



The Land Institute

# Annual Kernza® Supply Report

A look at 2023 planting,  
harvest, and management data

2023

**Published By:**

Crop Stewardship

[fancher@landinstitute.org](mailto:fancher@landinstitute.org)

[www.landinstitute.org](http://www.landinstitute.org)

# Table of Contents

Summary ..... p.1

Planting ..... p.2

Management & Harvest ..... p.6

Grain Inventory ..... p. 11

# Summary for US data

**There are 2,405 Kernza® acres.**

738 acres were planted in 2023.

1,157 acres were rotated out of production.



**Average bin-run grain yield is 300 lbs/acre on farm\*.**

**739,953 lbs of clean, dehulled Kernza® grain are estimated to be in storage.\*\* Half was harvested in 2023.**



**There are 160 Kernza licensees.**

72 are actively growing Kernza.

15 states have active Kernza growers.

\*We estimate that the average loss from bin-run grain to clean, dehulled grain is 40%

\*\*Average yield estimates are weighted by the number of acres harvested in each field because yields are generally lower in smaller fields with more edge effects.

# Planting



## Quick stats

**738**

Acres were planted, about half as many as 2022.

**242**

Acres of new plantings were Regenerative Organic Certified.

**115**

Acres of new plantings were Certified Organic.

**347**

Acres of new plantings were conventional.

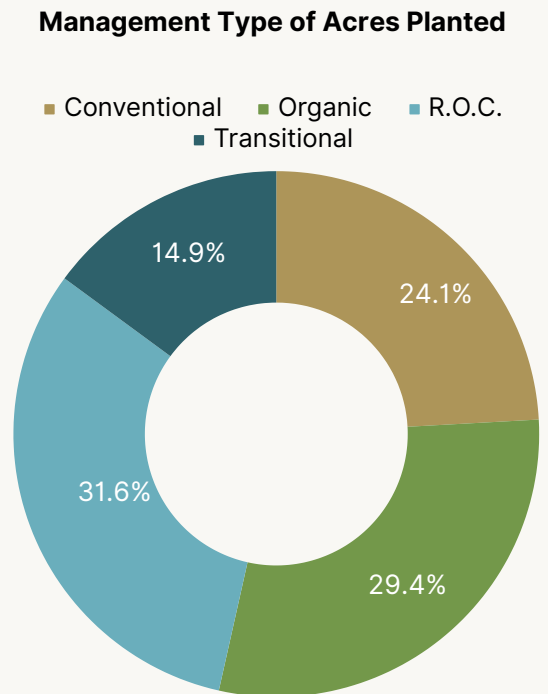
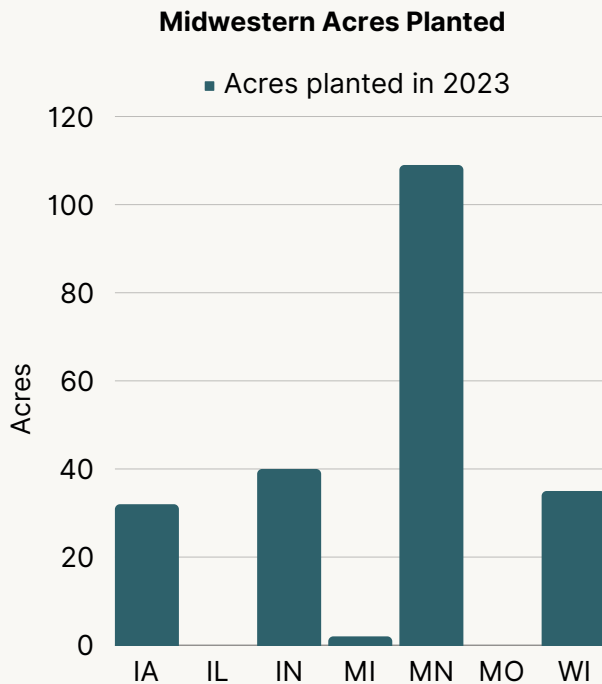
**34**

Acres of new plantings were transitional.

