



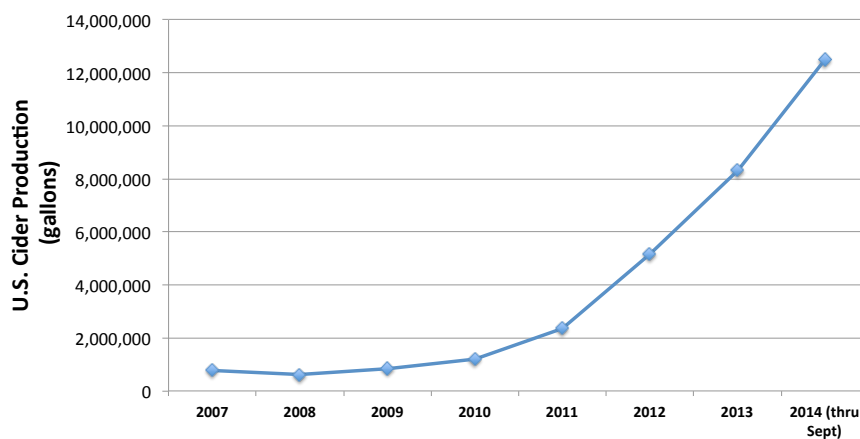
OPPORTUNITIES AND RESOURCES FOR HARD CIDER PRODUCTION

Greg Peck, Ph.D.
Assistant Professor of Pomology
greg.peck@vt.edu
www.anr.ext.vt.edu/tree-fruit/index.html

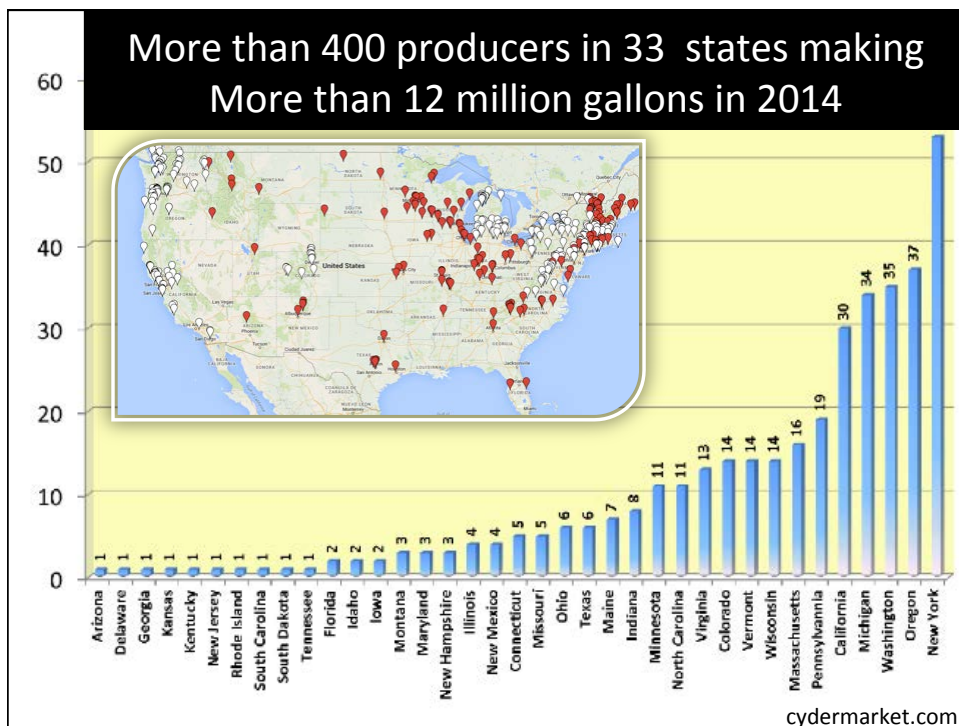



15-Fold increase between 2007-2014

- Value-added product with increased market growth, but still a small market share
 - Small market share (\$90M) compared to beer (\$100B) and wine (\$35B)



Source: Alcohol and Tobacco Tax and Trade Bureau




What is hard cider?

