



Grain Sorghum Seeding rates/Planting dates & Soil Fertility and Nutrient Management

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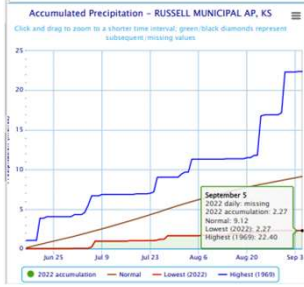
Information sourced from:
 Dorivar Ruiz Diaz, Associate Professor Soil Fertility Management
 K-State Department of Agronomy, Manhattan
 Lucas Haag Northwest Area Agronomist K-State Research and Extension
 Ignacio Ciampitti, Crop Production and Cropping Systems Specialist
 K-State Mesonet & National Weather Service

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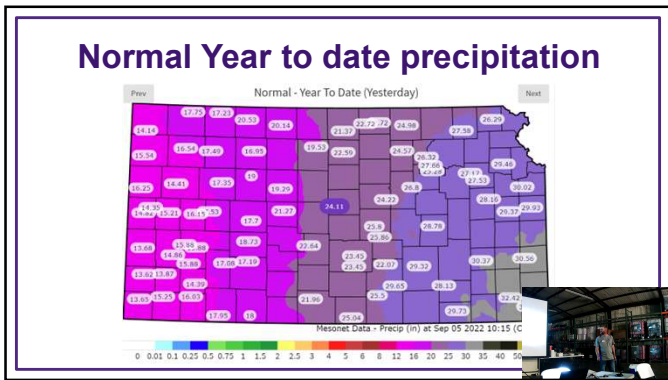
2022 Growing Conditions Review

Accumulated Precipitation - RUSSELL MUNICIPAL AP, KS

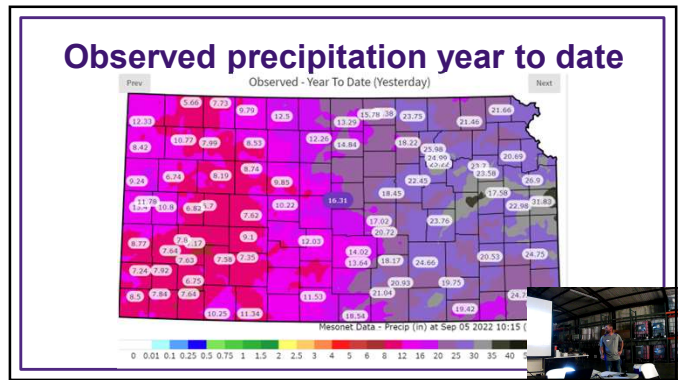


Dry and Hot
 Weather data since June 17th 2022
 Precipitation 2.27 inches lowest on record for this period
 23 Days over 100 degrees

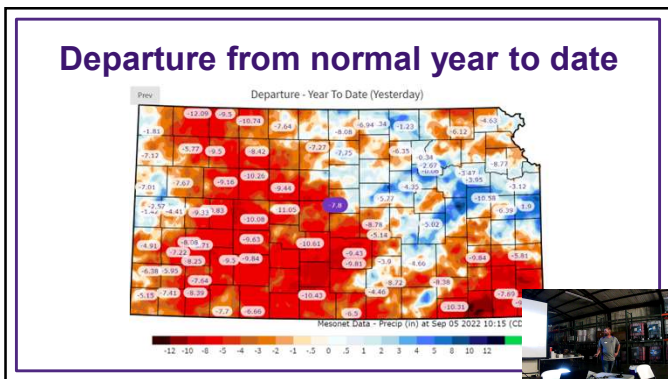
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Grain Sorghum Seeding rates

- Average annual rainfall for Midway District
- 25 - 30 inches
- Seeding rate assuming 70% emergence
- 35,000 – 64,000 seeds/acre
- Targeted plants/acre final stand
- 25,000 – 45,000

Average annual rainfall (inches)		
<20	20-36	>37 Irrigated
23-27	25-45	35-55 50-90 80-110
30-35	35-64	50-80 70-125 110-150

Yield Range (bu/0)	Crop Condition	Average Seed Weight (g/1000)	Seeds Per Pound
<50	Very Poor	24.5	18.5
50-100	Poor	25.5	17.9
100-150	Fair	26.2	17.3
150-200	Good	25.6	17.2
>200	Excellent	25.5	17.2

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Sorghum planting dates

Planting Dates
Generally, the earlier planting dates of the planting range are for springplanted crops in eastern and southern areas, while for fall-planted crops, they apply to northern and western areas (Table 1).