# Planting in the Midwest

## Iowa, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Wisconsin

There were 218 acres planted in the Midwest, almost all of which were fall plantings between August 31st and October 22nd. The majority of acres in this region are dryland, with three acres under irrigation in Wisconsin. Nearly all acreage was planted with the MN-Clearwater variety and an average seeding rate of 11.5 lbs/acre. Various crops preceded Kernza®, including alfalfa, corn, clover, grass mixes, buckwheat, soybeans, and wheat.

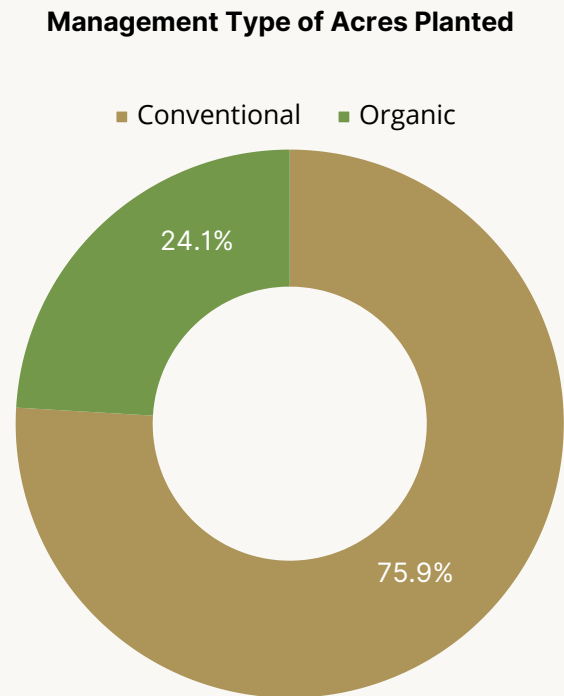
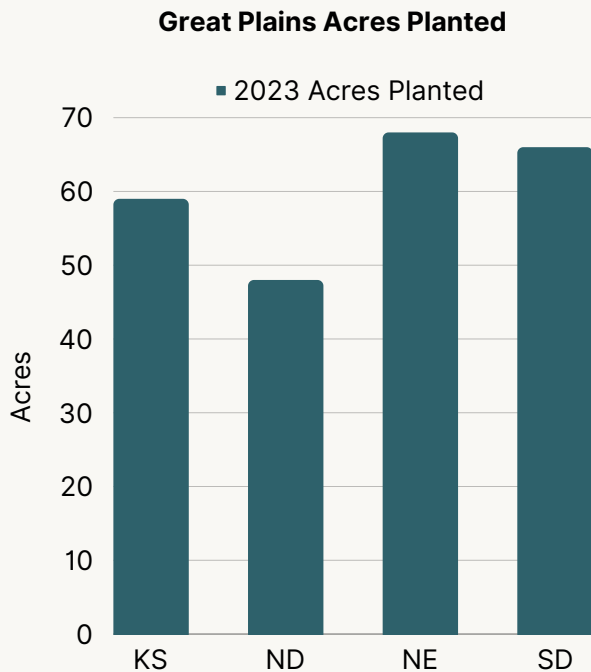


Two percent of acres planted in this region failed to establish due to planting too deep and poor timing of precipitation.

# Planting in the Great Plains

## Kansas, Nebraska, North Dakota, South Dakota

Two hundred forty-one acres were planted in the Great Plains. Both spring and Fall planting occurred, with the majority of acres planted in the fall between September 15th and October 16th. TLI-801 and MN-Clearwater were planted at an average seeding rate of 12 lbs/acre. There are no irrigated fields in this region. Various crops preceded Kernza®: corn, soybeans, winter wheat, sorghum sudangrass, forage sorghum, or fallow.