- Hard cider: fermented apple juice (3-10% ABV)
 - 2010 VA law passed to move from 7 to 10% ABV
 - May or may not be carbonated
 - More like wine than beer
- Apple wine: made by adding sugar prior to fermentation (>10% ABV)
- Apple jack: made by freeze concentrating already fermented cider (not legal for sale)
- Apple brandy: distilled apple cider
- Hobbyists can make 50 gal/year for personal consumption, but illegal to sell without license

Classification	Percent tannin (w/v)	Percent malic acid (w/v)
Bittersweets	> 0.2	< 0.45
Bittersharps	> 0.2	> 0.45
Sharps	< 0.2	> 0.45
Sweets	< 0.2	< 0.45

English	French	American (tend to be dual purpose)
Brown Snout (Bittersweet)	Bedan (Bittersweet or Bittersharp)	Esopus Spitzenberg (Sharp) <fireblight>
Chisel Jersey (Bittersweet)	Binet Rouge	GoldRush (Sharp)
Dabinett (Bittersweet)	Frequin Rouge (Bittersweet)	Harrison (Sharp) <poor yields/fireblight>
Kingston Black (Bittersharp) <poor yields>	Medaille D'Or (Bittersweet)	Hewe's Virginia Crab (Bittersharp?) <fireblight>
Porter's Perfection (Bittersharp)	Michelin (Bittersweet)	Newton (Albemarle) Pippin (Sharp) <hard to thin>
Tremlett's Bitter (Bittersweet)	St. Aubin	Stayman (Sharp)
Yarlington Mill (Bittersweet)	St. Martin	Winesap (Sharp)



Assessing the Economic Feasibility of Growing Specialized Apple Cultivars for Sale to Commercial Hard Cider Producers

Jarred Paris, Research Assistant, Agricultural and Applied Economics, Virginia Tech
Greg Peck, Assistant Professor, Horticulture, Alton H. Smith Jr. Agricultural Research and Extension Center
Gordon Groover, Extension Economist, Agricultural and Applied Economics, Virginia Tech

Introduction

This publication describes a set of associated budget spreadsheets that utilize a systematic means to assess the feasibility of growing specialty apple cultivars for sale to commercial hard cider producers.

Hard cider is a growing part of the alcoholic beverage industry. It is made by fermenting apple juice with yeast and typically has an alcohol content between 5 and 10 percent by volume. To make a premium hard apple cider product, commercial cider operations, called "cideries," want apple cultivars with high tannin, high acid, and/or high sugar content. Few apple cultivars satisfy all of these characteristics, so cider makers often blend multiple cultivars to achieve a desired flavor profile.

Some apple cultivars commonly grown in commercial orchards, such as Albemarle Pippin, Winesap, and Granny Smith, can be used to make hard cider — often as part of a blend. However, many ciders are also seeking specialized apple cultivars with high tannin content or other characteristics that make them suited for most other market destinations.

We have created two budgetary decision aids to assist growers in determining the feasibility of growing apples for hard cider production. A partial budget for growing multipurpose apples (defined as apple cultivars that potentially have multiple market destinations, e.g., hard cider, fresh market, or processing) and an enterprise budget for planting and growing hard cider apples were developed to help growers analyze the revenues, expenses, and risks associated with producing special apple cultivars for sale to ciders. Both budgetary decision aids were created using Excel spreadsheets and are readily available as a free download with a built-in user's manual.

To estimate the costs of production for growing hard cider apples in Virginia, we surveyed growers, consulted our colleagues' and our own professional experience, and conducted a thorough literature review. The partial and enterprise budget models provide insight into the potential profitability of growing hard cider apples.

Reviewed by Communications and Marketing, College of Agriculture and Life Sciences, Virginia Polytechnic Institute and State University, 2013.

PARTIAL BUDGET

The partial budget analysis suggests that growers would need to receive a median return of US\$0.63/kg (\$12/bu) at a yield of 28,245 kg/ha (600 bu/acre) to show a net change in profits when growing multipurpose apples instead of mainstream cultivars.

