

## CASE STUDY 1



# Valley Malt

*Bringing Back the Local Malt House*



GrowNYC's GREENMARKET REGIONAL GRAINS PROJECT and the Organic Growers' Research and Information-Sharing Network collaborated to create educational, research-based case studies that share best practices of regional grain producing and processing with entrepreneurs who seek to join this growing economy. This case study is one in a series, and was made possible by funding from the United States Department of Agriculture Rural Development's Rural Microentrepreneur Assistance Program. To read additional case studies, visit the Greenmarket Regional Grains Project and OGRIN.



# OGRIN





**Above** Mature barley crop at the Andrea and Christian Stanley's 70-acre farm in Hadley, Massachusetts.

**Valley Malt**, launched in 2009 by a husband and wife in their garage, is the first micro-malting facility to operate in the Northeast in decades. Malting is a second career for both Andrea Stanley, vocational rehabilitation counselor, and Christian Stanley, a mechanical engineer. **Valley Malt** sources all its grain locally and, as a result, has enabled numerous microbreweries and home brewers in the region to produce local beer and spirits. The Stanleys' business is growing rapidly, thanks not only to their high-quality malt, but also to their diverse and innovative revenue model. The couple is now sharing their knowledge and experience to encourage others to start their own grain-processing enterprises.

#### A ROADBLOCK BECOMES AN OPPORTUNITY

WHEN ANDREA AND CHRISTIAN STANLEY of Hadley, Massachusetts began thinking of starting up a small-scale grain-processing enterprise, they didn't plan to become maltsters. As Christian says, "we didn't even know what malt was." Instead, they wanted to start a microbrewery that used local grains—an idea that sprang from both their deep commitment to supporting local agriculture and their love of good beer.

They quickly found that raw grain isn't used in the brewing process—the grain must first be malted. Malting consists of three stages: steeping the grain, allowing it to germinate, and then kilning (drying) it. The malting process essentially uses the enzyme activity that occurs during germination to start the process of breaking down starches and proteins in the grain's energy reserve, thus making this material available for further modification by brewers or distillers.

The Stanleys set out to find a malting facility that could process local grain but discovered that there were no malting facilities in the Eastern U.S. Decades

ago malt houses had moved—along with the bulk of small-grain production—to the western half of the U.S. Not only were the costs of shipping grain to and from the closest malting facility in the Midwest prohibitive, but all the existing malt houses were operating on a large scale, unsuited to the micro-scale approach to brewing the Stanleys envisioned.

Instead of being discouraged by the lack of options for malting local grain, the Stanleys were excited. They felt they had discovered a "missing link" needed for the development of truly local beers and distilled spirits in the Northeast. Moreover, with the proliferation of craft breweries and distilleries in the region over the last ten years, helped by favorable policy changes (e.g., the NY State farmer/brewer program), they realized that a ready market for "locally grown" malt had been building. In late 2009, they started developing their business, Valley Malt, which they envisioned as a micro-scale or artisanal malt house.



**Above left** Valley Malt's first commercial prototype: a one-ton malting vessel designed and made by Christian Stanley.

**Above right** Valley Malt's two malting vessels with two chambers each on staggered schedules of the three-phase malting process: steeping, germinating, and kiln-drying.

## DEVELOPING A BUSINESS "FROM SCRATCH": A STEEP LEARNING CURVE

THE STANLEYS DRAFTED A BUSINESS plan and secured an initial loan of \$25,000 through the Western Mass Enterprise Fund (now known as Common Capital), a nonprofit institution that makes loans available to small businesses in western and central Massachusetts. The start-up costs they encountered required that they borrow an additional \$20,000 from family members and pitch in \$20,000 themselves. They also found themselves contributing smaller amounts from their outside incomes for needed equipment or supplies during the

first year of the business.

The next steps in developing their malting enterprise were daunting. Initially, they were on their own; they had no existing businesses they could learn from or consult with. Specifically, the Stanleys describe three major challenges they faced: They needed to 1) gain skill at the malting process, 2) source or create small-scale malting equipment, and 3) find local growers to supply them with barley and other needed grains.

