



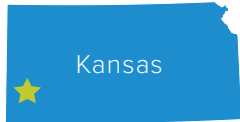
SUSTAINABILITY ANALYSIS

2020 ON-FARM OUTCOMES REPORT

INTRODUCTORY MESSAGE

About Winsome Farms

Winsome Farms has been working with Nu Life Market for four years. The operation is located 100 miles from Nu Life Market processing facilities. More information can be found on their website www.winsomefarmsks.com.



Quantifying the Impact of Actual Farm Practices

The benefits were determined through EcoPractices' unique process that is able to pinpoint the influence of specific agricultural practices. While agricultural practices have progressed to better care for natural resources, the ability to quantify the influence these practices have on sustainability has not kept pace. Having such data brings more depth to on-farm decision-making while reducing supply chain sustainability risk.

About Nu Life Market

Nu Life Market is aligning with United Sorghum Checkoff Program's sustainability goals by quantifying the on-farm practices of their growers. The brand is setting themselves apart and leading the way for the industry. The company's goals are focused on:

- > Soil Health
- > Water
- > Economics
- > Carbon

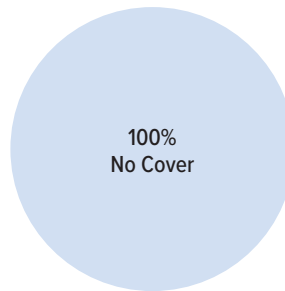


One of the biggest benefits of growing sorghum is its drought tolerance. It originated in northeastern Africa and therefore is greatly adapted to arid-semiarid regions. It also requires less inputs, such as nitrogen fertilizer, compared to other grain crops. It is in the top 5 cereal grains by production and acreage internationally.**

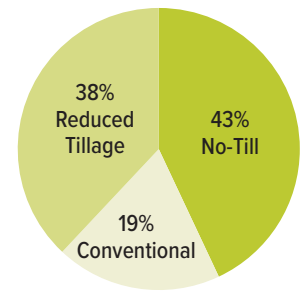
FIELD STATISTICS

650 acres from **5** fields

COVER CROPS



TILLAGE



According to the 2017 US Ag Census, the national average is **4% cover crop** adoption, **37% no-till** adoption, and **35% reduced till** adoption.

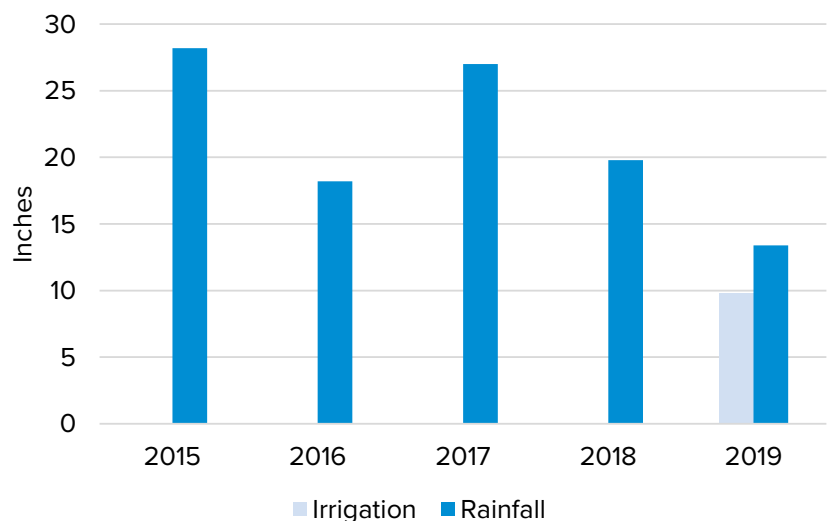
IRRIGATION EFFICIENCIES

Pivots have nozzles which drop down closer to the ground to avoid much water loss.



57% of fields are irrigated at a rate of **9.8 acre-in per acre**.

ANNUAL RAINFALL

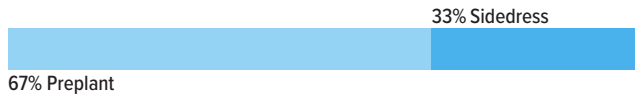


This graph represents the irrigation and rainfall over a five year period at Winsome Farms.

Rainfall data sourced from NOAA. Certain months are missing data due to malfunction in equipment.

FERTILIZER TIMING

Application timing is an important strategy to minimize fertilizer loss and increase efficiency.



AVERAGE APPLICATION RATE

An average rate of **69 lbs/acre of nitrogen** was applied.



Weather, Soils, and In-Field Management Practices influence the following environmental metrics

ENVIRONMENTAL OUTCOMES

From the management practices at Winsome Farms, which was 43% no-till and no cover crops during 2020, the following environmental outcomes resulted.*

OVERALL FARM

CO₂e Emissions (tons per acre)	0.2
Carbon Sequestered (tons per acre)	0.03
Soil Erosion (tons per acre)	0.4

EROSION AVERAGE

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



KS Cropland
5.0 T/ac



National Average
4.6 T/ac

SORGHUM GRAIN YIELD

24,368 bu or **37 bu/ac**

Yield values are influenced by seasonal precipitation.

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 are an overall **+** trajectory for **SCI**.

100% of fields have updated soil tests in the last year.



MANAGEMENT PRACTICE IMPACTS

Significant environmental benefits resulted from cropland acres compared to a conventional tillage, no cover crop scenario.*



170 tons reduction of CO₂e, which is the same as



33 average passenger cars off the road for a year



or **1 rail car of coal** saved from being burned



46 tons of soil carbon sequestered



1,759 tons of soil saved instead of being lost to erosion, which is the same as



110 dump trucks of soil



0.2 lbs/acre of nitrogen saved instead of being lost through leaching and runoff.



0.1 lbs/acre of phosphorus saved instead of being lost through runoff.

Data provided by Winsome Farms for the 2020 growing season and calendar year.

*EcoPractices estimates an environmental impact value for reducing greenhouse gas emissions, reducing soil erosion, and reducing nutrient loss due to reduced leaching. These estimates adhere to processes that are documented by the NRCS Technical Guides and publications from the EPA. These values are tailored to a specific location and participant's operation. Models used are supported by USDA, NRCS, other government agencies, and major universities. Modeled results include input data from public resources for weather, soils, and historical crop rotation. Greenhouse gas simulations were produced from the Greenhouse Gas Inventory (GGIT) tool developed by Soil Metrics, LLC (2021) <https://soilmetrics.eco>. The GGIT tool implements the USDA-sanctioned greenhouse gas inventory methods described in Eve et al. (2014) 'Quantifying Greenhouse Gas Fluxes in Agriculture and Forestry: Methods for Entity-Scale Inventory'. The GGIT tool utilizes greenhouse gas modeling technology developed for the COMET-Farm tool, licensed by Colorado State University to Soil Metrics, LLC.

** USDA, NRCS 2017 National Resource Inventory

*** Kansas State University, Department of Agronomy

This summary must not be edited or altered in any way without the involvement and consent of EcoPractices.

EcoPRACTICES
An Evaluation of Actual Performance