Hard Cider Production in Small Scale Wineries

A Senior Project

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by

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Abstract

The purpose of this project was to create a set of guidelines in which a small winery could follow in order to produce their first batch of hard cider. These guidelines include taking inventory of equipment needed for the production process and comparing that to equipment the winery already possesses, allowing input cost to stay as low as possible. These guidelines were then used to conduct a cost analysis for a local winery to brew their first batch of hard cider.
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This hard apple cider production plan has potential to be implemented in a variety of small wineries. It will work as a set of guidelines for existing wineries to follow. The goal is to help these companies expand their products to reach a larger market.

The first step will be deciding on what scale they choose to produce their cider. This plan is geared towards smaller scale production. In a way this is an experiment of how their consumers will react. If the first brew is a success the next batch may be increased to a larger scale production.

**Purpose of Project**

The goal of this project is not to develop a new company. It’s to give an existing company a new opportunity to expand their business and attract new consumers. In the process of attracting new customers with cider, these same customers will be exposed to their wine. This gives yet another opportunity to hook customers to all products, cider as well as wine. This is meant to help a company decide if they would like to make the investment in larger scale cider production equipment. As much existing equipment will be used for this first, experimental, batch. With the fermentation process of wine and cider similar, wineries will have some of the equipment already. This will help keep investment costs as low as possible.
Objectives

- Take inventory of supplies needed and supplies you already have
- Decide production size
- Conduct cost analysis for winery
- Create marketing strategy including price point

Summary

This project will allow companies a new opportunity to expand their business. With the massive growth in the hard cider industry, consumers are becoming exposed and are interested in the beverage. Currently, the majority of cider production comes from only a few large-scale companies. Encouraging new small-scale hand crafted ciders will help keep the industry authentic.
Chapter Two

Literature Review

American consumers have just recently been re-introduced to the classic beverage known as hard cider. The alcoholic beverage industry has taken note and hard cider production has spiked. Commercial fruit beverages such as coolers are beginning to take a back seat to artisanal, hand crafted cider. This presents existing winery and breweries an excellent opportunity to expand their beverage production to include hard cider.

History

English settlers first introduced cider to the New World during the Colonial period. These settlers brought seed with them that produced some of the first orchards. During this time period, cider was sometimes the first drink of the day. This is possibly due to the fact that it was safer to drink than some of the water available (Pittet, 2011.) Popularity of cider continued in response to low production costs and ample availability supplied by large orchards.

Even with these positive characteristics of cider, its popularity did not last forever. The Civil War increased immigrants to the United States, especially Germans. Theses immigrants brought with them their preference of beer and thus it began to grow in popularity (Rowles, 2000.) Even with this being said, prohibition may be the largest factor to blame in the disappearance of hard cider in the United States. Once the
prohibition was over beers ability to be mass-produced proved superior to small-scale cider production (Dickinson, 2001.)

Rising Interest

Hard cider has just recently begun to show up again in the beverage industry. It seems to be mimicking the increased popularity in microbreweries. This comeback started in the late 1990s to early 2000s and since then exploded. Nothing shows this better than the numbers. In just seven short years between 1990 and 1997 cases sold increased from 115,000 to 2.7 million cases (Rowels, 2000.) More recently in 2013 a market research company had hard cider production up 45.8 percent (Cioletti.)

Marketing and Consumers

Microbreweries have paved the path for other niche markets to breakthrough. These hand crafted breweries have customers accepting and expecting new tastes in their beverages (Carlson, 1996.) Hard cider has come into popularity at the perfect time. Cider is not only a new “flavor” but a new beverage all together. It falls between wine and beer seemingly in its own category. Cider is much more closely related to wine than it is to beer. A lower alcohol content, around 5 percent, and bottling in cans and kegs is about all cider and beer have in common (Frizell, 2014.) Even with the few similarities, the cider industry is getting pulled up in popularity by the craft beer market. This concept has even moved on from microbreweries to big beer brewers who are adding hard cider to their line of produces (Frizell, 2014.)
It even has historical and traditional significant to the establishment of our country. At the same time it has lower alcohol and refreshing characteristic. Some produces use this to attract female consumers whom are apposed to drinking beer (Rowles, 2000.) When asked, producers estimated that up to 80 percent of clientele were female (Mainville, 2004.) These consumers may fall into the category of “malternative” drinkers. Products such as Smirnoff Ice and Hard Lemonade, which tend to be high in sugar and additives are a few examples (Mainville, 2004.) Cider has an advantage over these products because of its authentic natural flavor.

