



The Land Institute

Annual  
Kernza®  
perennial grain

# Supply Report

A look at 2023 planting,  
harvest, and management data

2023

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# Summary of US Kernza® 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.

\*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.

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

# Planting



## Quick stats

**738**

Acres were planted in 2023, about half as many as 2022.

**347**

Acres of new plantings were conventional.

**115**

Acres of new plantings were Certified Organic.

**242**

Acres of new plantings were Regenerative Organic Certified.

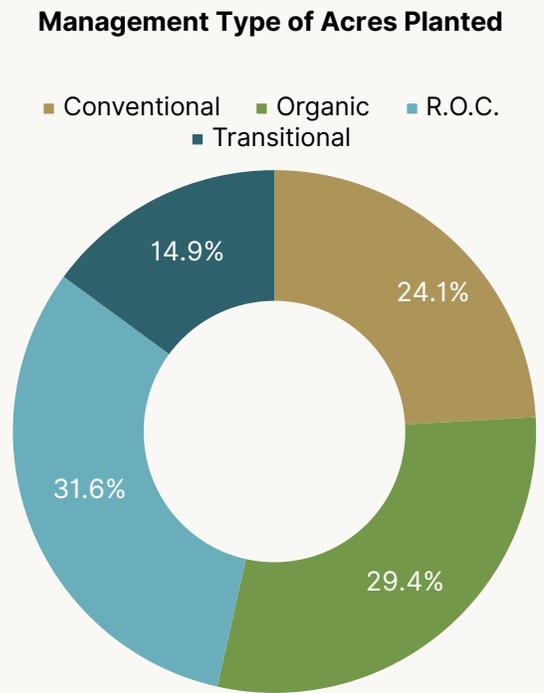
**34**

Acres of new plantings were transitional.

# Planting in the Midwest

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

Growers planted 218 acres in the Midwest, most of which were planted between August 31st and October 22nd. The majority of acres in this region are dryland, with three acres planted 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.

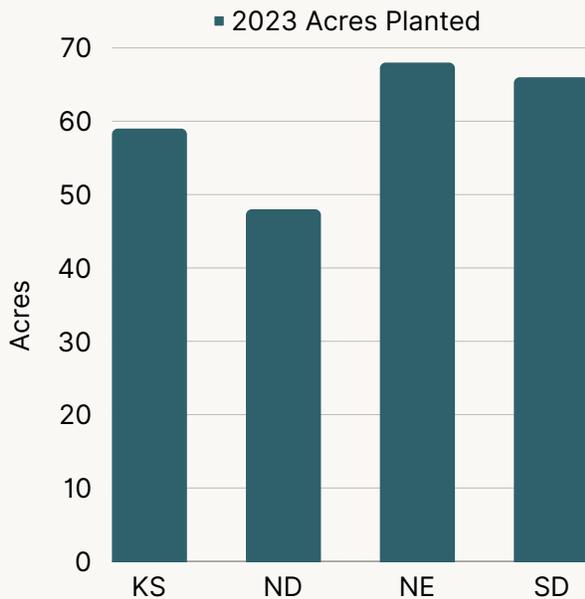


# Planting in the Great Plains

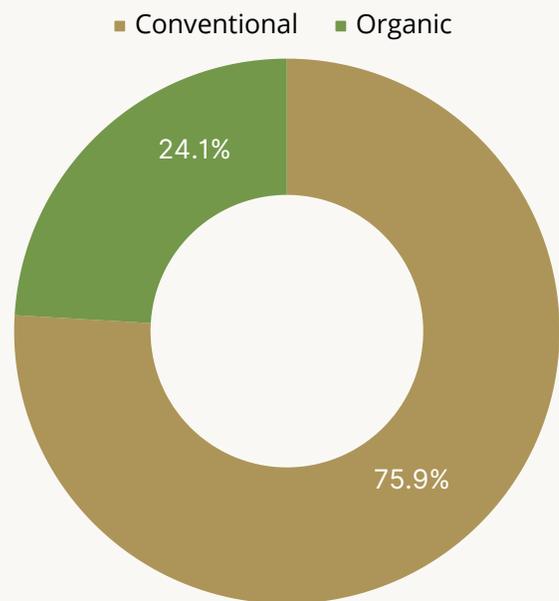
## Kansas, Nebraska, North Dakota, South Dakota

Growers planted 241 acres in the US Great Plains. Both spring and fall planting occurred, with most acres planted between September 15th and October 16th. The majority of acres in this region are dryland. There are new plantings under irrigation in this region. TLI-801 and MN-Clearwater were planted at an average seeding rate of 12 lbs/acre. Various crops preceded Kernza: corn, soybeans, winter wheat, sorghum sudangrass, forage sorghum, or fallow.