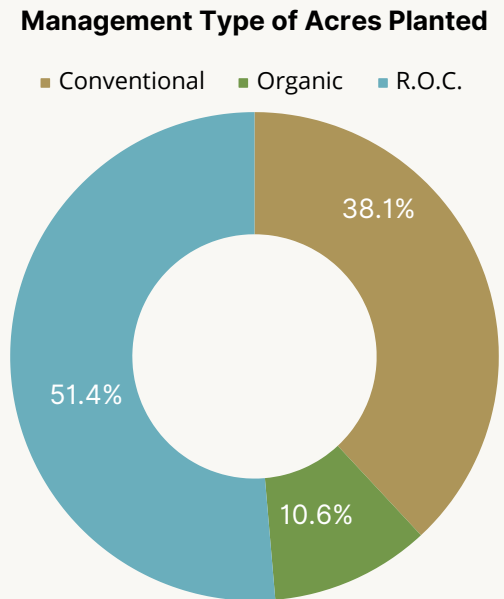
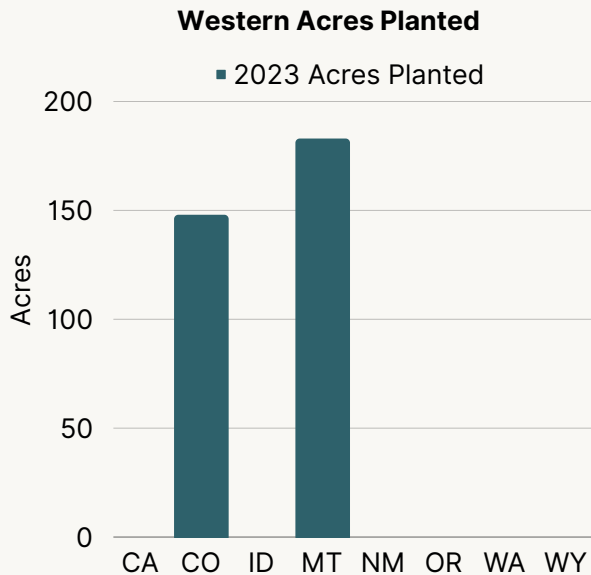


Twenty four percent of plantings in this region failed to establish due to drought.

# Planting in the West

## California, Colorado, Idaho, Montana, New Mexico, Oregon, Washington, Wyoming

Colorado and Montana added 331 new acres this year. Most plantings occurred in the spring between April 1st and June 6th. Most of the acres in this region are dryland, with 16 acres under irrigation in Colorado. Several Kernza® varieties were planted, including TLI C5, TLI 705, and MN-Clearwater, with an average seeding rate of 12 lbs/acre. Nearly all plantings were preceded by fallow or grass pasture, except 4 acres preceded by Teff.



Five percent of acres in this region failed to establish, primarily due to frost, weed pressure, annual grass pressure, and pests.