## LEARNING ABOUT THE MALTING PROCESS—AND EVERYTHING ASSOCIATED WITH IT

TO GET UP TO SPEED on malting as quickly as possible, the Stanleys took a "full court press" approach. Andrea describes reading textbooks and devouring information on malting on the internet—including that contained on websites from around the world. She found and attended a one-week short course in North Dakota on how to malt. The short course was designed for employees of large-scale breweries but nevertheless gave her valuable insights into the malting process. Through a fellowship from the American Distilling Institute, the Stanleys also visited small-scale malt houses in

the United Kingdom. They eventually discovered and visited a malt house in Quebec, Canada: The Malterie Frontenac, founded by Bruno Vachon in 2006, provided them with a functioning example of a micro malt house and a fellow maltster with whom they could consult.

Andrea emphasizes that the malting process was only one subject area they needed to thoroughly research. They also needed to be able to effectively interact with farmers and brewers. For that reason Andrea audited a brewing class at a local university. She also talked to barley breeders to gain informa-





**Above** The malting system as a whole: Once the malt is dried, the Stanleys swing into “bucket brigade” mode, using buckets to manually fill 2-ton totes, which are then brought by fork lift to the cleaning and bagging machines.

## DESIGNING AND BUILDING SMALL-SCALE MALTING EQUIPMENT

CONCURRENTLY WITH THEIR SWEEP for information on malting, the Stanleys began to malt grain themselves, starting with experiments in their kitchen. As Andrea notes, they found their major challenge to be figuring out how to scale down the malting process from the industrial to the micro level. Fortunately, Christian is a mechanical engineer, with experience in process development. He started by creating a prototype malting vessel, modifying a double boiler so that it could be used to steep, germinate, and dry grain to produce 10 pounds of malt. He also fitted the prototype with an automated control system. He then scaled up the design of the prototype to a vessel capable of producing 1 ton of malt per batch or around 50 tons per year. After ordering the needed metal, a friend of the Stanleys fabricated the malting vessel, and by September 2010, the Stanleys had the malting system set up and were running trial batches.

Christian notes that the malting process requires

tion on the various types and varieties of barley to discover which were most suitable for malting and which were likely to be better adapted to the Northeast. In 2010, the Stanleys planted their first barley crop—25 acres—learning firsthand about barley growth characteristics and production requirements.

more than a vessel. For example, a blower is needed to force air through the grain as it is germinating to keep the grain from overheating. Bulk grain is heavy; therefore, having adequate material handling equipment, such as a forklift and grain augers, is also important. Grain-cleaning equipment is also essential. After the germinated grain has been dried, it must be cleaned using an air-screen seed cleaner to remove rootlets, dust, and any other extraneous matter. Because many of the growers they work with lack adequate grain-cleaning equipment, the Stanleys often have to clean the grain at the “front end” as well—before the malting process can begin.

While much of the malting system Christian designed is automated, the grain must still be stirred manually during germination and again during kilning. The Stanleys also still form a bucket brigade to unload the grain from the malt vessel, although a more automated system of off-loading is being installed.

## RAMPING UP CAPACITY

SOON AFTER BEGINNING MALT PRODUCTION, the Stanleys were in the enviable but vexing position of having greater demand for their malt than they could produce; they had built their system too small. To increase capacity quickly, they bought used malt vessels from Malterie Frontenac. They also switched from electricity to natural gas to power their heat source and put in a new boiler, financing this through an agriculture energy grant from the State of Massachusetts. With this new system they increased their malting production to around 4-5 tons per week.

The Stanleys are continuing to add equipment and make improvements to grow their business. They are insulating and putting up washable walls throughout the malting facility. They’ve purchased a 15-kg coffee roaster that will allow them to make additional specialty malts like chocolate rye. They also are poised to do renovations to a loft in their malting facility that will allow them to do floor malting (in which the germination and kilning steps are done on a malting floor rather than in a malting vessel)—which would increase their capacity by 2 tons per week.



## BUILDING A GROWER COMMUNITY

WHAT ANDREA STANLEY FEARED WOULD be the greatest hurdle to starting up their malt house was finding farmers willing to grow barley for them. Although there has been a renaissance in the Northeast in the last several years, organic production of food-grade grains is still limited to a small percentage of arable acres in the region. This is especially true in Massachusetts.

Challenges for growers include lack of experience in growing grains and difficulty in sourcing both seed of regionally adapted varieties and production equipment of the appropriate scale. A major risk factor for small grain production in the Northeast is the region's climate. Relatively humid conditions throughout the growing season promote leaf and kernel diseases. Humid conditions at harvest can also result in preharvest sprouting or the sprouting of grain kernels while still in the grain head—which essentially makes the grain unusable for malting and of inferior quality for milling and other end uses. To make matters worse, currently available malting barley varieties are particularly susceptible to preharvest sprouting.

