



Montezuma Orchard Restoration Project

Business Plan for Producing Apple Juice with a Mobile Juice Unit

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Executive Summary

The Montezuma Orchard Restoration Project (MORP) has worked for nearly a decade to document and map the historic apple orchards in Montezuma County, to identify and propagate the cultivation of unique heritage apple tree varieties and to help farmers in southwest Colorado care for and benefit from their historic apple trees. It now seeks to provide juicing services to farmers, cider makers and others looking to turn these delicious, heritage apples into pasteurized apple juice for retail consumption and unpasteurized apple juice for use as an ingredient in hard apple cider. The business case for these services is detailed in the business plan and outlined below:

- On a good year, MORP estimates a potential supply of nearly 50,000 bushels (or 2 million pounds) of apples. Currently, most of these apples never make it to market, with most falling to the ground in the fields to be eaten by deer or other animals.¹
- Montezuma County's distance from major distribution hubs -- and the size and dispersion of the historic trees -- make it difficult to harvest and ship fresh apples to metropolitan markets within the needed time window. Doing so requires a qualified and dedicated labor force and a transportation infrastructure able to sort and move apples from tree-to-market in a short time window.
- Juicing apples locally in Montezuma County extends the window of sale of apples from a couple months to a full year. Apple juice produced for hard cider makers can be made and shipped over a four- to five-month period. Pasteurized apple juice for retail sale can be made and stored in shelf-stable, bag-in-box containers. This product can be sold and consumed over a 12-month period.
- Farmers in Montezuma County have grown apples for over 100 years. Many of such trees continue to produce apples today. MORP has so far surveyed 111 out of 200+ identified historic orchard sites and estimates over 3,000 living trees were planted before 1920. These apples have a complex and delicious taste as well as a story that is very special and marketable to Colorado consumers.
- MORP has a core mission that further enhances the value of apple juice and hard cider made from apples from the region. In short, every gulp of apple juice made by MORP and every sip of high quality cider made with apple juice squeezed by MORP will directly support the mission of restoring historic, heritage apple orchards in southwestern Colorado. MORP will market this message alongside products being sold by farmers and cider makers selling products made with these apples.
- MORP's will initially make apple juice as an activity of the existing non-profit organization. The plan builds upon MORP's experience with a 2016 pilot of juicing local apples for cider makers. It incorporates collaboration with another business in Colorado that recently acquired a mobile juice unit and sequences the acquisition of its mobile juice unit to follow the development of the needed stationary infrastructure (e.g., docking station) and operating plans (e.g., HACCP plans).

¹ The financials assume steady growth in the number of apples harvested each year. Readers and users of the models should adjust this amount based on their expectation of changes in yield due to weather and other factors.

- This business will increase income for many farmers in the region. We project breaking even in Year 7, assuming a gradual increase in harvests. MORP will seek primarily grant funding from donors but consider supplementing this funding with low-interest loans from mission-based investors that share MORP's vision for the region. MORP will seek funding to begin this business in 2019.

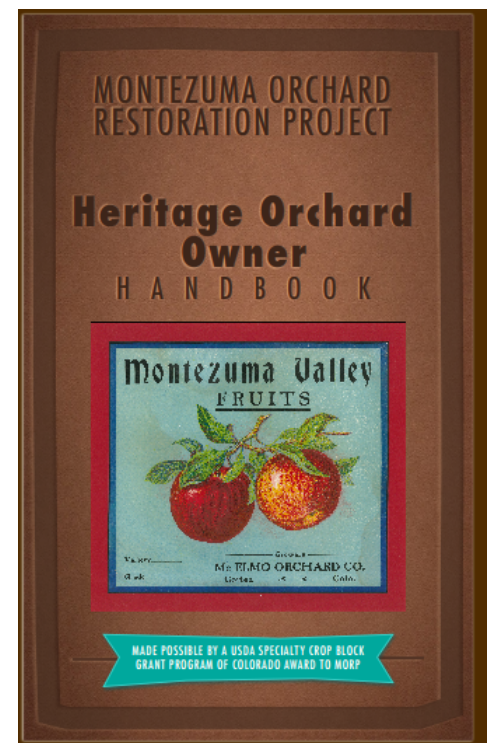
Organization and Mission

Description of the Montezuma Orchard Restoration Project

Montezuma Orchard Restoration Project (MORP) formed in 2008 as an informal partnership with the Montezuma County Historical Society. Through conversations with descendants of pioneer settlers, MORP founders and horticulturalists Addie and Jude Schuenemeyer were excited to learn that fruit orchards featured prominently in the agricultural landscape of southwestern Colorado during the early 1900s. Montezuma County was known for its quality fruit and some 200 historic orchard sites (primarily apple orchards) still exist today. Thousands of heritage trees live in these orchards, and many of the rare fruit varieties are more resilient, better adapted, and tastier than commodity varieties grown commercially today. These trees hold tremendous value not only in their history and genetic diversity but in their potential in restored and new orchards that serve as the foundation of a local fruit economy. MORP envisions southwestern Colorado being renowned again for an orchard culture and economy based on the legendary quality and diversity of Montezuma County fruits, and believes this possible through research, education, and preservation. Its mission is to preserve Colorado's fruit growing heritage and restore an orchard culture and economy to the southwestern region.

Description of Business Structure

MORP today operates under the fiscal sponsorship of the San Juan Resource Conservation and Development Council. MORP's founders, Addie and Jude Schuenemeyer work closely with MORP's Board of Directors and in compliance with the organization's by-laws. With this structure, MORP has implemented projects with funding from the Ballantine Family Foundation, the Colorado Department of Agriculture's Enrich CO Ag, the Gates Family Foundation, History Colorado's State Historic Fund Grant Award, Kenney Brothers Foundation, Whole Foods Market and the United States Department of Agriculture's Local Food Promotion Program and Block Grants Awards for the State of Colorado. It plans to continue to evaluate and update the business structure as the organization grows. The proposed business activity of making apple juice will be an activity of the existing organization.



Proposed Mission-Related Business Offering

As part of its commitment to rebuilding an orchard economy in the region, MORP proposes to purchase and operate a mobile juice unit that will produce pasteurized apple juice for retail sale and unpasteurized apple juice as an ingredient for commercial hard cider makers. Based on on-going orchard survey work, MORP estimates a potential supply of over 50,000 bushels of apples from existing but largely unmaintained, vintage trees in the region.²

As described in more detail in the [Montezuma Valley Apple Market Study](#), Montezuma Valley's farmers started growing apples over a century ago. The story of these apples is unique and valuable -- and potentially "taste-able" and marketable. Over 3,000 trees planted prior to 1920 and another 4,000 trees planted between 1920 and 1960 remain in today's landscape. The diverse flavors that result from the apples of vintage trees that thrive in the soil and climate of Montezuma County can be enjoyed as fresh products, pasteurized apple juice or hard cider after the juice has been fermented.

Description of Products and Services

MORP will press the region's apples into both pasteurized apple juice and unpasteurized apple juice that can be used for hard apple cider production. The mix of apple varieties used will differ based on the end purpose and, in some cases, the specifications of the customer. MORP will be able to pasteurize the juice with a piece of equipment on the mobile juice press and package it in five-liter, pasteurized apple juice bag-in-boxes (or other containers). MORP will generally not pasteurize the juice to be used as an ingredient in hard cider. Instead, it will pump this product immediately into 270-gallon totes to be shipped to



² See the Montezuma Valley Apple Market Study (<http://montezumaorchard.org/2016/09/22/montezuma-valley-apple-market-study/>) updated by MORP in 2018 for more details.

the cider maker who will mix it with other ingredients and ferment it into hard apple cider. As shown in the picture above, MORP piloted this process with a mobile juice press in 2016.

As outlined below, MORP's juicing business will provide both product and service offerings. MORP ultimately envisions primarily juicing (and, when needed, pasteurizing) as a fee-for-service business. However, given the lack of recent experience in growing, harvesting and selling the region's apples, MORP recognizes that, initially, it will need to play an intermediary role in building confidence in the market for both producers (farmers) and customers (retail customers and commercial cider makers). As such, in the first few years, MORP will also buy apples and then make and sell apple juice as a product.

Product or Service	Customers
Retail Product = Pasteurized Apple Juice	Local community, tourists and visitors to events
Wholesale Product = Unpasteurized Apple Juice	Commercial Cider Makers
Service = Juicing and Pasteurization of Apple Juice	Farmers for gifting and, in future, retail sale
Service = Juicing of Apple Juice for Cider	Farmers or Commercial Cider Makers

NOTE: MORP recognizes, in Colorado, the retail sale of pasteurized apple juice is generally limited to products that have been juiced and pasteurized inside a facility with an approved HACCP plan.³ As described in more detail in the Operating Plan section below, in the first year, MORP will work closely with a partner business that will be responsible for both the HACCP plan and the juicing. Doing so will enable farmers and MORP to sell pasteurized apple juice in the first year of the business. Once MORP has acquired its mobile juicing unit, it will then create a similar HACCP plan to allow it to do so as well.

³ See: See "Guidance for Industry: The Juice HACCP Regulation – Questions and Answers." US Department of Health and Human Services, Food and Drug Administration. September 4, 2003. Note that the organization making the juice can sell the pasteurized apple juice retail but cannot make it for a customer to re-sell.

Industry Overview

Overall Value Chain for MORP's Juice Products

Two juice products will be made as part of MORP's juicing business, **pasteurized apple juice** and **unpasteurized apple juice to be used as an ingredient in hard apple cider**.

Both are first pressed into an unpasteurized apple juice. At the simplest level, the industry value chain for the two products can be represented in the diagram to the right. To make pasteurized apple juice, the unpasteurized



juice is pasteurized soon after being pressed. To make hard apple cider, the cider maker starts with unpasteurized apple juice, mixes it with other ingredients and then ferments the mixture. MORP will not be involved in fermenting apple juice into hard cider.

