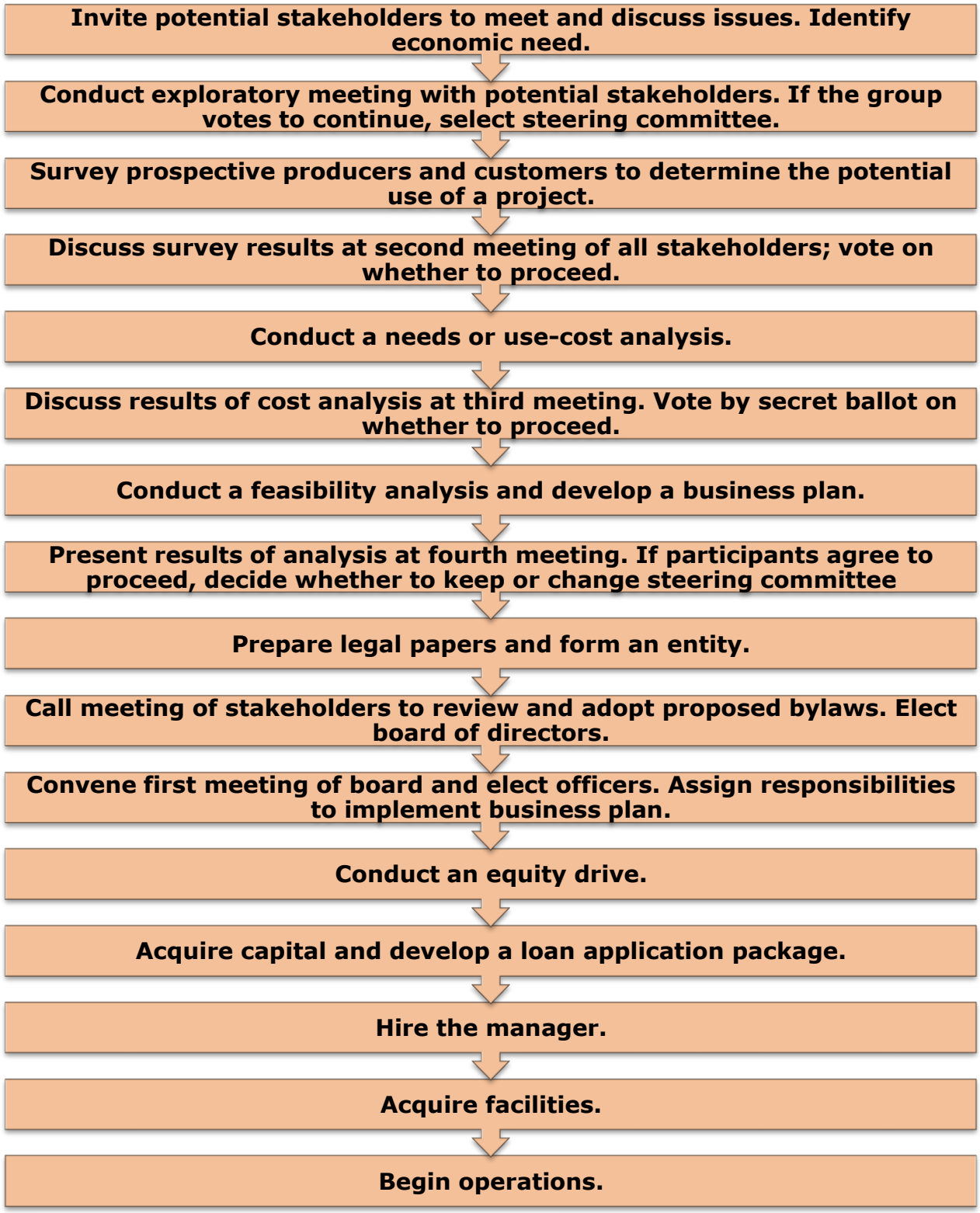
Quality control procedures should be implemented before operations begin. Selling high-quality chestnuts is one of the keys to success and customer loyalty. A lower quality product for a higher price would result in financial distress and dishonorable business practices. Care should be taken to ensure all chestnuts sold are free of infestation or disease.

A serious problem could result if efforts fall short of projections. Unplanned operational expenses over long time periods could result in failure for the proposed venture. These should be closely monitored and issues that may arise should be dealt with quickly and efficiently or risk of failure is high.

APPENDIX

APPENDIX A: Cooperative Organization

The following has been adapted from the USDA Rural Development reference guide entitled *Understanding Cooperatives: How to Start a Cooperative*. For more information, access this guide online at http://www.rd.usda.gov/files/CIR45-14.pdf.



