

Nature Talks

Sherburne Soil and Water Conservation District

Nature Talks
September 2021



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Sherburne
SWCD

This issue focuses on the drought conditions that Minnesota and almost half of the United States is experiencing in 2021.

Drought is defined as: a prolonged period of abnormally low rainfall, leading to a shortage of water. When serious water shortages occur, they have a negative impact on soil moisture reserves, groundwater supplies, lake levels and river/stream flows. This in turn has a profound affect on water-dependent industries including agriculture, public utilities, forestry and tourism. This newsletter explores the drought we are experiencing right now and changes we can make to help conserve water.

A Brief History of Droughts

Published by weather.com

The Great Drought

Also, known as "The Dust Bowl," the Great Drought is synonymous with the 1930s and the central plains of the United States. The drought itself extended from 1934 to 1941 and affected two-thirds of the country, from the Rockies to the Appalachians. Two of the driest years on record in the U.S., 1934 and 1936, occurred during this time.

The dust was the rich Great Plains topsoil that had dried and was picked up by strong surface winds, some of it blowing all the way to the East Coast. The term "Dust Bowl" referred to the area of eastern Colorado and New Mexico, west Texas, and most of Oklahoma, and Kansas.



Image credit: Glenbow Archives
NA-2496-1

On April 14, 1935, a dust storm engulfed Stratford, Texas, and actually suffocated some residents. The day was referred to as "Black Sunday."

During the summer of 1936, at least four major dust storms swept the central Great Plains. Poor ranching and agricultural practices, the below normal rainfall, along with very high temperatures and strong winds, all contributed to the "Dust Bowl."

Soil and Water Conservation Districts were formed in response to the Dust Bowl and have been involved in delivering conservation across America for more than 75 years. Because Minnesota has a wide variety of landscapes and conservation needs, each district operates at the direction of five locally elected board supervisors. This local perspective allows SWCD's to specifically manage the resources and serve the needs of the citizens in their district.

A Brief History of Droughts

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Published by weather.com

The 1988 Drought

One of the worst and most widespread droughts in recent decades was the one that parched much of the central United States in 1988.

The dryness started as early as late Winter, and conditions deteriorated through the Spring. By early June, many locations from the Canadian border to Texas had received less than 50% of normal precipitation, with some areas getting less than 40%. For example, from March to May, Des Moines, Iowa, usually receives over 9 inches of rain; in 1988 they managed less than three inches - only 30% of average.

Dozens of stations across the central part of the nation, particularly the Midwest, recorded record high temperatures. Temperatures in Valentine, Nebraska, and Sioux Falls, South Dakota, rocketed to 110°F, with readings topping the century mark in many other locations.

The drought peaked in early July. In stark contrast to conditions just five years later, the Mississippi River flowed at a relative trickle. Barge traffic was halted as extensive sandbars formed in the usually filled riverbed. Forty-five percent of the nation was experiencing drought or severe drought conditions as defined by the Palmer Drought Severity Index.

The 1988 drought was the worst in the Midwest since the "Dust Bowl" years in the mid-1930s. Damage and costs related to the drought amounted to \$40 billion, and there were over 5,000 related fatalities, including heat stress-related.



President Ronald Reagan visits the Krone Family Farm in Du Quoin, Illinois on July 14, 1988 (Courtesy: Ronald Reagan Presidential Library and Museum)

2021 Drought, where are we now?

Published by dnr.state.mn.us

2021 Drought

Drought conditions expanded aggressively across Minnesota during June, thanks to an extraordinary early-summer heatwave, along with a continuation of very dry weather. It was Minnesota's third warmest and seventh driest June on record. Stations throughout the state recorded 10 or more 90-degree days during the month, while averaging a mere 45% of normal precipitation.

The area of Moderate Drought or greater expanded by over 500%, from 13% coverage at the beginning of June, to 71% coverage by month's end. Severe Drought (D2) emerged in northwestern and southern Minnesota, occupying over 10% of the state by the end of June.

