

CONSERVATION PAYS

How hops (and beer) saved the farm, water too



Photo Credit: Anheuser-Busch

By Steve Stuebner

In mid-February, the Boundary Soil and Water Conservation District had a special awards ceremony for three employees who work at Elk Mountain Farms, the recipient of the district's award as the Conservation Farmer of the Year.

All three employees have worked for Elk Mountain Farms – the largest hops farm in the world – for 30 years. The trio are Ed Atkins, general manager, John Kellogg, Tavern Farm manager, and John Solt, Backwoods Farm manager. The 1,700-acre farm combines the operations of the Tavern Farm and Backwoods Farm locations in the Kootenai Valley. Besides the plaque, the men also received nice gift baskets with items donated by local businesses, including gift certificates, shirts, hats and more.

Tom Daniel, chairman of the Boundary SWCD, said Elk Mountain Farms received the award because of their commitment to saving water and improving the environment with their drip-irrigation system and other best practices. The farm converted to drip-irrigation in the mid-1990s.

"Elk Mountain Farms and Anheuser-Busch are very conscious of their impact on the environment," Daniel said. "I've toured their operations and their water savings was tremendous. They are very energetic and great operators. They are always trying to make things run more efficiently and make things better for the environment."

Daniel notes that Elk Mountain Farms have proved to be very adaptable and resilient over the years, considering that the farm had to convert its hop-growing

operations to growing wheat and canola when Anheuser-Busch had an overstock of hops in the late 2000s. For four years, the farm had to completely change its focus until Anheuser-Busch purchased a craft brewing company, Goose Island Beer in Chicago, and then it suddenly needed more hops again in a big way.

When Anheuser-Busch bought Goose Island, "that's what made this place special again," Atkins says.

Elk Mountain developed the hops farm in 1987 to grow three types of hops for Anheuser-Busch beer – brands like Budweiser and Bud Light, Michelob, Rolling Rock and more. They grew Tettnang, Saaz and Hallertau hops from root stock in Europe. And it just so happens that the Bonner's Ferry area is located at the same latitude as the prime hop-growing

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Aerial view of Elk Mountain Farm

Photo Credit: D.J. Paul, Brewpublic.com

regions in Europe. The area gets 16 hours of sunshine in the peak of the summer, which is a good thing for maximizing yield, Atkins said.

During those transition years, when Elk Mountain had to grow wheat and canola to make ends meet, Atkins said that was a challenge and but made it work. The whole 1,700-acre farm was set up with poles and wires for growing hops, so that meant somehow planting and harvesting without disrupting the hops infrastructure.

“Growing canola and winter wheat was a blast! Not as fun as hops, but what crop is!” Atkins says. “The challenges were



Hops at Elk Mountain Farms

three-fold: we didn’t have any experience growing wheat and canola, we didn’t have the right equipment, and we had obstacles every 28 feet throughout our fields. As one can only imagine working around the hop poles and anchor wires was not always fun. The equipment received a few bruises, but our operators got the hang of it in short order and we made it work.

“To fill some of the gaps, our fellow farmers in the valley were kind enough to rent some of their equipment to us. We are so thankful to be a part of such a supportive community as we would not have planted the crop and completed harvest before the snow hit without their help.

“The first year was a big learning curve for us, but we were able to regroup and make major improvements for the next season. We purchased combines, additional cultivation equipment, and changed our crop mix to ensure we were prepared to produce high quality crops. It was smooth sailing from there until hops came to play again in 2012.”

Prior to that transition, Elk Mountain Farms made the decision to invest in drip irrigation in the mid-1990s. Atkins says the notion of making their farm as environmentally sustainable as possible was a key driver.

“Our conversion to drip irrigation in the mid-1990s was a logical step in our

ongoing quest to improve sustainability,” he says. “Water is critical for our agricultural inputs and the brewing process, and also a valuable resource for communities across the globe, so we are continuously seeking new opportunities to conserve and manage its use from seed to sip.