APPENDIX B: Expense and Revenue

Year 1 Revenue and Expenses													
Wholesale Baseline	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**First Year Annual Total**
Chestnuts (pounds)	10,625	0	0	0	0	0	0	10,625	53,125	53,125	53,125	31,875	212,500
Chestnut Waste	1,500	0	0	0	0	0	0	1,500	7,500	7,500	7,500	4,500	30,000
Total Sales (pounds)	**12,125**	**0**	**0**	**0**	**0**	**0**	**0**	**12,125**	**60,625**	**60,625**	**60,625**	**36,375**	**242,500**
	$	$	$	$	$	$	$	$	$	$	$	$	$
Income													
Chestnuts ($)	45,156	0	0	0	0	0	0	45,156	225,781	225,781	225,781	135,469	903,125
Chestnut Waste	4,125	0	0	0	0	0	0	4,125	20,625	20,625	20,625	12,375	82,500
Total Sales All Types	**49,281**	**0**	**0**	**0**	**0**	**0**	**0**	**49,281**	**246,406**	**246,406**	**246,406**	**147,844**	**985,625**
Variable Costs													
Product Lost in Transport/Handling & Returns	(1,806)	0	0	0	0	0	0	(1,806)	(9,031)	(9,031)	(9,031)	(5,419)	(36,125)
Chestnut Inputs	(25,500)	0	0	0	0	0	0	(25,500)	(127,500)	(127,500)	(127,500)	(76,500)	(510,000)
Credit Card Processing	(90)	0	0	0	0	0	0	(90)	(452)	(452)	(452)	(271)	(1,806)
Packaging Material Expense	(3,161)	0	0	0	0	0	0	(3,161)	(15,805)	(15,805)	(15,805)	(9,483)	(63,219)
Variable Labor & Delivery Expense	(6,253)	(4,275)	(3,246)	(3,471)	(3,471)	(3,471)	(4,500)	(6,284)	(7,888)	(7,906)	(7,880)	(6,506)	(65,154)
Total Variable Operations	**(36,811)**	**(4,275)**	**(3,246)**	**(3,471)**	**(3,471)**	**(3,471)**	**(4,500)**	**(36,842)**	**(160,675)**	**(160,693)**	**(160,668)**	**(98,179)**	**(676,304)**
Total Variable Costs	**(36,811)**	**(4,275)**	**(3,246)**	**(3,471)**	**(3,471)**	**(3,471)**	**(4,500)**	**(36,842)**	**(160,675)**	**(160,693)**	**(160,668)**	**(98,179)**	**(676,304)**
Variable Margin	**12,470**	**(4,275)**	**(3,246)**	**(3,471)**	**(3,471)**	**(3,471)**	**(4,500)**	**12,439**	**85,731**	**85,713**	**85,738**	**49,665**	**309,321**

