



// Eric Sannerud, Ben Boo, Brian Krohn
// February 14th, 2014

// Executive Summary

Almost a century ago Great Grandpa Sannerud walked his fields in central Minnesota. The land was fertile and the water was clean. He turned the soil with little more than the strength of his back and the help of two sturdy horses. He loved the land, loved the outdoors and loved Minnesota. The Sannerud farm embodied a philosophy of respect, collaboration, and hard work that was required for the community to survive the long winters and protect the land from degradation.

While Minnesotan values and cultural appreciation for our beautiful landscapes have remained, the land Great Grandpa Sannerud walked has changed greatly. In the fields, decades of economic trends have whittled the diverse landscape down to one that cannot support wildlife, soil, or water quality without losing money. The distant bustling capital has sprawled into a thriving metropolis and is virtually at the farm's backdoor. The conversations around the dining room table have shifted from the holistic management of a small number of acres to questions about whether to expand or sell.

A hundred years from the first season on the farm, great grandson Eric Sannerud doesn't want to expand or sell. He is dedicated to making the farm that has been in his family for generations one that protects the land and water while remaining a financially viable cornerstone of Minnesotan community values for many generations to come. And Eric can make this a reality using an old Minnesotan crop that is making a resurgence: hops.

Native to temperate regions all over the world, including Minnesota, hops have been a staple ingredient in beer for centuries. They enjoy a uniquely dedicated niche market of Minnesotan craft brewers, all willing to pay stable premium prices for a high quality local product. In addition to financial sustainability, they are ideally suited to being grown in environmentally regenerative ways that will improve biodiversity, soil quality, and water quality. Finally, because hops are tied to a passionate group of urban craft beer drinkers, their production presents a unique opportunity to create bridges between rural and urban Minnesota and will help strengthen Minnesotans' connection to the land, our heritage, and our common values.

In spirit of the our values of collaboration and sustainable land management, Eric along with two co-founders, Ben and Brian, are dedicated to doing more than just growing the plant; they have formed Mighty Axe Hops. Mighty Axe Hops will develop localized production methods that help clean our watershed, protect our soil and make room for wildlife, then expand into a hop growers co-operative that will ensure the responsible and viable growth of the hops industry in Minnesota through grower education, risk management, shared marketing and environmental outreach to the wider community. Minnesotan hops have great potential to improve the financial fortitude of small Minnesotan farmers, improve the environment, strengthen our cultural heritage, and make Great Grandpa Sannerud proud.

// Problem

As the next generation turns over, small farms in rural Minnesota bear the torch of community history, culture, values and stewardship. With biodiversity, soil, and water quality diminishing, growers face greater environmental challenges that augment already present financial burdens.

At the same time, the steady growth of the craft beer industry in the state has many in the business thirsty for new ways to differentiate their beverages from those of their competitors. Many brewers are challenged by finding local sources of high quality hops to use in their beers.

What are the cycles in the beer market?

// Solution

Our solution is to grow high quality hops in an ecologically regenerative manner on the Sannerud family farm. We will grow into a cooperative of Minnesotan hops growers with the purpose of ensuring that financially and environmentally sound practices are adopted and use our collective power to address broader issues related to biodiversity, soil quality and water quality. Local hops for local beer.

// What are hops?

Humulus lupulus, the Common Hop plant, is a perennial, features a flower that has been used in beer for centuries as a bittering agent, a preservative and an aromatic. Through time, hops have grown to be a staple of every beer produced and even an ingredient to highlight. The burgeoning craft beer industry in Minnesota has many brewers facing issues surrounding scale and competition. Startup production outfits have a difficult time securing the small quantities of hops they need while others are wanting for a way to set their beer apart from the pack. Of the primary ingredients in beer (malt, water, yeast and hops), hops offer the brewer the greatest control and variability, making them the most suitable for expressing a unique flavor within, and story behind, their beer.

