

# FAQs for starting up a hop farm in New York by Steve Miller

Thank you for your interest in growing hops. The following is some information that I have put together for people interested in getting started in hops. This information is a general primer to answer commonly asked questions. This is an exciting time for the industry with excellent potential for marketing to over 140 microbreweries around the state, with more appls. pending. The NY Farm Brewery legislation will create new opportunities for on the farm brewing and sales. This legislation went into effect in January 2013, so contact Sam Filler at the Empire State Development Corp to get info on obtaining a Farm Brewery License (518) 461-2840 or [sfiller@esd.ny.gov](mailto:sfiller@esd.ny.gov) there are 40 new farm breweries in NY as of June 1, 2014.

## History

Yes, we had a very important hop industry here a hundred years ago. In 1880 New York produced 21 million pounds of dried hops, the majority of the US crop which sold upwards of \$1.00/pound. What happened and why can we grow them now? New York State produced a large portion of the hops in the US at one time. Disease pressure from downy mildew and powdery mildew, as well as aphids and spider mites made production much more difficult and risky. The industry started moving to the mid-west and then the Pacific Northwest fleeing disease pressure. Along came prohibition, the price went from a high of \$1/ pound to 5 cents overnight, and most of the hops in NY were pulled out of the ground.

There are several reasons why we can grow hops commercially again in New York. The industry in the PNW has funded strong plant breeding and IPM research for many decades and a good deal of effort has gone into developing new varieties with disease resistance. These varieties are doing well in NY and offer the best potential. Secondly, pest management options, both chemical and cultural have come a long way in the last hundred years. These advances make commercial hop production viable in New York.

## Finances and Costs

### **What's the minimum acreage for a farm to make enough on hops to have a livable income?**

It looks like if you are doing a good job of it, 10-15 acres should provide a good income. It doesn't sound like a lot but it is a lot of work and about \$12-\$15,000/A (see below) investment to get started. Currently there is no one in New York with more than 10 acres of producing hops.

### **What returns can be expected and how many years does it take to get a return?**

There is great potential now for growers in NY. Local prices are all over the board, anywhere from \$10-\$14/pound for dried, pelleted, hops with about 800-1200 #s/A yield if you are doing an excellent job. Brewers currently pay from \$4-10/pound for hops grown on the west coast or from Europe, varying greatly on the amount they purchase and the variety. It is important to keep market prices in mind when developing a business plan, as brewers are conscious of their contracted prices for hops and although most are willing to pay some premium, prices need to be realistic. Also quality is more important than where they were grown, so "local" will not make up for poor quality hops. The first year you may have some hops, a partial crop the second and a full crop the third. Expenses are variable but most growers believe they need to have gross sales of more than \$6-8,000/A to break even because of initial investment, equipment, harvesting and processing costs.

### **What are the fixed costs to start up and what are the variable costs for ongoing production?**

It costs about \$12-15,000 /A to get started including labor, plants, trellises, irrigation, and then add on the equipment you buy. Growers are looking at sharing some things, such as harvesters, kilns (oasts) and pelletizing and packaging machines.

**What are the costs, such as harvesting machines, etc.?** Harvesting is one of the main costs in producing hops. Hand picking is not feasible for anything more than an acre or so. A stationary Wolf 140 or 170 harvester will cost in the range of \$30-35,000 but not easy to find in the US so shipping is involved from Europe. NEHA has one located at Morrisville College that is available for members to use. There are 7 more of these privately owned around the state. Keep in mind that the harvester you use needs to be within an hour of your farm because of transportation time and costs. Growers are developing small scale machines and several types may be available soon. Larry Fisher of Foothill Hops has built his own and will be sharing the plans. There are plans from UVM in Burlington, VT for a harvester they designed and built with funds from SARE, as well as for a small scale kiln and baler.

### **What other equipment is needed to grow hops?**

Small tractor, trailer, weed sprayer, crop sprayer like what is used in vineyard or orchard, truck, drying equipment, possible pelleter, a cooler, and a building for storage and drying. Growers should plan on drying their own hops but there are 3 pelleting companies in NY that will pellet and package. Whipple Bros Kendall, Hager Hops Oneonta, Foothill Hops Munnsville.

## **Marketing your hops**

### **What is the demand for hops in New York State to local brewers and in the future?**

Hops are easy to ship once dried, however the demand right now is from micro-brewers and local is "in". The growth was slow at first because the brewers want to be sure that they can get a consistent product, both in quantity, availability and quality. As the number of acres increases the demand will also increase. Brewers like the quality that they are getting from local producers! The demographics of the consumers of these products are in their 20s and 30s and it seems unlikely that they will go back to more generic beers. This is a good indicator that there is plenty of room for longevity and growth in the craft beer industry. We estimate there is a need for 400-500 acres of hops in New York to satisfy the domestic demand for local hops.

**Is it possible to be classified as an organic producer?** Yes there are some growers going organic. It is more work and risky I'd say and time will tell if brewers will be willing to pay a premium for organic hops. Eastern hops are already higher in price than west coast hops. That said, there is interest on the part of growers and brewers. As of January 2013 organic beer requires the use of organic hops.

### **Is there a profitable online sales market?**

I would say yes but with a caveat. New York hops are going to be more expensive to produce so many home brewers are looking to the PNW still because they are less expensive. You would have to build interest in "local" or uniqueness on the part of home brewers.

