

## Sampling Instructions

### Step 1: Establish Sampling Area(s)

The first step is to establish a sampling area, or 'plot' within your hop yard. You can choose 1, 2 or 3 different sampling areas that correspond to different varieties or different hop yard ages.

In order that we have a dataset that we can draw reasonable conclusions from, it's important that you select from one of the following varieties: **Cascade, Centennial, Chinook, Columbus, or Nugget**

We are also interested in how nutrient demands change as your hop yard matures. Thus, you can select sampling areas/plots that contrast hop establishment ages: **0-3 years or 4+ years**

**To summarize, you may submit up to 3 samples that combine different varieties and/or hop plant ages.**

1. Identify your sampling areas. Choose a sampling area that is as level and uniform as possible. Please use the supplied stakes to mark the four corners of your sampling plot. Your sampling area should encompass multiple plants (and rows if possible) so it is representative of your hopyard. If you have varieties that are mixed in the same rows (trellis), then be sure to delineate between varieties. (We don't want multiple varieties in the same sampling area). Typical sampling areas may contain 10 – 20 plants or more. If possible, don't include the end of the row in the sampling area, rather start 5-10 ft into the row. (This will reduce edge effects.) Please see illustration below for an example.
2. Prioritize and define your sampling areas if you submit multiple samples. We've had a great response rate from growers, which has led us to tweak our sampling approach and analysis budget. We will analyze all soils we receive, but will likely reduce planned crop analysis depending on the number of samples received. Therefore, we are asking that you prioritize and designate each sampling area as "1", "2" and "3". We will measure all things on sample "1" and may limit analysis on samples "2" and "3" as our budget necessitates. Prioritize "1" as the sampling area you care most about.
3. Mark your sampling areas with the provided stakes. Note the stakes are already numbered.
4. Please sketch your site layout in the notes section of the site management survey, so we have a better idea of your site and sampling area.

### Step 2: Collect Soil Sample(s)

Soil will be collected once per year for this study, in the spring preferably before applying fertilizers or amendments. We will have you collect 10 cores per sampling area and put them in the supplied bag. Note that there is also a sample ID card inside the bag – this should stay inside the bag and be returned with the sample. Please collect 0 – 8" soil samples using a soil probe to help maintain consistency during sampling. Sampling depth is very important and needs to be kept consistent. We have marked your probe at 8" already to help you determine proper depth. Soil should be sampled when moisture is good and soils are not saturated. Please do not sample/send water-logged soils.

1. Mentally map out a zigzag or random pattern through the sampling area (see illustration below). Soil cores should be pulled from no more than 18 – 24" from the hop row.

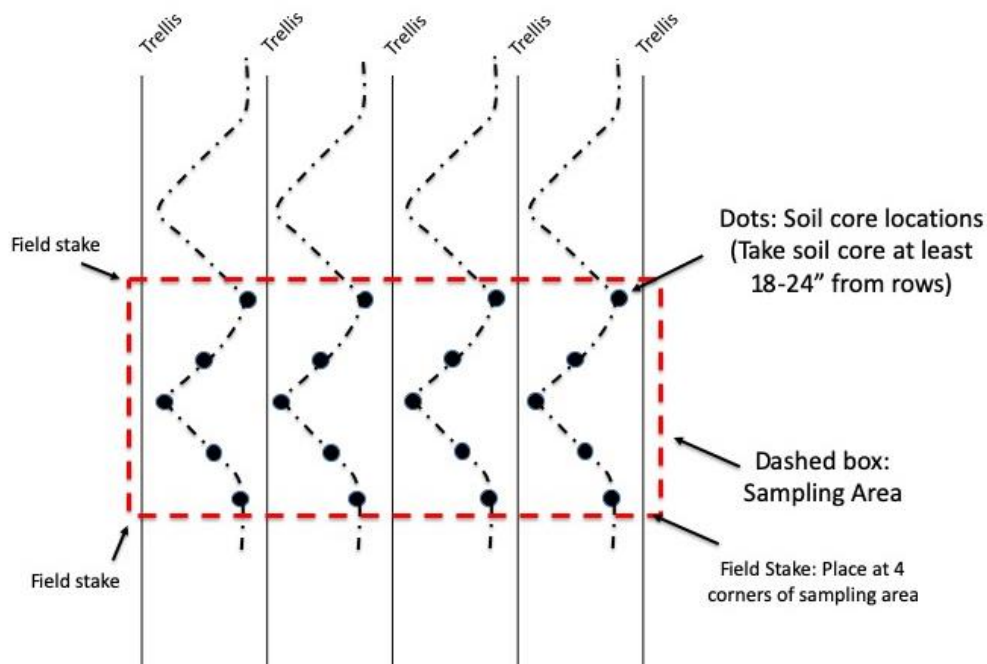
2. Push any surface residue aside so that you are only collecting soil. Push the probe straight into the soil until you hit the 8" mark on your probe. Pull the probe out of the ground, ensuring the soil core remains in the probe. If you don't have a full core, or it falls out, etc., feel free to discard the half core and resample. Empty the full 8" soil core into the labeled plastic bag. Repeat for another 9 samples following your zig-zag or random pattern.
3. Once you have sampled ten cores, tie the bag using an overhand knot and store in a cool, dark place until soil is shipped. Again, the small laminated sample ID card should be kept in the bag. If you don't ship within 24 hours, please store in refrigerator. Ideally soils would be sampled and shipped Mon-Weds, so we receive them before the weekend and they don't sit in a potentially warm shipping facility for the weekend.

### Step 3: Complete Your Site Management Survey

We have provided a management survey in this mailing. It's important that we have this information to make sense of the data from your site. Please fill out and submit with your soil.

### Step 4: Mail Back Your Materials

1. After collecting all soil cores, compile materials.
2. Go to nearest United States Post Office. Find a medium flat rate box (usually in customer prep area). Assemble the box, put the shipping label and return address on. (This step can be done ahead of sampling.)
3. Put soil bag(s) and management survey in the box. Protect with crumpled newspaper, paper, plastic bags, etc. if necessary.
4. Leave with post office for shipment.



**Example of Sampling Area Layout and Soil Sampling**