

SUSTAINABILITY ANALYSIS

2023 ON-FARM PRACTICES REPORT

PROGRAM OVERVIEW

About Minnesota Corn

Minnesota Corn is one of the largest grassroots farm organizations in the United States. Minnesota Corn strives to identify and promote opportunities for Minnesota's corn growers while enhancing quality of life. This is accomplished by:



- › **Promoting Sustainability Programs**
- › **Supporting Innovation**
- › **Advocating Best Practices**
- › **Fostering New Uses**
- › **Strengthening Partnerships**

Verified by Eocene Environmental Group

Eocene Environmental Group is an independent third party that provides scientific, evidence-based sustainability metrics for regenerative agriculture practices such as reduced tillage, improved soil health practices and increased carbon sequestration. Eocene's unique process platform EcoPractices® pinpoints the influence of these practices, providing key sustainability data.

With a growing demand by consumers and food companies for evidence-supported sustainability, this data can be used to increase product marketability, enhance industry communications and provide valuable insight for future in-field decisions.

CURRENT PROGRAM

The current program allows Minnesota Corn to view the impact of agricultural practices on **38,959 acres** from **539 fields**.



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MINNESOTA CORN | EXECUTIVE SUMMARY

Soil Health

NRCS defines soil health as the continued capacity to function as a vital living ecosystem that sustains plants, animals and humans.¹ Soil health increases as the amount of soil disturbance and compaction decreases. In addition, having residue or a living cover outside of the growing season improves soil health by minimizing erosion. All of these practices stimulate biological activity which results in better nutrient cycling and grows healthy plants.

SOIL CONDITIONING INDEX (SCI)

Soil Conditioning Index (SCI) is a tool from NRCS that shows the trajectory of soil health. A positive SCI means a positive trajectory of soil health and vice versa.

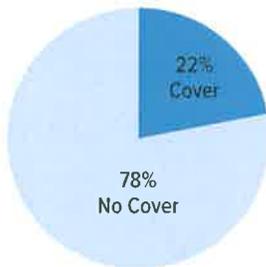
The fields in the project have an overall **positive (+) trajectory** based on the SCI.

SOIL TESTING

67% of fields had updated soil tests.



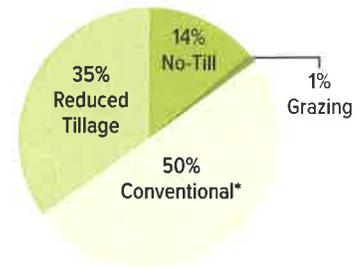
COVER CROPS BY % OF ACRES



Cover crop varieties include **cereal rye, hay, oats, tillage radish and triticale**. According to the 2017 U.S. Ag Census, the national average is **4% cover crop adoption, 37% no-till adoption, and 35% reduced till adoption**.

*Conventional tillage is defined as 70% or more residue incorporated and/or three or more passes of a tillage implement(s) in a given growing season.

TILLAGE BY % OF ACRES



EROSION AVERAGE (USDA)

The USDA National Resources Inventory provides estimates on average erosion for different systems across the U.S.*



IN-FIELD ENVIRONMENTAL OUTCOMES

The data is reflective of weather and soils influence in addition to implemented in-field management practices for the project year.[†]

Soil Erosion Rate **OVERALL FARM** **0.80 T/ac**

IN-FIELD PRACTICES COMPARISON IMPACTS

When compared to conventional practices (i.e. conventional tillage, no cover crop scenario), in-field farm practices generated:[‡]

 **54,751 tons of soil saved** instead of being lost to erosion, which is the same as

 **3,422 dump trucks of soil**

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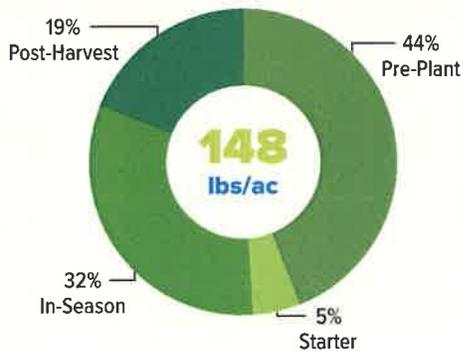
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Water

Water in agriculture is evaluated both on quality and quantity. Water quality is affected by decreasing or eliminating contamination. For example, ensuring there isn't overapplication of nutrients decreases water quality risks. Water quantity is important in dry climates.

CORN NITROGEN TIMING & RATE

Split applying nitrogen can improve productivity and profitability and can reduce losses to the environment. This chart represents the percent of total nitrogen applied at different points in the growing season.



NITROGEN INHIBITOR/STABILIZER

30% of nitrogen applied corn acres utilized a nitrogen inhibitor or stabilizer.

Conservation Practice	Acres
Buffer	2,106
Forest	305
Grassed Waterway	183
Pollinator Habitat	17
Wetland	1

WATER QUALITY SAVINGS

When compared to conventional practices (i.e. conventional tillage, no cover crop scenario), in-field farm practices generated:¹

109 tons of nitrogen saved instead of being lost through leaching and runoff

15 tons of phosphorus saved instead of being lost through runoff

Economics

Farms maximize profit in two ways: increasing outputs or decreasing inputs. Increasing yield is often a key area of focus for farmers. While less popular, decreasing fertilizer, chemicals, water and other inputs can also be an effective way for farms to improve profitability.

CROP ROTATION

In North America, crop management is prone to monocropping systems, where the same species may be utilized in a field for repeated seasons. If this occurs the soil is subject to degradation due to non-varying root systems, and can impact crop growth and potential yield. To reduce the impacts on the soil and crop, growers are encouraged to increase their crop rotation. Acres under crop rotation also increase biodiversity, manage risk of on-farm economics, and vary input use.²

CROP DIVERSITY

