

water spouts

No. 236

JUNE 2008

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

Upcoming NDSU Field Days

| | | |
|--|---------|----------------|
| Streeter Central Grasslands Research Extension Center | June 26 | (701) 424-3606 |
| Minot – Canola Day North Central Research Extension Center | June 30 | (701) 857-7677 |
| Williston – Pulse Tour Research Extension Center | July 1 | (701) 774-4315 |
| Minot – Pulse Crops Day North Central Research Extension Center | July 8 | (701) 857-7677 |
| Hettinger Research Extension Center | July 8 | (701) 567-4323 |
| Dickinson Research Extension Center | July 9 | (701) 483-2348 |
| Williston Research Extension Center | July 10 | (701) 774-4315 |
| Casselton Agronomy Seed Farm | July 14 | (701) 347-4743 |
| Carrington Research Extension Center | July 15 | (701) 652-2951 |
| Minot North Central Research Extension Center | July 16 | (701) 857-7677 |
| Sidney, Montana Eastern Agricultural Research Center, Sidney, Mont. | July 16 | (406) 482-2208 |
| Langdon Research Extension Center | July 17 | (701) 256-2582 |
| Mandan USDA/ARS Northern Great Plains Research Lab | July 17 | (701) 663-3018 |
| Outlook, Saskatchewan Canada-Saskatchewan Irrigation Diversification Centre | July 17 | (306) 867-5400 |
| Oakes Irrigation Research Site | July 29 | (701) 742-2189 |

Missouri Slope Irrigation Development Association (MSIDA) Annual Irrigation Tour Set for June 27

The annual MSIDA irrigation tour will be on Friday, June 27. The destination will be the Garrison Dam and Lake Audubon area. The emphasis of the tour is on energy production. The tour registration is \$30 per person, which includes a seat on the bus and lunch.

Tour Agenda – June 27

| | |
|----------------|--|
| 7 a.m. | Bus will depart from Kist Livestock in Mandan |
| 8:30-11 a.m. | Blue Flint Ethanol Plant and Coal Creek Power Plant at Falkirk |
| Noon | Lunch – Little Bar and Grill, Pick City |
| 1-2 p.m. | Garrison Dam Electric Generation Tour |
| 2:30-3:15 p.m. | Garrison Dam National Fish Hatchery |
| 4-5 p.m. | Price Feedlot (Missouri River Feeders) |

Contact me for more information.

Ken Miller, (701) 250-4518, ext. 3
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MSIDA Secretary
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Summer Water Tours – North Dakota Water Education Foundation

In the next month, the North Dakota Water Education Foundation will offer three water tours. These tours provide a firsthand look at North Dakota's critical water issues. Registration is \$15 per person and includes tour transportation, meals, refreshments, informational materials and a one-year subscription to *North Dakota Water* magazine.

Devils Lake Solution – June 26

This tour focuses on numerous water-related issues, including the growing problems in Nelson County, East Bay and Stump Lake. Other stops include Sully's Hill Game Refuge, Stump Lake Park and the Fort Totten state historic site. This tour begins and ends in Devils Lake.

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Northwest Dakota Ventures – June 30

This half-day tour will head west to the Eastern Agricultural Research Center in Sidney, Mont., to see irrigated research experiments on high-value and alternative crops. Along the way, the tour will stop at an oil rig, Fort Buford and the Missouri-Yellowstone Confluence Interpretive Center.

Sites of the Southwest – July 9

This tour will begin and end in Medora. Stops will include the Southwest Pipeline Project rural water facilities and Bully Pulpit golf course. The tour also will include a drive through the south unit of Theodore Roosevelt National Park. The tour then will move east to Richardton for a tour of the Red Trail Energy Ethanol plant and Assumption Abbey.

To register online, go to www.ndwater.com or send a check to NDWEF, P.O. Box 2254, Bismarck, ND 58502. For more information on the tours, give us a call or send an e-mail.

North Dakota Water Education Foundation,
(701) 223-8332
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Irrigation Funding Assistance Publication Revised

The NDSU Extension publication “Funding Assistance Programs for Irrigation Development in North Dakota” recently was revised and updated. The publication provides information on financial incentives for individual irrigators as well as irrigation districts.

Prospective irrigators will find the AgPACE (Agricultural Partnership in Assisting Community Expansion) Program of interest. It is offered by the Bank of North Dakota. AgPACE is an interest buy-down program that can buy down up to 5 percent of the interest on an irrigation development loan.

Established irrigators may benefit from the Natural Resources Conservation Service EQUIP (Environmental Quality Incentive Program). This program offers incentive payments and financial assistance for a variety of conservation practices, such as high to low pressure conversion and conversion from flood to center-pivot irrigation.

Irrigation districts will find opportunities with the North Dakota State Water Commission and its cost-sharing program for water delivery systems. The commission offers districts up to 40 percent cost sharing on eligible projects.