Industry Size and Key Players

Pasteurized Apple Juice Industry Segment

The US market for apple juice is more than \$2.2 billion with annual projected growth of about 1.4%.⁴ In 2011, Americans consumed “almost 700 million gallons of apple juice...enough juice to fill more than 1,000 Olympic-sized swimming pools” with around 85% of that juice being shipped from abroad, mostly from China.⁵ This juice is sold in various forms under different brands; for example, the leading shelf-stable, bottled apple juice brands in the US in 2013 were private labels, followed by Mott's, Minute Maid, Nestle and Tropicana.⁶

In southwestern Colorado, two main companies today produce pasteurized apple juice for retail sale: Big B's Juices and Hard Ciders (in Hotchkiss, operated by Two Brothers Organics) and Talbott Farms (in Palisade). Both make premium, specialty juices which utilize locally grown fruit.

- Big B's juice products include: Organic Apple Juice, Organic Cherry Apple Juice, Organic Ginger Apple Juice and Organic Peach Apricot Apple Juice. It distributes fruit juices throughout Colorado, to Chicago and the Midwest, to southern California, Texas, New Mexico and Utah. It reported using nearly 5 million pounds of apples for its juice and cider in 2014.⁷ Without a

⁴ Apple juice statistics from Statista: <https://www.statista.com/outlook/20030200/104/apple-juice/north-america#>

⁵ “Apple Juice Prices Squeezed in the US” Mintec, 3/2017. <http://spendmatters.com/2017/03/06/apple-juice-prices-squeezed-u-s/>

⁶ Ibid

⁷ “Two Brothers Organics awarded marketing grant.” Delta County Independent, August 5, 2015. <http://www.deltacountyindependent.com/two-brothers-organics-awarded-marketing-grant-cms-211>

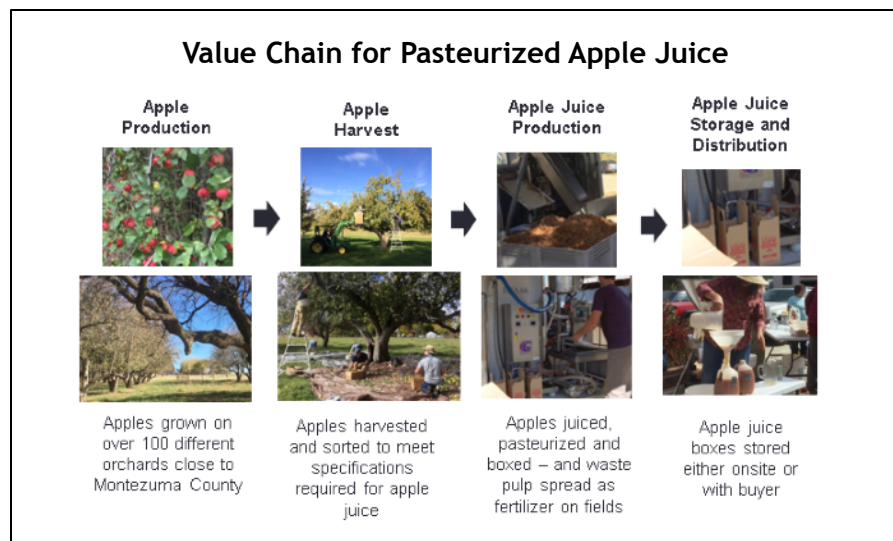
sufficient supply of organic fruit in the southwest Colorado area, it also purchases from Washington state.

- Talbott Farms makes Talbott's Mountain Gold Premium Apple Juice. As noted on its website: "Talbott's Mountain Gold cider and juice is fresh pressed and produced to order year around in our cider mill. Our cider press is running nearly on a daily basis from late August until December, keeping us busy long after peach harvest. We ship to a variety of retailers and dairies all over Colorado and the Western United States. If you are in the Denver and Longmont area you can get our Premium Apple Juice delivered right to your door! If you are in the Western United States, you can look for our High Country Cider in your local Wal-Mart stores or our Tamarack Farms cider available in City Market and Kroger stores throughout Colorado."⁸

No juice producer today exists in Montezuma County. There is a history of such production, though. Until it closed in 2002, Mountain Sun Juice Plant manufactured organic apple and fruit juice in Dolores. At its peak, the company had \$11 million in annual sales and 80 semi-loads of juice.

As described in the market section, MORP will make small batches of its own premium, specialty juice for retail sale and will offer juicing services to farmers so they can sell similar juices to retail customers (on site, at farmers markets and online).

The diagram below shows the value chain for a Montezuma County apple being made into pasteurized apple juice for retail sale.



⁸ Talbott's Mountain Gold website: http://talbottfarms.com/tmg_working_007.htm

Apple Cider Industry Segment

As noted above, unpasteurized apple juice is mixed with other ingredients and fermented by cider makers into hard ciders. In comparison to the US pasteurized apple juice market, the US hard cider market is smaller but growing more rapidly. In 2014, “it exploded into a \$366 million industry... up from \$172 million a year before and, at 75.4% growth...way ahead of the 18% growth of the craft beer segment.”⁹ The global cider industry includes major international breweries and vintners, including Heineken, Distell, C&C Group (e.g., Woodchuck Hard Cider), Anheuser Busch and The Boston Beer Company.¹⁰ However, cider production in the United States is done largely by “small, independently owned operators... the majority of industry revenue is from small craft producers.”¹¹

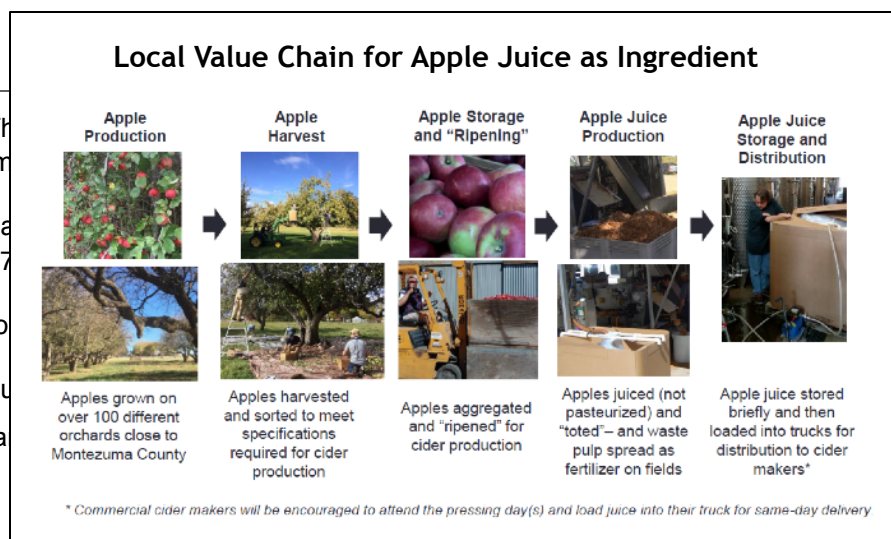
The US cider industry is currently offering products that compete with both the craft beer market and the wine market. One Colorado cider maker noted, “Some major brewers introduced cider to the mass market as an alternative to beer -- so consumers are looking to pay beer prices, rather than wine prices. If I suggest a cider to a customer at \$6-7 a pint, it will be a hard sell.”¹² Thus, the evolution of cider customers’ expectations for cider will impact the price commercial cider makers are able to pay for the unpasteurized apple juice.

Currently, with the dramatic increase in the number of commercial cider makers in Colorado (from four to over 20 in a few years), demand for quality, Colorado-grown juice is high with the current premium (at \$5 to \$5.50 per gallon) reflecting that demand. However, Colorado cider makers can purchase dessert variety apple juice from the Pacific Northwest at \$1.50 per gallon delivered and mix it with blueberries or ginger to make marketable ciders. To receive this premium, the quality and story of Montezuma County apple juice must be special, allowing customers to make, differentiate and sell premium ciders.

The diagram below shows the value chain for a Montezuma County apple being made into unpasteurized apple juice for use as an ingredient in cider production.

Market Overview

Find below a brief description of the markets for both pasteurized apple juice and unpasteurized apple juice as an ingredient for hard cider. Please see the [Montezuma Valley Apple Market Study](#) for a more detailed assessment of markets for Montezuma County’s apples, including the markets described here.



⁹ “5 Hard Ciders Th...
www.thestreet.com

¹⁰ “Global Wine Ma...
Reuters, 9/26/2017

¹¹ “Cider Productio...

¹² Interview with au...
Montezuma Orcha...

/beer.html

Rate by 2022”.

Pasteurized Apple Juice

At the wholesale level, Colorado-based juice makers (such as Big B's and Talbott's) make specialty juice products which utilize quality fruit grown in Colorado and target markets willing to pay a premium for products with such ingredients. These producers have sufficient juicing capacity on-location, as well as established in-state and out-of-state suppliers of organic and natural apples for their juices.

At the retail level, MORP and the local farmers may have an opportunity to sell shelf-stable, farm-specific, specialty apple juice at prices that generate new sources of income (after covering the costs of cultivation, harvest and juicing). As described in the Customer Section below, MORP currently has over 1,000 social media followers who may be interested in such products. In addition to interest from the local community and supporters of MORP in such products, over 500,000 tourists visit the archeological treasures located across the county, including in Mesa Verde National Park and Canyons of the Ancients National Monument. Such tourists are also natural customers for locally produced food and drinks.¹³

Shelf-stable pasteurized apple juice in 5-liter (1.3-gallon) bag-in-box containers sell in Canada for \$10-12 (CAN\$12-15)¹⁴ and in other parts of Colorado for \$12-15 per box. The price per gallon for this type of pasteurized apple juice thus falls somewhere in the \$8-12 per gallon range.

