water spouts

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http://www.ext.nodak.edu/extnews/spouts/

Upcoming NDSU Field Days

Streeter Central Grasslands Research Extension Center	June 24	(701) 424-3606
Hettinger Research Extension Center	July 7	(701) 567-4323
Dickinson Research Extension Center	July 8	(701) 483-2348
Williston Research Extension Center	July 9	(701) 774-4315
Casselton Agronomy Seed Farm	July 13	(701) 347-4743
Carrington Research Extension Center	July 14	(701) 652-2951
Minot North Central Research Extension Center	July 15	(701) 857-7677
Langdon Research Extension Center	July 16	(701) 256-2582

Checklist for Your Irrigation System

- ❑ **Open and check electric control panels for rodents or damage before starting.**
- ❑ Check all motor openings to see if they are properly screened, again to keep out rodents.
- ❑ Measure and record the static water level in all wells.
- ❑ Visually inspect the 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 any broken or old pressure gages.
- ❑ Check the sprinkler system for damage.
- ❑ Make sure all portable aluminum or PVC pipe sections have gaskets installed.
- ❑ 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.

NDSU
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What a Start to the 2009 Growing Season!

This is the beginning of the 38th year that we have been providing this newsletter to the irrigators of North Dakota. During that time span, finding two years where growing conditions and economic conditions were similar is very difficult. An “average” growing season probably doesn’t exist. The winter of 2008 and spring of 2009 are going to be remembered by many people for a long time. First, we had a wet fall with above-average rain over much of the state that prevented the timely harvest of many acres of corn and soybeans. Then very cold temperatures and above-average snow amounts with blizzards resulted in the loss of many cows and calves. Starting in April, the snow melted rather suddenly, culminating in equal opportunity flooding. The entire state received some degree of flooding or acquired flood-related problems.

From a farming perspective, a silver lining is associated with these weather-related events. The excess moisture did away with a persistent drought in most areas of the western part of the state. The excess water recharged soil and subsoil moisture, recharged aquifers, filled dugouts and dams, and generally made the upcoming irrigation season look good. Now all we need is some normal to above-normal heat units in the next few months to increase the potential for a good growing season, provided field access and planting aren’t delayed too long.

Potato Research Farm at Tappen has Moved to Fordville Area

In 2002, the Northern Plains Potato Growers Association (NPPGA) bought land three miles east of Tappen for irrigated potato research. However, the site is 140 miles from NDSU on Interstate 94, or more than 200 miles from the potato research site near Thompson. This created travel problems for potato researchers, plus travel costs have risen significantly during the last few years. The new irrigated potato research site will be close to the Hutterite colony near Fordville. The NPPGA will be selling the Tappen site to a farmer.

Checking the Timer on Electric Center Pivots

The amount of water applied to a crop by a center pivot is controlled by the speed of the end tower. The movement time of the end tower is determined by the setting of the percent timer in the pivot control panel. Computerized control panels use electronic timers, but many older pivot control panels have electro-mechanical timers. Electro-mechanical timers are low-cost and readily available, but after a few years, they are prone to wear and this causes the end tower on/off time to fluctuate. These fluctuations can cause over- or underapplication of irrigation water throughout the field. An accurate estimate of the application amount for each irrigation event is important for good water management. It is especially important during the fruiting stage (grain filling, corn ear formation, potato tuber bulking, etc.) of crops.

To check the accuracy of a percent timer (whether electro-mechanical or electronic), all you need is a view of the wheels on the end tower, a stopwatch and the percent timer setting.

For example, if you set the timer to 40 percent, then the end tower should move 24 seconds out of each minute (0.4 x 60 seconds). Start the stopwatch when the wheels on the end tower start to rotate and stop the stopwatch when the wheels stop. Some pivots don't move a continuous 24 seconds but move 12 seconds in each 30-second interval. Either way, for this example, the time of movement should add up to 24 seconds in a minute. Repeat the measurement at least three times. The start/stop time should not vary by more than a second. If the movement time fluctuates more than two seconds, the timer is probably faulty and may need to be replaced. However, first check the gear-drives on the end tower. Worn gear-drives sometimes can cause movement fluctuations, especially on potato fields with high hills.

Checking the movement time of the end tower also can indicate if the application chart for the pivot is correct. The application chart indicates the depth of application at a percent timer setting for the pivot (assuming the flow rate is the same). If the movement time is consistent during the three readings but is more or less than 24 (in this example) by more than two seconds, then something has affected the rotation time of the pivot. This could be due to tower gear drives with gear ratios different from the original or it could be due to larger or smaller tires. Checking the accuracy of the percent timer could save you some future headaches and make your water application amounts reliable.

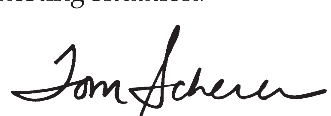
Electrical Safety is Important When Starting Your Irrigation System

With the wet fall, extremely cold winter, excess snow and flooding, many irrigation systems and pumps probably have been submerged or inundated with water. The major components of your irrigation system have been sitting idle since last fall and may have sustained some damage. Visually checking all the parts of your irrigation system before starting the pump or center pivot always is a good idea.

The most common problem at startup is rodents getting into electric control boxes and causing damage during the winter. The increased snowfall this past winter probably increased rodent nesting activity in electrical control boxes. The damage may result in chewed wires and control switches or corrosion caused by urine. If you don't look for this type of damage before turning on the system, some components could explode. You could be hurt if standing in front of the electric control box.

