Soil Capping and Crusting

What Is Soil Capping?

Soil capping or crusting refers to the creation of a sealed “cap” on the top layer of the soil. This often results from heavy rain pounding the soil - destroying its structure leading to a compaction of the soil surface. Once this cap develops on top of the soil, the soil surface becomes somewhat impenetrable to infiltration by water and air and makes passage by microbes difficult.

How Does Capping Occur?

Capping can be seen in fields and other areas of bare land that display a cracked texture with an apparent “crust” on the surface. Capping/crusting can be the result of soil compaction due to extended periods of soil erosion caused by repeated plowing or tillage paired with the impact of rain. Overgrazing or bare ground exposure can also leave soils vulnerable to capping, however it is often more prevalent in high clay soils and high magnesium soils. These soils, sometimes known as “gumbo”, are particularly susceptible to crusting because soil particles in these areas are much smaller and more plate-like, making it easier for them to settle closely together, forming a tight cap over the soil. This can be seen when flood waters subside, leaving behind heavily crusted, often cracking soils.

How To Mitigate Soil Capping

The good news is that in most cases, this capping and crusting can be mitigated through regenerative practices. The act of “armoring” the soil using plant cover and crop residues can help alleviate this issue by protecting soil surfaces and preventing the problem from getting worse. Incorporating cover crops, extending the growing season and increasing soil biology can provide a more long term solution; helping to break down existing crusts/caps and preventing their reoccurrence.

The Truth About Capping

There can be a great deal of confusion regarding the term “capping”. Don’t get confused! An internet search will turn up a variety of unrelated topics including: capping as a process used in the remediation of old landfill sites to prevent the release of toxins capping of an abandoned well to seal out impurities from entering the aquifer capping as in setting an upper limit to the amount of nutrients allowable as inputs.