Unfortunately, local farmers currently have no capacity to produce juice to sell to this potential market. As noted previously, to enable farmers to sell to these markets, MORP would need to complete the required food safety plan (and to make the needed investments) for pressing and pasteurizing juice.¹⁵ Prior to its own food safety plan being implemented, MORP will partner with another company with a mobile juice unit and an approved plan to produce small batches of pasteurized apple juice for: (a) farmers to consume, give away or sell; and (b) MORP to sell retail at events, from its location and, potentially, online.

We roughly estimate these the Total Available Market for the retail portion of this market at \$50,000 annually for MORP products (5,000 gallons of pasteurized apple juice to be sold by MORP at an average price of \$10 per gallon) and at \$90,000 annually for MORP juicing services -- after the implementation of a food safety plan (20,000 gallons of pasteurized apple juice to be made at an average fee for juicing, pasteurizing and packaging of \$4.50 per gallon).¹⁶

¹³ See: <https://www.nps.gov/meve/learn/management/statistics.htm>

¹⁴ Interview with author, August 2017.

¹⁵ See: "Guidance for Industry: The Juice HACCP Regulation – Questions and Answers." US Department of Health and Human Services, Food and Drug Administration. September 4, 2003.

¹⁶ Estimates based on retail price range for a 5-liter bag-in-box of between \$12-15 per box and a service fee for juicing and packaging of \$4.50 per gallon.

Unpasteurized Apple Juice as Ingredient for Hard Apple Cider

As noted above, hard apple cider is mixed and then fermented after the unpasteurized apple juice is made. As such, cider juice can be produced by MORP without an approved food safety plan and then legally sold through wholesale channels to cider makers as an ingredient for their ciders. The number of potential customers and the demand for quality apple juice for cider in MORP's target market of Colorado and nearby states is growing. Both cider consumption and production have increased dramatically in Colorado in the past few years; the opening of seven cider-producing businesses in 2015 increased the number of cider producers in the state by 50%. Colorado's 21 cider producers in 2017 put the state in 9th place the US in the number of cider producers.¹⁷ The 28 cider companies identified by Cyder Market in 2018 now put it in 8th place nationally.¹⁸

These Colorado cider makers are growing in other ways as well. Some are establishing distribution and sales relationships with Colorado's larger, established breweries; for example, in 2016, Denver's Stem Ciders partnered with Fort Collins-based craft beer maker Odell for sales support across Colorado.¹⁹

However, nationally and locally, there is a limited number of trees with the varieties desired by cider makers, especially those high in tannin.²⁰ The vintage trees found in Montezuma County are dual-purpose varieties that are good as fresh apples and as a quality base juice for cider that is of Colorado origin, naturally grown, and from heritage varieties. Cider makers have added tannins to this blend to make award winning cider. In 2016, the Montezuma Valley Heritage Blend tested at a 3.2 PH.

According to author and cider maker Ben Watson, "a good acidity reading for juice is somewhere between 3.0 and 3.8." As noted in the Industry Section above, with the availability of low-priced dessert apple juice from the Pacific Northwest readily available to Colorado cider makers, the quality and the story behind Montezuma County apple juice must be special – and must enable cider makers to sell a premium cider product.



From ColoradoBiz's "How does Colorado stack up in the hard cider

¹⁷ "How does Colorado stack up in the hard cider industry?" ColoradoBiz, March 21, 2017.

¹⁸ The Cyder Market. <https://www.cydermarket.com/>

¹⁹ Furnari, C. "Stem Ciders Taps Odell Brewing for Expanded Sales Coverage in Colorado." Brewbound, 9/1/16.

²⁰ It is important to note that, particularly since the demand for cider-specific apples increased in 2013, more orchards with desired varieties have been planted across the US. These orchards take around five years to come into full production. No good estimate currently exists for quantifying the potential increase in such varieties as a result of these plantings.

We estimate the Total Available Market for MORP's unpasteurized apple juice for cider makers in Colorado and neighboring states at \$1.1 million annually (200,000 gallons to be sold to cider makers at an average price of \$5.50 per gallon).²¹

²¹ Estimate based on interviews with Colorado cider makers who identified total estimated purchases of premium apple juice for cider at between 5,000 and 15,000 gallons. We assumed an average supply need of 10,000 gallons for 20 cider makers.

Customer Overview

Eventually MORP's juicing will be primarily a service business. It will provide juicing services to farmers with apple orchards and to cider makers looking to get apples from the region made into juice. However, as noted above, MORP will initially need to build confidence with both the farmers and the cider makers that, in southwestern Colorado, such products can be made and sold profitably. As such, in the first few years of operation, MORP will also buy apples and then make and sell apple juice as a product. The customers for these MORP product will be retail customers (of pasteurized apple juice) and cider makers (of unpasteurized juice). The chart below identifies customers for each line of business.

Product or Service	Customers
Retail Product = Pasteurized Apple Juice	Local community, tourists and visitors to events
Wholesale Product = Unpasteurized Apple Juice	Commercial Cider Makers
Service = Juicing and Pasteurization of Apple Juice	Farmers for gifting and, in future, retail sale
Service = Juicing of Apple Juice for Cider	Farmers or Commercial Cider Makers

Retail Customers of Pasteurized Apple Juice:

The pasteurized apple juice will either be made and sold by MORP (MORP product) or made by MORP (as a service) and sold by the farmer. In both cases, the product will be sold to retail customers with a specific interest in (and willingness-to-pay a premium for) pasteurized apple juice grown in Montezuma County. Categories of such retail customers include:

- (1) Local and regional customers wanting to support the overall mission of MORP. With over 300 existing donors, over 1,000 followers on social media and 2,000 addresses on its mailing list, MORP already has potential customers looking for new ways to support its mission of restoring an orchard culture and economy to southwestern Colorado. By providing a delicious product that directly supports this mission, MORP will convert a portion of this initial group of supporters into regular customers and build an even larger community of customers and donors by giving pasteurized apple juice from Montezuma County to them in appreciation for their support.
- (2) Tourists to Montezuma County. In addition to interest from the customers dedicated to supporting the mission of MORP, over 500,000 tourists travel through Montezuma County each year just to visit Mesa Verde National Park.²² Many of these visitors are from outside of Colorado – and research has shown that most such tourists seek out local food and drink to enhance their visits.²³ They are both potential customers and, by extension, potential donors to MORP.

In addition, national customer trends suggest even larger opportunities for retail sales. For example, as documented in many market studies, most Millennials say that “they are willing to pay more for organic,

²² See: <https://www.nps.gov/meve/learn/management/statistics.htm>

²³ A 2007 survey by a Colorado State researcher found 76% of out-of-state visitors expressed an interest in enhancing their visits with a local food / culinary experience (https://www.colorado.gov/pacific/sites/default/files/Branding%20%26%20Positioning%20Your%20Product_1.pdf)

natural, sustainably and locally sourced food.”²⁴ While these general market trends clearly support the concept of a local, natural apple juice with a clear social mission, MORP will focus its marketing and sales efforts on the two defined customer categories listed above.

²⁴ Cheng, Andria. “How Millennials are Rewriting the Food Industry Playbook,” eMarketer Retail, 22 Feb 2017.
Montezuma Orchard Restoration Project Apple Market Study

Wholesale Customers of Unpasteurized Apple Juice for Cider:

From major companies to small, local vintners in MORP's target markets, cider makers are looking for ingredients and stories to help them differentiate their brands. As the number of cider makers in Colorado has grown in the past few years, the availability of apple juice (made from local, Colorado apples) as an ingredient for that cider has not expanded as quickly. In interviews, several Colorado cider makers acknowledged most of the juice used for their ciders comes from out-of-state; they all also stated an interest in high quality, cider-specific apple juice – particularly with stories like that of MORP and the Montezuma County's orchards.

The Cyder Market currently lists 28 commercial cider makers with 138 cider styles in Colorado: ²⁵

Apple Valley Cider Company — Penrose	Old Mine Cidery & Brewpub — Erie Snow
Big B's Hard Cider — Hotchkiss	Outlier Cellars and Fenceline Cider – Mancos
Branch Out Cider — Fort Collins	Red Fox Cellars – Palisade
(purchased by Summit Hard Cider)	Snow Capped Cider — Cedaredge
C Squared Ciders — Denver	St. Vrain Cidery — Longmont
Clear Fork Cider — Denver	Stem Ciders — Denver
Climb Hard Cider Co. — Loveland	Summit Hard Cider – Fort Collins
Colorado Cider Company — Denver	Talbott's Cider Company — Palisade
Colorado Common Hard Cider — Colo Springs	Talisman Farm - Hygiene
Compass Cider – Fort Collins ²⁶	Teal Cider – Dolores
Golden City Winery and Brewery – Golden	Varaison Vineyards & Winery — Palisade
Haykin Family Cider — Aurora	Waldschanke Cider – Denver
Ice Cave Cider House — Monument	Wild Cider — Firestone
Infinite Monkey Theorem — Denver	
Jack Rabbit Hill Farm — Hotchkiss	

It also includes 15 commercial cider makers with 56 cider styles in the other Four Corners states of Arizona, New Mexico and Utah:

Cider Corps – Mesa, AZ	Sandia Hard Cider — Albuquerque, NM
Desert Cider House — Chandler, AZ	Santa Fe Cider Works — Santa Fe, NM
Desert Rock Winery — Scottsdale, AZ	Skarsgard Farms — Albuquerque, NM
Superstition Meadery — Prescott, AZ	Tractor Brewing Company – Albuquerque, NM
Desert Dogs Brewery / Cidery – Santa Fe, NM	Mine Shaft Brewing – Park City, UT
Kaktus Brewing Company – Bernalillo, NM	Mountain West Cider Company — SLC, UT
New Mexico Hard Cider — Santa Fe, NM	The Hive Winery — Layton, UT
Palmer Cider House — Albuquerque, NM	

²⁵ The Cyder Market. <https://www.cydermarket.com/>

²⁶ According to news reports, Compass Cider closed in 2016. It is included in the above list since it remains on the list of current commercial cider makers on the Cyder Market site.