// Social Value: Welcome to the “Beershed”

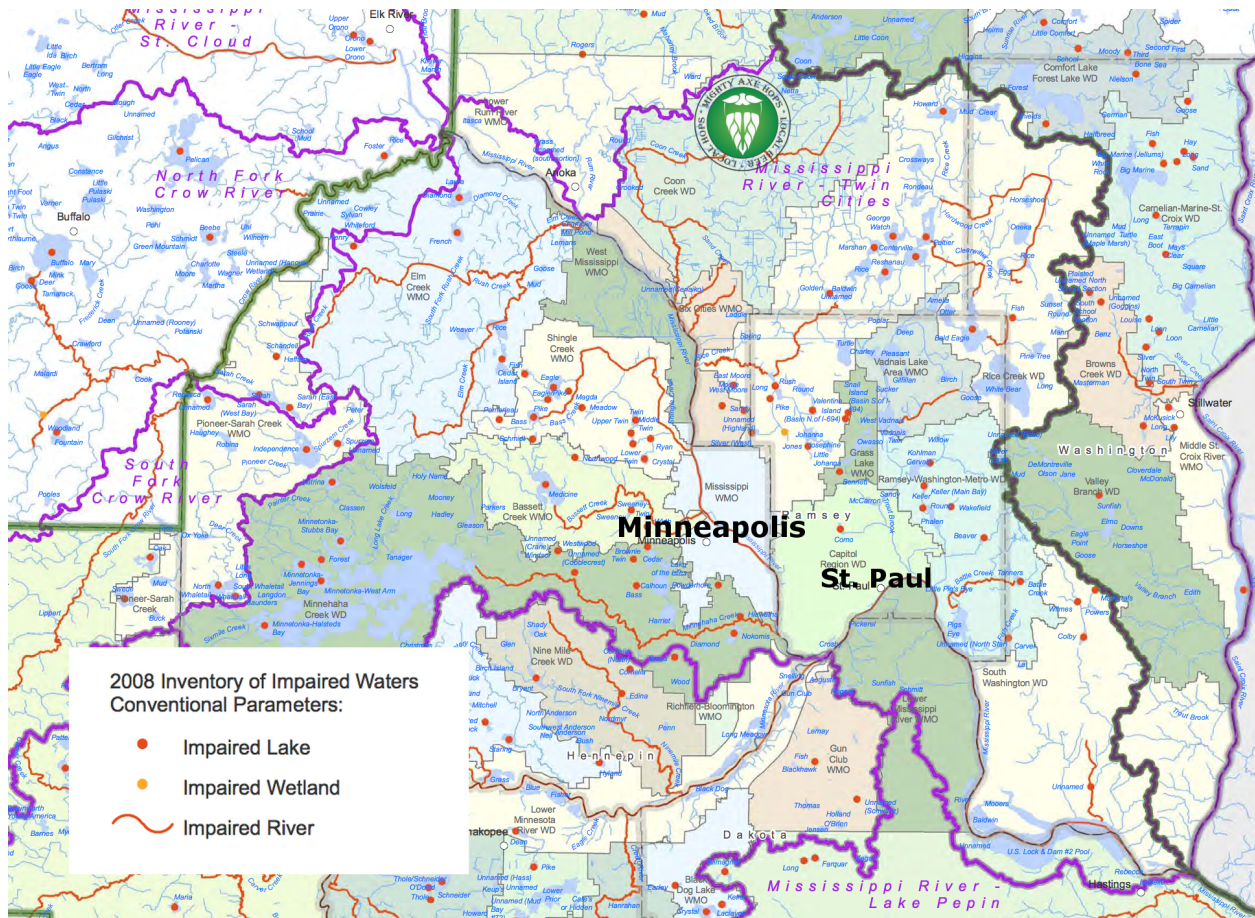
Hops have the unique potential to connect rural environmental issues with an active group of urban craft beer drinkers in very tangible ways. The key issue connecting hop growers, brewers and beer drinkers is water quality. Beer is 95% water and the quality of the water directly affects the flavor and characteristics of the beer. Ultimately, the water that flows through the local hop farm is the same water that flows to the brewery and into the consumers' beer.

Instead of thinking of a watershed beer drinkers can think of a “beershed”. A beershed is an area where the activities of hop growers at the beginning of the supply chain directly impact the experiences of the customers at the end of the supply chain. The site of Mighty Axe Hops, is at the headwaters of dozens breweries and brewpubs.