# Management & Harvest



## Quick stats

**367,380**

Estimated pounds of clean\*  
grain was harvested

**814**

Tons\*\* of Kernza hay and straw  
were harvested

**689**

Acres were grazed

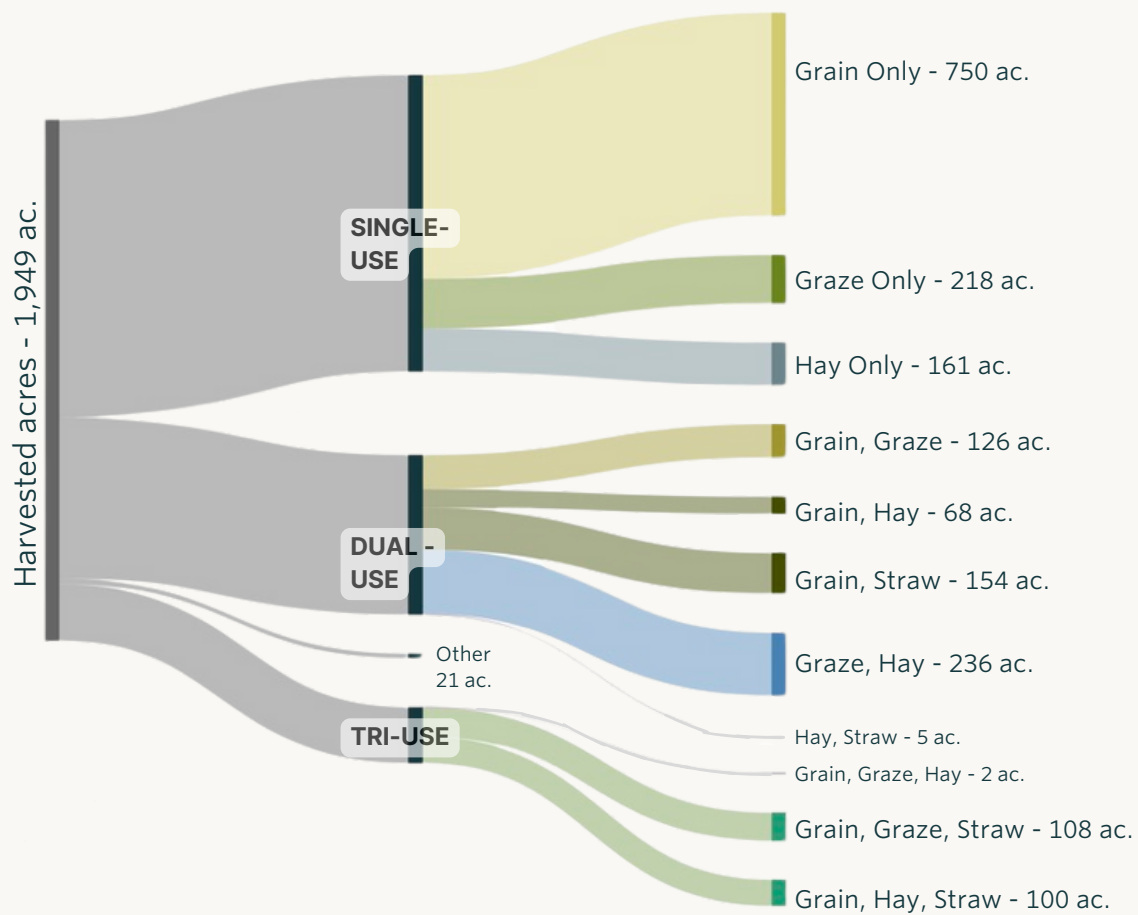
\*Estimated clean, dehulled tons using a cleaning and dehulling loss of 40%

\*\*A ton, is an "english ton" (short ton) equivalent to 2000 lbs.



# Harvest Products

**Kernza Multi-Use:** All products harvested from Kernza fields (grain, hay, straw, graze) in the US in 2023. The number one product for Kernza is grain, but half of all acres result two or more products.



# Management & Harvest in the Midwest

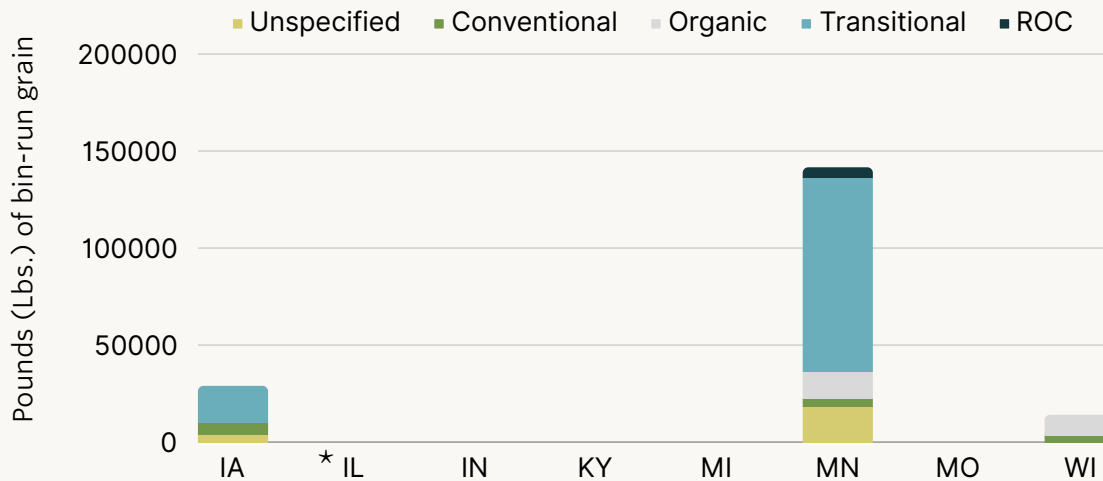
Iowa, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Wisconsin