ENTERPRISE BUDGET

Using a US\$0.79/kg (\$15/bu) selling price and mature yields of 36,485 kg/ha (775 bu/acre), our enterprise budget estimated the first year establishment cost at US\$35,635/ha (\$14,427/acre)

Annual variable costs at maturity were US\$8,080/ha (\$3,271/acre), and total variable costs over 25 years were US\$215,930/ha (\$87,421/acre).

The Net Present Value (before taxes) was positive at year 4.


Feasibility Study

For

A Small Farm Cidery in Nelson County, VA


Prepared by:

Matson Consulting
PO Box 661
Aiken SC 29802
Phone: 803-233-7134
Fax: 803-233-7938
www.Matsonconsult.com



In Coordination with:

VAFAIRS
P.O. Box 27552
Richmond VA 23261
Phone: 804-290-1160
www.vafaairs.org



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- Matson Consulting
- 154 pages
- Market analyses
- Feasibility study
- Sensitivity analyses

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Article
pubs.acs.org/JAFC

Characterization of the Polyphenol Composition of 20 Cultivars of Cider, Processing, and Dessert Apples (*Malus × domestica* Borkh.) Grown in Virginia

Katherine A. Thompson-Witrick,^{1,8} Kathryn M. Goodrich,¹ Andrew P. Neilson,¹ E. Kenneth Hurley,¹ Gregory M. Peck,¹ and Amanda C. Stewart^{9,†}

¹Department of Food Science and Technology, Virginia Polytechnic Institute and State University, 360 Duck Pond Drive, Blacksburg, Virginia 24061, United States
²Department of Horticulture, Alston H. Smith, Jr. Agricultural Research and Extension Center, Virginia Polytechnic Institute and State University, 595 Laurel Grove Road, Winchester, Virginia 22602, United States

10 Supporting Information

- Blacktwig
- Pink Lady
- GoldRush
- Red Delicious
- Enterprise
- Rome
- York
- Staymen
- Suncrisp
- Winesap

*donated by Albemarle Ciderworks

- Arkansas Black*
- Granny Smith
- Harrison*
- Fuji
- Idared
- Golden Delicious
- Jonagold
- Newton (Albemarle) Pippin
- Virginia Gold
- Pilot

New National Cider Association & Virginia Cider Association

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Home

Welcome to the United States Association of Cider Makers.

The USACM is an organization of cider and perry producers in the United States. It gathers and shares information about cider production, cider regulations, and cider apple growing, to help members improve their operations, raise awareness, and advance cider in the market.

Upcoming events

The organization was founded in February, 2013 at "CiderCon," the third annual gathering of Cider Makers from across the US. Board members are: Michael Beck from Uncle John's Cider Mill (President), James Kohn from Wandering Aengus Ciderworks, Brad Page from Colorado Cider Company (Vice President), Dan Rowell from Vermont Cider Company (Treasurer), Charlotte Shelton from Albemarle Cider Works (Secretary), Robert Vail from Angry Orchard, and Stephen Wood from Farnum Hill Ciders.





National Conference:
ciderconference.com



NOVEMBER 14-23, 2014

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ciderweekva.com

http://www.extension.org/pages/70601/an-introduction-to-hard-cider-in-the-us#.VN4UXEKXjYk

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An Introduction to Hard Cider in the U.S.

Apples June 16, 2014 | Print

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By the simplest definition, hard cider is fermented apple juice. In the U.S., unfermented and usually unfiltered apple juice is referred to as cider or sweet cider. In many other countries, particularly in Europe, the fermented product is called cider and the unfermented product is called apple juice. In this article, we use the term cider to refer to the fermented product.

According to Alcohol and Tobacco Tax and Trade Bureau data, production of hard cider in the U.S. has, on average, increased 73% per year from 2008 to 2012. This is the largest growth in demand since the 1930s when Congress enacted prohibition and ended a more than 300-year tradition of cider production in the U.S. With the increase in cider sales, there is an equal interest in cider apple production, and a need to identify apple cultivars that are suitable for making quality cider.