Hops are ideally suited to being grown on a small scale, which provides the opportunity for numerous environmental benefits. With high returns per acre, growers are under less pressure to farm every inch of their land; thus, allowing more sensitive areas to be dedicated for conservation practices such as habitat restoration, soil erosion mitigation, or reducing agricultural runoff. At this scale hops can also be tended with precision agricultural instruments, e.g. drip irrigation and spot pest management, which greatly reduces the use of agricultural chemicals and pesticides along with their subsequent environmental burdens.

In addition to the environmental benefits of growing hops on a small scale, the plants themselves have inherent characteristics that make them environmentally beneficial. As a perennial crop, they return every year from a deep root system without the need for tilling or planting. This underground network prevents erosion, increases soil fertility, and even takes carbon out of the atmosphere and stores it in a manner that helps mitigate climate change. Hops are also grown in rows that are divided by wide alleyways. In these spaces, additional crops can be planted that increase the hop yard’s environmental benefits. For example, nitrogen fixing clovers can be grown to reduce the need for fertilizers and plants such as milkweed can be grown to provide habitat for monarch butterflies.

Finally the truly exciting benefits of growing Minnesotan hops will be realized when ecologically minded growers work together. At Mighty Axe Hops we can only improve the environment within our own fence lines, but by collaborating with local growers across Minnesota we can improve the environment throughout the state.



This map shows the impaired lakes and rivers in the Twin Cities River Basin that includes the Mighty Axe Hop yard.



Craft breweries and brewpubs in the Twin Cities.

// Market

Recently, craft brewing has exploded and the demand for high quality local Minnesotan has returned to levels not seen since before Prohibition. This trend is not a fad but a growing cultural appreciation for high quality local food products from both consumers and policy makers. For instance, “The Surly Law” is a piece of legislation allows craft brewers to sell their product in a way that ensures their financial viability at a small-scale. The long term viability of the local craft brewing industry translates into the long term viability for the local hops market.

The hops industry in modern times has been dominated by large commercial growers located in the Western United State, Eastern Europe, and increasingly in New Zealand. Roughly 20 years ago, coinciding with the return of craft beer, specialty hops producers began to appear. These growers competed on quality, sustainability, and local connections versus the global commodity market dominated by the largest farms.

Michigan was the first state in the midwest to jump on board and now boasts a mature local hops industry that exports product to breweries across the country. More recently, Wisconsin began producing hops. The Wisconsin market has matured quickly to support both a hops growers cooperative and a private contract grower group.

Minnesota’s local hops industry is far behind those of Wisconsin and Michigan. Best estimates put the total acreage of cultivated hops in the state at less than 20 acres. Michigan’s microbrewery industry currently supports more than 140 acres of hops more than 7 times Minnesota’s acreage and is still growing.¹ In Minnesota, the largest farm holds 5 acres and is less than a year old. The oldest hop yard holds .25 acre and has been producing for 4 years. The Minnesota Hops Growers Association was formed in 2013 to provide a venue for hops producers and those interested in growing hops.

// Competition

Gerhard Hops in Pine City, MN is the largest hop producer in our market. They have 5 acres planted and plans to expand. So far Gerhard has been focused on providing hops to Northern and Central Minnesota breweries however, their size will attract the attention of Twin Cities brewers. We are confident that the relationships we have developed and continue to develop with Twin Cities brewers will secure a steady demand for our hops. Besides this, the volume demanded is far ahead of the available supply so we do not expect direct competition from other Minnesota growers.

¹ <http://research.msu.edu/stories/michigan-could-be-niche-market-hops> At least 140 acres between the three largest growers/collectives.

Wisconsin growers associated with Gorst Valley Hops and the Wisconsin Hop Exchange also pose some competition. However, the market in Wisconsin is also still developing and demand exceeds supply. As a result, these growers are focused on providing Wisconsin hops to Wisconsin brewers and have very little interest in expanding to Minnesota any time soon. Finally, both the major players in Wisconsin have been very open to sharing technical and market information and will likely be important partners as we scale our production.