Year 1 Revenue and Expenses Cont.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	First Year Annual Total
Fixed Costs													
Equipment Loan Interest Pmnts	(579)	(579)	(579)	(579)	(579)	(579)	(579)	(579)	(579)	(579)	(579)	(579)	(6,951)
Business Personal Property Tax	(1,282)	0	0	0	0	0	0	0	0	0	0	0	(1,282)
Tools, Dies, Fixtures, Maint/Repairs	(850)	(850)	(850)	(850)	(850)	(850)	(850)	(850)	(850)	(850)	(850)	(850)	(10,200)
Fixed Vehicle Expenses and Forklift Rental	(904)	(780)	(780)	(780)	(780)	(780)	(780)	(904)	(904)	(904)	(904)	(904)	(10,102)
Total Equipment Costs	**(3,615)**	**(2,209)**	**(2,209)**	**(2,209)**	**(2,209)**	**(2,209)**	**(2,209)**	**(2,333)**	**(2,333)**	**(2,333)**	**(2,333)**	**(2,333)**	**(28,535)**
Facilities													
Rent Expense	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(1,500)	(18,000)
Facility Expenses and Insurance	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(627)	(7,520)
Utilities	(1,800)	(1,035)	(1,035)	(1,035)	(1,035)	(1,035)	(1,035)	(1,800)	(1,800)	(1,800)	(1,800)	(1,800)	(17,010)
Facility Supplies	(667)	(667)	(667)	(667)	(667)	(667)	(667)	(667)	(667)	(667)	(667)	(667)	(8,000)
Total Facility Costs	**(4,593)**	**(3,828)**	**(3,828)**	**(3,828)**	**(3,828)**	**(3,828)**	**(3,828)**	**(4,593)**	**(4,593)**	**(4,593)**	**(4,593)**	**(4,593)**	**(50,530)**
Fixed Sales and Marketing													
Promotional Costs and Marketing Employee	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(35,000)
Total Selling and Marketing Costs	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(2,917)**	**(35,000)**
General/Administrative													
Mgmt./Admin. Support	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(3,333)	(40,000)
Fringe and Overhead (0.3)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(12,000)
General Expenses & Fees (Software, Legal, Phone, OFC Supplies etc.)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(1,000)	(12,000)
Total General/Administrative Costs	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(5,333)**	**(64,000)**
Unforeseen/Contingency													
Unforeseen Expenses and Bad Debt	(4,928)	(1,232)	(1,232)	(1,232)	(1,232)	(1,232)	(1,232)	(4,928)	(24,641)	(24,641)	(24,641)	(14,784)	(105,955)
Total Fixed Costs	**(21,386)**	**(15,519)**	**(15,519)**	**(15,519)**	**(15,519)**	**(15,519)**	**(15,519)**	**(20,105)**	**(39,817)**	**(39,817)**	**(39,817)**	**(29,961)**	**(284,020)**
Wholesale Baseline EBITDA	**(8,916)**	**(19,794)**	**(18,766)**	**(18,991)**	**(18,991)**	**(18,991)**	**(20,019)**	**(7,665)**	**45,914**	**45,896**	**45,921**	**19,704**	**25,301**
Equipment Depreciation	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(1,168)	(14,016)
Receivables Interest (30 days @ 0.085)	(349)	0	0	0	0	0	0	(349)	(1,745)	(1,745)	(1,745)	(1,047)	(6,982)
Net Wholesale Baseline Income	**(10,433)**	**(20,962)**	**(19,934)**	**(20,159)**	**(20,159)**	**(20,159)**	**(21,187)**	**(9,182)**	**43,000**	**42,982**	**43,008**	**17,489**	**4,304**

Years 2 & 3 Revenue and Expenses										
Wholesale Baseline	**Y2Q1**	**Y2Q2**	**Y2Q3**	**Y2Q4**	**Y3Q1**	**Y3Q2**	**Y3Q3**	**Y3Q4**	**Annual Total Year 2**	**Annual Total Year 3**
Chestnut Pounds	12,750	0	76,500	165,750	14,875	0	89,250	193,375	255,000	297,500
Chestnut Waste	1,800	0	10,800	23,400	2,100	0	12,600	27,300	36,000	42,000
Total Sales (units)	**14,550**	**0**	**87,300**	**189,150**	**16,975**	**0**	**101,850**	**220,675**	**291,000**	**339,500**
	$	$	$	$	$	$	$	$	$	$
Income										
Chestnuts ($)	56,897	0	341,381	739,659	66,380	0	398,278	862,936	1,137,938	1,327,594
Chestnut Waste ($)	4,950	0	29,700	64,350	5,775	0	34,650	75,075	99,000	115,500
Total Sales All Types	**61,847**	**0**	**371,081**	**804,009**	**72,155**	**0**	**432,928**	**938,011**	**1,236,938**	**1,443,094**
Variable Costs										
Product Lost in Transport/Handling & Returns	(2,276)	0	(13,655)	(29,586)	(2,655)	0	(15,931)	(34,517)	(45,518)	(53,104)
Chestnut Inputs	(30,600)	0	(183,600)	(397,800)	(35,700)	0	(214,200)	(464,100)	(612,000)	(714,000)
Credit Card Processing	(114)	0	(683)	(1,479)	(133)	0	(797)	(1,726)	(2,276)	(2,655)
Packaging Material Expense	(3,983)	0	(23,897)	(51,776)	(4,647)	0	(27,879)	(60,406)	(79,656)	(92,932)
Variable Labor & Delivery Expense	(14,296)	(7,971)	(26,137)	(27,185)	(15,500)	(8,229)	(29,905)	(32,102)	(75,590)	(85,735)
Total Variable Operations	**(51,269)**	**(7,971)**	**(247,972)**	**(507,827)**	**(58,634)**	**(8,229)**	**(288,712)**	**(592,850)**	**(815,039)**	**(948,425)**
Total Variable Costs	**(51,269)**	**(7,971)**	**(247,972)**	**(507,827)**	**(58,634)**	**(8,229)**	**(288,712)**	**(592,850)**	**(815,039)**	**(948,425)**
Variable Margin	**10,578**	**(7,971)**	**123,109**	**296,183**	**13,520**	**(8,229)**	**144,216**	**345,161**	**421,899**	**494,669**

