



water spouts

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In this issue:

- Upcoming 2018 NDSU Field Days and Tours
- Welcome to the 46th Year of Water Spouts
- North Dakota Water Education Foundation – Summer Water Tours
- Updated Publication on Soil Compatibility for Irrigation
- Irrigation System Maintenance and Recordkeeping
- Starting the Irrigation System: A Checklist

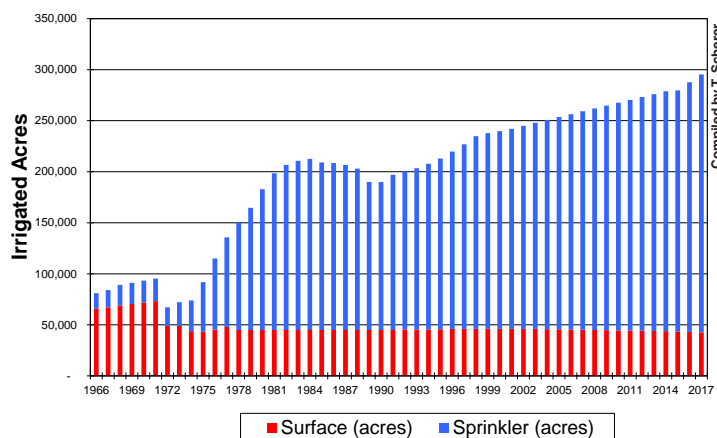
Upcoming 2018 NDSU Field Days and Tours

Carrington REC, Crop Mgmt. School	June 14	701-652-2951
Streeter – Central Grasslands REC	July 9	701-424-3606
Hettinger REC	July 10	701-567-4323
Dickinson REC	July 11	701-483-2348
Williston REC	July 11	701-774-4315
Nesson Valley Irrigation Research Site	July 12	701-774-4315
Casselon (Agronomy Seed Farm)	July 16	701-347-4743
Carrington REC	July 17	701-652-2951
North Central REC (Minot)	July 18	701-857-7679
Langdon REC (8 a.m. to noon)	July 19	701-256-2582
Oakes Irrigation Research Site	Aug. 14	701-742-2744

Welcome to the 46th Year of Water Spouts

Of the 17 western states that come under the purview of the U.S. Bureau of Reclamation, North Dakota has the fewest irrigated acres. However, since 1990, private investment by farmers slowly has increased the irrigated acres every year, as the chart shows.

Irrigated Acreage in North Dakota



Surface and subsurface soil moisture appears to be adequate throughout most of the state. How do I know? I checked the North Dakota Agricultural Weather Network (NDAWN) website at <https://ndawn.ndsu.nodak.edu/soil-moisture.html>.

Soil moisture sensors have been installed at various depths at 21 of the NDAWN stations. Most stations show good soil moisture at about the 3-foot depth, but some in the western part of North Dakota show lower soil moisture at depth. Beginning the irrigation season with good topsoil moisture (top 2 feet) is normal in most parts of the state.

Have a great growing season, and remember to take care of your irrigation system.

Tom Scherer, 701-231-7239

NDSU Extension Agricultural Engineer

Thomas.Scherer@ndsu.edu

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EXTENSION

North Dakota Water Education Foundation – Summer Water Tours

Clean water is important for the development of North Dakota, and the best way to learn about water projects is to see them in person via a tour.

These tours provide a firsthand look at North Dakota's critical water issues. Registration is \$20 per person and includes tour transportation, meals, refreshments, informational materials and a one-year subscription to *North Dakota Water* magazine.

Tours offered are:

- Managing the "Mighty" Mouse – June 13
- Devils Lake Solutions in Action – June 21
- Missouri River Expedition – June 27
- Water and Oil Development Tour – July 11
- **Nesson Valley Irrigation Tour** – July 12
- Fargo-Moorhead Flood and Water Management Tour – Aug. 1
- Missouri River Development Tour – Aug. 17

For more information about each tour and to register, go to www.ndwater.com/programs and click on "Summer Water Tours" on the left-hand menu or send a check to NDWEF, PO Box 2254, Bismarck, ND 58502. Please indicate which tour or tours you want to attend and include the number of people. For more information, give us a call or send an email.

North Dakota Water Education Foundation,
701-223-8332, Fax: 701-223-4645
jellingson@ndwater.net

Updated Publication on Soil Compatibility for Irrigation

When considering installing an irrigation system on a piece of land, determining soil and water compatibility is critical to achieve high, sustainable yields without damaging the soil. The NDSU Extension publication "Compatibility of North Dakota Soils for Irrigation" (AE1637) has been updated and revised. Almost 350 soil series have been classified in the state.

This publication is a first step to help current and prospective irrigators understand the principles behind the irrigability of soils in North Dakota. This publication should be used in combination with the soil survey information for the land to be irrigated and a water quality test on the proposed water source.

The named soil series generally fall into three categories: nonirrigable, conditional and irrigable. All soils series have been assigned to one of 29 irrigability groups. Soil series in groups 1 to 7 are irrigable, 8 to 22 are conditionally irrigable and 23 to 29 are not irrigable.

Soil surveys of every county in North Dakota have been completed and documented. Many counties have printed copies, but official, up-to-date soil survey information can be found only on the internet at www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/.

Here is how to use the publication. First, use the Web Soil Survey to determine the different soil series in the field to be irrigated. Next, look up the soil series in AE1637 to find its irrigability group. Then look up the characteristics for that group. Some of the characteristics listed are drainage classification, infiltration rate, water-holding capacity by 1-foot increments and irrigation water quality.

