U.S. GRAINS & BIOPRODUCTS COUNCIL

2025/2026 SORGHUM QUALITY REPORT

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The U.S. Grains & Bioproducts Council (Council) is pleased to present the findings from its *2025/2026 Sorghum Quality Report*. This is the seventh annual edition of a report designed to provide international customers and other interested parties with accurate, unbiased information about the quality of the U.S. sorghum crop. A total of 102 samples was collected from the outbound shipments of eighteen country elevators and one farmer and analyzed for the grade factors established by the U.S. Department of Agriculture as well as chemical composition and other quality characteristics not reported elsewhere. The results are summarized at the U.S. Aggregate level.

The Council's mission is one of developing markets, enabling trade and improving lives. To help fulfill this mission, the Council is pleased to offer this report as a service to our partners. We hope it provides valuable information about the quality of U.S. sorghum to our valued trade partners.

The Time is NOW

METHODOLOGY

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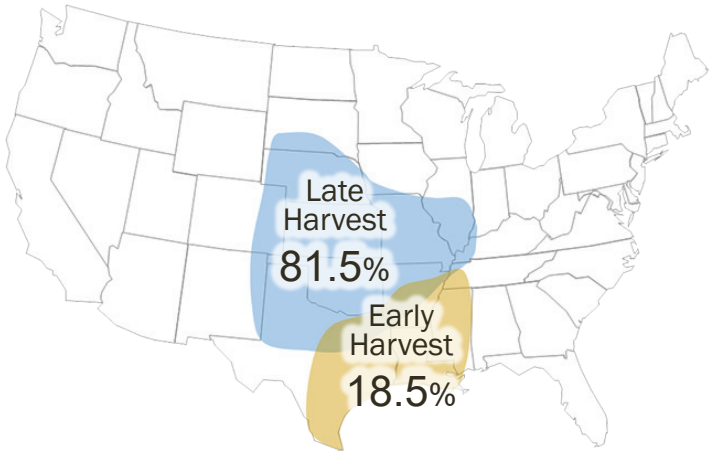
Sorghum production in the United States can be grouped into the two main harvest areas shown in the map below (the Early Harvest Area and the Late Harvest Area). For this *2025/2026 Sorghum Quality Report*, the target population was sorghum from these two key U.S. sorghum-producing areas representing nearly 100% of the U.S. sorghum exports.[1] The results reflect the quality of blended samples pulled from the outbound sorghum shipments of U.S. elevators.

The targeted number of samples was proportionately stratified according to each sorghum-producing area's share of total U.S. sorghum exports, as shown on the map.

SORGHUM HARVEST AREAS



The Council recruited participating elevators across these two areas by email or phone. Participants were instructed to collect 2,200 grams (about five pounds) of sorghum per sample bag provided. Samples were requested to be collected from individual outbound rail or truck shipments as the sorghum was being loaded or from inventories expected to be shipped for export.

- A total of 102 blended sorghum samples from eighteen participating elevators and one participating farmer was received from October 10, 2025, through January 21, 2026. Samples were received by Amarillo Grain Exchange, Inc. (AGE) in Amarillo, Texas, and tested for the sorghum grade factors. Following grade factor testing, the samples were then sent to the SGS North America Inc. in Vancouver, Washington, for chemical composition and physical factor analysis.

- Averages and standard deviations for each quality factor were calculated for the Early Harvest Area and the Late Harvest Area. The U.S. Aggregate average and standard deviation were then calculated based on each Harvest Area's proportion of total U.S. sorghum exports following standard statistical techniques for proportionate stratified sampling. The results are reported only for the U.S. Aggregate and not the individual Harvest Areas.

[1] *Source: USDA/NASS and Centrec estimates*

A. GRADE FACTORS

The U.S. Department of Agriculture's Federal Grain Inspection Service (FGIS) has established numerical grades, definitions and standards for grains. The attributes that determine the numerical grades for sorghum are test weight, broken kernels and foreign material (BNFM), foreign material, total damage and heat damage.

