






4R's of Irrigation Management

The “4R” framework—using the **Right source**, **Right rate**, **Right time**, and **Right place**—has long guided fertilizer management to improve profitability and sustainability. Backed by major agricultural organizations and supported by government incentives, it’s widely used across the U.S. and beyond. While often applied in fertigation, the same principles have seen less attention in irrigation management. Applying the 4Rs to water use offers a valuable way to improve efficiency and resilience, especially in drought-prone regions.

	<p>Select water sources (groundwater, surface water) based on legal rights, reliability, quality (e.g., salinity), and drought impacts. Explore water leasing or share purchases carefully, ensuring legal validity and cost-effectiveness. Some states are piloting leasing programs to increase flexibility in drought.</p>	<p>Right Source</p>	<p>Adjust irrigation amounts to match crop needs and avoid overapplication. Essential steps include accurate water measurement, soil moisture monitoring, and using weather or satellite-based tools. Variable rate irrigation technology (especially in pivots) can tailor application across field zones for greater efficiency.</p> 
<p>Schedule irrigation to align with crop growth and minimize losses. Less frequent, deeper watering can improve root development. Use soil sensors or ET-based models for timing. Avoid irrigating during high winds and optimize scheduling within system and water availability limits.</p> 	<p>Right Time</p>	<p>Right Place</p>	<p>Focus on uniform water application and efficient delivery to the root zone. Evaluate your irrigation system type—technologies like LESA, LEPA, and MDI can significantly improve efficiency. Prioritize high-yield or high-efficiency areas when water is limited and use tools like the Crop Water Allocator or Idaho ET Planner for complex allocation decisions.</p> 

View Full Factsheet: <https://extension.usu.edu/crops/research/4rs-of-irrigation-management>