In July, the extremely dry weather continued, with the month finishing second driest on record on a statewide basis, and driest on record in many northern Minnesota counties. Once again, most areas received less than half of their normal precipitation. July was warm also, but lacked the heat extremes the state experienced during June. On July 6th, Severe Drought (D2) had expanded to account for 40% of the state; by the end of the month it had nearly doubled again to 75% coverage. Extreme Drought (D3) accounted for 4% of Minnesota in mid-July, and blossomed to 22% coverage by the end of the month.



2021 Drought, where are we now?

Published by dnr.state.mn.us
Continued from page 2

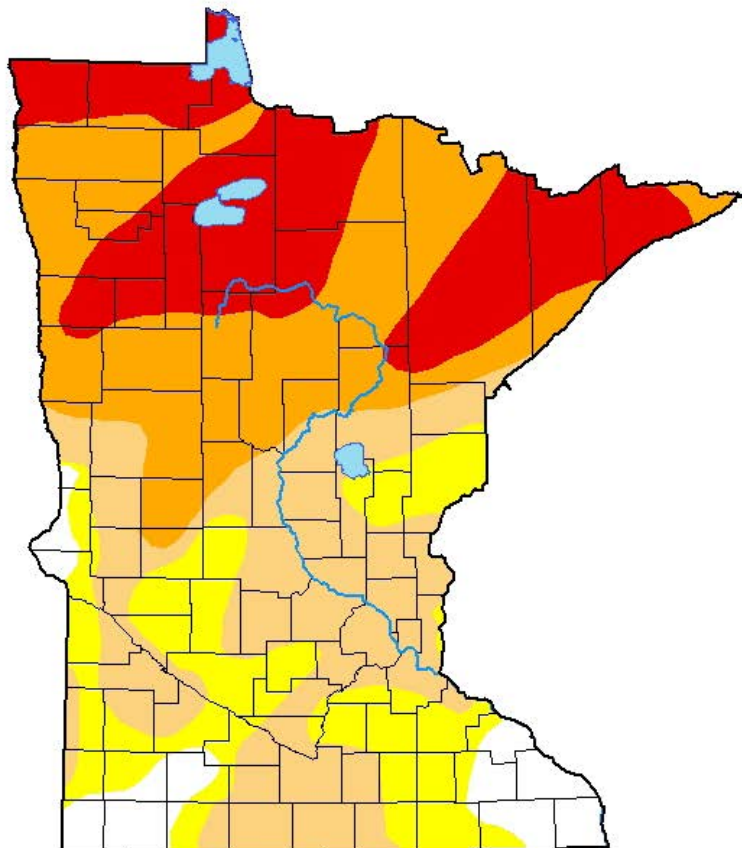
A two-week wet period in late August, did at least slow down the drought's intensification. All but northeastern Minnesota had at least two inches of new precipitation, with many areas receiving three or more inches of rain during that time. Additional rains of 1-2 inches fell over southern, and especially western Minnesota September 2nd and 3rd. Northeastern Minnesota received scattered totals of over an inch between September 6th and 10th, thanks to numerous isolated afternoon showers and thunderstorms.









Current Drought Conditions

U.S. Drought Monitor
Minnesota

September 21, 2021
(Released Thursday, Sep. 23, 2021)
Valid 8 a.m. EDT



Intensity:

-  None
-  D0 Abnormally Dry
-  D1 Moderate Drought
-  D2 Severe Drought
-  D3 Extreme Drought
-  D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <http://droughtmonitor.unl.edu/About.aspx>

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Brad Rippey
U.S. Department of Agriculture



droughtmonitor.unl.edu

Adopt a Storm Drain



The Adopt-A-Storm Drain program is a collaboration between Sherburne SWCD, Sherburne County Public Works and participating municipalities within Sherburne County. The goal of the program is to help support municipalities in their effort to maintain the extensive storm drain systems. Storm drains in rural and urban areas are constructed to help move water quickly off streets prevent flooding. This means the water being carried away at top speed is picking up litter, sediment, salt, oil, grass clippings and other organic material. Storm drains lead directly to nearby surface waters and runoff can cause serious pollution issues like algae blooms, murky water from sediment, and contaminated water from oil and other car fluids. Once the Adopt—A-Storm Drain program is up and running, volunteers throughout the county can sign up to Adopt a storm drain in their neighborhood.

