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water spouts

No. 310

June 2020

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Summer Water Tours – Canceled

The board of the North Dakota Water Education Foundation has decided to cancel all summer water tours for 2020. We hope the tours will resume next summer.

North Dakota Water Education Foundation,
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jellingson@ndwater.net

2020 NDSU Field Days

"In the interest of public health and safety, we will be modifying our field days to be held primarily virtually or with small-group tours this summer," says Greg Lardy, NDSU vice president for Agricultural Affairs. "This will allow producers and other interested parties to receive updates on the research at the centers at their leisure in an environment of their choosing."

Short prerecorded videos will be shot on location so producers can see the researchers' work. Research Extension Center and NDSU main campus scientists and Extension specialists will talk about a wide variety of current topics.

Following is a tentative list of 2020 annual field day events. Most will have prerecorded videos go live on their scheduled field day date. Some will have a live Zoom session on their date (registration required) and some will have both. A few live events will happen for

small groups of people with preregistration required. Please visit the Research Extension Center and Agronomy Seed Farm websites for more details.

- July 7 Hettinger Research Extension Center
- July 8 Dickinson Research Extension Center
- July 8-9 Williston Research Extension Center (4 p.m.)
Nesson Valley irrigated field day (July 9)
23 miles east of Williston on Highway 1804 (9 a.m.)
- July 13 Agronomy Seed Farm, Casselton (5 p.m.)
- July 14 Carrington Research Extension Center
- July 15 North Central Research Extension Center, Minot (includes pulse crops and canola field day)
- July 16 Langdon Research Extension Center (9 a.m.)
- July 28 Central Grasslands Research Extension Center, Streeter (10 a.m.)
- Aug. 4 Oakes Irrigation Research Site:
Robert Titus Research Farm (field tour)
- Aug. 27 Carrington Research Extension Center

Potato Blight Line

The 2020 Potato Blightline has begun.

Some changes have been made to the Blightline this year. The telephone hotline is not available, but the Blightline will be sent to our listserv recipients and is available at <http://z.umn.edu/spud>. Late blight severity values and maps still are available on NDAWN at <https://ndawn.ndsu.nodak.edu/potato-late-blight.html>.

The Blightline will be updated weekly and posted on the website of Andy Robinson at <http://z.umn.edu/spud>.

The NDAWN Potato Blight App is available with field-specific data models at <http://z.umn.edu/potatoapp>. To use this app, you will need to enter your specific field information and location. If you have questions, please contact me.

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Monitoring Crop Water Use

The recent hot and windy weather has had me thinking about crop water use and the potential for drought stress in the state if we don't get some rain.

One way to monitor crop water status is to use the crop water use app in the North Dakota Agricultural Weather Network (NDAWN, <https://ndawn.ndsu.nodak.edu>). Daily water use by a crop is dependent on the crop, its stage (greater leaf area means greater water use), temperature, relative humidity and wind speed. **Figure 1** charts the daily water use with this app at the Hettinger Research Extension Center.

Because of its greater leaf area, wheat is using more than twice the water of corn. Additionally, from these data, you can see the impact of daily weather on water use. For example, the water use by wheat on June 13 was more than twice that recorded on June 9.

This app also can be used to monitor the relationship between water use and the amount of rainfall received. Currently, the crop water deficits (transpiration minus rainfall) for wheat are large, with the greatest deficits (the larger the number, the larger the deficit) in the southwest (**Figure 2, Page 3**). For corn, the scenario is more positive (**Figure 3, Page 3**), with many stations

reporting slight surpluses of water (more rainfall than crop use resulting in negative deficits).

The fact that water deficits are positive does not necessarily mean that the crop has suffered from drought stress because these calculations do not consider the amount of water available in the soil. The plentiful rainfall last fall and the snowmelt this spring filled the soil profile in many regions of the state.

Soils can provide 1 to 2 inches of water per foot of depth (depending on their texture), meeting the water use requirements of the crop for many days before the crop experiences drought stress. When soil moisture is depleted and the plant becomes "stressed," it will reduce transpiration by closing the stomata.

While this reduces water loss from the plant, it also reduces the amount of CO₂ available to the plant for photosynthesis. Reduced photosynthesis means reduced plant growth, which in turn translates into reduced plant size and reduced yield potential. Leaves soon wilt, especially during the heat of the day. With severe moisture stress, plant tissues desiccate and eventually die when the stress is significant enough.

