How CBOT Futures React to WASDE

A Fifteen-Year Event Study of USDA Report-Day Price Reactions, 2010 to 2026

Prepared by Dan Maycock, Dataplai *July 10, 2026*

Executive summary

This study quantifies how Chicago Board of Trade futures have reacted to the monthly USDA World Agricultural Supply and Demand Estimates (WASDE) over the last fifteen years. It covers every report from July 2010 through April 2026, a total of 181 reports, for the five liquid CBOT markets with continuous history across the period: corn, Chicago (soft red winter) wheat, soybeans, soybean meal, and soybean oil. For each report the price reaction is measured settle to settle in the most active contract as of report day, across three windows: the report day itself (prior settlement to report-day settlement), and the cumulative move through the first and second sessions afterward. Prices are official CME settlements. As a check on the engine, the computed report-day moves reproduce AgResource's own tracked July Chicago-wheat reactions within 0.1 to 0.4 percentage points across all thirteen years in the sample, and the largest measured reactions line up with the historically recognized report shocks.

Four conclusions stand out. First, WASDE is a real but moderate market event: the average report moves grain futures 1.1 to 1.7 percent on the day, with a big move (over three percent) occurring on roughly one report in seven for corn and wheat. Second, impact is highly seasonal and concentrated in the yield-discovery and final reports. Third, the market absorbs most of the news immediately: about two thirds of the eventual two-day move is complete by the report-day settlement. Fourth, the raw balance sheet only weakly predicts the reaction, because price trades against expectations rather than against last month's number, which is the empirical case for pairing WASDE with a pre-release survey in a real-time product.

Key findings

1. Average report-day move: Chicago wheat 1.71%, corn 1.52%, soybean meal 1.32%, soybeans 1.27%, soybean oil 1.14%. Distributions are right skewed, so the typical (median) reaction is smaller: 1.46% wheat, 1.27% corn, 0.92% soybeans.
2. Seasonality dominates. Ranked by average report-day move, the biggest report types are August (first survey yield, 1.97%), October (FSA and harvest, 1.81%), the January final (1.77%), and July (1.71%). February and December, which carry little new crop information, are the quietest at under one percent.
3. A large move (over three percent) hits corn on 14% of reports and wheat on 14%, while a major move (over five percent) is rare at 2 to 4 percent of reports. Reactions are close to symmetric, with wheat slightly bear-skewed (43% of reactions positive).
4. The market is efficient: 71% of corn's eventual two-day move and 72% of soybeans' is complete by the report-day settlement. What follows is mixed: wheat tends to keep trending (59% continuation), while the soybean complex tends to fade (meal 42%, oil 41%).
5. The month-over-month ending-stocks revision carries the correct sign but loose correlation once the one-in-four unchanged reports are excluded: corn r=-0.18 (hit 53%), soybeans r=-0.20 (56%), wheat r=-0.46 (72%). The market prices the surprise versus expectations, not the prior month.