“Drip irrigation not only allows us to reduce water, fertilizer use and improve work safety for employees, but it also helps to safeguard against the potential impacts of fertilizer on groundwater. Conserving and protecting water is the cornerstone of our global goal of reducing our environmental impact on the planet and the drip irrigation system was a natural fit.”



Drip filter station and fertilizer tanks

How the drip system works. The drip irrigation system at Elk Mountain Farms consists of several elements. It starts with central pumping systems, which bring irrigation water from the Kootenai River to an underground network of pipes. These pipes in turn run throughout the farm to the various drip-filter stations strategically located alongside the farm fields. From this point, the drip-filter stations feed a series of drip tubes which run throughout the fields, delivering water and fertilizer as required.

To help further improve efficiency, Elk Mountain Farms has soil moisture and nitrogen-sensing equipment, which work in conjunction with the drip systems to regulate water and nutrient flow. All of the equipment is connected via radio telemetry through a web-based system, in which they have access to real-time data and system control.

Asked how much water Elk Mountain Farms has conserved, Atkins said it’s hard to know exactly because they do not have flow meters on their drip systems. “We have seen that drip irrigation is the most effective way to deliver water and nutrients to crops,” he says. “Farms which

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rely on sprinkler irrigation have increased evaporation from the misting action of the sprinkler spraying the water through the air, and over-irrigating is usually a problem. Over-irrigating wastes water, increases plant stress, and washes precious nutrients out of the plant root zone."

Hops do require quite a bit of water compared to some crops, he says. "Compared to cereal crops such as wheat and barley, hops do require more water. However, hops are on par with other crops such as corn. Of course, water use numbers vary depending on soil types, climatic conditions, and varieties."

Atkins highly recommends drip-irrigation. "Water and plant nutrients are resources we all need to conserve," he says. "Drip irrigation allows us to reduce water and increase productivity by "spoon feeding" the plant. In other words, you only give the plant as much water and fertilizer as required at any given stage during the growing season. That enables you to maximize yield while reducing disease levels caused by plant stress."

Too much water? In farming in the Kootenai River Valley, too much water can be a significant problem. Many years ago, the farmers located in the flood plain of the Kootenai River Valley had to set up drainage districts, which contain a number of ditches and pumping systems to get rid of excess surface and ground water. This is an additional expense that all of the farmers in the valley must shoulder to make their fields dry enough to grow crops. The excess water is pumped from the fields back into the river.

"The Kootenai Valley hosts some of the finest farm land in the United States," Atkins says. "This is due to the rich soil developed over thousands of years of



Hops up close



Conservation Farmers of the Year: John Kellogg, General Manager Ed Atkins and John Solt with Tom Daniel, Boundary SWCD Chairman

flooding. This also means that we are all farming in a flood plain. The issue is that most agricultural crops do not like to have their "feet wet" and will not grow if plant parts are exposed to excessive moisture when they are actively growing."

The weather in the valley can be tempestuous as well, causing issues on the farm. "Weather is the biggest variable you can't control," he notes. "There have been years past when we had a record-breaking hop crop in terms of quality and yield, only to see it all disappear days away from harvest by a large hail storm. Thankfully those are extreme and relatively rare events.

"However, every year the weather throws us a curve ball. If it's too cold our plant won't grow, if it's too hot, our plants are stressed and the insects are going crazy munching on our precious greens. And, if it's too wet, it stresses our plants and promotes mildews, which cause all kinds of mayhem. Luckily for us, with our drip irrigation system, one thing is certain, it's never too dry!

"Farmers are optimists, you have to be. Every year is a new beginning, a fresh start to dream about what might be."

The safety record of Elk Mountain Farms with their 19 full-time employees, 200-plus seasonal employees also was singled out as a factor in receiving the Conservation award. The farm set a record for 1,489 consecutive days of operation without an accident.

"We are very proud of our safety record. It is a top priority," Atkins says. "We work hard every day to work towards our goal of "zero" incidents of any kind.

In order to achieve this, everyone has to be committed to the goal of "zero" risk-taking. This implies that we all have the right attitude toward the problem. As employees, we have to take personal responsibility for our own safety by having the right attitude and owning our actions. As employers, we have to ensure that we're providing employees with the resources and positive reinforcement to work safely."