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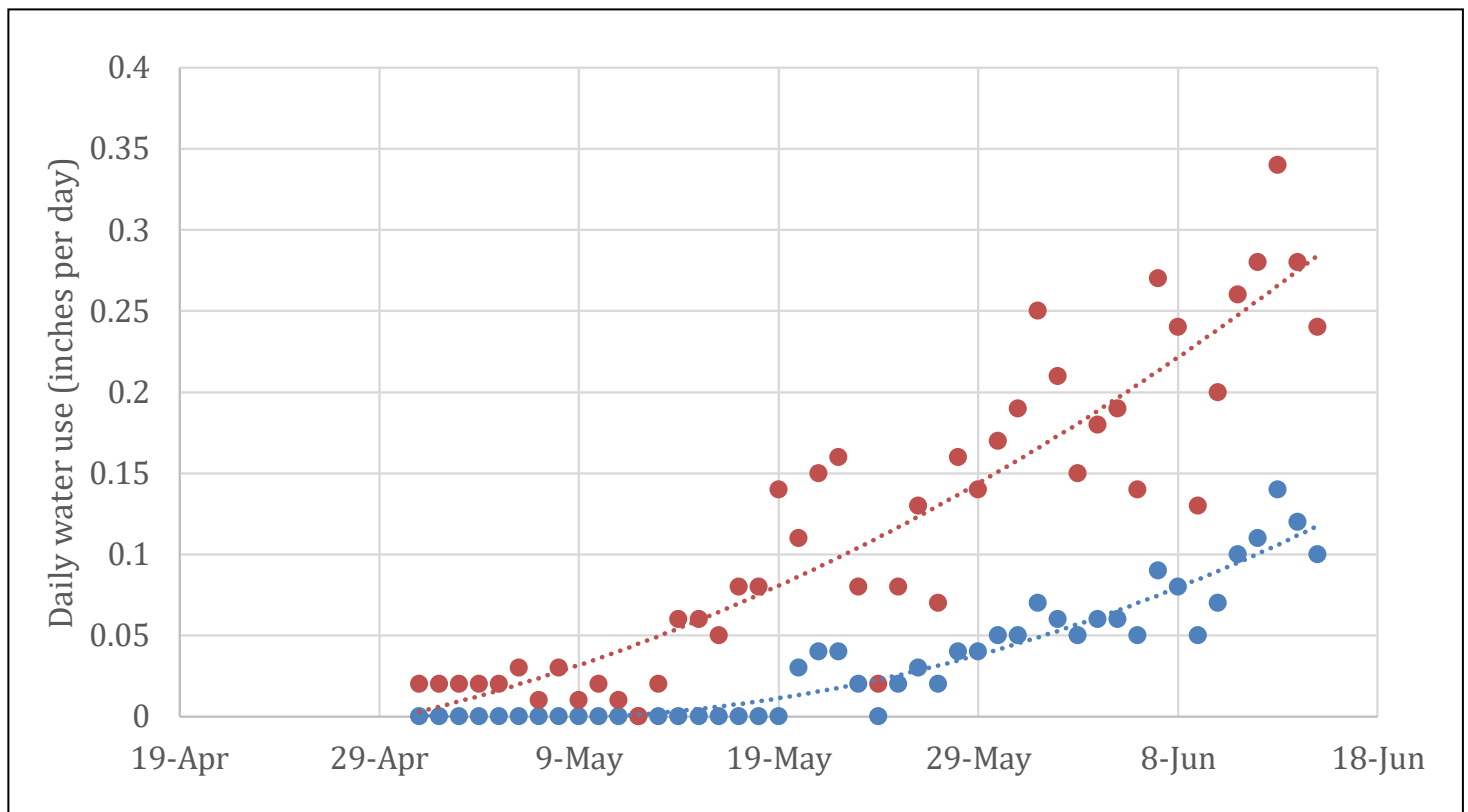


Figure 1. Estimated daily water use by wheat (top line) and corn (bottom line) at Hettinger, N.D., in 2020. These data assumed a May 1 emergence date for wheat and a May 20 emergence date for corn.

