U.S. GRAINS & BIOPRODUCTS COUNCIL

2025/2026 CORN HARVEST QUALITY REPORT

ACKNOWLEDGMENTS

Developing a report of this scope and breadth in a timely manner requires participation by several individuals and organizations. The U.S. Grains & BioProducts Council (Council) is grateful to Steve Hofing, Lee Singleton, Lisa Eckel, Dee Ann Hoffman, David Mock and Erin Krannawitter of Centrec Consulting Group, LLC (Centrec) for their oversight and coordination in developing this report. A team of experts provided analysis and writing support. External team members include Dr. Tom Whitaker, Dr. Lowell Hill, Dr. Marvin R. Paulsen, Dr. Fred Below and Juliann R. Seebauer. In addition, the Council is indebted to the Illinois Crop Improvement Association's Identity Preserved Grain Laboratory (IPG Lab) and Champaign-Danville Grain Inspection (CDGI) for providing the corn quality testing services.

Finally, this report would not be possible without the thoughtful and timely participation of local grain elevators across the United States. We are grateful for their time and effort to collect and provide samples during their very busy harvest time.

U.S. GRAINS & BIOPRODUCTS COUNCIL

The U.S. Grains & BioProducts Council is pleased to present findings from its 15th annual corn quality survey in this *2025/2026 Corn Harvest Quality Report*.

The Council offers this report to provide reliable and timely information about the quality of the U.S. corn crop and assist industry leaders in making well-informed buying decisions. Through trade, the Council is committed to the furtherance of global food security and mutual economic benefit.

Generally favorable weather conditions allowed for the 2025 crop to be planted at a pace similar to the average pace of the previous five crops. Following planting, warm conditions promoted timely emergence and strong early growth despite dry weather prior to pollination. The crop experienced warm and wet conditions during pollination, followed by progressively cooler and drier conditions during early grain-fill, which limited kernel size and weight. Much of the Eastern Corn Belt had exceptionally warm and dry weather during dry-down and harvest while pockets of rain in September delayed progress in the Western Corn Belt.

These weather conditions contributed to the U.S. Department of Agriculture projecting the highest average yield on record at 11.67 metric tons per hectare (186.0 bushels per acre), surpassing the previous record yield by 0.42 metric tons per hectare (6.7 bushels per acre) set last year. In addition, a total of 36.44 million hectares (90.05 million acres) of corn is projected to be harvested this year, the most since 1933 (37.28 million hectares or 92.13 million acres). Given the record yield and the historically large area harvested, the 2025/2026 crop is projected to be 425.53 million metric tons (16,752 million bushels). If realized, the size of this year's crop will surpass the previous record set in 2023 by 35.86 million metric tons (1,412 million bushels).

In addition to the record size of the 2025 corn crop, the United States produced a corn crop with high grain quality that will enable it to account for an estimated 38.4 percent of global corn exports during the marketing year.

The *2025/2026 Corn Harvest Quality Report* provides information about the quality of the current U.S. crop at harvest as it enters the domestic merchandising channel. Corn quality observed by buyers will be affected by subsequent handling, blending and storage conditions. A second Council report, the *2025/2026 Corn Export Cargo Quality Report*, will measure corn quality at the point of loading at export terminals and will be available in early 2026.

The Council offers this report as a service to our valued trading partners, and it serves as a means of fulfilling the Council's mission of developing markets, enabling trade and improving lives.

The Time is NOW

Sincerely,

Mark Wilson
Chairman, U.S. Grains & BioProducts Council
November 2025

The average aggregate quality of the representative samples tested for the *U.S. Grains & BioProducts Council 2025/2026 Corn Harvest Quality Report* (*2025/2026 Harvest Report*) was better than the grade factor requirements for U.S. No. 1 grade. The report also showed that 87.1% of the samples met the grade factor requirements for U.S. No. 1 grade, and 97.8% met the grade factor requirements for U.S. No. 2. Relative to each quality factor's average of the previous five crops (5YA[1]), the 2025 U.S. corn crop is entering the market channel with the same test weight and moisture, similar stress cracks and lower 100-kernel weight and kernel volume. This year's average broken corn and foreign material (BCFM) was also the lowest average observed in the 15 years of the *Harvest Report*.

The following points highlight the key harvest results from the 2025 crop.

GRADE FACTORS AND MOISTURE

Test weight of 58.6 pounds per bushel (lb/bu) (75.4 kilograms per hectoliter (kg/hl)) was the same as the 5YA.

Average U.S. Aggregate **BCFM** in 2025 (0.3%) was lower than 2024 (0.6%) and the 5YA (0.7%) and also surpassed the value from 2023 (0.5%) for the lowest value observed in the history of the report.

Average U.S. aggregate **total damage** in 2025 (1.1%) was the same as 2024 (1.1%) but higher than the 5YA (1.0%).

Average U.S. Aggregate **heat damage** was 0.0% for the 2025 samples, the same as 2024 and the 5YA.

Average U.S. Aggregate **moisture** content in 2025 (16.0%) was higher than 2024 (15.3%) but the same as the 5YA.

CHEMICAL COMPOSITION

Average U.S. Aggregate **protein** concentration in 2025 (8.4% dry basis) was similar to 2024 (8.5%) but lower than the 5YA (8.6%).

Average U.S. Aggregate **starch** concentration in 2025 (72.3% dry basis) was similar to 2024 (72.2%) and higher than the 5YA (72.1%).

Average U.S. Aggregate **oil** concentration in 2025 (3.8% dry basis) was lower than 2024 and the 5YA (both 3.9%).

[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 Harvest Reports*.

PHYSICAL FACTORS

Average U.S. Aggregate **stress cracks** in 2025 (9.5%) was similar to 2024 and the 5YA (both 9.3%).

Average U.S. Aggregate **100-kernel weight** in 2025 (34.04 grams) was lower than 2024 (36.66 grams) and the 5YA (35.12 grams).

U.S. Aggregate **kernel true density** in 2025 (1.258 grams per cubic centimeter (g/cm^3)) was lower than 2024 (1.265 g/cm^3) but similar to the 5YA (1.255 g/cm^3).

U.S. Aggregate **whole kernels** averaged 90.6% in 2025, lower than 2024 (93.1%) and the 5YA (92.3%).

Average U.S. Aggregate **horneous (hard) endosperm** in 2025 (83%) was lower than 2024 (85%) and the 5YA (84%).

MYCOTOXINS

In 2025, 100.0% of the samples tested at or below the U.S. Food and Drug Administration (FDA) action level for **aflatoxin** of 20.0 parts per billion (ppb), and 99.4% of the samples tested below 5.0 ppb, a higher proportion than in 2024 (91.7%).

Of the 2025 samples, 98.8% tested at or below the 5.0 parts per million (ppm) FDA advisory level for deoxynivalenol (**DON**). Also, 89.4% of the samples tested below 1.5 ppm, a lower proportion than in 2024 (93.9%).

In 2025, 87.2% of the samples tested below the FDA's strictest guidance level for **fumonisin** of 5.0 ppm, a lower proportion than in 2024 (97.2%).

For this year's *Harvest Report*, **ochratoxin A**, trichothecenes (**T-2**) and **zearalenone** were tested for the sixth year in a row. Results of the 180 samples tested for each additional mycotoxin can be found in the "Quality Test Results" section.

The *2025/2026 Harvest Report* has been designed to help international buyers of corn understand U.S. yellow corn's initial quality as it enters the market channel. This is the fifteenth annual survey of the quality of the U.S. corn crop at harvest. Fifteen years of results show patterns in the impact of weather and growing conditions on the quality of U.S. corn as it comes out of the field.

The 2025 growing season was characterized by warm conditions and ample moisture during the growing season and warm, dry conditions during dry-down and harvest. Given these conditions, average yield is projected to be the highest on record. Coupled with the highest harvested hectares in over 90 years, total production is projected to be 425.53 million metric tons (16,752 million bushels), surpassing the previous record set by the 2023 crop by 35.86 million metric tons (1,412 million bushels).

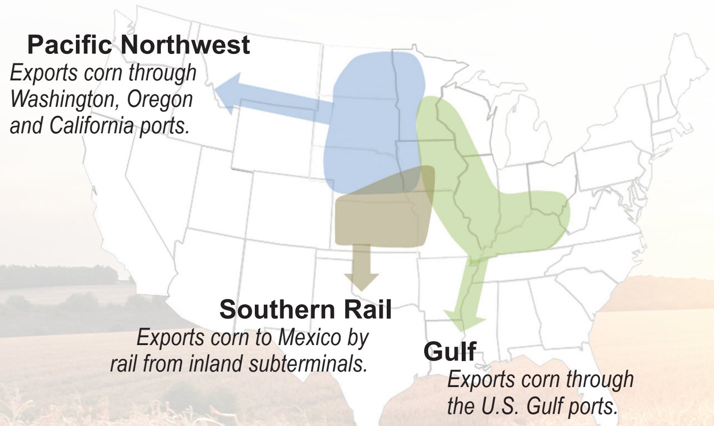
The growing season conditions and timely harvest helped produce a crop with good grain quality. The 2025 crop had the same average test weight and moisture, similar stress cracks and lower 100-kernel weight and kernel volume compared to their respective 5YAs. In addition, average BCFM was the lowest observed in the history of the report.

With these quality factors, the 2025 crop, on average, is entering the market channel with characteristics that met or exceeded each grade factor's numerical requirements for U.S. No. 1 grade corn. The report also showed that 87.1% of the samples met all grade factor requirements for U.S. No. 1 grade, and 97.8% met the grade factor requirements for U.S. No. 2 grade corn.

These data have laid the foundation for evaluating trends and the factors which impact corn quality. The cumulative reports also enable export buyers to make year-to-year comparisons and assess patterns of corn quality based on crop growing conditions across the years.

The *2025/2026 Harvest Report* is based on 621 yellow corn samples taken from defined areas within 12 of the top corn-producing and exporting states. Inbound samples were collected from local grain elevators to measure and analyze quality at the point of origin and provide representative information about the variability of the quality characteristics across the diverse geographic regions.

Export Catchment Areas



The sampling areas in the 12 states are divided into three general groupings labeled Export Catchment Areas (ECAs). These three ECAs are identified by the three major pathways to export markets shown on the map.

Test results from the sample analysis are reported at the U.S. Aggregate level and for each of the three ECAs, providing a general perspective on U.S. corn quality's geographic variability.

The corn's quality characteristics identified at harvest establish the foundation for the grain's quality ultimately arriving at the export customers' doors. However, as corn passes through the U.S. marketing system, it is mingled with corn from other locations; aggregated into trucks, barges and railcars; then stored, loaded and unloaded several times. Therefore, the corn's quality and condition may change between the initial market entry and the export elevator. For this reason, the *2025/2026 Harvest Report* should be considered in tandem with the Council's *2025/2026 Corn Export Cargo Quality Report*, to be published in early 2026. As always, the quality of an export cargo of corn is established by the contract between buyer and seller, and buyers are free to negotiate any quality factor important to them.

This report provides detailed information on each of the quality factors tested, including averages and standard deviations for the aggregate of all samples as well as the samples from each of the three ECAs. The "Quality Test Results" section summarizes the following quality factors:

- Grade Factors: test weight, BCFM, total damage and heat damage
- Moisture
- Chemical Composition: protein, starch and oil concentrations
- Physical Factors: stress cracks, 100-kernel weight, kernel volume, kernel true density, whole kernels and horneous (hard) endosperm
- Mycotoxins: aflatoxin, DON, fumonisin, ochratoxin A, T-2 and zearalenone

In addition, the *2025/2026 Harvest Report* includes brief descriptions of the U.S. crop and weather conditions; U.S. corn production, usage and outlook; detailed descriptions of survey, statistical analysis and testing analysis methods; and a historical perspective section displaying the average of each quality factor from all fifteen reports.

A. GRADE FACTORS

USDA FGIS has established numerical grades, definitions and standards for measurement of many quality attributes. The attributes that determine the numerical grades for corn are test weight, BCFM, total damage and heat damage. A table with the numerical requirements for these attributes is in the "U.S. Corn Supporting Information" section of this report and on the following page.

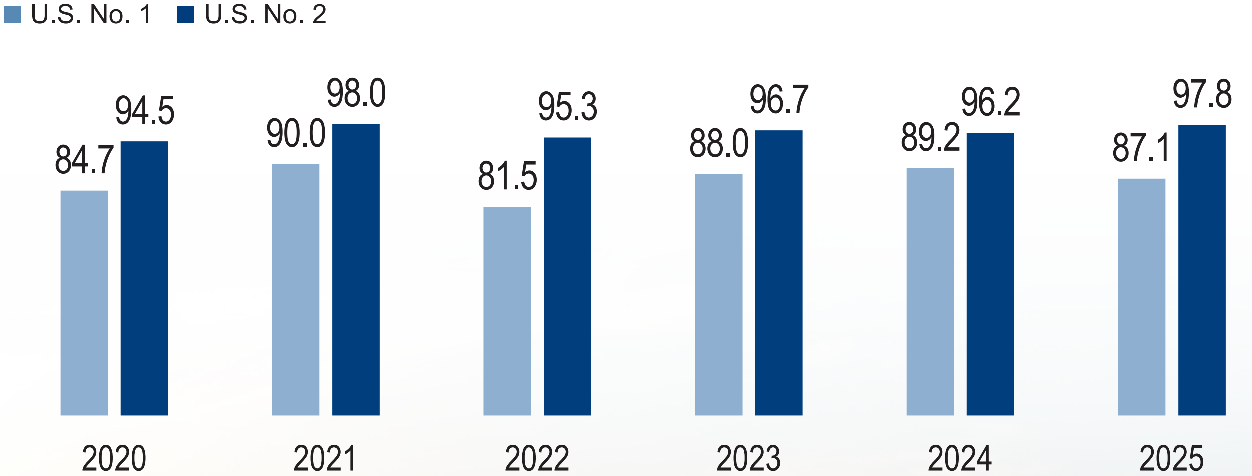
SUMMARY: GRADE FACTORS AND MOISTURE

- The figure shown on the following page describes the percent of samples meeting grade factor limits for U.S. No. 1 and No. 2 grades by year. On average, 87.1% of the samples met all grade factor requirements for U.S. No. 1 grade, and 97.8% met the grade factor requirements for U.S. No. 2 grade.
- Average U.S. Aggregate test weight (58.6 lb/bu or 75.4 kg/hl) was well above the minimum for U.S. No. 1 grade (56.0 lb/bu). It was also the same as the 5YA.
- The Pacific Northwest ECA (57.7 lb/bu) had the lowest average test weight. The Gulf and Southern Rail ECAs had test weights of 58.7 lb/bu and 59.3 lb/bu, respectively. Among ECAs, the Pacific Northwest has had the lowest test weight for 2025, 2024, 2023, the 5YA and the 10YA.
- Average U.S. Aggregate BCFM in 2025 (0.3%) was lower than 2024 (0.6%), the 5YA (0.7%) and 10YA (0.8%) and also surpassed 2023 (0.5%) for the lowest value observed in the history of the report.
- BCFM levels in 100.0% of the corn samples were equal to or below the 3.0% maximum allowed for No. 2 grade.
- Average BCFM levels for the Gulf, Pacific Northwest and Southern Rail ECAs (0.3, 0.4 and 0.3%, respectively) were all below the limit for U.S. No.1 grade.
- Average U.S. Aggregate broken corn averaged 0.3% in 2025, which was lower than 2024 and 2023 (both 0.4%), the 5YA (0.5%) and 10YA (0.6%).
- Average U.S. Aggregate foreign material in 2025 (0.1%) was lower than the 5YA and 10YA (both 0.2%).
- Average total damage in the U.S. Aggregate samples in 2025 (1.1%) was the same as 2024, higher than 2023 (0.9%) and the 5YA (1.0%), lower than the 10YA (1.5%) and was well below the limit for U.S. No. 1 grade (3.0%).
- A total of 94.0% of samples contained 3.0% or less damaged kernels. Average samples for the Gulf, Pacific Northwest and Southern Rail ECAs had total damage of 1.1, 0.8 and 1.4%, respectively. All were below the limit for U.S. No. 1 grade (3.0%).

SUMMARY: GRADE FACTORS AND MOISTURE

- Average U.S. Aggregate heat damage was 0.0% for the 2025 samples, the same as 2024, 2023, the 5YA and 10YA.
- Average U.S. Aggregate moisture content in 2025 (16.0%) was higher than 2024 (15.3%), the same as the 5YA and lower than 2023 (16.3%) and the 10YA (16.2%).
- The 2025 average moisture contents for the Gulf, Pacific Northwest and Southern Rail ECAs were 16.0, 16.2 and 15.6%, respectively. Average moisture levels for the Southern Rail have been the lowest among all ECAs in 2025, 2024, 2023, the 5YA and 10YA.
- There were 23.6% of samples with moisture contents above 17.0% in 2025 compared to 19.9% in 2024 and 30.8% in 2023. Care should be taken to monitor and maintain moisture levels sufficiently low to prevent possible mold growth and loss of storage life.

Samples Meeting All Requirements by Grade (%)



U.S. Corn Grades and Grade Requirements

Grade	Minimum Test Weight per Bushel (Pounds)	Maximum Limits of Damaged Kernels: Heat Damaged (Percent)	Maximum Limits of Damaged Kernels: Total (Percent)	Maximum Limits of Broken Corn and Foreign Material (Percent)
U.S. No. 1	56.0	0.1	3.0	2.0
U.S. No. 2	54.0	0.2	5.0	3.0
U.S. No. 3	52.0	0.5	7.0	4.0
U.S. No. 4	49.0	1.0	10.0	5.0
U.S. No. 5	46.0	3.0	15.0	7.0

TEST WEIGHT

Test weight (weight per volume) is a measure of bulk density. It is often used as a general indicator of overall quality and as a gauge of endosperm hardness for alkaline cooking processors and dry millers. High test weight corn takes up less storage space than the same weight of corn with lower test weight. Genetic differences initially impact the structure of the kernel for test weight. However, it is also affected by the method of drying, physical damage to the kernel (broken kernels and scuffed surfaces), foreign material in the sample, kernel size, stress during the growing season, microbiological damage and moisture content. In general, if corn is dried gently, test weight may increase 0.25 to 0.33 lb/bu for a one percentage point reduction in moisture. However, other factors such as kernel size, shape, fine material, damage and rapidity of drying may influence the potential change in test weight.[1]

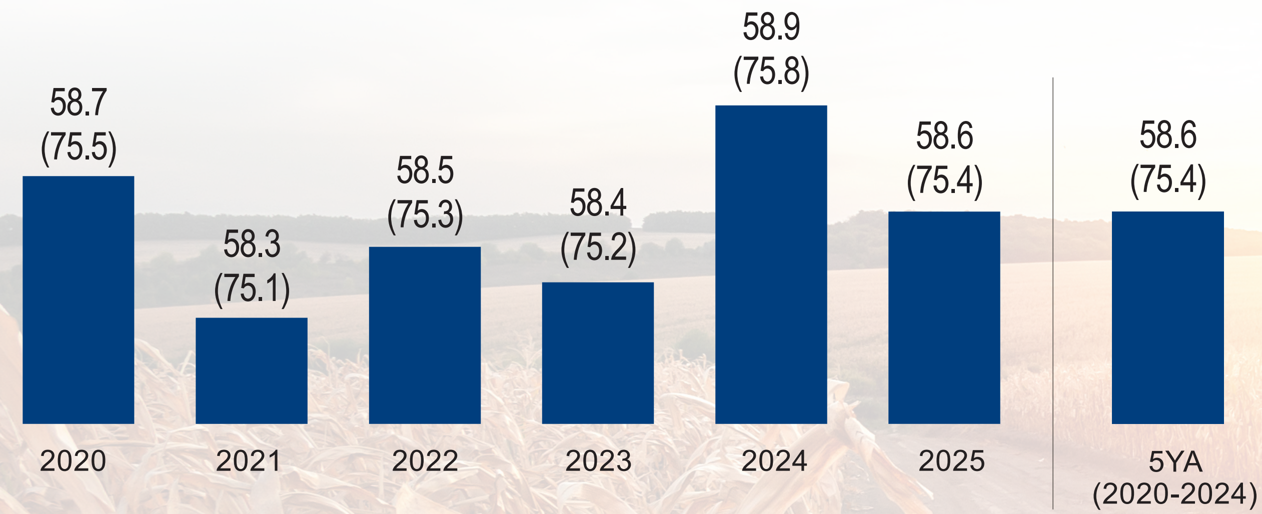
When sampled and measured at the point of delivery from the farm at a given moisture content, high test weight generally indicates high quality, a high percent of horneous (or hard) endosperm and sound, clean corn. Test weight has a positive correlation with true density and reflects kernel hardness and good maturation conditions.

RESULTS

- Average U.S. Aggregate test weight (58.6 lb/bu or 75.4 kg/hl) was lower than 2024 (58.9 lb/bu), higher than 2023 (58.4 lb/bu) and the 10YA (58.3 lb/bu) but the same as the 5YA (58.6 lb/bu). It was also well above the minimum for U.S. No. 1 grade (56.0 lb/bu).

TEST WEIGHT (lb/bu & kg/hl)

U.S. Aggregate Results Summary

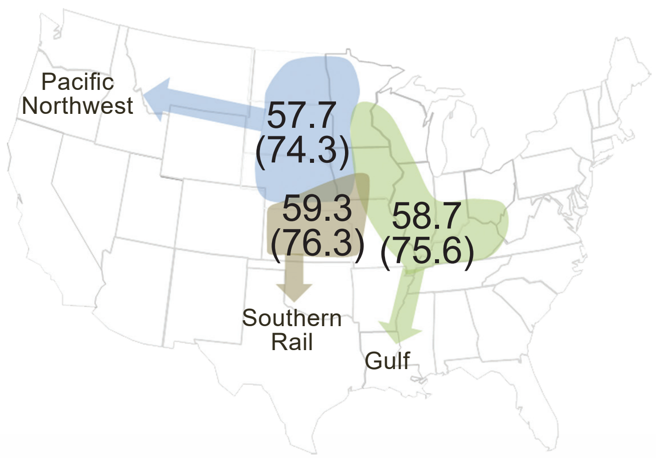


[1] *Hellevang, K. (2019) Many Factors Influence Corn Test Weight. NDSU Agricultural Communication November 27, 2019, NDSU Extension Service.*

- The standard deviation for U.S. Aggregate test weight in 2025 (1.37 lb/bu) was higher than 2024 (1.27 lb/bu), 2023 (1.23 lb/bu), the 5YA (1.24 lb/bu) and 10YA (1.23 lb/bu).
- The range in test weight values among the 2025 harvest samples was 11.0 lb/bu (52.6 to 63.6 lb/bu) which was similar to the 2024 range of 11.3 lb/bu (52.5 to 63.8 lb/bu) but smaller than the 2023 range of 16.6 lb/bu (46.4 to 63.0 lb/bu).
- The 2025 test weight values were distributed with 92.6% of the samples at or above the factor minimum for U.S. No. 1 grade (56.0 lb/bu) compared to 97.3% in 2024 and 93.7% in 2023. In 2025, 99.1% of the samples were above the minimum for U.S. No. 2 grade (54.0 lb/bu), compared to 99.7% in 2024 and 99.6% in 2023.
- In 2025, the Pacific Northwest ECA (57.7 lb/bu) had the lowest average test weight. The Gulf and Southern Rail ECAs had test weights of 58.7 lb/bu and 59.3 lb/bu, respectively. Among ECAs, the Pacific Northwest has had the lowest test weight for 2025, 2024, 2023, the 5YA and 10YA. The Southern Rail has consistently had the highest test weight among ECAs for 2025, 2024, 2023, the 5YA and 10YA.

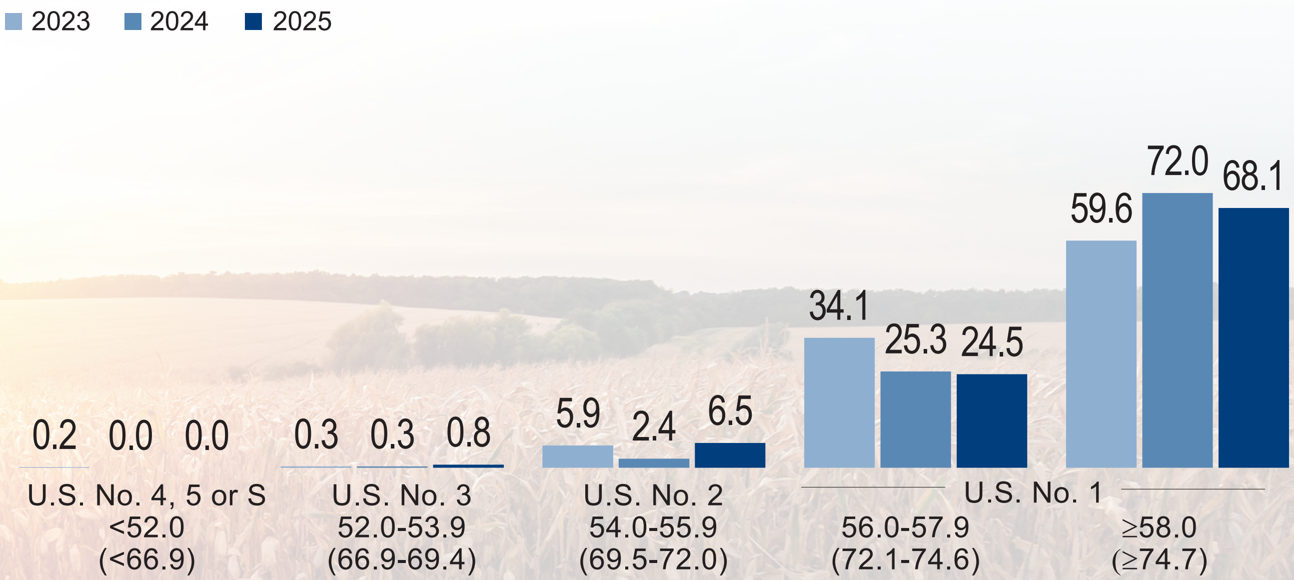
TEST WEIGHT (lb/bu & kg/hl)

2025 Average by Export Catchment Area



TEST WEIGHT (lb/bu & kg/hl)

Percent of Samples by Crop Year



BROKEN CORN AND FOREIGN MATERIAL

BCFM is an indicator of the amount of clean, sound corn available for feeding and processing. The lower the percentage of BCFM, the less foreign material or fewer broken kernels are in a sample. Higher levels of BCFM in farm-originated samples generally stem from harvesting practices or weed seeds in the field. BCFM levels will normally increase during drying and handling as a result of more broken kernels, depending on the methods used and the soundness of the kernels.

Broken corn (BC) is corn and any other material (such as weed seeds) small enough to pass through a 12/64th-inch round-hole sieve and too large to pass through a 6/64th-inch round-hole sieve.

Foreign material (FM) is any non-corn material too large to pass through a 12/64th-inch round-hole sieve, as well as all fine material small enough to pass through a 6/64th-inch round-hole sieve.

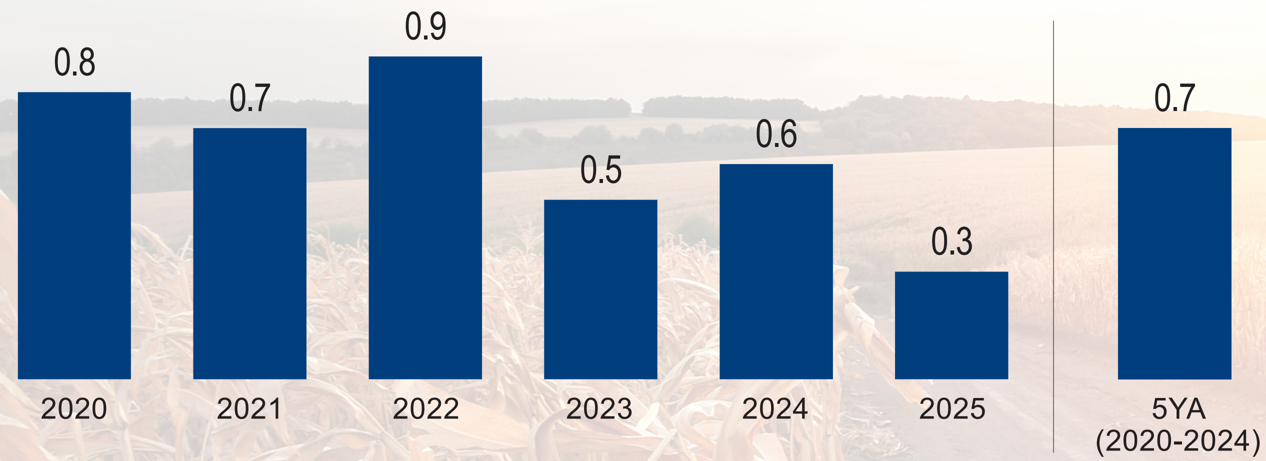
The diagram shown on the following page illustrates the measurement of broken corn and foreign material for the U.S. corn grades.

RESULTS

- Average U.S. Aggregate BCFM in 2025 (0.3%) was lower than 2024 (0.6%), the 5YA (0.7%) and 10YA (0.8%) and surpassed 2023 (0.5%) for the lowest value observed in the history of the report. It was also well below the maximum for U.S. No. 1 grade (2.0%).

BCFM (%)

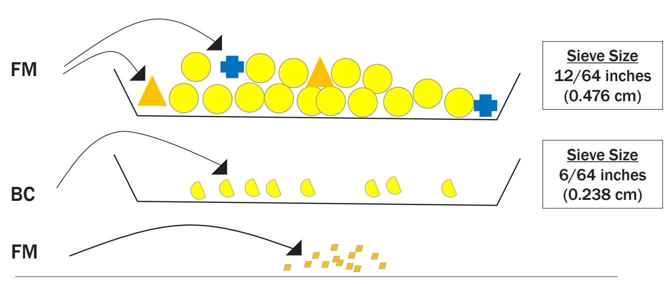
U.S. Aggregate Results Summary



- The variability of BCFM in the 2025 crop, based on standard deviation (0.21%), was lower than 2024 (0.38%), 2023 (0.45%), the 5YA (0.47%) and 10YA (0.52%).
- The range between minimum and maximum BCFM values in the 2025 harvest samples was 2.6% (0.0 to 2.6%), which was lower than the 2024 range of 7.3% (0.1 to 7.4%) and the 2023 range of 5.9% (0.0 to 5.9%).
- The samples from the 2025 crop were distributed with 99.5% of the samples at or below the maximum BCFM level for U.S. No. 1 grade (2.0%), compared to 98.3% in 2024 and 97.2% in 2023. BCFM levels in all samples (100.0%) were equal to or below the maximum 3.0% limit for U.S. No. 2 grade.
- Average BCFM levels for the Gulf, Pacific Northwest and Southern Rail ECAs were 0.3, 0.4 and 0.3%, respectively; all were below the limit for U.S. No.1 grade.

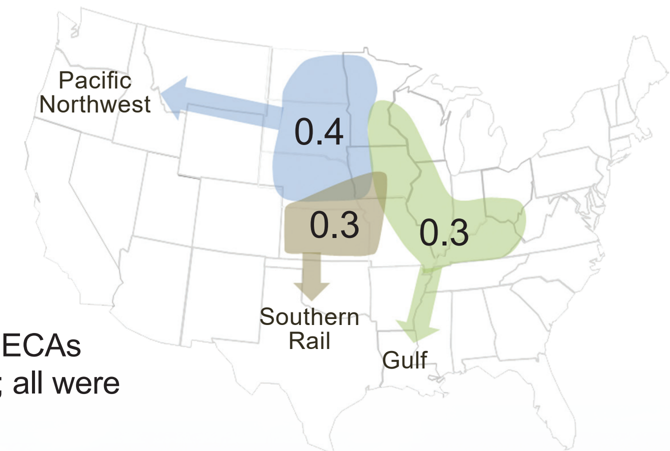
BCFM (%)

Broken Corn and Foreign Material Measured as Percent by Weight



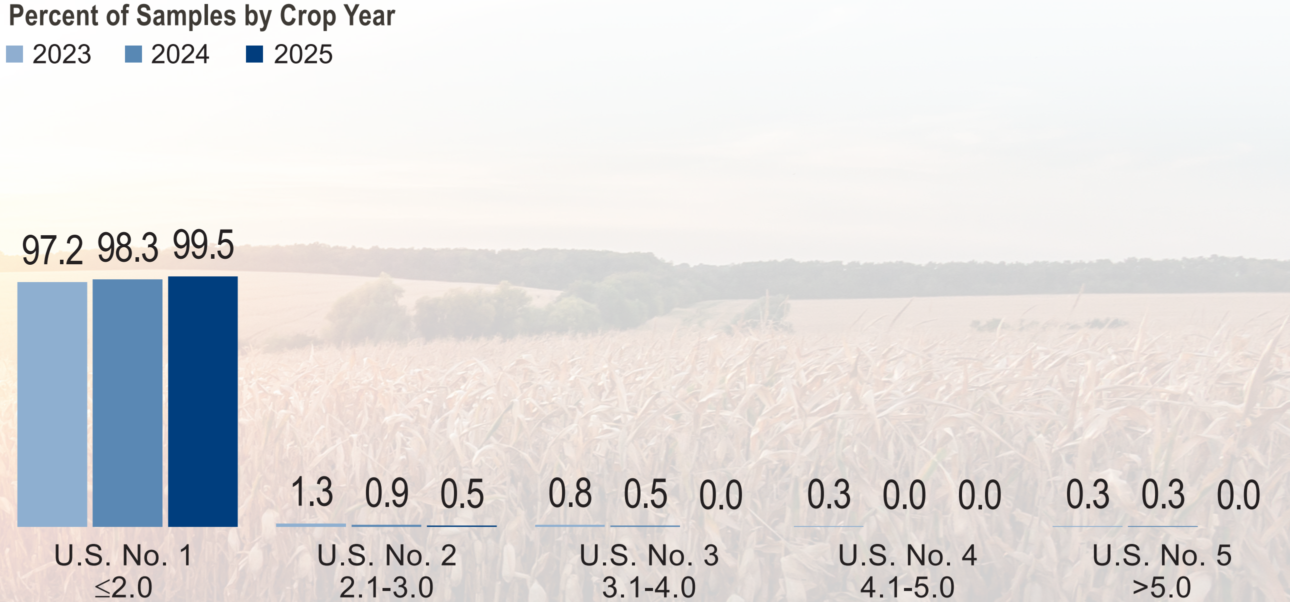
BCFM (%)

2025 Average by Export Catchment Area



BCFM (%)

Percent of Samples by Crop Year



BROKEN CORN

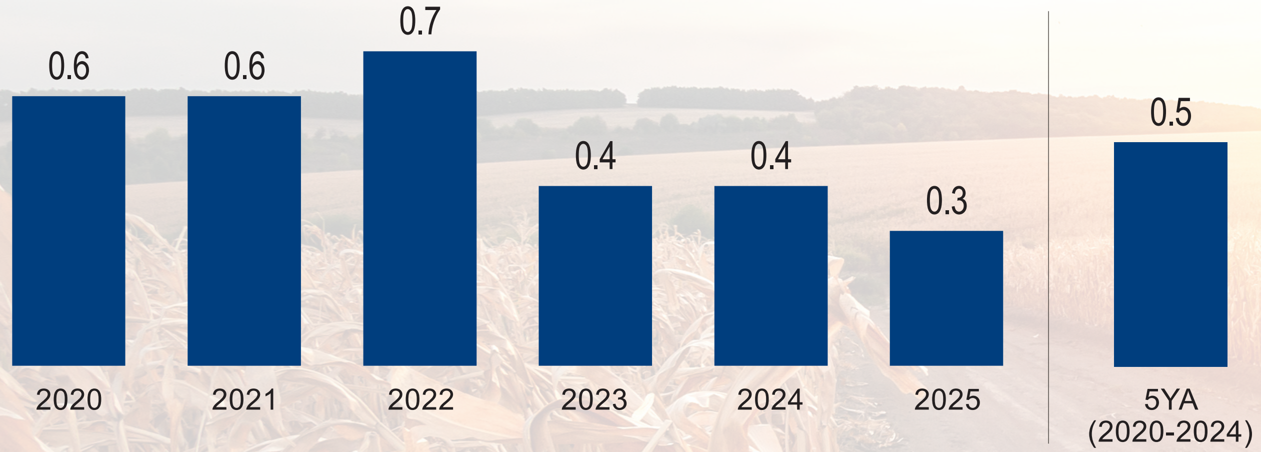
Broken corn in U.S. grades is based on particle size and usually includes a small percent of non-corn material. Broken corn is more subject to mold and insect damage than whole kernels, and it can cause problems in handling and processing. When not spread or stirred in a storage bin, broken corn tends to stay in the center of the bin, while whole kernels are likely to gravitate outward to the edges. The center area where broken corn tends to accumulate is known as a "spout-line." If desired, the spout-line can be reduced by drawing this grain out of the center of the bin.

