

Hard Cider

Thursday morning 9:00 am

Where: Grand Gallery (main level) Room D

MI Recertification credits: 1 (1C, COMM CORE, PRIV CORE)

CCA Credits: PM(0.5)

Moderator: Emily Pochubay, MSU Extension

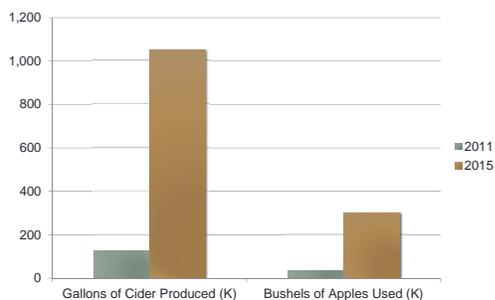
- 9:00 am Growing a Successful Orchard-Based Cider Business -- Panel of MCA members who are both cider makers and cider apple growers, discussing how to go about growing cider apples and starting a cider business
- Eric West, Great Lakes Cider and Perry Association -- Moderator
- 9:30 am Investigating Disease Susceptibility in Different Cider Varieties
- Nikki Rothwell, NWMHRS Coordinator, MSU Extension, Traverse City, MI
 - George Sundin, Plant, Soil and Microbial Sciences Dept., MSU
- 10:00 am What is Working for Cider and Cider Makers in New York State
- Dan Wilson, Hicks Orchard/Slyboro Cider House, Granville, NY
- 10:30 am Cost of Producing Hard Cider Apples and Exploring New Varieties for Cider Makers
- Greg Peck, Sustainable Fruit Production, Cornell Univ.
- 11:00 am Session Ends

NEW YORK CIDER ASSOCIATION

NYS Cider Growth

- Due to Craft Beverage-focused regulatory reforms, legislative changes and business-friendly policies initiated by the Cuomo administration starting in 2011, the number of cideries and volume of cider produced in New York State have grown significantly, and New York leads the nation in number of licensed cideries
- The steep growth trajectory for this period is illustrated by a 750% increase in cider production volume/quantity of bushels used to make cider, and 1200% growth (from 5 to 65) in number of licensed cider producers
- As a result, at over 1M gallons, the volume of NYS cider produced in 2015 represents 1% of the state's annual apple production

Volume of NYS Cider and Quantity of NYS Apples Used



Origins of NYCA with Glynwood Cider Project

- Glynwood, an agricultural non-profit in Cold Spring NY, helped found NYCA:
 - Programmed an exchange with French cider producers in 2011
 - Outcome: a nascent community of collaborative cider makers
 - Created "Cider Week" to build a category for cider by targeting participation from the trade, as well as public exposure
 - Cider Week took off in NYC, Hudson Valley, Finger Lakes, etc
 - Led to a more organized community of cider makers, interacting with NY State agencies, press, etc.
 - Used this to begin creating state-wide Association
 - Several producer gatherings at Glynwood established values, goals, bylaws >> Incorporated and gained 501(c)6 status
 - Now independent but partnered with Glynwood for grants

Current Organization

- ~75% of active, licensed cideries in NYS are members
 - Bylaws require the use of 100% NYS fruit
- Membership open to growers and cider makers, associated industries, and enthusiasts
 - Only cideries and growers can vote on motions at the AGM
- ED has a corporate background in strategic planning and communications, and came to cider through culinary marketing and events
- Board consists of :
 - 9 Directors, including 6 grower-producers, 4 of whom are working multi-generational family farms (and one of whom is additionally a CPA),
 - 1 urban producer (who additionally is a management consultant in financial services)
 - 1 producer with a background in spirits importing and sales,
 - 1 VP of programs working in the not-for-profit sector in food systems and sustainability

Objectives

- To build a coalition around our mission* and to foster the definition of New York State cider as a product of distinction and quality
- To function as forward-thinking cider industry representation and liaison to other craft beverage organizations, as well as to media, government and enthusiasts
- To be a vessel for funding for initiatives in research, marketing and strategic development

*The NYCA mission is to:

- support producers of fermented cider and the New York cider making industry in its vital role as an economic engine for agriculture, manufacturing, and tourism;
- build a market for New York cider made from New York apples; advocate for the New York cider industry through education, research, and communication;
- promote New York State as a world class cider producing region;
- and support the work of regional cider alliances within New York State.

Nation Building

- Events first, then coalition
 - NYCA grew out of collaboration and collegiality springing from Glynwood-led events and education, rather than being organized as a means to initiate events and education
- Balancing the ideals of the Association's origins with the changing landscape of cider
 - Vinification vs. Beerification
 - Desire to be inclusive and accessible balanced with a wish to define NYS cider as a premium agricultural product made with fruit grown for the purpose of fermentation, with techniques properly understood as a kind of vinification
 - Growing flood of inferior "make it and get paid" product claiming taps and shelf space
 - Demand for fruit grown with the purpose of producing cider (i.e. cider or heirloom fruit) outstripping current crop volume
 - Consumer education/coopting of terms of art such as "dry"