Wheat Crop Water Deficit (inch) (2020-05-01 – 2020-06-15)

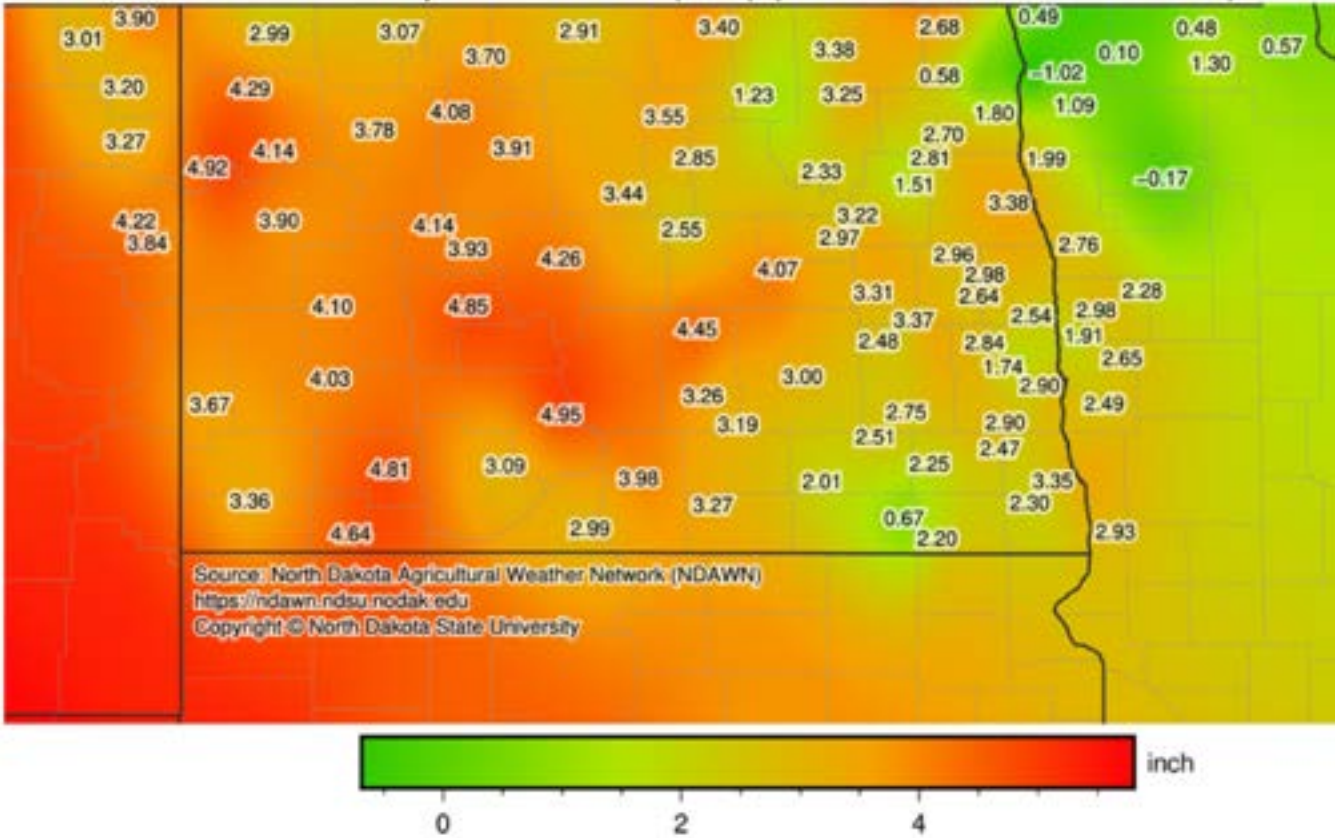


Figure 2. Crop water deficit for wheat, assuming a May 1 emergence date.

