

## **Soil Management for Hurricane-Impacted Western NC**

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Hurricane Helene caused great devastation throughout much of western NC and farm fields were not spared. There are reports of impacts to fields in all landscape positions. This situation calls for a vigilant approach to soil and crop management that includes assessment on a field-by-field basis. Caution should be used in first visiting fields since crossovers or bridges to enter fields may have been compromised during the storm. Here are considerations to address potential issues.

Remove any visible debris from the field. Storm water is powerful and can push and float all kinds of debris into fields, including large objects such as cars. Debris may be buried and not noticed until future tillage operations.

For areas where erosion has occurred, significant topsoil is lost. If so, phosphorus, potassium, and significant micronutrients such as manganese, zinc and copper, may have been removed. If not being replaced by fill, soil sampling existing soil is strongly encouraged. Any fill for reconstruction purposes (grading, filling gullies) should be tested for general soil fertility prior to use. There are no state regulations on topsoil quality in NC, so it is buyer beware.

Sediment or soil eroding from other locations may be deposited over native soil in fields. This can potentially impact fertility. Since this deposition is often topsoil from other locations to floodplain areas, it may have high nutritive value. If predominantly sand has been deposited, it may have relatively low nutrient levels. Deposits may be seen visually over existing soil, but the depth of deposition cannot be accurately assessed. Use of a soil probe can be helpful. Probe down to see where the soil layer transitions into native soil and measure the depth of deposition. Use the following considerations in assessment and management.

- Maps can be drawn of depositions across a field as evaluated. Zones can possibly be created from this effort and may be helpful for future management decisions.
- 0 – 2 inches of deposition. Consider this to minimally impact drainage and fertility. It may be best to mix the overlying sediment with native soil with normal tillage using a disc or shallow tillage implement.
- 2 – 4 inches of deposition. Considerable deposition has occurred and may impact field management and crop production. If to 3 or 4 inches of soil overlies the field, consider soil sampling this depth for soil fertility, especially for pH, phosphorus, and potassium levels. While sampling, take a sample from the next 3- or 4-inch depth for comparison purposes.
- More than 4 inches of deposition. Great deposition has occurred. Soil sample the deposited layer for soil fertility and evaluate.

- Movement of soil such as grading and other soil management such as tillage in such situations should be carefully evaluated on a site-by-site basis. Note textural / soil type differences when evaluating. Layers that are very different in texture could potentially cause drainage issues. If fieldwork is planned, wait until the soil is dry enough to reduce compaction.
- Soil stabilization is one of the first steps for the recovery of impacted areas. If possible, consider planting a cover crop with rapid growth and an extensive root system. It will help stabilize the soil, reduce erosion and stimulate soil biological activity.

On soils that were properly limed before the flood, soil pH, soil calcium and magnesium levels should be sufficient on most soils. If soils have not been sampled in 3 or more years, soil testing is highly encouraged.

In flooding situations, there are often concerns over pollutants in soils. Given the widespread origin of floodwaters, it is difficult to assess contamination of soils since various unknown chemicals can be associated with these events. If there are known chemicals of concern at a given location, use of a commercial environmental lab that offers analysis for contaminants is an option but can be expensive. Soil fertility labs do not offer this service. To initially evaluate crop growth impacts, plants such as wheat and soybeans can be grown in soil collected from fields of concern in a greenhouse setting to bioassay for materials toxic to plant growth.

Growers should keep records of expenses incurred as related to restoration including debris removal. Documentation with pictures is encouraged. If there is reason to believe insurance claims can be made with any loss, contact your agent.

The following are resources that can provide further help.

Soil Testing: Agronomic Division Soil Testing- NCDA&CS:

<https://www.ncagr.gov/divisions/agronomic-services/soil-testing>

Regional Agronomists: Agronomic Division Field Services- NCDA&CS:

<https://www.ncagr.gov/divisions/agronomic-services/field-services>

NC Cooperative Extension Service: <https://www.ces.ncsu.edu/local-county-center/>

NC Soil and Water Conservation- NCDA&CS: <https://www.ncagr.gov/divisions/soil-water-conservation> (For guidance on installation and remediation of conservation practices).

NCSU-Agricultural Risk Management Brief: “In the Aftermath of a Hurricane Helene: What do Farmers with Crop Insurance need to do?” [https://cals.ncsu.edu/agricultural-and-resource-economics/wp-content/uploads/sites/46/2024/07/AgPolicy\\_Brief\\_2017\\_09\\_13\\_hurricane.pdf](https://cals.ncsu.edu/agricultural-and-resource-economics/wp-content/uploads/sites/46/2024/07/AgPolicy_Brief_2017_09_13_hurricane.pdf)