Crop	Zone 1	Zone 2	Zone 3	Zone 4
Wheat	Sep 10-30	Sep 15-Oct 20	Sep 25-Oct 20	Oct 5-25
Triticale	Aug 20-Sep 15	Aug 20-Sep 15	Sep 1-15	Sep 1-Oct 1
Winter barley	Sep 10-20	Sep 10-Oct 5	Sep 15-Oct 10	Sep 20-Oct 10
Spring barley	Feb 25-Mar 15	Feb 25-Mar 15	Feb 25-Mar 19	Not recommended
Spring wheat	Feb 25-Mar 15	Feb 25-Mar 15	Feb 25-Mar 15	Not recommended
Winter oats	Not recommended	Not recommended	Not recommended	Sep 20-Oct 10
Spring oats	Mar 5-20	Feb 25-Mar 15	Feb 25-Mar 15	Feb 20-Mar 15
Corn	Apr 20-May 20	Apr 15-May 20	Apr 1-May 10	Mar 25-Apr 25
Sorghum	May 15-June 10	May 15-June 20	May 15-June 20	May 1-10-June 5-25
Sudangrass	Mar 15-July 1	Mar 20-July 10	Mar 20-July 10	Mar 20-July 10
Soybeans	May 10-June 15	May 5-June 10	May 5-June 10 W 1/2	May 10-June 25 W 1/2

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Planting date effects of tillering

Planting Date	Lo Population	Med Population	HI Population	Tillers
May 3	~65	~85	~105	~105
May 17	~55	~75	~95	~95
June 6	~55	~95	~145	~145
June 29	~25	~35	~75	~75

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Soil testing considerations

- Fertilizer and nutrient inputs are a key component of production costs, farmers should consider these points when making production plans.
- Test to determine your soil nutrient needs.** Before investing money in nitrogen, phosphorus, potassium, sulfur, or zinc, invest in good soil tests for these nutrients. Also, consider testing both the 0- to 6-inch surface soil and the 0- to 24-inch soil profile to improve the reliability for mobile nutrients such as nitrogen and sulfur. Nutrient levels vary from field to field, and in different areas of fields, so determine nutrient needs before investing in fertilizer. If the phosphorus soil test using the Mehlich 3 test exceeds 20 ppm and the potassium soil test level exceeds 130 ppm, the chances of an economic response to fertilizer in any given year is low.
- Nitrogen.** Nitrogen recommendations are strongly improved when the soil test nitrate-nitrogen level is considered. A profile soil test is probably the single most important thing a farmer can do to reduce fertilizer costs and maximize nitrogen use efficiency in corn. A profile soil sample is also valuable for estimating sulfur and chloride needs for sorghum in Kansas.

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How does sample handling practices effect soil test results

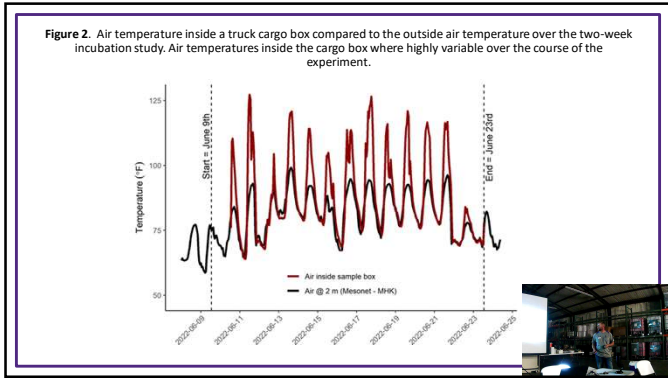
- Correct soil sampling in the field is often considered the most critical step for reliable soil test results. However proper handling of soil samples collected in the field until is processed in the lab can also influence some nutrient values.
- To evaluate the effect of soil storage on soil nutrients, scoops of soil were placed in samples bags randomly. Half the sample bags were then placed in the fridge, the other half were placed in a cargo box in a pickup bed. Every two days, 3 samples were removed from both storage locations and analyzed in the lab.

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Figure 1. Change in soil test results over a two-week period. Results are shown for nitrate (NO3-N, top left), ammonium (NH4-N, top right), iron (Fe, bottom left), and sulfur (S, bottom right).