The Stanleys have tackled the challenge of recruiting

growers with a multi-faceted approach:

To reduce risk for growers, the Stanleys produce—in addition to barley malts—malts made from grains that are less susceptible to preharvest sprouting: e.g., wheat, rye, spelt, and even buckwheat, a non-cereal crop that grows well in the Northeast and has few disease issues.

To build a base of reliable grain supply, they reached out to larger-scale, very experienced grain growers in the region (chiefly in New York State), who grow 10-30 acres or more of grain for them annually.

The Stanleys themselves farm 70 acres, about a third of which is in grains each year.

To encourage truly local production, the Stanleys have also actively sought out growers located near Hadley, who are chiefly small-scale vegetable producers. In addition to providing them with an opportunity to rotate an acre or so of their land out of vegetable production into a small grain (which helps to improve the soil and reduce insect pest and disease incidence), the Stanleys help the farmers source seed and find custom combining services.

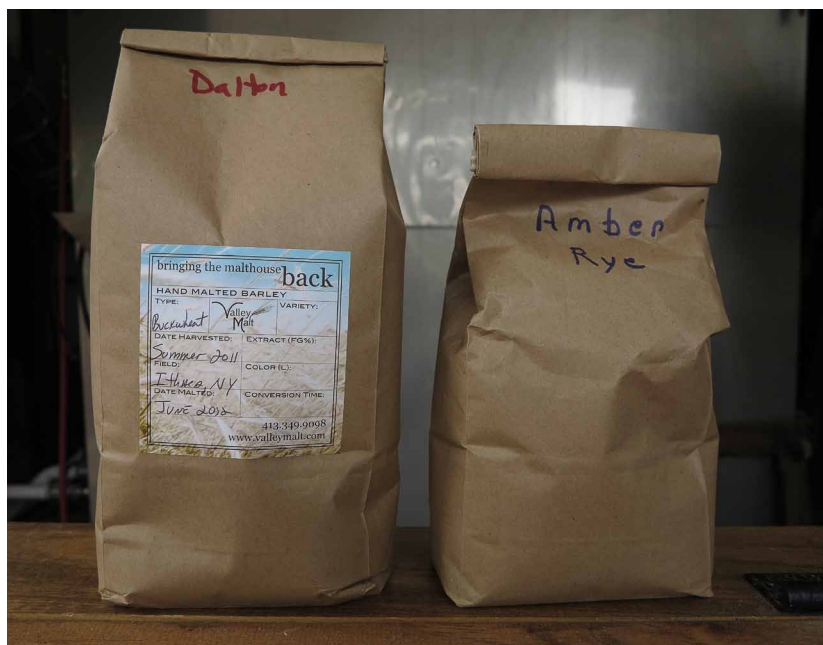
## BREWER SUPPORTED AGRICULTURE (BSA)

TO FURTHER REDUCE RISK FOR growers, the Stanleys started a Brewer-Supported-Agriculture (BSA) project in 2011. As with the Community-Supported-Agriculture (CSA) approach, in which consumers directly support and share the risk of vegetable growers, the BSA in-

volves brewers who provide support to farmers willing to grow grains. Each participating brewer provides a \$500 deposit at the beginning of the growing season to help with upfront costs for the grower, e.g., seed, fertilizer, or equipment. If the crop succeeds, the \$500 deposit is deducted from the farmer's sales of grain to the malt house, with the deduction then passed on to the brewer receiving the malt. If the crop is lost, the farmer doesn't return the deposit. Andrea points out that not only does the BSA help growers with upfront costs and spreads the risk of crop failure between farmers and brewers, but also has established direct connections between brewers and farmers, who now promote and support each other. From eight participants in 2011, the Valley Malt BSA has grown to include 14 brewers.

The Stanleys' approach to recruiting and supporting growers has paid off: they are currently working with 15 farmers who are growing between 1 to 30 acres of barley or other grains for them. Andrea attributes farmers' interest in growing for Valley Malt to the grain price offered, the chance to diversify their rotation with small grains, and their satisfaction in seeing their grains used to produce a high-quality local beer.