Corn Crop Water Deficit (inch) (2020-05-20 – 2020-06-15)

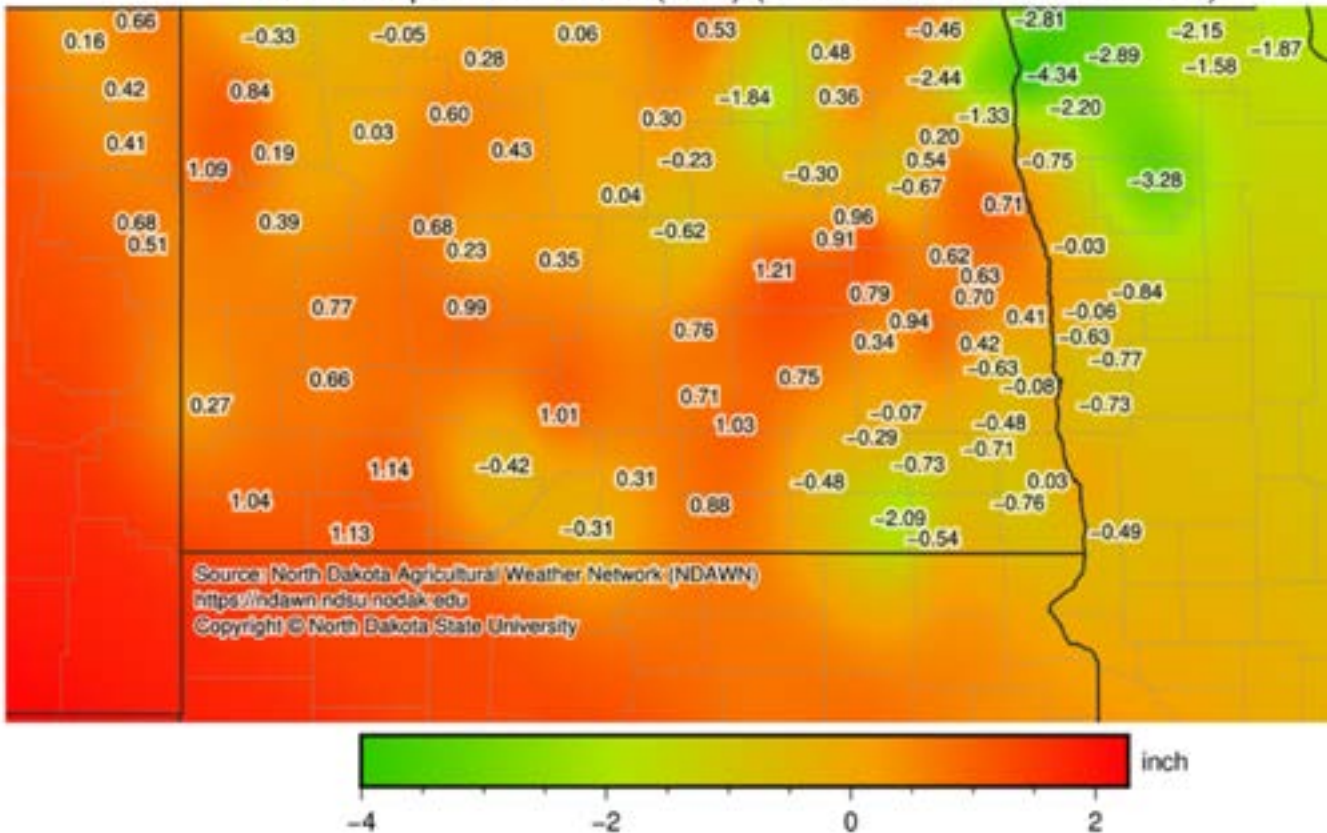


Figure 3. Crop water deficit in corn, assuming a May 20 emergence date.

Soil Compatibility for Irrigation on the State Water Commission Mapservice Website

When considering installing an irrigation system, a fundamental step is to determine if the soils in the field are suitable for irrigation. Soil and water compatibility is critical to achieve high, sustainable yields without damaging the soil.

In 2018, the NDSU Extension publication “Compatibility of North Dakota Soils for Irrigation” (AE1637) was updated and revised. This publication is a first step to help

current and prospective irrigators understand the principles behind the irrigability of soils in North Dakota.

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.

Now an additional resource is available to help plan irrigation developments. An overlay on the North Dakota State Water Commission GIS-based MapService (<https://mapservice.swc.nd.gov>) showing the irrigation status of soils throughout the state was updated recently to match the soils listed in AE1637 (**Figure 1**).



Figure 1. Irrigation layer shown in legend.

The overlay can be used to look at the spatial distribution of the soil irrigation classifications over relatively large areas, such as one or two counties. For example, **Figure 2** is a screen shot of the soil irrigation classification along the Heart River in Grant and Morton counties.