**Great Plains Acres Planted**



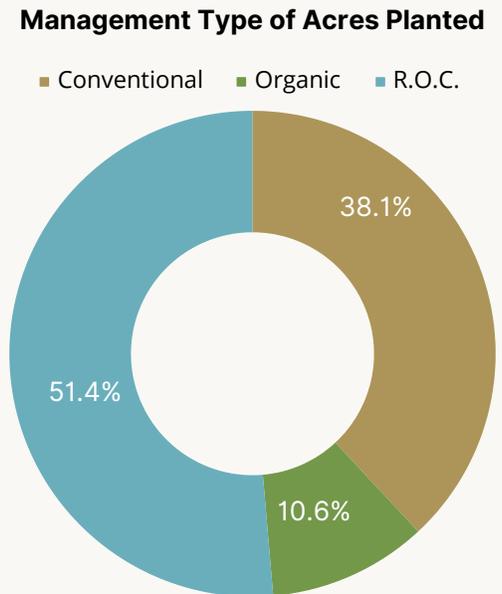
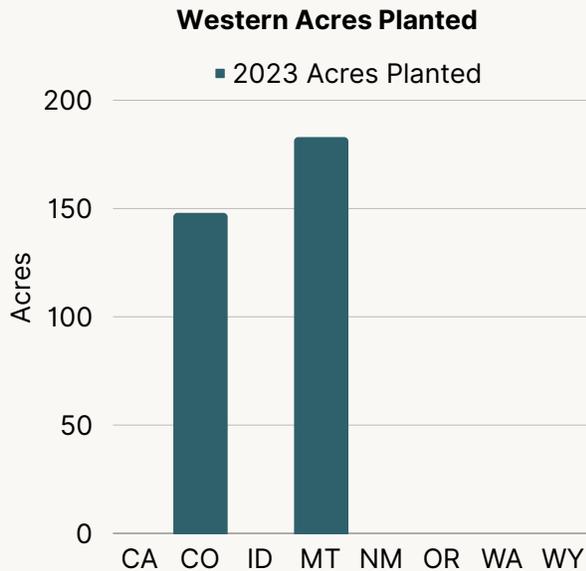
**Management Type of Acres Planted**



# Planting in the West

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

Growers in Colorado and Montana planted 331 new acres this year. Most plantings occurred in the spring between April 1st and June 6th. Most of the newly planted acres in this region are dryland, with 16 acres planted 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.



