

Rain is a Good Thing?
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So for this year many areas of South Dakota have been blessed with lots of rain. These rains bring what plants need to photosynthesize but can also bring some plant problems. Saturated soils can become a very nasty place for plant roots. Healthy soil is made up of 50% mineral, 45% pore space, and 5% organic matter. The pore space is filled with equal amounts of water and air. When soils become saturated the air portion is forced out and water fills all the pores in the soil. This lack of oxygen causes two problems; first, plant roots suffocate and secondly, nasty microorganisms start to consume the organic matter and release gases like methane, ethanol, and hydrogen sulfide.

It is interesting to note that trees respond to extended flooding with symptoms very similar to drought stress. Leaves wilt, turn yellow, and eventually fall off. This early leaf drop can cause the tree to go dormant until conditions are more favorable for growth. Trees become more susceptible to disease and insect attack following flooded conditions.

Pythium, *Armillaria*, and *Phytophthora* are diseases that are normally in soil but during saturated conditions these diseases become big problems. Stem boring insects will use this period after flooding to gain entry into a stressed tree causing further damage or even other diseases to become established. The removal of debris left by receding floodwaters is important to reduce breeding areas for insects.

Soil problems can persist long after the flood. Erosion during flooded time can remove soil from the root zone, leaving roots exposed. In retrospect of this, silt can be deposited on the soil surface, leaving roots unable to breath. Even as little as an inch of soil on the roots of trees can cause severe decline and even death. Soil pH can even be altered in response to flooding. Acid soils can have an increase in pH while alkaline soils may have a reduction in pH. This change can lead to nutrient deficiency symptoms like iron chlorosis or even a tying up of nitrogen as those microbes get busy, leading to nitrogen deficiency.

Different species of trees can tolerate flooding differently. That should not be too much of a surprise. Trees like green and black ash, cottonwood, boxelder, white poplar, willows, and burr oak can tolerate being flooded for over three weeks. American linden, quacking aspen, and black hills spruce, one to three weeks and black walnut, crabapple, and Colorado spruce only up to seven days.

Lawns that have been flooded will most likely have to be reseeded depending on how long the water was present. Wait until you are able to walk on the area. Work it to a depth of three inches level and reseed or sod.

Sources: Joe Zeleznik, NDSU Extension Forester

If you have additional questions about saturated soils or other horticultural issues feel free to call on me at 605-394-2188 or email to ricky.abrahamson@sdstate.edu.