

# Dryland Grain Sorghum Row Spacing Trial at Akron in 2022

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## **Introduction**

A grain sorghum row spacing trial was conducted at Akron, Colorado in 2022 in eastern Colorado. The trial consisted of two row spacing treatments, 30-inch and 60-inch rows. The purpose of the study was to determine if the wider row spacing would be beneficial to grain yield compared to the 30-inch rows, especially in a drought year. Data collected and summarized included soil test results, field management, flowering date, plant population, grain yield, and grain test weight.

## **Approach**

The trial was planted at the USDA-ARS research station at Akron, Colorado under dryland production. The hybrid used was Channel 5C35, an early maturity cream planted at a rate of 41,800 seeds per acre on June 10, 2022. The treatments were replicated six times. Planted plots were 10 feet wide by 60 feet long (two rows for 60-inch spacing and four rows for 30-inch spacing, respectively). For the 60-inch row spacing treatment, rows one and three were planted at twice the within-row seeding rate of the 30-inch spacing treatment. This was done so the total plants per acre was equal across treatments when taking into account half the rows were planted. For the 30-inch spacing treatment, all four rows in the 10-foot width were planted. At harvest, row three of the 60-inch treatment was harvested, and rows two and three of the 30-inch treatment were harvested to avoid edge effects. Harvested area for all plots was five feet wide by 60 feet long.

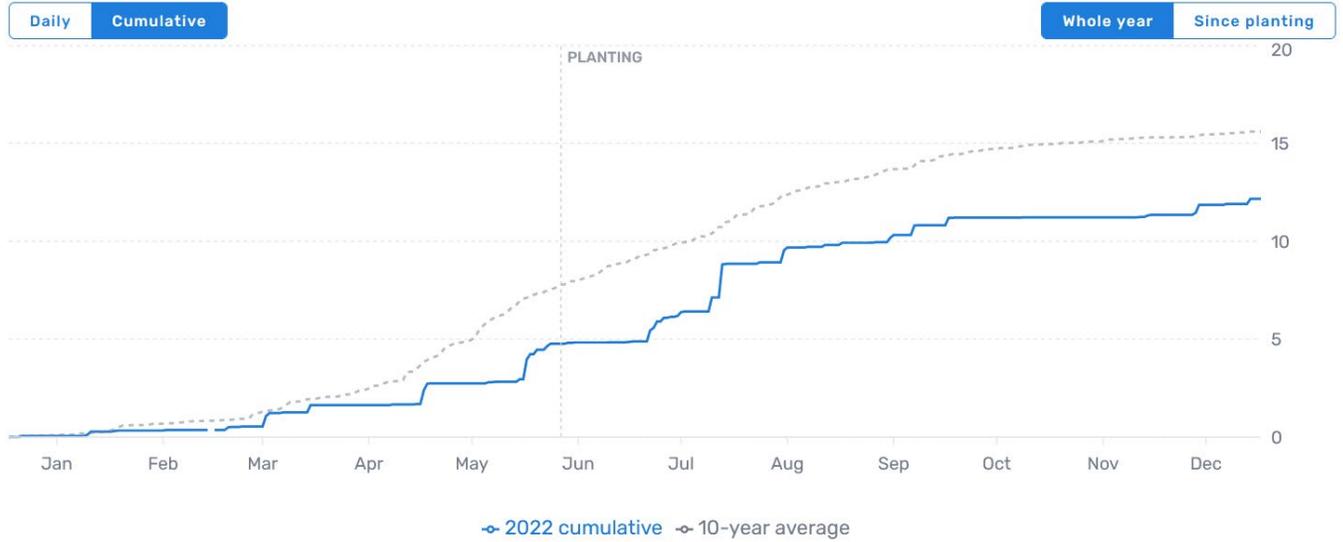
Plot seed weight, moisture, and test weight were collected using a Harvest Master H2 grain weighing system on a modified plot combine. Seed yield was adjusted to 14% moisture content. Soil samples (results not shown) were pulled at planting (0-12" and 12-24" depth) and were analyzed at American Agricultural Laboratory, Inc. in McCook, Nebraska. Treatment yield results were analyzed using the mixed model procedure in SAS 9.4. Significant differences were determined using an alpha level of 0.20, which protects against false negatives (concluding treatments are the same when they are actually different).

