

Bringing news to New Hampshire Farm Bureau families

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## Return of the HOPS

*Hops are creeping their way back to the Granite State. Over 200 years ago New Hampshire was one of the major hop growing states in the U.S. This climbing herbaceous perennial is making its way to the area again and to Misty Mountain Farm for the ultimate brew.*

EFFINGHAM, NH  
Story & photos by Maureen Duffy  
NHFBF Communications Director

A brew master and a hops farmer... It sounds like a match made in heaven. When Kate and Paul Davis got married three years ago they knew they were a good fit but little did they know they would be instrumental in leading commercial hops back to New Hampshire.

Hops were first introduced to the U.S. from Europe by the Massachusetts Company in 1629.<sup>1</sup> In the early 1800s growing hops was profitable and most New Hampshire (and New England) farmers entered into production, enough so to warrant the need for a hops inspector. According to inspection books, Bedford, NH was the largest hops producing town in New England. In 1833, Bedford produced 97,320 pounds of hops and New England produced over a million pounds in the mid-1800s.<sup>2</sup>

Hops production started moving west to Oregon, California and Washington around 1850. With an increase in supply the price began to decline in the Northeast along with powdery mildew problems. By the turn of the century the production of hops in the New England region vanished.<sup>3</sup> Kate and Paul explored the idea of growing hops in the Northwest but returned to their Yankee heritage and established Misty Mountain Hops.



Kate Davis with her hops.

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## LATE BLIGHT – IDENTIFICATION AND MANAGEMENT

By Cheryl Smith, PhD  
UNHCE, Plant Health Specialist

Although late blight has NOT yet been confirmed in New Hampshire, late blight was confirmed on tomato in CT on June 17, 2010. The sample was from a backyard garden. Extension personnel throughout most of the rest of New England are recommending that growers and home gardeners apply some type of protectant fungicide to prevent late blight on their tomatoes and potatoes.

Home gardeners can apply fungicides with the active ingredients of either chlorothalonil or copper. (several copper formulations have organic labels). Biological controls, although usually not as effective, include products with the trade names Serenade, Sonata, Regalia, and Oxidate. These products are also approved for organic use. If late blight is suspected, contact the UNH Education Center, or your County Cooperative Extension office. Once late blight is detected, pull and destroy infected plants **as soon as possible**. Any infected plants left in the garden (or on the compost) have the potential to serve as a source of infection for other gardens and commercial farms ... even those many miles away ... be a good neighbor & destroy infected plants ... we don't want a repeat of 2009!

Commercial growers should apply protectants as soon as possible. (Remember organic growers have the option of Basic Copper 53, NuCop 50 WP, Champ WG for copper fungicides. Copper fungicides were the most effective of the organic options in NY trials in 2009).



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# Return of the HOPS

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## Over the Hills Where the Hops Grow

For many brewing enthusiasts, this historical information has ignited interest in growing hops. Many New Hampshireites are going back to their roots (literally) and planting hops to meet their home brewing needs. But the owners of Misty Mountain Hops are taking their hobby to a higher level of production.

The 20 acre Effingham farm is uniquely situated and has a special buzz of life to it. The well drained,



Kate and Paul Davis with their 14 month old daughter Zebudah (not pictured is nine year old Katherine).

sandy loam soil is exactly what hops need to flourish along with a microclimate that is similar to where world renowned hops grow in southern Germany and the Czech Republic.

"Hops are the spice of beer," Kate said while observing her field trials. "They are the essential component for German lager, which is what Paul makes." The couple plans on growing enough hops for their brewery (Prodigal Brewery) once it is formally certified as well as supplying local brewers.

Many of the hops grown in major hop regions of the United States (specifically in the Northwest - Oregon and Washington) are hybrids that have some European hop characteristics. Kate is the hops grower in the family and she along with her husband Paul (the brewer), have selected varieties of hops native to Europe: Perle, Tettang, Spalt, Northern Brewer, Sterling (Saaz), Crystal (Hallertau), Cascade, Hallertau, Mt Hood (Hallertau), East Kent Golding and Sunbeam (Saaz). With 135 rhizomes planted and six crowns (full plants) in the trial field, Kate and Paul are expecting great results.

"We are very proud of the Hallertaus, they are not as prolific, they only yield about half of what other varieties do, but they are very aromatic," Kate explained. "The Germans use this variety in their beer."

Only female plants produce hops (the flower) and it usually takes three years for the rhizomes to produce. In the distant future Kate may consider cross pollinating varieties but for the time



Wilamette hops cone

Photo credit: Kerry Harman

being she wants to concentrate on going back to original varieties to see what is best suited for this climate. "We may look for some native hops," Kate mentioned. "In general, they are escapees from colonial kitchen gardens."

"I think everyone should grow hops in their garden," Kate said. It is a wonderful plant and they are easy to grow. It is a viable alternative small crop for New England and we would welcome more small scale hop farmers to meet the market demand."

The hops for Misty Mountain were obtained from Puterbaugh Farms (hopsdirect.com) in Washington. "They are a 'small grower' with 700 acres in the Northwest," explained Kate. "And the Perle variety came from Paris View Farm in Maine (Parisviewfarm.com)." Kate mentioned that it is ideal to propagate your own rhizomes to reduce the odds of blight but the couple needed to start somewhere. Kate and Paul plan on leasing additional land in other locations to separate growing areas and reduce the chances of blight spreading through fields.

Misty Mountain Farm is certified naturally grown and is transitioning to organic. At this time organic beer in the United States does not require certified organic hops due to a lack of supply. "There is an increasing number of growers in the U.S. and around the world 'going organic' to meet the demand," Kate noted. "It is likely that by this time next year organic beer will require organic hops."