**Below** Specialty malts awaiting pickup from members of Valley Malt's Malt of the Month Club.



Photos by J Russe||/GrowNYC



OGRIN

## MARKETS AND MARKETING APPROACHES

Valley Malt currently malts 500,000 pounds of grain a year. Wholesale customers include around 50 breweries and distillers. About 25% of this business consists of what the Stanleys call contract malting: they are contracted to malt a specific grain lot for a brewery or distillery. Another market they have developed is with craft breweries who want to create a 100% local beer or want to include at least some local malted grain in each beer.

Home brewers also make up a large share of Valley Malt's customer base. As part of their BSA, the Stanleys created a "Malt of the Month" project to cater to home brewers' interest in specialty malts. With each share (currently priced at \$200 annually), home brewers get 100 pounds of base malt plus 30 pounds of assorted

specialty malts (e.g., Crystal Spelt, Red Fife Heirloom Wheat, Roasted Oats), made available over the course of a year. The Malt of the Month project, which attracts between 80-100 members a year, not only provides Valley Malt with upfront funding to meet its production costs, but also showcases its strengths as a micro malt house—it has the flexibility to produce both base malt and small batches of unique, artisanal malts.

Through their frequent participation as speakers in conferences and workshops in the Northeast, the Stanleys have increased the visibility of Valley Malt and continue to make new contacts with growers and potential customers. They also maintain a website ([valleymalt.com](http://valleymalt.com)), distribute a newsletter, and participate in trade shows.

## FUTURE GOALS

### Developing malting barley varieties for the Northeast

Andrea notes that a continuing challenge is the lack of malting barley varieties adapted to Northeast growing conditions: The currently available varieties were bred in the western US under low humidity growing conditions and therefore lack resistance to sprouting in the head. With the surge of local breweries and distilleries interested in using local grains, barley breeders in the eastern US now have incentive to produce malting varieties. The Stanleys are working with regional breeders to help them create varieties that can consistently produce high-quality grain suitable for malting in the Northeast.

### Continuing education

The Stanleys are committed to continuing their education in all things related to malting. For example, they recently visited Briess Malt & Ingredients, a company in Clinton, Wisconsin, that has been producing specialty malts since the 1950s. The Stanleys also plan to continue to hold their annual "Farmer Brewer Winter Weekend," an event that brings together those interested in growing grains and hops, malting, and brewing with experts in those fields. They note that this event continues to add to their own knowledge as well as growing and enhancing the local and regional grain farming, malting, and brewing community.

**Below left** Andrea Stanley running malt through an air-screen seed cleaner, which then funnels it into bags.

**Below right** The screen cleaner and bagger.



Photos by J Russell/GrowNYC



**Right** A frosty beer brewed with emmer wheat that was malted by Valley Malt and brewed by The People's Pint of Greenfield, Massachusetts.



## KEY FACTORS IN THE ENTERPRISE'S SUCCESS

### Unmet need

By researching the brewing process and the existing malting industry in the U.S., the Stanleys were able to identify a unique market niche—micro malting—for themselves as processors of local grains in the Northeast. While being the first to fill this niche required a steep learning curve, it also gave them sole access, for at least the establishment phase of the enterprise, to a market for locally grown and malted grain that had been developing over the last ten years as craft breweries and distilleries and home brewers proliferated in the Northeast. This is in contrast to the already crowded market they would have entered had they stuck with their plans to open a micro brewery.

### Global approach

The Stanleys realized from the outset that the success of their enterprise depended not just on developing expertise in and the needed infrastructure and equipment for the malting process, but on simultaneously developing a high-quality supply of local grains and an understanding of the needs of their brewery customers. Their recruitment efforts with farmers and the time

spent learning about micro and home brewing have resulted in a dependable base of grain suppliers and long-term customers.

### Appropriate scale and technology

As Christian notes, as they started up the business, he and Andrea kept their current jobs, both as a risk reduction strategy and because they didn't have access to all the capital required to start up the business. As a result, they designed the enterprise to "fit into their lives," by starting at a scale they could manage after work hours and on weekends, locating the malting facility within minutes of their home, and automating the process where possible. In the summer of 2012, the business had grown enough for Andrea to be able to devote herself to the malting enterprise full-time. They have since continued to ramp up production.

### Design and mechanical know-how

Christian's training and experience as a mechanical engineer and in working with process systems was integral to the Stanleys' development of a micro malting system.