Fixed Costs	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4	Annual Total Year 2	Annual Total Year 3
Equipment Loan Interest Payments	(1,534)	(1,534)	(1,534)	(1,534)	(1,317)	(1,317)	(1,317)	(1,317)	(6,135)	(5,267)
Business Personal Property Tax	(1,199)	0	0	0	(1,123)	0	0	0	(1,199)	(1,123)
Tools, Dies, Fixtures, Maint/Repairs	(3,065)	(3,065)	(3,065)	(3,065)	(4,187)	(4,187)	(4,187)	(4,187)	(12,260)	(16,748)
Fixed Vehicle Expense and Forklift Rental	(1,379)	(803)	(1,379)	(1,379)	(1,618)	(827)	(1,618)	(2,409)	(4,941)	(6,473)
Total Equipment Costs	**(7,177)**	**(5,402)**	**(5,978)**	**(5,978)**	**(8,245)**	**(6,331)**	**(7,122)**	**(7,913)**	**(24,535)**	**(29,611)**
Facilities										
Rent Expense	(4,635)	(4,635)	(4,635)	(4,635)	(4,774)	(4,774)	(4,774)	(4,774)	(18,540)	(19,096)
Facility Expenses and Insurance	(1,936)	(1,936)	(1,936)	(1,936)	(1,994)	(1,994)	(1,994)	(1,994)	(7,746)	(7,978)
Facility Supplies	(3,090)	(3,090)	(3,090)	(3,090)	(4,635)	(4,635)	(4,635)	(4,635)	(12,360)	(18,540)
Utilities	(3,986)	(3,198)	(4,774)	(5,562)	(4,106)	(3,294)	(4,917)	(5,729)	(17,520)	(18,046)
Total Facility Costs	**(13,648)**	**(12,860)**	**(14,435)**	**(15,223)**	**(15,509)**	**(14,698)**	**(16,321)**	**(17,132)**	**(56,166)**	**(63,660)**
Fixed Sales and Marketing										
Promotional Costs and Marketing Employee	(10,513)	(10,513)	(10,513)	(10,513)	(12,328)	(12,328)	(12,328)	(12,328)	(42,050)	(49,312)
Total Selling and Marketing Costs	**(10,513)**	**(10,513)**	**(10,513)**	**(10,513)**	**(12,328)**	**(12,328)**	**(12,328)**	**(12,328)**	**(42,050)**	**(49,312)**
General/Administrative										
Mgmt./Admin. Support	(10,500)	(10,500)	(10,500)	(10,500)	(11,000)	(11,000)	(11,000)	(11,000)	(42,000)	(44,000)
Fringe and Overhead (0.3)	(3,150)	(3,150)	(3,150)	(3,150)	(3,300)	(3,300)	(3,300)	(3,300)	(12,600)	(13,200)
General Expenses & Fees (Software, Legal, Phone, OFC Supplies etc.)	(3,348)	(3,348)	(3,348)	(3,348)	(3,448)	(3,448)	(3,448)	(3,448)	(13,390)	(13,792)
Total General/Administrative Costs	**(16,998)**	**(16,998)**	**(16,998)**	**(16,998)**	**(17,748)**	**(17,748)**	**(17,748)**	**(17,748)**	**(67,990)**	**(70,992)**
Unforeseen/Contingency										
Unforeseen Expenses and Bad Debt	(6,185)	0	(37,108)	(80,401)	(7,215)	0	(43,293)	(93,801)	(123,694)	(144,309)
Total Fixed Costs	**(54,519)**	**(45,771)**	**(85,032)**	**(129,112)**	**(61,046)**	**(51,104)**	**(96,811)**	**(148,922)**	**(314,435)**	**(357,884)**
Wholesale Baseline EBITDA	**(43,941)**	**(53,743)**	**38,078**	**167,070**	**(47,525)**	**(59,333)**	**47,405**	**196,238**	**107,464**	**136,785**
Equipment Depreciation	(3,504)	(3,504)	(3,504)	(3,504)	(3,504)	(3,504)	(3,504)	(3,504)	(14,016)	(14,016)
Receivables Interest (30 days @ 0.085)	(438)	0	(2628)	(5695)	(511)	0	(3067)	(6644)	(8,762)	(10,222)
Net Wholesale Baseline Income	**(47,883)**	**(57,247)**	**31,945**	**157,871**	**(51,541)**	**(62,837)**	**40,834**	**186,090**	**84,686**	**112,546**

