Produce Sampling Guide

with Optional Simultaneous Soil Sampling

In order for our results to be useful, we need to have a standardized way of taking all of our samples. We will be training volunteers in these standardized methods during volunteer orientations. Reach out to_____ for times and locations.

Overview:
We are taking samples from ***plants that were planted before the wildfires*** and which were exposed to smoke from the fires.

Optional: by sampling the ***sub-surface soil that surrounds the base of the plant***, we would be able to better assess whether the soil contained persistent pollutants from before the fire. If plants samples show high levels of contaminants, this could give us a better idea if it is from the smoke, or from previous contamination.
Your sampling coordinator will tell you if they have decided to include soil sampling.

Contents of this packet:

- Sampling Protocol
- Volunteer & Site Information Sheet
- Sampling Consent Form

SAMPLING PROTOCOL

Materials and Preparation for sampling:

- Volunteer Information Sheet
- Sampling Consent Form
- Powderless nitrile gloves
- Plastic knives (or harvest knife, cleaned with soap and water)
- Isopropyl Alcohol wipes
- Harvesting tray, cleaned with soap and water
- Shovel, spade or hand auger
- Bucket
- Ziploc bags, 1-Gallon (6 per variety, up to 24 for 4 varieties)
- Sharpie

Before Sampling:

- Fill out “Volunteer Sheet” with personal information for all volunteers
- Ask site point-person to sign the sampling consent form
- Give them a copy of the consent form, including contact information for sampling project coordinator
- Ask site manager about type of irrigation at the site (overhead, drip, furrow)
    - Record on volunteer sheet, write “unknown” if unknown
- Fill out the labels on the ziplock bags, including:
    - Site name
    - Date
    - Variety sample was taken from (lettuce, kale, collards, chard)
    - Sample number (1, 2, or 3)
    - Media (plant or soil)

Collect 3 Unwashed Plant Samples of each Variety:

- Put on nitrile gloves & clean equipment to avoid cross-contamination
    - The equipment used must be clean to prevent contaminating the samples. Clean your equipment each time you move plants.
    - If you touch the plant with your gloves, change gloves before next plant
- Choose plant to sample. Each sample will come from a different plant, ideally in a different area of the site.
- To collect leaves for sample:
    - Place plastic bag over leaves for sample - do not touch the leaves themselves

    - Cut stalk using plastic knife, gripping plant through the plastic bag. Cut near base, avoid soil.
    - Switch plastic knives after each use. If using a harvest knife, wipe with an alcohol wipe after each use.
- Each sample should consist of several leaves for us to have enough mass for testing!
    - For leaves larger than your head, take 2 leaves per sample.
    - Leaves smaller than your hand, but bigger than your head, take 3-4 leaves per sample.
    - For leaves smaller than your hand, take 5-8 leaves per sample.
- Seal bag (try to touch the sample as little as possible)
- Switch gloves before next sample
- ***Optional: Take a soil sample from the plant base (see below)***
    - OR: You can place a flag or other marker next to the plants that you harvested, and return afterwards to collect the soil samples. We want to get soil samples that correspond to the plant sample.
    - Either way: Make sure that soil sample number on the bag matches the plant sample number. Eg. If the plant you are sampling is “Chard #1”, make sure that the bag for the soil you sample is also labeled “Chard #1”
- Collect 3 samples of each of these plant types: kale, chard, collard, lettuce
    - Each of these 3 sample should come from a different plant

Optional: Collect Soil from the Base of Each Plant that was Sampled

- Put on nitrile gloves & clean equipment to avoid cross-contamination.
    - The equipment used must be clean to prevent contaminating the samples. Clean your equipment each time you move plants.
    - If you touch the soil with your gloves, change gloves before next plant
- For each plant, take soil from 3 holes dug within 12 inches of the sampled plant.
    - Note: The soil from all three holes will eventually go into the same sample bag. In other words, 1 bag = 1 plant’s soil. Therefore, at the very end, you will have as many soil samples as you do plant samples.
- For each of the three holes:
    - Remove the top 2 inches of soil, including vegetation, debris, or gravel that covers the soil
    - Collect 6-12 inches of soil using an auger, spade or shovel.
    - Empty the auger/shovel in a clean bucket.
- The bucket should now contain soil from all three holes. Mix together thoroughly using the auger, spade, or shovel.

