



## Pivotal Moments in Water Quality and Agricultural Yield

By Susan Seacrest

The spray fills the air and gently settles again. The regular pumping sound and motion of a center pivot in action is often the heartbeat of

benefits also mean impacts-on the water, on the land, and to the financial bottom line.

These impacts are difficult to discern through a fast moving

car window. For example, most people don't realize center pivots are not the same and pivots are actually designed to fit individual field, crop, and climate variations. Length of reach, height of towers, nozzle patterns, speed, and size of drops are just some of the ways in which pivots vary. Sprinkler packages can make a big difference in how much water is

are high tech—hanging low or high depending on the crop—and spraying uniform water patterns to match crop water requirements. Newer pivot models are available with dragging hoses that minimize water lost to the air. Newer pivots are so efficient that many surface water irrigators are converting their gated pipe to pivots. Other improvements are also contributing to meeting water efficiency goals. For example, if an unexpected rainstorm hits in the middle of the night it's now possible to turn off the pivot via phone. An official with the Nebraska Department of Natural Resources points out that without the use of new water efficient pivots, some river basins would have to do without irrigation altogether. Pivots systems can also directly assist in reducing contaminants. Roy Spalding, University of Nebraska-Lincoln hydro-chemist has researched the effect of air exposure to the quality of the water spraying from pivot nozzles and hoses. Spalding's work demonstrated that individual pivots,

*Written for "Rainmakers: A Photographic Story of Center Pivots"*



a successful farming operation. A center pivot in action nourishes thirsty crops and also minimizes much of the drudgery associated with irrigation. However, these

sprinkled and the correct speed can mean the difference between too much water in one place and just the right amount for use by the root zone. Sprinkler heads today

especially those that expose water to air, act like small pump and treat groundwater remediation systems. In addition, Spalding and others have also proved that crops can utilize the nitrates in the water as a contributor to the overall fertilizer need, thus reducing the need for additional fertilizer application.

Serious risks remain—one risk to groundwater quality involves pivots the practice of using pivots to dispose of wastewater. This practice has been implemented in connection with large scale animal production facilities, municipalities, and other facilities that produce a liquid waste stream. As in agricultural crop production, much of the

This risk is reduced with the use of Nutrient Management Planning. This practice involves soil sampling, effluent monitoring, cropping

commitment by pivot manufacturers to work with customers so that the inherent efficiencies within the technology can be used to



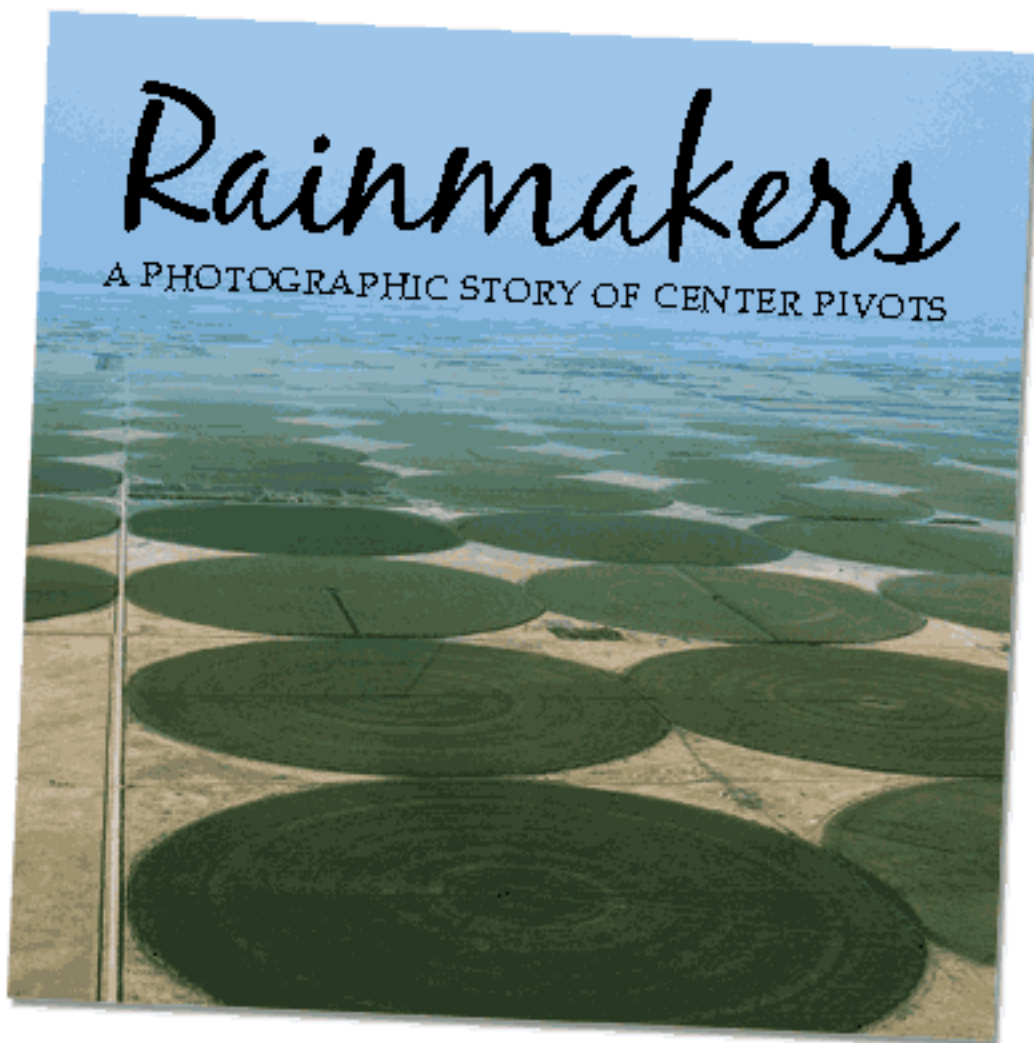
environmental impact depends on the choices of managers and local conditions.

patterns, and geography are all important factors in determining the impact of wastewater disposal. In addition, in the US, states and federal programs are increasingly requiring nutrient planning as part of permitting for animal production facilities or as a prerequisite for receiving federal funds.

Thoughtful and deliberate management of center pivot practices combined with finely calibrated technology can address these issues effectively. The remaining challenge: creating well educated and dedicated stewards of our soils and water. It's a challenge that needs to be addressed through local education programs for producers and a

maximize environmental benefit. Responsible use and innovation, based on science and education are vitally important to protecting groundwater regardless of the practice or technology involved.

Pivots are a powerful technology and as such carry a powerful responsibility for careful use. Urban and rural residents benefit from the affordable food provided by the bounty of production agriculture. As a result, everyone shares the responsibility for the careful use of center pivot technology, chemicals, and land. Our future economic and environmental vitality depends on it.



*"Rainmakers: A Photographic Story of Center Pivots" is available for purchase directly from The Groundwater Foundation and at speciality bookstores nationwide.*



The Groundwater Foundation is a nonprofit organization dedicated to educating and motivating people to care for and about groundwater. Contact us at 1-800-858-4844, [info@groundwater.org](mailto:info@groundwater.org) or visit us online at [www.groundwater.org](http://www.groundwater.org).