**Growing Conditions & Management Observations:** Drought and weed pressure impacted harvest and management decisions. According to the US Drought Monitor, nearly 100% of Minnesota was in D0 - D3\* drought for summer and fall of 2023. To manage weeds, several producers applied herbicides.

**Grain Harvest Observations:** Grain harvest began as early as July 1st and as late as September 30th. Growers reported challenges with combine settings, harvest timing, and achieving optimal grain moisture for harvest and storage of Kernza grain.

**Grazing Observations:** Some Midwestern producers grazed sheep or cattle, typically in October after grain harvest.

2023 Kernza Grain Harvest (Bin-Run) Totals



\*Iowa also reported 4,000 lbs. of clean , dehulled Kernza

“Weed pressure moved us from a 2023 grain plan into a forage/hay use. We harvested two cuttings on 15 acres...” -[ Minnesota Farmer ]

“I waited a little longer, lower moisture content, to start harvest vs. 2022. Got a much cleaner harvest”. - [ Iowa Farmer ].

# Management & Harvest in the Great Plains

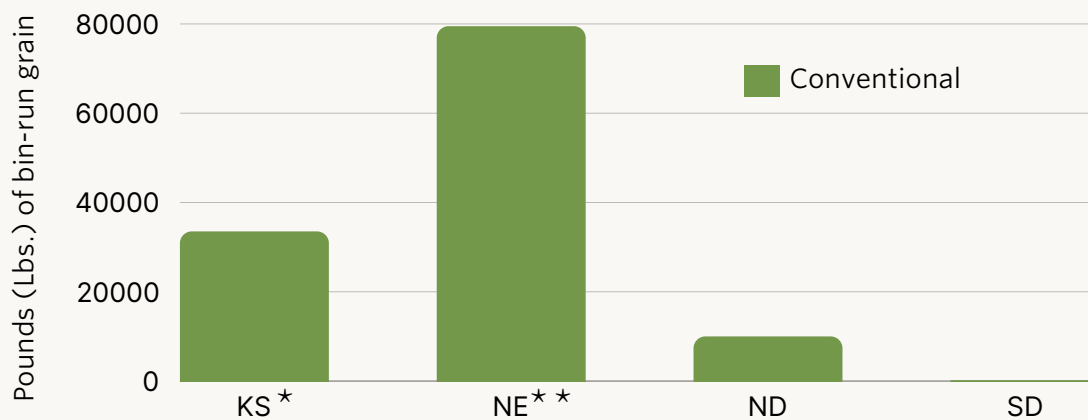
## Kansas, Nebraska, North Dakota, South Dakota

**Growing Conditions & Management Observations** Drought impacted harvest. According to the US Drought Monitor, 90% of Kansas was in a D0-D4 drought for all of 2023, with 40% of the state in D4 drought January to June of 2023. Producers reported no management decisions regarding herbicide use or irrigation.

**Grain Harvest Observations:** Grain harvest began as early as July 15th and as late as September 28th. Growers reported lodging in MN-Clearwater and issues with grain moisture content in stored grain.

**Grazing Observations:** Roughly 300 acres of Kernza were grazed. About half of those acres were winter grazed after a grain harvest, with a 15 to 30 AU/acre stocking rate. Some producers chose to summer graze, estimating 35 AU/acre in a May/June rotation grazing system. Summer grazers had no grain harvest.

