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Water.Use.of.Flood_Irrigated.Residential.Lawns¡

More than 25,000 residences in the Phoenix metro area receive flood irrigation services provided by the Salt River Project. However, the efficiency of this historical watering practice for maintaining residential lawns has not been evaluated before. This project aims to quantify how much water flood irrigated residential lawns actually use and how flood irrigation affects environmental conditions. In November 2025, we made in.situ. measurements of evapotranspiration (ET), soil water content, grass temperature, and grass height one day before and two days after flood irrigation on turfgrass lawns dominated by Bermuda grass at three residential properties.

Lawn ET varied within and across residential sites, ranging from approximately 0.3 mm d^{-1} to 1.2 mm d^{-1} in Gilbert and from approximately 0.7 mm d^{-1} to 1.8 mm d^{-1} in Mesa. Notably, lawn ET did not significantly change after irrigation, possibly due to negative feedbacks associated with elevated atmospheric humidity and decreased temperature due to evaporative cooling. We observed that after irrigation soil water content nearly doubled (from 0.24 ± 0.09 m^3 m^{-3} to 0.40 ± 0.05 m^3 m^{-3}), grass temperature decreased by 4°C (from 26°C to 22°C), and grass height increased by 9%. These results provide the first insight into water use dynamics of flood-irrigated residential lawns, helping develop future research strategies and determine water conservation pathways.

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