



The A-frame building that housed the original winery is still used for wine tasting.

From an A-frame to Modern Winemaking

Les Bourgeois Vineyards in Missouri grows into efficient, 51,000-case wine producer

By Andrew Adams

Perched on a bluff high above the slow and muddy waters of the Missouri River sits a small A-frame cottage that was the humble start of one of the largest wineries in Missouri.

In 1974, Curtis and Martha Bourgeois bought the cottage and lived there with their family while they built a home nearby. Several years later, one of the Bourgeois' sons had the idea to plant a vineyard. The vineyard soon supported a home-winemaking hobby that quickly grew into a small winery, and by 1991 the winery was producing several hundred cases of wine. The family purchased an old brick building that used to house a restaurant and an abandoned hotel off Highway 70 to house the fast-growing winery.

The winery gained regional distribution and a strong following at the tasting room, but winemaking was split between cramped quarters inside and an outside area.

Winemaker Jacob Holman joined Les Bourgeois Vineyards in 1999 as a part-time staffer in the tasting room, he eventually moved into the lab and then production. For much of his time at Les Bourgeois, Holman was the one-man team in the cellar. He said that making wine outside may work in California or Washington, but it's a little challenging in central Missouri.

During the summer, the winery had to spend a lot of money cooling the tanks down, and in the winter valves would freeze and Holman said he'd have to schedule routine cellar work around the

weather. "There were times you couldn't even get to the tanks," he said.

By the time the company was ready to expand, Holman was the winemaker and played a key role in planning the expansion. He said he wanted a smooth flow of grapes from receiving and crushing through fermentation and bottling.

Aiming for smooth work flow

The old winery was housed in a converted restaurant with tanks, barrels and storage split between two rooms and the outside. Holman helped design a winery with



Tanks encircle an open area in the new winery to help facilitate better workflow.

Highlights

- Missouri's third-largest winery recently completed an expansion of its winemaking facilities.
- New winery equipment helps the winemaking team work with red hybrid grape varieties.
- Better workflow and technology has improved overall efficiency.

tanks ringing a central work area and near the crush pad. “Having the space is by far the biggest benefit,” he said.

In 2010, the winery completed the 14,000-square-foot expansion and renovation that cost more than \$2 million. The A-frame cottage is still standing today and is a popular place among locals and tourists to sip wine and while away a summer afternoon sitting on wooden decks perched above the river. The estate is also home to a stunning, glass-fronted restaurant with equally expansive views of the river and the modern winery with enough room to house a small brewery and distillery. Holmann is now part owner of the winery along with director of operations Cory Bomgaars, chief facilities engineer Jeff Lynch and Drew Lemberger, the former winemaker who oversees bottling, packaging and the warehouse.



Winemaker Jacob Holman started out as part-time tasting room staff and is now part owner of the winery.

Just last year, Holman said, work finished on a lab and sensory room located on the mezzanine floor of the winery. The local firm Huebert Builders Inc. built the building with the winery’s own engineering staff doing the HVAC, plumbing and drains. Stephen Bourgeois, a member of the founding family and an architect, designed the restaurant on the estate as well as the new winery.

Les Bourgeois currently produces more than 50,000 cases of wine and is the third-largest winery in the state. The winery produces several different wines from hybrids and a few with *Vitis vinifera* grapes. About half of the grapes used by the winery are from the 30 acres of estate vines. The rest is purchased from in-state growers, and a small portion is brought in from California.

When it’s time to harvest, Les Bourgeois uses its own Braud harvester, a piece of equipment that Bomgaars credits with greatly improving fruit quality. He said the machine gives him and Holman the luxury of deciding exactly when to pick.

The harvester dumps grapes into half-ton MacroBins that workers bring to the winery crush pad, which is located adjacent to the brick building that once housed the entire winery. The old winery building still holds some barrels and tanks used for wine storage. Holman said he doesn’t like to ferment in the old winery, though he’ll do so in a pinch (like this past harvest, when he ran out of tank space).

