

The Kansas Corn Growers Association, with K-State Research and Extension, conducts an annual yield contest open to all active members of the association. This contest:

- recognizes Kansas farmers achieving high corn yields,
- shares crop management and efficiency data among Kansas growers, and
- provides on-farm sustainability and profitability insights.

This document summarizes the 82 entries from 2022, located mainly in the western half of the state (Figure 1).

Comprehensive Summary

Yield

- Grain yields for irrigated entries averaged 278 bushels per acre, ranging from 217 to 324 bushels per acre. Nonirrigated entries averaged 236 bushels per acre, ranging from 163 to 309 bushels per acre.
- Grain yields for high-yielding environments averaged 293 bushels per acre, ranging from 276 to 324 bushels per acre. Intermediate yielding environments averaged 255 bushels per acre, ranging from 225 to 275 bushels per acre. Lastly, low-yielding environments averaged 197 bushels per acre, ranging from 163 to 224 bushels per acre.

Crop Management

- Planting dates before April 20 presented significantly lower yields compared to later dates. Related to this, 58% of the low-yielding entries were planted before April 20.
- Plant populations ranged from 23,000 to 38,000 plants per acre. Yield increases were significantly tied to greater plant populations, showing an increase of 10.5 bushels per acre for every 1,000 plants per acre until a plant population level around 32,500 plants per acre.
- Relative to nutrient management, corn yield increased by 0.4 bushels per acre for every pound of nitrogen (N) added. No clear trends were found for the application of phosphorus (P) or potash (K). A higher percentage of potash fertilization was observed in the low-yielding entries.
- Irrigation significantly explained yield variations. Three-fourths of the irrigation observations were concentrated in the high-yielding entries.
- Strip-tillage was the most common tillage practice (66%) among the high-yielding group. Conservation tillage (strip and minimum) and no-till were common across all entries. Conventional tillage represented only 7 to 12% of the entries.
- Seed treatment did not result in a yield increase.
- The row spacing ranged from 15 to 39 inches. 84% of the entries were planted in 30-inch rows.

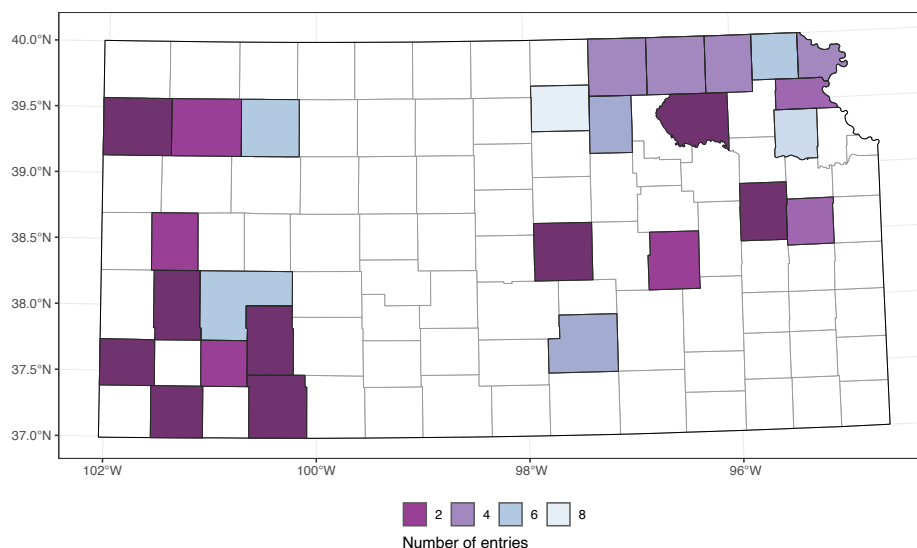


Figure 1. 2022 contest field locations, 82 total entries (Irrigated, 46; Nonirrigated, 36).

Key Points

- The entries presented, on average, 5% less yield than the 2021 entries.
- Planting after April 20, with plant populations near 30,000 plants per acre and fertilizer nitrogen rates of about 250 pounds per acre maximized yields.
- Irrigation to supplement rainfalls (at least 5 inches) was fundamental to achieve higher yields.
- The results are linked to the climatic conditions of the 2022 growing season, which was characterized by limited water.
- Planting date, plant population, nitrogen and potassium fertilization, irrigation, and tillage practice were the most significant factors explaining yield levels.