RESULTS

- Broken corn in the U.S. Aggregate samples averaged 0.3% in 2025. This was lower than 2024 (0.4%), 2023 (0.4%), the 5YA (0.5%) and 10YA (0.6%).
- The variability among samples of broken corn for the 2025 crop was slightly lower than 2024 and 2023, as measured by their standard deviations. Standard deviations for 2025, 2024, 2023, the 5YA and 10YA were 0.15, 0.26, 0.35, 0.34 and 0.36%, respectively.
- The range in broken corn values in 2025 was 1.6% (0.0 to 1.6%). This was lower than 2024 with 4.6% (0.0 to 4.6%) and 2023 with 5.0% (0.0 to 5.0%).

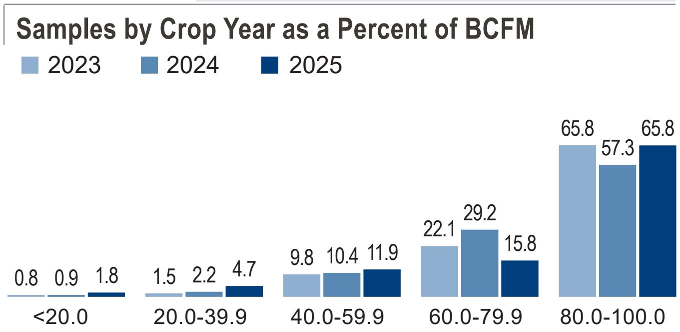
BROKEN CORN (%)

U.S. Aggregate Results Summary

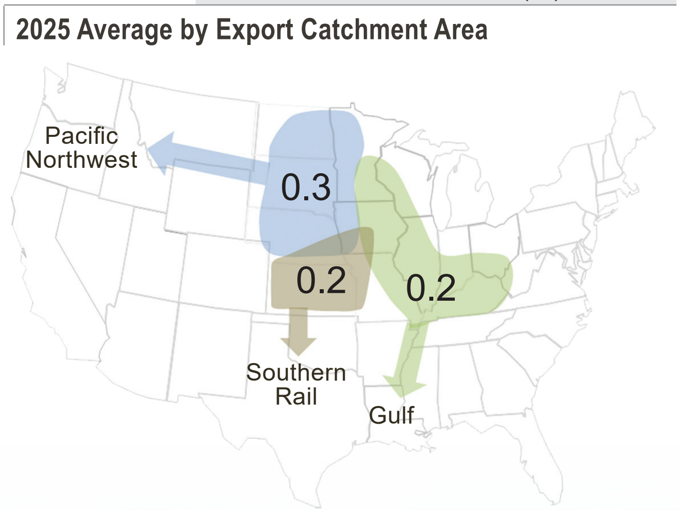


- The 2025 samples were distributed with 0.8% having 1.0% or more broken corn, compared to 6.5% in 2024 and 7.1% in 2023.
- The distribution chart to the right, displaying broken corn as a percentage of BCFM, shows that in 65.8% of the samples, BCFM consisted of at least 80.0% broken corn.
- The percentages of broken corn for the Gulf, Pacific Northwest and Southern Rail ECAs were 0.2, 0.3 and 0.2%, respectively.

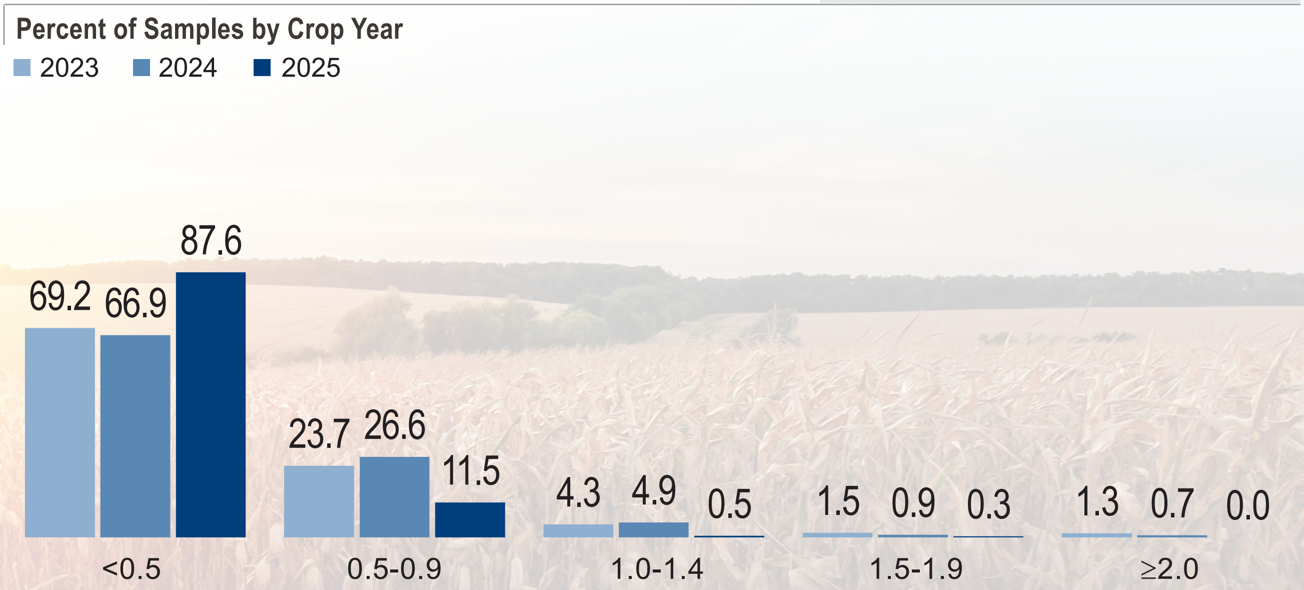
BROKEN CORN (% OF BCFM)



BROKEN CORN (%)



BROKEN CORN (%)



FOREIGN MATERIAL

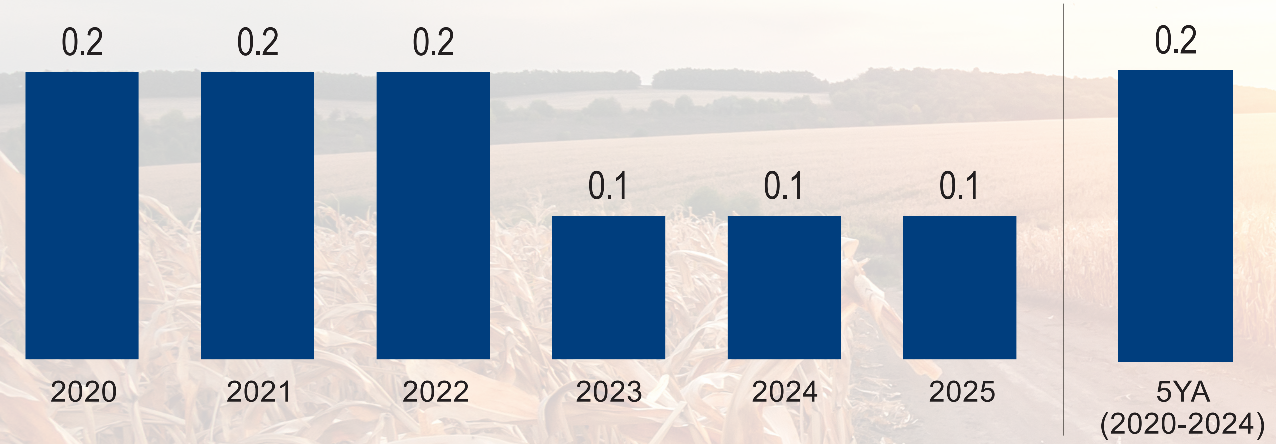
Foreign material is important because it has reduced feeding or processing value. It is also generally higher in moisture content than corn and, therefore, creates a potential for deterioration of corn quality during storage. Additionally, foreign material contributes to the spout-line (as mentioned in Broken Corn). It also has the potential to create more quality problems than broken corn due to its higher moisture content.

RESULTS

- Foreign material in the U.S. Aggregate samples averaged 0.1% in 2025, which is lower than the 5YA and 10YA (both 0.2%). However, the 2025 average was statistically different (lower) from 2024 (0.1%) and 2023 (0.1%). Combines, which are designed to remove most fine material, appear to be functioning well, given the consistently low level of foreign material measured across the years.
- Variability, measured by standard deviation, among the U.S. Aggregate samples in 2025 (0.12%) was similar to 2024 (0.19%), 2023 (0.16%), the 5YA (0.20%) and 10YA (0.22%).
- Foreign material in the 2025 samples ranged from 0.0 to 1.9%, which was lower than 2024 (0.0 to 3.5%) and 2023 (0.0 to 2.3%).

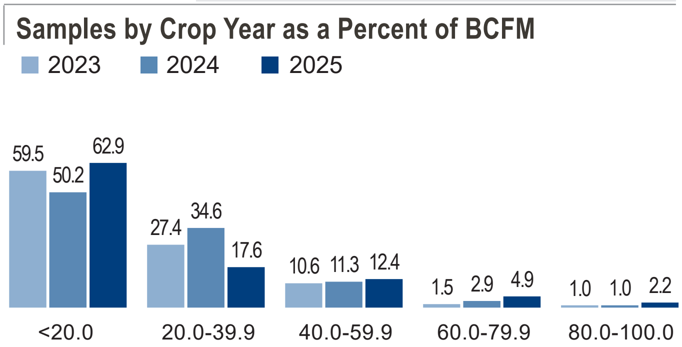
FOREIGN MATERIAL (%)

U.S. Aggregate Results Summary

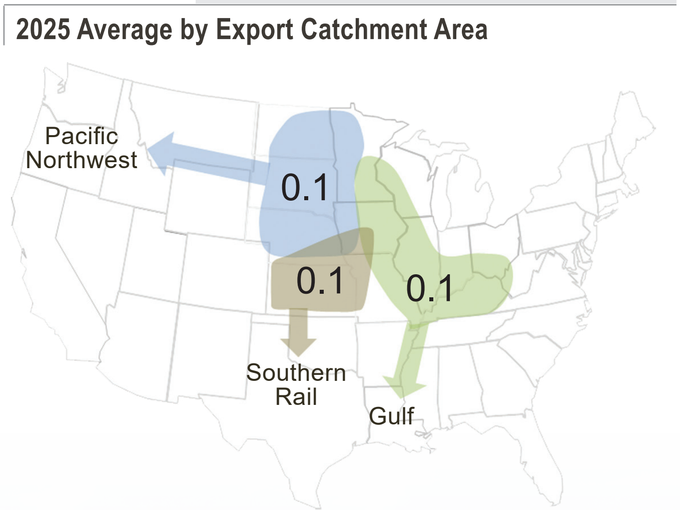


- In the 2025 crop, 97.5% of the samples contained less than 0.5% foreign material, similar to 2024 (94.4%) and 2023 (95.1%).
- The distribution chart to the right, displaying foreign material as a percentage of BCFM, shows that in 62.9% of the samples, BCFM consisted of less than 20.0% foreign material.
- The percentages of foreign material for the Gulf, Pacific Northwest and Southern Rail ECAs were all 0.1%. All ECAs had average foreign material values of 0.2% or less for 2025, 2024, 2023, the 5YA and 10YA.

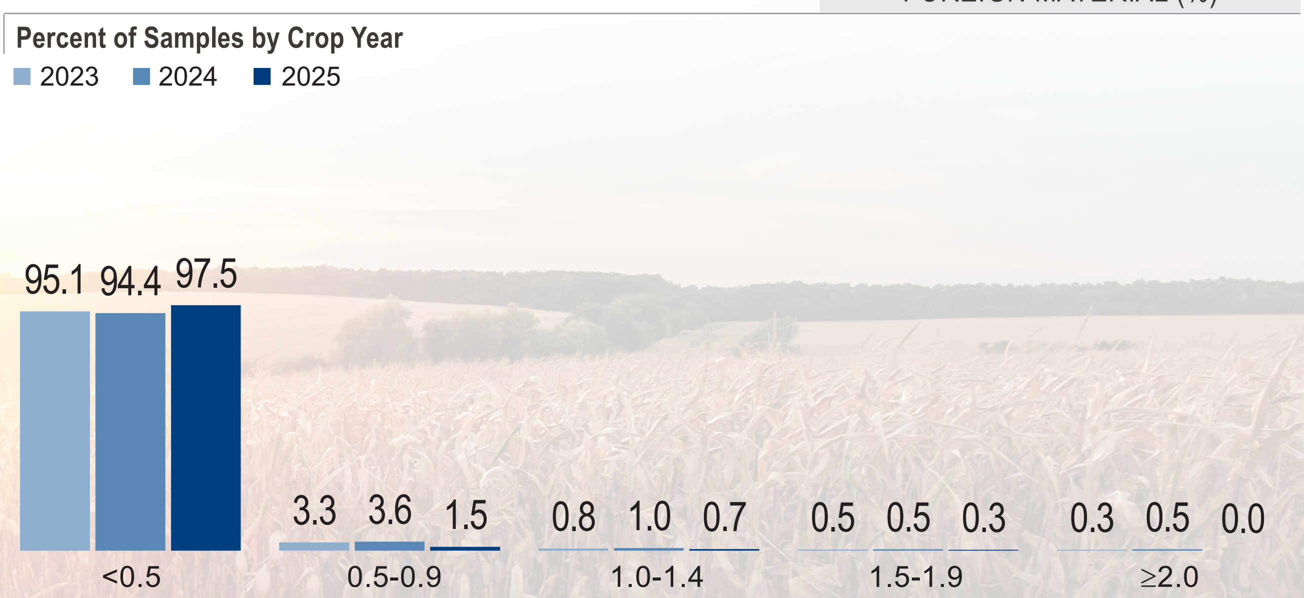
FOREIGN MATERIAL (% OF BCFM)



FOREIGN MATERIAL (%)



FOREIGN MATERIAL (%)



TOTAL DAMAGE

Total damage is the percent of kernels and pieces of kernels that are visually damaged in some way, including damage from mold, frost, insects, sprouting, disease, weather, ground, germ and heat. Heat damage is a subset of total damage and has separate allowances in the U.S. Grade standards. Most of these types of damage result in some discoloration or change in kernel texture. Damage does not include broken pieces of grain that are otherwise normal in appearance.

Mold damage is usually associated with higher moisture content and warm temperatures during the growing season or storage. Several field molds, such as Diplodia, Aspergillus, Fusarium and Gibberella, can lead to mold-damaged kernels during the growing season if the weather conditions are conducive to their development. While some fungi that produce mold damage can also produce mycotoxins, not all fungi produce mycotoxins. The chance of mold decreases as corn is dried and cooled to lower temperatures.

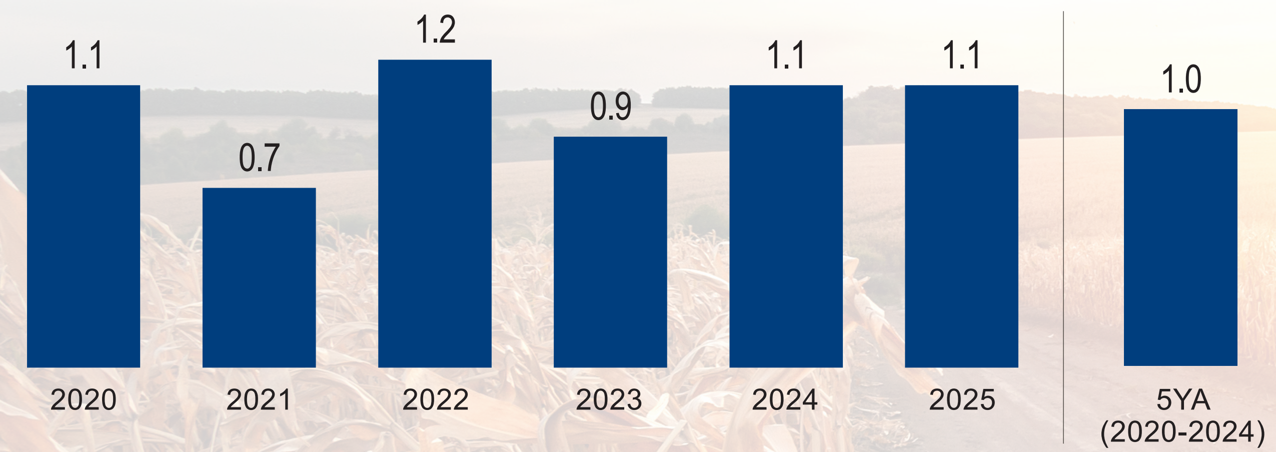
Heat damage can be caused by microbiological activity in warm, moist grain or high heat applied during drying. Heat damage is seldom present in corn delivered directly from farms at harvest.

RESULTS

- Average U.S. Aggregate total damage in 2025 (1.1%) was the same as 2024 (1.1%), higher than 2023 (0.9%) and 5YA (1.0%), but lower than the 10YA (1.5%). The 2025 total damage average was below the limit for U.S. No. 1 grade (3.0%).

TOTAL DAMAGE (%)

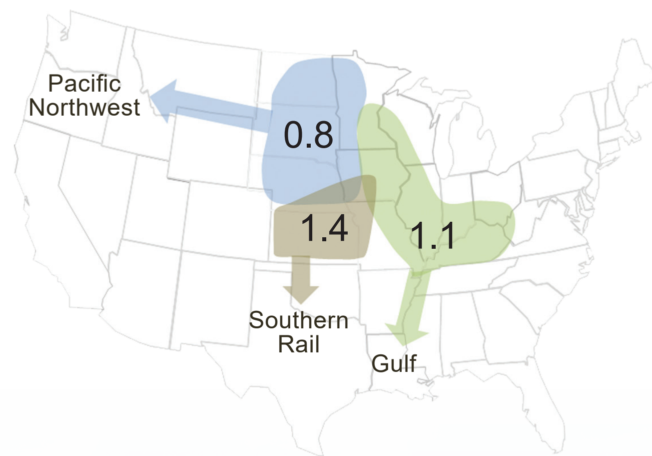
U.S. Aggregate Results Summary



- Total damage variability in the 2025 crop, as measured by the standard deviation (0.89%), was similar to 2024 (1.05%), 2023 (0.88%), the 5YA (0.93%) and 10YA (1.20%).
- The range for total damage in 2025 (0.0 to 11.4%) was lower than 2024 (0.0 to 21.3%) and 2023 (0.0 to 26.0%).
- The percent of samples having 3.0% or less total damage in 2025 (94.0%) was similar to 2024 (93.0%) and 2023 (95.1%).
- Average total damage was 1.1, 0.8 and 1.4% for the Gulf, Pacific Northwest and Southern Rail ECAs, respectively. Among the ECAs, the Pacific Northwest had the lowest average total damage in 2025, 2024, 2023, 5YA and 10YA. Average total damage in all ECAs was at or below the limit for U.S. No. 1 grade (3.0%).
- Aggregate heat damage averaged 0.0% for the 2025 samples, the same as 2024, 2023, the 5YA and 10YA.
- None of the samples in the 2025 survey tested above 0.0%. The lack of heat damage was likely due, in part, to fresh samples coming directly from farm to the elevator with minimal artificial drying.

TOTAL DAMAGE (%)

2025 Average by Export Catchment Area



TOTAL DAMAGE (%)

Percent of Samples by Crop Year

B. MOISTURE

Moisture content is reported on official grade certificates, and maximum moisture content is usually specified in the contract. However, moisture is not a grade factor; therefore, it does not determine which numerical grade will be assigned to the sample. Moisture content is important because it affects the amount of dry matter being sold, is an indicator of the need for drying and has implications for storability. Higher moisture content at harvest increases the chance of kernel damage during harvesting and drying, with the amount of drying required also affecting stress cracks and breakage.

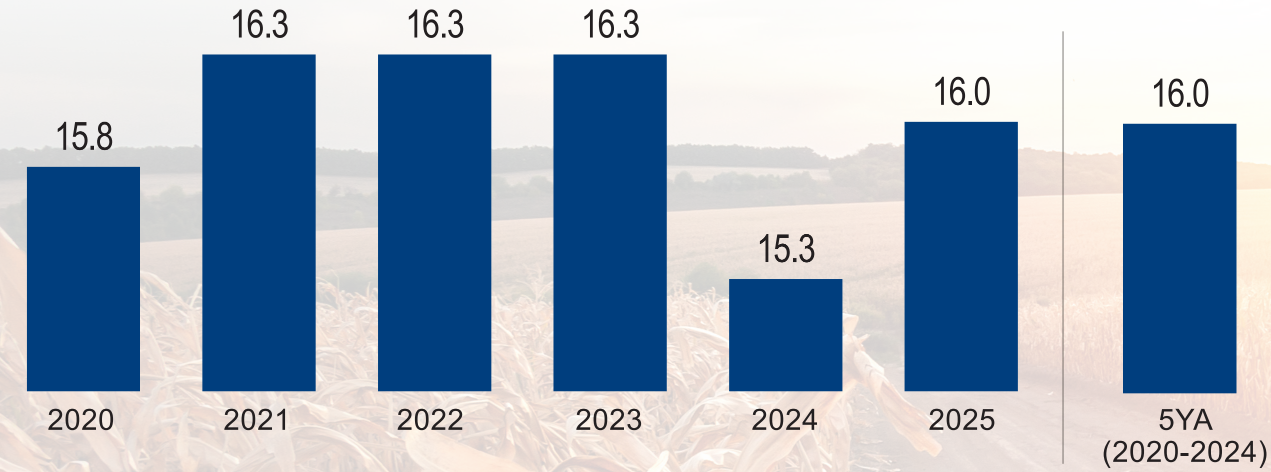
Extremely wet grain may be a precursor to high mold damage later in storage or transport. While the weather during the growing season affects yield, grain composition and kernel development, grain harvest moisture is influenced largely by crop maturation, the timing of harvest and harvest weather conditions. General moisture storage guidelines suggest that 14.0% is the maximum moisture content for storage up to six to twelve months for quality, clean corn in aerated storage under typical U.S. Corn Belt conditions, and 13.0% or lower moisture content for storage of more than one year.[2]

RESULTS

- The average U.S. Aggregate moisture content recorded at elevators in 2025 was 16.0%, which was higher than 2024 (15.3%), lower than 2023 (16.3%) and the 10YA (16.2%) and the same as the 5YA. Over the past fifteen years, average U.S. Aggregate moisture content ranged from a low of 15.3% in 2024 and 2012 to a high of 17.5% in 2019.

MOISTURE (%)

U.S. Aggregate Results Summary



[2]*MWPS-13. 2017. Grain Drying, Handling and Storage Handbook. Midwest Plan Service No. 13. Iowa State University, Ames, IA 50011.*

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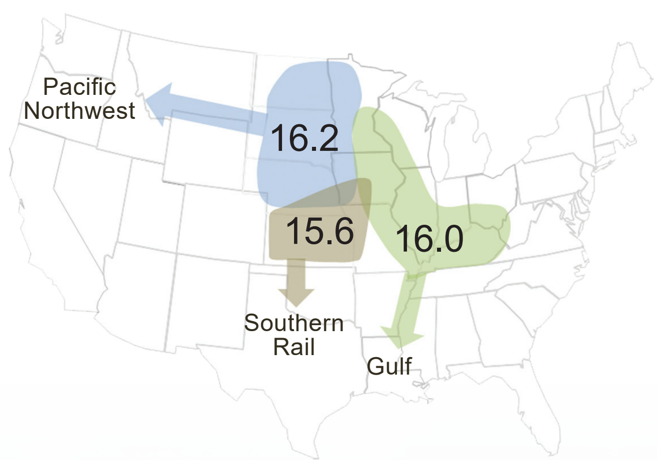
- U.S. Aggregate moisture standard deviation in 2025 (1.65%) was similar to 2024 (1.74%), but lower than 2023 (1.95%), the 5YA (1.91%) and 10YA (1.84%).
- In 2025, 23.6% of the samples were above 17.0% moisture, compared to 19.9% in 2024 and 30.8% in 2023. Care should be taken to monitor and maintain moisture content sufficiently low to prevent possible mold growth, reducing storage life.
- The 2025 moisture values were distributed with 35.8% of the samples containing 15.0% or less moisture. The base moisture used by elevators for discounts is generally 15.0%. This moisture content is considered safe for storage for only a short period during low wintertime temperatures.
- In the 2025 crop, only 3.0% of the samples contained 13.0% or less moisture, compared to 12.1% in 2024 and 4.4% in 2023. Moisture contents of 13.0% and lower are generally considered safe for longer-term storage and transport.
- The 2025 average moisture contents for the Gulf, Pacific Northwest and Southern Rail ECAs were 16.0, 16.2 and 15.6%, respectively. Average moisture levels for the Southern Rail ECA have been the lowest among all ECAs in 2025, 2024, 2023, the 5YA and 10YA.

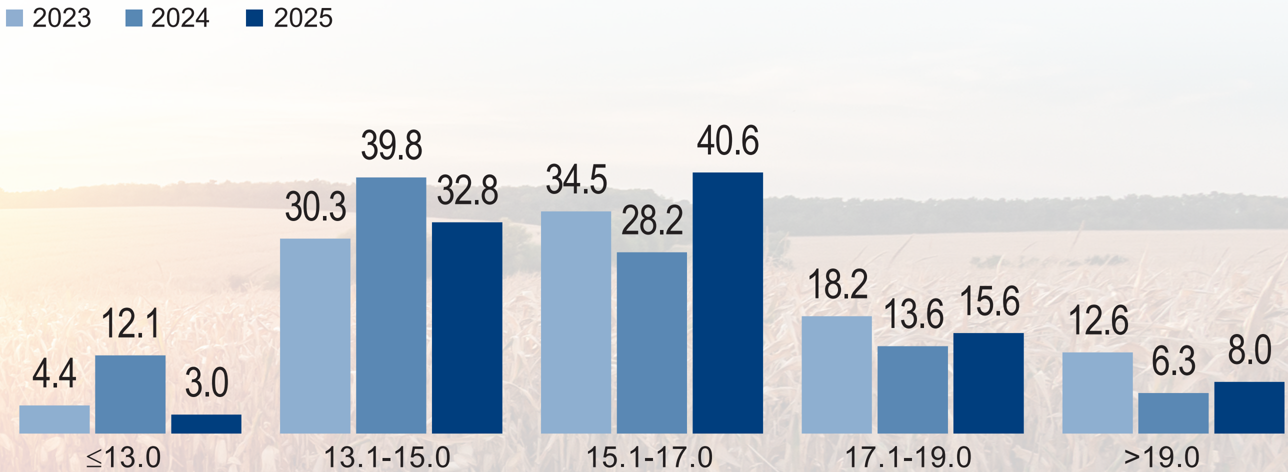
MOISTURE (%)

2025 Average by Export Catchment Area



MOISTURE (%)

Percent of Samples by Crop Year



SUMMARY: GRADE FACTORS AND MOISTURE

	2025 Harvest					2024 Harvest		2023 Harvest		Five-Year Average (2020-2024)		Ten-Year Average (2015-2024)	
	No. of Samples[1]	Avg.	Std. Dev.	Min.	Max.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
U.S. Aggregate						**U.S. Aggregate**		**U.S. Aggregate**		**U.S. Aggregate**		**U.S. Aggregate**	
Test Weight (lb/bu)	599	58.6	1.37	52.6	63.6	58.9*	1.27	58.4*	1.23	58.6	1.24	58.3*	1.23
Test Weight (kg/hl)	599	75.4	1.77	67.7	81.9	75.8*	1.63	75.2*	1.58	75.4	1.59	75.1*	1.58
BCFM (%)	599	0.3	0.21	0.0	2.6	0.6*	0.38	0.5*	0.45	0.7*	0.47	0.8*	0.52
Broken Corn (%)	599	0.3	0.15	0.0	1.6	0.4*	0.26	0.4*	0.35	0.5*	0.34	0.6*	0.36
Foreign Material (%)	599	0.1	0.12	0.0	1.9	0.1*	0.19	0.1*	0.16	0.2*	0.20	0.2*	0.22
Total Damage (%)	599	1.1	0.89	0.0	11.4	1.1	1.05	0.9*	0.88	1.0*	0.93	1.5*	1.20
Heat Damage (%)	599	0.0	0.00	0.0	0.0	0.0	0.00	0.0	0.00	0.0*	0.00	0.0*	0.00
Moisture (%)	609	16.0	1.65	11.4	27.8	15.3*	1.74	16.3*	1.95	16.0	1.91	16.2*	1.84
Gulf						**Gulf**		**Gulf**		**Gulf**		**Gulf**	
Test Weight (lb/bu)	572	58.7	1.50	52.6	63.6	59.0*	1.38	58.6	1.26	58.6	1.30	58.5*	1.24
Test Weight (kg/hl)	572	75.6	1.93	67.7	81.9	75.9*	1.77	75.4	1.62	75.5	1.68	75.3*	1.60
BCFM (%)	572	0.3	0.21	0.0	2.6	0.6*	0.39	0.6*	0.51	0.7*	0.50	0.7*	0.53
Broken Corn (%)	572	0.2	0.14	0.0	1.6	0.4*	0.26	0.5*	0.39	0.5*	0.36	0.6*	0.37
Foreign Material (%)	572	0.1	0.12	0.0	1.9	0.1*	0.20	0.1*	0.17	0.2*	0.20	0.2*	0.23
Total Damage (%)	572	1.1	0.95	0.0	11.4	1.4*	1.29	1.0*	0.92	1.2	1.11	1.7*	1.38
Heat Damage (%)	572	0.0	0.00	0.0	0.0	0.0	0.00	0.0	0.00	0.0*	0.00	0.0*	0.00
Moisture (%)	585	16.0	1.77	11.4	27.8	15.6*	1.84	16.4*	2.08	16.4*	2.04	16.5*	1.92
Pacific Northwest						**Pacific Northwest**		**Pacific Northwest**		**Pacific Northwest**		**Pacific Northwest**	
Test Weight (lb/bu)	262	57.7	1.13	52.9	62.3	58.4*	0.97	57.6	1.03	58.1*	1.07	57.7	1.20
Test Weight (kg/hl)	262	74.3	1.46	68.1	80.2	75.1*	1.24	74.2	1.33	74.8*	1.38	74.3	1.55
BCFM (%)	262	0.4	0.22	0.0	1.4	0.6*	0.35	0.5*	0.31	0.7*	0.44	0.8*	0.53
Broken Corn (%)	262	0.3	0.18	0.0	1.2	0.4*	0.25	0.4*	0.23	0.6*	0.31	0.6*	0.38
Foreign Material (%)	262	0.1	0.10	0.0	1.1	0.1*	0.16	0.1	0.12	0.2*	0.19	0.2*	0.21
Total Damage (%)	262	0.8	0.66	0.0	7.4	0.4*	0.37	0.6*	0.73	0.5*	0.59	0.8	0.86
Heat Damage (%)	262	0.0	0.00	0.0	0.0	0.0	0.00	0.0	0.00	0.0*	0.00	0.0*	0.00
Moisture (%)	269	16.2	1.55	11.5	24.7	14.9*	1.50	16.5	1.74	15.5*	1.67	16.0*	1.79
Southern Rail						**Southern Rail**		**Southern Rail**		**Southern Rail**		**Southern Rail**	
Test Weight (lb/bu)	342	59.3	1.29	52.6	63.6	59.3	1.24	58.7*	1.35	58.9*	1.23	58.8*	1.20
Test Weight (kg/hl)	342	76.3	1.66	67.7	81.9	76.3	1.59	75.6*	1.74	75.8*	1.59	75.6*	1.55
BCFM (%)	342	0.3	0.20	0.0	2.1	0.5*	0.37	0.5*	0.46	0.7*	0.46	0.7*	0.46
Broken Corn (%)	342	0.2	0.15	0.0	1.6	0.4*	0.26	0.4*	0.35	0.5*	0.33	0.6*	0.33
Foreign Material (%)	342	0.1	0.11	0.0	1.9	0.1*	0.17	0.1*	0.17	0.2*	0.20	0.2*	0.20
Total Damage (%)	342	1.4	1.01	0.0	7.0	1.1*	1.05	0.9*	0.94	1.0*	0.87	1.4	1.06
Heat Damage (%)	342	0.0	0.00	0.0	0.0	0.0	0.00	0.0	0.00	0.0*	0.00	0.0*	0.00
Moisture (%)	341	15.6	1.44	11.9	27.8	14.6*	1.70	15.8	1.83	15.3*	1.83	15.5	1.63

**Indicates average was significantly different from current year, based on a 2-tailed t-test at the 95.0% level of significance.*

[1]Due to the ECA results being composite statistics, the sum of the samples from the ECAs is greater than the U.S. Aggregate. While 621 samples were tested for this year's report, the test results for each grade factor were less than 621 due to some samples weighing 1,000 grams or less being included. Moisture includes only 609 samples as the incoming moisture was not indicated on the sample bag by participating elevators for 12 samples.