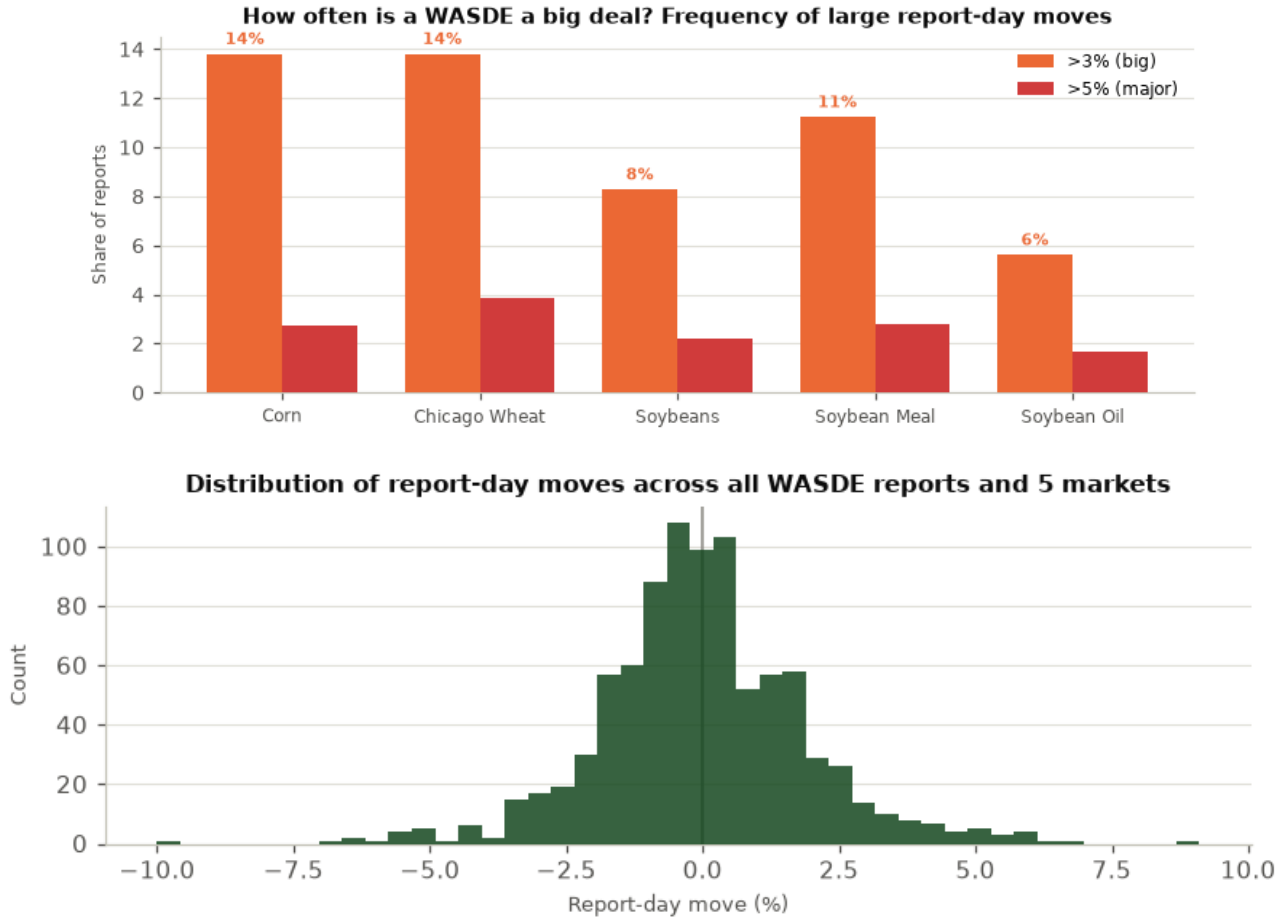
1. The reaction, quantified

Across 181 reports and five markets, the average WASDE is a moderate event. Chicago wheat is the most reactive of the grains at an average report-day move of 1.71 percent, followed by corn at 1.52 percent. Soybeans are the calmest of the row crops at 1.27 percent, reflecting a balance sheet that is usually less prone to abrupt revision than the wheat or corn sheets. Every distribution is right skewed: the mean runs 1.2 to 1.5 times the median because a small number of large crop reports pull the average up. The median is the better guide to a routine report, and the standard deviation and maximum below show how fat the tails are.

Commodity	Reports	Mean |move|	Median	Std dev	Max move	Share > 3%
Corn	181	1.52%	1.27%	2.00%	6.39%	14%
Chicago Wheat	181	1.71%	1.46%	2.20%	9.10%	14%
Soybeans	181	1.27%	0.92%	1.76%	6.51%	8%
Soybean Meal	178	1.32%	0.90%	1.87%	6.75%	11%
Soybean Oil	178	1.14%	0.87%	1.64%	10.00%	6%

The practical question for a merchandiser or risk manager is how often a WASDE is genuinely disruptive. The chart below answers it: a move greater than three percent, large enough to matter for margin and hedge timing, occurs on about one report in seven for

corn and wheat and one in twelve for soybeans. A move greater than five percent, the kind that resets the trading range, is genuinely rare, arriving on two to four percent of reports. In plain terms, most WASDEs are non-events, and the calendar tells you in advance which ones are worth defending against.

