



Hop harvest timing in the Northeast

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Factors to consider:

The time at which you harvest hops will affect the qualities of your finished product. There is no perfect time for hop harvest – rather certain advantages to harvesting hops earlier or later. Alpha and beta acids peak before essential oils. Waiting longer will increase essential oils but also increase the amount of time hops are in the field vulnerable to disease and fall rains. Logistical factors such as equipment availability and weather will affect your timing for harvest as well. This guide is meant to provide tools to make an informed decision about when to harvest, not to provide an exact date. The information below is based on the growing experience of Northwestern and European hop producers. Harvest timing is specific to your location and growing practices. Little is known about Northeastern harvest timing. Experimentation is encouraged to find the advantages of harvesting on different dates.

Ways to measure:

Measuring dry matter content is an easy and objective way to gauge harvest readiness. You will need a microwave or food dehydrator and a calculator to determine dry matter. We strongly recommend doing a dry matter test to make the final harvest decision. However, a combination of sensory assessments is a quick way to gauge if the hops are close to maturity.

Smell: Hops that are not quite ready smell “green” like hay or grass, while over-ripe hops smell like onions, sulfur, and garlic. In general, you should be able to smell hops from a couple feet away from a plant when they are ready. You should be able to smell mature hops from a couple feet away.

Sight: Split a cone in half. If the cone splits evenly, straight down the middle, it is not ready. Cones that are approaching maturity will split unevenly. The petals of the hop cone fan out like a Christmas tree as the cone dries down. The extent varies dramatically by variety, so make sure to compare change in one variety over time as opposed to variety-wide comparisons. If you have a microscope, you can also take a look at the lupulin glands. Lupulin glands that are ready should be shiny, golden, and have an acorn shape.

Sound: One Pacific Northwestern grower said he knows when his hops are ready because a cone will sound like a baby rattle when shaken.

Dry Matter:

When you think that your hops are approaching maturity, it is time to

measure hop cone dry matter content. Dry matter is the deciding factor that we use to determine when hops are ready to be harvested. We harvest between 21% and 27% dry matter. Generally, hop cone dry matter increases by 1-2% per week, although it can be faster in very hot, dry conditions. It is known that different varieties can have different optimal harvest dry matters within this range. We highly recommend taking notes on your harvest dry matter and resulting hop quality so that you can tweak your method in future years if necessary.

Recent studies have shown that later harvest (higher dry matter content) corresponds with higher essential oil content. Alpha and beta acids are generally thought to peak before essential oils; later is better if you are looking for more flavor and aroma characteristics, earlier may be better if you are growing hops for their bittering characteristics. Keep in mind that the longer you wait, the more time the hops spend in the field where they are susceptible to disease. If the weather is wet or pests are threatening significant damage, consider harvesting earlier. Severe downy mildew or arthropod damage will reduce hop cone quality more than an early harvest.

How to calculate dry matter:

Take a 50 gram sample of wet cones from each variety. Collect the cones from ¼ up the plant – dry matter varies from the bottom to the top. It is best to collect from multiple plants (of the same variety) in different locations in the yard for a representative sample. Weigh the wet cone sample. Place cones in a food dehydrator at medium heat or in a microwave. When you think they are dry, take a cone out. Split it open. Is it still wet? One way to know cones are completely dry is to weigh them periodically through the drying process—when there is no more water they will weigh the same from one weight check to the next. When cones are dry, calculate dry matter by dividing dry weight by wet weight:

$$\text{dry weight} / \text{wet weight} \times 100 = \text{Percent dry matter}$$

Our UVM Extension Hop Harvest Moisture Calculator will calculate dry matter for you and will also calculate what the cones should weigh after harvest when dried to 8-10% moisture. See this link for more information: <https://www.uvm.edu/extension/agriculture/engineering/?Page=hopscale.html>. For an academic journal article on hop maturation, see “The Development of brewing quality characteristics in hops during maturation,” by M. Murphey and G. Probasco, (1996) Tech. Qrtly. Master Brewers Assoc. of the Americas, 33(3) 149-159.

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