The old winery is home to some old, horizontal tanks that Curtis Bourgeois bought from a dairy in the 1980s. “We always called them pigs because of their shape,” he said. “So one year I decided to have a welder put ears, a nose and a tail on them.”

The “nose” is half of a beer keg, the “ears” are from a 55-gallon drum, and the tail is rebar. Holman said the tanks are now used to hold product used for distilling (see “One stop, all types of alcohol” on page 41) and are currently full of molasses wash.

A forklift driver will dump bins into a hopper located on a platform above the destemmer and press. The hopper is equipped with a screw conveyor that dumps grapes into a Vega 25 destemmer sourced through Carlsen & Associates in Healdsburg, Calif. A Waukesha must pump, also from Carlsen, then sends grapes directly to a press or to tanks. The juice and must is inoculated with a variety of yeasts from Laffort, Lallemant, Anchor, Lalvin and Fermicru.

Almost every lot ferments to dryness, and Holman said he co-inoculates all the reds with malolactic (ML) fermentation bacteria. “We started doing this four years ago,” he said. “With the temperatures falling at the end of harvest, we always had problems getting ML completed, so I changed strains and use the heat of the fermentation to get the ML through.”

White grapes are destemmed prior to pressing except for certain lots of Vidal grapes that are whole-cluster pressed for the winery’s sparkling wine.

The Les Bourgeois crew typically processes 30 tons per day and last year did a total of 680 tons.

The crush pad features two presses: a second-hand Defranceschi and a new Puelo F-70 that Holman said is his preferred press because of its digital con-

trols that allow him to program his own press cycles or use one of the machine’s pre-set cycles.

When the crush pad isn’t being used to receive grapes, Holman said the area doubles as the winery’s barrel-preparation and staging area.



The winery’s Braud harvesting machine helps ensure grapes are picked at optimal maturity.

Barrels are washed with AaquaTools pressure washers, and when they are ready to be filled they are transferred to rooms beneath the old winery. Holman stacks the barrels on bunks with chocks, so he fills and racks them in place. The barrels are sourced from A&K Cooperage, World Cooperage, Canton Cooperage and Demptos Napa Cooperage.

Cellar workers also rack the barrels in place with Bulldog Pup racking wands and send the wine via transfer hoses to tanks for bottling with the winery’s GAI 3013 line fed with a flexible impeller pump by Prospero. Prior to bottling, all wines (except a Port-style wine) are filtered with a Velo Acciai unit. The wines are bottled in Vitro Packaging bottles, closed with Amorim corks and then sealed with Lafitte capsules.

Les Bourgeois produces a line of a sweet Concord and Riverboat red and white blends as well as a “Pink Fox” at around \$10. Norton, Chardonel and Chambourcins sell for around \$20. The winery also features a regular “Collector Series” of wines packaged with labels featuring original artwork. The 2012 Collector Series wine is a Vignoles/Traminette blend that sells for \$25. Glazers distributes Les Bourgeois throughout the Midwest.

Technical upgrades make life easier

In addition to the extra space, Holman said he also has enjoyed working with the winemaking software VINx2, which replaced the pens and notebooks he used before. The software allows him to upload data from a desktop or mobile device as well as access data whenever or wherever he needs it. "That's been a pretty good efficiency."

A VinWizard system controls tank temperatures. Les Bourgeois has 53 tanks

that range from just about 130 gallons to 12,000 gallons. Holman purchased most of them from Mueller in Springfield, Mo., and Spokane Industries in Spokane, Wash.

He said technical tastings used to happen in the basement below the restaurant, but the new sensory room affords a quiet and spacious area for analysis and discussion among the winemaking team. The winery's former lab had barely enough space for one person, but now Holman can have a team of staff and interns run-

ning basic analysis on equipment by Fisher Scientific. (See "Triage for a Basic Wine/Grape Lab" on page 74.)