// Market Capture

There are close to 70 breweries and sizable craft brew pubs in Minnesota that demand approximately 380,000 pounds of hops annually.² Our initial target customers are the smallest craft brewers who demand hops of the highest quality and distinctive flavors. We have begun relationships with 15 of these brewers and meet with new brewers monthly. We are starting with smaller brewers because success in this market helps us penetrate either of our potential secondary markets. Success will garner respect for our product from larger brewers and generate name recognition among home brewers. We are moving towards retaining their business via small volume contracts that are currently unavailable to these small-scale brewers. We sold our first season's crop of hops to Sociable Cider Werks, a craft brewer in Minneapolis. The release of our "Mighty Axe IPA" attracted over 700 guests who gulped down nearly 4 kegs of Mighty Axe beer.

Beyond smaller brewers, Mighty Axe could supply larger brewers who brew specialty beers or do dry hopping. Dry hopping is a method where brewers add hops to the beer after it has finished fermenting and has become very popular in recent years because of the complex flavors it imparts to the beer. Larger craft brewers, such as Fulton Brewing, have a much greater demand for hops and could be strong and stable customers. Fulton alone, for instance, requires the equivalent of 4 acres of hops and is continuing to grow. In just three years Fulton has grown more than 10 fold in their annual beer production.

Additionally, homebrewers provide a flexible and potentially lucrative market. The homebrewing market has exploded in popularity in recent years with an estimated 20,000 homebrewers in Minnesota. One local homebrewing shop, Northern Brewer has \$15 million in annual revenue alone.³ Because homebrewers purchase hops in small quantities at a time, we can sell the hops for more than double what we sell to craft brewers. For example, craft brewers make bulk purchases at \$15 per pound while a homebrewer will typically buy 1 oz of speciality of hops for \$2.50, which translates into \$40 per pound. With the advent of e-commerce websites, such as Shopify, we can sell our hops directly to homebrewers and recoup all of the retail profits. We are active in the local homebrewing market and attend events

² http://tcbmag.com/Lists-and-Research/BIG-Book?djoPage=view_html&djoPid=18819 an estimated 20 breweries under 100 barrels per year production.

³ <http://www.privco.com/private-company/northern-brewer-inc>

such as farmers markets, beer festivals, and teach hops growing classes. We attend beer fests, had a table at the State Fair, and we were the first Minnesota hop grower to have a stand at a farmers market. Our outreach has collected social followings of almost 300 likes on Facebook and over 200 followers on Twitter.

// Business Plan

The growth of Mighty Axe Hops will occur in two phases. Phase one is installing four acres while phase two is comprised of leading the creation of a cooperative.

// Phase One

We plan to grow Mighty Axe Hops through three distinct stages in phase one that will allow us to gain experience with the crop, mitigate risk and build our customer base. The timeline of phase one is dependant upon financing. Our current three-year timeline assumes annual fundraising activities meet our targets. Earlier access to more funding advances the timeline.

First Stage: The first stage will be a $\frac{1}{4}$ acre demonstration plot that will allow us to focus on mastering growing the crop on a production scale. Growing includes installation, growing, and marketing. Installation is the greatest expense at about \$10k and includes installing a trellis system, irrigation lines, planting and soil preparation. However, hops are perennial crops and as a result installation only needs to occur every 10-20 years. Growing includes weed and pest management, disease scouting, fertilization and irrigation, training and pruning. Processing includes harvesting vines from the trellis, stripping the flowers and either shipping fresh or drying and packaging for later sale. Harvesters are also a big expense, costing \$13-50K depending on the size. At the $\frac{1}{4}$ acre scale we will focus on selling “wet” hops, which do not require any drying or post processing and will rent a harvester from another grower.

Second Stage: In the second stage we plant a full acre, bringing our total up to $1\frac{1}{4}$ acres. At this stage we will focus on solidifying our customer relationships with craft brewers and homebrewers in preparation for a bigger expansion to the final stage. Our goal will be leverage our success from the $\frac{1}{4}$ acre to gain dedicated contracts for hop production from craft brewers. We will also focus expanding our brand by meeting with brewers and homebrew clubs through yard tours, farmers market stands, beer festivals, and social media. In addition to contracts with brewers we will build relationships with homebrewers and sell our hops through our online storefront. For this stage we will still rely on renting a harvester and processing equipment but will build our own oast for drying the hops.

