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Excess rain water creates challenges in Illinois

University of Illinois Extension Farm Business Management and Marketing Educator Kevin Brooks has used his years of experience in the private sector to deal with farm drainage problems. Brooks states, "Solving farm drainage issues in an environmentally friendly manner is a lot like putting together a puzzle. Diminishing the Dead Zone in the Gulf of Mexico and protecting our drinking water is of utmost concern. Many communities, such as Peoria, rely on surface water for human water consumption."

Ponded Farm Field in Illinois

By nature, much of the soil dedicated to row crops in Illinois is slow to drain excess water in the form of rain from the root zones of growing crops. This slow soil drainage problem occurs in Fulton, Mason, Peoria, and Tazewell counties. The excess water takes up pore spaces in soil, which reduces oxygen intake of crops, causing plant suffocation and decreased yields.

Saturated soils are subject to compaction, which leads to ponds in fields following heavy rains. Field drainage tile can remove much of the water, but the existing drainage systems have large areas that are inadequate to do so correctly. This results in reduced yields. In addition, due to yield reduction, unused nitrogen and phosphorus fertilizer added to soils to provide essential elements for growing crops moves into our surface and groundwater supplies.

Brooks explains, "Compacted farm fields can have areas where water accumulates and cannot run off the field or percolate down through the soil. Like mudpies created by children, the soil structure becomes smashed together by ponded water and heavy farm equipment. When the soil dries out, the pressure creates a tough layer, which prevents future rainfall from moving through the soil and into drainage tiles. The result is the formation of large ponds right in the field."

Soil compaction causes reduced pore space, which reduces plant uptake of applied fertilizer in nitrogen and phosphorus nutrients. Roots are restricted stunting plant growth and reducing nutrient uptake.

A well-drained farm field allows for plant uptake of more nutrients. Though it is impossible to eliminate all contamination, applying fertilizer in the proper amounts to be used by the plants and helping to ensure the crop uses that fertilizer is a key component. When heavy rains occur, there will be some nutrient loss into our water resources. The key is working to minimize the amount of nutrient loss.

Brooks is working on a Farm Drainage Series of articles, which measures yield gain by implementing improvised drainage and looking at effective alternative solutions.

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