Another problem is loose bolts, nuts or screws, especially on electrical components or wire fasteners. The freeze/thaw cycle during the fall, winter and spring, along with vibrations from the previous growing season, sometimes can cause bolts, nuts and screws to come apart. This can result in poor electrical connections or worse – a wire touching either the ground or another conductor.

As a precaution, before turning on any electric equipment, open all electric control panels (this includes pivot control panels and tower boxes) and look for any evidence of rodent damage, loose wires or connectors. Also, check electric motors and phase converters. If protective screens are missing, look for damage to exposed wires, rodent nests or missing parts. If you find rodent damage, look for the point of entry and plug it. I have seen several electric control boxes with mouse nests in them, and the point of entry was through the conduit from the motor. The screens on the electric motor had been removed and the mice entered the motor and followed the conduit into the control box. From the mouse's point of view, this was a perfect nesting situation.



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Management of Wet Stored Grain and Forage

Check stored grain moisture content

Moisture measurements at harvest may have been in error due to moisture gradients in the kernel, grain temperature and other factors. In addition, the moisture may have changed while in storage due to moisture migration or moisture entering the bin. Collect and place a sample in a sealed container, such as a zip-lock plastic bag, warm the sample to room temperature and then check the moisture content. If the sample is not warmed to room temperature in a sealed container, remember that the grain temperature needs to be above about 40 degrees and a temperature adjustment must be made either automatically or manually to obtain an accurate measurement.

Storing high-moisture corn

Stored wet grain will deteriorate rapidly at warmer temperatures. Corn at 22 percent moisture has an allowable storage time (AST) of about 30 days at 50 degrees, 15 days at 60 degrees and only about eight days at 70 degrees. Therefore, corn at moisture contents up to about 22 percent moisture needs to be kept cool using aeration until it can be dried. Run the fans at night when outside temperatures are the lowest. Cover aeration fans when not operating to limit warm air blowing into the open fan and warming the grain.

Natural air-drying

Natural air-drying with an airflow rate of at least 1 cubic feet per minute per bushel (cfm/bu) can be used to dry corn at moisture contents up to 21 percent during the spring. Start the fans when the average air temperature is about 40 degrees, which is occurring now. Drying time will be about 45 days with an airflow rate of 1 cfm/bu. The final corn moisture content will be about 13 percent to 14 percent.

Wheat at moisture contents up to 17 percent can be naturally air-dried with an airflow rate of at least 0.75 cfm/bu. Start drying when air temperatures average about 40 degrees.

Storing cracked or immature grain

Immature and lower-quality grain is more prone to deterioration than good-quality grain, so it should be dried to a moisture content about one percentage point lower than good-quality grain. It also needs to be monitored more closely than good-quality grain.

Stored grain and feed affected by flooding

Electric wiring, controls and fans exposed to water need to be evaluated and possibly reconditioned or replaced. Do not energize wet components. Be sure the power is off before touching any electrical components of flooded systems.

Grains swell when wet, so bin damage is likely. Bolts can shear or holes elongate. Look for signs such as stretched caulking seals, misaligned doors or similar structural problems. A damaged bin is prone to failure.

Time is of the essence in salvaging wet feed and grain. Both will begin to heat and mold very quickly, leading to spoilage as well as the possibility of spontaneous combustion. Unloading from the center sump may not be possible because wet grain likely will not flow. One option is unloading the grain from the top using a pneumatic conveyor or any other means.

Get the wet grain to a dryer quickly, if possible. This is the surest way to save wet grain. If the grain depth is only a couple of feet, a natural-air bin drying system with a perforated floor and high-capacity drying fan should be able to dry the grain. Verify that the air is coming through the grain. Supplemental heat can be used to speed drying, but do not raise the air temperature more than 10 or 15 degrees.

If a dryer is not available, spread the grain to dry in a layer no deeper than 6 inches. Stir it daily to prevent overheating and to speed drying. Watch for and remove molded grains.

Do not feed heated, molded or sour feeds to livestock. Flooded feed should be presumed harmful to animals until tested because it may contain contaminants from floodwaters as well toxins produced by fungi.

Guard against hay fires

Dry bales of hay should be removed and restacked in a dry location since capillary action will draw water up into the stack.

Flooded hay should be disposed of since it is probably unsafe for animals and not worth the time and expense of drying.

Because of hay's tendency to heat and mold quickly, it should be spread out to dry as soon as possible and turned often. Hay bales at 30 percent to 40 percent moisture content pose the greatest risk of spontaneous combustion. Check hay storage often for pungent odors; hot, damp areas on the stack; emission of water vapors;

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and other signs of heating. To check a stack's temperature for fire risk, drive a sharp-pointed pipe into the hay, lower a thermometer inside the pipe and leave it there for about 20 minutes. At 150 F, the hay is approaching the danger zone. At 170 F, hot spots or fire pockets are possible. Have the fire department on standby.

Respiratory protection

Moldy grain and hay create a human respiratory hazard. Breathing mold spores can cause severe allergic reactions or other health concerns.
Wear a mask or respirator approved to remove mold spores. The mask should have an N95 rating or better. These masks will have two straps.

Additional information

Additional information is available on the NDSU Extension Service grain drying and storage Web site. Search for NDSU corn drying or go to

www.ag.ndsu.nodak.edu/abeng/postharvest.htm

Additional information on flood recovery is available on the NDSU Extension Service flood information Web site. Search for NDSU flood information or go to

www.ag.ndsu.edu/disaster/flood.html

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