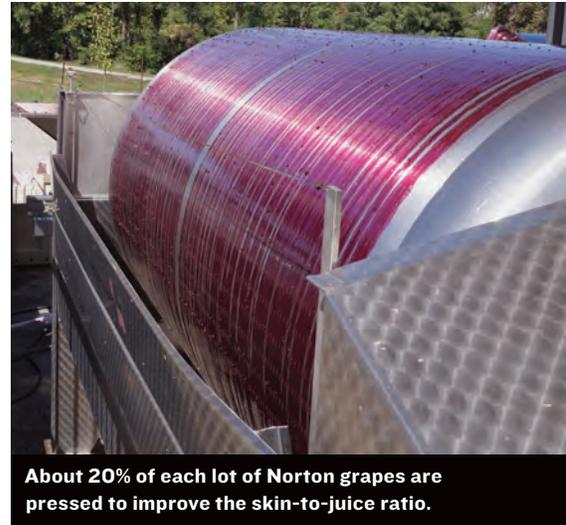
One piece of new equipment that Holman credited with helping to improve wine quality almost immediately was a Del Ozone machine. He said in the past the winery experienced some sanitation problems, but incorporating ozone has made it much easier for Holman to ensure the cellar team uses a standardized and effective sanitation process.



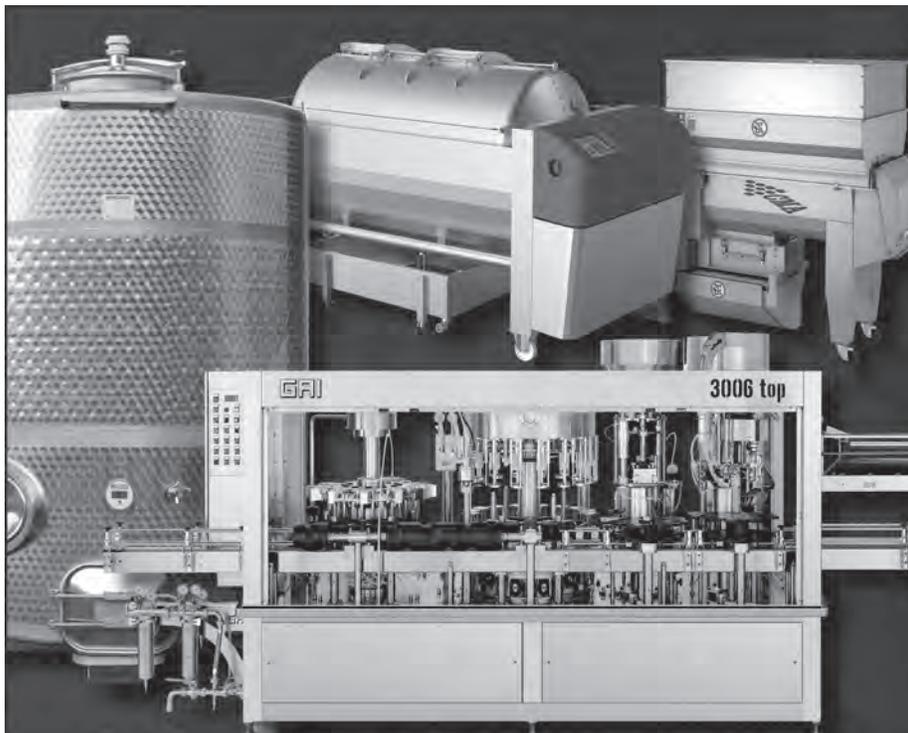
Grapes are dumped in to a Carlsen & Associates hopper on the crush pad.



Most white grapes and all red grapes are destemmed with a Vega 25 unit.



About 20% of each lot of Norton grapes are pressed to improve the skin-to-juice ratio.





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One stop, all types of alcohol

With the new winery completed, Les Bourgeois Vineyards had some extra space in its old winery. Those areas have been filled through partnerships with a local brewery and a joint-venture distillery.