SUMMARY: GRADE FACTORS

	2025/2026					2024/2025			2023/2024			5-Year Average 20/21-24/25	
	No. of Samples	Avg.	Std. Dev.	Min.	Max.	No. of Samples	Avg.	Std. Dev.	No. of Samples	Avg.	Std. Dev.	Avg.	Std. Dev.
U.S. Aggregate						U.S. Aggregate			U.S. Aggregate			U.S. Aggregate	
Test Weight (lb/bu)	102	58.9	1.69	53.9	61.5	93.0	57.7*	2.26	104	58.4	1.75	58.8	2.03
Test Weight (kg/hl)	102	75.8	2.14	69.4	79.2	93.0	74.3*	2.91	104	75.2*	2.25	75.7	2.61
BNFM (%)	102	1.7	1.00	0.2	6.0	95.0	1.9	1.11	104	1.8	0.93	1.4	1.15
Foreign Material (%)	102	0.7	0.68	0.0	5.3	95.0	0.8	0.60	104	0.9	0.66	0.7	0.67
Total Damage (%)	102	0.1	0.19	0.0	1.2	95.0	0.3*	0.44	104	0.0*	0.00	0.0	0.00
Heat Damage (%)	102	0.0	0.00	0.0	0.0	95.0	0.00	0.00	104	0.0	0.00	0.0	0.00

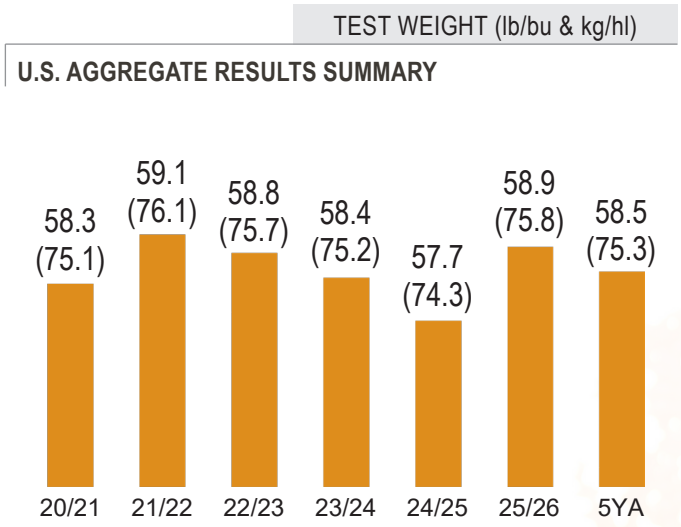
*Indicates average was significantly different from current year's sorghum, based on a 2-tailed t-test at the 95.0% level of significance.

TEST WEIGHT

Test weight is defined as the weight of grain required to fill a specific volume (Winchester bushel). This measure of bulk density is often used as a general indicator of overall quality and as a gauge of endosperm hardness for value-added processing.

The test involves filling a test cup of known volume through a funnel held at a specific height above the test cup to the point where grain begins to pour over the sides of the test cup. A strike-off stick is used to level the grain in the test cup, and the grain remaining in the cup is weighed. The weight is then converted to and reported in the traditional U.S. unit, pounds per bushel (lb/bu). Results are also reported in kilograms per hectoliter (kg/hl) in this report. The average and standard deviation for the 2025/2026 samples were the following:

- Average: **58.9 lb/bu (75.8 kg/hl)**, higher than 2024/2025 (57.7 lb/bu or 74.3 kg/hl), the 5YA[1] (58.5 lb/bu or 75.3 kg/hl) and the minimum for U.S. No. 1 grade (57.0 lb/bu or 73.4 kg/hl)
- Standard deviation: **1.69 lb/bu (2.14 kg/hl)**, lower than 2024/2025 (2.26 lb/bu or 2.91 kg/hl) and the 5YA (1.90 lb/bu or 2.45 kg/hl)



[1]*The 5YA represents the simple average of the quality factors' average or standard deviation from the 2020/2021, 2021/2022, 2022/2023, 2023/2024 and 2024/2025 Sorghum Quality Reports.*

