

EMERGING TECHNOLOGIES SHOWCASE WEBINAR: LOW ENERGY PRECISION APPLICATION (LEPA)

Troy Peters, WSU Extension Irrigation Specialist
Richard Stroh, Bonneville Power Administration

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Question and Answer Session

Q: Is the 18 gallons of water per KWH using hydroelectric GONE, or just needed to turn the turbine?

A: That water is just to turn the turbine. The beauty of hydroelectric is that it's not a consumptive use. It's very green.

Q: Please comment on relative pump energy use for LEPA vs. mid-level spray on a typical center pivot. I understand LEPA uses significantly lower energy for the pressure but the higher volume requires more energy.

A: LEPA actually uses less water, not a higher volume of water, so energy required for the pivots is reduced. For example, a conventional quarter-mile pivot would see water use drop by 10 to 15% with a LEPA system. This is because less water is lost to evaporation as the water travels from the sprinkler nozzle to the ground. The pressure is also able to be reduced from, for example, 20 PSI pressure regulators to 6 PSI pressure regulators on the pivots. All in all, if you're pumping just from a surface water supply, a canal or river, you're going to be able to save about 30% on energy consumption. That's a combination of water savings (less water is pumped) and pressure savings.

In other words, your irrigation application efficiency with LEPA is much higher, so you need less water to meet the same crop demands.

Q: In the Southeast, we have a high clay content so the infiltration rate is low. Could LEPA be used by making multiple applications spread over the course of day rather than a single high volume application?

A: The answer is yes. One strategy to move water into slow-infiltration soils is to speed the pivot up so you can apply less water per pass and the pivots would need to come around more frequently. However there's a limit because of how fast the wheels can turn. Pivots are usually quite long and most take about 30 hours to get all the way around. The timing can be sped up, but there is a limit to how much faster.

There has been discussion about the possibility of spreading the water out with LEPA using a drag hose, which would be added to the end of the drop hose. Other possibilities have been tried, including attaching drip tubing or tape to the end of each hose that would be dragged along the ground.