**Packaging and Taxation**

Generally cider is package more like beer than wine. Cider is more closely related to beer when it comes to carbonation and alcohol percentage. Most hard cider will contain 5.5 to 6 percent alcohol (Rowles, 2000.) A six-pack of 12 ounce cans, may cost over $7.60 (Mainville, 2004.) More recently, a six-pack of bottles can easily be seen selling for well over $10.00. Single 22 ounce bottles are also seen in stores priced just under $10.00. Things can get confusing when it comes to how cider is taxed. With the sudden growth in cider production, laws were not prepared. There is a shortage of accurate information to make taxation regulations clear. Some producers go as far to say that taxation is a challenge in their profit. Even with ciders alcohol percentage being closer to beer, it still has a higher tax similar to that of wine (Carlson, 1996.)
Summary

The rapid growth of the hard cider industry is promising. The more consumers
are exposed and educated about this beverage the better. Doors are opening for
producers already in the fermented beverage industry. This new avenue should be
taken advantage of. Maybe some day hard cider will once again be considered
America’s beverage.
Chapter Three

Methods and Materials

Introduction

There is not necessarily a right or wrong way to make hard cider. This leaves the cider maker room to experiment and truly make the finished product their own. With this in mind decisions during the production process will heavily influence the final outcome of the cider. Some good questions to ask yourself when you first start might be. Do I want a sweet or dry cider? Do I want a high or low alcohol percentage? Do I want the finished product to be carbonated or still? Having a mindset of what you ideally want to achieve in the end will help guide you along the way.

Equipment needed

Premium cider calls for apple cultivars high in tannins, acid and sugar (Farris, 2013). Although these characteristics are ideal, dozens of apple cultivars will work as well. You must decide if you would like to buy apples and press them yourself, or buy the juice from someone else. If you do decide to press your own juice, investing in new equipment will be necessary. Regardless of which method you decide, you must test the sugar levels of your juice before you start the fermentation process. This will tell you if you need to increase sugar levels by adding sugar or juice concentrate.

Packaging and Labeling

When deciding on the delivery of your product, think of all possible situations. When customers come into your tasting room having cider on tap reduces bottling and labeling costs. You will also need to offer a product that can be bought and taken home
with the customer. The two options are 22 ounce bottles and 12 ounce beer sized bottles. One constraint to consumers is price, 6 packs range around 7 or 8 dollars (Mainville, 2004). With packaging costs high, smart bottling and labeling can help keep product price as low as possible. If you do have a tap in your tasting room growlers can be sold and refilled saving additional bottling costs.

Now you must determine your target consumers. Beverage labels have a lasting first impression, so you must take this design seriously. Will your label be gender specific or neutral? Will your hard cider label be similar to your existing wine label or completely different?

**Marketing**

Hard cider has begun to show up rapidly in the beverage industry. Names like “Angry Orchard” and “Stella Artois” can now be found in almost every grocery store along side many others. Unique to small-scale production, it is up to business to create excitement surrounding their specific product. Adding a hard cider section to newsletters and emails to wine club members is a great start. Additionally make it visible to customers visiting the winery for a day of tasting. Chalkboards hung and brochures on tasting bars can inform customers that you offer cider. In addition to this let the customers sample the cider. Offering a taste of cider at the end of a wine flight allows them to experience the cider while still paying for it. Most towns have local event such as festivals or markets. If these aren’t available to showcase your cider, hold your own event at your winery that’s open to the public.
Summary

This chapter explains the major questions you will need to ask yourself before and during the production process. Understanding what you want to offer your customers before you start will lead you in the right direction. Adding hard cider to your winery can be a fairly inexpensive way to create new excitement surrounding your whole business.
Chapter Four

Results and Discussion

The following pages will consist of a brief pamphlet outlining the process of small-scale hard cider production. These production guidelines were then taken to a small winery, which produces around 1,200 cases of wine per year. Inventory of their equipment was taken and production size was established to a desired amount. A cost analysis was then run, showing initial investment expenses, as well as expected profit.
Hard Cider Production Guidelines

Production size:
On average you will get about 5 gallons of juice for every 80 pounds of apples. This will vary depending on apple cultivars used, as well as pressing equipment used.

Apple crushing:
When crushing a few hundred pounds of apples it is recommended to use a motorized apple crusher. This is a piece of equipment wineries will not already own. This equipment can either be purchased or rented on a daily basis. This machine will leave you with pulverized apples ready for pressing.

Juice pressing:
In this step it is time to separate juice from pulp. Most wineries will have a hydropress, which uses water to inflate a rubber bladder putting pulp under pressure, and expressing juice. This method is extremely productive, allowing you the most juice with minimal effort.

Sanitize and fermentation:
Once you have achieved pressing it is important to get the fermentation process started as quickly as possible. It is also essential to sanitize all equipment that will be used in the fermentation process. Many sanitizing agents are available such as PBW and citric acid. This step is intended to kill any wild yeast or bacteria, which may give the final product unfavorable characteristics.