# Management & Harvest



## Quick stats

**367,380**

Estimated pounds of clean\*  
grain was harvested

**814**

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

**689**

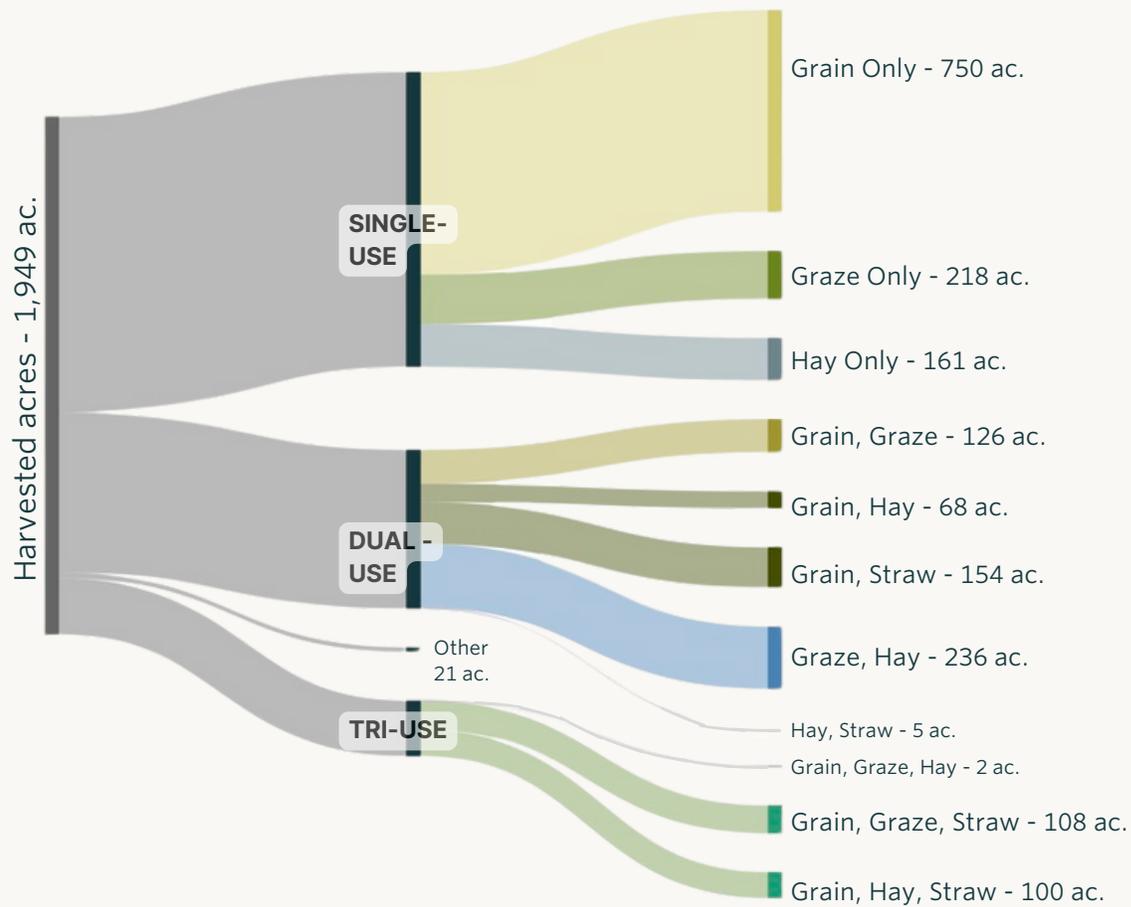
Acres were grazed

\*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 often produces more than one product.** All products harvested from Kernza fields (grain, hay, straw, forage grazed) in the US in 2023 are shown below. The number one product for Kernza is grain, but half of all harvested acres resulted in two or more products.



# Management & Harvest in the Midwest

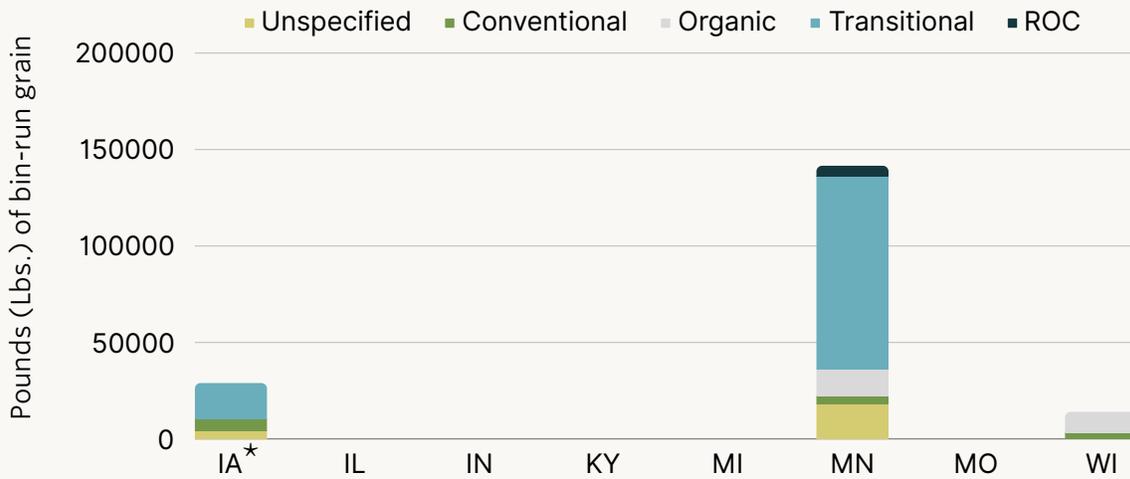
Iowa, Illinois, Indiana, Kentucky, Michigan, Minnesota, Missouri, Wisconsin

**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

# Management & Harvest in the Great Plains

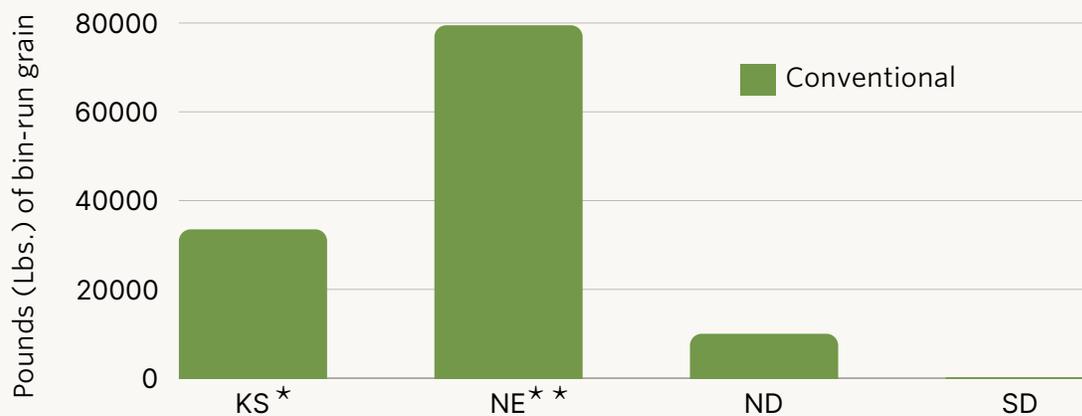
## Kansas, Nebraska, North Dakota, South Dakota

