

Feral and Wild Hops

Are they important Economically?

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Many growers and hop/beer enthusiasts have an interest in hops that they are finding in New York's landscapes and farms. There is great potential in the genetic diversity that is growing all over New York and perhaps some of these plants have a lot to offer. Hops were grown in NY for about 100 years commercially, peaking in 1880-90 at about 40,000 acres and 21 million pounds of production. 19th century production hinged on two factors, good soils, and access to markets via trains, canals etc. They were concentrated in 6 counties in the Mohawk Valley but nearly every county had some commercial hops outside of the Adirondacks and Catskills.

There is a great interest in "heritage hops" on the part of some brewers, but more so at this point on the part of growers, enthusiasts and for tourism. There are some growers who have found these plants and some have propagated them and are selling the hops. What is the background of these hops and are they valuable for brewing?

Hops are a plant that is dioecious, meaning two houses, or that they have separate male and female plants. These days we have only females in the yard. During the 19th century, growers used male plants in the yards because the seed would boost the end weight. Hops should be propagated asexually to maintain trueness to type, just like apples and grapes. Also breweries will not accept hops with seed as they add to the cost and provide little positive to the beer, so growers who find them should rogue them out.

What then are "heritage hops", you know the ones we find in a hedgerow or by an old barn? I mention this because we are finding that many, if not most of the feral or wild hops out there are the result of seedlings, so they have some genetics from old varieties, but are not "Cluster" or other old varieties themselves. They are not likely to be the exact hop that was grown on the farm 100 years ago but rather a daughter or son. Does that matter? Maybe not, but it is important to know. Brewers are very picky about the quality of the ingredients they use. "Wild" hops are very much like the "wild" apples we see in every hedgerow, most are mediocre compared to what is available in the trade of improved cultivars.

On the plus side, because of the genetic diversity that exists in New York's feral hop population, there may be some plants that offer disease resistance, high yields and even unique flavors, so as I said before there is a lot of interest in finding some of these gems. The problem is, it takes time to evaluate them to make sure we are not having people grow something that will not pan out. Also brewers want uniformity from batch to batch so it is important that we

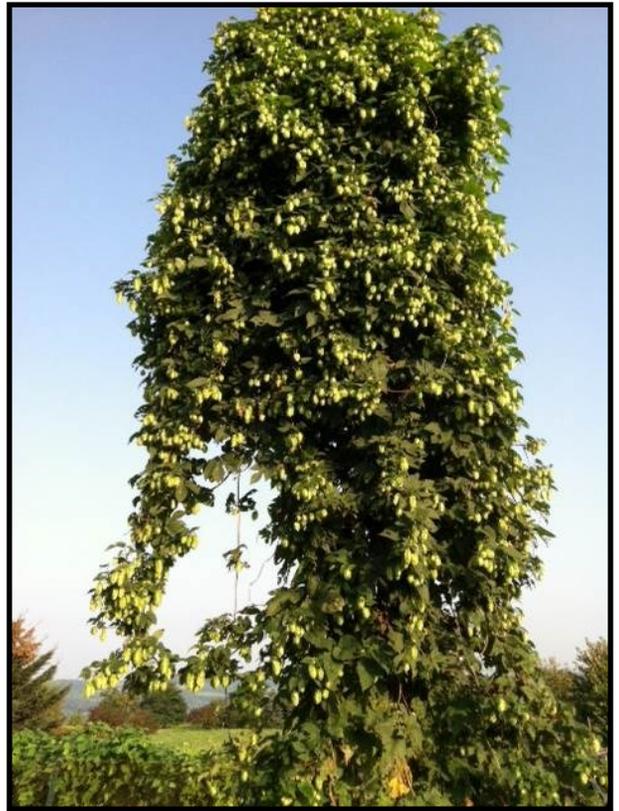


The flowers of a male hop plant look different than those of a female hop plant.

select clones and not just mass seedlings of mixed heritage.