“What we’re doing at this corner is a collection of local beverage companies, which is really fun,” said Cory Bomgaars, the winery’s director of operations. “The idea is to get like-minded folk who want to make local, craft beverages.”

Broadway Brewing in Columbia, Mo., is renting some production space for its beers, and Les Bourgeois teamed with a distiller for a small spirits program under a separate label.

Les Bourgeois winemaker Jacob Holman said the distillery partnership could be used to produce Les Bourgeois-branded grappas and brandies as well as contract distilling for other wineries in the state. He said wineries could distill flawed wines or purchase high-proof spirit for fortified wines.

The partnerships will also enable the winery to offer visitors a peek at the manufacturing process of all three main types of alcoholic beverages from wine to beer and spirits. “It’s a little alcohol world,” Holman said. “From the tourism angle, both of those projects really fit with what we’re doing on the corner here.”

A.A.



The winery uses two stills for a joint-venture distillery.

Other new equipment and improved technology helps the winemaking staff deal with the intricacies of hybrid grapes.

Hybrid winemaking

Bomgaars said Norton, which is Missouri’s state grape, produces exceptionally small grapes that yield only about 3ml of juice. With such a high ratio of skin to juice, about 20% of every Norton lot is pressed to get the juice off the skins.

Once in the tank, Bomgaars said the small berries can coalesce to form sections of thick grape material in the cap that in turn create hot pockets in the tank. These hot pockets can lead to unwanted notes of earthiness or mushrooms in the finished wine. To prevent the hot spots, Holman said Norton pump overs are done with the “fire hose method,” or directly through a two-inch hose and with a punch-down device. “This is just eliminating the irrigator and spraying (the cap) by hand using the hoe to break up clumps as they come to the surface,” he said.

Other pump overs for red varieties are facilitated with a Waukesha pumping to an irrigator up top. The tank tops are accessed via catwalks that run around the inside perimeter of the building.

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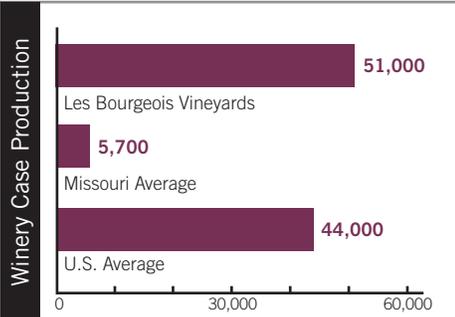
Curtis M. Bourgeois,
Curtis H. Bourgeois,
Cory Bomgaars, Jacob
Holman, Drew Lem-
berger and Jeff Lynch

VP WINERY OPERATIONS

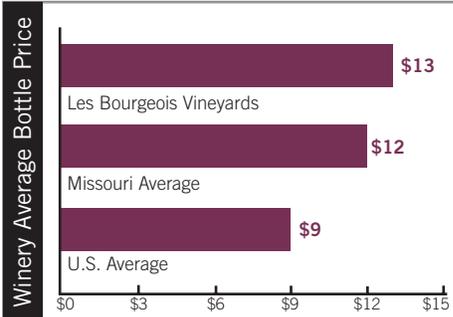
Cory Bomgaars

WINEMAKER

Jacob Holman



Source: Wines Vines Analytics



Source: Wines Vines Analytics



Building the Winery

Architect	Stephen Bourgeois
Excavation	CL Richardson Construction , (573) 657-4523
General contractor	Huebert Builders Inc. , huebertbuilders.com
Metal fabrication	Ceco Building Systems , cecobuildings.com
Concrete	Huebert Builders Inc. , huebertbuilders.com
Winery refrigeration	G&D Chillers , gdchillers.com
Flooring	Line-X, Line-X of Central Missouri , linex.com

THE CHALLENGE

The cellar at Les Bourgeois Vineyards had been split between a cramped space in a former restaurant and an outside area. A multi-million dollar expansion now houses a modern winery designed for better workflow and improved winemaking efficiency.

