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Investment Insight

What is Drainage Water Management (DWM)?

Dr. Laura Christianson, along with Paul Davidson, Richard Cooke, and Janith Chandrosoma at the University of Illinois is exploring managing drainage water at different times of the crop cycle.

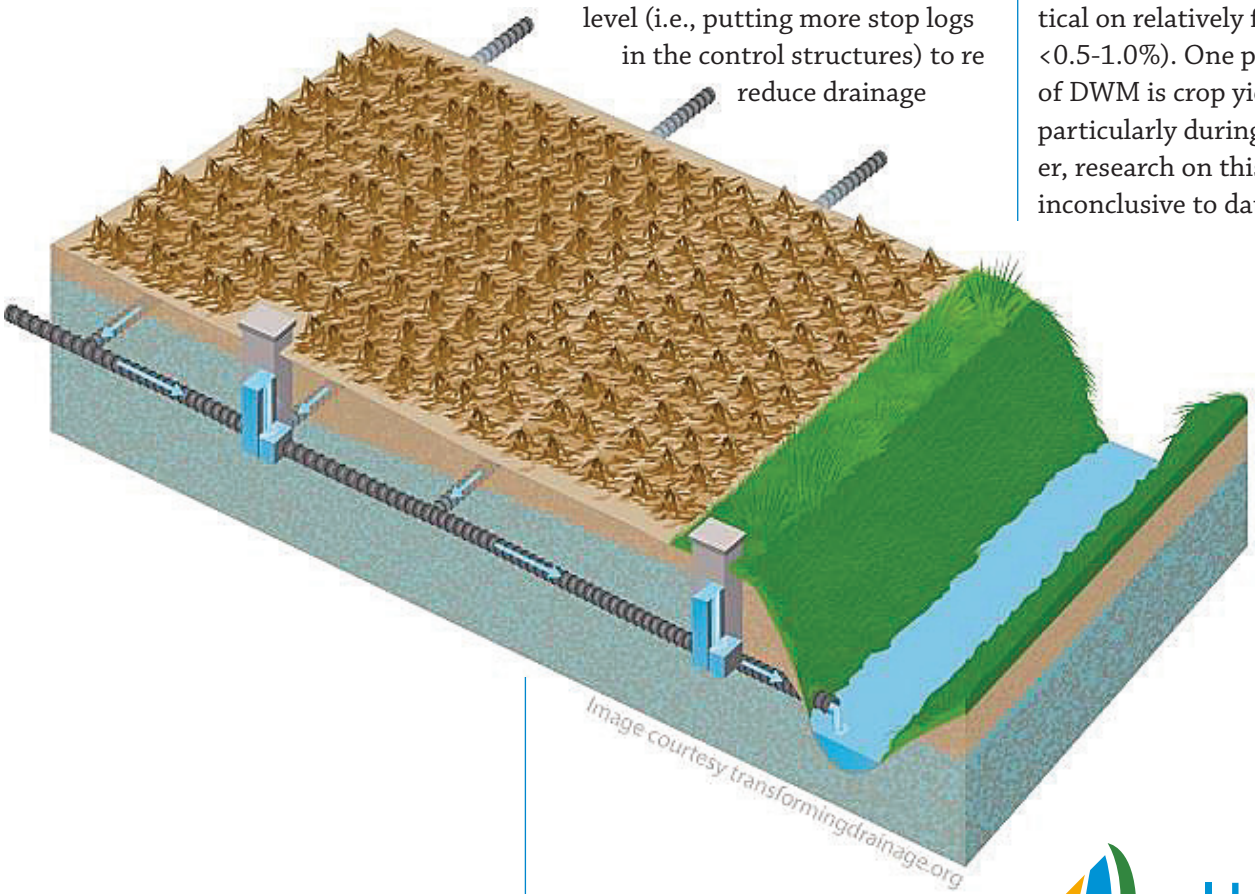
Drainage water management (DWM; AKA "controlled drainage"), consists of the use of adjustable control structures typically placed along drainage system mains that allow the outlet level of the tile to be adjusted. Because the water table must rise above the outlet level before drainage will occur, shallower water table depths occur, holding more water in the soil profile. Raising the outlet level during portions of the year when drainage is less critical reduces the overall amount of drainage. The underlying idea behind DWM for water quality improvement is the golden rule of drainage: "Drain only what is necessary for good trafficability and crop growth – and not a drop more."

Management of the control structures is key to this practice.

Suggested management involves:

1. After harvest: Raising the outlet level (i.e., putting more stop logs in the control structures) to reduce drainage and nitrate loss during the non-growing season.
2. Prior to planting in the spring: Lowering the outlet (i.e., removing stop logs from the control structures) to improve trafficability and to allow field operations.
3. After spring field operations: Raising the outlet (to within an acceptable limit) to potentially store water from early season rains for use later in the growing season.

One structure is recommended for every one to two foot change in field elevation, thus DWM is most practical on relatively flat fields (slopes <0.5-1.0%). One potential benefit of DWM is crop yield enhancement, particularly during dry years. However, research on this has been fairly inconclusive to date.



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