How do we go about evaluating their worth? The best practice is to collect cuttings or roots from these feral plants. If you see 10 of them in a hedgerow, there may be 10 individuals there, not just one spreading plant, so you need to treat them separately. Number them and make a key and a map of the new plantation. Remember you should always ask the landowner for permission to take cuttings or roots, especially if at some point you want to propagate them and name them. It is best to plant these plants in a situation like they would be in on a commercial hop farm. This means a good well drained soil, full sun, some irrigation water and fertilizer. We have a fact sheet entitled "Growing Hops in the Garden" that gives the details you need to do a good job.

Once you grow them out the most important thing is brewing quality and in order to measure that you will need to have about a half pound of dry hops. Count on an hour of hand-picking time per mature plant. You will also need to know when they should be picked. If you do not pick them at their peak maturity, then any analysis that is done will not be representative of the true value of the "selection". Generally, we wait until the lupulin glands in the hop cone fill out and change into a deep school bus yellow. Growers also do dry matter tests and pick when the hops are around 20-24 percent dry matter. This is different for each variety. The University of Vermont has a good explanation for dry matter calculations on their website. Once picked, the hops need to be dried to about 9% moisture in order to be shelf stable. Use a food sealer or freezer bags to store them to ship to a lab for analysis. Brewing quality analysis will cost somewhere in the \$60 range per sample. This includes Alpha and Beta Acids and Total Oils. Sealed hops are best stored refrigerated or even frozen.



If you can plant enough of these out, the next step is to take the dried (or even fresh) hops to a brewery where they may be able to do a pilot batch for you. A brewer will be able to tell by the analysis and the aromatic characteristics of the hop, how that hop might best be used in brewing, a lager, IPA Stout etc.



Brewing quality is only one of the important characteristics in developing a new variety. Disease resistance and yield are also critical if this hop is to be grown commercially and be better than what is already out there. Remember what I said earlier about wild apples. Many people assume that because a hop is growing in the "wild" and has survived many decades, that it automatically has superior disease resistance. It may, but it also may only have been missed by disease, or maybe in a plantation of hundreds of the same clone it could be a disaster. Take careful notes on the yield and incidence of insect and disease occurrence on each plant.

Once you have spent some time getting to this point, and the plant still seems promising, then it would be advisable to look into the possibility that this plant is genetically unique, rather than a feral form of a named variety that may have been planted on that farm some decades before. There is a company that is willing to do some genetics work but only on hop plants we find that show promise, because they are not able to test thousands of these wild seedlings. They can narrow it down to the gene pool from different known varieties to see what they may be closest to in heritage and even identify the possibility that the plant is a “known” escape.

What about propagation? Our biggest concern is that a propagator will spread a disease that can be economically important to the rest of the hop industry. Two of them are downy and powdery mildews. Another that is of great concern is Hop Stunt Viroid and other hop virus diseases. The National Clean Plant Network, in Prosser, Washington, is funded by USDA. At the lab they have the ability to remove viruses from propagation materials and then give clean plant material back to the owner. This can be done with privately owned materials for a fee of a few thousand dollars. Also, in New York and most states, you will need to obtain a nursery license from the State Department of Agriculture and Markets in order to sell hop plants, just as you would for fruit or ornamentals.



Propagators grow clean hop plants for resale in a greenhouse.

This may seem like a lot of trouble and time but keep in mind a couple things. A grower will be spending many thousands of dollars to establish an acre of hops and the varieties need to be at least as good as what is already available. Secondly, it takes about \$250,000 per year and about 10 years for a breeding program to bring new hop varieties to the market. Very few states have a large enough hop industry to justify this expense.

Can I name it? How can I make sure I can maintain ownership, i.e. have a proprietary variety? You may want to consult with an attorney that specializes in this subject. There is a difference between a plant patent and a proprietary variety. In our 2015 Hops Conference on Dec 5th, Jessica Lyga, Cornell’s Technology Licensing Officer, will be giving a talk on this subject. It is too detailed of an issue to cover here. There will be DVDs available from all of the talks at the conference early in 2016.



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