Also of interest to irrigation districts is the Bank of North Dakota’s Capital Finance Program, which issues guaranteed bonds for up to 80 percent of the project cost on qualifying projects.

If you would like to learn more about these programs, we would be happy to send you a copy of the Funding Assistance Program publication. Call me or send an e-mail and be sure to provide your complete mailing address. Copies also are available from Tom Scherer and the North Dakota Irrigation Association at (701) 223-4615 or ndirrigation@btinet.net.

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Subsoil Moisture – What a Difference in a Month

A month ago, much of North Dakota was experiencing drought conditions. However, in the last 30 days, most areas of the state have received at least 3 inches of rain as shown in the rainfall accumulation map obtained from the North Dakota Agricultural Weather Network (NDAWN – <http://ndawn.ndsu.nodak.edu/>).

However, the rain doesn’t necessarily mean the subsoil has been replenished. Since rainfall amounts are extremely variable, you need to check subsoil moisture manually using a soil probe (Figure 2). This should be done at several locations in your fields.

When managing water applications with a center pivot, getting behind is very easy if you don’t watch your soil moisture levels. Crops are growing quickly and using an increasing amount of water each day.

Checking soil moisture

The soil probe should be at least 3 feet long to check the soil moisture down to the 3-foot depth. A typical soil probe is made of stainless steel and removes a soil core about 3/4 inch in diameter. A common soil probe is the Oakfield probe. A one-piece, 3-foot soil probe sells for about \$80 (www.soilsamplers.com/). Some fertilizer plants carry 2-foot soil probes to sell to their customers.

Low soil moisture, especially subsoil moisture, can affect the growth and development of deep-rooted crops, such as small grains, corn, sugar beets, sunflowers and alfalfa. By using the “feel method,” you can estimate the soil moisture level with reasonable accuracy. The feel method involves taking a soil sample, forming a ball in your hand and squeezing. The response of coarse-textured soils to squeezing at field capacity will

Accumulated Rainfall (inches) (5-14-2008 to 6-12-2008)