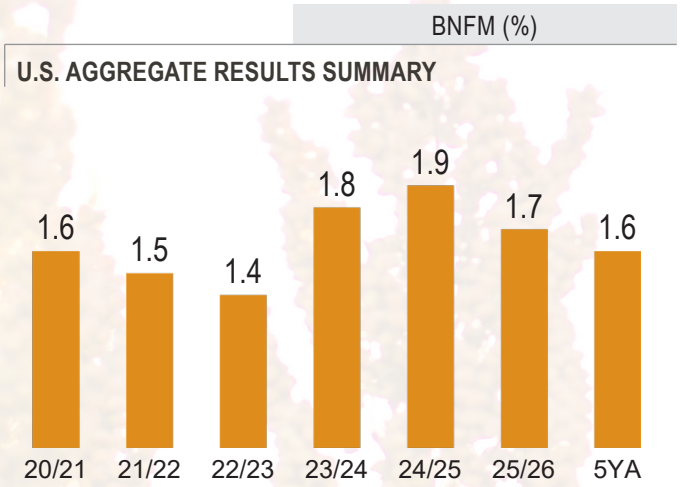
BROKEN KERNELS AND FOREIGN MATERIAL

Broken kernels and foreign material (BNFM), an indicator of the amount of clean, sound sorghum available for feed and processing, is reported as the sum of broken kernels as a percent of the dockage-free sample weight and the foreign material.

Broken kernels is defined as all material that passes through a 5/64th-inch triangular-hole sieve and over a 2.5/64th-inch round-hole sieve.

Foreign material is defined as all material, except sorghum, that remains on top of the 5/64th-inch triangular-hole sieve and all matter other than sorghum, which passes over a No. 6 riddle. Foreign material is reported as a sum of the mechanically-separated foreign material as a percent of the dockage-free sample weight and the handpicked foreign material as a percent of the handpicked sample portion weight. The average and standard deviation for the 2025/2026 samples were the following:

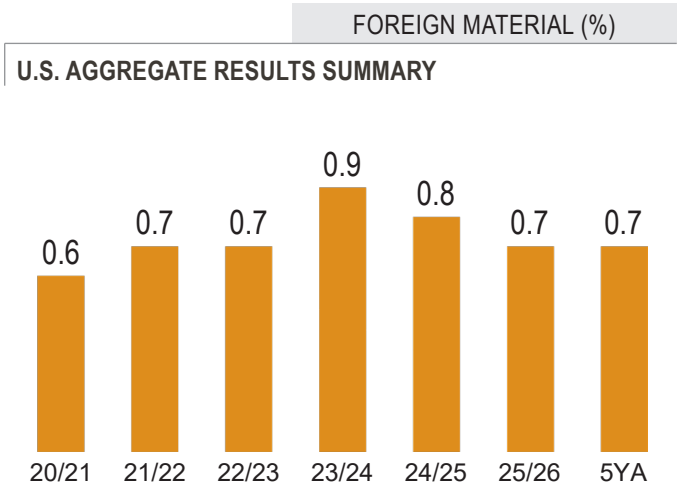
- Average: **1.7%**, similar to 2024/2025 (1.9%) and the 5YA (1.6%) but lower than the maximum for U.S. No. 1 grade (3.0%)
- Standard deviation: **1.00%**, similar to 2024/2025 (1.11%) and the 5YA (1.02%)



FOREIGN MATERIAL

Foreign material, a part of BNFM, consists of non-sorghum material and dust. Foreign material is generally higher in moisture content than the sorghum itself and reduces feed and processing value. The average and standard deviation for the 2025/2026 samples were the following:

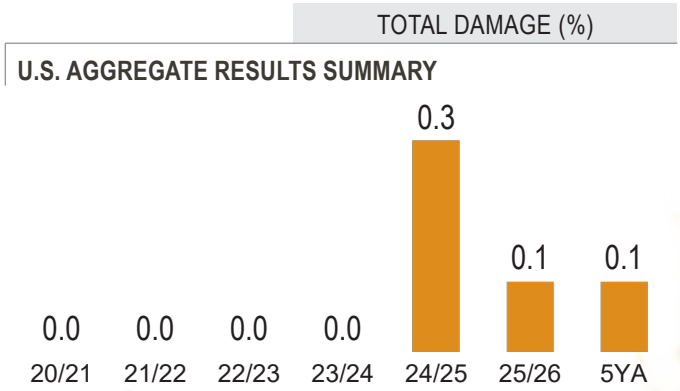
- Average: **0.7%**, similar to 2024/2025 (0.8%), the same as the 5YA but below the maximum for U.S. No. 1 grade (1.0%)
- Standard deviation: **0.68%**, similar to 2024/2025 (0.60%) and the 5YA (0.58%)



TOTAL DAMAGE

Total damage is the percentage of kernels and pieces of kernels that are damaged in some way. A representative working sample of 15 grams of BNFM-free sorghum is visually examined by a properly trained individual for the content of damaged kernels. Types of damage include germ-damaged kernels, ground- or weather-damaged kernels, diseased kernels, frost-damaged kernels, heat-damaged kernels, insect-bored kernels, mold-damaged kernels (surface or internal), mold-like substance, purple-pigment-damaged kernels and sprout-damaged kernels. Total damage is reported as the weight percentage of the working sample that is total damaged grain.

