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Avoid Unnecessary Tillage in Wet Soil Areas

Mahdi Al-Kaisi

Iowa State University, malkaisi@iastate.edu

H. Mark Hanna

Iowa State University, hmhanna@iastate.edu

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Abstract

The unavoidable and extreme wet conditions we are experiencing this year present soil management challenges, especially in low and poorly drained fields where a significant portion of the field is under water. The flooding conditions and super saturated soils are causing significant changes in physical, chemical, and biological properties of the soil. The immediate impact the wet conditions have is the prevention and delay in planting wet areas of the fields.

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Avoid Unnecessary Tillage in Wet Soil Areas

By Mahdi Al-Kaisi, Department of Agronomy and Mark Hanna, Department of Agricultural and BioSystems Engineering

The unavoidable and extreme wet conditions we are experiencing this year present soil management challenges, especially in low and poorly drained fields where a significant portion of the field is under water. The flooding conditions and super saturated soils are causing significant changes in physical, chemical, and biological properties of the soil. The immediate impact the wet conditions have is the prevention and delay in planting wet areas of the fields.

There may be an attempt to till such areas when the soil appears to be dry, but even though the soil surface looks dry there will be a significant amount of moisture below the top two inches. Tilling the soil will do more harm than good by compacting soil and creating conditions that will effect root development and induced soil erosion.

Farmers planning late-season planting in wet areas should avoid tillage before planting in most instances. Sun and warm air temperatures at this time of year effectively dry the surface as well or better than tillage in many instances. Tillage in wet, heavy soils tends to produce clods and destroys residue cover needed for erosion protection from early summer rainfall.

Emphasis should be concentrated in the remaining window of time on the planting operation, making planter adjustments as needed to compensate for wet soil conditions. Check for uniform seed depth and lighten pressure on closing wheels and depth-gauging wheels to only the level necessary to maintain desired seed depth and seed-to-soil contact. Be sure to evaluate yield potential, environmental conditions, and other factors in the farm business when contemplating a planting in late June.

How this soil saturation will influence next growing season

The long-term damages to soil quality in areas where significant flooding problems have taken place need to be considered during the next season planning. Several changes will take place when soil is under saturated conditions for an extended period of time and can carry over to the next season.

One of these potential changes is the change in biological health of the soil, especially if the soil is left unplanted. This affects the health of the microbial community, which is essential to nutrient cycling. The existence of plants in such areas will help enhance the development of microbial community, even though planting late will have significant yield reduction.

The other main issue farmers need to consider for the long-term impact of flooded areas is to carefully evaluate the status of nutrients next season by taking soil samples from the flooded areas. Assess the content of major nutrients such as N, P, and K and correct the potential deficiencies of these nutrients by applying the proper rates for the next season.

More Resources

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The flooded fields need to be managed carefully. Avoid any extensive tillage that may compound the problem by creating soil compaction that will reduce water penetration and increase potential soil erosion. The lessons of such wet conditions are to evaluate the field conditions and assess the needs for implementing management practices that will minimize such impact in the future. It will be timely to evaluate the need for installing tile drains or grass water ways to help remove excess water from fields in the future.

Mark Hanna is an extension agricultural engineer in agricultural and biosystems engineering with responsibilities in field machinery. Mahdi Al-Kaisi is an associate professor in agronomy with research and extension responsibilities in soil management and environmental soil science

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