To examine a smaller area, use the magnifying glass at the top of the screen to draw a box around the area of interest as shown in **Figure 3 (Page 6)**. More information about particular soils in the field can be highlighted by selecting “irrigability” as the active layer (upper right-hand corner), then selecting the “I” button to the left.

By clicking on any soil area on the map, irrigability information will be displayed in a popup box on the left side.

After looking at the irrigability classification on the map, more specific information can be found in AE1637. Printed copies of AE1637 can be obtained from any NDSU Extension county office. It’s also online at www.ag.ndsu.edu/publications/crops/irrigation-and-drainage.

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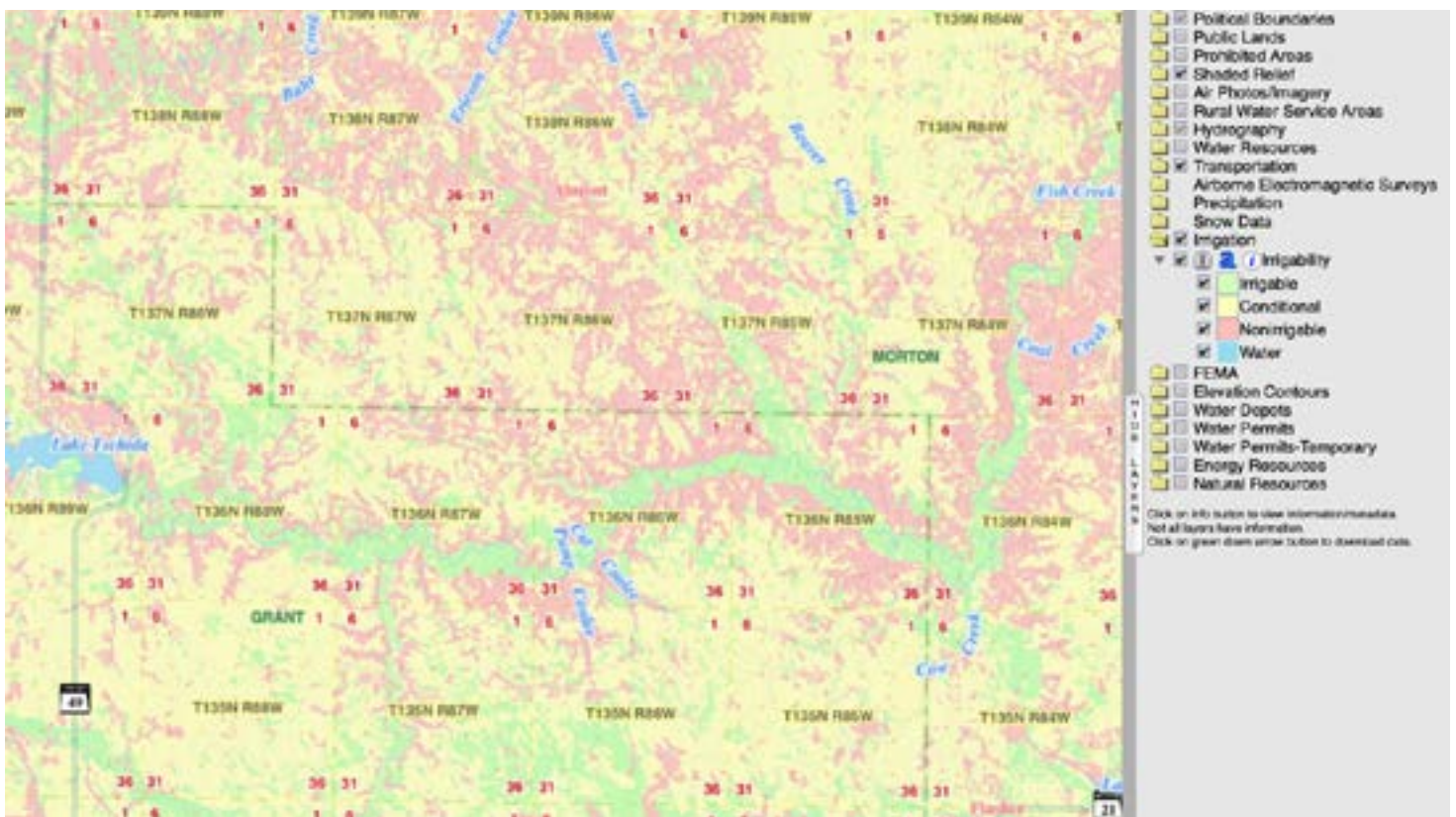
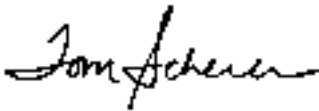


Figure 2. Irrigation classification of soils near the Heart River. The “T” in the legend allows the user to adjust the transparency.