- Average: **0.1%**, lower than 2024/2025 (0.3%), the same as the 5YA but below the maximum for U.S. No. 1 grade (2.0%)
- Standard deviation: **0.19%**, lower than 2024/2025 (0.44%) but similar to the 5YA (0.17%)



HEAT DAMAGE

Heat damage is a subset of total damage and consists of kernels and pieces of sorghum kernels that are materially discolored and damaged by heat. It occurs during heated air drying or in storage. Heat-damaged kernels are determined by a properly trained individual visually inspecting a 15-gram sample of BNFM-free sorghum. Heat damage, if found, is reported separately from total damage. The average for the 2025/2026 samples was the following:

- Average: **0.0%**, no heat damage was observed, the same as in the previous five years

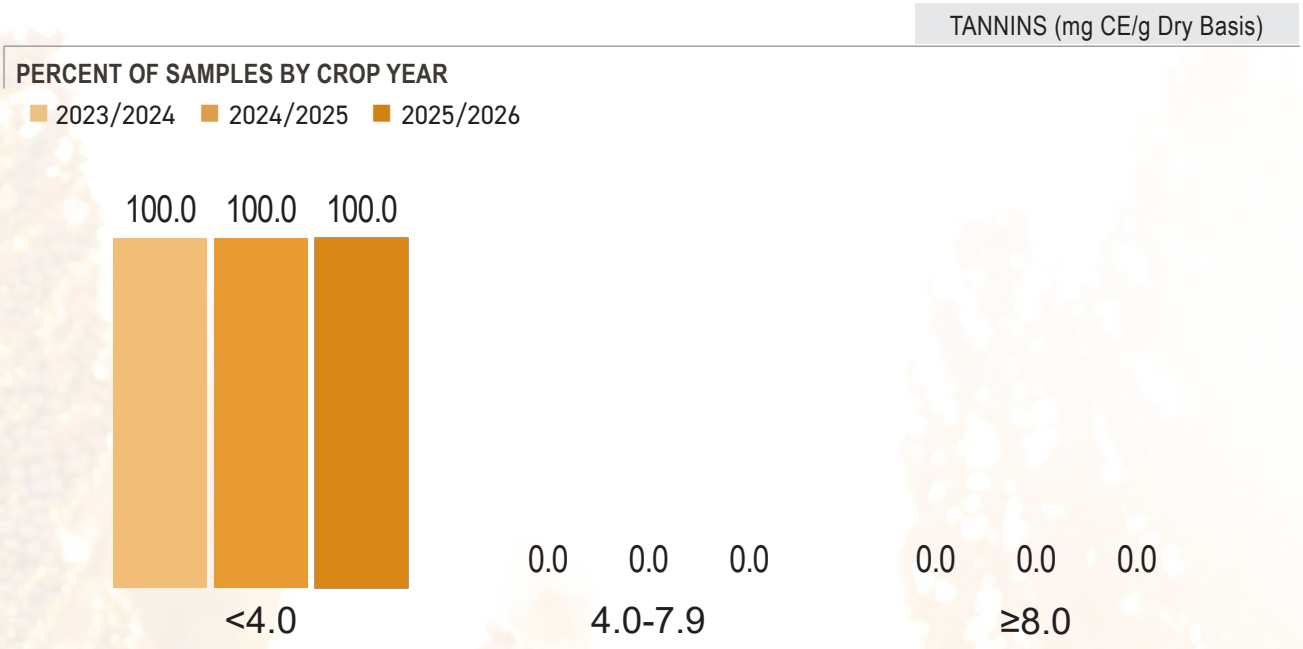
B. TANNINS

Tannins are present in sorghum varieties that have a pigmented testa within their kernels. Tannins affect nutritional and functional properties as a result of interactions of the tannins in sorghum-containing rations. Values near or below 4.0 milligrams (mg) catechin equivalents (CE) per gram (g) sample by this method generally imply the absence of condensed tannins. Type III tannin sorghums usually have values greater than 8.0 mg CE/g.

Tannins were measured using an approximately 200-gram sample in a FOSS DS2500 Near-Infrared Reflectance (NIR) instrument. A subset of 20 samples was tested using high-performance liquid chromatography (HPLC) for validation purposes. Both tests were conducted by SGS North America Inc. Values are reported as mg CE/g sample on a dry moisture basis.

