

**No-Till Notes:**  
**Irrigation Efficiency**

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Recently I was visiting with a neighbor about center pivots and their efficiency in watering the crops. The neighbor was concerned the center pivots he had didn't distribute the water in the field as evenly as he would like. After our conversation I got to thinking about a slide Dwayne Beck had shown during one of his presentations where the water distribution on the center pivot field was shown to vary throughout the field.

Dwayne's slide showed dramatic differences in the field. Using infrared type photography there were places in the field which highlighted where water was insufficient and the corn crop was suffering as a result, and other portions of the field where the crop had more moisture than it needed and water was actually leaving the field due to runoff. Dwayne attributed this difference due to the fact the water in the field was not infiltrating into the soil and was moving around due to different slopes in the field. As a result, portions of the field were dry and stressing crop development while other areas of the field had more moisture than the crop needed. This field was under a conventional tillage system. I wonder if this is similar to my neighbor's field where the water isn't infiltrating into the soil evenly due to poor infiltration and is moving to different portions of the field due to slopes in the field. The problem my neighbor has may not be with the center pivot's water distribution. The real culprit may be poor water infiltration and the water is moving to different areas in the field.

With a no till crop production system we are able to get water past the soil surface and into the soil profile. High amounts of residue protect the aggregates on the soil surface. The high amounts of residue break up the moisture droplets before they hit the soil surface, thus protecting the soil surface aggregates. Increased soil aggregation due to increased soil organic matter allows the moisture to flow through the soil profile. This increase in porosity also allows for air to escape as the moisture moves into the soil. This improved soil porosity also promotes increased water holding capacity in the soil. This all results in a more even water distribution throughout the field. With a more uniform distribution of water the crop develops throughout the field more uniformly, resulting in improved yields.

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