Third and Final Stage: For the third and final stage in Phase 1 we will plant an additional $2\frac{3}{4}$ acres bringing our total up to 4 acres. This stage we will be at our desired production level and will focus on maintaining and deepening our customer relationships. After the initial expense of planting the $2\frac{3}{4}$ acres we expect a profit of \$82,000 a year (not including salaries to the

owners but including for hired labor). Initially at this stage we will continue to rent post-processing equipment but in subsequent years we will use our profits to invest in our own equipment or in building a cooperative of MN hops growers to help stimulate the industry and share risk.

// Phase Two

Mighty Axe is going to create a Minnesota hops producers cooperative. There is strong precedent for the creation of a hops growers cooperative. The Minnesota Hops Growers Association is home to Minnesotan hops growers and provides an excellent starting point for conversations about a cooperative. The cooperative would own and manage hops processing equipment paid for and used by cooperative members. The cooperative would maintain small-acre competitiveness. Mighty Axe benefits further by being the driving force behind the coop. In addition to increasing financial viability, we plan to use the cooperative model to bring awareness to current environmental issues and support innovative solutions.

// The Team

Our team is well equipped to make Mighty Axe Hops a sustainable and fruitful business.

Benjamin Boo - Chief Horticulturalist

Ben is studying horticulture at the University of Minnesota and will graduate in Spring of 2014. Beyond his academic studies, he has worked in plant management, marketing and the preservation of culturally significant species at organizations like the Marjorie McNeely Conservatory, University of Minnesota Student Organic Farm and Dream of Wild Health.

Brian Krohn - Chief Financial Officer

Brian is a PhD student at the University of Minnesota in Natural Resource Science and Management and is analyzing the market realities and environmental impacts of second generation bioenergy crops. He loves entrepreneurship, holds a patent and is the co-founder of a successful iPhone app business.

Eric Sannerud - Chief Executive Officer

Eric graduated from the University of Minnesota with a degree in Business and Sustainability in 2013. His prior farm experience with Sunny Brothers CSA and Twin Fin Aquaponics as well as work with the Minneapolis Global Shapers has prepared him to execute the business of Mighty Axe.

// Financial Analysis

why don't you roll losses forward?

With a three stage ramp-up Might Axe Hops will be financially viable by the third year of production. The table below shows a summary of our estimated revenue, costs and profits. Detailed yearly cash flows and assumptions are reported in Appendix I.

Year	0	1	2	3 9	9 yr Total
Revenue	\$-	\$19,688	\$68,906	\$105,000	\$105,000	\$823,594
Owner Salary	\$-	\$-	-	\$60,000	\$60,000	\$420,000
Costs	\$7,695	\$21,201	\$64,537	\$24,226	\$23,226	\$257,017
Profit	\$(7,695)	\$(1,514)	\$4,370	\$20,774	\$21,774	\$146,576
ROI				14%		57%
IRR				46%		85%

Key financial assumptions:

- Sources: Mighty Axe co-founders are investing \$4,500, private investment and a bank loan will make up additional fundraising needs.
- We will charge \$15 per pound to craft brewers and \$40 per pound to homebrewers
- Homebrewers will make up 10% of our sales
- Eric Sannerud’s family owns the land and thus long term land renting is feasible
- By planting crowns instead of rhizomes we will have near 100% production within the planting year

// Risks & Assumptions

is this in budget?

As an agricultural business the greatest risk to Mighty Axe Hops is extreme weather, pests and disease. We are focusing on organic production initially, which can increase the risk of pests and disease. Unfortunately, traditional government financial support, such as crop insurance, does not exist for hops. To help mitigate this risk we plan to set aside 10% of total profits every year towards a contingency fund with goal of building a fund that is capable of replacing 75% of our planted acres.

Markets are also difficult to predict, and while we believe the craft brewing market is strong and not an artificial bubble, fluctuations in crop prices are always a concern. To mitigate this risk we are focusing on three premium markets: local, organic and agro-tourism (hop yard tours). We are also minimizing our capital investments by having a phased ramp up to 4 acres and by renting equipment until we are fully established. We believe that this measured approach will lead to long term viability and a strong base for future growth.