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County commissions, North Dakota State University and U.S. Department of Agriculture cooperating.

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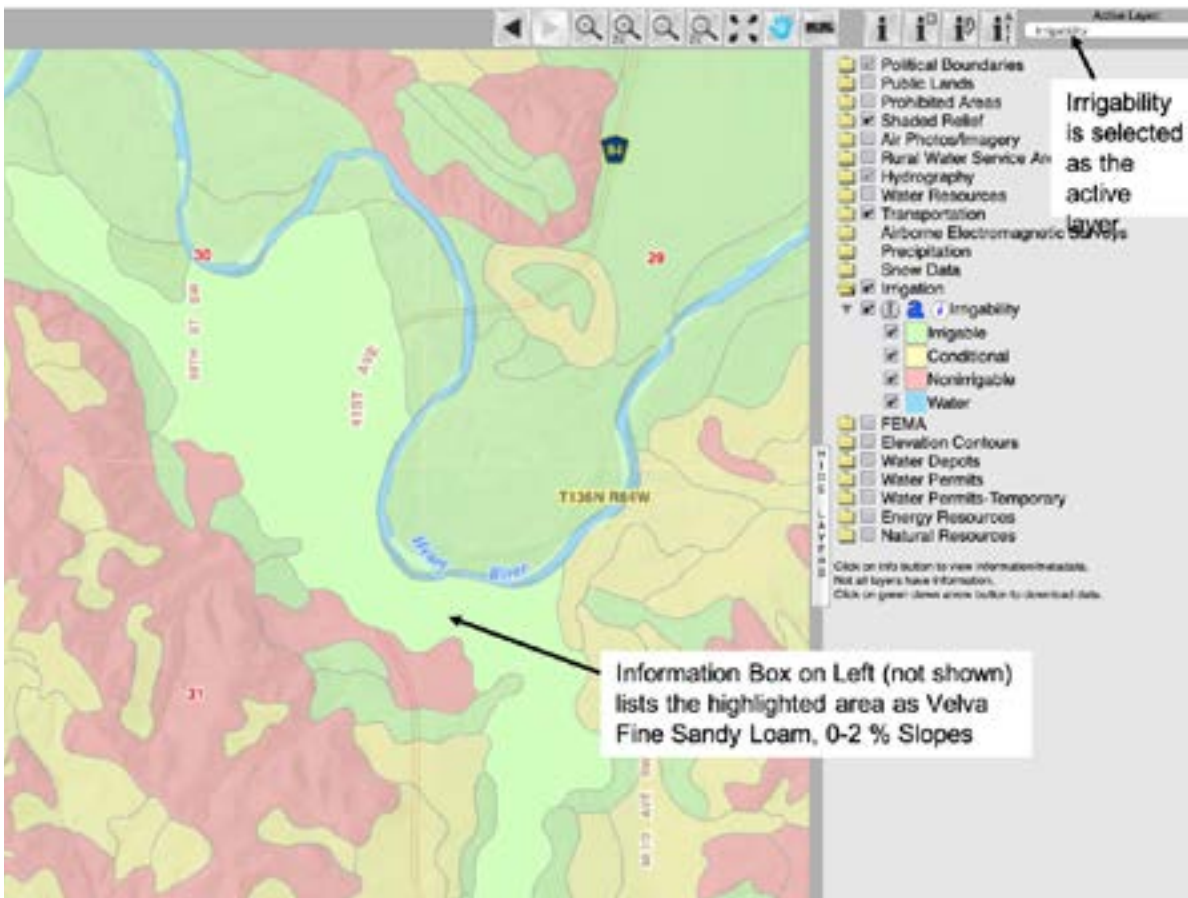


Figure 3. When "Irrigability" is the active layer and the "i" button is selected, the user can click on an area to open a window with information on that particular soil.