Years 1-3 Averages and Percent of Revenue								
Wholesale Baseline	**First Year Monthly Avg.**	**First Year Annual Total**	**Percent of Revenue**	**Quarterly Averages Year 2&3**	**Annual Total Year 2**	**Percent of Revenue Y2**	**Annual Total Year 3**	**Percent of Revenue Y3**
Chestnuts (pounds)	17,708	212,500		69,063	255,000		297,500	
Chestnut Waste	2,500	30,000		9,750	36,000		42,000	
Total Sales (pounds)	**20,208**	**242,500**		**78,813**	**291,000**		**339,500**	
	$	$	**$**	$	$	$	$	$
Income								
Chestnuts ($)	75,260	903,125	91.63%	308,191	1,137,938	92.00%	1,327,594	92.00%
Chestnut Waste ($)	6,875	82,500	8.37%	26,813	99,000	8.00%	115,500	8.00%
Total Sales All Types	**82,135**	**985,625**	**100.00%**	**335,004**	**1,236,938**	**100.00%**	**1,443,094**	**100.00%**
Variable Costs								
Product Lost in Transport/Handling & Returns	(3,010)	(36,125)	(3.7%)	(12,328)	(45,518)	(3.7%)	(53,104)	(3.7%)
Chestnut Inputs	(42,500)	(510,000)	(51.7%)	(165,750)	(612,000)	(49.5%)	(714,000)	(49.5%)
Credit Card Processing	(151)	(1,806)	(0.2%)	(616)	(2,276)	(0.2%)	(2,655)	(0.2%)
Packaging Material Expense	(5,268)	(63,219)	(6.4%)	(21,573)	(79,656)	(6.4%)	(92,932)	(6.4%)
Variable Labor & Delivery Expense	(5,429)	(65,154)	(6.6%)	(20,166)	(75,590)	(6.1%)	(85,735)	(5.9%)
Total Variable Operations	**(56,359)**	**(676,304)**	**(68.6%)**	**(220,433)**	**(815,039)**	(65.9%)	**(948,425)**	(65.7%)
Total Variable Costs	**(56,359)**	**(676,304)**	**(68.6%)**	**(220,433)**	**(815,039)**	(65.9%)	**(948,425)**	(65.7%)
Variable Margin	**25,777**	**309,321**	**31.4%**	**114,571**	**421,899**	**34.1%**	**494,669**	**34.3%**
Fixed Costs								
Equipment Loan Interest Pmnts	(579)	(6,951)	(0.7%)	(1,425)	(6,135)	(0.5%)	(5,267)	(0.4%)
Business Personal Property Tax	(107)	(1,282)	(0.1%)	(290)	(1,199)	(0.1%)	(1,123)	(0.1%)
Tools, Dies, Fixtures, Maint/Repairs	(850)	(10,200)	(1.0%)	(3,626)	(12,260)	(1.0%)	(16,748)	(1.2%)
Fixed Vehicle Expenses and Forklift Rental	(842)	(10,102)	(1.0%)	(1,427)	(4,941)	(0.4%)	(6,473)	(0.4%)
Total Equipment Costs	**(2,378)**	**(28,535)**	**(2.9%)**	**(6,768)**	**(24,535)**	**(2.0%)**	**(29,611)**	**(2.1%)**
Facilities								
Rent Expense	(1,500)	(18,000)	(1.8%)	(4,705)	(18,540)	(1.5%)	(19,096)	(1.3%)
Facility Expenses and Insurance	(627)	(7,520)	(0.8%)	(1,965)	(7,746)	(0.6%)	(7,978)	(0.6%)
Utilities	(1,418)	(17,010)	(1.7%)	(3,863)	(12,360)	(1.0%)	(18,540)	(1.3%)
Facility Supplies	(667)	(8,000)	(0.8%)	(4,446)	(17,520)	(1.4%)	(18,046)	(1.3%)
Total Facility Costs	**(4,211)**	**(50,530)**	**(5.1%)**	**(14,978)**	**(56,166)**	**(4.5%)**	**(63,660)**	**(4.4%)**

