



# Citizen Science Project

## A Step-By-Step Guide to Flawless Sample Plots and Data Collection

Firstly, a big thank you from the Sonoma Biochar Initiative/SVHS Earth Club Team for being involved in this exciting initiative! Our primary goal is to investigate the impact that biochar has across a variety of Sonoma County geographical locations and soil types, and an essential part of the process is you and your sample plot data collection.

This document therefore provides detailed guidance on how to set up your sample plots, tend to your experimental plants, and collect the most accurate data to contribute to the results. Much of this information is taken from our UK partner's website, [www.bigbiocharexperiment.co.uk](http://www.bigbiocharexperiment.co.uk), however there are also extra details to make sure everything goes exactly as planned for you this growing season.

### Step One: Create Your Plots

The purpose of this experiment is to draw a comparison between the health and weight of plants grown in a plot with biochar and a plot without biochar. This means that almost everything about the plots being compared must be the same, except for the application of biochar to one of them, known as the 'treatment' plot. It is best to have the plots relatively close together, so that they receive similar amounts of sunlight and rain.

We use plots of one yard wide by one yard long, and you will need to mark which plot is your control and which is your treatment. Once you have set up your sample plots, please fill in Section A of the Data Sheet, using one sheet per plot. We ask that you not use particularly good quality or fertilized soil. The biochar results will be much clearer if you start with poorer, ordinary soil than with soil that has already been improved. It will also tell us more about how to improve local soils that need it. Remember, we are not looking for which of our participants gets the best results, rather the differences in results between each participant's two plots. These important differences will be more readily identified if you start with ordinary or even poor soil.

Please carefully record any application of fertilizer or compost that you have undertaken ahead of planting. Any treatments must be identical across the two plots.

### Step Two: Add the Biochar and Plant Your Crops

It is essential that during planting the following characteristics are exactly the same between plots:

- Type of seeds planted
- Spacing of the seeds within the plots
- Date of planting

Once you have decided on the characteristics above, you can begin the application process. Apply the entire contents of the Compost Only bag to one plot, by spreading it evenly across the surface of one plot, and mixing it in, about 6 inches deep. Apply the entire contents of the Compost/Biochar mix bag to the other plot in the same way. Instructions for biochar application can also be found on the packet.

After applying the compost and biochar mixes, begin the planting process, remembering to plant the seeds in exactly the same pattern in both plots. Make a small sign for each plot that identifies which one is Biochar + Compost and which one is Biochar Only. This will help with your photos to keep track through the season.

Once planting is complete, take a photo of the two plots and note the date. Please fill in Section B of your two Data Sheets. Keep these sheets in a safe place so that they're available when it comes to harvesting.

### Step Three: Tend to Your Crops

Up until now, everything that you have done will have been the same for each plot, other than your application of biochar to the treatment plot. Continue this identical treatment, with one important exception. When you are tending each plot as your plants grow, watering will be the one respect in which you must treat them differently. Please respond to them according to their needs. I.e., water according to the moisture in the soil, rather than always watering each plot exactly the same amount. You should also record the different amounts of water you apply to each plot in order to maintain proper soil moisture. Take photos of each plot at different stages of growth and note the date of each set.

### Step Four: Harvest Your Crops

Please harvest your plants from each plot whenever they are ready. This may mean that you harvest on different days for your treatment as compared to your control plot. However, you will need to harvest all your plants from one species at the same time in each plot (i.e. all your carrots from the control plot will be harvested and weighed at the same time). Make sure to make a note of your harvest date on your Data Sheet. Step Five will guide you through the process of data collection. Be sure to take your final photos of the plots prior to harvest and note the date.

### Step Five: Measuring Your Harvests

Each time you harvest one or more plants from one of your plots, please enter the following data into Section B of your data sheet:

- Date of Harvest
- Plant Species
- Aboveground and belowground weights – divide your harvested plant into the mass visible above the soil surface and that below. Weigh the aboveground and belowground portions separately using standard kitchen scales, and record the results in grams.
- Area Harvested – List only if different than the one yard square plots recommended
- Observations – please note down any observations that you make during the growth and harvesting process. This may include comparisons between plots, unusual observations that have been different compared to other years, or anything that you feel is important to describing the end result of your experiment.

### Step Six: Send Off Your Results!

Once your plants have been harvested and weighed, please complete your datasheets. You can email your results with attached photos to:

[info@sonomabiocharinitiative.org](mailto:info@sonomabiocharinitiative.org)

Or if you prefer to mail in printed results, collect your sheets into an envelope and return them to the following address:

**Sonoma Biochar Initiative**  
19201 Sonoma Highway #192  
Sonoma, CA 95476

Please write Citizen Science Project on the outside of the envelope and include your email address if you'd like us to contact you with the experimental results! If you have questions please contact Raymond Baltar at

[raymond@sonomabiocharinitiative.org](mailto:raymond@sonomabiocharinitiative.org).

For more information and to download your datasheets go to:

[sonomabiocharinitiative.org/citizenscience](http://sonomabiocharinitiative.org/citizenscience)

## Program Partners