Kate is using a single pole trellising system similar to what is seen in German hopyards with guide wires. It is an unexplained phenomenon but hops always train themselves to climb clockwise up the wire and will climb the entire height of the trellis (most 10 to 12 feet). The couple is also considering other trellising options to assist with harvesting. As a grower, Kate has no intentions of cutting the vines just to ease picking. The plan is to allow the hops to complete their cycle for a healthier plant with the anticipation of more field trials to see what works best. "There is a mechanism that can be used to lower and raise the vine," Kate mentioned. "That way we can lower them to a table as you never want the hops to touch the ground and then raise them back up."

The alpha and beta acids found in the hop lupulin (pollen) are what give beer flavor. In order to be certain that these acids are available the harvest must occur at the right time. There were no seed cones (hops) to be harvested at Misty Mountain last year but the couple expects the hand picked harvest to take up to two weeks once they are in full production. Securing quality requires experience and knowledge at harvest time. "It is the visual and smell that indicates when it is time to harvest," explained Paul. "When the tight little flowers open and are spongy, the lupulin in the hops becomes exposed. The color of the lupulin is visible and hops flower differs from each variety."

Aromatics are a big part of the hops harvest because the hop needs to open enough for the lupulin glands to become exposed but not too much or the aromatics of the hops will dissipate. Following harvest, the hops will be dried using a solar drying hoop. The best will be selected and used for beer brewed on site. Any additional hops will be stored

in burlap bags to absorb moisture and will be sold to local brewers.

Any hops that don't meet quality standards for high value beer will be sold for secondary uses. Hops have a natural sedative and have many health benefits such as high levels of phytoestrogen, known to help lactating women. Soap can be made from hops, and the hop shoots are edible and may be eaten in salads. The leaves are decorative and are often used to make wreaths since they contain preservatives and antibiotic properties that prevents mold.

The usefulness decreases dramatically after approximately three to six months. Hops, start losing about 50% of their acid content. "You can preserve the flavor in the freezer," explained Paul. "But that fresh hop flavor is lost."

Paul is heavily involved in professional and home brewing organizations and is very familiar with industry trends. "There are a lot of brewers out there that use fresh or what we call 'wet hops' that are harvested and used to make beer within 24 hours of picking," Paul said. "That has become one of the 'hot' trends in draft beer as well as the green movement. Many brewers like knowing the hops are local and are not coming from Europe or from across the continent."

The couple believes there is a great amount of interest in "volunteering" within the home brewing/beer enthusiasts' community. "They want to be part of it," Paul said. "It is something that most brewers do not have access to, there's a real disconnect and I think a lot of brewers are trying to get back to the agricultural roots of brewing."

## Plans Brewing

In addition to being one of the major hops regions of the country, New Hampshire was also home to one of the largest producers of ale in the U.S. The Frank Jones Brewery in Portsmouth brewed about 250,000 barrels a year and was in operation for 90 years before it closed in 1950.<sup>4</sup> Perhaps Misty Mountain's brewing focus is not on becoming the largest producer, but crafting a Germany style lager for local connoisseurs.

Sculpting a lager like no other requires a variety of hops and good water. "When we bought the property two years ago we knew we had the right water for brewing," Paul noted. "The Ossipee water aquifer is fantastic for brewing beer."

The UC Davis, American Brewers Guild graduate became familiar with the water source while working as the assistant brewer for six years at Castle in the Clouds in Moultonborough. He gained additional experience at Trout Brook Brewing in Connecticut where he also worked for six years.

Paul knows how to create a good lager and explained the three reasons for using hops to brew beer. The first is to add the bitterness (the acid that counters the malt sweetness), second is the flavor from the different hop varieties and the third is aromatic character that gives the beer a more full flavor profile. The majority of the beer brewed at Misty Mountain will be draft to be consumed at restaurants. "We will also have one liter swing tops which are common in Germany," Paul mentioned. "The swing tops are reusable and we like the idea that they can be washed and reused. A five liter party keg (12-pack in a can) will also be available and may be returned and cleaned for reuse."

"I would love to grow barley as part of our operation," said Kate. "But the bottom line is the cost of farmland. As remote as Effingham is, the town is still impacted by suburban pressure as a commuter community to Portland and Portsmouth. It is not only the impact on prices but on the actual uses. We wouldn't have been successful if it wasn't for other farmers in the area and the town agriculture commission."

The assistance of great neighbors helping to reclaim the farm has been part of the foundation for Paul and Kate's accomplishments. The brewery portion of the business was recently licensed with the first batch expected this July. But for now, the hops keep growing as plans keep brewing for this long-awaited reunion back to New Hampshire.

## Follow Misty Mountain Hops on Facebook.

<sup>1</sup> Materials prepared by Jeanine S. DeNoma, USDA ARS National Clonal Germplasm Repository, *Humulus Genetic Resources Hop*, <http://www.ars-grin.gov/cor/humulul/huminfo.html> (January, 2000).

<sup>2</sup> By the town of Bedford, *History of Bedford, New Hampshire, from 1737*, (The Rumford Printing Company, Concord, NH, 1903), 76.

<sup>3</sup> Materials prepared by Jeanine S. DeNoma, USDA ARS National Clonal Germplasm Repository, *Humulus Genetic Resources Hop*, <http://www.ars-grin.gov/cor/humulul/huminfo.html> (January, 2000).

<sup>4</sup> Frank Jones, *Wikipedia the free encyclopedia*, [http://en.wikipedia.org/wiki/Frank\\_Jones](http://en.wikipedia.org/wiki/Frank_Jones)