



Soil Testing on Farms and Gardens after Flooding

1. Soil testing can help identify human health risks associated with contaminants in soil, but it is not a way to guarantee there is no risk related to growing food in previously flooded soils.
2. What is "safe" is all about risk assessment. The guidance from federal and state regulators is that any edible parts of plants that were touched by flood waters, above or below ground, pose enough risk that they should not be consumed. This risk comes from potential contaminants that may have been in the water, given all the sites (septic systems, wastewater treatment, fuel tanks, etc.) that may be upstream from where food is grown.
3. A test that screens for heavy metals is a good place to start assessing flooded soil, as it is low cost, and if present, heavy metals do not naturally break down. Testing of a small number of Vermont produce farms after flooding in 2011 and 2023 did not find evidence of elevated metals levels, but it is advisable to test just in case.

The UVM Agricultural and Environmental Testing Lab charges \$10 for a heavy metals "screen" when added to a regular \$17 field soil test (\$27 total). The screen performed alone costs \$17. See <https://www.uvm.edu/extension/agricultural-and-environmental-testing-lab>. If elevated levels of any element are detected, a follow up test using a more rigorous extraction method should be performed. This test costs \$20 for the extraction plus \$10 per individual element (e.g. \$30 for lead only).

More information about testing for heavy metals on farms and gardens is in this fact sheet: <https://www.uvm.edu/sites/default/files/UVM-Extension-Cultivating-Healthy-Communities/soil-tests-heavy-metals.pdf>

4. It is advisable to perform a "regular" field soil test, for soil pH and plant nutrient content. Flooding may leach available nutrients from the soil, or in some cases, may deposit nutrient-rich sediment. In other words, don't assume that the soil has the same acidity and nutrient content as it did prior to flooding. See the link above to the UVM testing lab for submission forms for horticulture or forage crops recommendations.
5. Testing for biological contaminants is complicated and expensive and is therefore not recommended except in partnership with trained professionals. There are many different potential human pathogens (E. coli, listeria, salmonella, etc.) and sample collection and handling must be done correctly (hygienic, within specific timeframes and temperatures).

Biological contaminants are known to die off with time and drying out, so allowing soil to dry and waiting at least 30 days before planting is a key strategy to reduce risk. A very low risk strategy is to plant a cover crop for the remainder of the season and allow soil to "recover." Pathogen die off is assumed to be complete by waiting till next year to farm/garden.

6. Testing for fossil fuels (hydrocarbons) is not as complicated as biological testing, since there is a general screen called TPH-DRO. This is available from [Endyne Labs](#) with locations in Vermont, New Hampshire and New York. The cost is \$90 per sample. They have very specific sampling and handling protocols, so it is more complicated than a regular soil test for nutrients and pH.

This test is advisable if there is an odor, visual indication of fossil fuel contamination, or upstream sources of fossil fuels. A rigorous sampling protocol (multiple samples taken from multiple locations in a field, handled appropriately) increases confidence in the test results. Be sure to contact the lab prior to submitting samples and to include the [required submission forms](#).

7. For additional details on managing produce safety risks after a flood see this document: https://www.uvm.edu/vtvegandberry/factsheets/Flooded_Produce_FAQ.pdf

- Vern Grubinger, Extension Professor, University of Vermont 7/15/24