Printed copies of AE1637 can be obtained from any county Extension office or a pdf copy is available online at www.ag.ndsu.edu/publications/crops/compatibility-of-north-dakota-soils-for-irrigation.

Irrigation System Maintenance and Recordkeeping

Irrigation equipment is no different than other crop production equipment. If not properly cared for, it may fail at the time it is needed most.

Fixing small problems is less expensive than fixing a major breakdown in July or August. Repairs should be made early in the season when the crop water demands are low (before June 15). If maintenance was performed on the irrigation system last fall, then early season maintenance should require only checking to see that no damage occurred during the winter.

Spring maintenance should include checking the operation of the pump, motor (or engine), electrical control boxes, piping and distribution system (sprinkler system, gated pipe, etc.). Rodents, dirt and water do the most damage to electrical components.

If you don't feel confident performing routine irrigation system maintenance or you don't have the time, most irrigation dealers offer an annual service contract.

Check Electrical Motors, Phase Converters and Control Panels

Before starting your irrigation system for the first time, check the condition of the control panels and pumping equipment. To begin, make sure the electrical power is **locked in the OFF position** at the main disconnection point.

You always should use extreme caution when working around electrical power boxes and machinery. If you are not sure the power is off, use a voltmeter to measure and make sure it is disconnected.

Open all electrical covers and examine for dirt, rodent damage, leaking door seals, and loose or damaged wires, and ensure that the bare copper grounding wire is connected to the panel box and the grounding rod properly. **For center pivots, making sure the pivot point is grounded properly is very important.** Last year, a person was electrocuted due to a broken ground connection at a pivot point (in another state).

Examine any relays with exposed contacts. Moisture condensation may cause corrosion that will make the contacts remain open or stick together. Be sure all switches operate freely. If moisture is present, remove it and leave the box open until it dries.

Rodents often cause significant damage to electrical components. If you see evidence of rodent damage, find the entry hole and plug it.

Electric motors and phase converters, including enclosed variable-frequency drives (VFD), are especially susceptible to dust and moisture accumulation. High winds can deposit snow and fine dust inside presumably sealed boxes. Phase converters, especially the static type, should be cleaned thoroughly with compressed air, and use a high-quality electrical contact cleaner on relay contacts.

Check the Piping and Sprinkler Systems

Visually inspect the piping between the pump and the distribution system (center pivots, lateral moves, big guns or gated pipe). Check all the air release valves to make sure they work. Replace broken pressure gauges. Check all valves to make sure they open and close properly.

Check the owners manual for specific maintenance items. If for some reason you do not have an operators manual, get one from a dealer or the manufacturer.

If the sprinkler system is relatively new, determine what service is required to keep the warranty in effect. Also, determine any other service the manufacturer suggests before the system is put into operation each year.

On center pivots, check the gearbox lubricant level on each tower drive, drain off moisture and refill with approved lubricant or change the lubricant if discolored. Lubricate all fittings, joints, bearings and the pivot point.

Check the inflation pressure on all tires. Improper inflation can cause tire breakdown and also may place stress on the drive system. Open the collector ring cover and inspect the brushes and contacts. The sprinkler heads should be checked thoroughly for damage.

Finally, remove the end cap from the center pivot. For electric and oil drive center pivots and lateral moves, start the machine and run dry. For the individual tower boxes, do the following:

- Do a visual check, clean any contact corrosion with high-quality sandpaper or emery cloth, and apply cleaner.
- Freeze/thaw cycles cause electrical contacts to loosen. Check and tighten all connection screws. Repair or replace any damaged or broken wires.

Now that you have completed the dry walk-through of the irrigation system, start the pump and put some water through the system. **However, don't stand in front of the main electrical panel when starting the system for the first time. Stand to the side of the panel.**

Check the Pump and Well Performance

Assuming you have performed a dry walk-through of the irrigation system, turn on the pump. Listen for any unusual sounds. When the system comes up to pressure, if your flow meter works, record the flow rate. Compare this with the pump design rate and past recordings. If the flow rate and pressure are the same as in previous years, you can assume the pump and well are in good condition.

Tom Scherer, 701-231-7239

NDSU Extension Agricultural Engineer

Thomas.Scherer@ndsu.edu



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This publication will be made available in alternative formats
for people with disabilities upon request, 701-231-7881.

Starting the Irrigation System: A Checklist

- ☐ **Make sure the main breaker is turned off, then open and check all electric control panels and motor openings for damage, especially from rodents, before starting the irrigation system.**
- ☐ **Check to make sure the pivot point is grounded properly.**
- ☐ If possible, measure and record the static water level in all wells.
- ☐ Visually inspect the above-ground piping system.
- ☐ Check all air-release valves to make sure they are working.
- ☐ **Fill pipelines slowly; make sure all the air is out of the system.**
- ☐ Replace broken or old pressure gauges.
- ☐ Walk along the center pivot and check the sprinkler system for damage.
- ☐ Make sure all portable aluminum or PVC pipe sections have gaskets installed. Pipeline leaks can reduce the amount of water applied to the field significantly. Gaskets have a useful life of about five years before they become brittle and crack.
- ☐ Check gearboxes on center pivot towers for water accumulation. Drain water and replace with oil.
- ☐ Check the tire pressure on center pivots.
- ☐ With the center pivot running, visually check each sprinkler head to make sure it is working properly.

Tom Scherer, 701-231-7239
NDSU Extension Agricultural Engineer
Thomas.Scherer@ndsu.edu