While each cider maker has its own preference and price it pays for apple juice it is purchasing for cider, cider makers that had previously purchased MORP apple juice from the 2016 pilot and those that had not yet purchased apple juice from the region both expressed an interest in tasting and potentially purchasing the MORP product in the future.

Sales and Marketing Overview

The “unique selling proposition” is the starting point for all sales and marketing. For MORP’s apple juicing business, the unique selling proposition for both the product and service business lines (and for both the pasteurized apple juice for retail customers and the unpasteurized apple juice for the cider market) is special, non-replicable and valuable. In short, every gulp of apple juice made by MORP and every sip of high quality cider made with apple juice squeezed by MORP will directly support the mission of restoring historic, heritage apple orchards in southwestern Colorado.

Pasteurized Apple Juice (Retail):

Product Description: Pasteurized apple juice will be sold in standard three- or five-liter (0.8- or 1.3-gallon) bag-in-box packages. The product is shelf-stable (requiring no refrigeration) for one year from when the juice is produced – and can be consumed over a two-month period once opened.²⁷ MORP will provide custom labels that provide information about the farm, the variety of the apple in the juice and a history of apples in the region. It will also certify the origin of the apple juice as being an orchard that is advancing MORP’s mission.



Example of Juice Box used by Northwest Mobile Juicing (nwmobilejuicing.com)

Pricing: The price for the pasteurized apple juice made by MORP will be higher than that of larger juice companies but comparable to that sold by farmers at farmers’ markets or at farmstands. Shelf-stable pasteurized apple juice in 5-liter bag-in-box containers sell in Canada for \$10-12 (CAN\$12-15)²⁸ and in other parts of Colorado for \$12-15 per box. With the additional value of these products supporting MORP’s mission, we project a conservative price of approximately \$10 for the five-liter box.

Sales and Distribution: For farmers, the shelf-stable product allows them to extend the sales window for their apples from a one-month window during the autumn harvest to a twelve-month period, which includes the May-September tourist season. Once MORP has the facilities and plan in place to make apple juice for farmers to sell retail, it will work directly with interested farmers to develop farm-specific sales strategies, which may include sales on the farm, online, at farmers markets and at events. It may also include selling products at tourist centers in the region. Prior to that period, MORP will sell pasteurized apple juice from its offices, online and at events. For small shipments of the products outside the region, it will utilize commercial carriers (e.g., UPS, FedEx) for distribution.

Advertising and Promotion:

MORP will primarily use events, partnerships and social media to build awareness and maintain excitement about the pasteurized apple juice made from Montezuma County’s apples. For example, it will bring both juice and brochures to its outreach activities in the community. To develop a consistent

²⁷ Northwest Mobile Juicing’s website (nwmobilejuicing.com), 2018.

²⁸ Interview with author, August 2017.

marketing message to generate and maintain sales, MORP will dedicate resources in the first year to develop its marketing plan – and to make the associated advertising and promotional materials.

Unpasteurized Apple Juice for Cider (Wholesale):

Product Description: Unpasteurized apple juice as an ingredient for cider will be sold based on the desired packaging specifications of the customer. Most will prefer a standard 270-gallon tote of juice which can then be piped into their fermentation vats. MORP will either ship the product immediately or hold the totes in cold storage for a few days. MORP will work with the customer to provide information about the farm, the varieties of the apple in the juice and a history of apples in the region. It will also certify the origin of the apple juice as being an orchard that is advancing MORP's mission. This information can be incorporated into the cider's label and marketing.

As noted in the comments from Colorado cider makers below, the quality of the apple juice made by MORP as an ingredient for cider in its 2016 pilot was very good. The value of apple juice made from Montezuma County's apples will be further enhanced as the availability of different varieties of apples (particularly those "prized-for-cider") to mix into the juice increases and the quality of juice made from these vintage apple trees is appreciated by more and more cider makers.

Comments from Colorado Cider Makers about MORP Apple Juice for Cider Production
Overall we were very happy with the juice we got from MORP. The juice was very nice and we liked getting the sheet with the exact blend of fruit.
In general the juice was of a good quality. The sugar content was high, it fermented without difficulty, and one batch went through a spontaneous M-F fermentation while racked. The flavor of the juice was good. As good as other suppliers of non-cider specific juice.
If you can find more fruit with tannin that would be helpful. We would like to use more Winesap juice in the future.
For cider-making purposes, we'd need a more diverse mix of apples, with fewer Red Delicious apples in the mix. As lovely as they are, they do not make good cider. The percentage was quite high and we were required to blend it heavily with other more cider-specific apple juice.
In terms of numbers, being able to produce a juice blend in the range of 3.6pH and 13 brix / just under 7% abv potential is a good goal if juicing for the larger cideries. For one-off or seasonal batches, those numbers aren't as important, but you'll have stability issues with the juice if its pH is too high...which it often can be with dessert varieties.

Pricing: MORP's 2016 survey discovered a range of prices paid by for cider makers from \$2-3 per gallon for juice made from commodity apples from out-of-state, to \$4 per gallon for similar apples from Colorado, to \$6.50 per gallon for heirloom varieties with cider-specific characteristics. Consistently, cider makers noted a willingness to pay a premium (ranging from 10-100%) for cider juice made from heirloom, local apples with cider characteristics. MORP sold apple juice from its 2016 pilot for \$6.00 per gallon. Customers in the pilot expressed a willingness to purchase larger volumes: (a) at that price or higher if there was a higher percentage of "prized-for-cider" varieties in the mix; (b) at a lower price if MORP provided the same quality mix, together with marketing support. We project an average price of \$5.50 per gallon for the apple juice for cider.

Sales and Distribution: MORP currently has a list of commercial cider makers interested and ready to taste and test its apple juice as an ingredient for their ciders. Building upon its established participation in the cider business community, it will reach out directly to cider makers to develop specifications and

secure contracts for apple juice for their ciders. The apple juice will either be shipped immediately to the cider maker upon juicing or stored in a cold room in 270-gallon vats until pick-up or delivery.

Advertising and Promotion:

MORP will partner with cider makers that purchase its apple juice to promote cider using apples from Montezuma County. As one cider maker stated, MORP is wonderfully positioned to provide the public and customers with detailed stories of unique Colorado apple varieties, the people who care for these apple trees and the community that is trying to restore the apple economy. He noted that MORP could directly enhance the value of his high-quality cider by providing both ongoing social media support and marketing collateral (pictures and stories) that he could incorporate into his marketing. He expressed interest in coordinating with MORP on the launch of products containing apple juice from Montezuma County.²⁹

As noted above, in order to develop a consistent marketing message to generate and maintain sales, MORP will dedicate resources in the first year to develop its marketing plan – and to make the associated advertising and promotional materials.

²⁹ Author interview with Colorado cider maker, Feb 2018.

Competition / Collaboration

As noted above, although MORP will eventually have a core fee-for-service juicing business in the first few years of operation, MORP will also buy apples and then make and sell apple juice as a product. The chart below identifies competitors (and potential collaborators) in each of these lines of business.

Product or Service	Competitors / Collaborators
Retail Product = Pasteurized Apple Juice	Big B's, Talbott Farms
Wholesale Product = Unpasteurized Apple Juice	Big B's, Talbott Farms
Service = Juicing and Pasteurization of Apple Juice	Northwest Mobile Juicing ; Summit Mobile Juicing
Service = Juicing of Apple Juice for Cider	Northwest Mobile Juicing ; Summit Mobile Juicing

Competitors / Collaborators in the Product Market: As described in the Industry Section above, in southwestern Colorado, two main companies today produce pasteurized apple juice for retail sale: Big B's Juices and Hard Ciders (in Hotchkiss, operated by Two Brothers Organics) and Talbott Farms (in Palisade). Both provide on-site juicing capacities and make premium, specialty juices which utilize locally grown fruit. Neither currently purchases a significant portion of their apples from Montezuma County. It is unlikely that the small relative quantity of pasteurized apple juice to be produced and sold by MORP or produced by MORP and sold by farmers will affect either the current supply of apples used by these companies or their sales of juice into traditional retail channels. It is more likely that these juice companies will benefit from increased apple production in Montezuma County if farmers' interest in cultivating and maintaining orchards increases due to the success of MORP's juicing business.

Competitors / Collaborators in the Service Market: Two companies currently provide juicing services with mobile juicing units that could service the Southwestern Colorado area: Northwest Mobile Juicing (Montana) and Summit Mobile Juicing (a business line of Summit Hard Cider and Perry Company, LLC, in Fort Collins, CO). Both provide juicing for stone fruit and apples, with the capacity to de-stone (e.g., peaches, plums), press, pasteurize and package (bag-in-box or totes) juice. They have a minimum number of gallons required and charge a per gallon (or per box) fee for juicing services.

