



CSR and CSR2 - An Explanation

The USDA NRCS Updated the Soil Survey with Iowa State's CSR2 Data in January 2014

Iowa's soils and their inherent productivity play key roles in Iowa's wealth and ability to feed the world. The USDA Natural Resources and Conservation Service (NRCS) is the agency responsible for mapping, classifying and quantifying the differences between soil types. They began publishing a soil survey in the 1930s. Since those first surveys were published, the NRCS has been working to improve soil mapping techniques and classification methods and now publishes the official soil survey on the internet as "the Web Soil Survey". The advances in the soil classification system and in soil survey publishing have made it necessary to update the way Iowa calculates and maintains its soil productivity rating system, the Corn Suitability Rating (CSR), which was created by Iowa State University. The new CSR2 model was released by Iowa State to the NRCS in July 2013. The NRCS completed a soil database update and published it in January 2014. CSR2 is now recognized as the standard rating system for Iowa soils.

What are CSR and CSR2?

The Iowa Corn Suitability Rating (CSR) system was developed by Iowa State University in the early 1970s as a way to measure potential soil productivity based on soil profile, slope characteristics and weather conditions. It is an index ranging from 5 to 100 with CSR values of 100 being the most productive. County assessors use the CSR and the Iowa State University soils database to determine land values for property taxation. Appraisers, real estate agents, and farmland investors use it to evaluate land values and analyze comparable sales. Farm managers and farmers use it for conservation planning, lease values, and crop production analysis.

CSR2 is an index similar to the CSR concept but uses a clearly defined and easily calculated formula to determine a soil's productivity. It is more consistent with the newer, more data-driven methods the NRCS uses compared to the original CSR which was more experience and judgment based. CSR2 is also more suitable to site-specific soil measurement and precision farming uses as it takes into consideration the soil inclusions or subcomponents.

CSR2 will evaluate soil taxonomy, soil particle size, field conditions, water holding capacity, soil depth and an erosion factor. The official CSR2 formula along with CSR2 values was released in July 2013.



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What Does this Mean for Iowa Farmland Owners?

On a farm-by-farm basis, it is probable that the weighted average CSR2 value is different from the original CSR value. If the CSR2 value is lower and it is reported as a CSR value, the perceived value of your farm may be impacted even though the soils are the same. This may also have an impact on lease negotiations. The same is true if the CSR2 is higher than the CSR.

If you still have a soil map or CSR records pre-dating January 2014 and compare it to current Web Soil Survey data, the Corn Suitability Rating for your farm may have changed. The likely explanation is the change from CSR to CSR2.

One of the key differences between CSR and CSR2 is the removal of the climate factor. In the original CSR values, soil scientists made an adjustment based on the geographic region of a soil map unit (SMU). The climate factor was used to show differences in normal rainfall patterns for each county.

For example, SMUs in northwest and north central Iowa were adjusted downward more than SMUs in southeast Iowa. Precipitation is no longer recognized as a limiting factor across the state due to increased rainfall amounts, making the climate factor obsolete. CSR2 ratings generally adjusted higher compared to the prior CSR value in northwest and north central Iowa after removing the climate factor.

It is also important to recognize that CSR2 values on your farm are still subject to slight changes from time to time as more information becomes known about particular soil types. Data is normally updated each year in July. These adjustments are typically relatively minor but can occur.

The Iowa Department of Revenue has required use of the official NRCS Soil Survey with CSR2 data for all Iowa county assessors since 2017. They base their assessment calculations for agricultural land on the data from Iowa State University.

CSR, CSR2 and Soil Mapping Resources

The explanation of the original CSR <http://www.extension.iastate.edu/Publications/PM1168.pdf>

Detailed information on the calculation differences between CSR and CSR2 <https://www.agron.iastate.edu/glsi/files/2022/12/CSR-vs-CSR2-Poster.pdf>

The website for the official NRCS published soil survey (The Web Soil Survey) is <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>