	First Year Monthly Avg.	First Year Annual Total	Percent of Revenue	Quarterly Averages Year 2&3	Annual Total Year 2	Percent of Revenue Y2	Annual Total Year 3	Percent of Revenue Y3
Fixed Sales and Marketing								
Promotional Costs and Marketing Employee	(2,917)	(35,000)	(3.6%)	(11,420)	(42,050)	(3.4%)	(49,312)	(3.4%)
Total Selling and Marketing Costs	**(2,917)**	**(35,000)**	**(3.6%)**	**(11,420)**	**(42,050)**	**(3.4%)**	**(49,312)**	**(3.4%)**
General/Administrative								
Mgmt./Admin. Support	(3,333)	(40,000)	(4.1%)	(10,750)	(42,000)	(3.4%)	(44,000)	(3.0%)
Fringe and Overhead (0.3)	(1,000)	(12,000)	(1.2%)	(3,225)	(12,600)	(1.0%)	(13,200)	(0.9%)
General Expenses & Fees (Software, Legal, Phone, OFC Supplies etc.)	(1,000)	(12,000)	(1.2%)	(3,398)	(13,390)	(1.1%)	(13,792)	(1.0%)
Total General/Administrative Costs	**(5,333)**	**(64,000)**	**(6.5%)**	**(17,373)**	**(67,990)**	**(5.5%)**	**(70,992)**	**(4.9%)**
Unforeseen/Contingency								
Unforeseen Expenses and Bad Debt	(8,830)	(105,955)	(10.8%)	(33,500)	(123,694)	(10.0%)	(144,309)	(10.0%)
Total Fixed Costs	**(23,668)**	**(284,020)**	(28.8%)	**(84,040)**	**(314,435)**	**(25.4%)**	**(357,884)**	**(24.8%)**
Wholesale Baseline EBITDA	**2,108**	**25,301**	**2.6%**	**30,531**	**107,464**	**8.7%**	**136,785**	**9.5%**
Equipment Depreciation	(1,168)	(14,016)	(1.4%)	(3,504)	(14,016)	(1.1%)	(14,016)	(1.0%)
Receivables Interest (30 days @ 0.085)	(582)	(6,982)	(0.7%)	(2,555)	(8,762)	(0.7%)	(10,222)	(0.7%)
Net Wholesale Baseline Income	**359**	**4,304**	**0.4%**	**24,654**	**84,686**	**6.8%**	**112,546**	**7.8%**

APPENDIX C: CASH FLOW STATEMENTS

STARTUP AND Year 1	Ongoing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year 1
OPERATING ACTIVITIES														Annual
Net Income (Loss)	13,991	(10,433)	(20,962)	(19,934)	(20,159)	(20,159)	(20,159)	(21,187)	(9,182)	43,000	42,982	43,008	17,489	4,304
Non cash charges to net income (loss)														
Depreciation	1,168	1,168	1,168	1,168	1,168	1,168	1,168	1,168	1,168	1,168	1,168	1,168	1,168	14,016
(Increase) Decrease in current assets														0
Accounts receivable	78,850	68,994	49,281	0	0	0	0	0	(49,281)	(197,125)	0	0	98,563	(29,569)
Increase (decrease) in current liabilities														0
Accounts payable and accrued expenses														0
Accrued interest	838	349	0	0	0	0	0	0	349	1,745	1,745	1,745	1,047	6,982
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	$94,847	$60,078	$29,487	($18,766)	($18,991)	($18,991)	($18,991)	($20,019)	($56,947)	($151,211)	$45,896	$45,921	$118,266	($4,267)
INVESTING ACTIVITIES														0
Purchases of property and equipment														0
FINANCING ACTIVITIES														0
Member contributions (distributions)	0	10,533	10,533	10,533	10,533	10,533	0	0	0	0	0	0	0	0
Other contributions		349	0	0	0	0	0	0	349	1,745	1,745	1,745	1,047	6,982
Net borrowings (payments) on short-term loans or notes		0	0	0	0	0	(2,000)	0	0	(1,000)	0	(11,000)	3,000	(11,000)
Principal payments on long-term loans		(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(1,046)	(12,547)
Proceeds from long-term debt borrowings														0
NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES	0	9,837	9,488	9,488	9,488	9,488	(3,046)	(1,046)	(696)	(300)	700	(10,300)	3,002	36,101
NET INCREASE IN CASH	$94,847	$69,915	$38,975	($9,278)	($9,503)	($9,503)	($22,036)	($21,065)	($57,643)	($151,511)	$46,596	$35,621	$121,268	$31,834
CASH -beginning of period	$20,000	$114,847	$184,761	$223,736	$214,458	$204,955	$195,452	$173,416	$152,351	$94,708	($56,804)	($10,208)	$25,413	$114,847
CASH - end of period	$114,847	$184,761	$223,736	$214,458	$204,955	$195,452	$173,416	$152,351	$94,708	($56,804)	($10,208)	$25,413	$146,681	$146,681