- Northwest Mobile Juicing provides juicing services, with multiple mobile juicing units, primarily in the Pacific Northwest region (Washington, Oregon, Idaho and Montana). However, for its 2016 pilot, MORP hired Northwest Mobile Juicing to bring a mobile unit to Montezuma County to make apple juice, primarily for cider makers. As described on its website: "Northwest Mobile Juicing is a family owned custom juice production business. We bring our processing ability and expertise to your site. We are capable of processing 1000 gals of juice per day and can be setup directly in the orchard, packing house, fruit stand, farmers market, cider house, or distillery. We provide the service of juicing, pasteurizing, and packaging your local fruit for retail sale. This is all possible through our professionally engineered, health department licensed mobile facility. We believe that through supporting our local farms and businesses our communities can be sustainable."³⁰

³⁰ Quote and photo from Northwest Mobile Juicing's website: <http://nwmobilejuicing.com>

- In 2016, Summit Hard Cider and Perry Company, LLC, a Fort Collins-based cider maker, received a \$150,000 implementation grant from the USDA-funded Local Foods Promotion Program. The primary purpose of the grant was to help rejuvenate orchards in Northern Colorado by providing farmers with a shelf-stable, value-added product (fresh juice) made from their apples. The grant helped fund the purchase and installation of a mobile juice unit.³¹ After getting the system



operational in 2017, Summit Mobile Juicing hopes to be able to have the mobile juicing unit operational for between 60 and 90 days annually, starting in 2018.³²

As noted in the descriptions above, neither Northwest Mobile Juicing nor Summit Mobile Juicing consider Southwest Colorado a core service area. They both support the initiative of MORP to develop a mobile juicing capacity in the region over time – and both are willing to provide juicing services to the region while MORP develops its own capacity. As one of the owners of Summit Mobile Juicing stated, “In four to five years Colorado could possibly benefit from having three or four mobile juicing units in the state. For the next two to three years, one is probably sufficient.”³³ As such, MORP looks forward to continuing collaboration with both of these juicing companies now and in the future.

³¹ See: “Summit Hard Cider Awarded USDA Local Food Promotion Grant”, <http://coloradowine.com/summit-hard-cider-awarded-udsa-local-food-promotion-program-grant/>

³² Interview with Jennifer Seiwald, Owner of Summit Hard Cider, 2018. Photo from: <http://summitmobilejuicing.com/>

³³ Ibid

Operating Plan

As part of its mission of restoring “an orchard culture and economy to the southwestern region” of Colorado, MORP recognizes the need for it to establish the viability of the restored apple economy both to local farmers and to customers. While demand for MORP to provide juicing as a service will grow each year, it knows it will need to use the first years of the business to build production capacity and interest in the product. As such, with its future business offering being primarily a service of juicing apples for farmers and their customers, its early years will include apple juice products that MORP makes and sells -- to establish the viability of the product and market.

Production Workflow

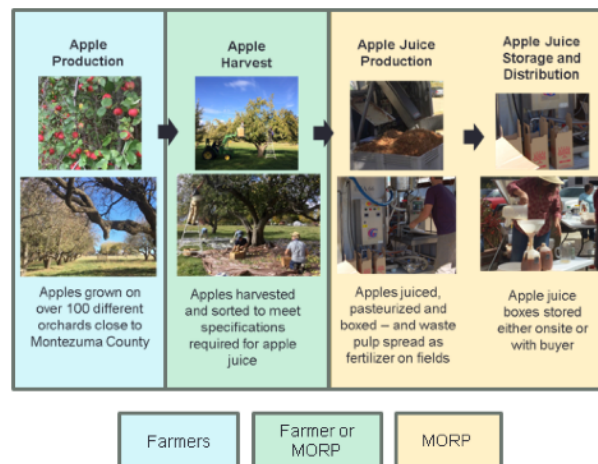
For the product business lines, MORP will purchase apples from local growers, produce the pasteurized apple juice or unpasteurized apple juice for cider and then sell the product to, respectively, retail customers or commercial cider makers. See below for a representation of MORP’s role in the value chain of producing pasteurized apple juice that it will sell to retail customers:

Model One (Product):

MORP buys apples from farmer, presses them, pasteurizes the juice and sells apple juice retail.

Consumers purchase the apple juice at events and on location. Hobby cider makers also purchase the apple juice as an ingredient for their cider.

A future potential market for this juice would be online retail sales.

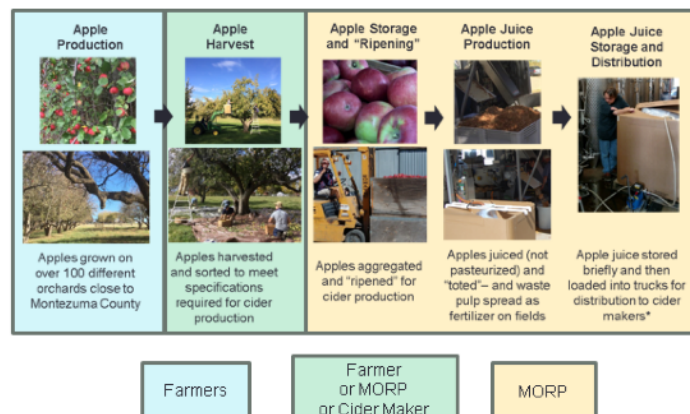


Similarly, see below for a representation of MORP’s role in the value chain of producing apple juice as a cider ingredient that it will sell to cider makers:

Model One (Product):

MORP buys apples from farmer, stores and ripens some varieties in order to make apple juice for cider from a mix of the apple varieties.

Commercial cider makers purchase and transport the apple juice to their facilities for fermentation.



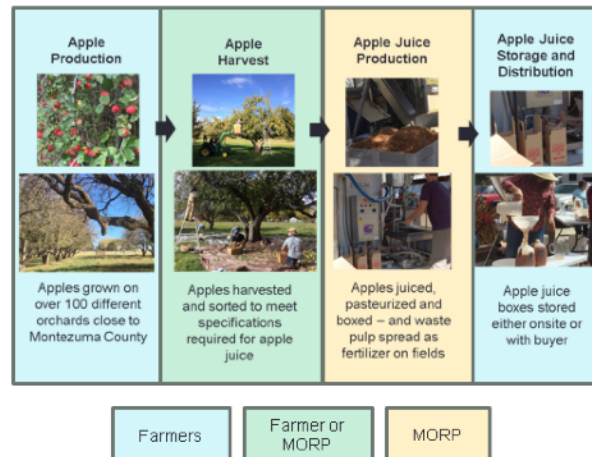
* Commercial cider makers will be encouraged to attend the pressing day(s) and load juice into their truck for same-day delivery.

For the service business line, MORP will charge a fee for juicing the apples based on the volume of juice produced. As outlined in the diagram below, a farmer might hire MORP to make pasteurized apple juice for the farm and for gifts by paying MORP for the juicing services:

Model Two (Service):

Farmer hires MORP to make apple juice that the farmer consumes or gives to others (not to be resold).

A related version of this model might be a farmer hosting an apple picking event and visitors "hiring" MORP to make juice from the apples they had just picked.

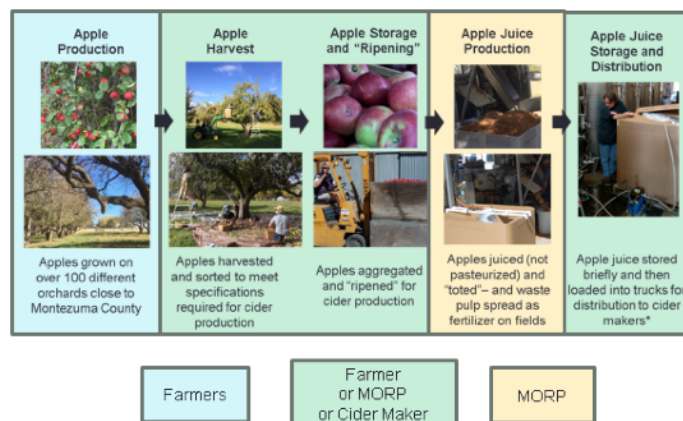


Finally, as outlined in the diagram below, either the farmer or the cider maker could order, define custom specifications for juicing and pay MORP for the making the apple juice that would then be fermented into a commercial hard cider.

Model Two (Service):

Farmer or commercial cider maker hires MORP to "custom-make" apple juice for cider from a mix of the apple varieties provided by the farmer. Commercial cider maker transports the apple juice to its facilities for fermentation.

In this model, the cider maker could contract with the farmer for apples (and pay for the juicing service) or the farmer could pay for the juicing service and then sell the apple juice to the cider maker



* Commercial cider makers will be encouraged to attend the pressing day(s) and load juice into their truck for same-day delivery.

Experience and Lessons Learned about Operations from 2016 Pilot

In 2016, MORP hired Northwest Mobile Juicing to juice 2,200 gallons of Montezuma Valley Heritage Blend raw apple juice. MORP sold and delivered the juice to the following cider makers: C Squared Cider, Clear Fork Cider, Outlier Cellars, Settembre Cellars and Stem Ciders. This experience enabled MORP to test out the process for finding and preparing the right docking station for the mobile juice unit, for getting apples from the trees to the press and for then getting the juice to the customers at the

right temperature in totes that met their needs. MORP captured feedback on the quality of the product and the process. It will use this information to refine the process in the future.

Production Timetable

As represented in the timetable below, apples would generally be harvested for a two-month period (from mid-September to mid-November), depending on the timing of the season-ending frost. The juicing process will extend for several months longer, as winter variety apples, for example, ripen to the stage needed for the desired complexity for cider production. This juice is then typically shipped soon after pressing to the cider makers; in contrast, pasteurized apple juice is shelf-stable for one year, extending the sales period from the two-month window for fresh apples to nearly twelve months for pasteurized apple juice. Note that the extended sales window allows MORP and the farmers to sell

General Production Timetable								Tourist Season			
Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Harvest Apples											
Sell Fresh Apples											
Juice Apples of Different Varieties											
Deliver (Pre-Sold) Apple Juice to Cider Makers											
Sell (and Deliver) Pasteurized, Shelf-Stable Apple Juice (Retail)											

products made from their orchards during the peak of the tourist season.

Risks facing MORP in Production Workflow

MORP faces the following risks in producing juice. MORP has identified ways to mitigate the risk both in the short-term and long-term.