Current Priorities and Outlook

- Developing a market for NYS cider
 - Increase visibility of NYS cider
 - Educating cider makers, trade and consumers
 - Defining dryness for consumers/developing a sweetness scale
 - Planning trade and consumer events
- Increasing the number of cider trees planted
 - Assessing the long term potential of cider fruit for growers and estimating crop volumes needed now and in the future
 - Exploring contract growing and group purchasing
 - Understanding the cost benefit analysis of orchards intended for cider vs. orchards intended for multipurpose use
 - Supporting research into mechanical harvesting, economic impact, and supply chain pain points

Cost of Producing Hard Cider Apples and Exploring New Varieties for Cider Makers

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Introduction

According to the U.S. Alcohol and Tobacco Tax and Trade Bureau, the volume of hard cider sold in the U.S. increased nearly nine-fold over the last decade. From 2010-2014, cider was the fastest growing segment of the alcohol beverage industry and sales increased on average by 55% per year. Over the last two years, sales growth increased 10% per year and market growth is expected to continue to increase by at least 1.2% per year for the next five years. However, statistics on specialty cider apple orchard acreage in the U.S. is lacking, so growers and academics can only speculate on the current and future supply of cider apples in the U.S.

One industry information clearinghouse has found that there are 630 cider producers in the U.S. (<http://www.cydermarket.com>). Increased cider production could create new opportunities for growers, allowing for orchard expansion and diversification, as well as increased profitability. However, many of the specialized European cider cultivars that are desired by cider producers have been selected for their fruit and juice quality more so than for their horticultural performance. Thus, these varieties may present production challenges to commercial apple growers. For example, some of the known issues with European cider varieties include susceptibility to fireblight and powdery mildew, biennial bearing, premature fruit drop, overly vigorous growth, and production of extensive blind wood (shoots with few or no flower buds).

Growers will need to determine what kind of planting system they wish to use for growing cider apples. In many apple production regions of the U.S., there has been a dramatic shift towards growing fresh market varieties in high-density orchards using dwarfing rootstock with trellis systems. The benefits of these intensive apple production systems are clear: greater precocity (4-5 years to full production), better fruit quality, less biennial bearing, better spray coverage, and greater labor efficiency. These factors all lead to greater profitability for growing culinary apples in high-density orchards, and in Europe many cider apple growers use high-density systems for growing cider apples. In the U.S., there has not yet been sufficient research to demonstrate the benefits of using high-density systems to grow cider apples. A major consideration for the high-density system is the installation cost of more than \$15,000 per acre. Additionally, more research is needed to understand the impacts of orchard design on horticultural management, disease and pest incidence, and fruit and cider quality. Cost of production budgets can aid orchard owners and managers to make fiscally sound decisions based upon known input costs and potential returns.

Economic Feasibility of Cider Apple Production

Farm owners and managers make choices on how to efficiently allocate limited farm resources among competing, individual crop enterprises. Since many decisions can have important financial impacts, a decision framework can be used to evaluate the tradeoffs and the profitability of an enterprise. An enterprise budget is a planning and informational tool for estimating the production costs, returns and profit of an enterprise. Information gained from an enterprise budget include:

- What are the start-up costs – e.g., fixed capital investments – machinery, equipment?
- What are the annual costs of production?
- After how many years will the operation be profitable?
- After how many years will the cost of investment be recovered?

Factors such as variations in orchard production systems and practices, apple cultivars appropriate for different production regions, and prices of inputs and outputs, among others, make answers to the above questions very specific to each operation. However, through surveys of cider apple growers we provide examples that can serve as benchmarks for cider apple production in Washington (WA) and Virginia (VA). The surveys involved meeting with some growers to develop a baseline production scenario, identifying production inputs, and estimating income and production costs. Enterprise budgets were published as extension bulletins, accompanied by interactive Excel workbooks (accessible at <http://pubs.ext.vt.edu/AREC/AREC-46/AREC-46.html> for Virginia and http://ses.wsu.edu/extension/enterprise_budgets/ for Washington).

Overview of an Enterprise Budget

Enterprise budgets are based on established assumptions about production, and these assumptions may not fit every individual farm. Growers should complete the above cited interactive Excel documents to get a more precise portrayal of their own operation. Additionally, enterprise budgets account for financial costs and opportunity costs, but not other economic forces that affect profitability. Opportunity costs are defined as revenue foregone by not investing in the next best alternative that carries a similar financial risk; for example, investing in the stock market or paying off an outstanding loan, or in terms of owned land, the opportunity cost is what an owner-producer could earn from renting out the land instead of using the land him/herself.

Enterprise budgets consist of both variable and fixed costs. Variable costs are those expenses that vary with output within a production period and result from the use of purchased inputs and owned assets. Fixed costs are those that do not vary with the level of output. For the benchmark enterprise budgets described in this paper, these costs were tabulated and then reviewed by commercial cider apple growers and industry experts.

Assumptions and Results

The assumptions used for the benchmark enterprise budgets in Virginia and Washington (central and western regions) included: crop yield, which began in the third year in Washington and second year in Virginia; gross return to the grower, which was \$315 per 900-lb bin in WA and \$321 per 900-lb bin in VA; and manual labor for horticultural practices and harvest. These assumptions form the basis for the production cost estimates. Hired labor and management comprised the largest operating cost; followed by chemical and fertilizer costs which were 13-14% of the total operating expenses in WA, and 23% in VA.

