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Assess Your Soil Moisture Profile

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Assess Your Soil Moisture Profile

Abstract

It is welcome news to see the potential recovery from [last year's drought](#) as the soil profile is fully recharged in most areas in the state. The moisture recharge of the soil profile is affected by many factors, such as soil texture, type of tillage, residue cover, soil slope, grass filter strips and many other conservation measures that enhance moisture recharge. The timing of rain events during early spring can cause significant damage, especially if soil temperature is low (frozen soils), leading to significant erosion and surface runoff. Therefore, monitoring soil moisture is important.

Keywords

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Assess Your Soil Moisture Profile

By Mahdi Al-Kaisi, Department of Agronomy

It is welcome news to see the potential recovery from [last year's drought](#) as the soil profile is fully recharged in most areas in the state. The moisture recharge of the soil profile is affected by many factors, such as soil texture, type of tillage, residue cover, soil slope, grass filter strips and many other conservation measures that enhance moisture recharge. The timing of rain events during early spring can cause significant damage, especially if soil temperature is low (frozen soils), leading to significant erosion and surface runoff. Therefore, monitoring soil moisture is important.

To determine the soil moisture status in a soil profile you can use two methods. One quick method is by monitoring your drainage tile flow. If the tile is running with considerable flow that is an indication the soil is saturated and the excess water is moving through the soil profile by what we call "gravity flow." The second method is to determine exactly how much water is held in the soil. To do this you must know your soil texture at different depths at least down to five feet in one-foot increments and the soil moisture holding capacity at each foot. (You can obtain this information from the soil survey or by contacting the NRCS office in your area). After you obtain this information, add up the moisture available for the top five feet to [determine the total amount of water in your soil profile](#).

Most soils in Iowa have fine to moderate soil texture and the amount of water held at [field capacity](#) will be approximately 10-12 inches of water for the top five feet. If this is true, it provides an excellent start for the growing season for both corn and soybean. Generally, corn needs approximately 24 inches of available water for the entire season. So at this point in time, if our soil profiles are at field capacity, we have almost 40-50 percent of the water needed for corn production. The other 50 percent or so must be provided through additional rain that hopefully will be spread evenly over the growing season. This is especially true during the high demand period for [water use by the crop](#) from June through August. However, the timing of rain during the growing season is as critical as the amount of rain needed for crop production.

This good moisture amounts we have received over the past few weeks brings some challenges we need to be aware of in terms of managing soil and planting to minimize potential damage and eventually [negative impact on yield](#). Maximizing potential precipitation capture during subsequent rain events is highly important and is affected by how we manage crop residue and the intensity of tillage. Slowing water movement across the field through conservation practices, such as grass filter strips and water ways, is a critical way of increasing water recharge and potentially mitigating any drought spells that may occur during the growing season.

Monitoring field conditions and soil moisture recharge will help assess the effectiveness of certain tillage and other management practices in achieving potential yield and improvement of soil quality. Keeping a good record of your field conditions and operations early in the growing season may help

explain positive or negative outcomes of the growing season for future management decisions/adjustments.

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