Year 2 and Year 3 Cash Flow	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4	Annual Total Year 2	Annual Total Year 3
OPERATING ACTIVITIES										
Net Income (Loss)	(47,883)	(57,247)	31,945	157,871	(51,541)	(62,837)	40,834	186,090	84,686	112,546
Non cash charges to net income (loss)									-	-
Depreciation	3,504	3,504	3,504	3,504	3,504	3,504	3,504	3,504	14,016	14,016
Tax Credit									-	-
(Increase) decrease in current assets									-	-
Accounts receivable	127,228	20,616	(123,694)	(144,309)	243,952	24,052	(144,309)	(168,361)	(120,159)	(44,667)
Inventories										
Increase (decrease) in current liabilities									-	-
Accounts payable and accrued expenses									-	-
Accrued interest	(438)		(2,628)	(5,695)	(511)		(3,067)	(6,644)	(8,762)	(10,222)
NET CASH PROVIDED BY (USED IN) OPERATING ACTIVITIES	$82,411	(33,127)	($90,873)	$11,371	$195,404	($35,281)	($103,038)	$14,589	($30,219)	$71,674
INVESTING ACTIVITIES										
Purchases of property and equipment									-	-
Sale of Property and Equipment									-	-
FINANCING ACTIVITIES										
Member contributions (distributions)	12,800				29,933				12,800	29,933
Other contributions	438		2,628	5,695	511		3,067	6,644	8,762	10,222
Grants									-	-
Net borrowings (payments) on short-term loans or notes									-	-
Principal payments on long-term loans	(3,341)	(3,341)	(3,341)	(3,341)	(3,558)	(3,558)	(3,558)	(3,558)	(13,362)	(14,231)
Proceeds from long-term debt borrowings									-	-
NET CASH PROVIDED BY (USED IN) FINANCING ACTIVITIES	9,897	(3,341)	(712)	2,354	26,887	(3,558)	(491)	3,087	8,199	25,924
NET INCREASE IN CASH	$92,308	($36,468)	($91,585)	$13,725	$222,291	($38,839)	($103,529)	$17,675	($22,020)	$97,598
CASH -beginning of period	$146,681	$238,989	$202,521	$110,936	$124,661	$346,952	$308,113	$204,584	$146,681	$124,661
CASH - end of period	$238,989	$202,521	$110,936	$124,661	$346,952	$308,113	$204,584	$222,259	$124,661	$222,259

APPENDIX D: PRO FORMA OPERATING STATEMENTS

	Y1	Y2	Y3
Revenues (Sales)	985,625	1,236,938	1,443,094
Total Variable Operating Costs	(676,304)	(815,039)	(948,425)
Total Marketing Costs	-	-	-
Variable Margin (Loss)	309,321	421,899	494,669
Total Equipment Costs	(28,535)	(24,535)	(29,611)
Total Facilities Costs	(50,530)	(56,166)	(63,660)
Total Selling and Marketing Costs	(35,000)	(42,050)	(49,312)
General and Administrative Expenses	(64,000)	(67,990)	(70,992)
Unforeseen and Contingency Expenses	(105,955)	(123,694)	(144,309)
Wholesale Baseline Earnings EBITDA (Loss)	25,301	107,464	136,785
Interest Expense	(6,982)	(8,762)	(10,222)
Depreciation Expense	(14,016)	(14,016)	(14,016)
Net Wholesale Baseline Venture Income (Loss)	4,304	84,686	112,546

APPENDIX E: BALANCE SHEET

	Year 1	Year 2	Year 3
ASSETS			
Cash and Equivalents	146,681	124,661	222,259
Accounts Receivables	82,135	103,078	120,258
Inventories	0	0	0
TOTAL CURRENT ASSETS	228,816	227,740	342,517
BUILDINGS AND EQUIPMENT, Net of Depreciation	219,591	205,575	191,558
OTHER ASSETS, Net of Amortization	0	0	0
TOTAL ASSETS	$448,407	$433,314	$534,075
LIABILITIES AND MEMBERS' EQUITY			
CURRENT LIABILITIES			
Accounts Payable and Accrued Expenses	0	0	0
Accrued Interest	6,982	(8,762)	(10,222)
Current Maturities of Long-Term Debt	(6,951)	(6,135)	(5,267)
TOTAL CURRENT LIABILITIES	$31	($14,897)	($15,489)
LONG-TERM DEBT			
Senior Debt	94,388	81,026	66,795
Less Current Maturities of Long-Term Debt	(6,951)	(6,135)	(5,267)
MEMBERS' EQUITY			
Member Equity and Equity Equivalents	356,636	288,635	375,490
Dispersed Member Equity	0	0	0
Retained Earnings (Losses)	4,304	84,686	112,546
TOTAL LIABILITIES AND MEMBERS' EQUITY	$448,407	$433,314	$534,075