Apples naturally have a sugar content between 10 and 20%, which produces ciders with a final ABV between 4 and 9%. Federal and state regulations define cider by its alcohol by volume (ABV) content, and specific amounts can differ by state. In most states, the ABV in cider must be below 7% or the cider will be taxed at a higher rate, similar to wine. However, some states, such as Virginia allow ciders to have an ABV of up to 10%. Many commercial cider producers in the U.S. desire an ABV taxation level that more accurately reflects the alcohol level produced naturally from orchard-run fruit.

For marketing and taxation purposes, cider is often categorized with beer, but the process of making cider is much more similar to wine. Briefly, fruit is crushed, the pulp is pressed to extract the juice, and then the juice is fermented by yeast that converts sugar to alcohol. Post-fermentation sugar and acid adjustments might be made to finished ciders in order to maintain flavor profiles and product consistency.

Cider producers make sweet tasting ciders by adding sugar, juice/juice concentrate, or stopping the ferment with high-quality filtration equipment after the fermentation process. If sugar is added to the juice prior to fermentation, the resulting product is higher in alcohol and is often called apple wine. This process of adding sugar prior to fermentation is called Chaptalization and is often used to standardize alcohol levels in ciders and may be used to make higher alcohol products.

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Hard Cider Production in Virginia

Background

In every major apple-growing region in the United States, there is an exponential expansion of commercial hard cider production. One source lists more than 100 licensed commercial ciders (beverages that specialize in hard cider production) across the country. The majority of these businesses are less than 10 years old, showing the growing popularity of hard cider among consumers. Virginia has at least seven licensed commercial ciders, and several more are slated to open in the next few years. Additionally, individuals who are interested in starting or expanding their orchard, winery, or cidery business are increasingly approaching Virginia Tech, Virginia Cooperative Extension, and Virginia Department of Consumer Services personnel for technical support on growing hard cider apples and making hard cider. Possessing many parallels to the Virginia wine industry, hard cider production can positively impact rural economies by creating a new value-added agricultural opportunity, which promotes tourism, land preservation and Virginia's apple industry.

Similar to wine, there is a large range of hard cider styles available in the marketplace. On the one end of the spectrum are ciders that have high-sugar content and may be made from a mix of fresh apple juice, apple juice concentrate, and/or water. On the other end of the spectrum are ciders that are dry to semi-dry (meaning that there is no or very little residual or added sugar in the final product) fermented from 100 percent apple juice. These ciders are often made from hard cider apple varieties or a blend of apple varieties, which provides a complex flavor profile. Hard cider apple varieties are unique in their chemical composition, having high acid and/or high tannin content. They also have unique names, such as Hewes Crab, Black Twig, and Sheepshead. Many hard cider producers believe that these specialized varieties are essential to the quality and marketability of their products. Hard cider may also be made from varieties commercially grown in Virginia, such as Winesap or Stayman.

Projects

In 2011, a Specialty Crop Block Grant from VDAC was awarded to the Nelson County Economic Development Office to fund economic feasibility studies of hard cider orchards and ciders. The outcomes from this grant were intended to help overcome the limited availability of hard cider apples in Virginia by producing a better

Contacts

Greg Peck, Ph.D.
Assistant Professor of Horticulture
Virginia Tech
Alson H. Smith, Jr. AREC
895 Laurel Grove Road
Woodsboro, VA 22692
540-668-2900 ext. 19
gpeck@vt.edu

Gordon Groover, Ph.D.
Extension Economist & Associate Professor
Virginia Tech
301A Hudson Hall
Blacksburg, VA 24060
540-231-5800
ggroover@vt.edu

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Feasibility Study for A Small-Scale Hard Cider

Feasibility Study for
A Small-Scale Hard Cider in Nelson County, VA

Prepared by:
VATFN

APPLE PRODUCTION
Greg Peck

CIDER PRODUCTION
Molly Kelly
Amanda Stewart

MARKETING AND
ECONOMICS
Gus Ferreira
Gordon Groover