All 102 total samples collected were analyzed for tannins by SGS North America Inc.

- Tannin levels in all 102 samples tested were less than 4.0 mg CE/g, implying an absence of tannins, the same as in 2024/2025 and 2023/2024.
- All samples in each of the seven annual Sorghum Quality Reports conducted since 2019/2020 have had tannin levels less than 4.0 mg CE/g.



C. CHEMICAL COMPOSITION

Chemical composition of sorghum is important because the components of protein, starch and oil are of significant interest to end-users. These attributes provide additional information related to nutritional value for livestock and poultry feeding and other processing uses of sorghum. Chemical composition tests for protein, oil and starch were conducted using an approximately 200-gram sample in a FOSS DS2500 Near-Infrared Reflectance (NIR) instrument. A subset of 20 samples was tested for crude protein, starch and oil for validation purposes using AOAC 972.43, AACC 76.13.01 and AOAC Am 5-04 standard wet chemistry methods, respectively. Both the NIR and wet chemistry analysis were conducted by SGS North America Inc.

All 102 total samples collected were analyzed for chemical composition in 2025/2026. NIR results are reported on a dry moisture basis (percent of non-water material).

SUMMARY: CHEMICAL FACTORS

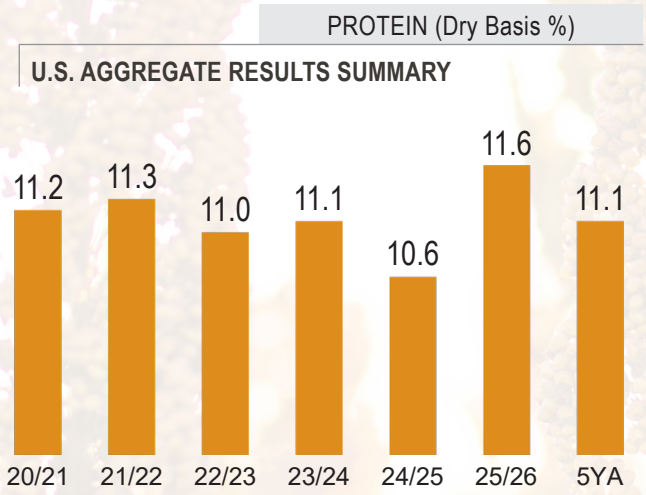
	2025/2026					2024/2025			2023/2024			5-Year Average 20/21-24/25	
	No. of Samples	Avg.	Std. Dev.	Min.	Max.	No. of Samples	Avg.	Std. Dev.	No. of Samples	Avg.	Std. Dev.	Avg.	Std. Dev.
U.S. Aggregate						U.S. Aggregate			U.S. Aggregate			U.S. Aggregate	
Protein (Dry Basis %)	102	11.6	1.04	9.0	13.7	91.0	10.6*	1.63	104	11.1*	0.79	11.1*	0.95
Starch (Dry Basis %)	102	72.8	1.55	70.2	78.6	91.0	73.9*	1.21	104	73.1	0.88	73.0	1.03
Oil (Dry Basis %)[1]	102	3.5	0.29	2.8	4.2	-	-	-	-	-	-	-	-

*Indicates average was significantly different from current year's sorghum, based on a 2-tailed t-test at the 95.0% level of significance.
[1]Due to changes in testing methodogy, year-to-year comparisons are the 5YA are not directly comparable.

PROTEIN

Protein is very important for poultry and livestock feeding, as it supplies essential sulfur-containing amino acids and improves the feed conversion efficiency. Protein is usually inversely related to starch concentration. Results are reported on a dry basis. The average and standard deviation for the 2025/2026 samples were the following:

- Average: **11.6%**, higher than 2024/2025 (10.6%) and the 5YA (11.1%)
- Standard deviation: **1.04%**, lower than 2024/2025 (1.63%) and similar to the 5YA (0.95%)



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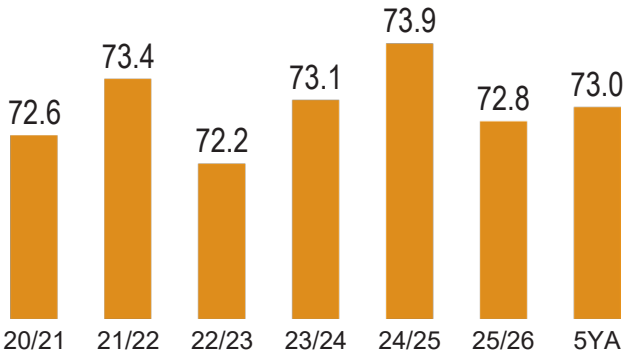
STARCH