**2023 Kernza Grain Harvest (Bin-Run) Totals**



\*Kansas also reported 11,500 lbs. of clean Kernza

\*Nebraska also reported 8,000 lbs. of clean Kernza

“Works great to graze in winter and in early spring”. -[Kansas grower]

“This field looks awesome, but there is a huge opportunity cost for irrigated ground so new markets need to open before the decision to keep it in.” -[Nebraska grower]

# Management & Harvest in the West

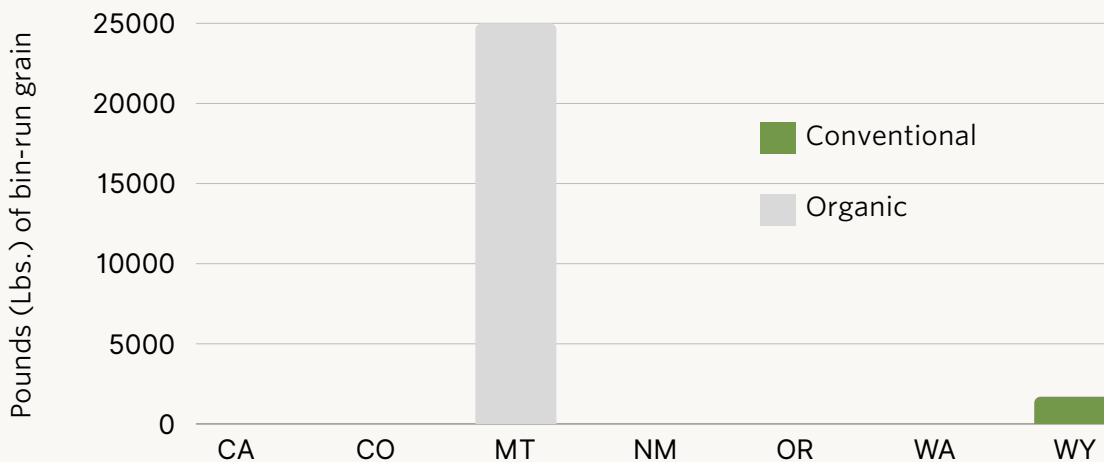
**California, Colorado, Idaho, Montana, New Mexico, Oregon, Washington, Wyoming**

**Growing Conditions & Management Observations:** Drought was less extreme in the western region with Colorado and Wyoming having an abnormally wet spring, followed by damaging summer hail events. Montana growers saw drought conditions, and according to the US Drought Monitor, nearly 60% of Montana was in D0-D4 drought for much of 2023. Also in Montana, growers reported significant weed pressure in newly established stands.

**Grain Harvest Observations:** Harvest began as early as August 18th and as late as October 5th. Late harvest led to shattering. Only Montana and Wyoming had grain harvests.

**Haying & Grazing Observations:** More acres were hayed and grazed than were harvested for grain. Several growers found value in winter grazing dry cows, especially with Kernza-alfalfa intercrop.

**2023 Kernza Grain Harvest (Bin-Run) Totals**



\*Only Montana and Wyoming are represented on this chart because they are the only states to have reported harvesting grain in this region in 2023.

“... decided to focus year one [2023] on establishment and reducing weeds through getting two cuttings of hay off the field with irrigation and fertilizer applied, would be certified grain harvest in 2026, will attempt a grain harvest in 2024.” - [Colorado Grower]

# Grain Inventory

## Grower Estimated Storage by Harvest Year

Equivalent\* clean, dehulled pounds

**367,380**

Pounds of clean grain in  
storage from **2023 harvest**

**287,586**

Pounds of clean grain in  
storage from **2022 harvest**

**76,987**

Pounds of clean grain in  
storage from **2021 harvest**

\*Estimated equivalent clean, dehulled tons using a  
cleaning and dehulling loss estimation of 40%

# Grain Yield by Region

Kernza yields depend on climatic factors, stand age, variety, harvest equipment, and grower experience level. **The yield data below are self-reported, bin-run, estimates.**

**Midwest** (Iowa, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Wisconsin): Twenty-seven fields were harvested for grain, and the average harvested field size was 20 acres. The weighted\* average for all bin-run grain yield estimates in the Midwest was 334 lbs/acre.

