

Bare Dirt: What You Don't Want on Your Land

There is a lot more bare dirt out there than there used to be. Because of last year's drought (which may or may not be continuing, we just don't know yet), there was very little new grass growth. This means for the most part, the only grass on the landscape is growth from 2010, and it is decaying and disintegrating, leaving the soil bare where it used to be covered with green grass leaves and/or dead grass litter.

There are several problems caused by having bare ground. First, not having any vegetation covering the soil means that raindrops fall directly on the ground, with nothing to break their fall. It is estimated that raindrops hit the ground at about 20 miles per hour. I don't know that that is true, and it probably depends on the size of the raindrops, but I do know that they hit the ground hard enough to dislodge small particles of soil. I have demonstrated this by making a "raincloud" out of a five gallon bucket with tiny holes in the bottom, held only about 6 feet above a patch of bare ground and watched the dirt particles dislodge and bounce up to adhere to a white foam board and turn it quite brown.

There are two consequences of raindrops dislodging soil particles and neither is good. First, the small soil particles are dislodged and become suspended in the water and thus they can then be carried downhill with the water flow. This is the first step in erosion. The second step in erosion is that the soil particles suspended in the flowing water give the water stream a much more erosive force to abrade other soil particles from the surface and thus carry off even more soil.

Furthermore, as water with suspended solids flows over the land, it is in patches of bare soil where the most erosion takes place. Under normal conditions, native grass and the dead leaf litter associated with it trap and slow down the water, causing it to drop out the suspended solids, thus preventing further erosion. But with the absence of the usual grass covering and more bare ground, more bare soil is exposed and there is less grass to slow the process.

Another aspect of not having vegetation to break the raindrop's fall is that the small particles that are dislodged can, as discussed above, become suspended and carried away, or some of them can fall into the small surface pores of the soil, plugging up the pores and slowing down the rate of water infiltration into the soil. I discussed the difference in porosity of bare ground versus ground under native grass roots in an earlier column.

The general results of what I have just described are probably known to everyone. We know that when construction lays bare the soil on a hillside, severe erosion can take place before enough grass grows to hold the soil, thus the practice of placing straw or fiber mats on the slope to protect the soil and hold it until grass can grow.

Bare ground causes another problem. Bare ground that is not shaded by vegetation soaks up a lot more heat from the sun, and in the summer can be easily 20 degrees hotter than soil under grass or other vegetation. In the summer this can make the ground hot enough to kill many of the soil microorganisms that are essential for healthy soil. Furthermore, the hotter the soil, the more moisture is lost from the soil by evaporation, and this becomes a cycle as the drier the soil, the hotter it gets.

In the summer, bare ground can get so dry and hot that the small feeder roots of some trees and other plants can die, obviously with negative consequences for the plants.

It is true that forb seeds germinate and sprout better on bare ground than in dense grass cover, but that includes less desirable forbs such as thistles and some of our prickly weeds as well as desirable wildflowers.

We can all keep our fingers crossed that we get enough spring rains to encourage some grass growth and cover some of those bare spots. Otherwise, continued drought will just make for more bare ground and conditions that will be harder for vegetation to recover from when we do get rain.

Until next time...

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