**Right** The Stanleys visiting customer Brad Estabrooke of Breuckelen Distilling (far right), with grain grower Thor Oeschner (second from right).



#### ADVICE FROM THE STANLEYS ON DEVELOPING A GRAIN-PROCESSING ENTERPRISE

##### Create a value statement—and stick with it

Andrea strongly recommends that those thinking of developing a grain-processing business start by working through a business plan—and critically—creating a value statement. The Stanleys' value statement boils down to their commitment to “make decisions based on what was best for us but also for farmers, brewers, and beer drinkers.” Andrea says they repeatedly reread this value statement and it has helped them to make informed management decisions. It was why they chose to have a flexible price for grain that gives larger- and smaller-scale growers what they need to include the ecologically sound small grains as part of their rotation, and to search for locally adapted grain varieties rather than sourcing grain from outside the Northeast region. This value statement, Andrea notes, keeps Valley Malt true to its founding and core identity, that of an artisanal enterprise that creates high-quality specialty malts from local grains.

##### Find people you can work with

Just as important as a defining value statement, the Stanleys say, is finding people with whom you can work and on whom you can rely and creating mutually beneficial business relationships with them. This is a process that requires making sure people are aware of and understand your business values, establishing trust, and ensuring that pricing is working for everybody in the community—grain suppliers, grain processors, and end users.





## Valley Malt

### *Facts and Figures*

#### Products\*

- **Base Malts:** 2 row pale, 2 row pilsner, 6 row, Danko rye malt, rye malt, warthog hard red wheat malt
- **Roasted Malts:** Amber, chocolate rye, biscuit malt, chocolate wheat
- **Caramel Malts:** Crystal light, medium, wheat, honey
- **Specialty Grains:** Spelt, emmer, buckwheat, oat (available on request)
- **Smoked Malts:** Barley, wheat, rye, triticale, spelt

#### Prices

Range from \$1.00 per pound for base malt to \$1.75 per pound for specialty malts

#### Production Volume

**2013:** Malted approx. 375,000 pounds of grain to produce approx 300,000 pounds of finished malt

#### Sales

**2013:** \$225,000

#### Buildings

- **Main facility:** 3,000 ft<sup>2</sup> building
- **Storage:** 1,500 ft<sup>2</sup> warehouse; 30-ton silo for bulk grain storage

#### Utilities

- **Electric:** 100,000 kWh monthly
- **Gas:** 1,000 therms monthly
- **Water:** 60,000 gallons annually

#### Staff

- 1 full-time
- 3 part-time

#### Licenses

- Registered as a food processor with state of Massachusetts
- Registered as a food processor with FDA
- Certified organic with Baystate Organic Certifiers

#### Start-up Costs

- \$95,000

#### Start-up Funding

- \$25,000 from a non-profit lender
- \$20,000 from family members
- \$20,000 from personal savings

#### Insurance

\$1,900 annually at time of start-up

#### Equipment

- One-ton malting vessel designed by Christian Stanley
- 2 used malting vessels capable of producing a combined 4 tons of malt per week
- Blower to force air through the grain during germination
- Fork lift
- Grain augers
- Air-screen seed cleaner
- Automated control system designed by Christian Stanley
- New boiler for a conversion from electric power to natural gas
- 15 kg coffee roaster for specialty malts

#### Markets Accessed

- Wholesale to about 50 breweries and distilleries
- Fourteen brewers participating in the Brewer-Supported-Agriculture project
- Direct sales to 80-100 home brewers through the "Malt of the Month" project

Photo by J Russell/GrowNYC

\*For additional materials and a complete Valley Malt product list, visit [grownyc.org/grains/technicalassistance](http://grownyc.org/grains/technicalassistance).



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GrowNYC's Greenmarket Regional Grains Project fosters a thriving regional grain economy within the local food system, beginning with our network of growers and customers and extending to any farmer, entrepreneur or retailer contributing to its growth throughout the Northeast.



The Organic Growers' Research and Information-Sharing Network (OGRIN) is an organization that generates practical information for organic farmers and gardeners through farmer participatory research, review articles and fact sheets on issues critical to organic farming, and by providing forums for information-exchange between growers.



Committed to the future of rural communities.

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**Case Study Series** Successful Baking and Processing Micro-Enterprises Using Local Grains

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