**Great Plains** (Kansas, Nebraska North Dakota, South Dakota): Seventeen fields were harvested for grain, and the average field size was 30 acres. The weighted average, for all bin-run grain yield estimates in the Great Plains is 281 lbs/acre.

**West** (California, Colorado, Idaho, Montana, New Mexico, Washington, Wyoming): Three fields were harvested for grain, and the average field size was 42 acres. The average, bin-run, grain yield in the West was 212 lbs/acre.

**Weighted\* Average 2023 Yield Estimates (Bin-Run)**  
by management type and region



\* Average yield estimates are weighted by the number of acres harvested in each field because yields are generally lower in smaller fields with more edge effects.

# Storage Data by Region

Self-reported by individual Kernza growers

**Eastern** (New York): New York has 8,000 lbs. of bin-run grain from a 2022 harvest. This grain is conventional.

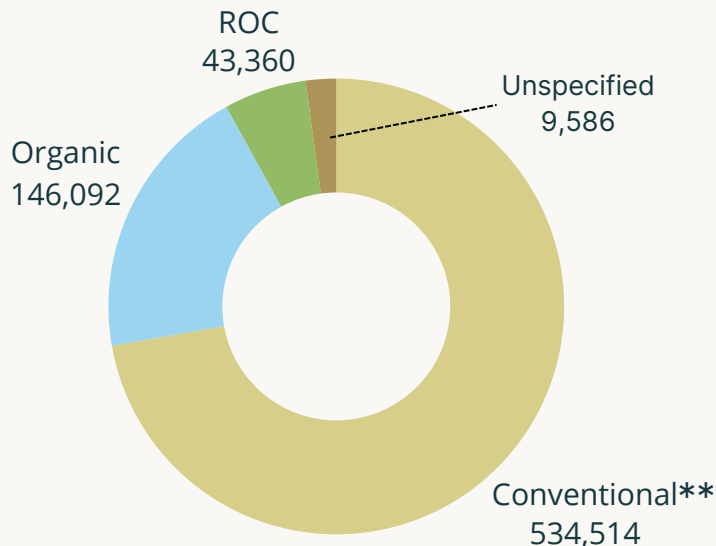
**Midwest:** There are just over 557,000 pounds of bin-run Kernza and roughly 48,000 pounds of clean Kernza. This grain is a combination of ROC, organic, transitional, and conventional grain.

**Great Plains:** There is approximately 182,000 lbs. of clean grain in storage, with an additional 80,000 lbs. of bin-run grain. The majority of grain in this region is conventional.

**Western:** There are just over 97,000 pounds of bin-run grain in storage. This grain is a combination of ROC, organic, and conventional grain, however the majority of the grain is ROC and organic.

## Total Estimate of Kernza in Storage

(in clean\* lbs.)



*According to self-reported data, approximately 740,00 pounds of clean\* Kernza grain are in storage.*

\*\*Transitional grain is included in the conventional estimate, because it is generally sold as conventional.

\*Much of the grain in storage currently needs to be cleaned. To estimate the total clean grain in storage, we calculated a cleaning and dehulling loss of 40%.

# Contact

The Land Institute  
Hana Fancher  
Crop Stewardship Team

 [Kernza.org](https://kernza.org)

 [fancher@landinstitute.org](mailto:fancher@landinstitute.org)

**Kernza® CAP**



THIS WORK IS SUPPORTED BY AFRI SUSTAINABLE AGRICULTURAL SYSTEMS COORDINATED AGRICULTURAL PROGRAM (SAS-CAP) GRANT NO. 2020-68012-31934 FROM THE USDA NATIONAL INSTITUTE OF FOOD AND AGRICULTURE.