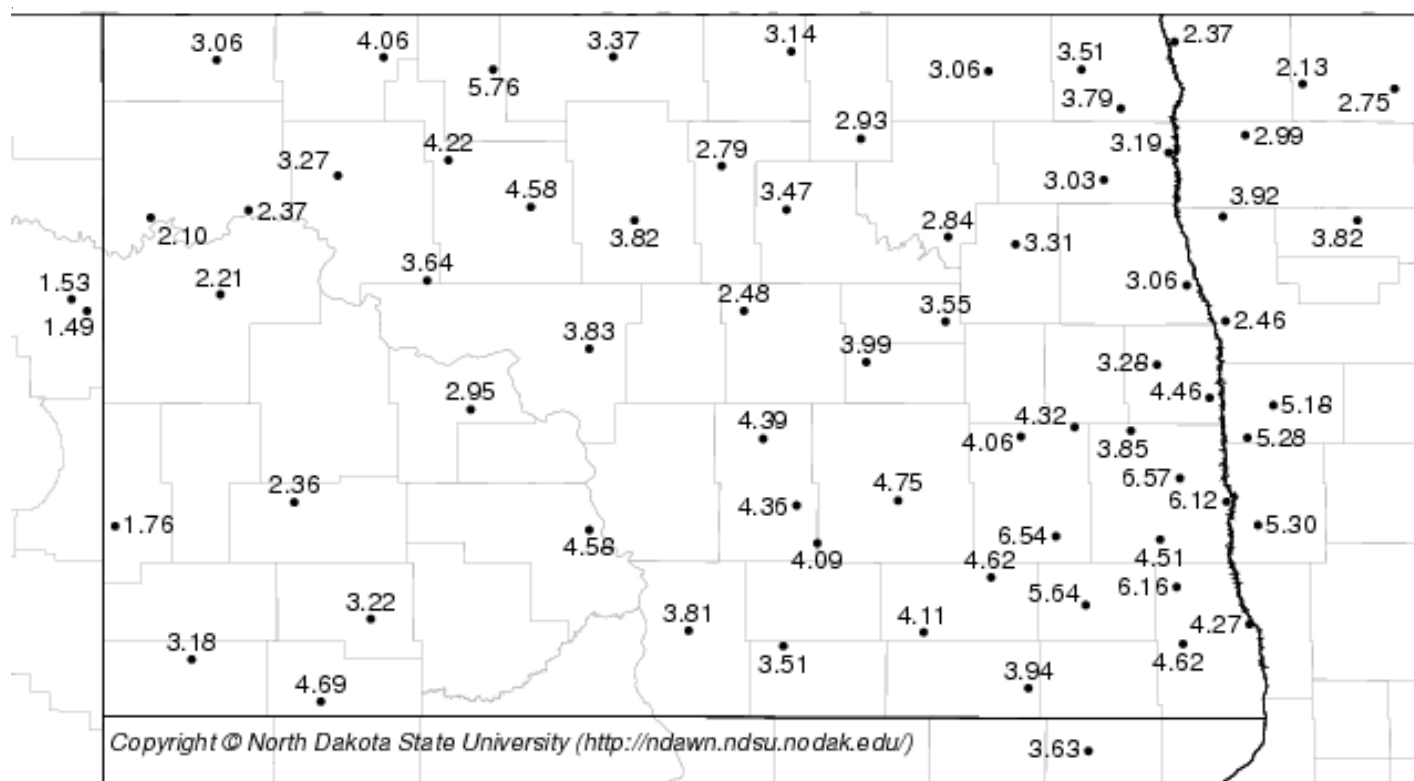


Figure 1. Rainfall amounts from NDAWN for a 30-day period from May 14 to June 12, 2008.

leave no free water on the soil ball, but a wet outline of the soil ball will be left on your hand. If the ball of soil breaks easily, then the soil is less than field capacity (Table 1, back page).

Managing subsoil moisture always is difficult because it involves determining if enough rain has been received to recharge the soil profile before the high-water use period begins. Recharging the root zone with irrigation is easy when the crop is young because it is not using much water. Most of the applied water will infiltrate into the soil. This may not be true later in the season, when the crop is taller, more mature and using a greater amount of water. Center pivots with less than 6 gallons per minute of flow capacity per irrigated acre (about 800 gallons per minute for a quarter-section machine) may not be able to keep up with crop water demand later in the season. Starting to irrigate early may be wise for irrigators with low-flow capacity irrigation systems.

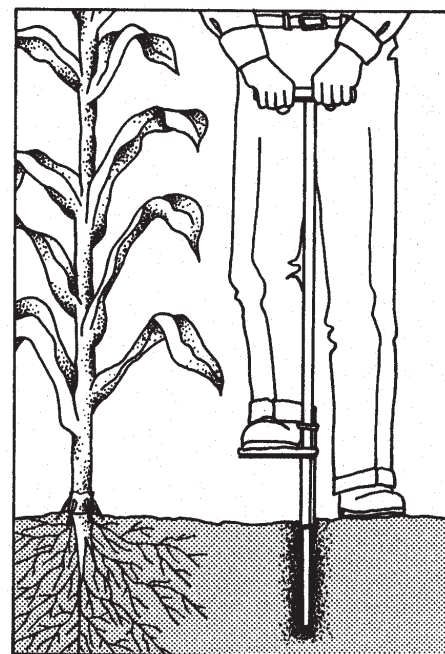


Figure 2. Probing in the field to check moisture content at different depths.

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Table 1. How to estimate soil moisture based on the feel method. A PRESSURE TEST involves grabbing a handful of soil, holding it in the palm and squeezing firmly with the thumb and fingers. A SLICK TEST involves trying to form a ribbon by pushing the soil between the thumb and forefinger.

| Soil Moisture Available in the Sample | Soil Texture | | | |
|---------------------------------------|--|--|--|--|
| | Coarse Texture: <i>Sand and Loamy Sands</i> | Moderately Coarse Texture: <i>Sandy Loam, Fine Sandy Loam</i> | Medium Texture: <i>Loam and Silt Loam</i> | Fine and Very Fine Texture: <i>Clay Loam, Silty Clay and Clay</i> |
| 0 % | Dry, loose, single grained, flows through fingers | Dry, loose, flows through fingers | Powdery, dry, sometimes slightly crusted but easily breaks down into powder | Hard, baked, cracked, sometimes has loose crumbs on surface |
| 50% or less | Appears to be dry, will not form a ball with pressure | Appears to be dry, will not form a ball with pressure | Somewhat crumbly, but will hold together with pressure | Somewhat pliable, will ball under pressure |
| 50 to 75% | Appears to be dry, will not form a ball with pressure | Forms a ball under pressure but doesn't hold together | Forms a ball, somewhat plastic, sometimes will slick slightly with pressure | Forms ball, will ribbon between thumb and forefinger |
| 75% to Field Capacity | Tends to stick together slightly, sometimes forms a very weak ball under pressure | Forms a weak ball that breaks easily and will slick | Forms a ball and is very pliable, slicks readily if high in clay | Easily ribbons between thumb and forefinger |
| At Field Capacity | After squeezing, no free water appears on soil but wet outline of the ball is left on the hand | After squeezing, no free water appears on soil but wet outline of the ball is left on the hand | After squeezing, no free water appears on soil but wet outline of the ball is left on the hand | After squeezing, no free water appears on soil but wet outline of the ball is left on the hand |
| Above Field Capacity | Free water appears when the soil is bounced in hand | Free water will be released by kneading the soil | Can squeeze out free water | Puddles and free water forms on the surface |