Volunteers are encouraged to keep their storm drain clear of litter and other debris that tend to collect after rain events or snowmelt. Volunteers can report what they've collected after each visit to allow SWCD and County staff to monitor the amount of debris that is being kept out of our waterways. This is a great way for the community to help prevent unwanted pollution from reaching their local waterways. Stay tuned for the official launch of the program later this fall!

Combine and Take Cover

2021 has been a crazy year when it comes to rain and temperature. But as we see it, producers who are interested in seeding down their cropland to a cover crop can look forward to the benefits it will bring. Availability of moisture and the potential for wind & water erosion is always present there is never a bad time to explore the advantage of cover crops. Even though we do not know what will come during the spring of 2022. Studies have shown you prevent erosion from wind and rain, suppress weeds, retain soil moisture when utilizing cover crops. Cover crops can lead to increased soil temperature in the spring and reduce soil temperature during July's hot days. During harvest you may notice higher yields due to the implementation of cover crops. Producers who are interested in utilizing cover crop should start with a manageable acre size to increase success.

A little cover can go a long way to protect soil, increase soil moisture, and providing wildlife habitat. If you are interested in cover crops and are looking for technical and/or financial assistance, please call your local Natural Resource Conservation Service at 763-241-1170 or the Sherburne County SWCD office at 763-220-3434.



Conservation Comedy



What do you get when you throw a billion books into the ocean?

A Droughts Impact on Fall Colors

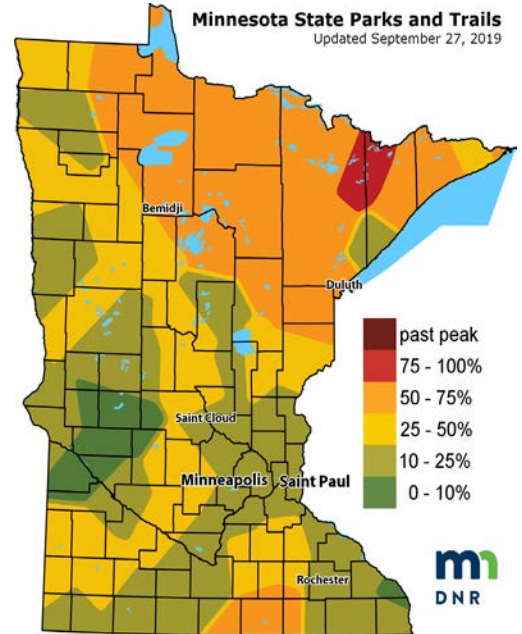


Every year we anticipate the beautiful transition as leaves begin to change color and trees go dormant for winter. But this summer hasn't been your average summer; for much of it, Sherburne County has been in "extreme" or "severe" drought. Not only Sherburne County but most of Minnesota has suffered similar conditions. This doesn't mean all of our trees will go right from green to brown, but it does mean things might be different from previous years. Weather, and more specifically temperature and moisture, play a large role in determining the amount and brilliance of fall colors that we will see.

Already this year we have observed shallow rooted species, such as paper birch and cottonwood, losing

their leaves very early due to lack of water. Not all tree species are impacted the same by drought and where the tree is on the landscape plays a significant role as well. Trees growing on tops of hills/bluffs or in shallow soil will typically have less access to water and may thus display less fall color. On the flip side, trees growing in valleys or slight depressions and trees growing in deep rich soil typically have more access to water and should show normal fall colors.