Appendix I

	Year 0	Year 1	Year 2	Year 3	Year 9
lbs hops	-	1,125	3,938	6,000	6,000
Revenue	\$-	\$19,688	\$68,906	\$105,000	\$105,000
Rent	Year 0	Year 1	Year 2	Year 3	Year 9
Land 4 acres and Utilities	\$-	\$200.00	\$400.00	\$400.00	\$1,000.00
Machinery	\$300.00	\$1,000.00	\$1,500.00	\$1,500.00	\$400.00
Total	\$300.00	\$1,200.00	\$1,900.00	\$1,900.00	\$1,400.00
Planting	Year 0	Year 1	Year 2	Year 3	Year 9
Establishment Costs per acre	\$3,750.00	\$15,000.00	\$41,250.00	\$-	\$-
Maintenance per acre	\$25.00	\$125.00	\$400.00	\$400.00	\$400.00
Total	\$3,775.00	\$15,125.00	\$41,650.00	\$400.00	\$400.00
Harvesting	Year 0	Year 1	Year 2	Year 3	Year 9
Harvesting Rental	\$-	\$618.75	\$2,165.63	\$3,300.00	\$3,300.00
Hours labor per acre	\$120.00	\$600.00	\$1,920.00	\$1,920.00	\$1,920.00
Total	\$120.00	\$1,218.75	\$4,085.63	\$5,220.00	\$5,220.00
Oast	Year 0	Year 1	Year 2	Year 3	Year 9
Capital	\$2,500.00	\$-	\$2,500.00	\$-	\$-

Labor	\$-	\$180.00	\$630.00	\$960.00	\$960.00
Total	\$2,500.00	\$180.00	\$3,130.00	\$960.00	\$960.00
_Milling	Year 0	Year 1	Year 2	Year 3	Year 9
Renting	\$-	\$150.00	\$525.00	\$800.00	\$800.00
Total	\$-	\$150.00	\$525.00	\$800.00	\$800.00
_Pelletize	Year 0	Year 1	Year 2	Year 3	Year 9
Renting	\$-	\$150.00	\$525.00	\$800.00	\$800.00
Total	\$-	\$150.00	\$525.00	\$800.00	\$800.00
Packaging	Year 0	Year 1	Year 2	Year 3	Year 9
Renting	\$-	\$177.44	\$621.05	\$946.36	\$946.36
Total	\$-	\$177.44	\$621.05	\$946.36	\$946.36
Storage	Year 0	Year 1	Year 2	Year 3	Year 9
Capital	\$-	\$500.00	\$500.00	\$500.00	\$-
Total	\$-	\$500.00	\$500.00	\$500.00	\$-
Marketing	Year 0	Year 1	Year 2	Year 3	Year 9
Yearly budget	\$-	\$-	\$1,000.00	\$1,000.00	\$1,000.00
Gen Business Expenses	Year 0	Year 1	Year 2	Year 3	Year 9
Travel	\$-	\$500.00	\$-	\$1,000.00	\$1,000.00

Insurance	\$1,000.00	\$2,000.00	\$5,000.00	\$5,000.00	\$5,000.00
Total	\$1,000.00	\$2,500.00	\$5,000.00	\$6,100.00	\$6,100.00
Professional Services	Year 0	Year 1	Year 2	Year 3	Year 9
Accounting	\$-	\$-	\$600.00	\$600.00	\$600.00
Legal contract services	\$-	\$-	\$5,000.00	\$5,000.00	\$5,000.00
Total	\$-	\$-	\$5,600.00	\$5,600.00	\$5,600.00
Total Costs	\$7,695	\$21,201	\$64,537	\$24,226	\$23,226

*Labor assumed wage of \$10 per hour

**Self-Insured

Eric is the fourth generation to work on the Sannerud family farm in Ham Lake, MN. After living his life on the farm, Eric's grandpa Al is a leading figure in the community; the farm and his family are part of the social fabric of the town. As the next successor to the Sannerud Farm, Eric's challenge is succeeding this role while continuing to be a good steward of the land and paying the bills. Meeting that challenge requires a "triple bottom line farm" that is sustainable, viable, and contributes to the health of its community. Hops farming does all three.

Mighty Axe is a business dedicated to producing specialty hops for local brewers. We grow our product using certified organic methods in Ham Lake, Minnesota. Our Minnesotan climate and small scale production and processing methods impart a unique flavor on our crop that won't be found anywhere else.