## **Results**

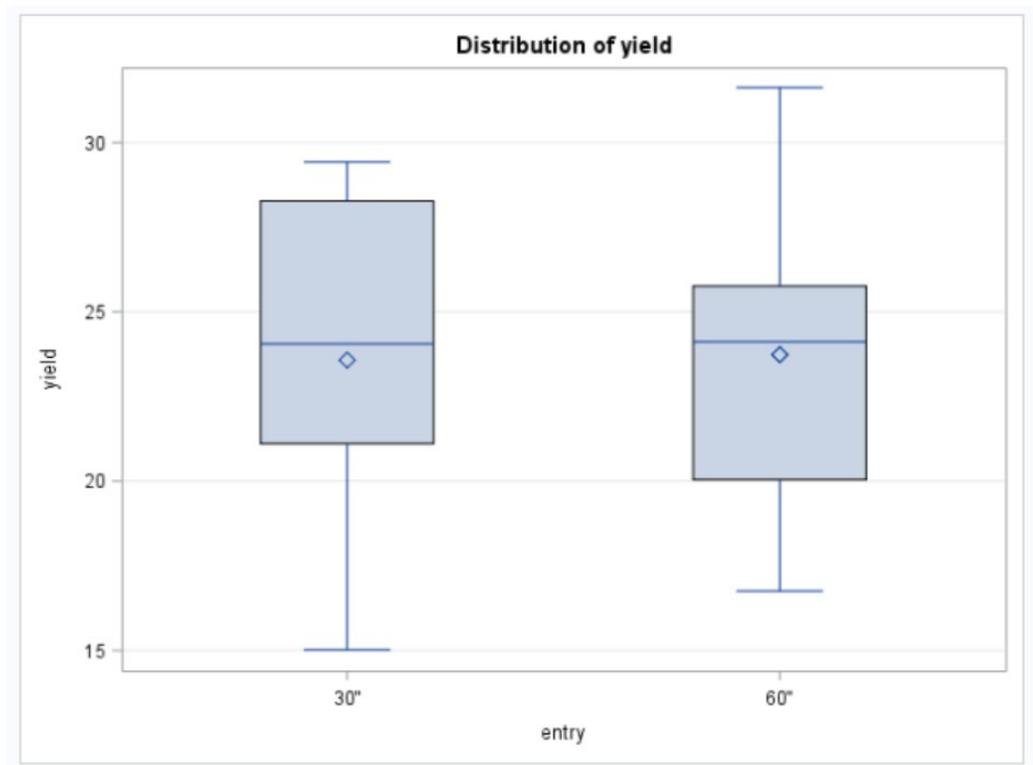
The average yield for the trial was 23.7 bu/ac, and test weight was 53.8 lb/bu. There were no significant differences between the two treatments for yield ( $p=0.33$ ), test weight ( $p=0.45$ ), or population (0.26). Days to bloom was significant, however the treatments differed by only a single day, with the 60-inch treatment being 64 days to mid-bloom and the 30-inch treatment being 65 days to mid-bloom. Box and whisker plots are shown on the following page for grain yield along with a table showing the averages across treatments for variables of interest.

A graph showing the precipitation received over 2022 is included on the following page. The site received 12.2" of total precipitation during the entire year with 6" received during the growing season. Hot and dry conditions, especially during flowering and grain-fill negatively impacted yield and test weight.

## 2022 Precipitation at Akron, CO



### Results Graphs and Tables



Row Spacing	Days to Bloom	Plant Population	Moisture	Test Weight	Grain Yield
30"	65	18,561	9.0	53.9	23.6
60"	64	20,183	8.8	53.6	23.7
<b>Averages</b>	<b>65</b>	<b>19,372</b>	<b>8.9</b>	<b>53.8</b>	<b>23.7</b>