So, if you plan on going out to find the beautiful fall colors here are a few tips. First, if you plan on visiting a state park, check the MND-NR "Fall Color Finder" website. Here it has every state park listed with its current color status and details. Second, choose areas that have varying topography. This will allow for different soil depths and moisture regimes which will give you the highest chance of seeing peak colors. Third, consider going to southeastern Minnesota or even Wisconsin to view the colors this year. Both areas have not been as affected by the drought and should have more classic fall colors. Overall, it's impossible to predict when and where the best fall colors are going to be, but by following these tips, you will have the best probability of witnessing the beautiful transition from summer to fall.



Join us for the great Elk River Clean Up



**Saturday, October 2nd
9am-11am**

Sign up on our website today or by contacting Franny at fgerde@sherburneswcd.org / 763-220-3434 x 104

Meeting Locations will be assigned in Big Lake & Elk River.



Great activity for small groups and families!

There's no better time to get involved in some good clean fun than at the Elk River Watershed Cleanup! Since 2008 the Sherburne has removed over 3,800 pounds of trash from the Mississippi River with the help of volunteers like you. Let's make this year the largest cleanup event yet!

Consider Prairie

Hot summer. Drought Conditions. Brown Lawn. What is a landowner to do? Plant Prairie.

Lawns have been a staple to the American suburb since the mid 20th century although they first started popping up in the late 1800's. Lawns are aesthetically pleasing, great to play on, and became another way to keep up with the Jones'. Most lawns are made up of introduced, cool season grasses meaning that they don't originate in the United States and that they prefer cooler weather such as Minnesota springs and falls. Grasses such as Kentucky Bluegrass are common in today's lawns but require a substantial amount of inputs such as Nitrogen, water, and mowing due to their very short root system (2 inches) and their growth pattern as a sod forming grass. But what happens when the heat turns up and the water disappears? Brown lawns. Most lawns cannot access water and nutrients with their short root systems and go dormant. They cannot put down new roots or above ground growth. When looking for alternatives to turf, consider prairie.

Pre-settlement, prairie covered many of the regions in Minnesota that had a drier climate with higher temperatures. Specifically in Sherburne County was Oak Savanna featuring short, dry grass prairie. Roots of prairie grasses and forbs go down several feet with the ability to use water in the top 10 inches of soil. Prairie prefers an environment with less nutrients meaning it does not need fertilizer; relationships form within the prairie to support itself! Prairie does not need to be mowed weekly either, it does best with a major disturbance every 3-6 years such as a mow or burn. There is additional scouting (much like a lawn) to make sure that pesky plants don't get a hold within your prairie but those can generally be spot treated. Weed control is also needed while the prairie establishes, which can take about three years. If you aren't quite ready to say goodbye to your lawn but want to move toward a lawn with less maintenance and more resilience? There are low mow and short native lawns mixes that might be your ticket.



Questions on prairie? Low mow? Give us a call! 763-220-3434.

A banner for a tree sale. On the left is a logo with a tree and a shovel, with the text "Tree Sale" and "Sherburne SWCD" below it. The main text reads "SWCD TREE SALE" in large white letters, and below that, "Spreading roots to promote a greener Sherburne County". The background shows hands planting a small tree seedling in the soil.

The Sherburne Soil and Water Conservation District is holding its annual tree sale to encourage tree planting in Sherburne County.

Bare root seedlings are easy to plant, grow quickly and come in bundles of 25. Many of the species being offered provide food and shelter for birds and wildlife year round. Additionally, trees can increase the value of your property and conserve energy by shading your house in summer and sheltering it from cold winds in winter.

Orders accepted beginning January 3rd, 2022.

Watering Tips During a Drought



Minnesota may seem like the land of a never-ending water supply but just like most natural resources, it is finite. Here are some helpful watering tips to reduce water waste during any year but most importantly during a drought.