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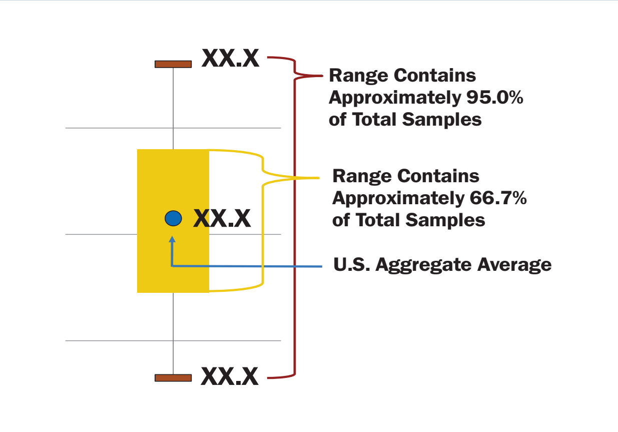
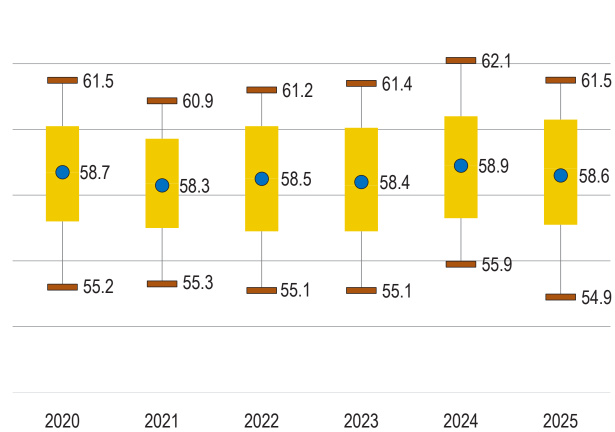
GRADE FACTORS
AGGREGATE SIX-YEAR COMPARISON

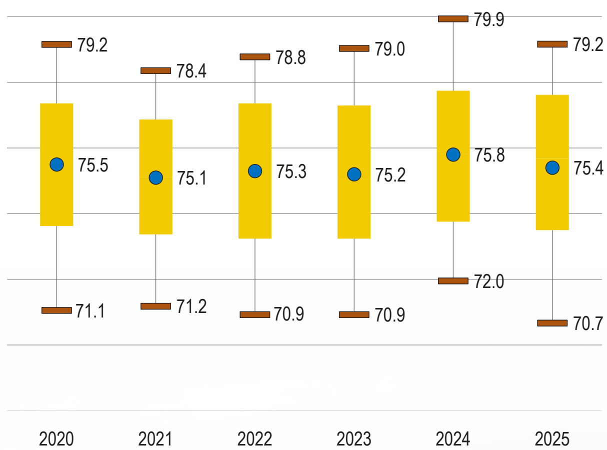
HOW TO READ THE CHARTS



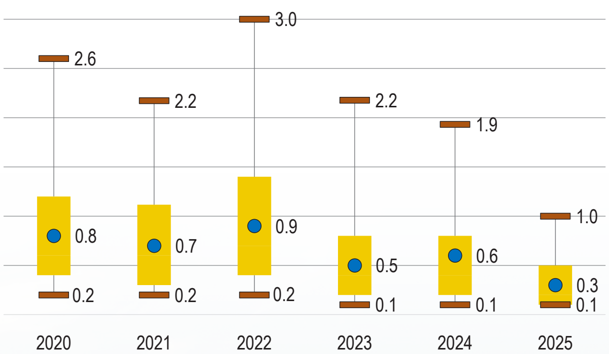
Test Weight (lb/bu)



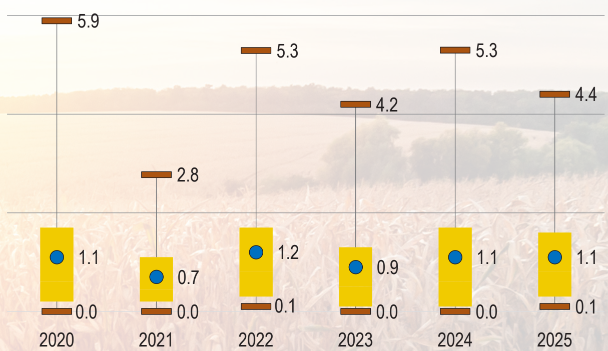
Test Weight (kg/hl)



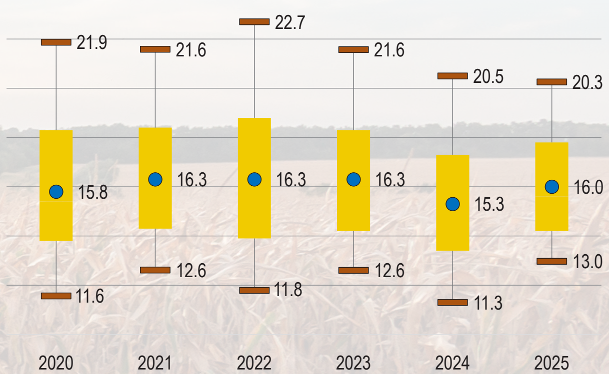
BCFM (%)



Total Damage (%)



Moisture (%)



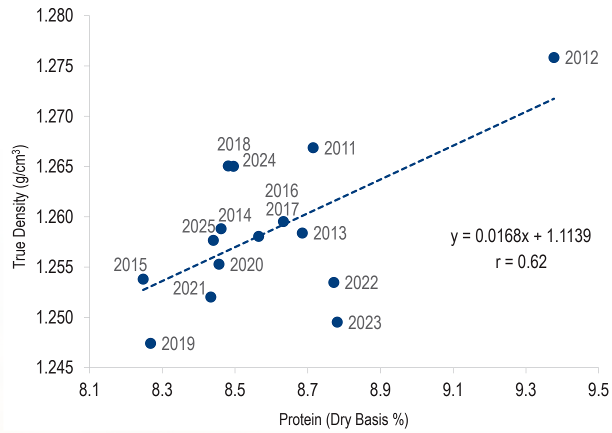
C.CHEMICAL COMPOSITION

The chemical composition of corn consists primarily of protein, starch and oil. While these attributes are not graded factors, they are of significant interest to end-users. Chemical composition values provide additional information about nutritional value for livestock and poultry feeding, for wet milling uses and other processing uses of corn. Unlike many physical attributes, chemical composition values are not expected to change significantly during storage or transit.

SUMMARY: CHEMICAL COMPOSITION

- Average U.S. Aggregate protein concentration in 2025 (8.4% dry basis) was similar to 2024 (8.5%), but lower than 2023 (8.8%), the 5YA (8.6%) and 10YA (8.5%).
- Among ECAs, the Southern Rail has had the highest or tied for the highest protein in 2025, 2024, 2023, the 5YA and 10YA.
- Based on U.S. Aggregate averages over the past fifteen years, as protein concentration increases, true density also increases (resulting in a correlation coefficient of 0.62), as shown in the figure to the right. In general, protein concentration appears to be lower in years with lower true density and higher in years with higher true density.
- Average U.S. Aggregate starch concentration in 2025 (72.3% dry basis) was similar to 2024 (72.2%), higher than 2023 (71.9%) and the 5YA (72.1%) but was lower than the 10YA (72.4%).

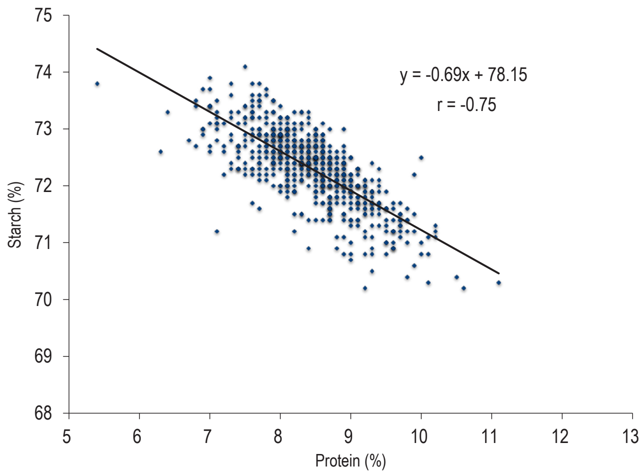
True Density vs Protein
U.S. Aggregate over Fifteen Years



SUMMARY: CHEMICAL COMPOSITION

- Since starch and protein are the two largest corn components, when the percentage of one goes up, the other usually goes down. This relationship is illustrated in the adjacent figure showing a negative correlation (r = -0.75) between starch and protein.
- Average U.S. Aggregate oil concentration in 2025 (3.8% dry basis) was the same as 2023, but lower than 2024, the 5YA and 10YA (all 3.9%).
- The average oil concentrations for the Gulf, Pacific Northwest and Southern Rail ECAs were 3.8, 3.9 and 3.8%, respectively. Oil concentration averages have consistently varied by 0.2% or less among the ECAs for 2025, 2024, 2023, the 5YA and 10YA.

Starch vs Protein, U.S. Aggregate 2025



PROTEIN

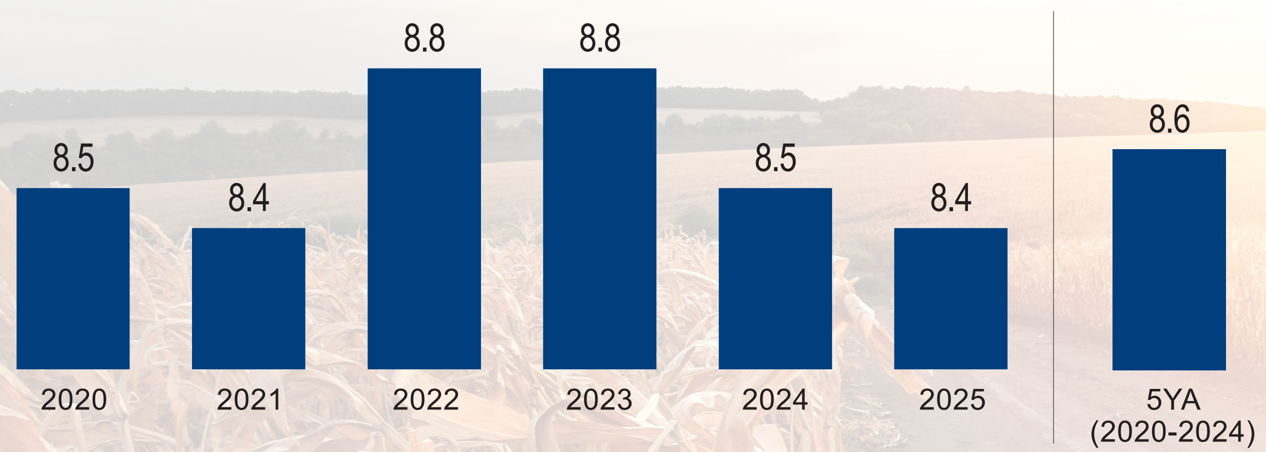
Protein is very important for poultry and livestock feeding because it supplies essential sulfur-containing amino acids and improves the feed conversion efficiency. Protein concentration tends to decrease with decreased available soil nitrogen and in years with high yields. Protein is usually inversely related to starch concentration. Results are reported on a dry basis.

RESULTS

- Average U.S. Aggregate protein concentration in 2025 (8.4%) was similar to 2024 (8.5%), but lower than 2023 (8.8%), the 5YA (8.6%) and 10YA (8.5%).
- Average U.S. Aggregate protein standard deviation in 2025 (0.53%) was lower than 2024 (0.60%) but similar to 2023 (0.56%), the 5YA (0.56%) and 10YA (0.54%).
- The range in protein concentration in 2025 (5.4 to 11.1%) was similar to ranges in 2024 (6.0 to 11.6%) and 2023 (6.9 to 12.8%).
- Protein concentrations in 2025 were distributed with 23.5% below 8.0%, 53.9% from 8.0 to 8.9% and 22.5% at or above 9.0%. The protein distribution in 2025 shows a lower number of high protein samples when compared to 2024 and 2023.

PROTEIN (DRY BASIS %)

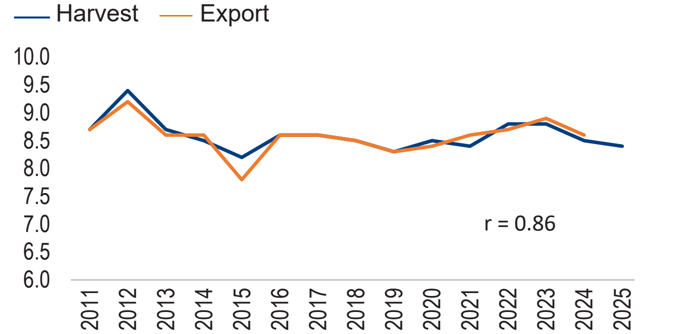
U.S. Aggregate Results Summary



- Additional handling, blending and storage from harvest to export has little impact on average chemical composition. Similar chemical composition has been observed between each individual year's *Harvest Report* and *Export Cargo Report*. The line chart at the right displays the U.S. Aggregate protein concentrations observed in each of these reports from 2011 through 2024. The high correlation coefficient (r = 0.86) illustrates this consistency.
- Protein concentration averages for Gulf, Pacific Northwest and Southern Rail ECAs were 8.4, 8.2 and 8.8%, respectively. Among ECAs, the Southern Rail had the highest or tied for the highest protein in 2025, 2024, 2023, the 5YA and 10YA.

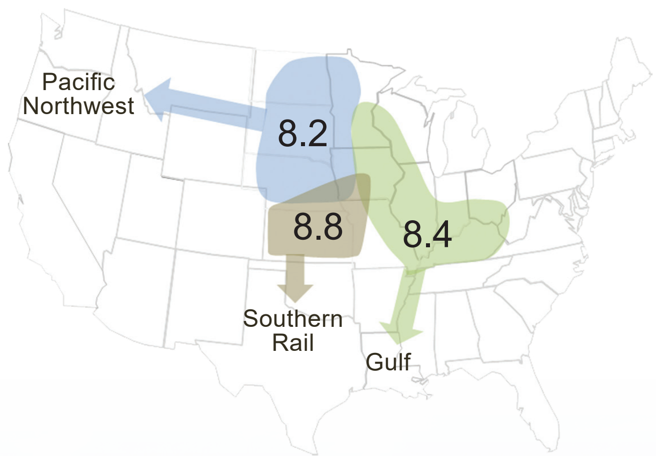
PROTEIN (DRY BASIS %)

U.S. Aggregate Results Comparison by Year



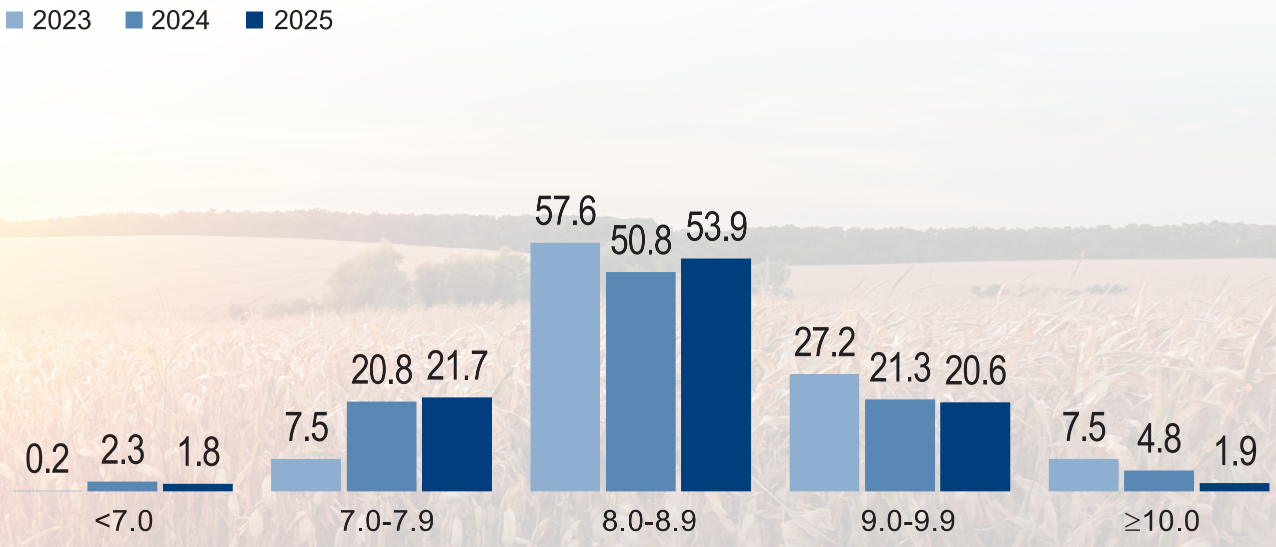
PROTEIN (DRY BASIS %)

2025 Average by Export Catchment Area



PROTEIN (DRY BASIS %)

Percent of Samples by Crop Year



STARCH

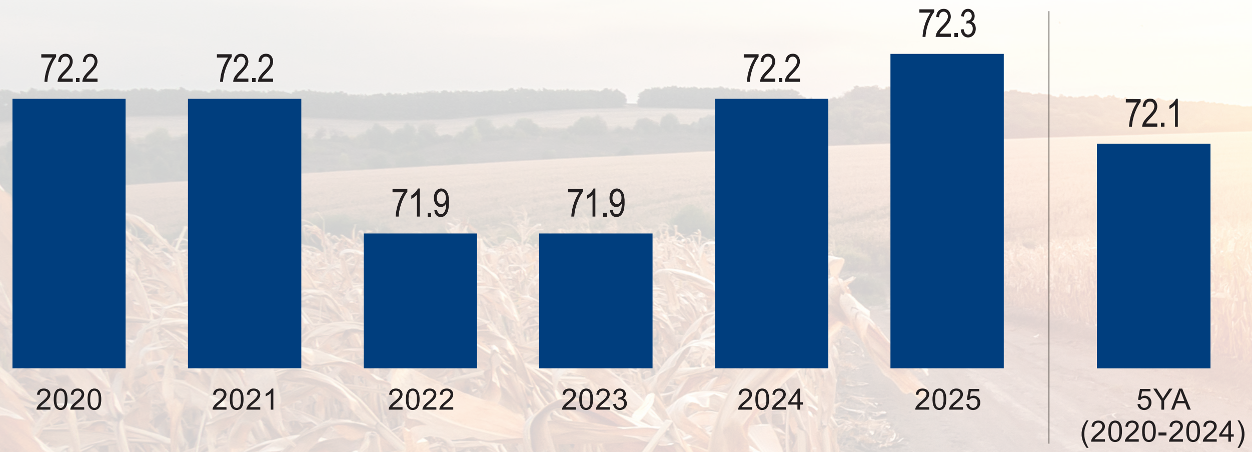
Starch is an important factor for corn used by wet millers and dry-grind ethanol manufacturers. High starch concentration is often indicative of good kernel growing/filling conditions and reasonably moderate kernel densities. Starch is usually inversely related to protein concentration. Results are reported on a dry basis.

RESULTS

- Average U.S. Aggregate starch concentration in 2025 (72.3% dry basis) was similar to 2024 (72.2%), higher than 2023 (71.9%) and the 5YA (72.1%) but lower than the 10YA (72.4%).
- U.S. Aggregate starch standard deviation in 2025 (0.55%) was lower than 2024 (0.65%), 2023 (0.61%), the 5YA and 10YA (both 0.60%).
- Starch concentration range in 2025 (70.2 to 74.1%) was lower than 2024 (69.7 to 74.3%) and 2023 (68.4 to 73.7%).
- Starch concentrations in 2025 were distributed with 26.2% of the samples below 72.0%, 58.8% from 72.0 to 72.9% and 15.0% at 73.0% and higher.

STARCH (DRY BASIS %)

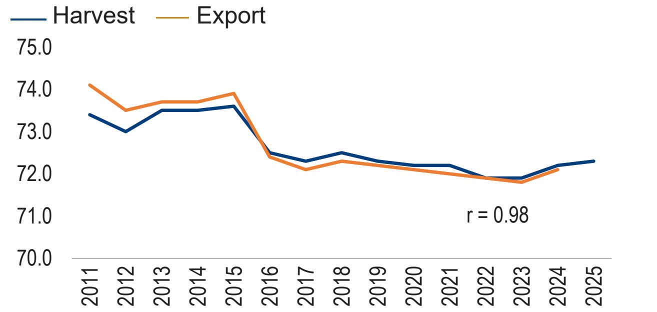
U.S. Aggregate Results Summary



- Additional handling, blending and storage from harvest to export has little impact on average chemical composition. Similar chemical composition has been observed between each individual year's *Harvest Report* and *Export Cargo Report*. The line chart at the right displays the U.S. Aggregate starch concentrations observed in each of these reports from 2011 through 2024. The high correlation coefficient (r = 0.98) illustrates this consistency.
- Starch concentration averages for the Gulf, Pacific Northwest and Southern Rail ECAs were 72.3, 72.4 and 72.2%, respectively. While not the case in 2025, starch concentration averages were highest or tied for the highest in the Gulf ECA in 2024, 2023, the 5YA and 10YA.

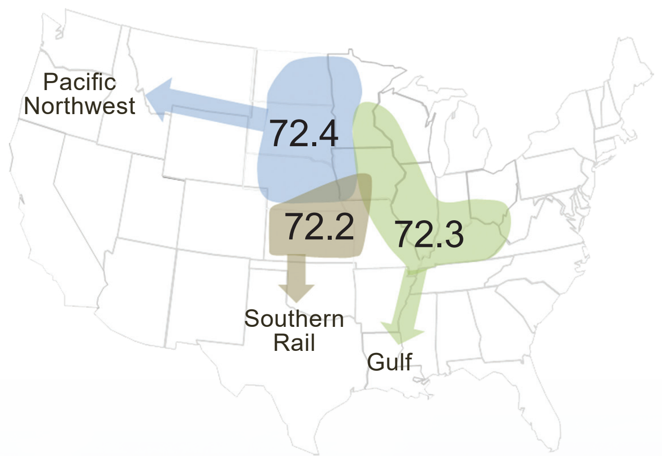
STARCH (DRY BASIS %)

U.S. Aggregate Results Comparison by Year



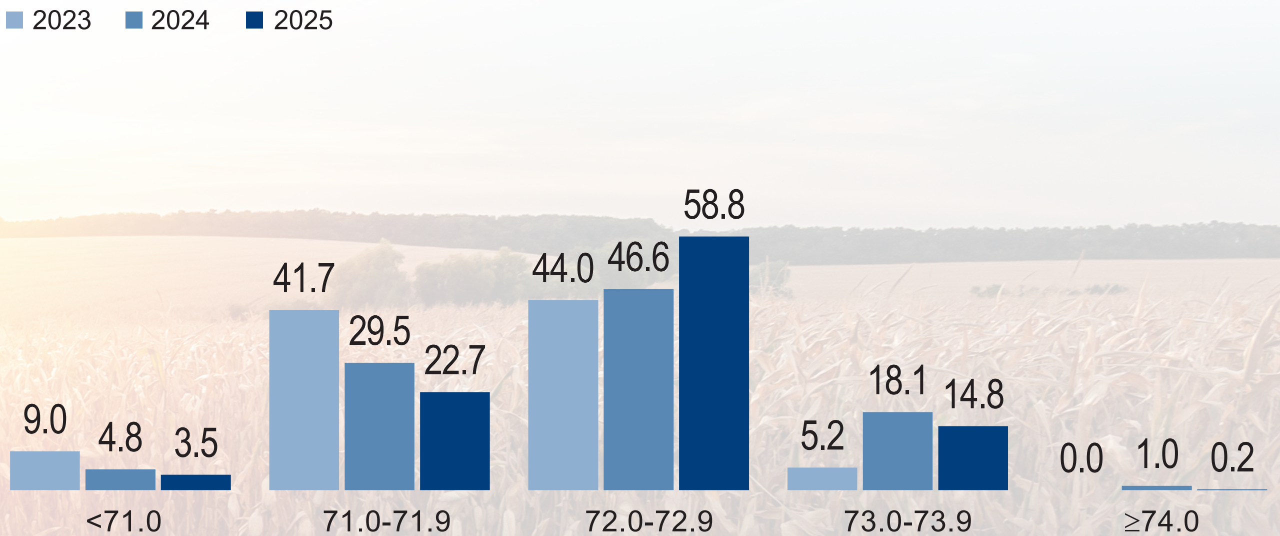
STARCH (DRY BASIS %)

2025 Average by Export Catchment Area



STARCH (DRY BASIS %)

Percent of Samples by Crop Year



OIL

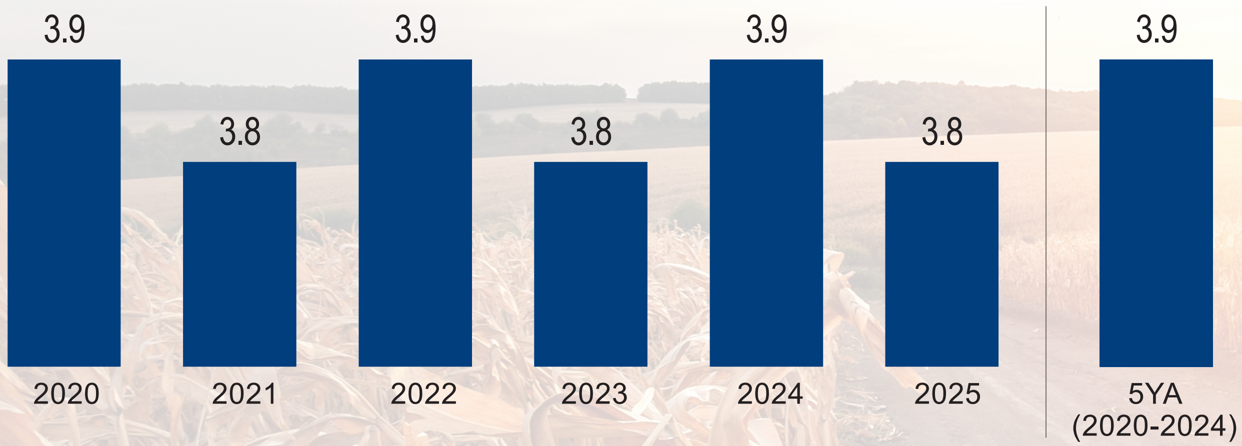
Oil is an essential component of poultry and livestock rations. It serves as an energy source, enables fat-soluble vitamins to be utilized, and provides certain essential fatty acids. Oil is also an important co-product of corn wet and dry milling. Results are reported on a dry basis.

RESULTS

- Average U.S. Aggregate oil concentration in 2025 (3.8%) was the same as 2023, but lower than 2024, the 5YA and 10YA (all 3.9%).
- Standard deviation of U.S. Aggregate oil samples in 2025 (0.23%) was similar to or the same as 2024 (0.24%), 2023 (0.23%), the 5YA (0.23%) and 10YA (0.24%).
- Oil concentration range in 2025 (2.9 to 5.0%) was higher than in 2024 (3.0 to 4.8%) and 2023 (3.2 to 4.6%).
- Oil concentrations in 2025 were distributed with 27.4% of the samples less than 3.7%, 68.4% of samples from 3.7 to 4.2% and 4.2% of samples at 4.3% or higher.

OIL (DRY BASIS %)

U.S. Aggregate Results Summary

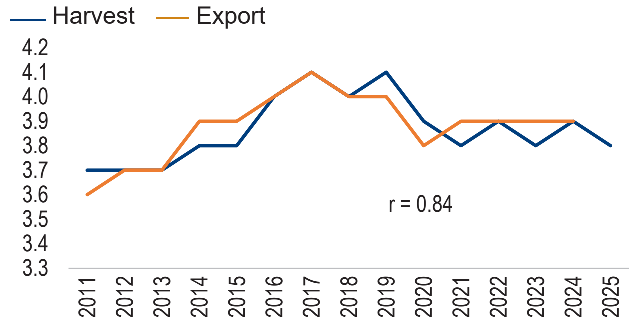


- Additional handling, blending and storage from harvest to export has little impact on average chemical composition. Similar chemical composition has been observed between each individual year's *Harvest Report* and *Export Cargo Report*. The line chart at the right displays the U.S. Aggregate oil concentrations observed in each of these reports from 2011 through 2024. The high correlation coefficient (r = 0.84) illustrates this consistency.

- Oil concentration averages for Gulf, Pacific Northwest and Southern Rail ECAs were 3.8, 3.9 and 3.8%, respectively. Oil concentration averages have varied by 0.2% or less among the ECAs for 2025, 2024, 2023, the 5YA and 10YA.

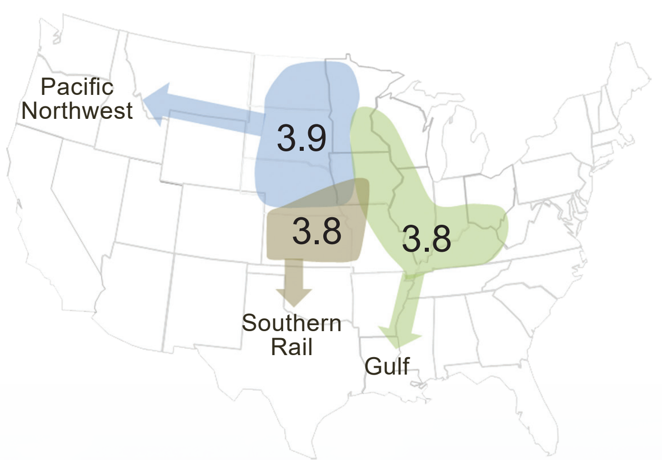
OIL (DRY BASIS %)

U.S. Aggregate Results Comparison by Year



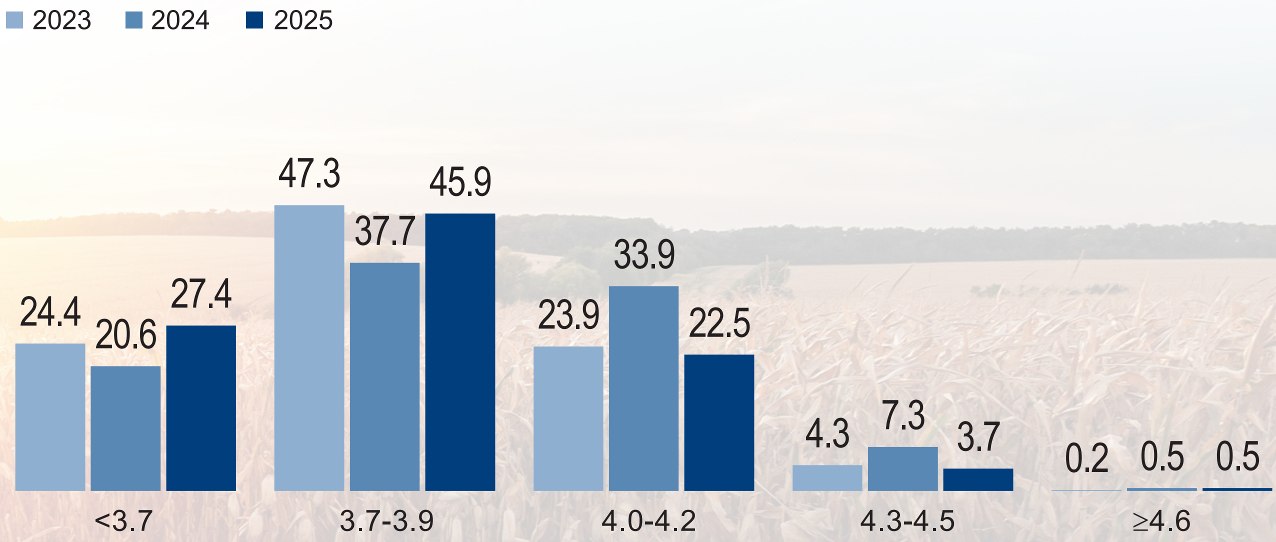
OIL (DRY BASIS %)

2025 Average by Export Catchment Area



OIL (DRY BASIS %)

Percent of Samples by Crop Year



SUMMARY: CHEMICAL COMPOSITION

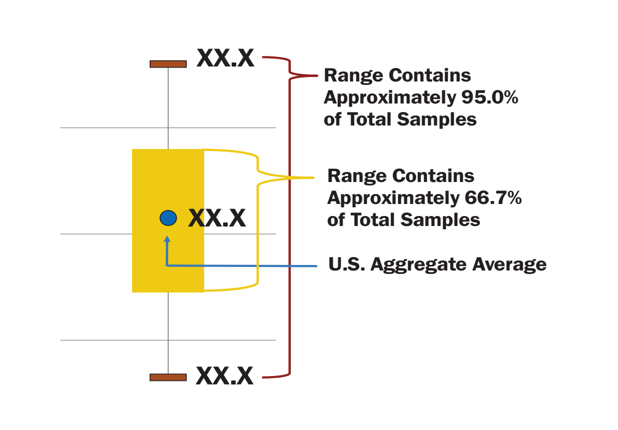
	2025 Harvest					2024 Harvest		2023 Harvest		Five-Year Average (2020-2024)		Ten-Year Average (2015-2024)	
	No. of Samples[1]	Avg.	Std. Dev.	Min.	Max.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
U.S. Aggregate													
Protein (Dry Basis %)	621	8.4	0.53	5.4	11.1	8.5	0.60	8.8*	0.56	8.6*	0.56	8.5*	0.54
Starch (Dry Basis %)	621	72.3	0.55	70.2	74.1	72.2	0.65	71.9*	0.61	72.1*	0.60	72.4*	0.60
Oil (Dry Basis %)	621	3.8	0.23	2.9	5.0	3.9*	0.24	3.8	0.23	3.9*	0.23	3.9*	0.24
Gulf													
Protein (Dry Basis %)	594	8.4	0.54	5.4	11.1	8.4	0.60	8.7*	0.51	8.5	0.54	8.4	0.53
Starch (Dry Basis %)	594	72.3	0.58	70.2	74.1	72.3	0.69	72.0*	0.59	72.2*	0.60	72.5*	0.60
Oil (Dry Basis %)	594	3.8	0.25	2.9	5.0	3.9*	0.26	3.8*	0.24	3.9*	0.24	3.9*	0.24
Pacific Northwest													
Protein (Dry Basis %)	271	8.2	0.51	5.4	11.1	8.3*	0.54	8.8*	0.66	8.7*	0.58	8.7*	0.58
Starch (Dry Basis %)	271	72.4	0.47	70.2	73.8	72.3	0.53	71.9*	0.65	72.0*	0.59	72.2*	0.60
Oil (Dry Basis %)	271	3.9	0.21	3.2	4.7	4.0*	0.21	3.8*	0.23	3.9*	0.21	4.0*	0.22
Southern Rail													
Protein (Dry Basis %)	351	8.8	0.51	7.0	11.1	8.9*	0.64	9.0*	0.57	8.8*	0.56	8.7	0.55
Starch (Dry Basis %)	351	72.2	0.54	70.2	74.1	72.0*	0.68	71.8*	0.62	72.0*	0.61	72.3*	0.61
Oil (Dry Basis %)	351	3.8	0.22	2.9	4.6	3.8*	0.24	3.8*	0.22	3.8*	0.23	3.9*	0.23

**Indicates average was significantly different from current year, based on a 2-tailed t-test at the 95.0% level of significance.*

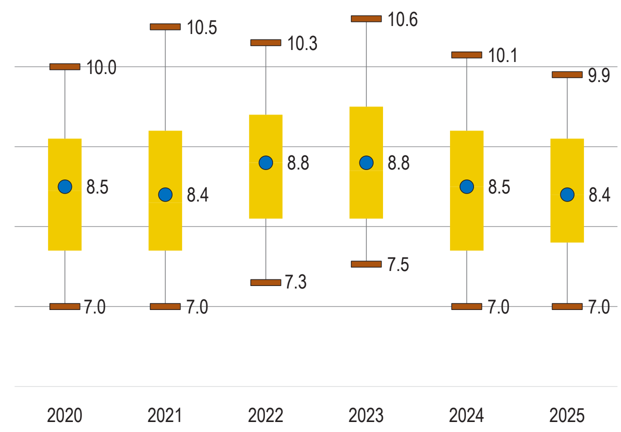
[1]Due to the ECA results being composite statistics, the sum of the sample numbers from the three ECAs is greater than the U.S. Aggregate.

