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Delivery of Water Spouts

We would like your feedback regarding the delivery of Water Spouts. In an effort to reduce production costs, we would like to send an email when the latest copy is posted to the Water Spouts website (www.ag.ndsu.edu/irrigation/water-spouts).

Then all you would need to do is click on an included link to download the latest copy. To be removed from the mail list and subscribe to email notification, go to the NDSU Irrigation website www.ag.ndsu.edu/irrigation.

Included in this issue is an insert that you can send back, postage free, to indicate your preferred delivery method. If you already receive a pdf copy via email, you will be subscribed automatically.
Bismarck Irrigation Workshop –
Thursday, Dec. 7

The workshop will be at the Best Western Ramkota Hotel in conjunction with the North Dakota Water User Association’s annual convention Dec. 6-8. The NDSU Extension Service, North Dakota Irrigation Association and North Dakota Water Users Association sponsor the workshop. The convention will include an irrigation and water products exposition.

Topics to be presented include: mapping aquifers using airborne electromagnetic survey, an update on the water permit process, Natural Resources Conservation Service precision irrigation projects, using unmanned aircraft systems to improve irrigation management, irrigation development along the McClusky Canal, the economic impact of irrigation along the McClusky canal and the region, irrigated pasture and cover crops, along with irrigation research center updates.

Williston Irrigation Workshop –
Thursday, Dec. 14

The workshop will be in the Ernie French Center at the Williston REC. The workshop, along with a sponsored lunch and break, is free of charge with registration at the door. Contact Kelly Stehr or Tyler Tjelde at 701-774-4315 or Kelly.Stehr@ndsu.edu for more information.

Corn Harvest, Drying, Storage Challenging This Year

Each year brings challenges for corn production, and this year’s drought and cool August will have a big impact on North Dakota’s corn harvest, drying and storage.

As of the second week in October, much of southeastern North Dakota is 100 to 200 growing degree-days behind normal, according to the North Dakota Agricultural Weather Network. This is reflected in the National Agricultural Statistics Service crop production report showing that on Oct. 8, only 62 percent of the corn was mature, which is behind the average of 82 percent.

The U.S. Department of Agriculture estimates that 82 percent of the U.S. corn crop is mature, compared with a five-year average of 87 percent. As of Oct. 8, only 22 percent of the U.S. corn crop had been harvested, compared with a 37 average.

Fall Dry-down

An average dry-down rate for corn in North Dakota during October is about 2.5 percent per week, so if corn reaches maturity at about 30 to 35 percent moisture on Oct. 1, it might be expected to be at least 20 to 25 percent moisture at the end of October. The average dry-down rate in November is only about 1 percent per week.

Normally, harvest should start by mid to late October because the amount of field drying is limited and the risk of snow and greater field losses increases when harvest is delayed. Current National Oceanic and Atmospheric Administration long-range weather forecasts are for normal or slightly below normal temperatures and normal to slightly greater precipitation during October.

Assure corn stalks and cob shanks are strong if considering leaving high-moisture corn in the field over winter. Field losses can range from minor to severe. Compare the cost of drying versus losses associated with leaving the corn in the field. In addition, standing corn tends to slow soil drying in the spring, which may delay planting.

To estimate the propane cost of drying per bushel per point of moisture removed, multiply the propane price per gallon by 0.02. For example, the cost to remove 10 points of moisture using $1.50 propane is 30 cents per bushel. Dividing the propane cost by the corn price provides the percentage of corn losses that will equal the drying cost (30 cents divided by $3.50 equals 9 percent). Also, verify the impact on insurance of leaving the corn in the field.

Storage Methods

With so much grain still in storage from last year, producers may be considering alternative storage options. Storage in a poly bag is a good option, but it does not prevent mold growth or insect infestations. Grain should be dry, at recommended storage moisture contents, when placed in a grain bag.

Storing higher-moisture corn in a bag should be considered very short-term storage and done only at near-freezing temperatures. At moisture contents exceeding about 25 percent, ensiling may occur at temperatures above freezing and prevent the corn from being dried and sold in the general market.

When storing in bags, select an elevated, well-drained location with the surface prepared to prevent the bags from being punctured, and run the bags north and south so solar heating is similar on both sides of the bags.

Wildlife can puncture the bags, creating an entrance for moisture and releasing the grain smell, which attracts more wildlife. Monitor the grain temperature at several locations in the bags and repair punctured bags.
**Corn Drying**

Corn above 21 percent moisture should not be dried using natural-air (NA) or low-temperature (LT) drying to minimize corn spoilage during drying. Because the drying capacity of NA and LT is extremely poor at temperatures below 35 to 40 degrees, little drying typically is possible using a natural-air system after about Nov. 1.

Adding heat does not permit drying wetter corn and only slightly increases drying speed. The primary effect of adding heat is to reduce the final corn moisture content.

When outdoor temperatures average near or below freezing, cool the corn to 20 to 25 degrees for winter storage and finish drying in April to early May. Limit the corn depth to about 20 to 22 feet to obtain an airflow rate of 1 to 1.25 cubic feet per minute per bushel, which is necessary to dry the corn before deterioration occurs. Turn fans off during extended periods of rain, snow or fog to minimize the amount of moisture the fans pull into the bin.

Using the maximum drying temperature that will not damage the corn increases the dryer capacity and reduces energy consumption of a high-temperature dryer. Removing a pound of water requires about 20 percent less energy at a drying air temperature of 200 F than at 150 F. Follow the dryer manufacturer’s recommendations, but generally, recommended temperatures when drying corn are 210 to 230 F.

Be aware that excessively high drying temperatures may result in a lower final test weight and increased breakage susceptibility. In addition, as the drying time increases, high-moisture corn becomes more susceptible to browning. A cross-flow dryer that moves corn from the inside to the outside of the drying column, varies the corn flow rate across the drying column, or varies the corn’s exposure to the drying air is more likely to maintain corn quality.

Removing debris that accumulates on or in a dryer is more critical when outside air temperatures are cold because condensation can develop on the dryer, creating a wet surface on which debris can collect. The debris may reduce airflow through the dryer, decreasing the dryer’s capacity and creating a fire hazard.

More mechanical damage occurs when harvesting high-moisture corn, which affects the storage life of the corn. Dry low-test-weight corn and corn with more damaged kernels to a percentage point lower in moisture content than normal. Cooling the grain in storage to about 20 to 25 degrees for winter storage in northern corn-growing regions and near freezing in warmer regions is more important for damaged corn than for mature, sound corn.

Check immature and damaged grain more frequently, and do not put immature or damaged corn in long-term storage.

For more information, do an internet search for “NDSU corn drying.”

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**This Winter, Point Your Center Pivot in the Right Direction**

When dealing with wind and sleet, the center pivot is a rather fragile machine.

From October to April, the worst storms and highest winds come from the northwest. Properly parking a pivot will present the smallest surface area to the wind.

Center pivots on level ground should be parked for the winter pointing to the northwest or southeast, not to the northeast or southwest. Ice storms and blizzards have damaged many center pivots that were parked in the wrong direction.

Exceptions are parking center pivots next to windbreaks or other wind protection and where the pivot point is on high ground. Park the pivot downhill when it’s on high ground.

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

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