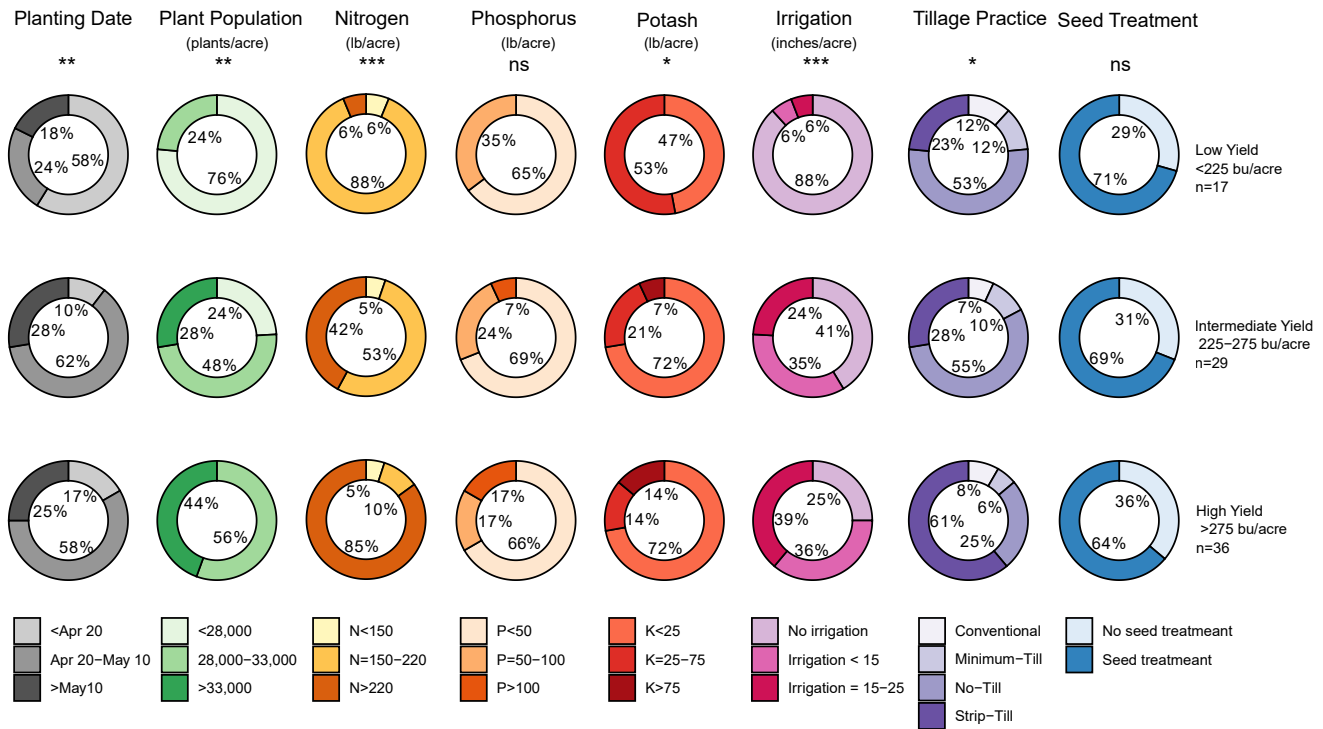


Figure 2. Data summary for crop (irrigation and yield environment) and pest and nutrient (yield environment) management of contest entries. Significance differences are indicated with symbols: “***” $p < 0.001$; “**” $p < 0.01$; “*” $p < 0.05$; “ns” no significant $p > 0.05$.

Ana Carcedo

Postdoctoral Research Fellow
Department of Agronomy
Kansas State University

K-STATE
Research and Extension

Ignacio Ciampitti

Professor, Farming Systems
Department of Agronomy
Kansas State University


Ciampitti Lab

KANSAS
CORN

Publications from Kansas State University are available at: bookstore.ksre.ksu.edu

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned.

Publications are reviewed or revised annually by appropriate faculty to reflect current research and practice. Date shown is that of publication or last revision. Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Ana Carcedo and Ignacio Ciampitti, *Kansas Corn Yield Contest 2022, High-Yield Management*, Kansas State University, April 2023.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of K-State Research and Extension, Kansas State University, County Extension Councils, Extension Districts.

MF3463 | April 2023