CHEMICAL COMPOSITION
AGGREGATE SIX-YEAR COMPARISON

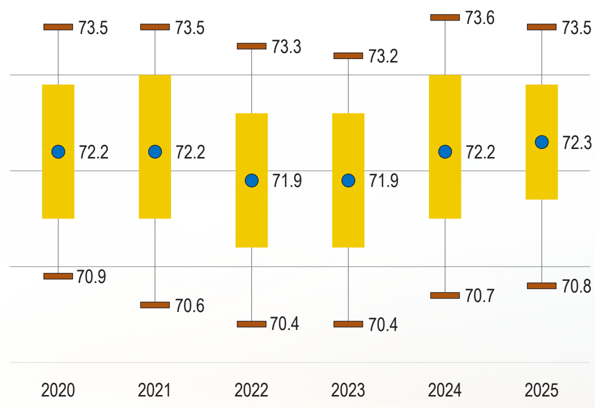
HOW TO READ THE CHARTS



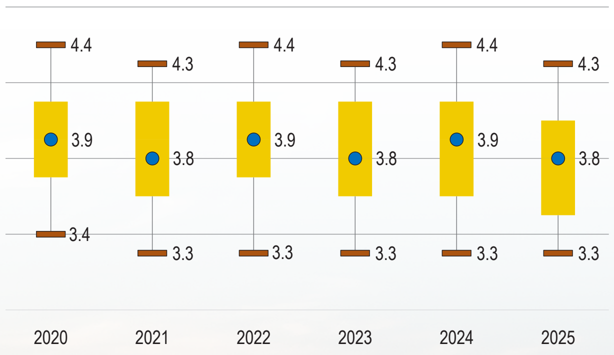
Protein (Dry Basis %)



Starch (Dry Basis %)



Oil (Dry Basis %)

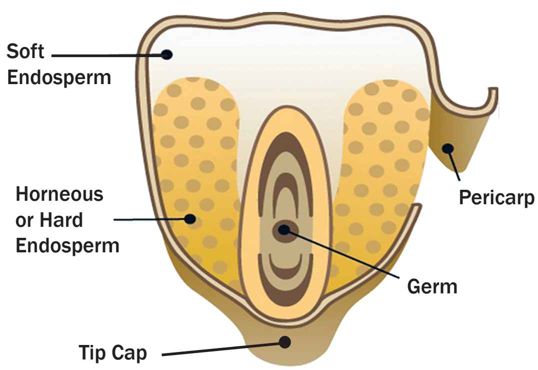


D.PHYSICAL FACTORS

Physical factors are other quality attributes that are neither grade factors nor chemical composition. Physical factors include stress cracks, kernel weight, kernel volume, true density, percent whole kernels and percent horneous (hard) endosperm. Tests for these physical factors provide additional information about the processing characteristics of corn for various uses, as well as corn's storability and potential for breakage in handling. The physical composition of the corn kernel influences the quality attributes, which is, in turn, affected by genetics and growing and handling conditions.

Corn kernels are made up of four parts: the germ or embryo, the tip cap, the pericarp or outer covering and the endosperm. The endosperm represents about 82% of the kernel. It consists of soft (also referred to as floury or opaque) endosperm and of horneous (also called hard or vitreous) endosperm, as shown to the right. The endosperm contains primarily starch and protein, the germ contains oil and some protein, and the pericarp and tip cap are mostly fiber.

Corn Kernel



Source: Adapted from Corn Refiners Association, 2011

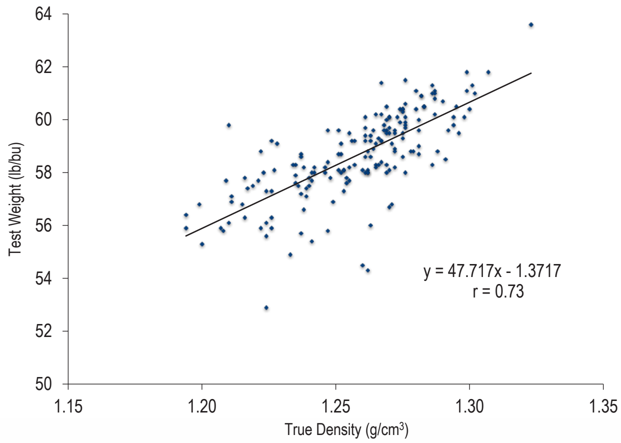
SUMMARY: PHYSICAL FACTORS

- Average U.S. Aggregate stress cracks in 2025 (9.5%) was similar to 2024 and the 5YA (both 9.3%), higher than the 10YA (7.2%) and lower than 2023 (19.2%).
- The Gulf, Pacific Northwest and Southern Rail ECAs had stress crack averages of 9.9, 10.7 and 6.7%, respectively.
- Average U.S. Aggregate 100-k weight in 2025 averaged 34.04 g, lower than 2024 (36.66 g), 2023 (35.52 g), the 5YA (35.12 g) and 10YA (35.09 g).
- Average U.S. Aggregate kernel volume was 0.27 cm^3 in 2025, lower than 2024 (0.29 cm^3), 2023 (0.28 cm^3), the 5YA (0.28 cm^3) and 10YA (0.28 cm^3).
- The Pacific Northwest ECA had the lowest 100-k weight and the lowest kernel volume of the ECAs in 2025, 2024, 2023, the 5YA and 10YA.

SUMMARY: PHYSICAL FACTORS

- U.S. Aggregate kernel true density averaged 1.258 g/cm^3 in 2025, lower than 2024 (1.265 g/cm^3), higher than 2023 (1.250 g/cm^3) and similar to the 5YA (1.255 g/cm^3) and 10YA (1.256 g/cm^3).
- Kernel true densities for the Gulf, Pacific Northwest and Southern Rail ECAs averaged 1.260, 1.244 and 1.268 g/cm^3, respectively. Of the ECAs, the Pacific Northwest had the lowest true density and lowest test weight in 2025, 2024, 2023, the 5YA and 10YA.
- Test weight, also known as bulk density, is based on the amount of mass contained in a quart cup. Test weight is influenced by true density, as shown in the adjacent figure (r = 0.73). Test weight is also affected by moisture content, pericarp damage (whole kernels), breakage and other factors.
- In the 2025 samples, 26.9% had true densities at or above 1.275 g/cm^3 compared to 32.4% in 2024 and 13.8% in 2023. This distribution indicates the hardness of corn in 2025 samples was lower than in 2024 but higher than 2023.

Test Weight vs True Density
U.S. Aggregate 2025



- U.S. Aggregate whole kernels averaged 90.6% in 2025, lower than 2024 (93.1%) and 2023 (92.5%), the 5YA (92.3%) and 10YA (92.5%).
- Of the 2025 samples, 64.3% had 90.0% or higher whole kernels, compared to 2024 (84.2%) and 2023 (78.2%).
- Average U.S. Aggregate horneous (hard) endosperm in 2025 (83%) was lower than 2024 (85%), 2023 (85%) and the 5YA (84%) but higher than the 10YA (82%).
- Average horneous endosperm values for the Gulf, Pacific Northwest and Southern Rail ECAs were 83, 82 and 85%, respectively.
- The Southern Rail had the highest horneous endosperm, the highest true density, the highest test weight and the highest or tied for the highest protein among ECAs in 2025, 2024, 2023, the 5YA and 10YA.

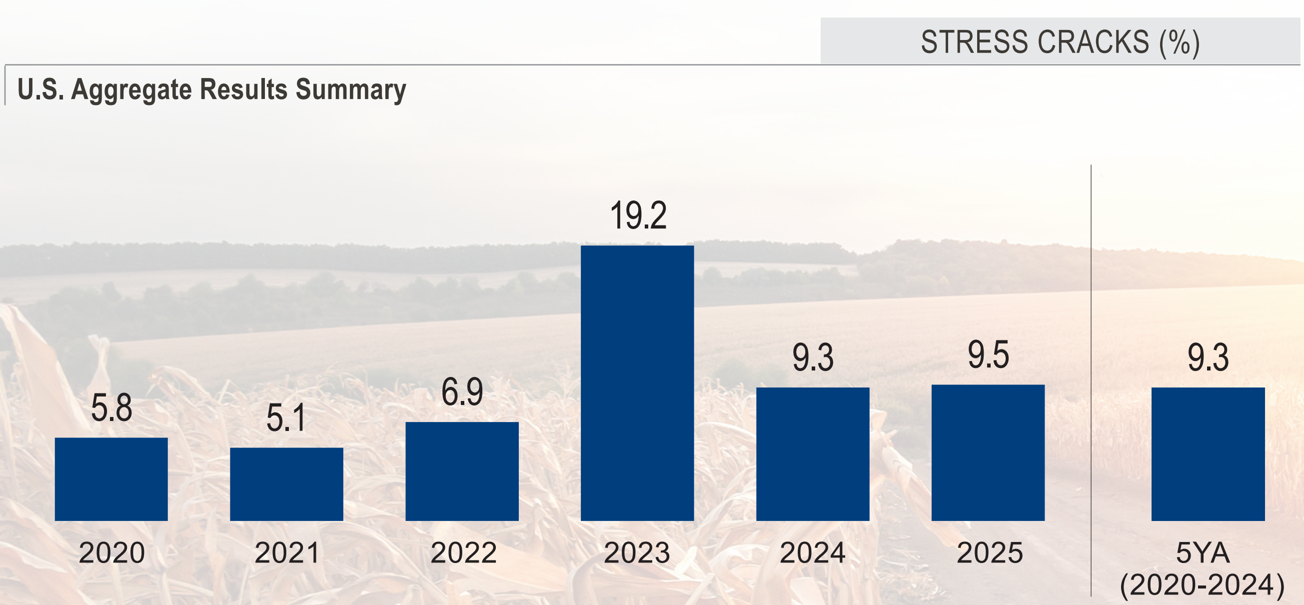
STRESS CRACKS

Stress cracks are internal fissures in the horneous (hard) endosperm of a corn kernel. The pericarp (or outer covering) of a stress-cracked kernel is typically not damaged, so the kernel may appear unaffected at first glance, even if stress cracks are present.

The cause of stress cracks is pressure buildup due to moisture and temperature gradients within the kernel's horneous endosperm. This can equate to the internal cracks that appear when dropping an ice cube into a lukewarm beverage. A kernel may vary in severity of stress cracking and can have one or multiple stress cracks. The most common cause of stress cracks is high-temperature drying or low-humidity conditions during drying that rapidly remove moisture. The impact of high levels of stress cracks on various uses includes:

> **General:** Increased susceptibility to breakage during handling, requiring more removal of broken corn during cleaning operations.
>
> **Wet Milling:** Lower starch yields due to increased difficulty in separating starch and protein. Stress cracks may also alter steeping requirements.
>
> **Dry Milling:** Lower yield of large flaking grits.
>
> **Alkaline Cooking:** Non-uniform water absorption leading to over or under cooking, which affects the process balance.

Growing conditions will affect crop maturity, timeliness of harvest and the need for artificial drying, all of which influence the degree of stress cracking. For example, late maturity or late harvest caused by rain-delayed planting or cool temperatures may increase the need for artificial drying, thus potentially increasing the occurrence of stress cracks.



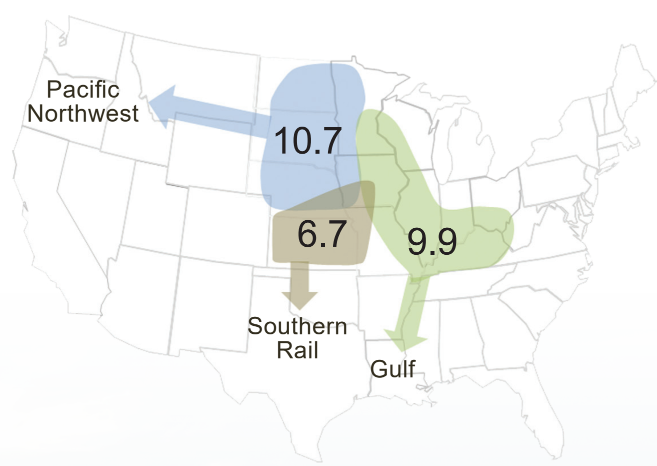
U.S. GRAINS & BIOPRODUCTS COUNCIL

RESULTS

- U.S. Aggregate stress cracks in 2025 averaged 9.5%, which was similar to 2024 and the 5YA (both 9.3%), higher than the 10YA (7.2%) and lower than 2023 (19.2%).
- The standard deviation for U.S. Aggregate stress cracks in 2025 (8.3%) was similar to 2024 (9.4%), the 5YA (8.9%) and 10YA (7.6%), but was lower than 2023 (18.6%),
- The percentage of samples with less than 5.0% stress cracks in 2025 (35.3%) was lower than 2024 (43.9%) and 2023 (42.2%). The percentage of samples with 20% or higher stress cracks in 2025 (10.6%) was similar to 2024 (11.8%) but lower than 2023 (28.6%). Stress crack distributions indicate that 2025 corn may be similar to corn from 2024, but lower than corn from 2023 in breakage susceptibility.
- U.S. Aggregate stress crack averages for Gulf, Pacific Northwest and Southern Rail ECAs were 9.9, 10.7 and 6.7%, respectively.

STRESS CRACKS (%)

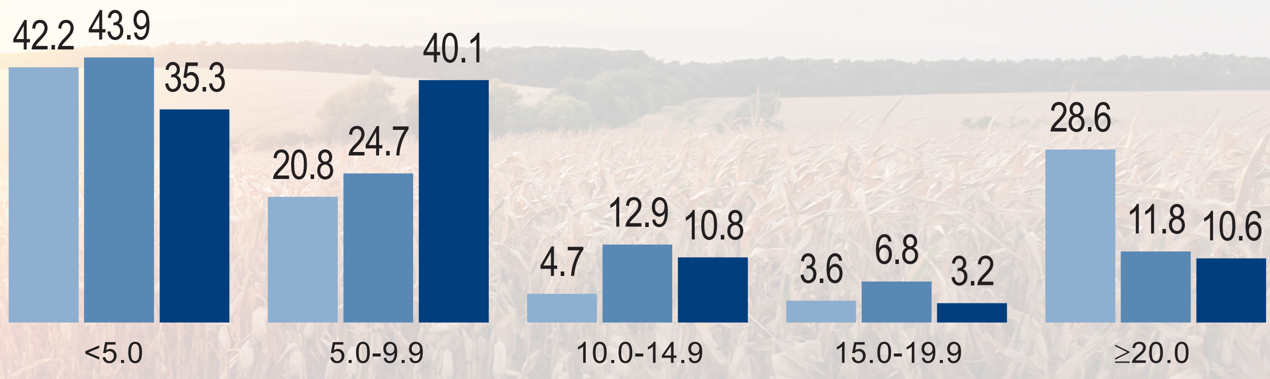
2025 Average by Export Catchment Area



STRESS CRACKS (%)

Percent of Samples by Crop Year

2023 2024 2025



100-KERNEL WEIGHT

100-kernel (100-k) weight, reported in grams (g), indicates a larger kernel size as 100-k weight increases. Kernel size affects drying rates. As the kernel size increases, the volume-to-surface-area ratio becomes higher; and as the ratio gets higher, drying becomes slower. In addition, large, uniform-sized kernels often enable higher flaking grit yields in dry milling. Kernel weights tend to be higher for specialty varieties of corn with high amounts of horneous (hard) endosperm. The 100-k weight is determined from the average weight of two 100-kernel replicates using an analytical balance that measures to the nearest 0.1 milligrams.

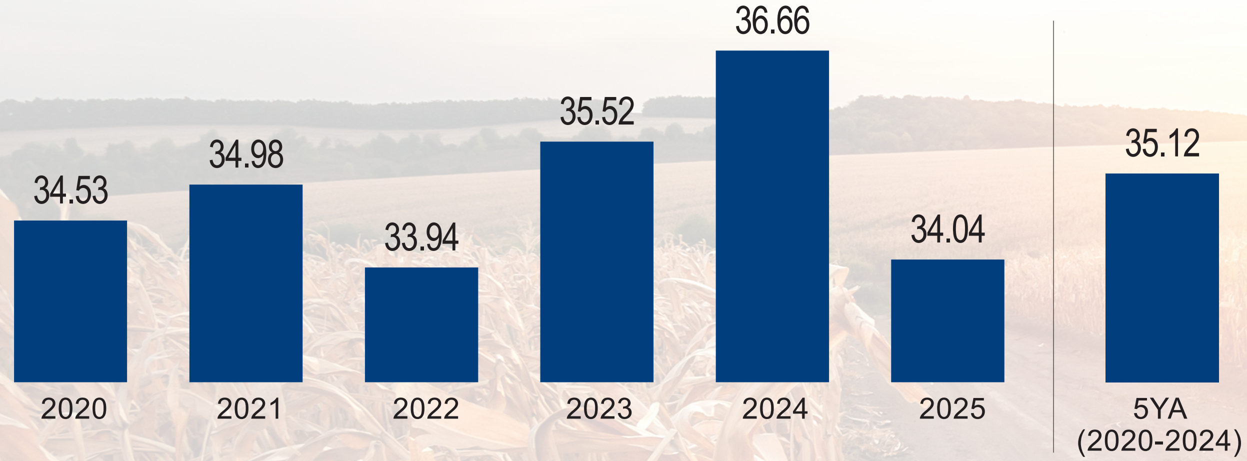
Beginning with the *2020/2021 Harvest Report*, only the samples tested for mycotoxins were tested for 100-k weight. While this protocol reduced the number of samples tested for 100-k weight to a minimum of 180 for the current *Harvest Report*, this quality factor's relative margin of error was expected to remain well below the targeted level of precision of no greater than 10.0%. Further details on the sampling criteria employed by this study are described in the "Survey and Statistical Analysis Methods" section.

RESULTS

- U.S. Aggregate 100-k weight in 2025 averaged 34.04 g, lower than 2024 (36.66 g), 2023 (35.52 g), the 5YA (35.12 g) and 10YA (35.09 g).
- Variability in the 2025 U.S. Aggregate 100-k weight (standard deviation of 3.54 g) was lower than 2024 (4.33 g), but similar to 2023 (3.76 g), the 5YA (3.87 g) and 10YA (3.21 g).

100-KERNEL WEIGHT (g)

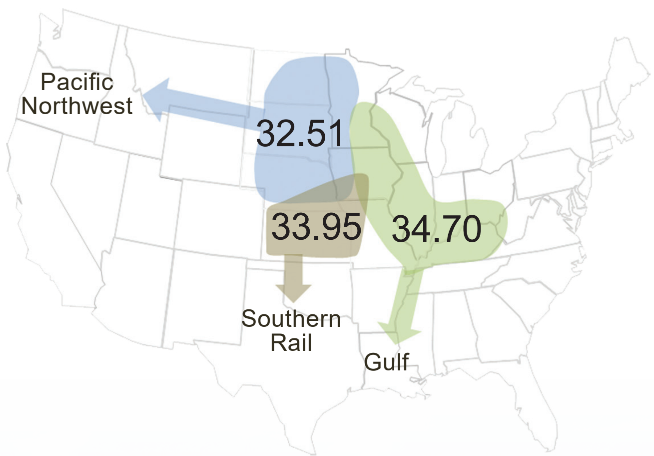
U.S. Aggregate Results Summary



- The range in 100-k weight in 2025 (25.50 to 41.90 g) was lower than 2024 (23.60 to 47.20 g) and 2023 (17.60 to 45.40 g).
- The 100-k weights in 2025 were distributed with 46.1% of the samples having a 100-k weight of 34.0 g or greater, compared to 70.4% in 2024 and 67.9% in 2023. This distribution indicates a lower percentage of large kernels in 2025 as compared to the two previous years.
- The average 100-k weight was lowest for the Pacific Northwest ECA (32.51 g), compared to the Gulf (34.70 g) and Southern Rail (33.95 g) ECAs. The Pacific Northwest ECA had the lowest 100-k weight in 2025, 2024, 2023, the 5YA and 10YA.

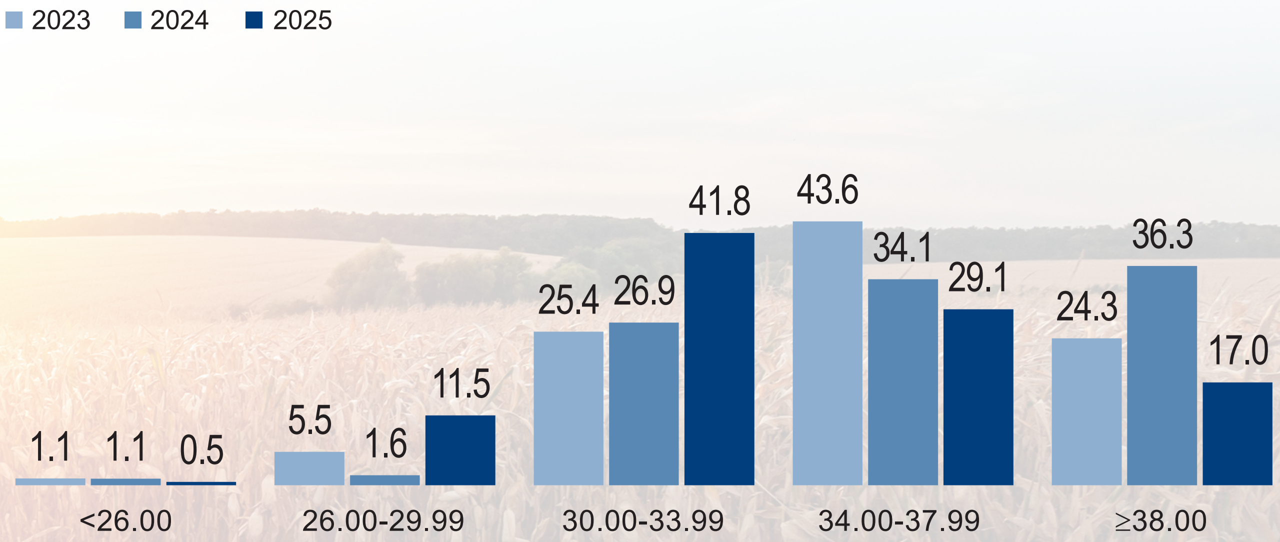
100-KERNEL WEIGHT (g)

2025 Average by Export Catchment Area



100-KERNEL WEIGHT (g)

Percent of Samples by Crop Year



KERNEL VOLUME

Kernel volume is calculated using a helium pycnometer and expressed in cubic centimeters (cm^3). Kernel volume is often indicative of growing conditions. If conditions are dry, kernels may be smaller than average. If a drought hits later in the season, kernels may have lower fill. Small or round kernels are more difficult to degerm. Additionally, small kernels may lead to increased cleanout losses for processors and higher yields of fiber.

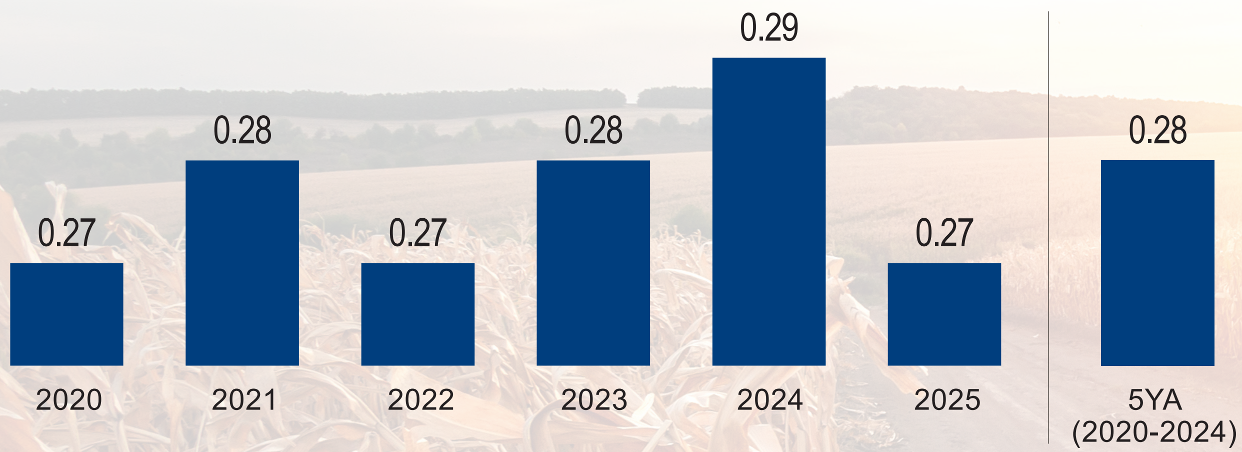
Beginning with the *2020/2021 Harvest Report*, only the samples tested for mycotoxins were tested for kernel volume. While this protocol reduced the number of samples tested for kernel volume to a minimum of 180 for the current *Harvest Report*, this quality factor's relative margin of error was expected to remain well below the targeted level of precision of no greater than 10.0%. Further details on the sampling criteria employed by this study are described in the "Survey and Statistical Analysis Methods" section.

RESULTS

- U.S. Aggregate kernel volume was 0.27 cm^3 in 2025, which was lower than 2024 (0.29 cm^3), 2023 (0.28 cm^3), the 5YA (0.28 cm^3) and 10YA (0.28 cm^3).
- The standard deviation for U.S. Aggregate kernel volume in 2025 was 0.03 cm^3, the same as 2024, 2023, the 5YA, but higher than the 10YA (0.02 cm^3).

KERNEL VOLUME (cm^3)

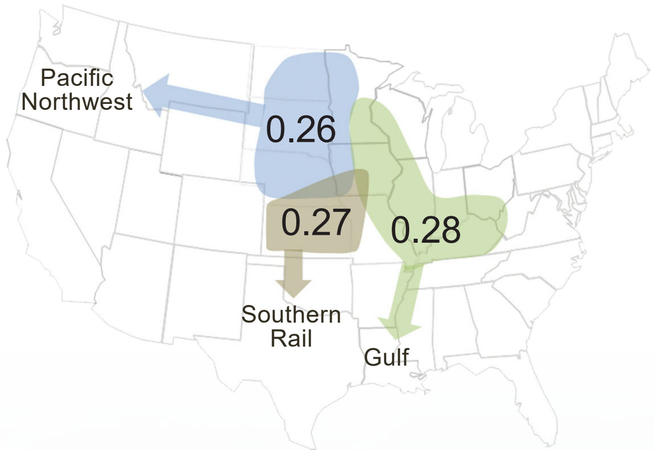
U.S. Aggregate Results Summary



- Kernel volume range in 2025 (0.21 to 0.33 cm^3) was similar to 2024 (0.19 to 0.37 cm^3) and 2023 (0.15 to 0.36 cm^3).
- The kernel volumes in 2025 samples were distributed with 32.4% having kernel volumes of 0.29 cm^3 or greater, compared to 2024 (51.7%) and 2023 (48.0%).
- Kernel volume for the Gulf, Pacific Northwest and Southern Rail ECAs averaged 0.28, 0.26 and 0.27 cm^3, respectively. Among the ECAs, the Pacific Northwest has had the lowest average kernel volume in 2025, 2024, 2023, the 5YA and 10YA.

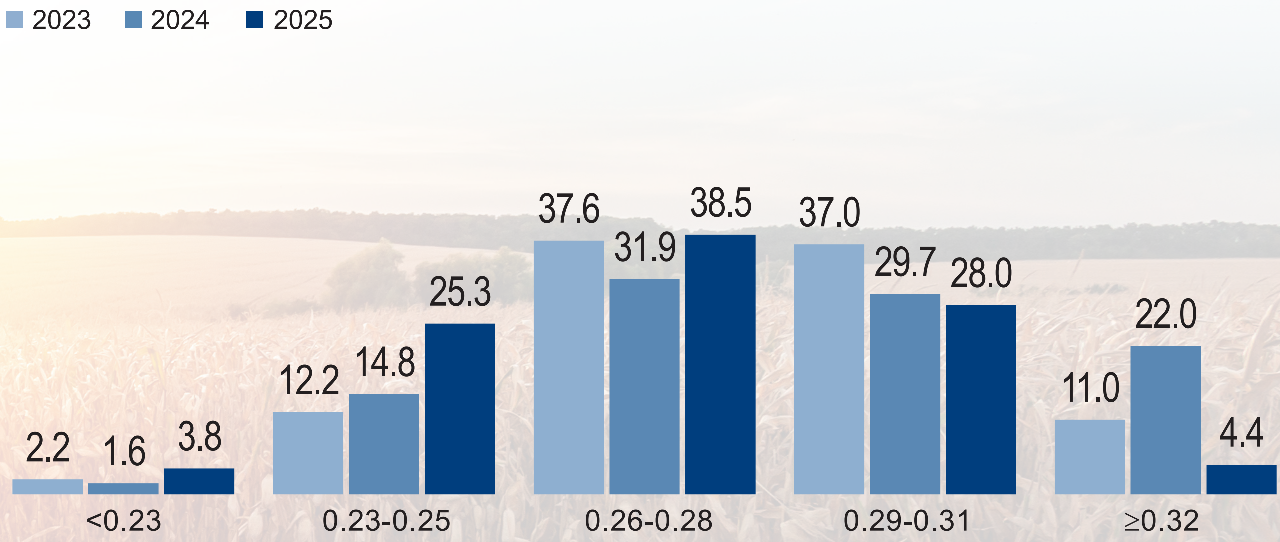
KERNEL VOLUME (cm^3)

2025 Average by Export Catchment Area



KERNEL VOLUME (cm^3)

Percent of Samples by Crop Year



KERNEL TRUE DENSITY

Kernel true density is calculated as the weight of a 100-k sample divided by the volume, or displacement, of those 100 kernels and reported as grams per cubic centimeter (g/cm^3). True density is a relative indicator of kernel hardness, useful for alkaline cooking processes and dry millers. True density may be affected by the genetics of the corn hybrid and the growing environment. Corn with a higher density is typically less susceptible to breakage in handling than lower density corn but is also more at risk of developing stress cracks if high-temperature drying is employed. True densities above 1.30 g/cm^3 indicate very hard corn, typically desirable for dry milling and alkaline cooking processes. True densities near the 1.275 g/cm^3 level and below tend to be softer and process well for wet milling and feed use.

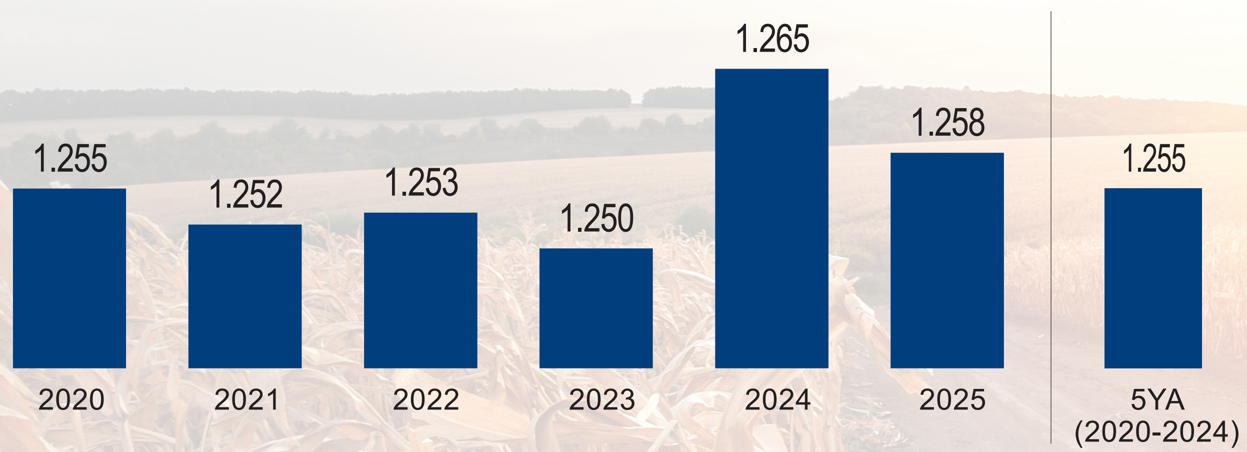
Beginning with the *2020/2021 Harvest Report*, only the samples tested for mycotoxins were tested for 100-k weight and kernel volume, which are the two analytical tests needed for the calculation of true density. While this protocol reduced the number of samples with true density results to a minimum of 180 for the current *Harvest Report*, this quality factor's relative margin of error was expected to remain well below the targeted level of precision of no greater than 10.0%. Further details on the sampling criteria employed by this study are described in the "Survey and Statistical Analysis Methods" section.

RESULTS

- Average U.S. Aggregate kernel true density in 2025 (1.258 g/cm^3) was lower than 2024 (1.265 g/cm^3), higher than 2023 (1.250 g/cm^3) and similar to the 5YA (1.255 g/cm^3) and the 10YA (1.256 g/cm^3). Over the past fifteen years, true densities have tended to be higher in years with higher protein with a correlation coefficient of 0.62.

TRUE DENSITY (g/cm^3)

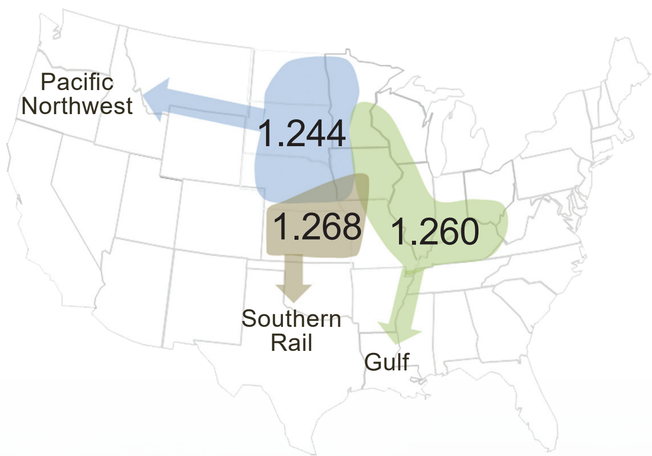
U.S. Aggregate Results Summary



- Variability, based on the standard deviation, in 2025 (0.025 g/cm^3) was similar to 2024 (0.022 g/cm^3), 2023 (0.023 g/cm^3), the 5YA (0.022 g/cm^3) and 10YA (0.020 g/cm^3).
- True densities in 2025 ranged from 1.194 to 1.323 g/cm^3 compared to 2024 (1.203 to 1.325 g/cm^3) and 2023 (1.176 to 1.303 g/cm^3).
- In the 2025 samples, 26.9% had true densities at or above 1.275 g/cm^3 compared to 32.4% in 2024 and 13.8% in 2023. Since corn with values above 1.275 g/cm^3 is often considered to represent hard corn and values below 1.275 g/cm^3 are often considered to represent soft corn, this distribution indicates the hardness of the corn in 2025 samples was lower than in 2024 but higher than 2023.
- Kernel true densities for the Gulf, Pacific Northwest and Southern Rail ECAs averaged 1.260, 1.244 and 1.268 g/cm^3, respectively. The Pacific Northwest ECAs average true density and bulk density (test weight) were lower than the other ECAs' values in 2025, 2024, 2023, the 5YA and 10YA.