APPENDIX F: LABOR

Year 1													
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Driver	# Emp.	1	0	0	0	0	0	0	1	1	1	1	1
Rate/Hr.	Total Hrs.	18	0	0	0	0	0	0	20	52	52	50	34
$15.00	Cost	$265	$0	$0	$0	$0	$0	$0	$302	$774	$774	$746	$510
Admin Cost		$128.57	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$128.57	$128.57	$128.57	$128.57	$128.57
			Total Cost	**$4,143**									
General Labor	# Emp.	2	1	1	1	1	1	1	2	3	3	3	2
Rate/Hr.	Total Hrs.	108	64	64	86	86	86	86	108	108	108	108	108
$10.50	Cost	$2,268	$675	$675	$900	$900	$900	$900	$2,263	$3,394	$3,412	$3,414	$2,276
			Total Cost	**$21,977**									
Total Cost Production:		**$2,533**	**$675**	**$675**	**$900**	**$900**	**$900**	**$900**	**$2,564**	**$4,168**	**$4,186**	**$4,160**	**$2,786**
Bookkeeper	#Emp.	1	1	0	0	0	0	1	1	1	1	1	1
Rate/Hr.	Total Hrs.	86	86	0	0	0	0	86	86	86	86	86	86
$12.00	Cost	$1,029	$1,029	$0	$0	$0	$0	$1,029	$1,029	$1,029	$1,029	$1,029	$1,029
			Total Cost	**$8,229**									
Office/Administrative	# Emp.	1	1	1	1	1	1	1	1	1	1	1	1
Rate/Hr.	Total Hrs.	171	171	171	171	171	171	171	171	171	171	171	171
$15.00	Cost	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571	$2,571
			Total Cost	**$30,857**									
Total Labor Cost P 1:							**$65,205**						

Year 2						Year 3					
		P2 Q1	P2 Q2	P2 Q3	P2 Q4			P3 Q1	P3 Q2	P3 Q3	P3 Q4
Driver	# Emp.	1	0	1	1	**Driver**	# Emp.	1	0	1	2
Rate/Hr.	Total Hrs.	42	0	96	164	Rate/Hr.	Total Hrs.	44	0	106	187
$15.50	Cost	$655	$0	$1,492	$2,539	$16.00	Cost	$702	$0	$1,698	$2,994
Admin Cost		$133	$0	$133	$133	Admin Cost		$137	$0	$137	$274
			Total Cost	**$5,084**					**Total Cost**	**$5,944**	
General Labor	# Emp.	2	0	3	3	**General Labor**	# Emp.	2	0	3	3
Rate/Hr.	Total Hrs.	129	257	387	387	Rate/Hr.	Total Hrs.	150	386	450	450
$11.00	Cost	$2,838	$0	$12,771	$12,771	$11.75	Cost	$3,525	$0	$15,863	$15,863
			Total Cost	**$29,540**					**Total Cost**	**$36,686**	
Total Cost Production:		**$3,626**	**$0**	**$14,395**	**$15,443**	**Total Cost Production:**		**$4,364**	**$0**	**$17,698**	**$19,131**
Bookkeeper	# Emp.	1	0	1	1	Bookkeeper	# Emp.	1	0	1	1
Rate/Hr.	Total Hrs.	171	0	257	257	Rate/Hr.	Total Hrs.	171	0	257	257
$12.50	Cost	$2,143	$0	$3,214	$3,214	$13.00	Cost	$2,229	$0	$3,343	$3,343
			Total Cost	**$8,571**					**Total Cost**	**$8,914**	
Office/Administrative	# Emp.	1	1	1	1	**Office/Administrative**	# Emp.	1	1	1	1
Rate/Hr.	Total Hrs.	514	514	514	514	Rate/Hr.	Total Hrs.	514	514	514	514
$15.50	Cost	$7,971	$7,971	$7,971	$7,971	$16.00	Cost	$8,229	$8,229	$8,229	$8,229
			Total Cost	**$31,886**					**Total Cost**	**$41,829**	
Total Labor Cost P 2:				**$75,081**		**Total Labor Cost P 3:**				**$93,372**	