



Irrigation Fact Sheet
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Dated 4-17

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Irrigation Inspection and Repair

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**PURDUE
EXTENSION**
Making a Difference

Running through a checklist of inspections and repairs for each irrigation system now greatly improves the chance of being able to start irrigating the day the crop needs it.

Irrigation can often aid in improving germination, crop emergence, herbicide activation and reduce Nitrogen valorization. All of the potential benefits to using irrigation early in the cropping season are dependent on the readiness of the irrigation system. Inspecting and performing necessary repairs now greatly increases the chance the system will be ready to water when you need it.

Here are a few suggestions of system inspection and repair areas to concentrate on:

Check and test all control and power boxes – With all power off, open each electric box and blow it out with compressed air. Avoid leaving any dust or debris in the box or connections. Seal holes that rodents, snakes or insects may use to gain access to the box. A small application of an insecticide with a long residual time to the bottom of the box can reduce ant and spider problems in the future. Make sure disconnects function and repair or replace faulty equipment. Also make sure all connections are tight and all connection surfaces are free of corrosion. Many electrical disconnects or pivot control boxes meet an early demise from electrified mouse nest explosion in the box.

Turn on power supply, using proper safety protocol – If you generate your own power, start the engine and bring it up to proper RPMs for the generator. Check voltage at each pump and pivot in the system. Inspect the grounding wire from terminal to rods. Some irrigated crop contracts have requirements for testing of the grounding system and maximum resistance. Make a list of needed repairs for your electrician to follow-up on and get him started before the traditional over committed first days of irrigation season.

Service pump engines and inspect all fluid levels – Pumps run for hours without operator presence, and even small oil or coolant leaks can result in damage. Inspect belts, batteries and recharge system. Look carefully for rodent damage and insect nests that may result in malfunction later. Inspect pump murphy switches or safety shut-down systems or install them if you do not have them. Adding low oil and high temperature shut downs can avoid burning up your engine.

Measure static water levels in wells – Many of your neighbors may be concerned that irrigation water use is permanently lowering the water table. Documenting the static water level in your well and surrounding wells before you start pumping each year allows a comparison from beginning to end of pumping season. A late fall reading will show the recovery levels. If you do not have the equipment to measure the static water level of your well, consider an annual well maintenance company inspection or a single visit from a well driller to inspect equipment and measure water levels.

Start the well pump – Slowly fill water supply lines allowing air to escape from ends of lines. With the distribution system running furthest from the water source, inspect all the remaining outlets for freeze damage, missing frost plugs and leaks. Compare last year's records with your start-up reading for pressure and flow.

Rock traps, screens and filters - Remove debris, sand and small stones from rock traps. Clean screens and filters often used in conjunction with end guns and cornering arms. Rock traps are often removed for the winter to prevent freeze damage from water condensation in pipe and accumulating in trap. If rock traps were removed for the winter and bird guards are not put in place inspect openings for nests.

System leaks and bad sprinklers – Start the system up and pressurize it. Look for leaks and bad sprinklers, create a list of units in need of attention. Remember to check risers and other irrigation pipe areas that may need attention. Small leaks can saturate the soil and weaken force blocks used to hold underground pipe and plugs in place. Create a list of pressure and flow meter readings (if available) for each pumping station and pivot point. Knowing the starting pressure can help diagnose in-season irrigation problems in the future.

Check center pivot sprinkler patterns – With water up to pressure, check sprinkler patterns. This can be easily done on bare earth or when crops are small. Look for sprinklers that have smaller wetted patterns than others. Plugs, no-turns, and watering patterns would indicate damage or obstruction. Check pressure at the pivot point and the last sprinkler and compare to the sprinkler chart, pressure that differs from the chart by more than 10% indicates the need for attention.

Check solid set system coverage patterns – Coverage from a solid set system is dependent on each individual sprinkler. Inspect the coverage after bringing the system to designed pressure. Visual inspection of each sprinkler while running will often find the major problems. Comparing pressure reading from sprinklers furthest from the source to the design specification will often indicate hidden leaks or under supplied systems. The following link provides information conducting a water application uniformity evaluation for an overhead sprinkler irrigation system in the nursery

<http://msue.anr.msu.edu/uploads/files/6-4FactSheetTemplateOverhead%20Sprinkler.pdf>

Cornering arm hydro valves – Use of hydro valves is the most common method for controlling the irrigation water from individual sprinklers on cornering arms and Z arms that are in their folded back position. If valves are stuck open you are grossly overwatering end-rows or other field edges where the arm is not deployed. Valves that are stuck closed will result in under watering corners of the field. While the machine is running, inspect sprinklers in a corner area with the arm fully deployed to make sure all sprinklers come on and in an area with the arm fully folded to see if all valves shut off.

End gun adjustments – Make sure you are covering every foot of planted ground possible and are not watering areas that are not cropped. Fine adjustments now can improve coverage area or keep you out of trouble if irrigation water ends up where it should not be. Avoid going overboard fine tuning, higher surface and ground water levels in the spring can give a little bigger coverage area in the spring that they will late summer for some systems.

Check irrigation tires – Check air pressure in each pivot tire. Refill to 20 pounds or the recommended level. Note tires that were near flat, and return a week later to see if they leaked. Expect tires to lose two or three pounds pressure each year if not re-aired annually.

Service center drive and final drives on pivots – Gearboxes should be checked annually. First drain condensation water from the bottom of the box and then refill with recommended gear lube.

Tree trimming and brush control – Check fence row height compared to pivot overhangs and cut or spray to eliminate damage to the center pivot. Ohio Extensions Brush Controls bulletin “**Relative Effectiveness of Herbicides Commonly Used to Control Woody Vegetation**” is an excellent resource.

<https://woodlandstewards.osu.edu/sites/woodlands/files/imce/0051%20herbicide%20relative%20effectiveness.pdf>

Inspect bridge crossings and wheel paths through rough and low areas – Wheel tracks will only deepen as the season progresses. Identify potential problem areas now to allow time to build-up, fill, level and permanently seed problem areas. In some situations larger tires or track system may need to be added to allow the pivot to float over wet spots.

Chemigation valve and fertigation pump power supply – Many producers are investigating chemigation/fertigation as an option. Adding the equipment now makes it a far more viable option in the future. Make sure there is a functional chemigation valve on each water supply feeding into the system. Install interlocked injection pump power source. This will operate only when the irrigation water pump is on avoiding undiluted fertilizer from ever going into the irrigation system. For a diesel engine this may be as simple as running the injection pump from a v-belt off of the engine shaft.

Stop barricades – Pivots that make partial circles often use stop barricades at the edge of the water area. Check stops for integrity, making sure that the height is still appropriate for the machine's turnoff mechanism. Manually operate the turn off arms on the pivot to make sure that they are functioning. Newer style stop barricades are designed to catch and spin the tire against the barricade allowing the safety system to shut the pivot down as a backup safety system.