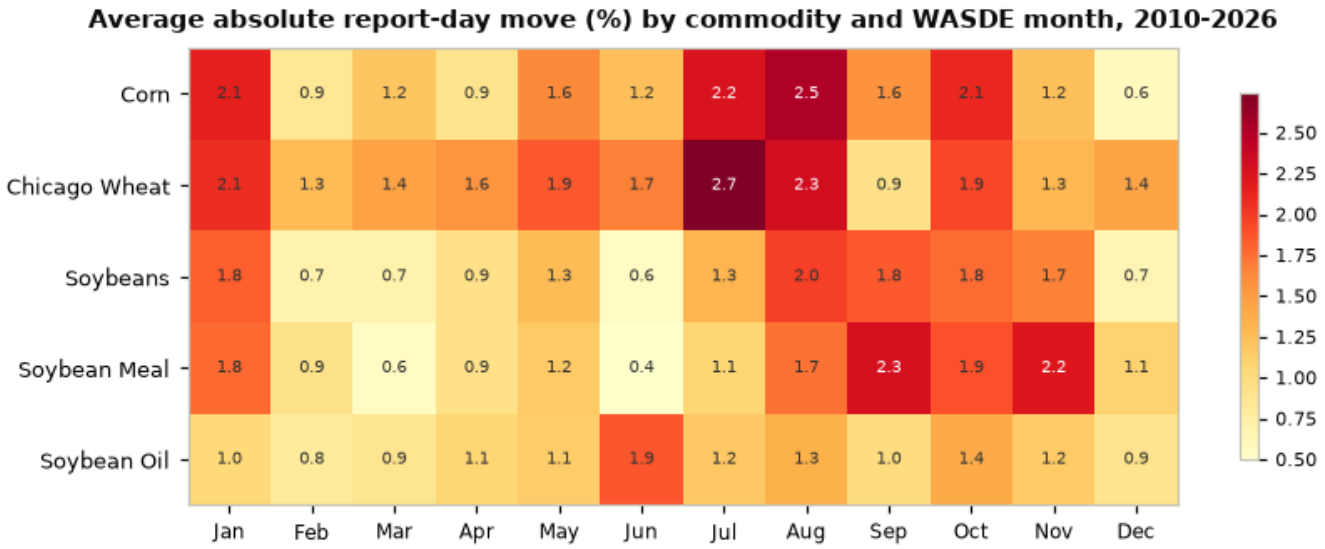


The full distribution of report-day moves is centered near zero and roughly symmetric, with visible fat tails on both sides. The symmetry is worth noting: WASDE is not systematically bullish or bearish, and the up-share sits between 43 and 51 percent across the five markets. Wheat leans slightly to the downside, consistent with a fifteen-year period in which the US wheat balance sheet was more often revised looser than tighter.

2. Seasonality and the report calendar

Not all WASDEs are created equal. The reports that fold in fresh, survey-based crop data move markets several times more than the winter reports that mostly re-shuffle known quantities. The heatmap below shows the average report-day move for each market in each calendar month, and the ranking is exactly what an agronomic calendar would predict.

The mechanism is straightforward. For much of the marketing year USDA carries production and yield on trend-based or model-based placeholders that the trade can anticipate, so the balance sheet changes little and the market has already priced it. The high-impact reports are the ones that replace those placeholders with hard survey data: the August Crop Production report is the first to use farmer and field observations for new-crop yield, and the January report closes the book on the crop with final production and the December 1 Grain Stocks count. Those are the moments when genuinely new information enters the balance sheet, and the price reaction scales with the information content rather than with the calendar month itself. A quarterly Grain Stocks release landing alongside the WASDE, as in January, June, and September, adds a second independent surprise and amplifies the reaction further.



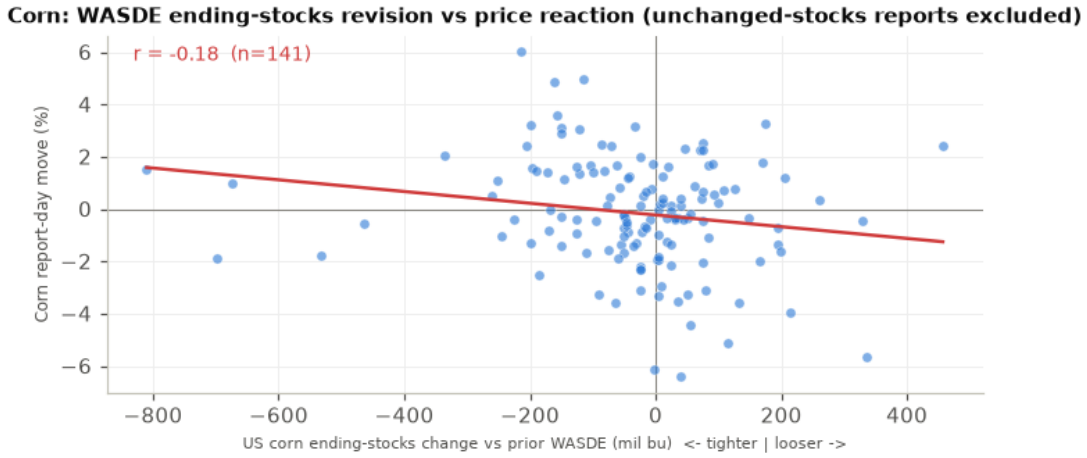
The August report carries the first survey-based yield estimates for corn and soybeans and is the single most powerful report of the year, averaging a 2.5 percent corn move. September and October update those yields as harvest advances and the Farm Service Agency certified-acreage data lands, and both remain high-impact. The January report is the final word on the prior crop, pairing final Crop Production with the Grain Stocks report, and it reliably produces a large reaction. The July report, the subject of today's release, reconciles winter wheat production and June acreage and is the biggest wheat report of the year at a 2.7 percent average. The quiet months are February, March, and December, which carry little genuinely new information.