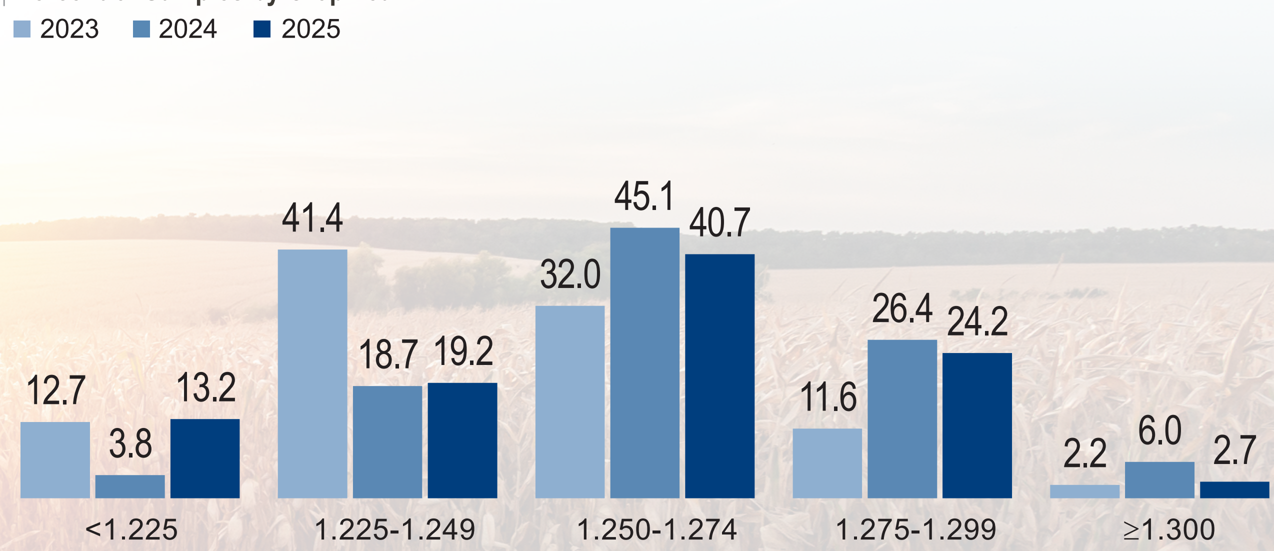
TRUE DENSITY (g/cm^3)

2025 Average by Export Catchment Area



TRUE DENSITY (g/cm^3)

Percent of Samples by Crop Year



WHOLE KERNELS

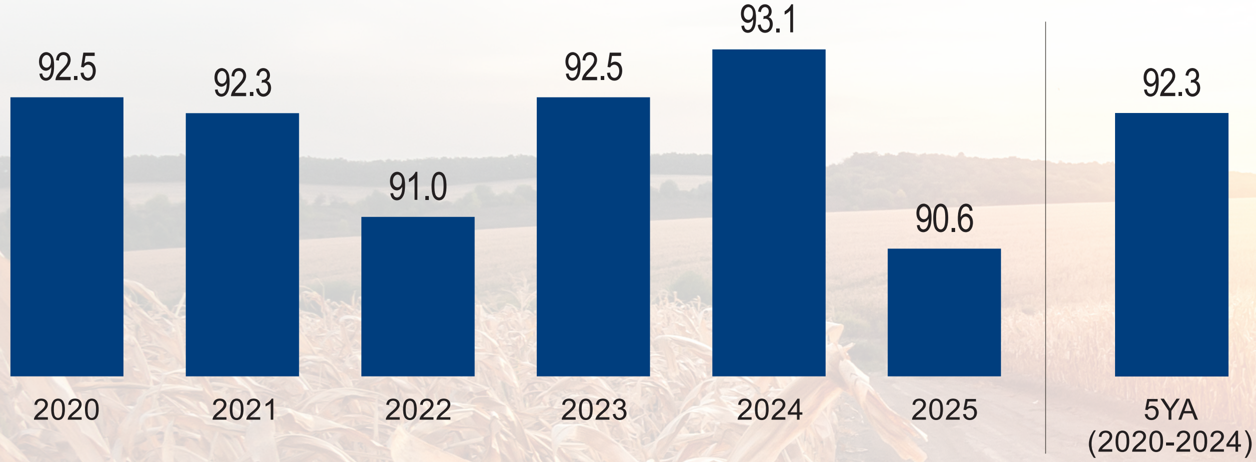
Though the name suggests some inverse relationship between whole kernels and BCFM, the whole kernels test conveys different information than the broken corn portion of the BCFM test. Broken corn is defined solely by the size of the material. As the name implies, whole kernels are the percent of fully intact kernels in the sample with no pericarp damage or kernel pieces chipped away.

The exterior integrity of the corn kernel is very important for two key reasons. First, it affects water absorption for alkaline cooking processes and steeping operations. Kernel nicks or pericarp cracks allow water to enter the kernel faster than intact or whole kernels. Too much water uptake during cooking can result in loss of soluble, non-uniform cooking, expensive shutdown time, or products that do not meet specifications. Some companies pay contracted premiums for corn delivered above a specified level of whole kernels.

Second, intact whole kernels are less susceptible to storage molds and breakage in handling. While hard endosperm lends itself to preserving more whole kernels than soft corn, the primary factor in delivering whole kernels is harvesting and handling. This begins with proper combine adjustment followed by the severity of kernel impacts due to conveyors and the number of handlings required from the farm field to the end-user. Each subsequent handling will generate additional breakage. Actual amounts of breakage increase exponentially as moisture decreases, drop heights increase, or a kernel's velocity at impact increases.[3] In addition, harvesting at higher moisture content (e.g., greater than 25%) will usually lead to soft pericarps and more pericarp damage to corn than when harvesting at lower moisture levels.

WHOLE KERNELS (%)

U.S. Aggregate Results Summary



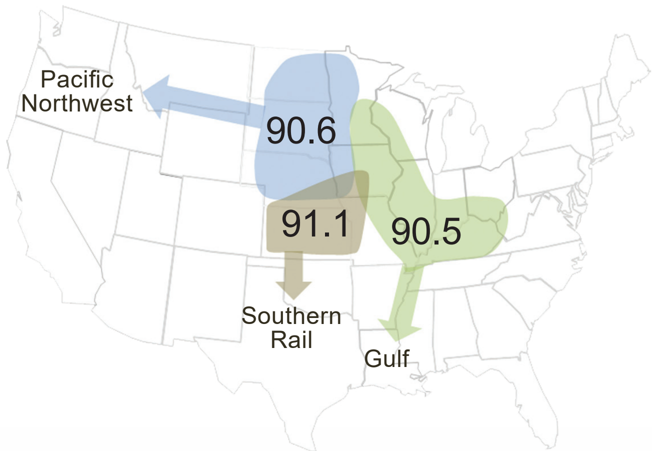
[3] *Foster, G. H. and L. E. Holman. 1973. Grain Breakage Caused by Commercial Handling Methods. USDA. ARS Marketing Research Report Number 968.*

RESULTS

- U.S. Aggregate whole kernels averaged 90.6% in 2025, lower than 2024 (93.1%), 2023 (92.5%), the 5YA (92.3%) and 10YA (92.5%).
- The standard deviation for whole kernel samples in 2025 (4.9%) was higher than 2024 (3.6%), 2023 (3.9%), the 5YA (3.9%) and 10YA (3.7%).
- Whole kernel range in 2025 (66.4 to 99.4%) was lower than 2024 (49.8 to 99.6%), but similar to 2023 (63.2 to 100.0%).
- In the 2025 samples, 64.3% had 90.0% or higher whole kernels, compared to 2024 (84.2%) and 2023 (78.2%).
- Whole kernel averages for Gulf, Pacific Northwest and Southern Rail ECAs were 90.5, 90.6 and 91.1%, respectively.

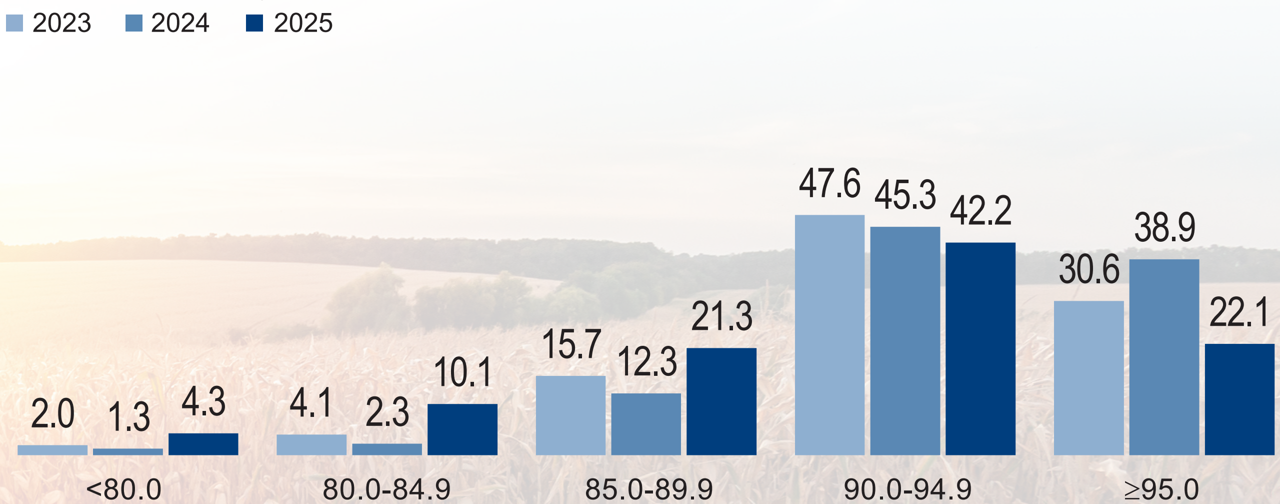
WHOLE KERNELS (%)

2025 Average by Export Catchment Area



WHOLE KERNELS (%)

Percent of Samples by Crop Year



HORNEOUS (HARD) ENDOSPERM

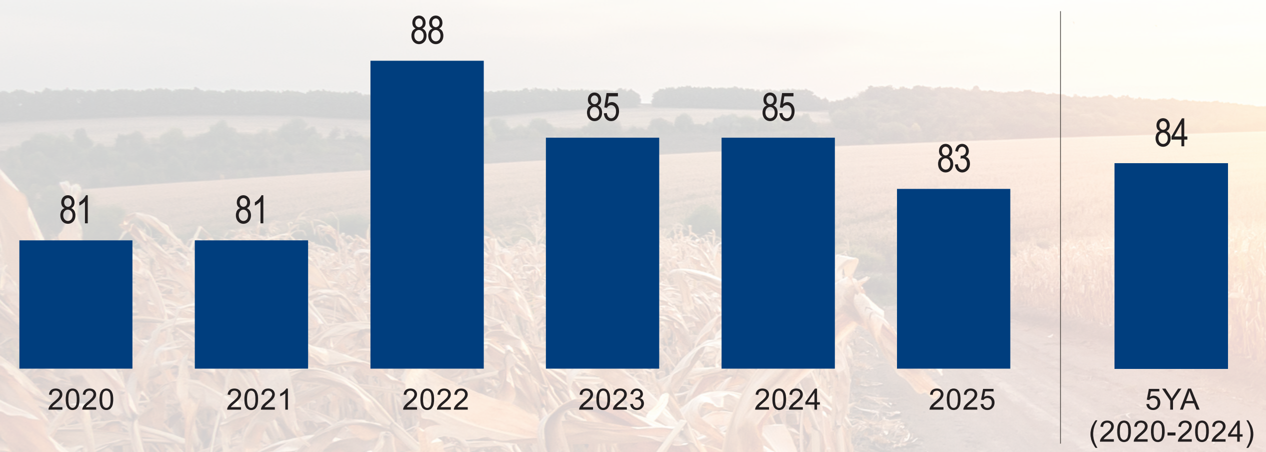
The horneous (hard) endosperm test measures the percent of horneous or hard endosperm out of the total endosperm in a kernel, with a potential value from 70 to 100%. The greater the amount of horneous endosperm relative to soft endosperm, the harder the corn kernel is said to be. The degree of hardness is important, depending on the type of processing. A hard kernel is needed to produce high yields of large flaking grits in dry milling. Desired hardness is hard to medium for alkaline cooking processes, and desired hardness is medium to soft for wet milling and livestock feeding. Hardness is correlated to breakage susceptibility, feed utilization/efficiency and starch digestibility. The internal stresses causing stress cracks do not build up as much in the soft, floury endosperm as in the hard, horneous endosperm. Therefore, corn with a higher percentage of horneous endosperm is more susceptible to stress cracking than softer grain.

As a test of overall hardness, there is no good or bad value for horneous endosperm. There is only a preference by different end-users for particular ranges. Many dry millers and alkaline cooking processors would like greater than 85% horneous endosperm, while wet millers and feeders would typically like values from 70 to 85%. However, there are certainly exceptions in user preference.

Beginning with the *2019/2020 Harvest Report*, only the samples tested for the mycotoxin were tested for horneous endosperm. Continuation of this protocol resulted in a minimum of 180 samples tested for horneous endosperm for the current *Harvest Report*. This quality factor's relative margin of error did not exceed 0.4% in the *2011/2012 Harvest Report* through the *2018/2019 Harvest Report* when all samples were tested for this quality factor. Further details on the sampling criteria employed by this study are described in the "Survey and Statistical Analysis Methods" section.

HORNEOUS ENDOSPERM (%)

U.S. Aggregate Results Summary

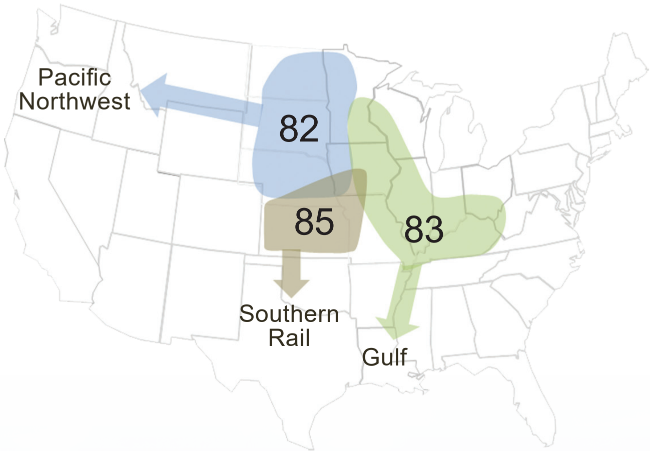


RESULTS

- Average U.S. Aggregate horneous (hard) endosperm in 2025 (83%) was lower than 2024 (85%), 2023 (85%) and the 5YA (84%) but higher than the 10YA (82%).
- The standard deviation for U.S. Aggregate horneous endosperm in 2025 (3%) was the same as 2024, 2023, the 5YA and 10YA.
- The 2025 horneous endosperm range (74 to 92%) was similar to 2024 (77 to 92%) and 2023 (75 to 94%).
- In the 2025 samples, 82.4% contained more than 80% horneous endosperm, which was lower than 2024 (96.7%) and 2023 (97.2%).
- Average horneous endosperm values for the Gulf, Pacific Northwest and Southern Rail ECAs were 83, 82 and 85%, respectively. The Southern Rail had the highest horneous endosperm among ECAs in 2025, 2024, 2023, the 5YA and 10YA.

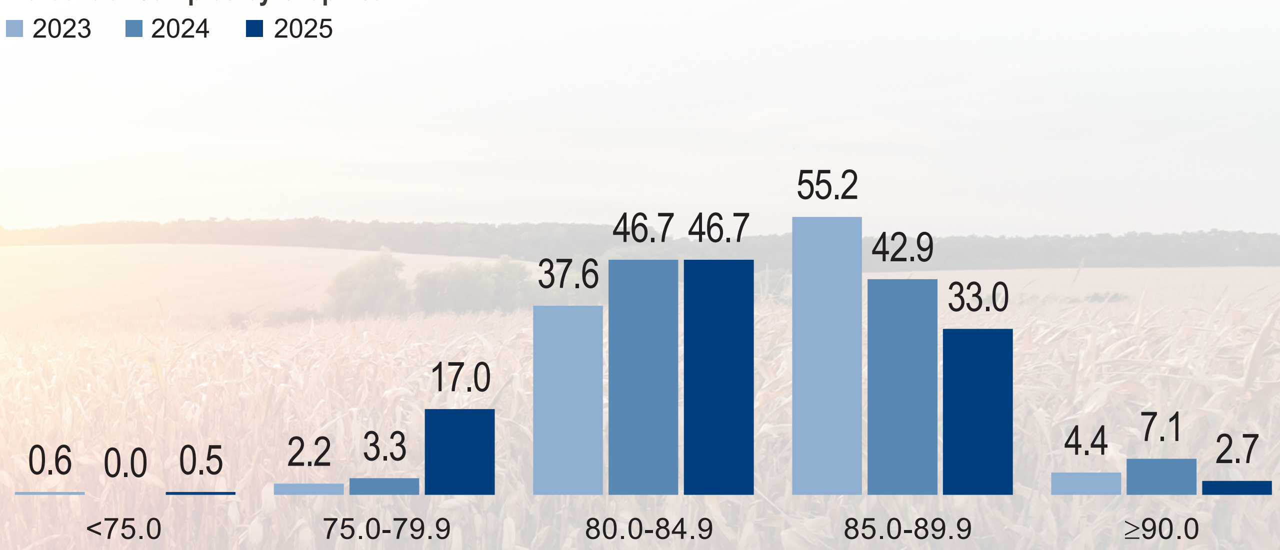
HORNEOUS ENDOSPERM (%)

2025 Average by Export Catchment Area



HORNEOUS ENDOSPERM (%)

Percent of Samples by Crop Year



SUMMARY: PHYSICAL FACTORS

	2025 Harvest					2024 Harvest		2023 Harvest		Five-Year Average (2020-2024)		Ten-Year Average (2015-2024)	
	No. of Samples[1]	Avg.	Std. Dev.	Min.	Max.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
U.S. Aggregate						**U.S. Aggregate**		**U.S. Aggregate**		**U.S. Aggregate**		**U.S. Aggregate**	
Stress Cracks (%)	621	9.5	8.3	0	96	9.3	9.4	19.2*	18.6	9.3	8.9	7.2*	7.6
100-Kernel Weight (g)	182	34.04	3.54	25.50	41.90	36.66*	4.33	35.52*	3.76	35.12*	3.87	35.09*	3.21
Kernel Volume (cm^3)	182	0.27	0.03	0.21	0.33	0.29*	0.03	0.28*	0.03	0.28*	0.03	0.28*	0.02
True Density (g/cm^3)	182	1.258	0.025	1.194	1.323	1.265*	0.022	1.250*	0.023	1.255	0.022	1.256	0.020
Whole Kernels (%)	621	90.6	4.9	66.4	99.4	93.1*	3.6	92.5*	3.9	92.3*	3.9	92.5*	3.7
Horneous Endosperm (%)	182	83	3	74	92	85*	3	85*	3	84*	3	82*	3
Gulf						**Gulf**		**Gulf**		**Gulf**		**Gulf**	
Stress Cracks (%)	594	9.9	8.9	0	96	9.8	10.4	22.9*	22.0	10.7	10.3	8.0*	8.5
100-Kernel Weight (g)	172	34.70	3.55	25.50	41.90	37.99*	4.31	36.18*	3.74	36.13*	3.71	35.89*	3.14
Kernel Volume (cm^3)	172	0.28	0.03	0.21	0.33	0.30*	0.03	0.29*	0.03	0.29*	0.03	0.29*	0.02
True Density (g/cm^3)	172	1.260	0.025	1.194	1.323	1.267*	0.022	1.252*	0.023	1.257	0.022	1.258	0.020
Whole Kernels (%)	594	90.5	5.1	66.4	99.4	92.8*	3.8	92.1*	4.1	91.8*	4.2	92.3*	3.8
Horneous Endosperm (%)	172	83	3	74	92	85*	3	85*	3	84*	3	82*	3
Pacific Northwest						**Pacific Northwest**		**Pacific Northwest**		**Pacific Northwest**		**Pacific Northwest**	
Stress Cracks (%)[2]	271	10.7	9.8	1	96	9.2	8.1	11.5	10.8	7.1*	6.5	6.4*	6.6
100-Kernel Weight (g)	80	32.51	3.18	26.40	41.00	33.46	2.88	33.07	5.04	32.93	3.65	33.08	3.03
Kernel Volume (cm^3)	80	0.26	0.02	0.21	0.32	0.27	0.02	0.27	0.04	0.26	0.03	0.27	0.02
True Density (g/cm^3)	80	1.244	0.026	1.194	1.302	1.254*	0.018	1.236	0.138	1.246	0.043	1.247	0.031
Whole Kernels (%)	271	90.6	4.7	73.2	98.8	93.6*	3.3	93.4*	3.2	93.0*	3.5	92.7*	3.6
Horneous Endosperm (%)	80	82	4	74	92	84*	3	84	10	84*	5	82	4
Southern Rail						**Southern Rail**		**Southern Rail**		**Southern Rail**		**Southern Rail**	
Stress Cracks (%)	351	6.7	4.7	0	59	8.2*	8.0	17.7*	17.8	8.0*	7.5	5.8*	5.9
100-Kernel Weight (g)	99	33.95	3.43	25.50	41.90	36.01*	4.46	36.42*	3.65	34.95*	3.79	35.25*	3.21
Kernel Volume (cm^3)	99	0.27	0.03	0.21	0.33	0.28*	0.03	0.29*	0.03	0.28*	0.03	0.28*	0.02
True Density (g/cm^3)	99	1.268	0.021	1.194	1.323	1.270	0.020	1.257*	0.022	1.259*	0.021	1.261*	0.019
Whole Kernels (%)	351	91.1	4.7	70.0	99.4	93.6*	3.1	92.6*	4.4	92.7*	3.7	92.8*	3.5
Horneous Endosperm (%)	99	85	3	74	91	86*	3	86*	3	85	3	83*	3

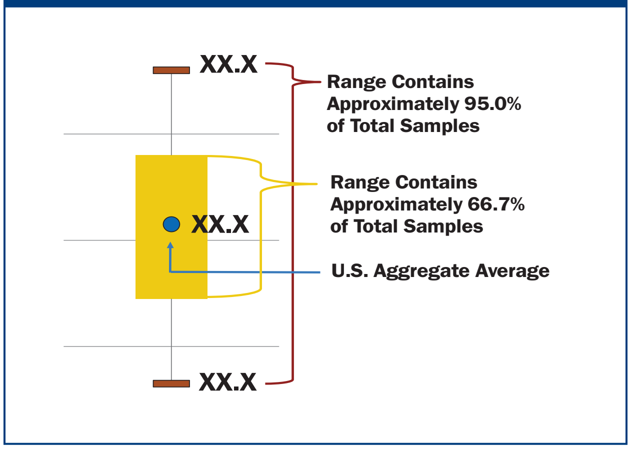
**Indicates average was significantly different from current year, based on a 2-tailed t-test at the 95.0% level of significance.*

[1]Due to the ECA results being composite statistics, the sum of the sample numbers from the three ECAs is greater than the U.S. Aggregate.

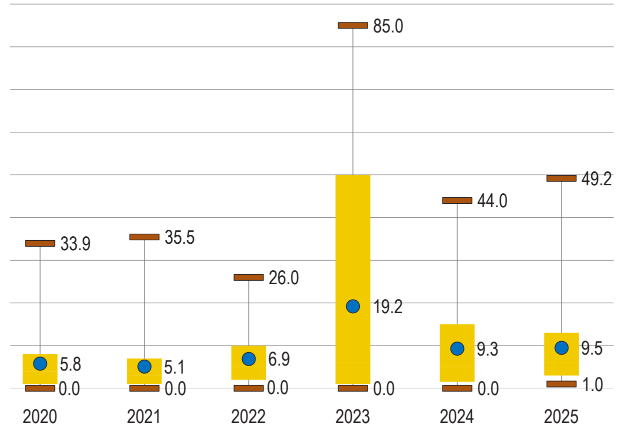
[2]The Relative ME for predicting the harvest population average exceeded ±10.0%.

PHYSICAL FACTORS
AGGREGATE SIX-YEAR COMPARISON

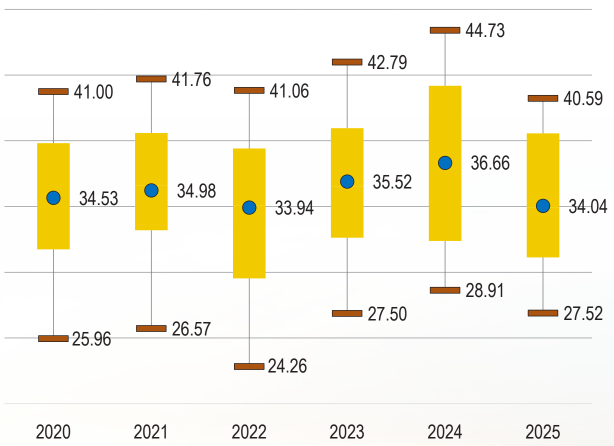
HOW TO READ THE CHARTS



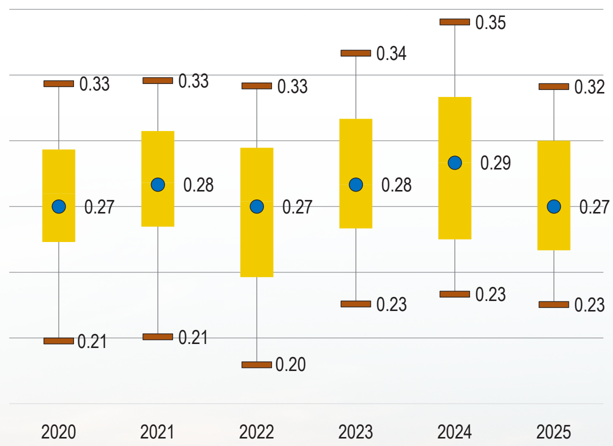
Stress Cracks (%)



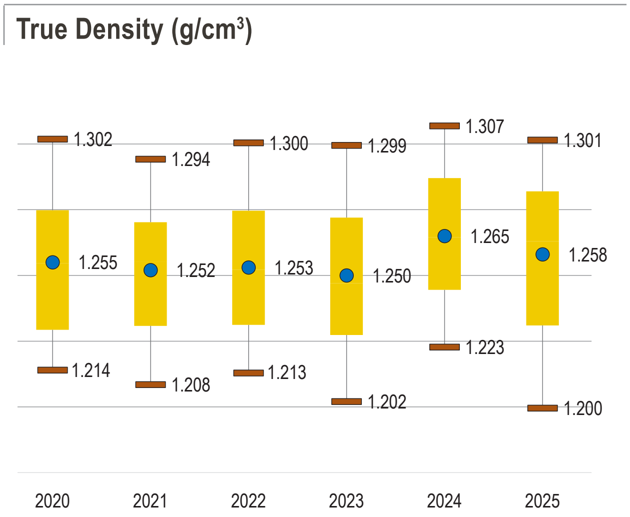
100-Kernel Weight (g)

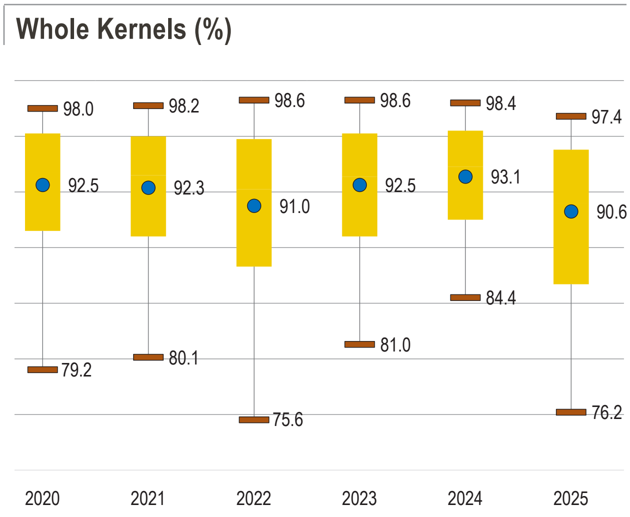


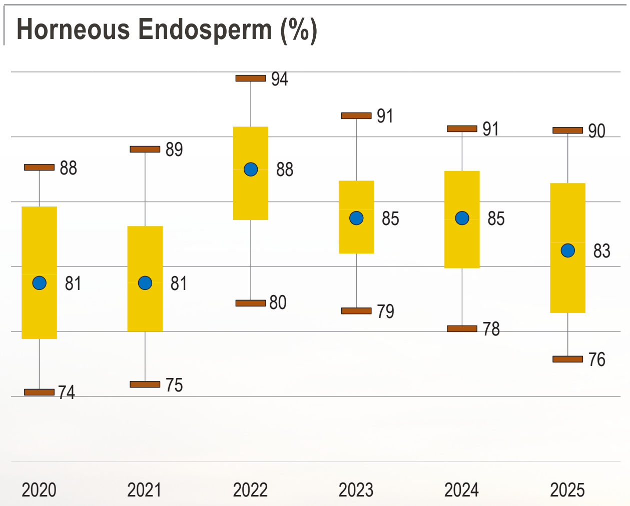
Kernel Volume (cm^3)



PHYSICAL FACTORS
AGGREGATE SIX-YEAR COMPARISON







E. MYCOTOXINS

Mycotoxins are toxic compounds produced by fungi that occur naturally in grains. When consumed at elevated levels, mycotoxins may cause sickness in humans and animals. Aflatoxin, DON and fumonisin are considered to be three of the most common mycotoxins found in corn.

A subset of the harvest samples have been tested for aflatoxin and DON in all fifteen years of *Harvest Reports*. Fumonisins were added to the list of mycotoxins tested beginning with the *2019/2020 Harvest Report*. The *2020/2021 Harvest Report* also began testing samples for ochratoxin A, T-2 and zearalenone.

Depending on the year, environmental conditions under which the corn is produced and stored may or may not be conducive to developing a particular mycotoxin to levels that impact the corn's use for human and livestock consumption. Humans and livestock are sensitive to mycotoxins at varying levels. As a result, the FDA has issued action levels for aflatoxin and advisory levels for DON and fumonisin by intended use.

Action levels specify limits of contamination above which the agency is prepared to take regulatory action. Action levels signal that the FDA believes it has data to support regulatory or court action if a toxin or contaminant is present at levels exceeding the action level if the agency chooses to do so. If imports or domestic feed supplements are analyzed in accordance with valid methods and found to exceed action levels, they are considered adulterated and may be seized and removed from interstate commerce by the FDA.

Advisory levels guide the industry concerning levels of a substance present in food or feed believed by the agency to provide an adequate margin of safety to protect human and animal health. While the FDA reserves the right to take regulatory enforcement action, enforcement is not the fundamental purpose of an advisory level.

Since growing conditions heavily influence the production of mycotoxins, the *Harvest Report's* objective is strictly to report on instances when mycotoxins are detected in the corn crop at harvest and not to predict the level at which mycotoxins might appear in U.S. corn exports. Due to the multiple stages of the U.S. grain merchandising channel and the laws and regulations guiding the industry, mycotoxin levels that appear in corn exports may be less than what initially appear at harvest. The *Harvest Report's* results should be used only as one indicator of the potential for mycotoxin presence in the corn at harvest. The *2025/2026 Corn Export Cargo Quality Report* will report corn quality at export points and be a more accurate indication of mycotoxin presence in U.S. corn export shipments.

The sampling criteria, described in the "Survey and Statistical Analysis Methods" section, resulted in a total number of 180 samples tested for mycotoxins. Details on the testing methodology employed in this study for the mycotoxins are in the "Testing Analysis Methods" section.

AFLATOXIN

The most important type of mycotoxin associated with corn is aflatoxin. There are several types of aflatoxin produced by different species of *Aspergillus*, with the most prominent species being *A. flavus*. The growth of the fungus and aflatoxin contamination of grain can occur in the field before harvest or in storage. However, contamination before harvest is considered to cause most of the problems associated with aflatoxin. *A. flavus* grows well in hot, dry environmental conditions or where drought occurs over an extended period. It can be a serious problem in the southern United States, where hot and dry conditions are common. The fungus usually attacks only a few kernels on the ear and often penetrates kernels through wounds produced by insects. Under drought conditions, it also grows down silks into individual kernels.

There are four types of aflatoxin naturally found in foods – aflatoxins B1, B2, G1 and G2, commonly referred to as “aflatoxin” or “total aflatoxin.” Aflatoxin B1 is the most commonly found aflatoxin in food and feed and is also the most toxic. Research has shown that B1 is a potent, naturally-occurring carcinogen in animals with a strong link to human cancer incidence. Additionally, dairy cattle will metabolize B1 to a different form of aflatoxin called aflatoxin M1, which may accumulate in milk.

Aflatoxin expresses toxicity in humans and animals primarily by attacking the liver. The toxicity can occur from short-term consumption of very high doses of aflatoxin-contaminated grain or long-term ingestion of low levels of aflatoxin, possibly resulting in death for poultry, the most sensitive of the animal species. Livestock may experience reduced feed efficiency or reproduction, and both human and animal immune systems may be suppressed due to ingesting aflatoxin.

The FDA has established action levels for aflatoxin M1 in milk intended for human consumption and aflatoxin in human food, grain and livestock feed in parts per billion (table below).

The FDA has established additional policies and legal provisions concerning the blending of corn with levels of aflatoxin exceeding these threshold levels. In general, the FDA currently does not permit corn blended to reduce the aflatoxin content to be sold in general commerce.

Aflatoxin Action Level	Criteria
20.0 parts per billion	Dairy animals, pets of all ages, immature animals (including immature poultry) and when the animal’s destination is not known
100.0 parts per billion	Breeding beef cattle, breeding swine and mature poultry
200.0 parts per billion	Finishing swine of 100 pounds or greater
300.0 parts per billion	Finishing (i.e., feedlot) beef cattle

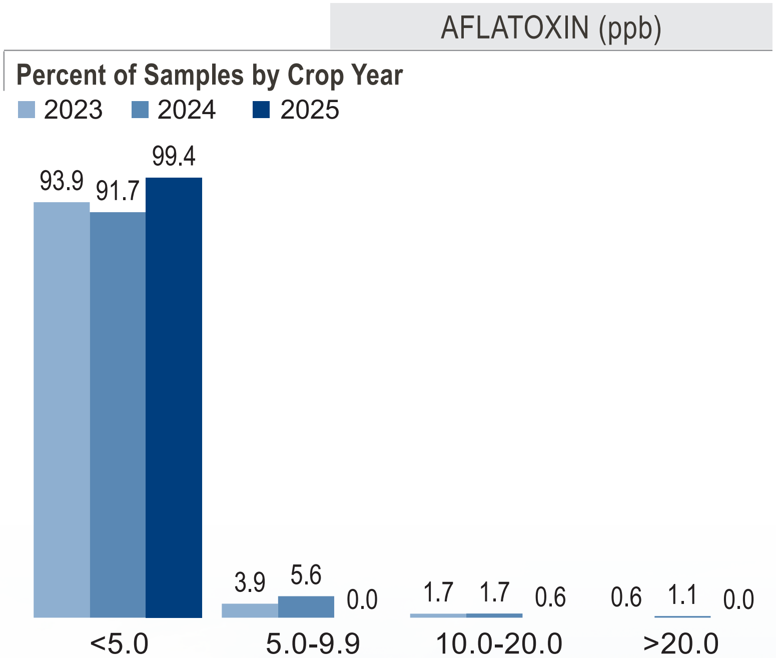
Source: www.ngfa.org
For additional information, see the National Grain and Feed Association’s guidance document titled “FDA Mycotoxin Regulatory Guidance” found at https://drive.google.com/file/d/1tqeS5_eOtsRmxZ5RrTnYu7NCIr896KGX/view.

According to federal law, unless the contract exempts it, corn exported from the United States must be tested by FGIS for aflatoxin. Corn above the FDA action level of 20.0 ppb cannot be exported unless other strict conditions are met. This results in relatively low levels of aflatoxin in exported grain.

RESULTS

A total of 180 samples were analyzed for aflatoxin in 2025, compared to 180 samples tested for aflatoxin in 2024 and 181 samples tested in 2023. Results of the 2025 survey are as follows:

- One hundred seventy-nine (179) samples, or 99.4% of the 180 samples, had no detectable levels of aflatoxin (below the FGIS lower conformance limit of 5.0 ppb). This was much higher than the percentage of samples with no detectable levels of aflatoxin in both 2024 (91.7%) and 2023 (93.9%).
- Zero (0) samples or 0.0% of the 180 samples showed aflatoxin levels greater than or equal to 5.0 ppb but less than 10.0 ppb. This percentage was lower than both 2024 (5.6%) and 2023 (3.9%).



- One (1) sample or 0.6% of the 180 samples showed an aflatoxin level greater than or equal to 10.0 ppb, but less than or equal to the FDA action level of 20.0 ppb. This percentage was lower than both 2024 (1.7%) and 2023 (1.7%).
- Zero (0) samples, or 0.0% of the 180 samples, showed an aflatoxin level greater than the FDA action level of 20.0 ppb. This percentage was lower than both 2024 (1.1%) and 2023 (0.6%).

These results for 2025 denote that there is a lower level of aflatoxin in samples surveyed in the 2025 crop season as in the 2024 and 2023 crop seasons. These favorable sample results may be due, in part, to weather conditions that were not conducive to aflatoxin development in 2025 (see the “Crop and Weather Conditions” section for more information on 2025 growing conditions).