## **Land preparation**

It is very important that you select the area where you will be growing and begin to get the land prepared. It should be well drained, have access to water for irrigation, be flat or have a gentle slope, and have good air circulation as well as full sun. Those are the key ingredients to site selection. I would start by going to your Cornell Cooperative Extension office in your county and obtain copies of the soil maps of your farm. The USDA NRCS or the County Soil and Water District staff can tell you about the particular qualities of each of the soil types.

I would also obtain a soil test box there for Dairy-one/Agro-one and send it in with the "F" form filled out for hops establishment. This will tell us if you need lime or other minerals to be added before you plant. I also would suggest that you ask the Ext staff about establishing a cover crop this year to cut down on the weeds. Buckwheat followed by clover is a good choice. Will you be organic? What is growing in the field now? Grass, weeds, corn? Atrazine carryover can be harmful. You may want to kill off what is there with either tillage and cover crops or with glyphosate (Round-up) as perennial weeds and grasses will be a problem, and you want as little of those as possible before the hops go in.

## **Here are a few typical questions about growing hops commercially:**

### **What is the system of growing plants that will produce the highest yield?**

The highest yields are still with full size plants on high trellises 16-20 ft. About 900 plants /acre are required about 3ft apart and rows 12 ft apart. There are a few different high trellis systems being tried out in the Northeast. Low trellis systems (10 ft with plastic deer netting) are being used out west, but require specialized (\$350,000) over the row harvesters unless you plan to hand pick in the field. It may also be more difficult to manage diseases in low trellis hops so I do not see this as a viable option. Also there are very few varieties that lend themselves to dwarf production, which also means less diversity to offer a brewer.

### **What about irrigation?**

Hops need at least an inch of water a week, more as the season progresses. Most growers are using drip with the emitters set at 18-24 inches apart. You need to know how many acres you want to put in and determine if you have an adequate water source. You usually can water one block at a time for several hours and then shift to another. An acre can use 5-6,000 gals/day.

### **How are the plants harvested?**

The plants grow up twine (coconut coir) and it is cut at top and bottom and brought to a barn to be hand-picked or trucked to someone with a harvester to machine picked. Baling twine will stretch and not last. Hand picking is not cost effective, about 1 man hour per mature plant. We have 8 Wolf harvesters in New York and a couple smaller pickers in the state now. As acreage grows we may see more of these purchased or built. Mobile harvesters are being built in 2013 that can travel from farm to farm and should be proven for use in 2014.

**What is the process to dry and possibly pelletize the crop?** After harvest, the crop needs to be dried right away. Use plenty of warm air, no more than 100-120F, too hot will destroy flavors. The hops can now be stored in air-tight bags in a cooler. Before pelleting, they may need to be ground in a hammer mill and then pelleted, vacuum sealed and again, stored cold.

### **What is the shelf life of product?**

This depends on quality but almost a year if processed right and vacuum packed in Mylar bags, gas flushed and kept in a cooler or freezer. Many growers don't pelletize until they have orders ready to ship. Well processed hops, cold stored, can last a year or more with minimal loss of potency. A 20 C license is required from NYS Ag and Mkts to process and a variance is required for vacuum sealing.

### **What varieties are in demand?**

For the most part brewers are looking for the more aromatic varieties as they can get the bittering varieties more easily from PNW. Cascade, Willamette, Mt Hood, Fuggle, Liberty, and Perle are aroma varieties, and Brewers Gold, Chinook, Centennial, Nugget and Newport are a few bittering varieties that are being grown in the Northeast and are in demand. We also must consider disease resistance. Mt Hood, Centennial, and Columbus (CTZ) for example, are not resistant to downy mildew. Saaz and most of the German varieties have not done well in the East so far but growers are experimenting with these.

### **Finding more information**

As for hop information I would start by going to the NEHA site [northeasthopalliance.org](http://northeasthopalliance.org) and reading some of the literature that is listed on the resource page. Copies of our newsletter are listed there as well as articles from U of Vermont. UVM has a great resource site at <http://www.uvm.edu/extension/cropsoil/hops> Also; consider joining the Northeast Hop Alliance. The Alliance supports research and development of the industry and is a small investment for your farm. The NEHA growers will likely be putting in a group order for coir and rhizomes each fall. This can save on start up costs because of quantity purchases.

Cornell Univ. and Cooperative Extension is offering a Cornell Guidelines for Hop Production for \$28 plus shipping. There is also a new hop research yard planted at the NYS Experiment Station in Geneva. Variety and pest management trials will be carried out there.

In 2011, 12, and 13 we held a hops conference in Troy and Morrisville, NY. A 2 DVD set (approx.7 hours) is available from each conference for \$60 ea. including shipping. Any two sets of DVDs can be purchased for \$100 from Cooperative Ext of Madison County. (see below)

P.S. If interested in brewing, contact: **NYS Brewers Association** PO Box 25353 Rochester, NY 14625 315 256 7608 [www.thinknydrinkny.com](http://www.thinknydrinkny.com)

Karl Siebert at the NYS Ag Expt Stat. in Geneva offers an excellent brewing short-course for commercial and home brewers. They sell out so get on the list for the next one.

Or for the brew school in Vermont. Contact: **American Brewers Guild** 1001 Maple Street Salisbury, VT 05769 <http://www.abgbrew.com/admissions.htm>

Contact me, Steve Miller

Cornell Hops Specialist

[sgm6@cornell.edu](mailto:sgm6@cornell.edu) , or [hops.educator@gmail.com](mailto:hops.educator@gmail.com)

315 684-3001 x127 Fax 315 684-9290

Cornell Cooperative Extension of Madison County

P.O. Box 1209 Morrisville NY 13408