Risk	Short-term Mitigation	Long-term Mitigation
Limited production of apple varieties currently desired for juice for cider production	Work with cider makers to validate quality and complexity of juice from Montezuma County	Plant a more diverse range of desired apple varieties in Montezuma County
Late spring freeze leaves MORP with no supply of apples to juice	Outreach to wide variety of orchards in Montezuma County to identify possible new sources	Plant a diverse range of apple varieties in a wider geographic area
Farmers are unable to find qualified labor to harvest apples	Work with Rocky Mountain Farmers Union (RMFU) to train and schedule workers. Acquire tree shaker to improve productivity	

Available apples rot because MORP does not have sufficient juicing capacity to juice them within the needed time period	Invest in needed storage infrastructure to hold apples at proper temperature prior to juicing
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Team

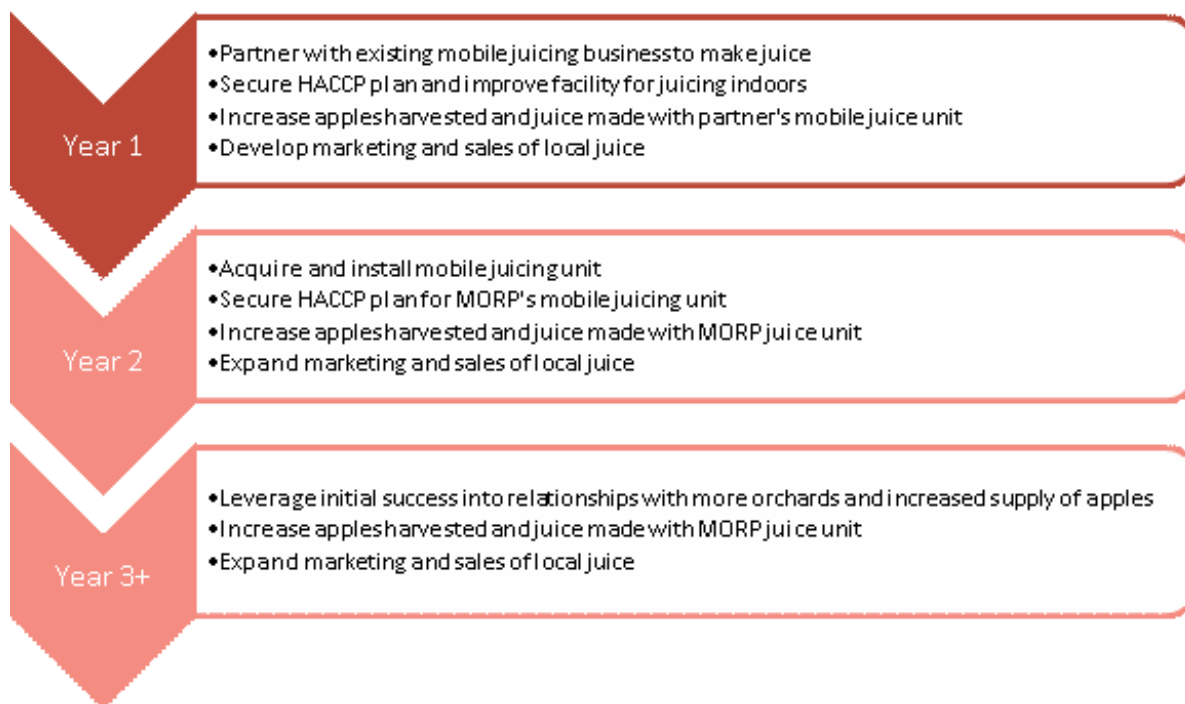
The founders of MORP, Addie and Jude Sheunemeyer (pictured to the right), will lead the implementation of this project. In addition to a decade of work together in growing MORP from an idea to a funded, active organization, Addie and Jude have experience in both orchard farming and the retail nursery business.



In addition, Addie and Jude will rely on a network of trusted, qualified community members ready to help them build this juicing business. This network includes: 200 Colorado heritage orchard owners, 300 dues paying members, Colorado cider makers, Montezuma School to Farm Project, Fort Lewis College Heritage Orchard at the Old Fort, Colorado State University Extension Research Orchards, Seed Savers Exchange Heritage Orchard, Town of Dolores, United States Department of Agriculture, History Colorado, Gates Family Foundation, Ballantine Family Foundation, and the Kenney Brothers Foundation. Additional expert contributors include: John Bunker, renowned fruit explorer with the Maine Heritage Orchard; Dan Bussey, renowned fruit historian, former Orchard Manager at Seed Savers Exchange and author of the recently published seven-volume set *The Illustrated History of Apples in the United States and Canada*; Ben Watson, renowned cider maker and author of *Cider Hard & Sweet*; Michael Phillips, renowned orchardist and author of *The Apple Grower*.

Timeline

In order to build capacity and the market for apple juice from Montezuma County, MORP plans to roll-out the business in collaboration with an existing mobile juicing business and then, as the volume of apples available for harvest increases, with its own mobile juice unit. See a general overview of the planned timetable below:



Financial Plan

Start-Up Capital Requirements

As noted above, the MORP plan assumes a significant investment in improvements in buildings and related infrastructure to enable the indoor docking of the partner business's mobile juice unit in Year 1 (and hire a partner company to do the juicing) and in the mobile juice unit in Year 2. The numbers below use industry averages to project the cost of constructing both cold storage and a loading dock.

Under these assumptions, MORP projects total net requirements to get the juicing business established at \$380,000. The total net requirements will decrease substantially if an existing facility can be upgraded to meet the requirements for the business.

Summary of annual capital requirements for the mobile juicing business

	Establishment Years				Year 5+
	Year 1	Year 2	Year 3 ^[1]	Year 4 ^[1]	
Annual Requirements (\$)					
Mobile Juicer	\$ -	\$ 215,000	-	-	-
Refrigerated Storage[1]	\$ 64,000	\$ -	-	-	-
Indoor Warehouse for Trailer[2]	\$ 26,000	\$ -	-	-	-
Loading Platform	\$ 15,000	\$ -	-	-	-
Bins	\$ 13,000	\$ 14,000	\$ 1,900	\$ 12,600	\$ 4,900
Bin trailer	\$ 6,000	\$ -	-	-	-
Crates	\$ 4,050	\$ 5,000	\$ -	\$ 5,000	\$ -
N/A	\$ -	\$ -	-	-	-
N/A	\$ -	\$ -	-	-	-
Operating Expenses	\$ 95,156	\$ 145,959	\$ 167,062	\$ 223,363	\$ 272,349
Total Requirements (\$)	\$ 223,206	\$ 379,959	\$ 168,962	\$ 240,963	\$ 277,249
Receipts (\$)	\$ 71,334	\$ 180,978	\$ 211,361	\$ 307,133	\$ 383,091
Net Requirements (\$)	\$ 151,872	\$ 198,981	\$ (42,399)	\$ (66,171)	\$ (105,842)

NOTES:

^[1] Refrigerated storage construction costs based on industry standard range of \$150-170/SF

^[2] Dry warehousing construction costs based on industry standard range of \$50-65 / SF

Projected Five-Year Returns

Income Statement for Apple Juicing Business

	Year 1	Year 2	Year 3	Year 4	Year 5+
Gross Production					
Bushels of Apples Harvested	3,200 bushels	8,000 bushels	10,000 bushels	15,000 bushels	20,000 bushels
Total Gallons of Apple Juice Produced	10,568 gallons	26,420 gallons	33,025 gallons	49,538 gallons	66,050 gallons
Gross Revenue					
Fee-for-Service Business Line - Apple Juice for Cider	\$ -	\$ 10,568	\$ 19,815	\$ 39,630	\$ 66,050
Fee-for-Service Business Line - Pasteurized Apple Juice	\$ -	\$ 5,284	\$ 19,815	\$ 39,630	\$ 66,050
Product Business Line - Apple Juice for Cider	\$ 34,346	\$ 72,655	\$ 72,655	\$ 104,029	\$ 118,890
Product Business Line - Pasteurized Apple Juice for Retail	\$ 36,988	\$ 92,470	\$ 99,075	\$ 123,844	\$ 132,100
Total Gross Revenue	\$ 71,334	\$ 180,978	\$ 211,361	\$ 307,133	\$ 383,091
Variable Costs					
<u>Cost of Apples for MORP Products</u>					
Cost of Apples (MORP Products Only)	\$ 19,200	\$ 40,800	\$ 42,000	\$ 54,000	\$ 60,000
<u>Harvest of Apples for MORP Products</u>					
Full cost of labor for apple harvest	\$ 12,800	\$ 27,200	\$ 28,000	\$ 36,000	\$ 40,000
less: Value of volunteer labor for apple harvest	\$ (9,600)	\$ (13,600)	\$ (8,400)	\$ (9,000)	\$ (6,000)
<u>Storage and Ripening of Apples for Cider</u>					
Forklift rental (for lifting apple bins)	\$ 1,600	\$ 3,400	\$ 3,500	\$ 4,500	\$ 5,000
Truck rental (for transporting apple bins)	\$ 192	\$ 408	\$ 420	\$ 540	\$ 600
Cost of labor (for transporting apple bins)	\$ 819	\$ 1,741	\$ 1,792	\$ 2,304	\$ 2,560
<u>Juicing and Packaging of Apple Juice</u>					
Hiring of Mobile Juicing Company (Year 1)	\$ 15,852	\$ -	\$ -	\$ -	\$ -
Forklift rental (for lifting apple bins)	\$ 4,095	\$ 10,238	\$ 12,797	\$ 19,196	\$ 25,594
5-Liter Bag-in-Box Containers for Apple Juice	\$ 2,800	\$ 8,001	\$ 11,251	\$ 16,877	\$ 22,502
270-Gallon Totes for Apple Juice for Cider	\$ 6,500	\$ 14,750	\$ 17,000	\$ 25,250	\$ 33,750
Cost of labor (for operating apple juicer)	\$ 2,097	\$ 5,242	\$ 6,552	\$ 9,828	\$ 13,104
Cost of forklift rental (for loading totes onto trucks)	\$ 2,662	\$ 6,143	\$ 7,038	\$ 10,558	\$ 14,077
Cost of labor (for loading totes onto trucks)	\$ 734	\$ 2,097	\$ 2,948	\$ 4,423	\$ 5,897
Cost of truck and trailer rental (for transporting apple waste)	\$ 491	\$ 1,229	\$ 1,536	\$ 2,304	\$ 3,071
Cost of labor (for transporting apple waste)	\$ 2,097	\$ 5,242	\$ 6,552	\$ 9,828	\$ 13,104
<u>Other Variable Costs</u>					
Overhead (5% of VC)	\$ 3,117	\$ 5,644	\$ 6,649	\$ 9,330	\$ 11,663
Total Variable Costs	\$ 65,456	\$ 118,533	\$ 139,637	\$ 195,938	\$ 244,924
Fixed Costs					
<u>Depreciation</u>					
Mobile Juicer	\$ -	\$ 21,500	\$ 21,500	\$ 21,500	\$ 21,500
Building Construction and Improvements	\$ 5,250	\$ 5,250	\$ 5,250	\$ 5,250	\$ 5,250
Machinery and Equipment	\$ 2,305	\$ 4,205	\$ 4,395	\$ 6,155	\$ 6,645
<u>Interest</u>					
PRI Loan	\$ -	\$ 3,575	\$ 3,575	\$ 3,575	\$ 3,575
<u>Other Fixed Costs</u>					
Property and Facility Leasing	\$ 9,000	\$ 9,000	\$ 9,000	\$ 9,000	\$ 9,000
Juicer Maintenance	\$ -	\$ 750	\$ 750	\$ 750	\$ 750
Tractor Maintenance	\$ 700	\$ 700	\$ 700	\$ 700	\$ 700
Insurance Cost	\$ -	\$ 3,400	\$ 3,400	\$ 3,400	\$ 3,400
Marketing Plan Development	\$ 10,000	\$ -	\$ -	\$ -	\$ -
MORP Staffing Support	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
Total Fixed Costs	\$ 37,255	\$ 58,380	\$ 58,570	\$ 60,330	\$ 60,820
TOTAL COSTS	\$ 102,711	\$ 176,914	\$ 198,207	\$ 256,268	\$ 305,744
ESTIMATED NET RETURNS	\$ (31,377)	\$ 4,064	\$ 13,154	\$ 50,866	\$ 77,347
Operating Margin	Negative	2%	6%	17%	20%