Starch is related to metabolizable energy for livestock and poultry. High starch concentration is often indicative of good kernel maturation/filling conditions and reasonably moderate kernel densities. Results are reported on a dry basis. The average and standard deviation for the 2025/2026 samples were the following:

- Average: **72.8%**, lower than 2024/2025 (73.9%) and similar to the 5YA (73.0%)
- Standard deviation: **1.55%**, higher than 2024/2025 (1.21%) and the 5YA (1.03%)

STARCH (Dry Basis %)

U.S. AGGREGATE RESULTS SUMMARY



OIL

Oil is an essential component of poultry and livestock rations. It serves as an energy source, enables fat-soluble vitamins to be utilized and provides certain essential fatty acids. Oil may also be an important co-product of sorghum value-added processing. Results are reported on a dry basis. The average and standard deviation for the 2025/2026 samples were the following:

- Average: **3.5%**
- Standard deviation: **0.29%**
- Due to changes in testing methodology, year-to-year comparisons and the 5YA are not directly comparable.

OIL (Dry Basis %)

U.S. AGGREGATE RESULTS SUMMARY

D. PHYSICAL FACTORS

Physical factors include other quality attributes that are neither grading factors nor chemical composition. Tests for physical factors provide additional information about the processing characteristics of sorghum for various uses, as well as its storability and potential for breakage in handling.

All 102 total samples collected were analyzed for physical factors by SGS North America Inc.

SUMMARY: PHYSICAL FACTORS

	2025/2026					2024/2025			2023/2024			5-Year Average 20/21-24/25	
	No. of Samples	Avg.	Std. Dev.	Min.	Max.	No. of Samples	Avg.	Std. Dev.	No. of Samples	Avg.	Std. Dev.	Avg.	Std. Dev.
U.S. Aggregate						U.S. Aggregate			U.S. Aggregate			U.S. Aggregate	
Kernel Diameter (mm)	102	2.39	0.18	1.90	2.90	91	2.52*	0.17	73	2.49*	0.19	2.50*	0.16
1000-Kernel Weight (g)	102	24.31	1.76	20.40	29.60	91	25.17	2.96	73	23.52	3.79	24.74	3.14

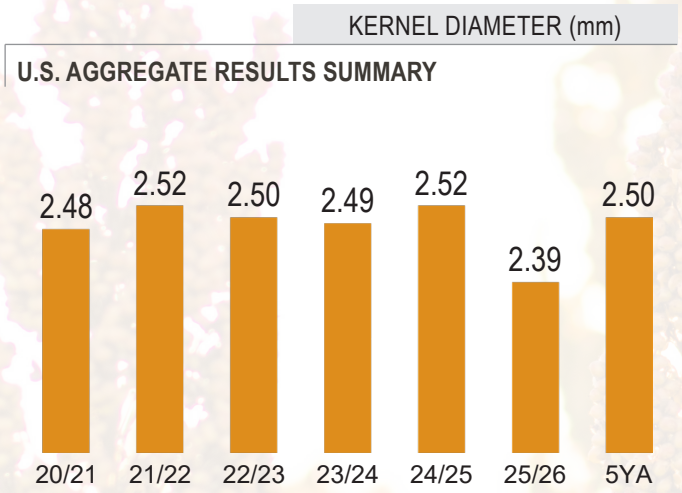
*Indicates average was significantly different from current year's sorghum, based on a 2-tailed t-test at the 95.0% level of significance.

KERNEL DIAMETER

Kernel diameter directly correlates with kernel volume, affects material handling practices and may indicate the maturity of kernels.