Making the Wine

Sorting table/hoppers	Carlsen & Associates via New World Winery Equipment , enotools.com
Destemmer	Vega 25, Carlsen & Associates via New World Winery Equipment , enotools.com
Tanks	Mueller, Paul Mueller Co. , paulmueller.com; Spokane Industries , spokaneindustries.com
Barrels	Canton Cooperage , cantoncooperage.com ; Demptos Napa Cooperage , demptosusa.com; A&K Cooperage , (660) 456-7227; World Cooperage , worldcooperage.com
Barrel washing	Aquatools, New World Winery Equipment , enotools.com
Barrel racking	Bull Dog Pup, Bulldog Manufacturing , bulldogmfg.com
Filters, filtration services	Velo, Scott Laboratories , scottlab.com
Winemaking software	Cellar management: VinX2 by JX2 Technology , winery-software.com.au; Tank controls: Vinwizard, Wine Technology America , vinwizard.com
Bottling line	GAI 3013, Prospero Equipment Corp. , prosperocorp.biz
Yeast/nutrients	Laffort USA , laffortusa.com; Anchor and Lalvin, Lallemend , lallemendwine.com; Fermicru, Scott Laboratories , scottlab.com
Malolactic bacteria	1-Step Alpha, Scott Laboratories , scottlab.com
Lab equipment	Fisher Scientific , fishersci.com
Tank mixer	Guth Mixer, Scott Laboratories , scottlab.com
Presses	Defranceschi, Valley Pipe & Supply , valleypipe.com; Puelo F-70, New World Winery Equipment , enotools.com
Ozone machine	Del Ozone , delozonefoodsafety.com
Oak additions	ëvOak, Oak Solutions Group , oaksolutionsgroup.com
Tannin additions	Scott Laboratories , scottlab.com
Pumps	Waukeshas , Carlsen & Associates , carlsenassociates.com; Prospero , prosperocorp.biz

Packaging

Bottles	Vitro Packaging , vitropackaging.com
Corks	Amorim Cork America , amorimca.com
Label design	Steve Hicks , stevehicks101.com
Label printing	U.S. Tape & Label , ustl.com
Capsules	Lafite Cork & Capsule , laffite-usa.com

Winery Services

Laboratory services	Gusmer Enterprises , gusmerenterprises.com; ETS Laboratories , etslabs.com
Web sales/ POS/ inventory software	Micros POS, POS System World , posystemworld.com; Fishbowl , fishbowlinventory.com
Financing/ bank	Wood & Huston Bank , woodhuston.com

Growing the Grapes

Varieties	Norton, Chardonel, Vignoles, Trameintte, Vidal Blanc
Trellis systems	Single high wire and VSP

MISSOURI



Holman said the region's white wines are excellent, and he'd put them up against any white wine in the world. Vignoles in particular makes great wine, he said. "The reds have their challenges. The lack of tannin is always an issue."

For Norton in particular, Holman said he throws tannin at it whenever he can. He uses *evOak* oak dust at the crusher and then ferments with oak chips. The wine then ages in up to 70% new oak, depending on how much Holman thinks it needs.

"It's an oak sponge," Bomgaars said of Norton.



Some old dairy tanks purchased in the 1980s are referred to as 'pigs.'

Some reds also need to be chaptalized to boost the Brix level for fermentation. Holman said he adds fructose and glucose with cane sugar. He said he worked with Scott Laboratories to engineer the winery tanks to accommodate a Guth mixer that does an ideal job of incorporating the sugar addition.

Hybrids may have some unique challenges, but Bomgaars and Holman say the new winery makes the entire production process much smoother and more efficient.

With the new winery, plans for an expanded hospitality area, the restaurant and original A-frame, Les Bourgeois is poised to continue to grow with the wine industry in Missouri and the rest of the Midwest. **W&V**

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