They go by the slogan, "Safety starts with me."

After Elk Mountain Farms got back into the hop-growing business, they have diversified the types of hops that they are growing there to satisfy a growing demand from Anheuser-Busch's craft beer varieties. Today, they grow 10 commercial varieties of hops, and 108 experimental varieties, Atkins says.

Anheuser-Busch has continued to invest in new craft beers, increasing the demand for a diversity of hops.

In the brewing process, hops are used primarily to enhance or control bitterness, flavor, and aroma, according to the experts. Hops can be added at several points in the brewing process to enhance one or all of those things.

Elk Mountain Farms harvests the hops around the end of August, and finishes in mid-September. Their seasonal workforce increases from 130 people in the spring to 220 during harvest time to handle the harvest. Elk Mountain also invested in special custom-made harvesting equipment that they use during harvest time.

After harvest, they compost 100 percent of their hop waste and use it as fertilizer

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the following year. The compost fertilizer is supplemented with commercial fertilizer to meet all of their needs during the growing season.

Asked if he thinks other farms in the Kootenai Valley might convert to hops, to satisfy higher demands, Atkins says he doubts that they will. "I do not foresee any local farmers converting to hops as hop-growing is very capital- and labor-intensive," he says. "With enough money, you can construct a large hop farm in one season but it all boils down to risk and reward. Hops are a high-input crop. If you have a good contract, and the weather treats you well, you can earn a fair reward. However, you can also have a good contract and if weather isn't so kind, you can lose a lot of money too. Remember, "That's farming!"

More about Elk Mountain Farms:

Hop harvest video: <https://www.youtube.com/watch?v=SpeQkB-9D2s>

Article about Elk Mountain Farms by BrewPublic: <http://brewpublic.com/beer-education/a-visit-to-elk-mountain-farms-the-worlds-largest-hop-farm/>

Article by Good Beer Hunting: <http://goodbeerhunting.com/blog/2014/9/1/reaaping-what-you-sow-anheuser-busch-and-geese-island-bring-a-hop-farm-back-to-life>

Steve Stuebner writes about conservation success stories on a regular basis for the Conservation Commission.

FY 2017 Commission Meeting Schedule*

May 11, 8:00 am , Idaho Water Center, Boise

June 15, 8:00 am, Idaho Water Center, - Boise

*Please confirm meetings before attending by reviewing agendas posted at www.swc.idaho.gov or by calling 208-258-4752.

GOVERNOR SEEKS APPLICATIONS FOR DIVISION FOUR COMMISSION BOARD VACANCY

(Boise) - Governor Otter is seeking applicants to fill the remainder of a term on the five-member Idaho Soil & Water Conservation Commission Board representing southern Idaho's District 4. Commissioner Glen Gier of Twin Falls has announced his retirement from the Board effective June 30, 2017. His term extends through June 30, 2020.

Gier, a farmer and retired Idaho Air National Guardsman, Snake River Soil & Water Conservation District Supervisor, and former Idaho Association of Soil Conservation Districts board member was appointed to the Commission in 2015. He and his wife LaJune plan to move to Arizona. Gier is well-regarded for his agricultural background, dedication to voluntary conservation, and thoughtful, even temperament.

"Glen will be hard to replace," says administrator Teri Murrison, "He's brought a perspective and demeanor to

the Board that is much appreciated. Glen and his wife LaJune are excited about the warmer weather and their upcoming move. We wish them the best in their new life."

The Commission provides technical assistance and programs to accomplish voluntary agricultural stewardship projects throughout the state working with local conservation districts, the Natural Resources Conservation Service, and other partners. Board members are appointed by the Governor to five-year terms. The Board appoints and supervises the Commission's administrator.

For more information on the appointment, contact Ann Beebe in the Governor's office at 208-334-2100 or by email at ann.beebe@gov.idaho.gov. Further information about the Commission's programs can be obtained by visiting www.swc.idaho.gov or by calling Teri Murrison at 208-332-1790.

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