

PRECISION IRRIGATION TO IMPROVE WATER USE EFFICIENCY

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ABSTRACT

Efficient water use is the key to sustainable management of water resources. Over irrigating is wasteful and can lead to leaching of fertilizers and other potential pollutants into both underground and surface water supplies, whereas under irrigation leads to reduced yields. The spatial and temporal characterization of crop water consumption is important for efficient management of water resources and allows water delivery to match agricultural demands.

Research has shown the usefulness of remotely sensed data to obtain accurate information on land surface processes and conditions. These studies have demonstrated that quantitative assessment of the soil-vegetation-atmosphere-transfer processes can lead to a better understanding of the relationships between crop growth and water management. However, remotely sensed data remain underutilized by practicing water resource managers.

The objective of this study was to characterize the spatial and temporal variations in water uptake by corn plants in a typical irrigated Delaware corn field. Datasets collected during the growing season included electromagnetic conductivity, remote sensing, soil texture profiles, and soil moisture.