For small scale production, which these guidelines pertain to, 5 gallon carboys make great fermentation sites. Fresh juice fills the carboys and yeast is added to inoculate each 5 gallon batch. Airlocks will be needed for each carboy, allowing CO2 to escape during the fermentation process.

Bottling:
This is where most of the investments will need to be made. Hard cider is normally bottled more like beer than wine. In addition, if you decide to carbonate your cider, bottles and caps that can withstand pressure are a requirement. With this being said most wineries will have to purchase a bench capper. A bench capper is a piece of equipment that seals both 12 and 22 ounce glass bottles.

Labeling:
Labeling should be kept consistent with already existing wine labels. The brands trademark symbol should be visible and pronounced. You want consumers to recognize the label and associate it with the existing winery. Once the cider becomes more popular and well known a new label can be created if desired.

Price point:
This can be established after input costs are accounted for. It is important to be aware of hard cider prices that are already established in the area.

Marketing:
Now that you have this new and exciting product for sale, make it known! Add a taste of cider to the end of each wine flight. If you have established a customer email list, send out an announcement introducing hard cider to your winery!

CHEERS!
San Luis Obispo Winery Producing 1,200 cases of wine per year

Objective, Materials, and Price analysis

Objective

The goal is to produce one hundred 22 ounce bottles, and thirty six-packs of 12 ounce bottles. To achieve this, a total of approximately 4,500 ounces of juice will be needed. This equates to roughly 35 gallon of hard cider. Each carboy hold 5 gallons so seven carboys will be needed to ferment 35 gallons of juice. Referencing figure 1, the production guidelines above, in order to achieve five gallons of juice 80 pounds of apples are needed. So, to fill seven 5 gallon carboys you will need about 560 pounds of apples.

Materials

Once production size has been established equipment inventory can be taken. Below is a list of equipment this winery already owned

- 25 gallon Water Bladder Press
- Food grade plastic buckets to catch fresh pressed juice
- 5 empty 5 gallon glass carboys
- 4 carboy airlocks
- Tubes for racking off
- Some sanitation solution
Below is a list of equipment the winery needs to either buy or rent:

- Motorized apple crusher (day rental)
- 2 more 5 gallon carboys
- 3 carboy airlocks
- Additional sanitizer
- Yeast
- Bench capper
- Bottles: both 12 and 22 ounces
- Crown caps
- Auto siphon
- Six-pack carrying case

![Table of Equipment Costs]

Figure 2
Price Analysis

In figure 2 the total input costs are totaled to 1,151.74. Based off of this knowledge, prices can be set for the sale of both six-packs and 22 ounce bottles.

![Figure 3](image)

Results

As seen above in figures 2 and 3 the profit margin is not as large as one may have expected. For this specific example, a profit of only about $300.00 was achieved.

Discussion

This winery has a wine club just over one hundred members. This allows each member the opportunity to purchase at least one 22 ounce bottle or six-pack. It is important to produce enough hard cider in the first batch to allow all current wine club members the ability to try the product. These member are walking advertisements for your company, they joined the club because they enjoy the wines and now possibly the ciders. Looking at the investment costs of the first brew of hard cider, it seems that cost will only decrease more as more equipment will already be acquired from previous batches.
Chapter Five

Summary, Recommendation, and Conclusion

This project was intended to outline the necessary steps a small winery needed to take in order to produce its first batch of hard cider. In addition to guidelines, a specific cost analysis was conducted relating to a local winery. This winery produces on average 1200 cases of wine each year, qualifying it as a small scale low production winery. This is an ideal sized winery to introduce hard cider production slowly and first and then increase overtime.

Recommendations

- Work closely with local apple growers to get the lowest possible price per pound.

- Look for opportunities to save money. If more carboys are needed for fermentation, purchase the food grade plastic carboys instead of glass.

- Heavily market the introduction of hard cider, give customers another reason to stop by the tasting room.

- Make the investment of time and money worth more that just a monetary gain. Use this opportunity to reach even most consumers of different demographics.

- Keep appropriate and specific records of exact costs as well as customer feedback. How did they like to product, was it in high demand?

- Take notes on how you could improve each batch regarding flavor, alcohol percentage, etc.
Conclusion

This set of production guidelines and example of cost analysis is a great starting point for small-scale wineries. This gives the company some expectations on yield, pricing and possible revenue. It is imperative that this first batch of hard cider is advertised. This allows customers to associate the winery with the new product and spread the news through word of mouth.

It is evident throughout the guidelines that the process of making wine and that of hard cider are very similar. With just a few purchases of equipment and time a winery can fairly easily expand their products to please a wider variety of consumers.
List of References