Virginia

In Virginia, growing specialized cider apple cultivars for sale to commercial hard cider producers was found to be economically profitable. The study estimated the first-year establishment cost at \$35,635/ha (\$14,427/acre). Annual variable costs at maturity were estimated at \$8,080/ha (\$3,271/acre), and the total variable costs over 25 years were \$215,930/ha (\$87,421/acre). The Net Present Value of the cider apple orchard investment was positive at year 4. Furthermore, a partial budget analysis showed that growers would need to receive a median return of \$0.63/kg (\$12/bu) at a yield of 28,245 kg/ha (600 bu/acre) to justify producing multipurpose apples (that can be used for hard cider as well as fresh consumption) instead of mainstream cultivars (used for fresh consumption only).

Washington

The WA budgets assumed that trees start bearing fruit in Year 3, and full production was achieved in the fifth year in western WA and in the sixth year in central WA. When the gross revenue is above the columns, it means that the grower could recover all production costs as well as earn a profit. During the first two years of establishment, the gross revenue was zero because there was no crop yield. In central WA, gross revenue was not greater than costs through Year 3, and in Year 4 gross revenue was a bit greater than costs, indicating that a grower could contribute towards the opportunity costs that year. In the

case of western WA, gross revenue was only able to cover part of the variable costs by Year 4. In both WA production regions, a profit is earned in Year 5 and onwards.

Enterprise budgets are also useful in performing breakeven analysis for prices. The break-even price represents a marketing price target that must be received to cover production costs at the expected yield. If the first break-even return is below the total variable costs (i.e., below \$159/bin or \$177/bin), cider apples are not profitable. The second break-even return shows that the total cash costs are recovered, thus allowing the grower to stay in business in the short run. The third break-even return is what must be received to stay in business over the long run because the fixed costs are being covered. Otherwise, replacing machinery and equipment will be increasingly difficult and thus, the enterprise will not be financially sound after a period of several years. The fourth break-even return is the total cost break-even return. Only when this break-even return is received can the grower recover all expenses including opportunity costs. This figure is lower than \$315/bin that was used as the baseline, which means that in addition to recovering all costs, the grower can earn a profit during the full production of cider apples.

The point in time when an orchard operator can recover all funds expended in the orchard will vary depending on the costs included in the calculation of the payback period. For the Central WA example, if one includes total cash costs (the sum of total variable cost, miscellaneous supplies, land and property taxes and insurance cost), the payback period is 6.6 years. If all production costs are considered, which is the sum of total cash cost, management cost and fixed capital investment, the payback period is 11.3 years.

Discussion

Production practices and yields can vary depending on the production area; for example, a high-density orchard in central Washington and medium density orchard in western WA and Virginia, will have very different expected yields. However, based on the benchmark data we assembled and the economic assumptions built into the enterprise budget models, cider apple production can be economically profitable for both production systems. Economic profitability means that an enterprise is financially sustainable in the long run if a producer's revenues can recoup the total production costs, which is shown to be the case for cider apple production in Virginia and Washington. Labor cost, though, was a significant expense. Mechanical pruning, harvesting, and other tasks may help to reduce labor costs. Other important issues to carefully evaluate include producing multipurpose apples so that there are alternative market destinations for the fruit. In the end, growers should only consider producing specialized cider apples if they lead to increased profits and/or reduced risk. Additionally, growers need to provide a product (i.e., apples) that cideries are willing to buy.

While the consumption of hard cider has grown 9-fold over the last six years, and major marketing firms predict a strong cider market for the next decade, there is no guarantee that these consumer trends will continue. An orchard is a 20 to 30-year investment and growers must take a risk of planting varieties that have not been widely grown or objectively evaluated in the U.S. Additionally, apple growers should weigh the potential opportunity costs if cider consumption trends falter. It is reasonable to question the long-term prospects for the U.S. cider industry, but it is also a very exciting time for both apple growers and cider producers.

Following are general recommendations for potential growers of cider apples:

- Plant orchards in horticulturally desirable sites (i.e., sites with excellent sun exposure, air drainage, well-drained soils, etc.).
- Use precocious rootstocks that are disease resistant and virus free.
 - There are several Geneva rootstocks that will have a mature tree size between M.9 and M.26, but have greater resistance to soil-borne diseases, replant disease, and fireblight than Malling or Merton-Malling stocks.
- Use varieties that are going to produce annually, and have some level of disease resistance.
- Source trees from a certified nursery to ensure they are virus free.
- Use plant growth regulators for thinning, increasing return bloom, minimizing pre-harvest drop and fruit loosening.
- Identify what is most important to you (if you are producing your own cider) and/or your buyer (if you are selling fruit to a cidery); for example, organic versus conventional, high crop yield, labor efficiency, fruit with high tannin content.
- Do your homework because an orchard is a 20 to 30 year-long investment.

Additional resources:

- New York — Cornell hard cider resources - <http://hardcider.cals.cornell.edu>
- Washington — <http://www.cider.wsu.edu>