**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 herbicide use.

**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 in May/June, estimating 35 AU/acre in a rotational 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

# Management & Harvest in the West

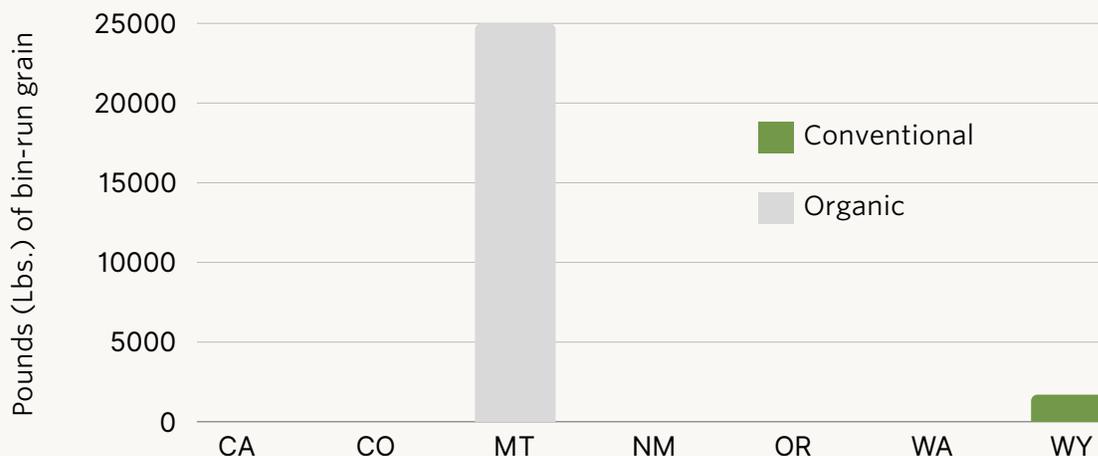
## California, Colorado, Idaho, Montana, New Mexico, Oregon, Washington, Wyoming

**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. Some growers reported significant weed pressure, especially in newly established stands; however, growers reported no herbicide use. Typically, spring mowing and haying were used to manage weeds.

**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 on Kernza-alfalfa intercropped fields.

**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.

# 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 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): Growers harvested 27 fields for grain, and the average 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): Growers harvested 17 fields 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): Growers harvested 3 fields 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

Kernza storage data is 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.

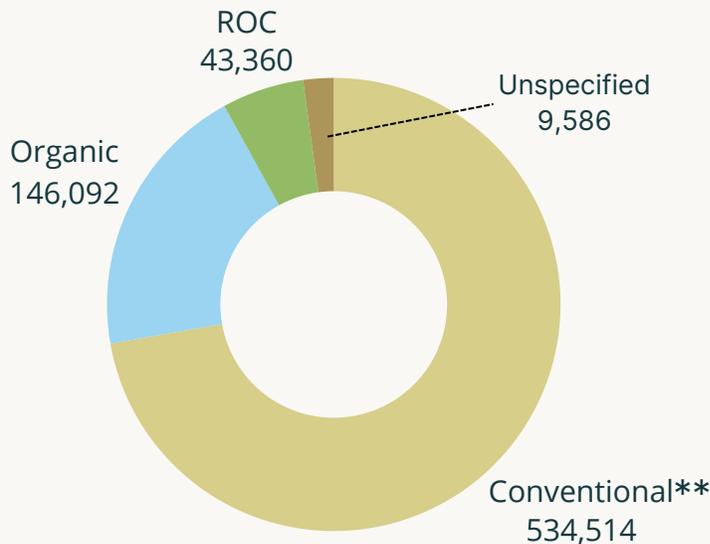
**Midwest:** There are just over 599,000 pounds of bin-run Kernza and roughly 48,000 pounds of clean Kernza. This grain is a combination of ROC, organic, transitional, and conventional grain.

**Great Plains:** There are approximately 182,000 lbs. of clean grain in storage, with an additional 95,000 lbs. of bin-run grain. The majority of grain in this region is conventional.

**Western:** There are just over 112,000 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.*

\*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%.

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

# Contact

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