- Water early in the morning or later in the afternoon to avoid the hottest part of the day when most water will be lost due to evapotranspiration
- Water deeper and less frequently to encourage deeper root growth
- Mulch around plants to help conserve moisture – avoid mulch volcanoes around the stem
- Plant drought tolerant species that require less care during harsh weather
- Install a rain barrel to harvest rainwater to use on the lawn and perennial gardens

Be sure to follow your local watering restrictions during times of drought. For more smart watering tips visit the U of M extension yard and garden page or feel free to contact the SWCD office.
<https://extension.umn.edu/how/water-wisely-start-your-own-backyard>

Uniformity Testing

District staff is working with 4 farms in 2021 to perform uniformity tests on their operation. This helps assure that Sherburne County Irrigators are doing their best to protect water quality and quantity while saving energy and money. Uniformity testing is paired with Irrigation Water Management to track soil moisture at multiple depths throughout the growing season.

Identifying water application problems when irrigating using a sprinkler irrigation system, such as center pivots, is vital. Over and under irrigation can have an adverse effect on crop yield that can be attributed to poor soil aeration, increased disease incidence and leaching of the agricultural chemicals to the groundwater especially in sandy soils, which are highly porous and cannot hold much water.

Consequently, periodic checking of irrigation system uniformity is important and is the first step in improving water use efficiency and yield and reducing the energy costs.

Test procedure

Uniformity testing can be done by setting the catch cans (collectors) along the length of the pivot or perpendicular to the direction of the travel and letting the system pass over these cans.

- The system pressure should match the pressure used to design the sprinkler package on the machine.
- Record the amount of water collected in each can and can distance from the center of the pivot.
- Using this information, a coefficient of uniformity (CU) can be calculated.
- The coefficient of uniformity (CU) is usually expressed as a percentage.



**For more information on Uniformity Testing,
contact Miranda 763-220-3434 x 105
mwagner@sherburneswcd.org**

What Happens to a Stream During a Drought?

With our region reaching “Extreme Drought” conditions as described by the Department of Natural Resources, the aquatic organisms in our streams must be feeling very stressed. How exactly do aquatic plants and animals react to these conditions?

When water levels start dropping, fish will congregate in deeper pools or spring-fed sections of the stream. These “sanctuaries” may allow for some temporary relief but are also dangerous in many ways. Here, many species may congregate so some fish may become food for others. As fish density increases, the competition for food increases. The likelihood of disease or virus transmission increases too. As time passes, the temperature of the water will increase and oxygen levels decrease. Some fish species are tolerant of warmer water and low oxygen but these conditions can be too stressful for others. Eventually, the conditions may become lethal for some fish and if conditions persist for too long, all fish could be impacted. Short term drought is unlikely to alter the fish community in a stream to a large degree, but a drought that lasts for a long time may require years of recovery.



Mobility is a critical factor to determine an organism’s ability to survive drought conditions. Fish are highly mobile as long as there is a connected waterway of sufficient depth. Some species have very limited mobility such as native freshwater mussels. You may observe mussel “tracks” in the streambed as water recede. They are able to move short distances to find water, but because they move very slowly they risk being eaten raccoons, muskrats, otters, or even geese or ducks. Even if they find water, they are susceptible to stressful conditions such as a lack of flow, increasing temperatures or low oxygen. Like fish, some mussel species are more tolerant of stressful conditions than others.

Similar to fish and mussels, some insects can thrive in low water conditions whereas others cannot. Mayflies, stoneflies and caddisflies simply cannot tolerate low oxygen and will quickly die off. Midge flies and black flies are quite tolerant. Dragonflies are a somewhat “hardy” species and also fairly mobile so they can find the right conditions if necessary. Some insects adapt to conditions by seeking shaded moist areas like the undersides of leaves, rocks or logs. Others are able to burrow deep into the streambed to find moist conditions and reduce their metabolism in order to “wait out” the drought. For many organisms in a stream, drought is an exceptional challenge. But intermittent and short drought conditions can be beneficial for the stream and even protect it when water returns. For example, low water allows plant seeds to sprout. Re-vegetated streambanks will better withstand the force of stream currents. Exposed organic matter will dry up and decompose, reducing the transport of nutrients and sediment downstream in the future.