DEOXYNIVALENOL (DON OR VOMITOXIN)

DON is another mycotoxin of concern to some importers of corn. It is produced by certain species of *Fusarium*, the most important of which is *Fusarium graminearum* (*Gibberellazeae*), which also causes Gibberella ear rot (or red ear rot). *Gibberellazeae* can develop when cool or moderate temperatures and wet weather occur at flowering. The fungus grows down the silks into the ear. In addition to producing DON, it produces conspicuous red discoloration of kernels on the ear. The fungus can also continue to grow and rot ears when corn is left standing in the field. Mycotoxin contamination of corn caused by *Gibberellazeae* is often associated with excessive postponement of harvest or storage of high-moisture corn.

DON is mostly a concern with monogastric animals, where it may irritate the mouth and throat. As a result, the animals may eventually refuse to eat the DON-contaminated corn and may have low weight gain, diarrhea, lethargy and intestinal hemorrhaging. It may cause suppression of the immune system, resulting in susceptibility to several infectious diseases.

FGIS is not required to test for DON on corn bound for export markets but will perform either a qualitative or quantitative test for DON at the buyer's request.

The FDA has issued advisory levels for DON. For products containing corn, the advisory levels are shown below.

DON Advisory Level	Criteria
5.0 parts per million	Swine, not to exceed 20% of their diet
5.0 parts per million	All other animals not otherwise listed, not to exceed 40% of their diet
10.0 parts per million	Chickens, not to exceed 50% of their diet
10.0 parts per million	Ruminating beef and dairy cattle older than four months

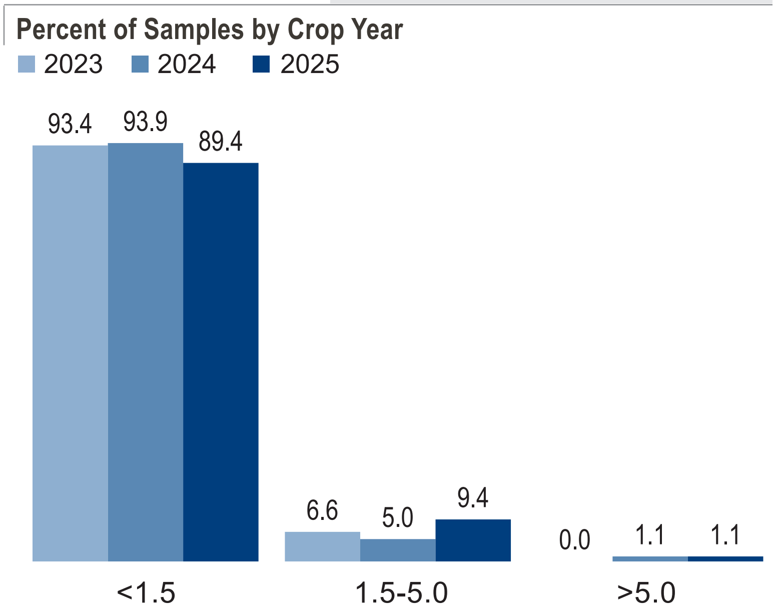
Source: www.ngfa.org
For additional information, see the National Grain and Feed Association's guidance document titled "FDA Mycotoxin Regulatory Guidance" found at https://drive.google.com/file/d/1tqeS5_eOtsRmxZ5RrTnYu7NCIr896KGX/view.

RESULTS

A total of 180 samples were analyzed collectively for DON in 2025, compared to 180 samples tested for DON in 2024 and 181 samples tested for DON in 2023. Results of the 2025 survey are as follows:

- One hundred sixty-one (161) samples, or 89.4% of the 180 samples, tested less than 1.5 ppm. This percentage for 2025 was lower than both 2024 (93.9%) and 2023 (93.4%).
- Seventeen (17) samples, or 9.4% of the 180 samples, tested greater than or equal to 1.5 ppm, but less than or equal to the FDA advisory level of 5.0 ppm. This percentage for 2025 was higher than both 2024 (5.0%) and 2023 (6.6%).
- Two (2) samples or 1.1% of the 180 samples tested above the FDA advisory level of 5.0 ppm. The 2025 sample results were the same as 2024 (1.1%) and slightly higher than 2023 (0.0%).

DON (ppm)



DON levels in 2025 were similar to DON levels in 2024 and 2023. The relatively high percentage (98.8%) of samples in 2025 testing below 5 ppm may be attributed to weather conditions in 2025 that were generally not conducive to DON development in most areas.

FUMONISIN

Fumonisins are naturally occurring mycotoxins found mostly in cereal grains, mainly corn. Fumonisins are a more recent discovery compared to aflatoxin and DON. Fumonisins are produced by several fungi of the *Fusarium* genus. The fumonisin family consists of fumonisin B1, fumonisin B2 and fumonisin B3. Fumonisin B1 is the most abundant, accounting for about 70 to 80% of total fumonisins. The main concern with fumonisins is feed contamination that can have detrimental effects, particularly to horses and pigs. Fungal and fumonisin formation occurs mainly before harvest. Insects play an important role in fumonisin contamination since they act as a wounding agent. Temperature and rainfall conditions are related to fungal growth and fumonisin contamination. In general, fumonisin contamination is related to plant stress, insect damage, drought and soil moisture. In 2001, the FDA issued guidance levels for fumonisins in corn-based foods and feed to reduce human and animal exposure. FDA advisory levels are shown below.

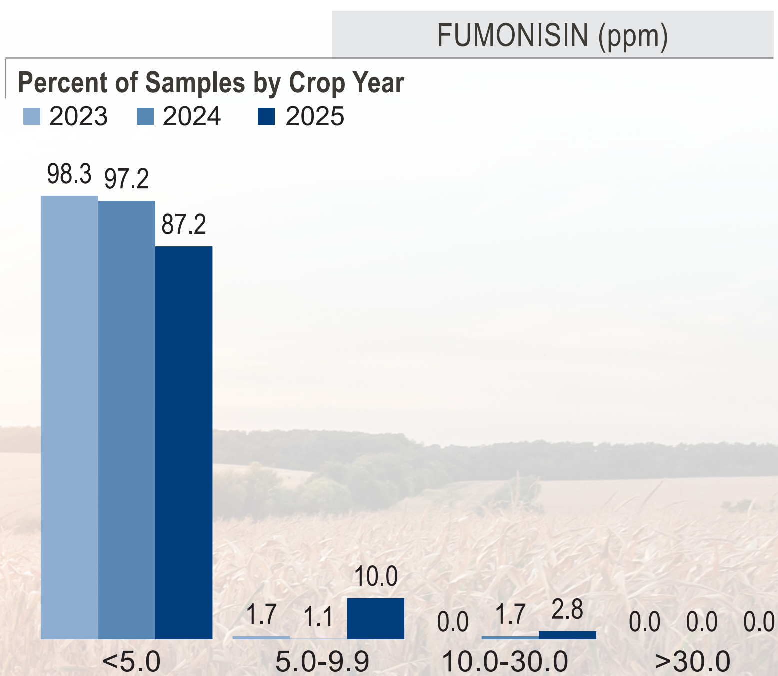
Fumonisin Advisory Level	Criteria
5.0 parts per million	Equids (i.e., horses) and rabbits, not to exceed 20% of diet
20.0 parts per million	Swine and catfish, not to exceed 50% of diet
30.0 parts per million	Breeding ruminants, breeding poultry and breeding mink, not to exceed 50% of diet
60.0 parts per million	Ruminants older than three months raised for slaughter and mink raised for pelt production, not to exceed 50% of diet
100.0 parts per million	Poultry raised for slaughter, not to exceed 50% of diet
10.0 parts per million	All other animals not otherwise listed, not to exceed 50% of their diet

Source: www.ngfa.org
For additional information, see the National Grain and Feed Association's guidance document titled "FDA Mycotoxin Regulatory Guidance" found at https://drive.google.com/file/d/1tqeS5_eOtsRmxZ5RrTnYu7NClr896KGX/view.

RESULTS

A total of 180 samples were analyzed collectively for fumonisin in 2025. Survey samples have been tested for fumonisin since the *2019/2020 Harvest Report*. Results of the 2025 survey are as follows:

- One hundred fifty-seven (157) or 87.2% of the 180 samples tested below 5.0 ppm, the lowest advisory level for animals (equids and rabbits). This percentage for 2025 was lower than both 2024 (97.2%) and 2023 (98.3%).
- Eighteen (18) or 10.0% of the 180 samples tested greater than or equal to 5.0 ppm, but less than 10.0 ppm. This percentage for 2025 was higher than both 2024 (1.1%) and 2023 (1.7%).
- Five (5) or 2.8% of the 180 samples tested greater than or equal to 10.0 ppm, but less than or equal to 30.0 ppm. This percentage for 2025 was slightly higher than 2024 (1.7%) and 2023 (0.0%).
- Zero (0) or 0.0% of the 180 samples tested greater than 30.0 ppm, which is the advisory level for breeding ruminants, poultry and mink. This percentage for 2025 was the same as both 2024 and 2023.
- The lower percentage of samples testing below 5.0 ppm was likely due to environmental conditions that were favorable for fumonisin development.



OCHRATOXIN A

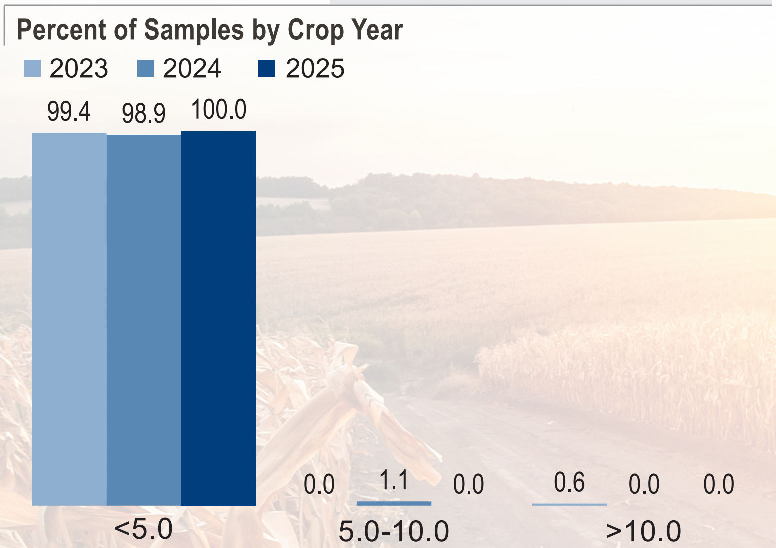
Ochratoxins are considered a hazardous mycotoxin produced by a number of fungal species such as *Penicillium verrucosum* and *Aspergillus ochraceus* that can colonize grains, cereals and a range of other food products. Of these products, grains and cereals are considered to represent 50–80% of the intake of ochratoxins. The fungi can produce ochratoxins A, B and C, but ochratoxin A is produced in the greatest quantity. While ochratoxin A can occur all along the production chain from the field to storage, it is primarily considered a storage problem. Grains stored under high moisture/humidity (>14%) at warm temperatures (>20°C) and/or inadequately dried have the potential to become contaminated with the fungi and produce ochratoxins. Also, damage to the grain by mechanical means, physical means or insects can provide a portal of entry for the fungus. Initial growth of fungi in grains can form sufficient moisture from metabolism to allow for further growth and mycotoxin formation. Because grains and cereal products represent a large portion of the human diet, several countries have established maximum levels for ochratoxin A in unprocessed cereals. The European Commission established a maximum level for ochratoxin A in raw cereals at 5.0 parts per billion. The FDA has issued no advisory levels for ochratoxin A.

RESULTS

Survey samples have been tested for ochratoxin A since the *2020/2021 Harvest Report*. Results of the 180 samples analyzed for ochratoxin A in 2025 are as follows:

- One hundred eighty (180) or 100.0% of the samples tested below 5.0 ppb, the European Commission's established maximum level for ochratoxin A. This percentage was higher than both 2024 (98.9%) and 2023 (99.4%).
- Zero (0) or 0.0% of the samples tested greater than or equal to 5.0 ppb, but not greater than 10.0 ppb. This percentage for 2025 was lower than 2024 (1.1%) and the same as 2023 (0.0%).
- Zero (0) or 0.0% of the samples tested greater than 10.0 ppb. This percentage for 2025 was the same as 2024 (0.0%) and slightly lower than 2023 (0.6%).
- There was slightly less Ochratoxin A in 2025 than 2024 and 2023. The high percentage of samples testing below 5.0 ppb was likely due to environmental conditions not conducive to Ochratoxin A development.

OCHRATOXIN A (ppb)



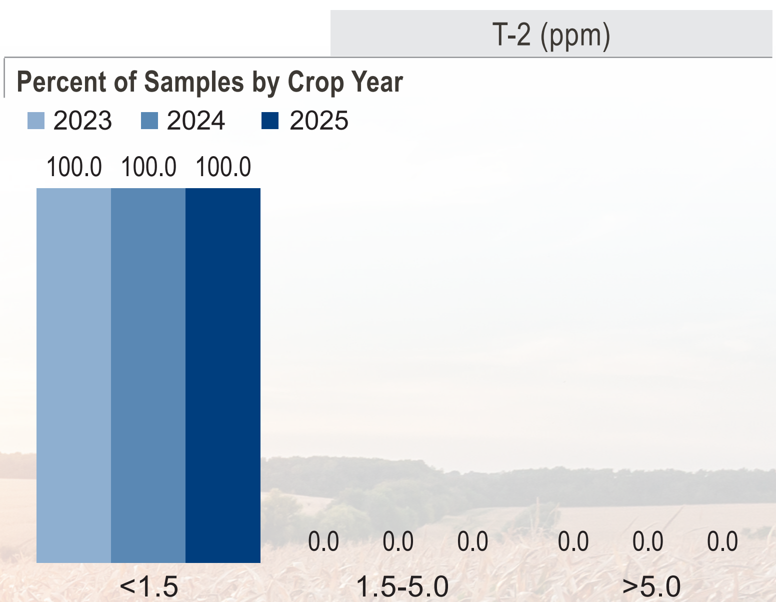
T-2

T-2 is one of several mycotoxins (including Deoxynivalenol or DON) belonging to a group of mycotoxins called trichothecenes. T-2 toxin is produced in growing cereal grain crops by various *Fusarium* species of fungi. The fungi can grow over a wide range of temperatures (-2 to 35°C) and only at a water activity above 0.88. As a result, T-2 is not normally found in grain at harvest but in grain that has suffered water damage when left in the field after harvest (especially over winter). However, T-2 can occur in storage if the grain has suffered water damage in storage. The FDA has issued no advisory levels for T-2 toxin.

RESULTS

Survey samples have been tested for T-2 since the *2020/2021 Harvest Report*. Results of the 180 samples analyzed for T-2 in 2025 are as follows:

- One hundred eighty (180) or 100.0% of the 180 samples tested below 1.5 ppm in 2025. This percentage for 2025 was the same as 2024 and 2023.
- Zero (0) or 0.0% of the samples tested greater than or equal to 1.5 ppm, but not greater than 5.0 ppm in 2025, which was the same as 2024 and 2023.
- Zero (0) or 0.0% of the samples test greater than 5.0 ppm in 2025, which was the same as 2024 and 2023.



ZEARALENONE

Zearalenone is a mycotoxin that is very similar to deoxynivalenol (DON) in most aspects, with a few exceptions. Both are produced by *Fusarium* species of fungi. As a result, it would not be uncommon to find both mycotoxins in grain and grain products at the same time. The growing conditions for zearalenone production are very comparable to DON, with the optimal temperatures ranging from 65 to 85°F. A drop in temperature during growth also stimulates the production of toxins by the fungi. A moisture content of 20% or greater is required by the fungi to produce zearalenone, which is also similar to that needed to produce DON. But if the moisture content during growth drops below 15%, the production of toxins is halted. This is one of the reasons that it is recommended that corn for storage should be dried to moisture levels less than 15%. Levels of as little as 0.1 to 5.0 ppm have been shown to cause reproductive problems in swine, so great care should be used when feeding possibly contaminated grain to pigs. The FDA has issued no advisory levels for zearalenone but recommends only that the levels of concern for DON be observed.

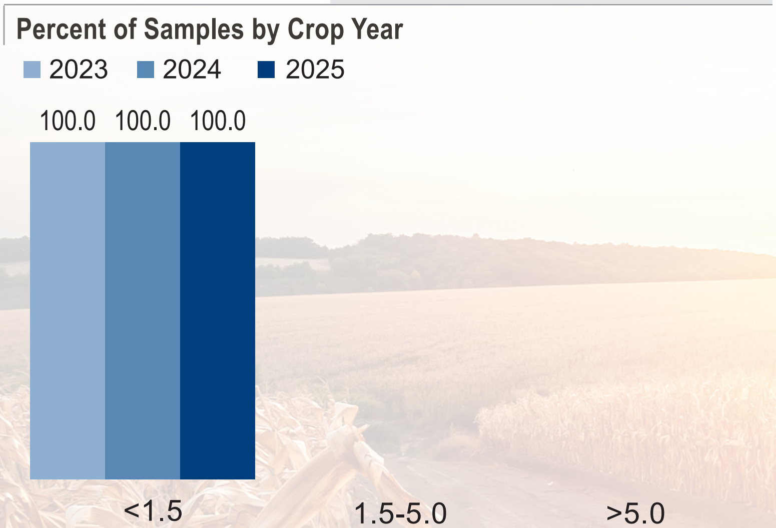
Results of the 180 samples were tested to assess the impact of this year's growing conditions on zearalenone are shown below. The sampling criteria and the testing methodology employed are described in the "Survey and Statistical Analysis Methods" and "Testing Analysis Methods" sections, respectively.

RESULTS

Survey samples have been tested for zearalenone since the *2020/2021 Harvest Report*. Results of the 180 samples analyzed in 2025 are as follows:

- One hundred eighty (180) or 100.0% of the samples tested for below 1.5 ppm in 2025. This percentage was the same as 2024 and 2023.
- Zero (0) or 0.0% of the samples tested greater than or equal to 1.5 ppm, but not greater than 5.0 ppm in 2025. This percentage was the same as 2024 and 2023.
- Zero (0) or 0.0% of the 180 samples tested greater than 5.0 ppm in 2025, which was the same as in 2024 and 2023.

ZEARALENONE (ppm)



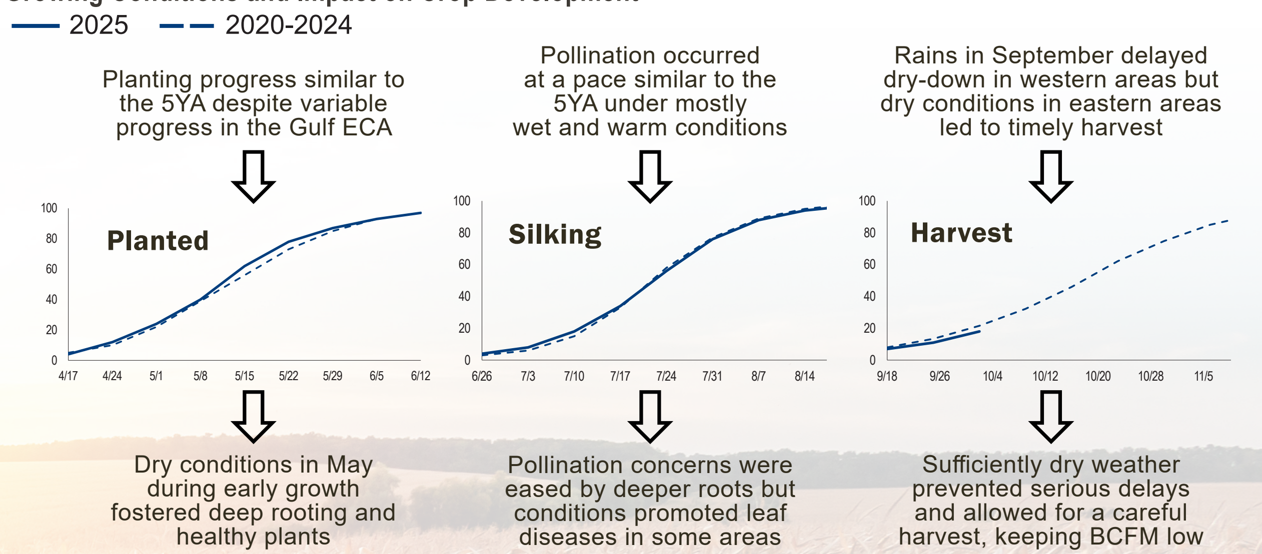
A. 2025 HARVEST HIGHLIGHTS

Weather plays a large role in the corn planting process, growing conditions and grain development in the field. These, in turn, impact final grain yield and quality. Overall, 2025 was characterized by early vegetative rains and warm temperatures that moderated during the late grain-filling period to mitigate the subsequent drought, then excellent dry-down and harvest. These conditions led to the best season-long good-to-excellent crop condition rating[1] of the past five years. The weather conditions produced a crop with slightly smaller, lighter kernels with greater starch level but less protein and oil levels compared to the 5YA.

The following highlights the key events of the 2025 growing season:

- Warm conditions sped vegetative growth, with above average rain in the southern Gulf and Southern Rail ECAs.
- Pollination (silking stage) was similar timing as the 5YA, with warm, wet conditions.
- Grain developed under progressively cooler and drier conditions, which limited grain size, weight and protein concentrations.
- Relatively hot and dry conditions at the end of the season led to good field drying and steady, but slowing harvest, with the least BCFM recorded in the 15 years of this report.

Growing Conditions and Impact on Crop Development



Note: USDA crop progress data from October through mid-November was not available due to the federal government shutdown. As of the week ending November 16, 91% of the U.S. corn crop was harvested, compared to 98% in 2024 and 94% for the 5YA.

[1] *The U.S. Department of Agriculture rates the U.S. corn crop weekly during the production cycle. The rating is based on yield potential and plant stress due to a number of factors, including extreme temperatures, excessive or insufficient moisture, disease, insect damage and/or weed pressure.*

B. PLANTING AND EARLY GROWTH CONDITIONS

Timely start, deep roots

Weather factors impacting corn yield and quality include the amount of precipitation and the temperature just prior to and during the corn-growing season. These weather factors interact with the corn variety planted and soil fertility. Grain yield is a function of the number of plants per acre, the number of kernels per plant and the weight of each kernel. Cold or wet weather at planting could reduce plant numbers or hinder plant growth, which may result in lower yields per area. Some dryness at planting and early growth time is beneficial. It promotes a deeper root system to access water better later in the season and keeps nitrogen fertilizer available for later plant growth.

2025

Planting progressed normally in 2025, and mostly dry conditions in May during early growth fostered deep rooting of the plants. Then precipitation extremes caused some concerns and led to an initial lower than average Good + Excellent crop condition rating. As the crop progressed towards pollination, however, the surviving plants had the healthiest crop conditions compared to the previous four years.

The Pacific Northwest ECA planted early, and young plants primarily grew under wet conditions until the late vegetative stages before pollination.

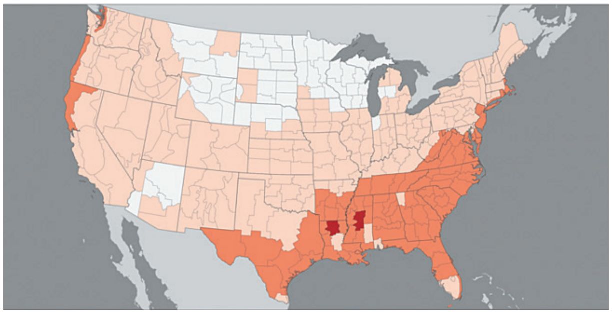
The Gulf ECA overall was planted similar to the 5YA, with a wide variation of early and late plantings. Young plants grew under warm temperatures with very dry conditions, prompting roots to grow deeper to get water. As the plants grew towards pollination, warm to hot plus wet weather came, promoting excellent growth.

Plants in the Southern Rail ECA emerged about a week earlier than normal and grew under normal to cool temperatures, with abundant rain and flooding.

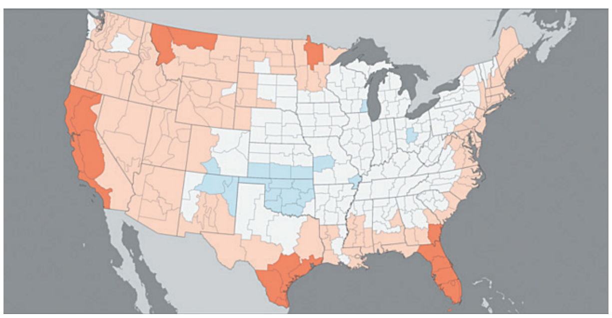
DIVISIONAL AVERAGE TEMPERATURE RANKS

(Period: 1895-2025)

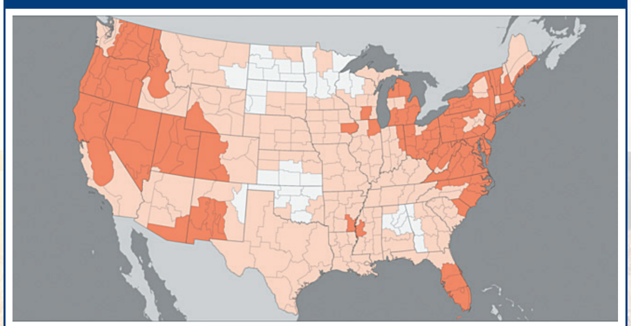
APRIL 2025



MAY 2025



JUNE 2025

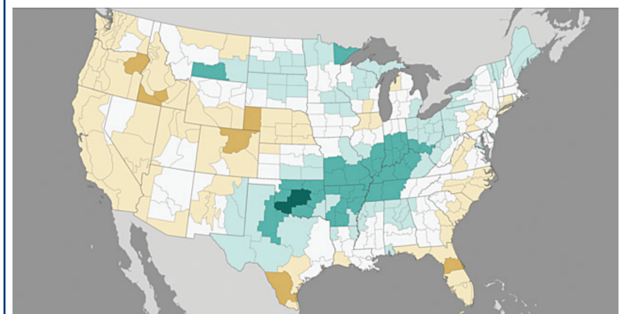


Source: NOAA/Regional Climate Centers

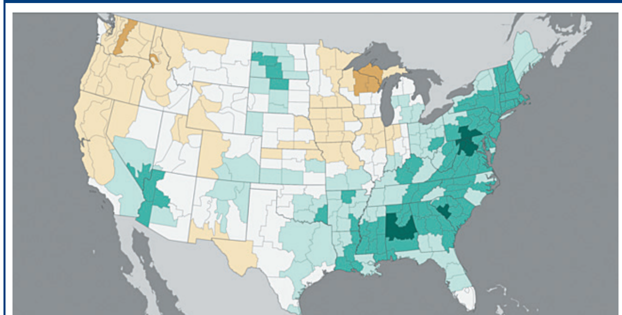
DIVISIONAL PRECIPITATION RANKS

(Period: 1895-2025)

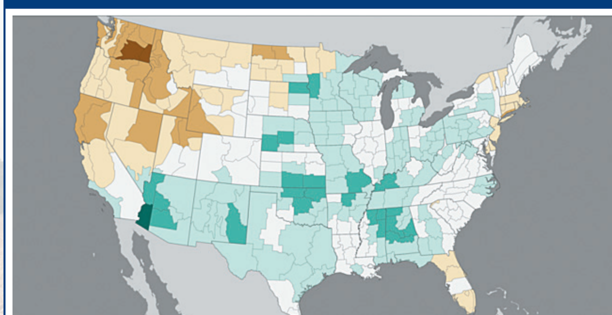
APRIL 2025



MAY 2025



JUNE 2025



Source: NOAA/Regional Climate Centers

C. POLLINATION AND GRAIN-FILL CONDITIONS

Excellent conditions for pollination and grain-fill

Corn pollination typically occurs in July. At pollination time, greater-than-average temperatures or lack of rain typically reduce the number of kernels. During the early grain-filling period in July and August, the weather conditions are critical to determining final grain composition. At pollination, moderate rainfall and cooler-than-average temperatures, especially overnight temperatures, lead to increased yields. Less rainfall and high temperatures, especially in the second half of grain-fill (August to September), lead to more protein. Nitrogen also remobilizes from the leaves to the grain during late grain-filling, leading to increases in grain protein and hard endosperm.

In terms of mycotoxin development, aflatoxin production is induced by heat stress, low precipitation and drought conditions during flowering followed by periods of high humidity with warmth. While the production of DON is associated with harvest delay or storage of high-moisture corn, the fungal infections responsible for DON's production are promoted by cool or wet conditions within three weeks after pollination by infecting through the silks of the corn ear of a susceptible hybrid.

2025

Overall in 2025, pollination occurred under wet conditions with warm to hot temperatures in the Gulf ECA. These conditions were unfavorable for aflatoxin, but more favorable for DON development this year, with susceptibility to DON also being hybrid-dependent.

Heat stress during pollination in the Gulf ECA prompted concerns that there would be less grain pollinated. Drought stress and heat stress after pollination was a concern in the eastern and central Gulf ECA. These conditions could lead to kernel abortion. Less kernels could lead to each individual kernel becoming larger from more assimilate supply per grain. However, the earlier warm, wet weather promoted the growth of many leaf diseases, especially in the Gulf ECA. When temperatures cooled during grain-fill, these damaged leaves were not able to produce as much sugar as normal, so 100-kernel weights were lighter than the 5YA, and kernels were smaller (i.e., had less volume).

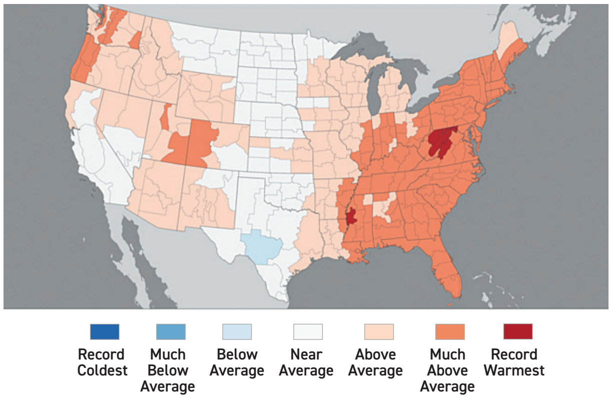
In the Pacific Northwest ECA, temperatures were normal in July for pollination, with above average rain. Temperatures cooled for grain-fill, leading to greater starch levels in the grain than the 5YA.

Temperatures warmed briefly in the Southern Rail ECA during pollination but cooled again for grain development. Deep roots reaching down for stored water from earlier rains eased the stress. Average to above average precipitation continued, aiding grain development and fostering a true density greater than the 5YA.

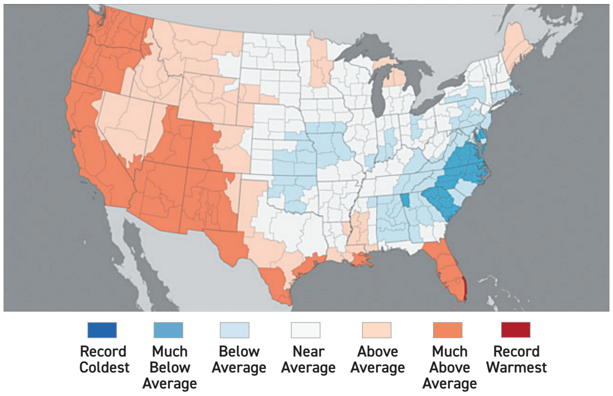
DIVISIONAL AVERAGE TEMPERATURE RANKS

(Period: 1895-2025)

JULY 2025



AUGUST 2025

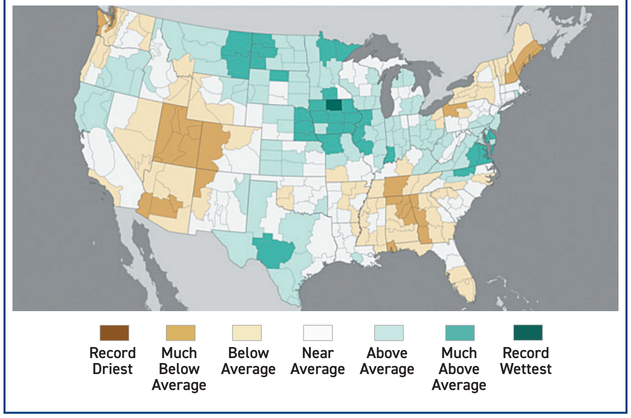


Source: NOAA/Regional Climate Centers

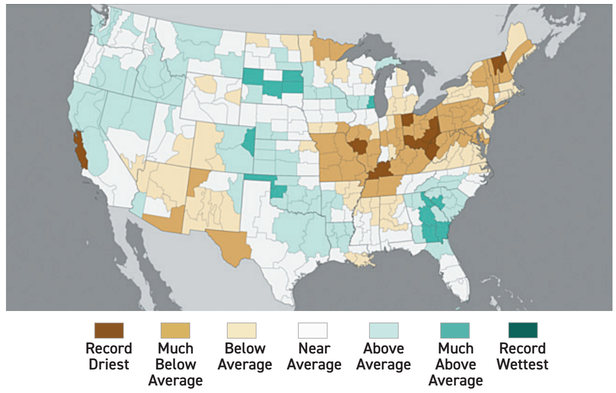
DIVISIONAL PRECIPITATION RANKS

(Period: 1895-2025)

JULY 2025



AUGUST 2025



Source: NOAA/Regional Climate Centers

D.HARVEST CONDITIONS

Harvest slightly behind 5YA, but varied among regions

Corn grain at maturity ranges from 25 to 35% moisture. At the end of the growing season, the dry-down rate of the grain to the ideal level of 15 to 20% moisture depends on sunshine, temperature, humidity and soil moisture. Corn can most effectively dry down with the least adverse impact on quality amid sunny, warm and dry days. One weather concern at the end of the growing season is freezing temperatures. Early freezing before the grain can sufficiently dry down may lead to lower yield, true density and test weight. If harvested prematurely, higher moisture grain may be susceptible to more stress cracks and greater breakage than drier grain.

2025

September brought warm and rainy conditions to the Pacific Northwest and Southern Rail ECAs, delaying grain maturity and dry-down, which delayed harvest compared to the 5YA. As of mid-November, the Pacific Northwest ECA was the furthest behind in harvesting, varying between 74 to 90% harvested, while the Southern Rail ECA was estimated to be 92% harvested.

A majority of the Gulf ECA had continued warm and dry conditions to extend grain-fill. That weather continued after maturity, which allowed producers to harvest the grain in a careful manner without the stress of rain delays or freezing weather while avoiding artificial drying.

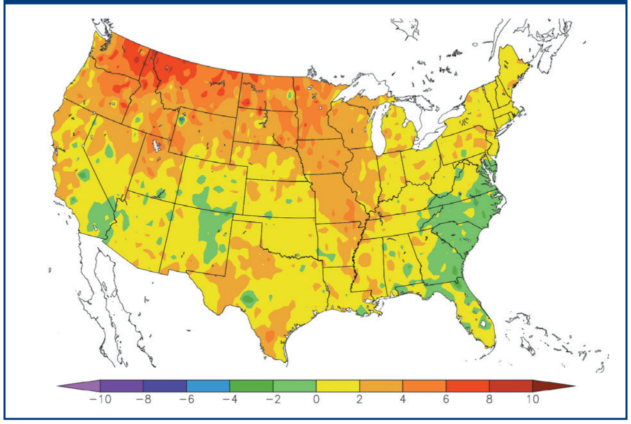
Despite these seasonal stresses, the corn plants were still able to produce a good amount of grain yield with high quality. Corn hybrids are increasingly being bred to tolerate heat and drought stress and use their deeper roots to obtain the water from the earlier rains. Producers are using fungicides more often to combat leaf diseases fostered by warm, wet weather and higher planting populations, which helps to continue starch accumulation in the grain.