Key Metrics by Business Line

Volume of Apples Made Into Juice	Year One	Year Two	Year Three	Year Four	Year Five
Total Bushels of Apples Used for Juice	3,200 bushels	8,000 bushels	10,000 bushels	15,000 bushels	20,000 bushels
Bushels - Apple Juice for Cider (Service)	0 bushels	800 bushels	1,500 bushels	3,000 bushels	5,000 bushels
Bushels - Pasteurized Apple Juice (Service)	0 bushels	400 bushels	1,500 bushels	3,000 bushels	5,000 bushels
Bushels - Apple Juice for Cider (Product)	2,080 bushels	4,000 bushels	4,000 bushels	5,250 bushels	6,000 bushels
Bushels - Pasteurized Apple Juice (Product)	1,120 bushels	2,800 bushels	3,000 bushels	3,750 bushels	4,000 bushels
Pounds of Apples Made into Juice	Year One	Year Two	Year Three	Year Four	Year Five
Total Pounds of Apples Used for Juice	128,000 pounds	320,000 pounds	400,000 pounds	600,000 pounds	800,000 pounds
Pounds of Apples - Apple Juice for Cider (Service)	0 pounds	32,000 pounds	60,000 pounds	120,000 pounds	200,000 pounds
Pounds of Apples - Pasteurized Apple Juice (Service)	0 pounds	16,000 pounds	60,000 pounds	120,000 pounds	200,000 pounds
Pounds of Apples - Apple Juice for Cider (Product)	83,200 pounds	160,000 pounds	160,000 pounds	210,000 pounds	240,000 pounds
Pounds of Apples - Pasteurized Apple Juice (Product)	44,800 pounds	112,000 pounds	120,000 pounds	150,000 pounds	160,000 pounds
Volume of Apple Juice Produced	Year One	Year Two	Year Three	Year Four	Year Five
Total Gallons of Apple Juice Produced	10,568 gallons	26,420 gallons	33,025 gallons	49,538 gallons	66,050 gallons
Gallons of Juice - Apple Juice for Cider (Service)	0 gallons	2,642 gallons	4,954 gallons	9,908 gallons	16,513 gallons
Gallons of Juice - Pasteurized Apple Juice (Service)	0 gallons	1,321 gallons	4,954 gallons	9,908 gallons	16,513 gallons
Gallons of Juice - Apple Juice for Cider (Product)	6,869 gallons	13,210 gallons	13,210 gallons	17,338 gallons	19,815 gallons
Gallons of Juice - Pasteurized Apple Juice (Product)	3,699 gallons	9,247 gallons	9,908 gallons	12,384 gallons	13,210 gallons
Days of Juicing	Year One	Year Two	Year Three	Year Four	Year Five
Total Days Juicing	16 days	41 days	51 days	77 days	102 days
Days Juicing - Apple Juice for Cider (Service)	0.0 days	4.1 days	7.7 days	15.4 days	25.6 days
Days Juicing - Pasteurized Apple Juice (Service)	0.0 days	2.0 days	7.7 days	15.4 days	25.6 days
Days Juicing - Apple Juice for Cider (Product)	10.6 days	20.5 days	20.5 days	26.9 days	30.7 days
Days Juicing - Pasteurized Apple Juice (Product)	5.7 days	14.3 days	15.4 days	19.2 days	20.5 days
Cost per Day of Juicing	Year One	Year Two	Year Three	Year Four	Year Five
Cost per Day of Juicing - All Business Lines	\$2,279 /day	\$1,293 /day	\$1,283 /day	\$1,280 /day	\$1,281 /day
Gross Revenue	Year One	Year Two	Year Three	Year Four	Year Five
Total Gross Revenue	\$ 71,334	\$ 180,978	\$ 211,361	\$ 307,133	\$ 383,091
Gross Revenue - Apple Juice for Cider (Service)	\$ -	\$ 10,568	\$ 19,815	\$ 39,630	\$ 66,050
Gross Revenue - Pasteurized Apple Juice (Service)	\$ -	\$ 5,284	\$ 19,815	\$ 39,630	\$ 66,050
Gross Revenue - Apple Juice for Cider (Product)	\$ 34,346	\$ 72,655	\$ 72,655	\$ 104,029	\$ 118,890
Gross Revenue - Pasteurized Apple Juice (Product)	\$ 36,988	\$ 92,470	\$ 99,075	\$ 123,844	\$ 132,100
Cost of apples, harvest and storage for MORP Product Line	Year One	Year Two	Year Three	Year Four	Year Five
Total Cost of Apples, Harvest and Storage for MORP Product Line	\$ 25,011	\$ 59,949	\$ 67,312	\$ 88,344	\$ 102,160
Cost of Apples - Apple Juice for Cider (Product)	\$ 12,480	\$ 24,000	\$ 24,000	\$ 31,500	\$ 36,000
Cost of Harvest - Apple Juice for Cider (Product)	\$ 2,080	\$ 8,000	\$ 11,200	\$ 15,750	\$ 20,400
Cost of Storage - Apple Juice for Cider (Product)	\$ 2,611	\$ 5,549	\$ 5,712	\$ 7,344	\$ 8,160
Cost of Apples - Pasteurized Apple Juice (Product)	\$ 6,720	\$ 16,800	\$ 18,000	\$ 22,500	\$ 24,000
Cost of Harvest - Pasteurized Apple Juice (Product)	\$ 1,120	\$ 5,600	\$ 8,400	\$ 11,250	\$ 13,600
Operational Costs (Variable)	Year One	Year Two	Year Three	Year Four	Year Five
Total Operational Costs (Variable)	\$ 62,339	\$ 112,889	\$ 132,987	\$ 186,607	\$ 233,261
Operational Costs (Variable) - Apple Juice for Cider (Service)	\$ -	\$ 5,294	\$ 9,851	\$ 19,653	\$ 32,775
Operational Costs (Variable) - Pasteurized Apple Juice (Service)	\$ -	\$ 2,647	\$ 9,851	\$ 19,653	\$ 32,775
Operational Costs (Variable) - Apple Juice for Cider (Product)	\$ 41,434	\$ 64,019	\$ 67,182	\$ 88,986	\$ 103,890
Operational Costs (Variable) - Pasteurized Apple Juice (Product)	\$ 20,905	\$ 40,929	\$ 46,103	\$ 58,316	\$ 63,820
Gross Profit	Year One	Year Two	Year Three	Year Four	Year Five
Total Gross Profit	\$ 8,995	\$ 68,089	\$ 78,373	\$ 120,526	\$ 149,830
Gross Profit - Apple Juice for Cider (Service)	\$ -	\$ 5,274	\$ 9,964	\$ 19,977	\$ 33,275
Gross Profit - Pasteurized Apple Juice (Service)	\$ -	\$ 2,637	\$ 9,964	\$ 19,977	\$ 33,275
Gross Profit - Apple Juice for Cider (Product)	\$ (7,088)	\$ 8,636	\$ 5,473	\$ 15,043	\$ 15,000
Gross Profit - Pasteurized Apple Juice (Product)	\$ 16,083	\$ 51,541	\$ 52,973	\$ 65,528	\$ 68,280
Contribution Margin (%)	Year One	Year Two	Year Three	Year Four	Year Five
Total Contribution Margin (%)	14%	60%	59%	65%	64%
Contribution Margin (%) - Apple Juice for Cider (Service)	0%	100%	101%	102%	102%
Contribution Margin (%) - Pasteurized Apple Juice (Service)	0%	100%	101%	102%	102%
Contribution Margin (%) - Apple Juice for Cider (Product)	-17%	13%	8%	17%	14%
Contribution Margin (%) - Pasteurized Apple Juice (Product)	77%	128%	115%	112%	107%

Funding Need

As noted above, the MORP plan assumes a requirement of building a new cold storage facility as well as a loading dock. The total net requirements and the funding need will decrease substantially if an existing facility can be upgraded to meet the requirements for the business. Readers should take this information into consideration when reviewing the financials.