Kernel diameter is measured using a carbon fiber composite digital caliper. The diameter reported for each sample is the average value obtained from 300 seeds. Kernel diameter is reported in millimeters (mm). The average and standard deviation for the 2025/2026 samples were the following:

- Average: **2.39 mm**, lower than 2024/2025 (2.52 mm) and the 5YA (2.50 mm)
- Standard deviation: **0.18 mm**, similar to 2024/2025 (0.17 mm) and the 5YA (0.16 mm)

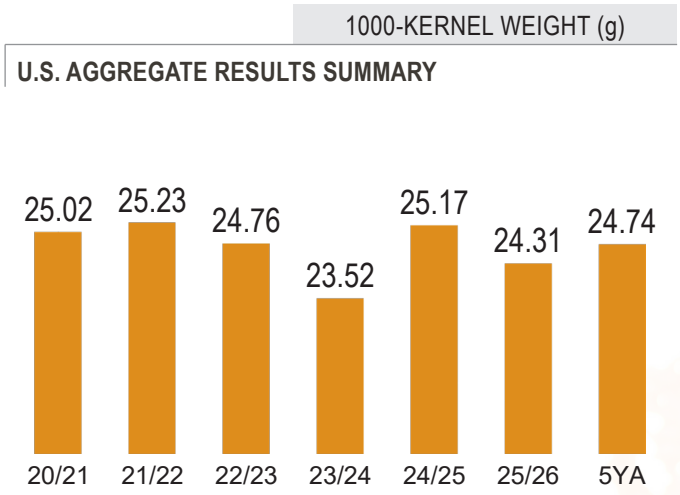


1000-KERNEL WEIGHT

1000-kernel weight (commonly referred to as TKW) is the weight for a fixed number of kernels and is reported in grams. Kernel volume (or size) can be inferred from TKW. As TKW increases or decreases, kernel volume will proportionally increase or decrease.

The TKW is determined from the weight of the 300 individual seeds. The average TKW is reported in grams. The average and standard deviation for the 2025/2026 samples were the following:

- Average: **24.31 g**, similar to 2024/2025 (25.17 g) and the 5YA (24.74 g)
- While lower, the differences between this year's average and the 2024/2025 average and the 5YA were not statistically significant based on a 2-tailed t-test at the 95.0% level of significance.
- Standard deviation: **1.76 g**, lower than 2024/2025 (2.96 g) and the 5YA (3.14 g)



U.S. SORGHUM GRADES AND GRADE REQUIREMENTS

Grade	Minimum Test Weight per Bushel (Pounds)	Maximum Limits of			
		Damaged Kernels		Broken Kernels and Foreign Material	
		Heat Damaged (Percent)	Total (Percent)	Foreign Material (part of total) (Percent)	Total (Percent)
U.S. No. 1	57.0	0.2	2.0	1.0	3.0
U.S. No. 2	55.0	0.5	5.0	2.0	6.0
U.S. No. 3[1]	53.0	1.0	10.0	3.0	8.0
U.S. No. 4	51.0	3.0	15.0	4.0	10.0

U.S. Sample Grade is sorghum that:

(a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, or 4; or

(b) Contains 8 or more stones which have an aggregate weight in excess of 0.2 percent of the sample weight, 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria spp.*), 2 or more castor beans (*Ricinus communis L.*), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburs (*Xanthium spp.*) or similar seeds singly or in combination, 10 or more rodent pellets, bird droppings, or an equivalent quantity of other animal filth in 1,000 grams of sorghum, 11 or more pieces of other material from any combination of animal filth, castor beans, crotalaria seeds, glass, stones, unknown foreign substances, and cockleburs; or

(c) Has a musty, sour, or commercially objectionable foreign odor (except smut odor); or

(d) Is badly weathered, heating or otherwise of distinctly low quality.

[1]*Sorghum which is distinctly discolored shall not grade any higher than U.S. No. 3.*

Source: Code of Federal Regulations, Title 7, Part 810, Subpart D, United States Standards for Sorghum

U.S. AND METRIC CONVERSIONS

Sorghum Equivalents		Metric Equivalents	
1 bushel =	56 pounds (25.40 kilograms)	1 pound =	0.4536 kg
39.368 bushels =	1 metric ton	1 hundredweight =	100 pounds or 45.36 kg
15.93 bushels/acre =	1 metric ton/hectare	1 metric ton =	2204.6 lbs
1 bushel/acre =	62.77 kilograms/hectare	1 metric ton =	1000 kg
1 bushel/acre =	0.6277 quintals/hectare	1 metric ton =	10 quintals
56 lbs/bushel =	72.08 kg/hectoliter	1 quintal =	100 kg
		1 hectare =	2.47 acres

U.S. GRAINS & BIOPRODUCTS COUNCIL

A global network of professionals building worldwide demand and developing markets for U.S. grains and ethanol.

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