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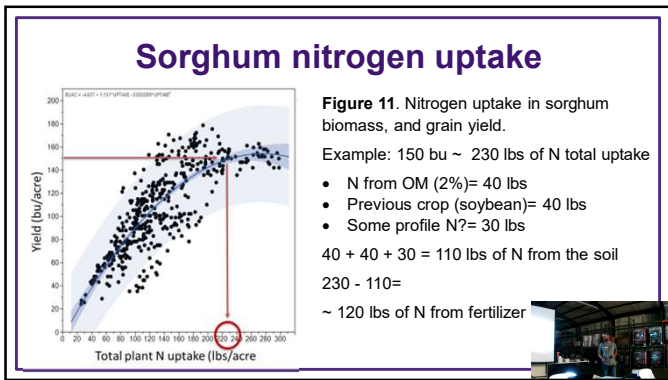


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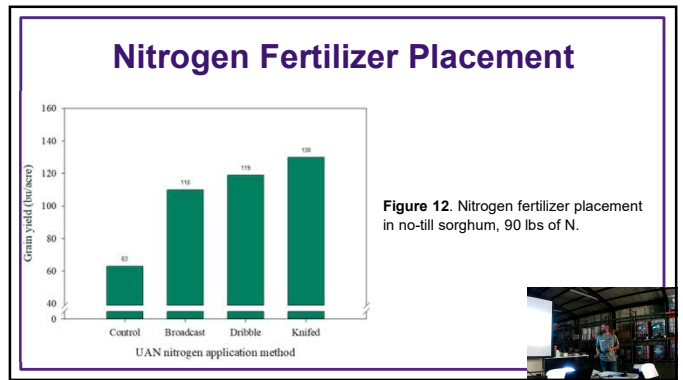
Take Home Points

- Soil test results are strongly affected by how we handle samples before lab analysis.
- Air temperatures inside truck cargo boxes can reach high temperatures quickly (Figure 2). Sample should not be stored for more than a couple hours.
- Soil test nitrogen was especially sensitive in this study. Profile-N increased from 20 lbs N/ac on Day 1, to over 100 lbs N/ac by Day 10 (Figure 1).
- Soil samples should be air-dried as soon as possible after collection, especially when nitrogen will be measured. If air-drying is not possible, place samples in a fridge with temperature < 40 F. Do not heat or freeze samples!

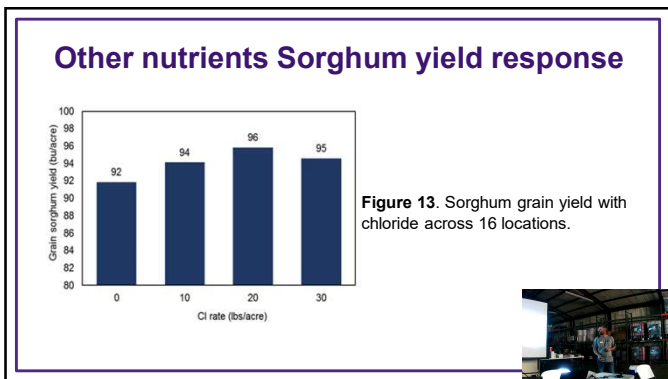
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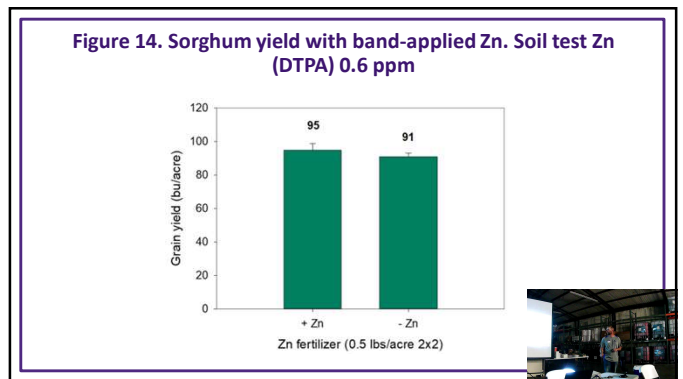
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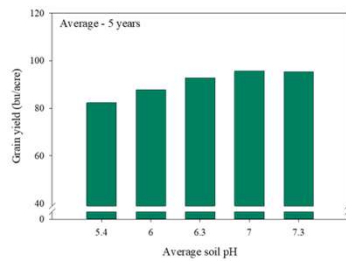


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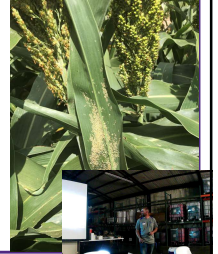
Figure 15. Sorghum and soil pH



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Sorghum Insects

- Sorghum aphids Formerly know as Sugarcane Aphids Still something to be aware of
- Management options plant aphid tolerant varieties
- Monitor for them before spraying for headworms
- Use spray options that don't hurt beneficial insects
- Heligen or Blackhawk



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Thanks & Questions

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