In addition, MORP plans to raise grant funding for this project; however, for purposes of showing the potential to leverage this funding with low-interest loans from mission-oriented investors, the plan incorporates a small, low-interest loan as part of the funding strategy.

User Inputs - Funding assumptions	Year One	Year Two	Year Three	Year Four	Year Five
Grants	\$ 150,000	\$ 150,000	\$ 15,000	\$ 15,000	\$ 10,000
Donation of Lease	\$ 8,000	\$ 8,000	\$ 4,000	\$ -	\$ -
Other Donations of Cash or Labor	\$ 2,500	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000
User Inputs - PRI Loan assumptions	Est Cost per Unit	Notes			
Year of PRI	Year 1	User can enter a value between one and five. Interests payments come due the year following the loan year			
Principal Amount of PRI	\$ 25,000				
Payback Period (in Years)	7 years	User can enter a value between five and ten			
Interest Rate of PRI	3.0%				
Output - Cash Flow Situation Summary	Year One	Year Two	Year Three	Year Four	Year Five
Beginning Cash	\$ -	\$ 33,628	\$ 1,222	\$ 71,196	\$ 160,942
Ending Cash	\$ 33,628	\$ 1,222	\$ 71,196	\$ 160,942	\$ 285,359

Appendix A: Summary of Material, Labor and Equipment Requirements

For informational purposes, the sections below detail the material, labor and equipment requirements for each segment of the value chain: Apple Production, Apple Harvest, Apple Storage and Ripening, Apple Juice Production and Apple Juice Storage and Distribution. They also identify the entity responsible for these requirements. Please note, however, the financial feasibility for the mobile apple juice unit does not include the costs associated for apple production or harvest (which, for purposes of the financial feasibility model, are the responsibility of the farmer or the customer).

Apple Production

MORP and others recognize that, for cider makers, the value of the juice from Montezuma County can be increased in the future by expanding the number of apple trees producing prized cider varieties. MORP directly supports the rehabilitating of historic orchards and planting of new orchards with heirloom apple varieties to meet this need. MORP has a tree nursery where it grows and makes these rare and desired apple varieties available to the community (see: <http://montezumaorchard.org/2017/01/23/morp-tree-sale-late-spring-2017>).



Furthermore, thanks to a USDA Specialty Crop Grant Award for the State of Colorado, MORP is working in partnership with Colorado State University Extension Orchards on a Colorado Heritage Apple Trials Initiative. Through propagation, orchard trials, information sharing and education, this initiative will increase knowledge and availability of seedlings, scion and Colorado-grown apple trees.³⁴ While MORP will continue to play an active role in making these varieties available to the community, the farmers and landowners – not MORP – will be the ones ultimately establishing and cultivating (and investing in) the apple orchards which provide the apples for the apple juice products.

Required Inputs for Apple Production		
Stage of Production	Input(s)	Responsible Party
All Stages	Land, Soil, Climate and Water for Growing Apples	Landowner
Rehabilitation of Existing Orchard (1x Expenses)	Existing Trees of Historic Varieties	Landowner
	Tractors, ladders and hand equipment for initial pruning	Landowner or MORP
	Labor for initial pruning	Landowner
Planting of New Trees (1x Expenses)	New Trees of Desired Varieties	Landowner
	Tractors and hand equipment for preparing soil, digging holes and planting	Landowner or MORP
	Labor for preparing soil, digging holes and planting	Landowner

³⁴ Scion is a section of a tree stem with leaf buds (stem, branch) that is then grafted into the stock of another tree. MORP is both making scion of vintage apple tree varieties available to the community to graft onto existing tree stocks as well as actually grafting the scion onto the rootstock to produce these apple tree varieties.

Cultivation	Fencing	Landowner
	Fertilizer	Landowner
	Pest and Weed Management	Landowner
	Labor for Farming and Pruning	Landowner

Apple Harvest

Apples in the region are generally harvested with by hand-stripping and tree-shaking methods. They are then loaded into large orchard bins for transport. Some of the apple varieties desired most by cider makers in Montezuma County on the oldest trees; these trees are not suited to tree-shaking as a harvesting method. This can potentially make the cost of harvesting these varieties of apples quite high.



Required Inputs for Apple Harvest		
Stage of Harvest	Input(s)	Responsible Party
Picking and Sorting	Tree Shaker (Depends on Variety)	Landowner or MORP
	Cherry Picker or Picking Platform (Depends on Variety)	Landowner or MORP
	Crates and Bins	Landowner or MORP
	Ladders, tarps and hand equipment	Landowner or MORP
	Forklift for lifting bins of apples	Landowner or MORP
	Tractor or Vehicle for transporting bins from field	Landowner or MORP
	Labor for harvesting and sorting	Landowner or MORP

Crates and bins for harvest and storage are a significant cost (with long payback periods) for individual farmers. These costs can be distributed across multiple farms if a single entity like MORP owned and recycled the bins, across a season that could last nearly six months (between the harvest time for different varieties and the ripening periods for some varieties for cider purposes.



As noted above, while MORP will invest in bins and crates to reduce the cost of harvest for participating orchard owners, we do not consider the cost of harvest part of the financial feasibility model for apple juice production with the mobile unit. Either the farmer or the customer will be responsible for the costs of the harvest; MORP will either provide the juicing of these apples as a service (for a fee) or will purchase the apples for a price that depends on whether MORP or the farmer will be paying the costs of the harvest.

Apple Storage and Ripening

Producing both pasteurized apple juice for retail and unpasteurized apple juice as a cider ingredient requires a location for storing certain types of apples between harvest and juicing.

As noted in the chart at the bottom of this page, some early fall apple varieties are ready for juicing into a cider ingredient immediately after harvest; others, largely the late fall and winter varieties, see their acidity and sugar content (brix) improve during a four- to twelve-week storage period after harvest. Storage of the apples requires bins in which the apples can ripen, a storage facility and the ability transport the apples to and within the storage facility.



With sufficient storage capacity, MORP can press apples over many months, rather than during a brief harvest window, thus increasing the utilization of the mobile juice unit and related equipment.

Required Inputs for Apple Storage and Ripening		
Stage of Harvest	Input(s)	Responsible Party
Transport from Field to Juicing Location	Forklift for lifting bins of apples onto and off truck	MORP or Customer
	Bins for apples	MORP or Customer
	Truck for transporting bins of apples to juicing location	MORP or Customer
	Labor for transporting from field to juicing location	MORP or Customer
Storage and ripening of apples	Storage facility for storing apple varieties as they ripen	MORP or Customer

<u>Early Fall Apple Varieties which are Ready for Juicing for Cider Product at Harvest:</u> Grimes Golden, Golden Delicious , Winter Banana , <u>Famuse/Snow</u> , <u>MacIntosh</u> , Smith Cider, Senator, Wealthy	<u>Late Fall / Winter Apple Varieties which Add Benefits to Cider Product with Post-Harvest Ripening:</u> Jonathan , Hewes Crab and other unknown Crabs, Delicious , Rome , Winesap, Ben Davis , Ralls, Wagener
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NOTE: MORP has found the greatest number of apple trees in the varieties shown in **bold**. These varieties would be used as the main juice component. The other varieties listed (and

Juice Production, Storage and Distribution

Juice can be produced with a mobile juicing unit that is pulled into a “docking station” which, at a minimum, has power, clean water and a bathroom available. In addition, juice production requires access to a location (e.g., field, livestock operation) interested in using the leftover apple pulp waste as fertilizer or feed. Finally, while some customers will want to observe the pressing and ship the juice immediately to the cidery for fermentation, others will need the juice to be stored in a forklift-accessible cold room for a few days prior to transportation.



In the first years of operations, MORP envisions maintaining and utilizing a central docking station (with the needed infrastructure as well as a sufficient supply of crates and bins) located in Cortez, Colorado, for juice production. As the demand for juice from the region grows, MORP will work with partners who maintain similar docking stations for the mobile juice unit in nearby counties.

Required Inputs for Juice Production, Storage and Distribution		
Stage of Juicing, Storage and Distribution	Input(s)	Responsible Party
Juicing and packaging	Appropriate variety and ripened apples for type of juice being made	MORP or Customer
	Bins for apples	MORP or Customer
	Forklift for lifting bins of apples and totes	MORP or Customer
	Location for docking station with power, clean water and bathrooms	MORP or Customer
	Mobile juice press	MORP
	Five-Gallon Bag-in-Box packages (for pasteurized apple juice)	MORP or Customer
	270-Gallon Totes (for apple juice for cider)	MORP or Customer
	Labor for operating and cleaning juice press	MORP
Storage	Location for storing shelf-stable pasteurized apple juice in bag-in boxes	MORP or Customer
	Forklift-accessible Cold Room for storing apple juice for cider in 270-gallon totes	MORP or Customer
Distribution	Loading dock	MORP or Customer
	Labor for loading totes on trucks	MORP or Customer
Waste Pulp Disposal	Fields for spreading apple pulp as fertilizer	MORP or Customer
	Truck to transport apple pulp waste as fertilizer	MORP or Customer

	Tractor and spreader for fertilizing field with pulp	MORP or Customer
	Labor for transporting and spreading pulp as fertilizer	MORP or Customer