The warm conditions experienced by the crop at the end of the growing season were not conducive for major development of mycotoxins such as DON, fumonisin, ochratoxin A, T-2 or zearalenone.

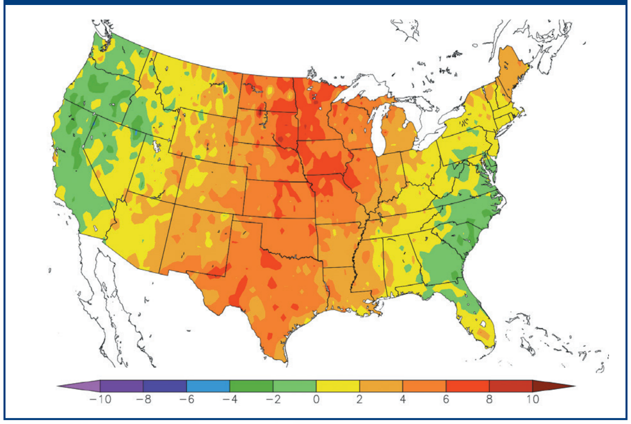
U.S. GRAINS & BIOPRODUCTS COUNCIL

DEPARTURE FROM NORMAL TEMPERATURE (°F)

SEPTEMBER 2025



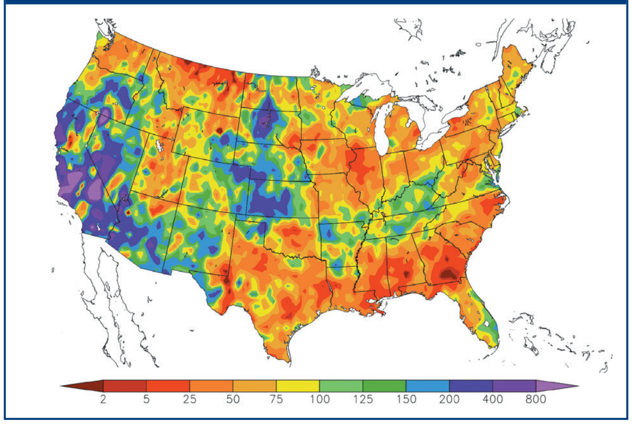
OCTOBER 2025



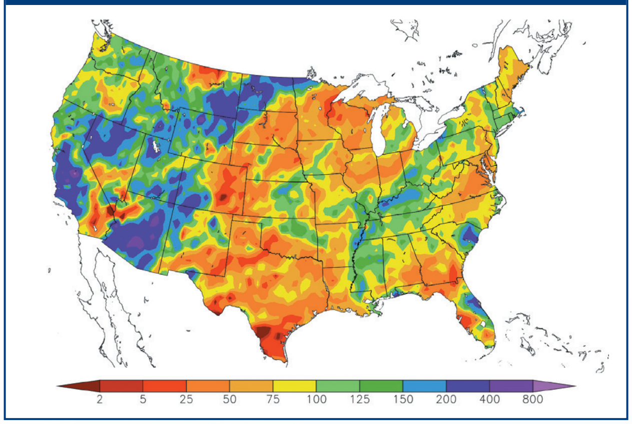
Source: High Plains Regional Climate Center (HPRCC), NOAA was unavailable at the time of publication due to the federal government shutdown.

PERCENT OF NORMAL PERCIPITATION

SEPTEMBER 2025



OCTOBER 2025



Source: High Plains Regional Climate Center (HPRCC), NOAA was unavailable at the time of publication due to the federal government shutdown.

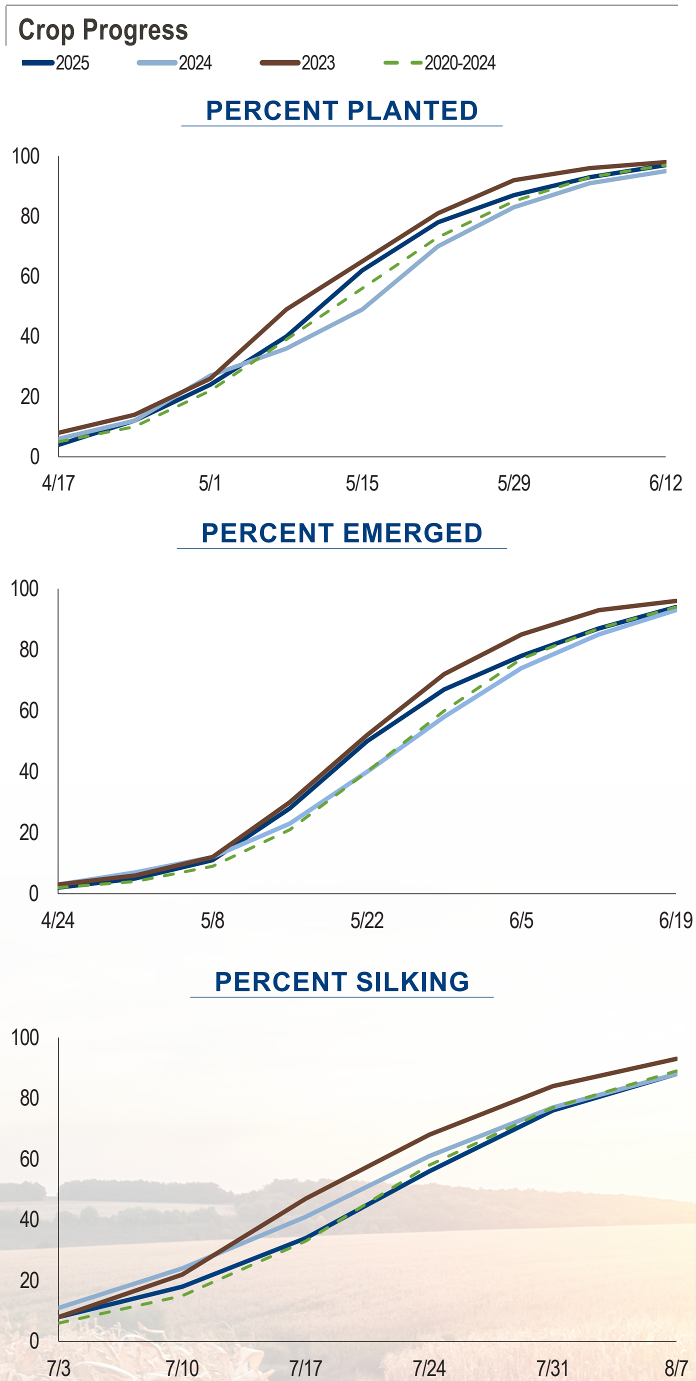
E. COMPARISON OF 2025 TO 2024, 2023 AND THE 5YA

2025 crop had smaller, lighter kernels and more starch

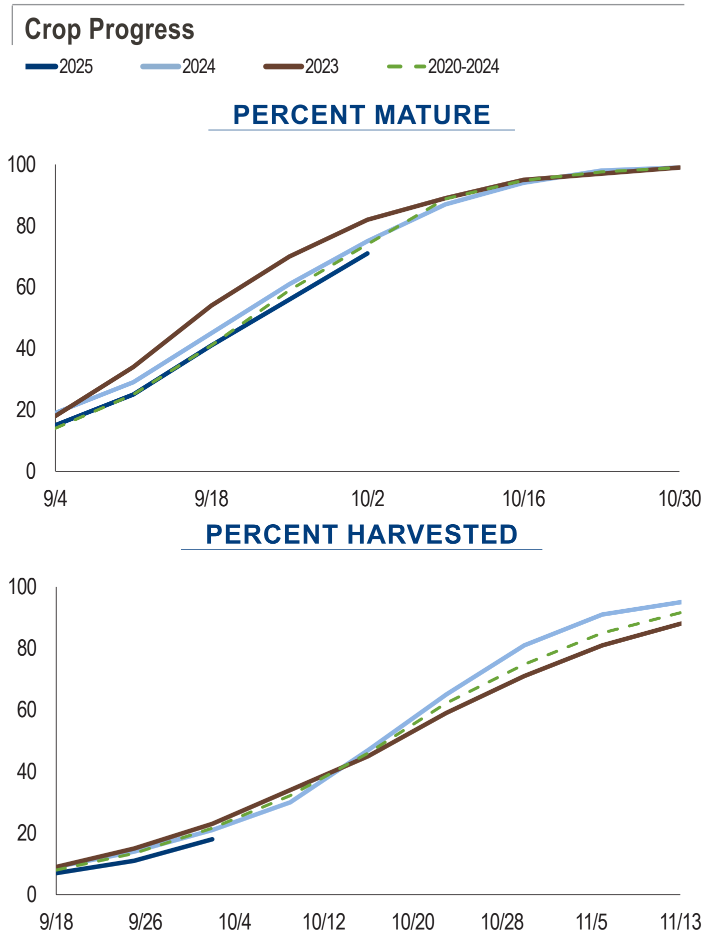
The 2025 crop was planted near or slightly ahead of average, setting up good growth capacity. The 2024 crop was planted in two phases separated by a rain delay, setting up a potential for variation in growth, quality and yield. Warm, dry conditions led the 2023 crop to be planted earlier than the 5YA.

Warm conditions led the 2025 and 2023 crops to emerge earlier than the 5YA. In 2024, the crop emerged similar to the 5YA under seasonal temperatures but with abundant rainfall during early vegetative growth. Continued heat and drought throughout vegetative growth in 2023 limited kernel numbers.

In 2025, silking and pollination happened under warm conditions, but similar to the 5YA. In 2024, they initiated about a week before the 5YA and 2023 but moderated over time. In 2023, helped by rain, the silking/pollination was overall earlier than the 5YA.

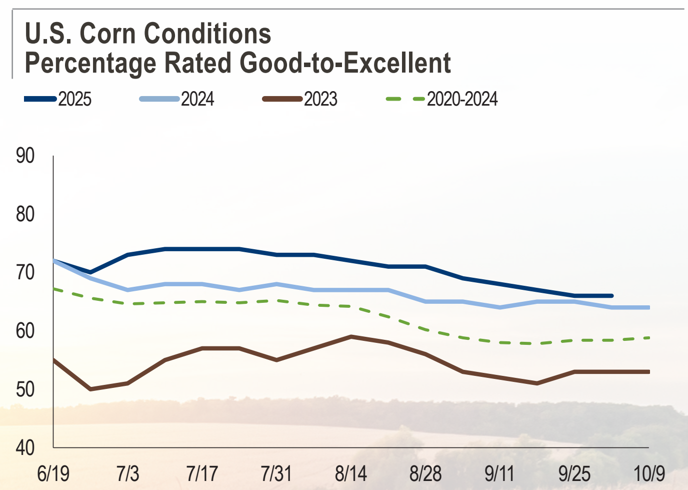


Source: USDA NASS



Cool and drier conditions during grain-fill in 2025 favored starch accumulation and maturation similar to the 5YA. In 2024, smoke from Canadian wildfires tempered the heat of summer but increased photosynthesis and starch accumulation. In 2023, hot and dry conditions limited photosynthesis, thereby starch and oil accumulation, but favored protein and hard endosperm.

Harvest in 2025 began steadily, similar to the 5YA, but slowed with rains. In 2024, dry conditions allowed very early harvest completion. The 2023 crop was initially harvested early due to rapid maturation from drought conditions, heat and concern of plants falling down but moderated in late October.



Source: USDA NASS

In 2025, abundant rains and warm to moderate temperatures sustained a relatively high good-to-excellent condition rating[2]. The 2024 crop initially had a high rating and remained above the 5YA throughout the season due to ample early rains and moderate temperatures throughout most of the season. In 2023, the crop started with a somewhat low rating, which quickly decreased below the 5YA during the vegetative development stages, due to excessive heat and drought, then stabilized.

Note: USDA crop progress data from October through mid-November was not available due to the federal government shutdown. As of the week ending November 16, 91% of the U.S. corn crop was harvested, compared to 98% in 2024 and 94% for the 5YA.

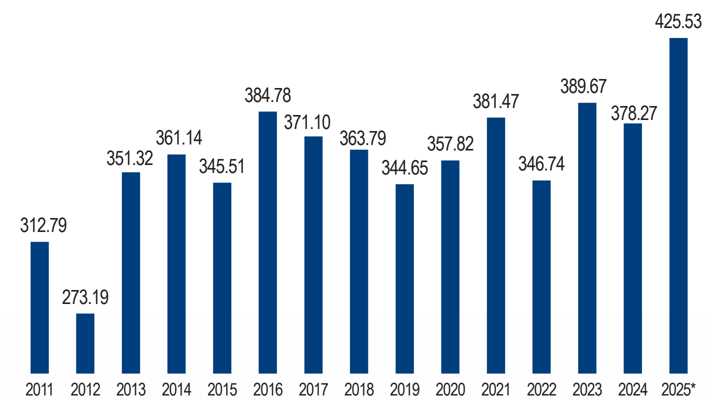
[2] A good rating means that yield prospects are normal; moisture levels are adequate; and disease, insect damage and weed pressures are minor. An excellent rating means that yield prospects are above normal; the crop is experiencing little or no stress; and disease, insect damage and weed pressures are insignificant.

A. U.S. CORN PRODUCTION

U.S. Average Production and Yields

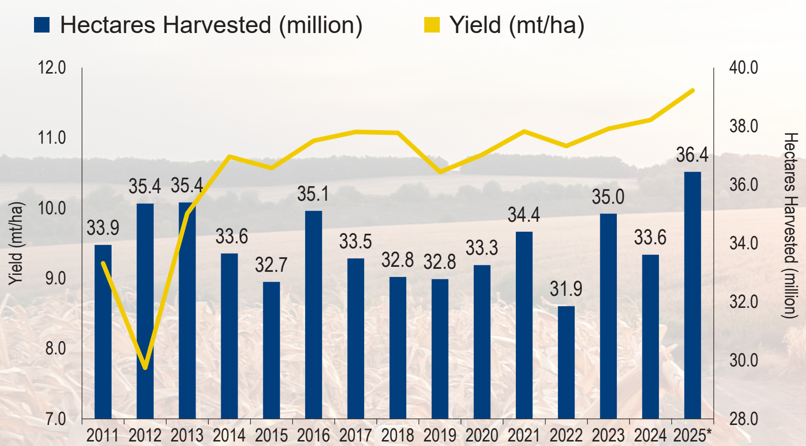
According to the November 2025 USDA World Agricultural Supply and Demand Estimates (WASDE) report, U.S. corn production in 2025 is projected to be 425.53 million metric tons (16,752 million bushels). If realized, this amount would make this year's crop the largest on record, surpassing the previous record set in 2023/2024 (389.67 million metric tons or 15,341 million bushels). Average yield is projected to be 11.67 metric tons per hectare (186.0 bushels per acre), surpassing the previous record yield also set by the 2024/2025 crop (11.25 metric tons per hectare or 179.3 bushels per acre). A total of 36.44 million hectares (90.05 million acres) is projected to be harvested in 2025, the most since 1933 (37.28 million hectares or 92.13 million acres).

U.S. Corn Production (mmt)



*Projected
Source: USDA NASS

U.S. Corn Yield and Harvested Area

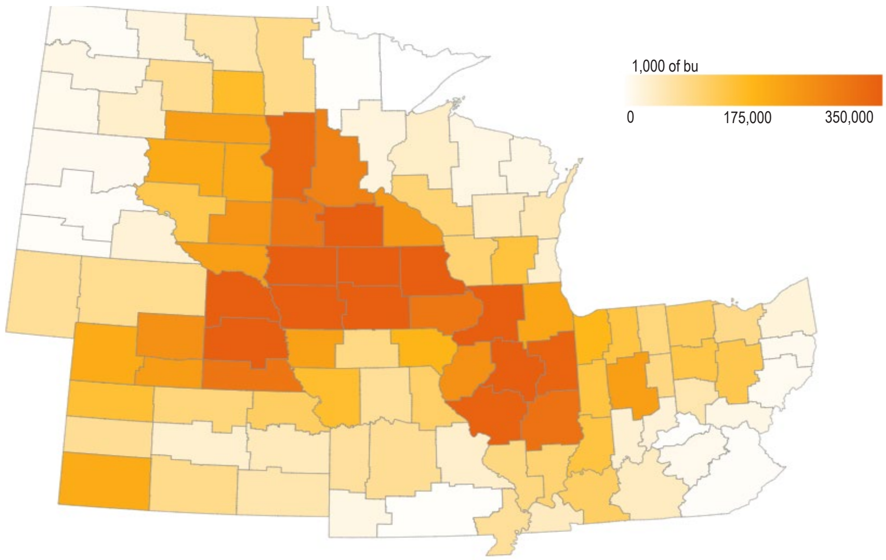


*Projected
Source: USDA NASS

ASD and State-Level Production

The geographic areas included in the *2025/2026 Corn Harvest Quality Report* encompass the United States' highest corn-producing regions. The map below shows the projected 2025 corn production by USDA Agricultural Statistical District (ASD). These states represent more than 90% of U.S. corn exports.[1]

Projected 2025 U.S. Corn Production by ASD



Sources: USDA NASS and Centrec estimates

[1]*Sources: USDA NASS, USDA GIPSA and Centrec estimates.*

The U.S. Corn Production by State chart and table summarize the production changes between each state's 2024 and projected 2025 corn crops. The table also includes an indication of the relative changes in harvested acres and yield. A green bar indicates a relative increase, and a red bar indicates a relative decrease from 2024 to projected 2025.

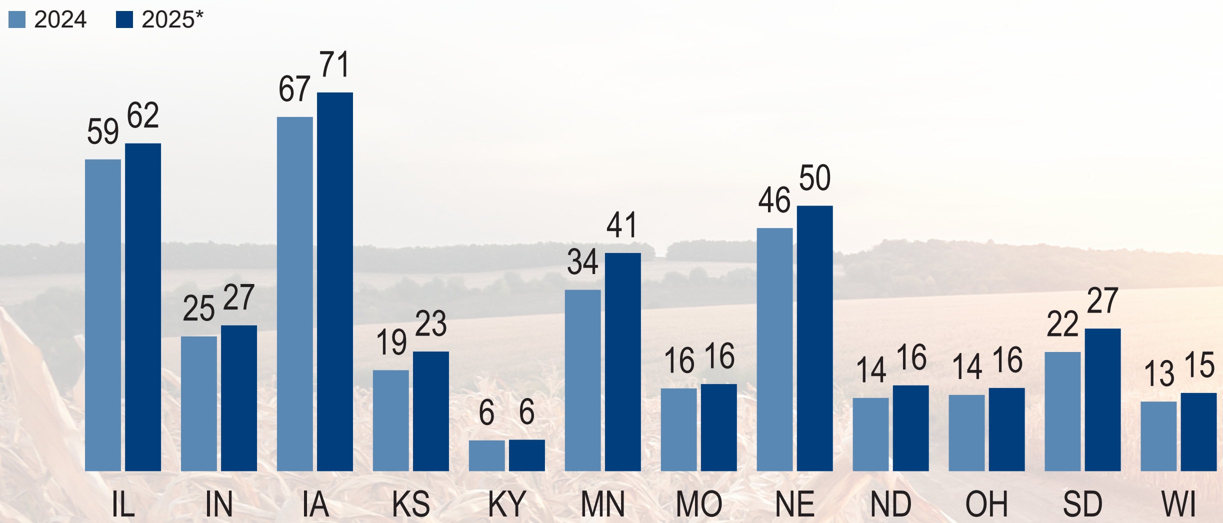
All 12 key corn-producing states expect increased production relative to their 2024 crops with five states expecting large year-over-year changes (greater than 10%) in production. All but Kentucky, Missouri and North Dakota expect higher average yields relative to 2024. Harvested acres are expected to be higher in each of the 12 key corn-producing states besides Ohio, which is projected to see a decrease in harvested acres of only 0.6%.

U.S. Corn Production by State

State	2024 (mmt)	2025 (mmt)*	Difference mmt	Difference Percent	Relative % Change† Acres	Relative % Change† Yield
Illinois	58.70	61.75	3.05	5.2%		
Indiana	25.40	27.47	2.07	8.2%		
Iowa	66.72	71.32	4.60	6.9%		
Kansas	19.00	22.53	3.52	18.5%		
Kentucky	5.79	5.92	0.13	2.2%		
Minnesota	34.16	41.08	6.92	20.2%		
Missouri	15.57	16.41	0.84	5.4%		
Nebraska	45.79	49.97	4.18	9.1%		
North Dakota	13.78	16.17	2.39	17.4%		
Ohio	14.39	15.67	1.28	8.9%		
South Dakota	22.45	26.85	4.40	19.6%		
Wisconsin	13.08	14.73	1.65	12.6%		
Total U.S.	**378.27**	**425.53**	**47.25**	**12.5%**		

†Green indicates higher than previous year, and red indicates lower than previous year with height of bar indicating the relative amount.
**Projected*
Source: USDA NASS

U.S. Corn Production by State (mmt)



**Projected*
Source: USDA NASS

B. U.S. CORN USE AND ENDING STOCKS

U.S. corn usage for all categories and ending stocks decreased in marketing year 24/25 relative to 23/24 following the year-over-year decrease in corn production of 2.9%.

Corn for food, seed and other non-ethanol industrial purposes, which typically remains relatively consistent over time, decreased by 0.4% in marketing year 24/25 relative to 23/24.

Corn used for domestic ethanol production decreased by 1.0% in marketing year 24/25 relative to 23/24 despite slightly higher finished gasoline supplied by U.S. refiners and continued growth of ethanol exports. After its rebound following the COVID-19 pandemic, finished gasoline supplied by U.S. refiners has steadied, increasing by 0.3% from marketing year 23/24 to 24/25.[2] Increasing ethanol exports would also point to increased corn usage for ethanol production. Following the 41.3% increase in ethanol exports from the corn marketing year 22/23 (September through August) to 23/24, ethanol exports increased another 21.1% (1.38 billion liters) from marketing year 23/24 to 24/25.[3] While total ethanol production increased, the 1.0% decrease in corn use for ethanol production can be explained by the additional 1.55 million metric tons of sorghum used for ethanol production in marketing year 24/25 relative to 23/24, which represents a year-over year increase of 254%.[4]

The direct consumption of corn as a feed ingredient in domestic livestock and poultry rations in marketing year 24/25 also decreased, falling by 5.8% relative to marketing year 23/24.

While total domestic use decreased by 3.1% in marketing year 24/25 relative to 23/24, U.S. corn exports rose by 25.5% in marketing year 24/25 relative to 23/24.

Lower domestic corn production and higher exports outweighed the impact of lower domestic consumption, leading to a 13.1% decrease in ending stocks in marketing year 24/25 relative to 23/24.

[2] *U.S. Energy Information Administration, Weekly Petroleum Status Report, Accessed on November 13, 2025, from https://www.eia.gov/petroleum/supply/weekly/. Weekly estimates of U.S. product supplied of finished motor gasoline (thousand barrels per day) were averaged from September through August to make this comparison consistent with the U.S. corn marketing year.*
[3] *USDA/Foreign Agricultural Service- Global Agricultural Trade System. Data retrieved November 2025.*
[4] *USDA/WASDE*

C.OUTLOOK

U.S. Outlook

Given the record projected production of the 2025 U.S. corn, higher levels of consumption and exports are anticipated in marketing year 25/26.

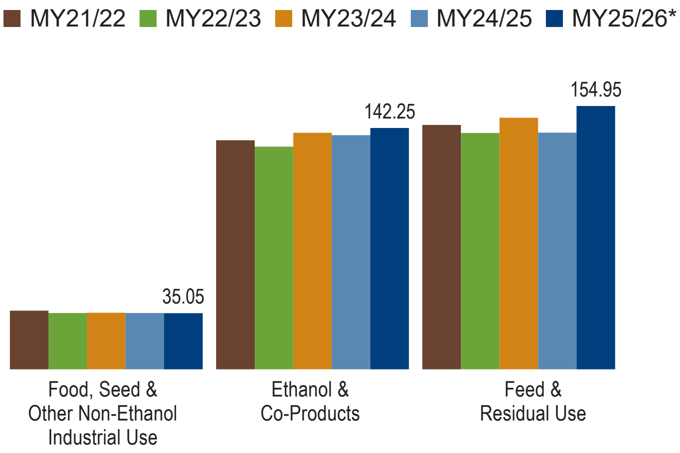
Corn use for ethanol production is projected to increase by 4.17 million metric tons in marketing year 25/26 (a 3.0% increase relative to 24/25).

Domestic corn for feed and residual use in marketing year 25/26 is expected to be 154.95 million metric tons. This estimate is 15.44 million metric tons higher (11.1% increase) than in 24/25.

Corn use for food, seed and non-ethanol industrial purposes is expected to be 35.05 million metric tons, which is a level near the 5YA (35.73 million metric tons).

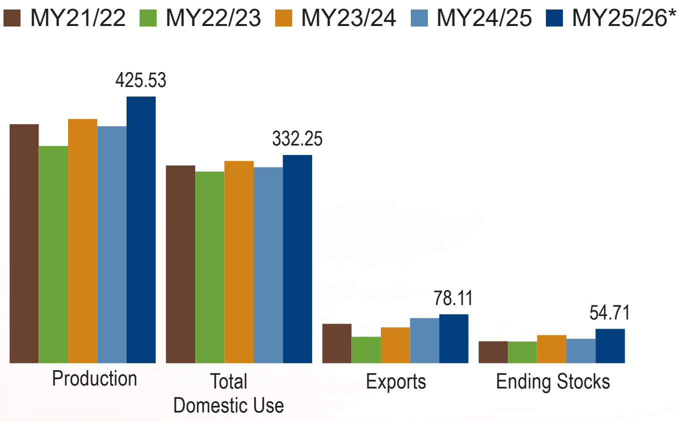
Higher U.S. corn exports are projected for marketing year 25/26 due to the record corn crop anticipated. U.S. corn exports are projected to be 78.11 million metric tons in marketing year 25/26, which is 6.22 million metric tons higher than marketing year 24/25 (8.7% higher) and 17.32 million metric tons higher than the 5YA (28.5% higher).

U.S. Corn Use by Marketing Year (mmt)



*Projected
Sources: USDA WASDE and ERS

U.S. Corn Production & Disappearance (mmt)



*Projected
Sources: USDA WASDE and ERS

U.S. ending stocks are projected to be 54.71 million metric tons in marketing year 25/26, a year-over-year increase of 15.80 million metric tons (40.6% increase). If realized, this would be the highest U.S. ending stocks since marketing year 18/19, which had ending stocks of 56.82 million metric tons.

The stocks-to-use ratio is projected to be 13.3% in marketing year 25/26, the highest value since marketing year 19/20 (14.5%).

International Outlook[5]

Global Supply

Global corn production during marketing year 25/26 is expected to be 1,286.23 million metric tons, 55.50 million metric tons higher (4.5% higher) than in marketing year 24/25.

In addition, global corn exports during marketing year 25/26 are expected to be 203.47 million metric tons, a 14.97 million metric ton increase (7.9% increase) from marketing year 24/25. Decreased exports from Serbia, Canada and the European Union are expected to be offset by higher exports from Brazil, Argentina, Ukraine and the United States.

Global Demand

Global corn consumption is expected to increase from 1,254.61 million metric tons in marketing year 24/25 to 1,296.54 million metric tons in marketing year 25/26, a 3.3% increase. The United States, China, Mexico, Brazil and India are all anticipated to consume at least 1.00 million metric tons more corn in marketing year 25/26 than in the previous marketing year. In comparison, only Turkey is anticipated to have a decrease in corn consumption in marketing year 25/26 of at least 1.00 million metric tons relative to the previous marketing year.

China and the European Union are each anticipated to have an increase in year-over-year imports of at least 1.00 million metric tons. Only Turkey is anticipated to have a year-over-year decrease in corn imports of over 1.00 million metric tons in marketing year 25/26.

[5] *USDA/Foreign Agricultural Service- Production, Supply and Distribution Database. Data retrieved November 2025.*

U.S. CORN SUPPLY AND USAGE SUMMARY BY MARKETING YEAR

Metric Units	21/22	22/23	23/24	24/25	25/26*
Acreage (million hectares)					
Planted	37.76	35.69	38.28	36.79	39.94
Harvested	34.39	31.85	35.01	33.61	36.44
Yield (mt/ha)	11.09	10.88	11.13	11.25	11.67
Supply (million metric tons)					
Beginning stocks	31.36	34.97	34.55	44.79	38.91
Production	381.47	346.74	389.67	378.27	425.53
Imports	0.62	0.98	0.72	0.51	0.64
Total Supply	**413.44**	**382.70**	**424.94**	**423.58**	**465.07**
Usage (million metric tons)					
Food, seed, other non-ethanol industry use	36.50	35.12	35.32	35.18	35.05
Ethanol and co-products	135.12	131.47	139.42	138.08	142.25
Feed and residual	144.04	139.35	148.13	139.50	154.95
Exports	62.80	42.21	57.28	71.89	78.11
Total Use	**378.47**	**348.15**	**380.15**	**384.65**	**410.36**
Ending Stocks	34.97	34.55	44.79	38.91	54.71
Average Farm Price ($/mt)**	236.21	257.47	179.13	166.92	157.47

English Units	21/22	22/23	23/24	24/25	25/26*
Acreage (million acres)					
Planted	93.3	88.2	94.6	90.9	98.7
Harvested	85.0	78.7	86.5	83.0	90.0
Yield (bu/ac)	176.7	173.4	177.3	179.3	186.0
Supply (million bushels)					
Beginning stocks	1,235	1,377	1,360	1,763	1,532
Production	15,018	13,651	15,341	14,892	16,752
Imports	24	39	28	20	25
Total Supply	**16,277**	**15,066**	**16,729**	**16,675**	**18,309**
Usage (million bushels)					
Food, seed, other non-ethanol industry use	1,437	1,382	1,391	1,385	1,380
Ethanol and co-products	5,320	5,176	5,489	5,436	5,600
Feed and residual	5,671	5,486	5,832	5,492	6,100
Exports	2,472	1,662	2,255	2,830	3,075
Total Use	**14,900**	**13,706**	**14,966**	**15,143**	**16,155**
Ending Stocks	1,377	1,360	1,763	1,532	2,154
Average Farm Price ($/bu)**	6.00	6.54	4.55	4.24	4.00

**Projected*
***Farm prices are weighted averages based on the volume of farm shipment.*
The average farm price for 25/26 based on the projected price from the November 2025 WASDE.
Sources: USDA WASDE and ERS

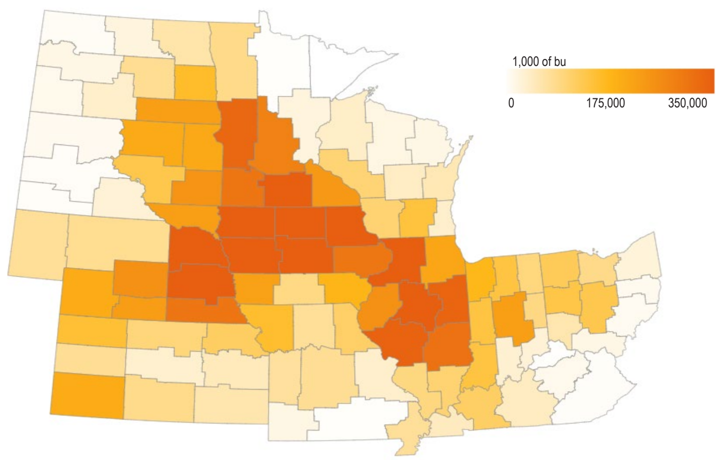
A. OVERVIEW

The key points for the survey design, sampling methodology and statistical analysis for this *2025/2026 Harvest Report* are as follows:

- Following the methodology developed for the previous fourteen *Harvest Reports*, the samples were proportionately stratified according to ASDs across 12 key corn-producing states representing more than 90% of U.S. corn exports.

- A total of 600 samples collected from the 12 states was targeted to achieve a relative margin of error no higher than 10.0% for U.S. Aggregate's quality factor estimates at the 95.0% confidence level.

Projected 2025 U.S. Corn Production by ASD



Sources: USDA NASS and Centrec estimates

- A total of 621 unblended corn samples was received and tested for the report. These samples were pulled from inbound farm-originated trucks by local elevators from August 5 through November 8, 2025.

- The mycotoxin testing across the ASDs in the 12 states surveyed for the other quality factors used a proportionate stratified sampling technique. This sampling resulted in testing 180 samples for aflatoxin, DON, fumonisin, ochratoxin A, T-2 and zearalenone.

- Weighted averages and standard deviations following standard statistical techniques for proportionate stratified sampling were calculated for the U.S. Aggregate and the three ECAs.

- Each quality factor's relative margin of error was calculated for the U.S. Aggregate and each of the three ECAs to evaluate the statistical validity of the samples. No quality factor had a relative margin of error above 10.0% for the U.S. Aggregate. However, the Pacific Northwest ECA had a relative margin of error for stress cracks of 10.9%. While this level of precision is less than desired, it does not invalidate the estimate.

- Two-tailed t-tests at the 95.0% confidence level were calculated to measure statistical differences between this year's quality factor averages and those from the previous two reports, the 5YA and the 10YA.

B. SURVEY DESIGN AND SAMPLING

Survey Design

For this *2025/2026 Harvest Report*, the target population was yellow corn from the 12 key U.S. corn-producing states representing more than 90% of U.S. corn exports.[1] A ***proportionate stratified, random sampling*** technique was applied to ensure a sound statistical sampling of the U.S. corn crop at the first stage of the market channel. Three key characteristics define the sampling technique: the ***stratification*** of the population to be sampled, the ***sampling proportion*** per stratum and the ***random sample*** selection procedure.

Stratification involves dividing the survey population of interest into distinct, non-overlapping subpopulations called strata. For this study, the survey population was corn produced in areas likely to export corn to foreign markets. The USDA divides each state into several ASDs and estimates corn production for each ASD. The USDA corn production data, accompanied by foreign export estimates, were used to define the survey population in the 12 key corn-producing states. The ASDs were the subpopulations or strata used for this corn quality survey. From those data, the Council calculated each ASD's proportion of the total production and foreign exports to determine the ***sampling proportion*** (the percent of total samples per ASD) and, ultimately, the number of corn samples to be collected from each ASD. The number of samples collected for the *2025/2026 Harvest Report* differed among the ASDs due to their different shares of estimated production and foreign export levels.

Establishing the ***number of samples collected*** allowed the Council to estimate the true averages of the various quality factors with a certain level of precision. The level of precision chosen for the *2025/2026 Harvest Report* was a relative margin of error no greater than 10.0%, estimated at a 95.0% level of confidence.

To determine the number of samples for the relative margin of error target, ideally, the population variance (i.e., the variability of the quality factor in the corn at harvest) for each of the quality factors should be used. Greater variation among the levels or values of a quality factor requires more samples to estimate the true mean with a given confidence limit. In addition, the variances of the quality factors typically differ from one another. Therefore, different sample sizes would be needed for each quality factor for the same level of precision.

[1] *Source: USDA NASS, USDA GIPSA and Centrec estimates*

Since the population variances for the quality factors evaluated for this year's corn crop were unknown, the variance estimates from the *2024/2025 Harvest Report* were used as proxies. The variances and, ultimately, the estimated number of samples needed for the relative margin of error to be no higher than 10.0% for 13 quality factors were calculated using the 2024 results of 620 samples. Broken corn, foreign material and heat damage were not examined. Based on these data, a minimum sample size of 600 would allow the Council to estimate the true averages of the quality characteristics with the desired level of precision for the U.S. Aggregate.

