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