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Soil moisture conditions in late spring 2001

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Abstract
This season's soil moisture status varies a great deal from one area to another, but is generally wet across much of the state. Most areas have received at least some rainfall and the wet soil has kept producers out of fields in the southeastern and south central parts of the state. For current weather reports in your area, go to the Iowa State University Extension website. The recent rainfall throughout the state has had a mixed impact on soil moisture.

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The recent rainfall throughout the state has had a mixed impact on soil moisture. Current moisture conditions show a good moisture profile recharge for the top 5 feet, which is very encouraging in terms of soil moisture availability for the rest of the season. This level of moisture availability minimizes the impact of limited soil moisture stress usually experienced with dry conditions and is highly beneficial for crop development throughout the growing season.

Optimum soil moisture levels for crops

The optimum soil moisture for any soil is at field capacity, where water is available to the plant at the maximum level. Changes in soil moisture above or below field capacity have a negative impact on crop growth, nutrient status, and water availability.

Under the high moisture conditions that some fields are experiencing (where soil moisture is above field capacity or saturation), plant growth can slow down due to low oxygen availability in the root zone and loss of essential nutrients such as nitrogen due to leaching and denitrification.

In addition, surface runoff is a concern with wet conditions. Significant erosion could take place, leading to sediment and nutrient losses. However, under dry conditions (where soil moisture is below field capacity), the impact is limited to water availability to the crop and potential yield loss due to water stress.

Managing the field

Soil moisture is greatly affected by what happens in the field. Soil moisture availability or the history of moisture conditions for a particular field can provide a guide on how to plan and manage fields for implementing crop rotations, using alternative crops, changing plant populations and row spacing, and adjusting tillage practices to overcome adverse effects of moisture conditions.

Conservation practices play a significant role in managing diverse soil moisture conditions.

One of the many benefits of soil conservation practices is moisture conservation. Crop residue along with no-till systems can minimize soil moisture loss from the soil's surface and maximize soil moisture storage.

The absence or limitations of soil disturbance in no-till also allows for the enhancement of beneficial soil physical properties such as increased infiltration rate, improvement of bulk density, and reduction of surface runoff and soil erosion.

In addition, wet soil conditions induce soil compaction from farm equipment. Therefore, producers should evaluate field conditions and respond accordingly. In some cases, light cultivation to reduce weed pressure due to high soil moisture availability may be needed.

Right now is also a good time to evaluate fields to see whether drainage systems are working properly, especially for poorly drained and fine-textured soils. Keeping records on field moisture conditions can help in planning drainage system improvements, if needed. Keeping field records on soil moisture conditions is as important as recording information about soil fertility, insects, and management practices. These records help explain yield variability across the field.

However, under the current prevailing wet conditions, the best choice producers can make is to stay away from the field--avoid traffic on wet soil to reduce soil compaction.

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