

The 10 Commandments of Irrigation for Dairymen

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- 1. *Stop guessing when to run the water, and when to shut it off.*** Gather and use some sort of data.
 - Use look-and-feel (good), weather-based ET estimates (better), or soil moisture sensors (best).
 - More water isn't always better. This can result in water-logging, and/or water losses to deep percolation.
 - Don't use the same schedule all season. The water requirements of your crops vary drastically throughout the season.

- 2. *Move sprinklers closer to the ground if possible.***
 - LEPA/LESA will really pay if you are water limited (deficit irrigating).
 - Only wrap hoses when going into corn if you have water uniformity problems without doing it.

- 3. *Hand-lines and wheel lines: Use the SKIP instead of TAXI or WIPE set movement patterns.***
 - Skip = Irrigate using every-other riser, and hit the skipped risers on the way back. You will have quicker recovery from stress following an alfalfa harvest, fewer issues with water losses to deep percolation (over-irrigation), and less stress in between irrigation events. It also makes about the same amount of work every move.
 - Taxi = Irrigate every riser going down, and “taxi” the pipe empty all the way back to the beginning to start again.
 - Wipe = Irrigate every riser going down, and irrigate every riser coming back like a windshield wiper. This is the most inefficient and ineffective method. It applies too much water at the ends of the field (water losses due to deep percolation) and it takes so long in between irrigations that there is water stress.

- 4. *Pivots: Slow them down until you start to see runoff*** somewhere (anywhere), then speed it up slightly.
 - Applying more water per pass of a pivot is more efficient than applying many, more frequent irrigations.
 - Using sprinklers with a larger wetted diameter, boombacks, or draping hoses over the outside of truss rods can increase infiltration.

5. *Till less.*

- No-till, strip till, or limited tillage saves water, diesel, and preserves the soil structure, organic matter content, and soil moisture.

6. *Schedule time and budget money to maintain and repair your system.*

- Unplug nozzles and/or regulators.
- Replace sprinklers, regulators, nozzles, drain plugs, gaskets, etc.
- Fix leaks.
- Service the pump (grease it, replace packing, replace the wear ring every few years).

7. *Don't allow water to freeze inside your system.*

- An expensive mistake!

8. *Get your system designed by somebody who knows what they are doing (CID).*

- You will pay, and pay, and pay for a bad irrigation design, either in lost potential (yield and quality) or higher energy costs.

9. *Pay attention to nozzle sizes!*

- Irrigation uniformity is important to profitability. Water flow rate from each sprinkler is very dependent on the nozzle size. Don't just toss a replacement sprinkler on that has a different nozzle size.

10. *Steep slopes or elevation differences in your field... need to use pressure regulators or flow control nozzles.*

- Irrigation uniformity is important to profitability. Varying pressures due to elevation differences results in varying flow rates or different amounts of water to different areas of the field.

Bonus:

- Variable rate irrigation systems probably won't pay for themselves when growing forages except in pretty rare circumstances.
- Dairy producers sometimes need to be deliberately inefficient (applying effluent to a field when the soil is mostly full of water, no crop, or early or late in the season when crops aren't using much water). High pressure, big-gun sprinklers are best at being inefficient (about 60%), and have large nozzles that won't plug.
- Variable frequency drives VFD's on your pumps are worth looking into. Especially if you have dual systems for applying effluent (high pressure system for big guns, and low pressure for pivots), or pivots and wheel lines on the same pump, etc.
- If you have a pivot on a very flat field with little elevation difference (maximum of 10-15 ft), and a constant and reliable incoming pressure, you probably don't need pressure regulators on your pivot. Because this condition is kind of rare, they will be automatically designed with them. If you have a flat field like this, you can ask that the system be designed without them. (Save you about \$1,000).

