

International Year of Soils

AGRI-VIEWS

by Chuck Otte, Geary County Extension Agent

The United Nations, a little over a year ago, declared that 2015 shall be the International Year of Soils. I'm sure that some people either laughed out loud or shook their heads in disgust at the waste of time and effort to make a fuss over dirt. I applaud the United Nations for taking the time to call attention to the importance of soil!

Too many people treat soil like dirt. Dirt is the residue that is tracked into our homes and offices. Soil is a living breathing complex organism. Soil is composed mass and void. The void is the space between the soil particles. It is either composed of air or water. Right now those voids are probably carrying quite a bit of water. The mass component is going to be the mineral portion of the soil or it's going to be the organic matter. The mineral portion is comprised of sand, silt and clay. The proportion of each of these three determine if the soil is classified as a silty clay loam or a sandy loam or one of twelve different soil classifications. The organic matter portion is that part that is carbon based often in some level of decomposition.

In good healthy soils the mass and void are each about half of the soil volume. In compacted soils, much of the void has been pressed out. Compacted soils are not healthy soils because of their inability to have oxygen or water in adequate quantities to support healthy roots, not to mention the inability of roots to penetrate the compacted soil!

Sandy soils have the ability to take in water very quickly, but it also passes out of the root zone equally quickly. Clay soils are very slow to take in water, but once it's in the soil it is held there for plants to use. The tiny little clay particles are also very important as they serve as a site where nutrients (fertilizers) can attach and stay available for the plants to use. A nice mix of sand, silt and clay is necessary to provide a nice blend of water infiltration ability, water holding ability and nutrient holding ability. These soil solids amount to about 45% of the soil volume.

We are now down to the final 5% of the soil volume and it may be the most critical, albeit the smallest proportion. This is the organic matter which includes soil organisms. The decaying plant parts, what most people think of with organic matter, is a very crucial component. It releases nutrients into the soil, essentially recycling them back to where they came from. Organic matter also helps provide a buffer between the clay particles providing more pore space for air and water.

But there's still another portion of that organic matter that many folks totally forget: the organisms of the soil. Sure, there are earthworms and other insects and invertebrates in the soil, but think even smaller than that. Think of soil bacteria, fungi, even algae and actinomycetes. An area that has experienced extreme heat from fire or a volcano, is often barren and plantless. The reason is that the soil microbes are gone. It takes time for the soil to be re-inoculated, if you will, with these creatures. Over time, once these become re-established, the soil will again become productive.

We abuse our soils on a regular basis. We work them when they are wet. We put on inappropriate amounts of fertilizer or the wrong fertilizers. We add the wrong soil amendments or we add sand when we should be adding organic matter. We simply don't understand our soils and we aren't listening to them. The soil IS the basis for all our food and without well tended and healthy soils, we are all in trouble, and hungry!