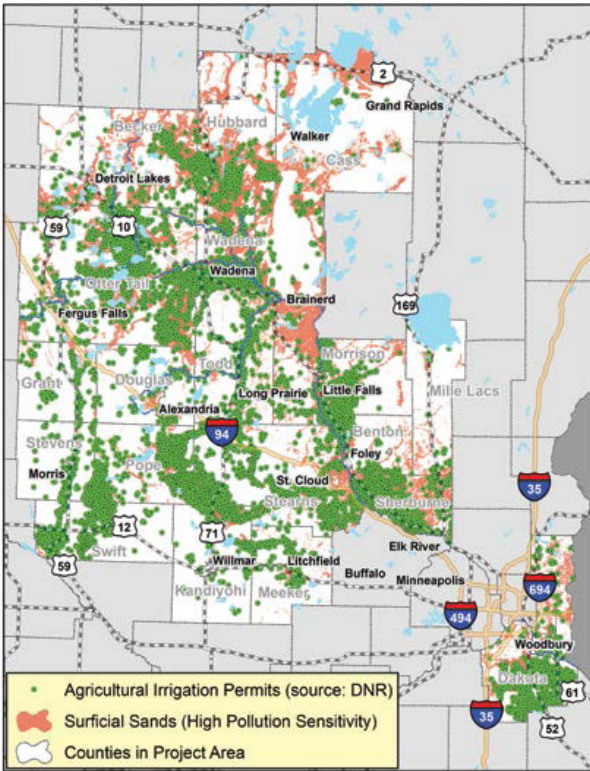
Streams are dynamic and quickly-changing environments. As our climate changes, the magnitude of both droughts and floods will also change. To help streams better tolerate these extreme conditions, the Sherburne SWCD encourages planting native vegetation along the streambanks and within stream buffer zones. Tall grasses and flowering plants slow the movement of water into a stream, reducing flooding while increasing base flow. Trees and shrubs help in this regard too, but also create shade to cool a stream’s water. Restoration of nearby peatlands and wetlands help to capture water and slowly release it to streams and lake. These practices help streams to manage extremes in either direction either too much or too little water.

Upcoming Events

- | | |
|------------------|-------------------------------------|
| Oct 2nd | Elk River Clean Up |
| Oct 11th | Columbus Day |
| Nov 7th | Day Light Savings Time Ends |
| Nov 25/26 | Thanksgiving (Office Closed) |



Innovative Irrigation Practices



The Minnesota Department of Agriculture (MDA) has partnered with over 30 organizations, including USDA-Natural Resource Conservation Services (NRCS), soil and water conservation districts (SWCDs), Central Lakes College, AgCentric, University of Minnesota, Mille Lacs Band of Ojibwe, state agencies, irrigator’s associations, and businesses, to provide financial and technical support for precision irrigation to irrigators. This 5-year project is designed to work directly with agricultural producers using irrigation in the project area to:

- Apply conservation practices that protect groundwater quality and quantity
- Promote expanded precision irrigation practices
- Build technical expertise among NRCS and SWCD staff to guide farmers in applying conservation practices
- Promote and organize farmer to farmer learning opportunities
- Utilize partners’ expertise to design innovative approaches to expand conservation efforts, and quantify the environmental

Contact Miranda at mwagner@sherburneswcd.org or 763-220-3434 x 105 for more information on this program.

Golden Clam Update

Sherburne SWCD has participated with the Minnesota AIS Research Center in a year-long study regarding the newly discovered golden clams in Briggs Lake. Here is a highlight video of some of the work that has been complete, Click the image to watch. *Stay tuned for results and a report this coming fall / winter.*



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