Center Pivot Operation and Evaluation Field Checks

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This is meant as a simple guide to new irrigators on what to check for to ensure efficient center pivot and linear move irrigation system operation for maximum economic productivity and water effectiveness. *Please* spend some time to read the pivot safety checklist!

**DRIVE-BY**

- All sprinklers are operating? Any plugged nozzles?
- Pressure and flow rate of each sprinkler spray pattern looks good?
- Are Rotators rotating? Are iWobs wobbling? Are spinners spinning?
- End gun operating over the angles as per the sprinkler chart?
- Is there surface runoff? Water ponding in low spots?
  - Can be due to leaks. If runoff is everywhere, consider speeding the pivot up (applying less water per pass).
  - Visual observation of any non-uniform water application areas.
  - Water stressed areas? Stripes in field?

**WEEKLY**

- *If using surface water and filter*, check the filters (pressure loss in acceptable range).
- *If you have a flow meter*, is the weekly flow total close to expectations?
- *If flow rate or well drawdown changes* during the season, update the percent timer on panel based on current well flow rates
- *If using aerial imagery* to identify uniformity issues (patterns that indicate a problem)
  - Rings indicate nozzle/leak issues?
  - Spoking? It may occur at light application depths, if low pressure setting in the panel is incorrect or if the pump is surging.
  - Bank of nozzles lost because of a failed controller in VRI?

**Systems with Telemetry or Remote Operation**

- Pressure at design pressure or higher?
- Pivot location where expected?
- End-gun state is as expected
- Aux ports state is as expected
- Pivot travel speed based on telemetry is as expected for the applied water depth
- Last time it communicated seems reasonable?

**ANNUAL**

*Start of season*

- Can you find the current sprinkler chart?
- *If you have a flow meter*. Does the flow rate match the sprinkler chart?
- *If part-circle or wiper pivot*: Bumper bars in place and functional?
- Has the pivot point bearing been greased?
With the power off (Are you sure it’s off?), check for loose connections or loose cord grips in the control panel and tower boxes. Do contactors show signs of arcing?

- Electrical grounding conductors solidly connected? (both to the ground and the power supply ground wire) Clean or tighten as required.
- Check the tire pressure. Check wheel lug nut torque.
- Check for leaks at tower joints, goosenecks, and at sprinkler and hose couplings
- Does the operating pressure match the design pressure (from sprinkler chart)?
- Check the oil level in the gear boxes (will need a wrench to open fill plug). Is there water in the oil? If so, drain the water.
- Are the drive shaft U-joint inserts still in good condition?
- Are the drive shaft safety shields in place?
- Gearbox noise indicating wear or problems?
- Is the filter for the hydraulic tubes for hydro-valves actuators clean?
- Does the pivot alignment look straight when it is operating?
- Rodent damage to wiring?
- Walk the entire system while it is operating to look closely for problems.
- If you have remote-control or telemetry, is it still operational and communicating?
  - System starts/stops on command
- Is it time to replace the sprinkler nozzles, sprinklers, or regulators?
  - Because of non-uniform sprinkler operation
  - Sprinkler spray pattern isn’t uniform
  - Usually recommended every 5-10 years depending on water quality.

End of season
- Prepare water use report
- Hours of operation for the season seem reasonable?
- Will you need to budget for winter maintenance?
- Was the system flushed? Are the sand traps clean?
- Is the pivot and connections to the well completely drained of water?
- Is the power off?

EVERY FIVE YEARS
- Do a pumping plant performance audit
- Seriously consider replacing the sprinkler package. Does the package need redesigning or updating?
- Compare installed nozzles to sprinkler chart.
- Are pressure regulators working as expected or need to be replaced?
- Do pressure gauges and flow meters need replacement?
- Change the gearbox oil at the interval recommended by the manufacturer.
- Check structural bolts, chains, and nuts. Are they still tight?
- Inspect the tower drive motor contactors and replace if necessary.
- Do a pumping plant performance audit
- Electrician do an inspection for electrical safety
- Catch can test to check application uniformity