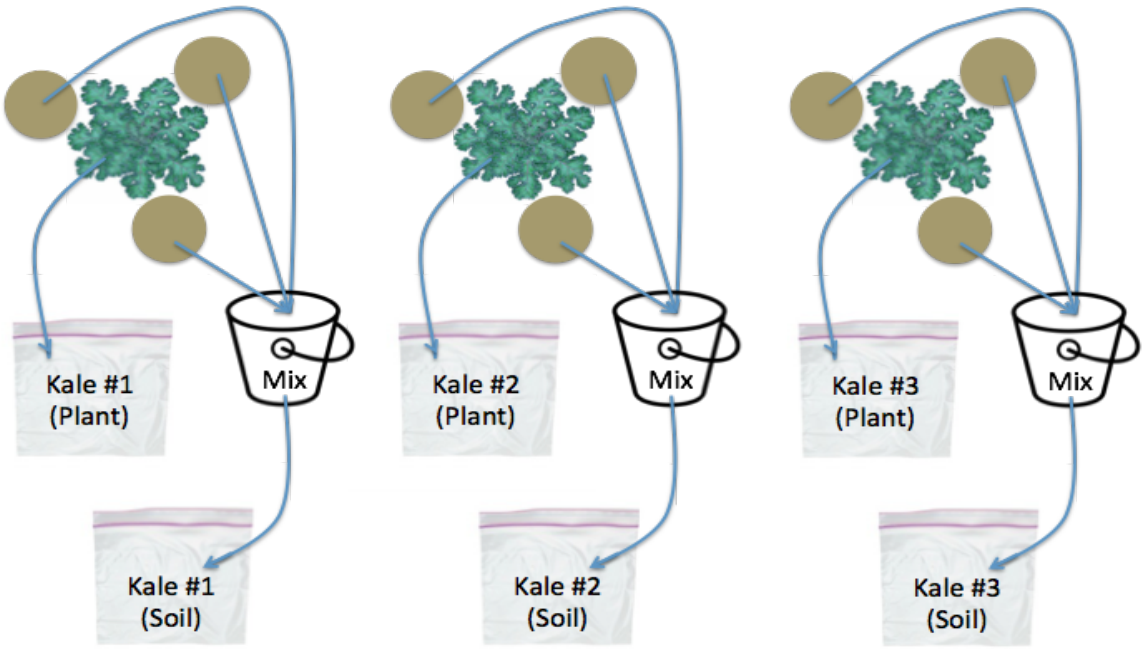
- Fill the sampling bag with the soil mixture. Try to obtain a fine, well-mixed sample (avoid including large clumps)
    - Double check that the soil sample number on the bag matches the plant sample number
- Clean bucket and spade with soap and water before moving on to the next plant, and switch gloves.

After Sampling:

- Place all samples in a cooler on ice and transport them to a freezer
- Finish end of “volunteer information sheet”

Sampling Design Summary

If you only had kale, you would end up with 3 sample bags for the plant tissue. If you are doing plant samples and soil samples, you would end up with 6 sample bags.



VOLUNTEER & SITE INFORMATION SHEET

When completed, please scan or take a picture of this sheet
and send it to the Sampling Coordination, preferred contact information.

Volunteer Information

Name: _____

Email: _____

Phone number: _____

If there are other volunteers with you, please record their names and contact information in the notes on the back of this sheet

Site Information

Site Name: _____

Address: _____

Type of Irrigation used at the site: _____

Sampling Information:

Date of sampling: _____

What time started sampling: _____

What time ended sampling: _____

How many samples were taken of each of these plant types and conditions:

	Kale	Chard	Collards	Lettuce
Plant				
Soil				

Storage Information:

What time samples put in freezer: _____

Where are the samples being stored? _____

_____

How long can they stay there?_____

Notes from Sampling: *Use this space to take notes on anything from your sampling time, including anything that differed from the standard method or did not go as planned. Feel free to include anything about unique conditions of your site that you think are worth noting (such as air quality conditions on testing day). Please note if you have any information about the particular varieties tested.*

When finished, please read and sign the following statement:
These samples were taken using the method described in the "volunteer instructions" given to me during orientation, and followed to the best of my ability. Any discrepancies or difficulties have been marked in the "notes" above.

Volunteer Signature Date

SAMPLING CONSENT FORM

Citizen Science Research on the Potential Health Impacts of Air Pollution on Local Produce in Sonoma County

For questions, please contact: Sampling Coordinator, Contact information

Please note that this is a community-initiated and community-driven citizen science project, and as such, this consent form has not gone through an Institutional Review Board (IRB) for approval. It was created by and for community members to help better provide information and gain clear consent for sampling.

Rationale:
Air quality in Sonoma county has been significantly impacted by the ongoing fires in the region. Local farms have played a very large and important role in food relief efforts immediately following the start of the fires and the mass evacuations. Many farmers, backyard gardeners, and others in the community are concerned about how the air pollution might be impacting the produce.

Community organizations are collaborating to collect samples from local farms of washed and unwashed produce (focusing on kale, collards, chard, and lettuce), in order to shed more light on these questions. This is a community-based and community-driven research effort. We are getting advising on this citizen science project from Professor Asa Bradman at University of California, Berkeley.

We will be examining:

- What, if any, air pollutants have been deposited on crops on local farms?
- Can these pollutants be washed off, or are they absorbed into plant tissue?
- How much of these air pollutants might be ingested by those eating local produce?

Based on these samples and lab results, we will be able to ask:

- What are the risks from ingestion of crops grown near recent fires?
- How do these risks compare to exposures due to inhalation?
- How does this risk compare to the risk of health impacts from conventionally-grown produce and processed foods, which are also highly exposed to a different set of chemical contaminants?
- What are the benefits of locally-grown fresh produce for the community resilience to this disaster?

Information for making informed consent:

We will be using your GPS location to mark your site on a map displaying all samples and their distance from the fires, but we will keep your farm's name and contact information confidential. We will continue to follow-up and engage closely with you to share our results, and to collaborate on any next steps or responses that are needed based on what we find. We are currently seeking funding to process the samples, but are moving forward with sampling despite funding because of the time-sensitive nature of this moment. It may be several months after sampling until we have findings available to share, and it is not yet clear how useful this information will be for advising local growers. We cannot promise that all sites that get sampled will be tested: it is likely that a subset of samples will be tested based on their proximity to the fires and other important features that make them more representative of the region. We encourage you to contact UC Cooperative Extension for your region for more comprehensive advice for the immediate future.

When finished, please read and sign the following statement:

I have read the above information about this citizen science research project, including information about the confidentiality and follow-up. I was provided with a copy of this consent form, including contact information for the lead community organizer. I consent to having plant tissues taken from my land and tested for the above stated purposes.

Name of farm or garden: _____

Name: _____

Title (if applicable): _____

Signature: _____

Date: _____