While the relative margin of error for stress cracks was not higher than 10.0% in the 2024 results for the U.S. Aggregate, this quality factor has had a relative margin of error slightly higher than 10.0% in three of the fourteen previous reports. Given the *2025/2026 Harvest Report*'s sample size and the unpredictability of this quality factor's variance, there was the potential that stress cracks may not meet the targeted level of precision for the U.S. Aggregate. However, the relative margin of error for stress cracks has never been above 12% for the U.S. Aggregate in past reports.

The testing of the grade, moisture, chemical and physical characteristics used the same proportionate stratified sampling approach for the mycotoxin testing of the corn samples. In addition to using the same sampling approach, the same level of precision of a relative margin of error no higher than 10.0%, estimated at a 95.0% level of confidence, was desired.

Testing at least 25% of the minimum number of samples (600) was estimated to provide that level of precision. In other words, testing at least 150 samples would provide a 95.0% confidence level that the percent of tested samples with aflatoxin results below the FDA action level of 20.0 ppb and the percent of tested samples with DON results below the FDA advisory level of 5.0 ppm would have a relative margin of error no higher than 10.0%. There was no targeted level of precision for fumonisin, ochratoxin A, T-2 and zearalenone for this year's report. The proportionate stratified sampling approach also required testing at least one sample from each ASD in the sampling area. To meet the sampling criteria of testing 25% of the minimum number of samples (600) and at least one sample from each ASD, the targeted number of samples to test for mycotoxins was 180.

Beginning with the *2019/2020 Harvest Report*, only the samples tested for mycotoxins would be tested for horneous endosperm. This testing protocol was extended to 100-k weight, kernel volume and kernel true density in the *2020/2021 Harvest Report*. These quality factors' relative margin of errors never exceeded 0.6%, well below the targeted maximum level of precision of 10.0%, in the samples tested from the ten reports prior to the *2020/2021 Harvest Report*. Thus, reducing the number of samples tested for horneous endosperm, 100-k weight, kernel volume and kernel true density would likely keep the precision of these quality factors' estimates well below the targeted maximum level 10.0%.

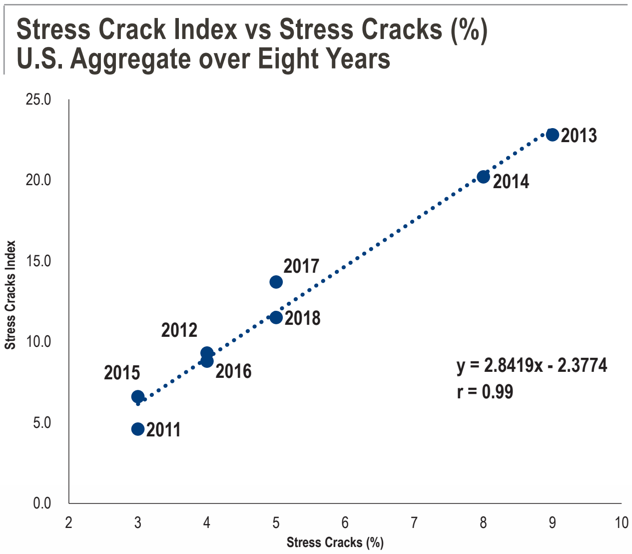
In the first eight years of the *Harvest Report*, the stress crack index was reported in addition to the percent stress cracks to indicate the severity of stress cracking. The stress crack index is determined using the following calculation:

[SSC x 1] + [DSC x 3] + [MSC x 5]

Where

- SSC is the percentage of kernels with only one crack;
- DSC is the percentage of kernels with exactly two cracks; and
- MSC is the percentage of kernels with more than two cracks.

The U.S. Aggregate percent stress cracks and stress crack index from the first eight *Harvest Reports* are displayed in the scatter chart to the right. Given its strong correlation (r = 0.99) to percent stress cracks, it was determined that the stress crack index provided limited additional value and was discontinued following the *2018/2019 Harvest Report*.

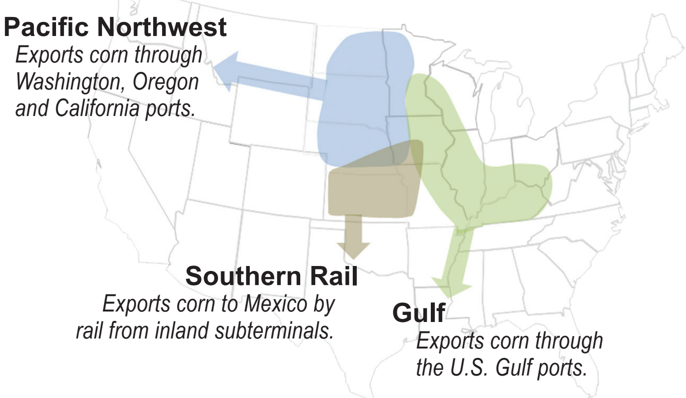


Sampling

Soliciting local grain elevators in the 12 states by email and phone provided the ***random selection*** process. Postage-paid sampling kits were mailed to elevators agreeing to provide the 2,050 to 2,250-gram corn samples requested. Elevators were told to avoid sampling loads of old crop corn from farmers cleaning out their bins for the current crop. The individual samples were pulled from inbound farm-originated trucks when the trucks underwent the elevators' normal testing procedures. The number of samples each elevator provided for the survey depended on the targeted number of samples needed from the ASD along with the number of elevators willing to provide samples. However, each sampling kit mailed to the participating locations contained bags to collect a maximum of four samples to ensure geographic variation in the samples collected. A total of 621 unblended corn samples pulled from inbound farm-originated trucks were received and tested from local elevators. The participating elevators indicated that these samples were pulled from inbound farm-originated trucks from August 5 through November 8, 2025, by writing the collection date on each sample bag.

C.STATISTICAL ANALYSIS

Export Catchment Areas



The sample test results for the grade factors, moisture, chemical composition and physical factors were summarized as the U.S. Aggregate and three composite groups that supply corn to each of three major ECAs.

In analyzing the sample test results, the Council followed the standard statistical techniques employed for proportionate stratified sampling, including ***weighted averages*** and ***standard deviations***.[2] In addition to the weighted averages and standard deviations for the U.S. Aggregate, weighted averages and standard deviations were estimated for the composite ECAs. The geographic areas from which exports flow to each of these ECAs overlap due to available transportation modes. Therefore, composite statistics for each ECA were calculated based on estimated proportions of grain flowing to each ECA. As a result, corn samples could be reported in more than one ECA. These estimations were based on industry input, export data and evaluation of studies of grain flow in the United States.

The *2025/2026 Harvest Report* contains a simple average of the quality factors' averages and standard deviations of the previous five *Harvest Reports (2020/2021, 2021/2022, 2022/2023, 2023/2024 and 2024/2025)*. These simple averages are calculated for the U.S. Aggregate and each of the three ECAs and are referred to as the "5YA" in the text and summary tables of the report. References to the "10YA" are also made throughout the report. The 10YA represents the simple average of the quality factors' averages from the *2015/2016 Harvest Report* through the *2024/2025 Harvest Report*.

The relative margin of error was calculated for each of the quality factors for the U.S. Aggregate and each of the ECAs. None of the quality factor estimates had relative margin of errors above 10.0% for the U.S. Aggregate. However, the Pacific Northwest ECA had a relative margin of error for stress cracks of 10.9%. While this level of precision is less than desired, it does not invalidate the estimate. Footnotes in the summary tables indicate that the quality factor's relative margin of error exceeded 10.0%.

Two-tailed t-tests validated references in the "Quality Test Results" section to statistical or significant differences between this year's quality factor averages and those from the previous two reports, the 5YA and the 10YA at the 95.0% confidence level. Differences between this year's quality factor averages and those from the previous two reports, the 5YA and the 10YA will be described as "similar" unless the difference is statistically significant at the 95.0% confidence level.

[2] *The reported standard deviations for horneous endosperm, 100-k weight, kernel volume and kernel true density were not weighted due to the reduced number of samples tested.*

The *2025/2026 Harvest Report* samples (each about 2,200 grams) were sent directly from the local grain elevators to the Illinois Crop Improvement Association's Identity Preserved Grain Laboratory (IPG Lab) in Champaign, Illinois. The general process is as follows:

- Upon arrival, samples were analyzed for chemical composition and moisture via Near-Infrared Transmission Spectroscopy (NIR). This analysis provides the sample test results for protein, starch and oil.
- Participating elevators were asked to record the moisture measured by their own electronic moisture meters at the time of delivery on each sample bag. These moisture results are reported instead of the results provided by the NIR analysis conducted upon each sample's arrival.
- While not reported, moisture results provided by the NIR analysis conducted upon each sample's arrival were used to determine if further drying was necessary to reduce the sample's moisture content to a suitable level to prevent any subsequent deterioration during the testing period. Samples above 16.0% moisture were dried using an ambient-air drying technique to prevent stress cracking and heat damage.
- Next, the samples were split into two subsamples of about 1,100 grams each using a Boerner divider while keeping the grain sample's attributes even between the two subsamples.
- One subsample was delivered to the Champaign-Danville Grain Inspection (CDGI) in Urbana, Illinois, for grading. CDGI is the official grain inspection service provider for east-central Illinois as designated by the USDA FGIS. The grade testing procedures were in accordance with FGIS's Grain Inspection Handbook and are described in the following section.
- The other subsample was analyzed at IPG Lab for physical factors and mycotoxin contamination following either industry norms or well-established procedures. IPG Lab has received accreditation under the ISO/IEC 17025:2017 International Standard for chemical composition, stress cracks, 100-kernel weight, kernel volume and kernel true density. The full scope of accreditation is available at https://www.ilcrop.com/about/lab-services/.

A. GRADE FACTORS

Test Weight

Test weight is a measure of the volume of grain required to fill a Winchester bushel (2,150.42 cubic inches). Test weight is a part of the FGIS Official U.S. Standards for Corn grading criteria.

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 test cup's sides. 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).

Broken Corn and Foreign Material

BCFM is part of the FGIS Official U.S. Standards for Grain and grading criteria.

The BCFM test determines the amount of all matter that passes through a 12/64th-inch round-hole sieve and all matter other than corn that remains on the top of the sieve. BCFM measurement can be separated into broken corn and foreign material. Broken corn is defined as all material passing through a 12/64th-inch round-hole sieve and retained on a 6/64th-inch round-hole sieve. The definition of foreign material is all material passing through the 6/64th-inch round-hole sieve and the coarse non-corn material retained on top of the 12/64th-inch round-hole sieve. BCFM is reported as a percentage of the initial sample by weight.

Total Damage and Heat Damage

Total damage is part of the FGIS Official U.S. Standards for Grain grading criteria.

A trained and licensed inspector visually examines a representative working sample of 250 grams of BCFM-free corn for damaged kernels. Types of damage include blue-eye mold, cob rot, dryer-damaged kernels (different from heat-damaged kernels), germ-damaged kernels, heat-damaged kernels, insect-bored kernels, mold-damaged kernels, mold-like substance, silk-cut kernels, surface mold (blight), mold (pink *Epicoccum*) and sprout-damaged kernels. Total damage is reported as the weight percentage of the working sample that is total damaged grain.

Heat damage is a subset of total damage and consists of kernels and pieces of corn kernels that are materially discolored and damaged by heat. Heat-damaged kernels are determined by a trained and licensed inspector visually inspecting a 250-gram sample of BCFM-free corn. Heat damage, if found, is reported separately from total damage.

B. MOISTURE

The moisture recorded by the elevators' electronic moisture meters at the time of delivery is reported. Electronic moisture meters sense an electrical property of grains called the dielectric constant that varies with moisture—the dielectric constant rises as moisture content increases. Moisture is reported as a percent of total wet weight.

C. CHEMICAL COMPOSITION

Near-Infrared Transmission Spectroscopy (NIR) Proximate Analysis

The chemical composition (protein, oil and starch concentrations) of corn is measured using NIR. The technology uses unique interactions of specific wavelengths of light with each sample. It is calibrated to traditional chemistry methods to predict protein, oil and starch concentrations in the sample. This procedure is nondestructive to the corn.

Chemical composition tests for protein, oil and starch were conducted using a 550 to 600-gram sample in a whole-kernel Foss Infratec 1241 NIR instrument. The NIR was calibrated to chemical tests, and the standard errors of predictions for protein, oil and starch were about 0.22, 0.26 and 0.65%, respectively. Comparisons of the Foss Infratec 1229 used in *Harvest Reports* before 2016 to the Foss Infratec 1241 on 21 laboratory check samples showed the instruments averaged within 0.25, 0.26 and 0.25% points of each other for protein, oil and starch, respectively. Results are reported on a dry basis percentage (percent of non-water material).

D. PHYSICAL FACTORS

100-Kernel Weight, Kernel Volume and Kernel True Density

The 100-kernel weight is determined from the average weight of two 100-kernel replicates using an analytical balance that measures to the nearest 0.1 milligrams. The averaged 100-kernel weight is reported in grams.

The kernel volume for each 100-kernel replicate is calculated using a helium pycnometer and is expressed in cubic centimeters (cm^3) per kernel. Kernel volumes usually range from 0.14 cubic centimeters to 0.36 cubic centimeters per kernel for small and large kernels, respectively.

True density of each 100-kernel sample is calculated by dividing the mass (or weight) of the 100 externally sound kernels by the volume (displacement) of the same 100 kernels. The two replicate results are averaged. True density is reported in grams per cubic centimeter (g/cm^3). True densities typically range from 1.20 grams per cubic centimeter to 1.30 grams per cubic centimeter at "as is" moisture contents of about 12 to 15%.

Stress Crack Analysis

Stress cracks are evaluated by using a backlit viewing board to accentuate the cracks. A sample of 100 intact kernels with no external damage is examined kernel by kernel. The light passes through the horneous or hard endosperm, so each kernel's stress crack damage can be evaluated. Kernels are sorted into two categories: (1) no cracks; (2) one or more cracks. Stress cracks, expressed as a percent, are all kernels containing one or more cracks divided by 100 kernels. Lower levels of stress cracks are always better since higher stress cracks lead to more breakage in handling. Some end-users will specify by contract the acceptable level of cracks based on the intended use.

Whole Kernels

In the whole kernels test, 50 grams of cleaned (BCFM-free) corn are inspected by the kernel. Cracked, broken or chipped grain, along with any kernels showing significant pericarp damage, are removed. The whole kernels are then weighed, and the result is reported as a percentage of the original 50-gram sample. Some companies perform the same test but report the "cracked & broken" percentage. A whole kernel score of 97.0% equates to a cracked & broken rating of 3.0%.

Horneous (Hard) Endosperm

The horneous (or hard) endosperm test is performed by visually rating 20 externally sound kernels, placed germ facing up, on a backlit viewing board. Each kernel is rated for the estimated portion of the kernel's total endosperm that is horneous endosperm. The soft endosperm is opaque and will block light, while the horneous endosperm is translucent. The rating is made from standard guidelines based on the degree to which the soft endosperm at the crown of the kernel extends down toward the germ. The average of horneous endosperm ratings for the 20 externally sound kernels is reported. Ratings of horneous endosperm are made on a scale of 70 to 100%, though most individual kernels fall in the 70 to 90% range.

E. MYCOTOXINS

Detection of mycotoxins in corn is complex. The fungi producing the mycotoxins often do not grow uniformly in a field or across a geographic area. As a result, the detection of any mycotoxin in corn, if present, is highly dependent upon the concentration and distribution of the mycotoxin among kernels in a lot of corn, whether a truckload, a storage bin or a railcar.

The objective of the FGIS sampling process is to minimize underestimating or overestimating the true mycotoxin concentration since accurate results are imperative for corn exports. However, the objective of the *2025/2026 Harvest Report's* assessment of mycotoxins is only to report the frequency of occurrences of mycotoxins in the current crop and not to report specific levels of mycotoxins in corn exports.

To report the frequency of occurrences of aflatoxin, DON and fumonisin for the *2025/2026 Harvest Report*, IPG Lab performed the mycotoxin tests using FGIS protocol and approved test kits. FGIS's protocol requires a minimum of a 908-gram (two-pound) sample from trucks to grind for aflatoxin testing, approximately a 200-gram sample to grind for DON testing and a 908-gram (two-pound) sample for fumonisin testing. For this study, a 1,000-gram laboratory sample was subdivided from the two-kilogram survey sample of shelled kernels for the aflatoxin analysis. The one-kilogram survey sample was ground in a Retsch ZM 200 mill, with a distance ring sieve size of 1 millimeter trapezoidal holes so that 60 to 75% would pass through a 20-mesh screen. From this well-mixed ground material, a 50-gram test portion was removed for each mycotoxin tested. EnviroLogix AQ 309 BG, AQ 304 BG and AQ 411 BG quantitative test kits were used for the aflatoxin, DON and fumonisin analysis, respectively. DON and fumonisin were extracted with water (5:1), while the aflatoxin was extracted with buffered water (3:1). The extracts were tested using the EnviroLogix QuickTox lateral flow strips, and the QuickScan system quantified the mycotoxins.

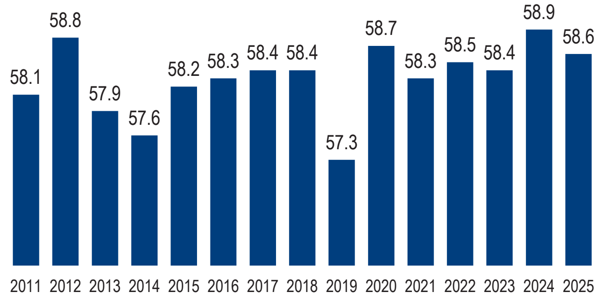
The EnviroLogix quantitative test kits report specific concentration levels of the mycotoxin if the concentration level exceeds a specific level called a "Limit of Detection." The limit of detection is defined as the lowest concentration level that can be measured with an analytical method that is statistically different from measuring an analytical blank (absence of a mycotoxin). The limit of detection will vary among different types of mycotoxins, test kits and commodity combinations. The limit of detection for the EnviroLogix AQ 309 BG is 2.7 parts per billion for aflatoxin. The limit of detection for DON using the EnviroLogix AQ 304 BG is 0.1 parts per million. For the fumonisin tests, the EnviroLogix AQ 411 BG has a limit of detection of 0.1 parts per million. FGIS has issued a letter of performance for the quantification of aflatoxin, DON and fumonisin using the Envirologix AQ 309 BG, AQ 304 BG and AQ 411 BG kits, respectively.

Beginning with the *2020/2021 Harvest Report*, ochratoxin A, T-2 and zearalenone were added to the list of mycotoxins analyzed to complement the information provided by the aflatoxin, DON and fumonisin test results. The testing for these three additional mycotoxins was continued in this year's *Harvest Report*. EnviroLogix AQ 113 BG, AQ 314 BG, and AQ 412 BG quantitative test kits were used for ochratoxin A, T-2 and zearalenone, respectively. The EnviroLogix AQ 113 BG quantitative test kit used for the ochratoxin A tests has a limit of detection of 1.5 parts per billion. The ochratoxin A was extracted with a grain buffer (five milliliters per gram). For the T-2 tests, the AQ 314 BG quantitative test kit has a limit of detection of 50 parts per billion. T-2 was extracted with water (five milliliters per gram). The EnviroLogix AQ 412 BG quantitative test kit used for the zearalenone tests has a limit of detection of 50 parts per billion. The zearalenone test uses a 25-gram test portion of corn. The zearalenone was extracted using a reagent of EB17 extraction powder and a water buffer of 75 milliliters per sample.

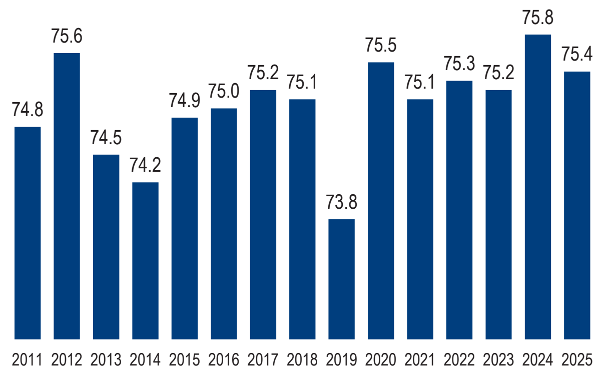
A. GRADE FACTORS AND MOISTURE

Since 2011, the Council's *Harvest Quality Reports* have provided clear, concise and consistent information about each U.S. crop's quality entering international merchandising channels. This series of quality reports have used a consistent and transparent methodology to allow for insightful comparisons across time. The following charts display the average U.S. Aggregate from all *Harvest Reports* for each quality factor tested to provide historical context to this year's results.

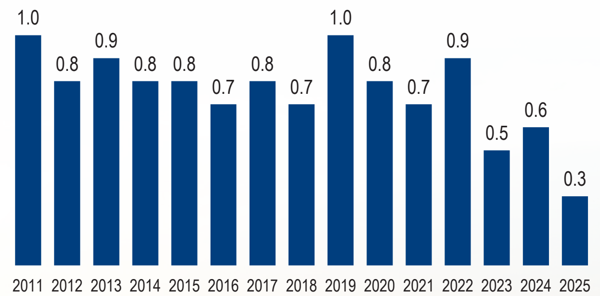
Test Weight (lb/bu) by Crop Year



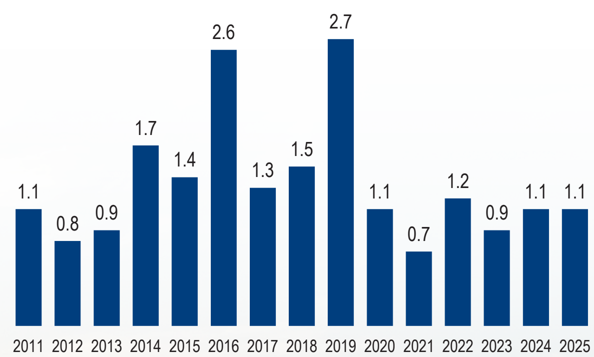
Test Weight (kg/hl) by Crop Year



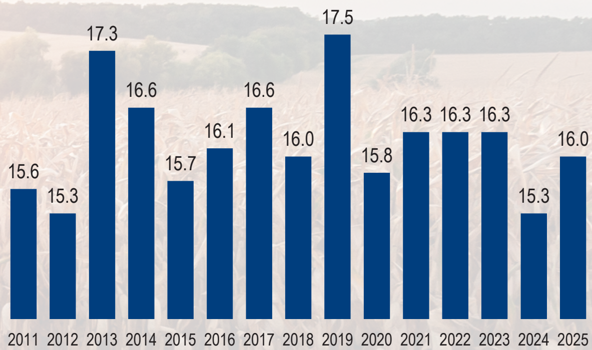
BCFM (%) by Crop Year



Total Damage (%) by Crop Year

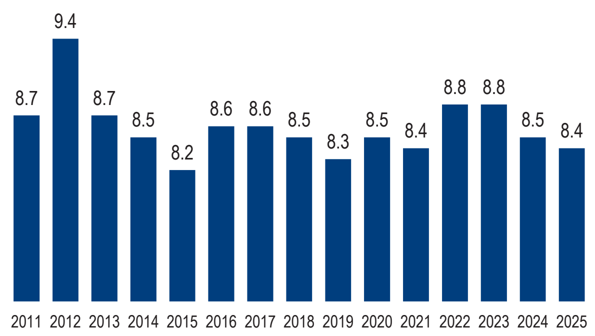


Moisture (%) by Crop Year

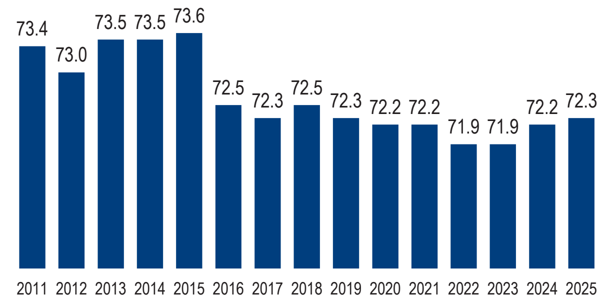


B. CHEMICAL COMPOSITION

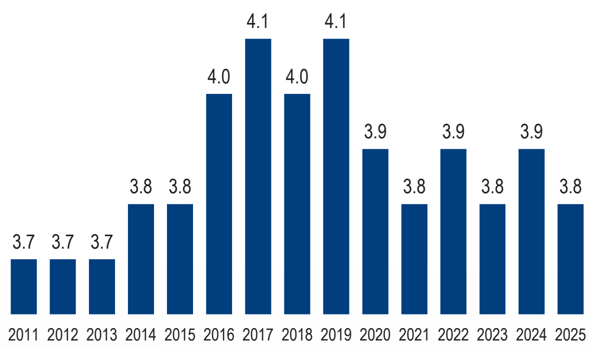
Protein (Dry Basis %) by Crop Year



Starch (Dry Basis %) by Crop Year



Oil (Dry Basis %) by Crop Year



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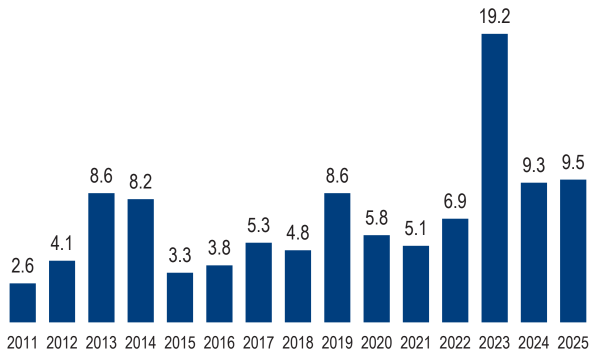
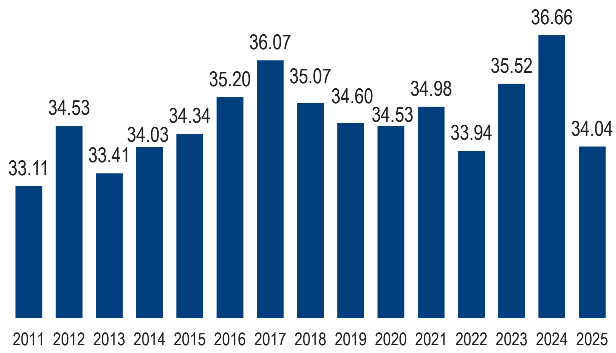
C.PHYSICAL FACTORS

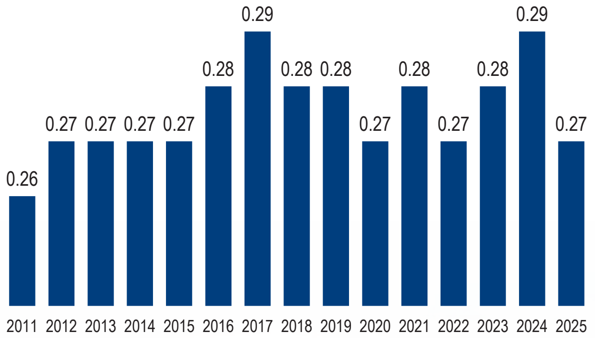
Stress Cracks (%) by Crop Year



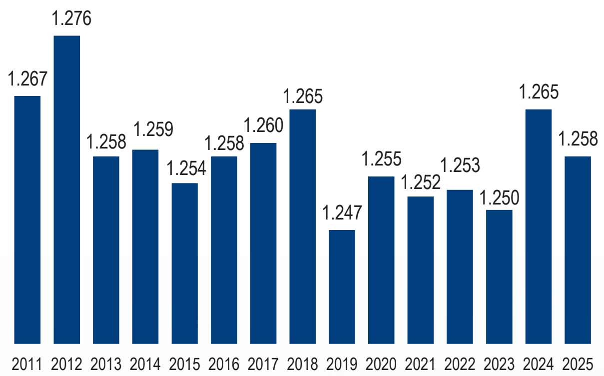
100-Kernel Weight (g) by Crop Year



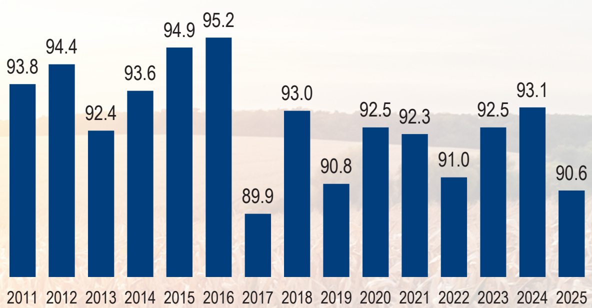
Kernel Volume (cm³) by Crop Year



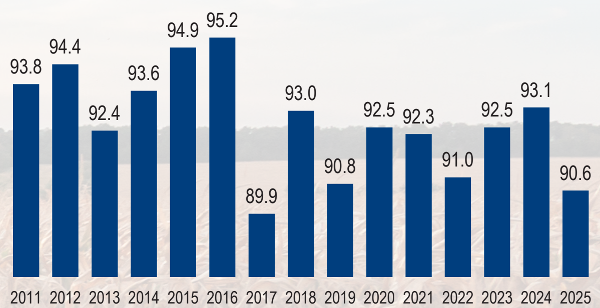
True Density (g/cm³) by Crop Year



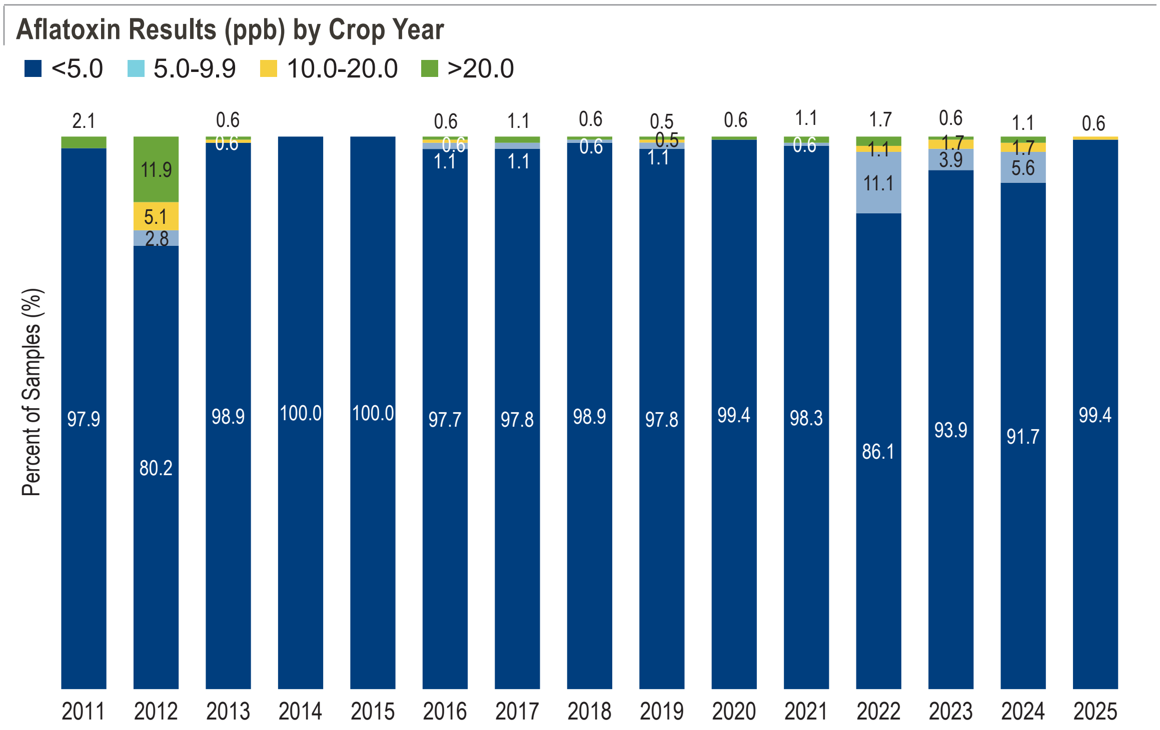
Whole Kernels (%) by Crop Year

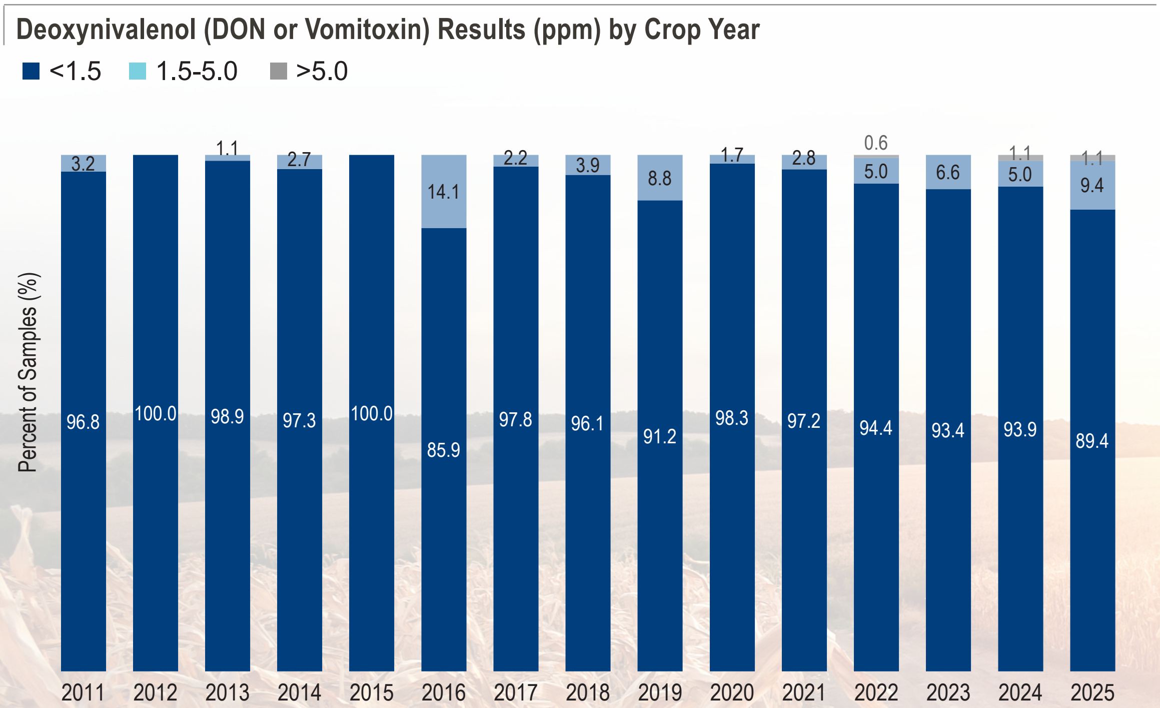


Horneous Endosperm (%) by Crop Year



D.MYCOTOXINS





U.S. CORN GRADES AND GRADE REQUIREMENTS

		Maximum Limits of		
		Damaged Kernels		
Grade	Minimum Test Weight per Bushel (Pounds)	Heat Damaged (Percent)	Total (Percent)	Broken Corn and Foreign Material (Percent)
U.S. No. 1	56.0	0.1	3.0	2.0
U.S. No. 2	54.0	0.2	5.0	3.0
U.S. No. 3	52.0	0.5	7.0	4.0
U.S. No. 4	49.0	1.0	10.0	5.0
U.S. No. 5	46.0	3.0	15.0	7.0

U.S. Sample Grade is corn that: (a) Does not meet the requirements for the grades U.S. Nos. 1, 2, 3, 4, or 5; or (b) Contains stones with an aggregate weight in excess of 0.1% 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, or animal filth in excess of 0.2% in 1,000 grams; or (c) Has a musty, sour, or commercially objectionable foreign odor; or (d) Is heating or otherwise of distinctly low quality.

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

U.S. AND METRIC CONVERSIONS

Corn 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

ABBREVIATIONS

cm^3 =	cubic centimeters
g =	grams
g/cm^3 =	grams per cubic centimeter
kg/hl =	kilograms per hectoliter
lb/bu =	pounds per bushel
ppb =	parts per billion
ppm =	parts per million

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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