Report (by USDA content)	Reports	Avg move
Aug first survey yield	16	1.97%
Oct FSA + harvest	14	1.81%
Jan Final (Crop Prod + Grain Stocks)	14	1.77%
Jul (winter wheat + acreage reconcile)	16	1.71%
Sep survey update	16	1.51%
May first new-crop S&D	15	1.42%
Jun Acreage + Grain Stocks	15	1.14%
Winter/Spring plantings + Mar Stocks	15	0.96%

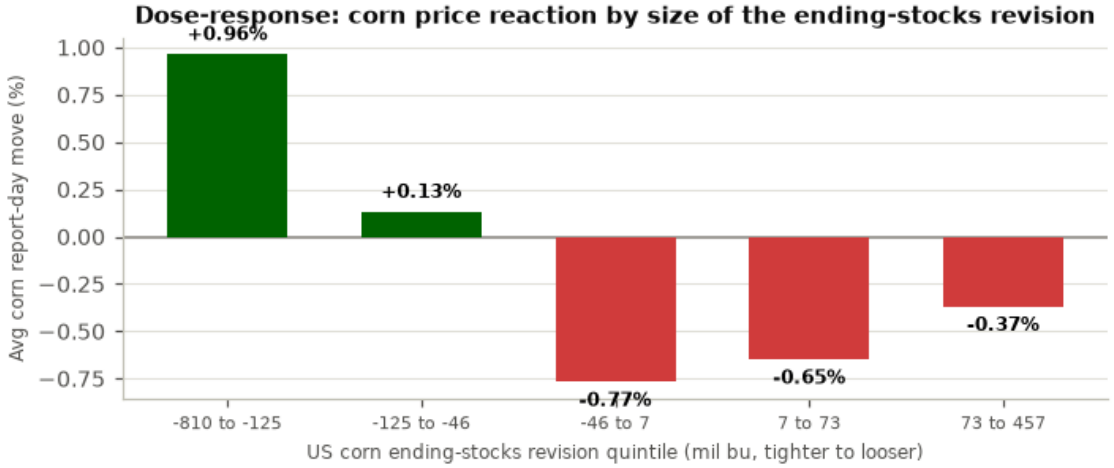
3. The surprise question: why the balance sheet is not enough

A natural hypothesis is that the report-day move should track the change in the balance sheet: a bigger ending-stocks number is bearish, a smaller one is bullish. The data supports the sign but not the strength. After excluding the roughly one report in four that leaves ending stocks unchanged, which are not a directional signal, a larger carryout than the prior month is followed by a lower price on 53 percent of corn reports, 56 percent of soybean reports, and 72 percent of Chicago wheat reports. The correlations are correctly signed but loose, from -0.18 in corn to -0.46 in wheat.

It is worth being precise about what those numbers mean for a trader. A correlation of -0.18 in corn explains only about three percent of the variance in the report-day move; even the stronger -0.46 in wheat accounts for roughly a fifth. In other words, knowing the direction of the monthly stocks revision tells you a little, but the majority of the reaction is driven by everything the revision leaves out: how the number compared with the trade guess, the production and demand components beneath the carryout, and the world balance sheet released in the same report. The scatter below shows the relationship for corn, with the negative slope visible but the cloud wide. This is the central diagnostic of the study, and it reframes what a WASDE model should actually forecast.



The dose-response chart makes the same point more constructively. Sorting corn reports into quintiles by the size of the ending-stocks revision, the average price reaction moves monotonically from the tightest to the loosest revisions, in the expected direction. The signal is real; it is simply noisy, because a single month's revision is a weak proxy for the true surprise.

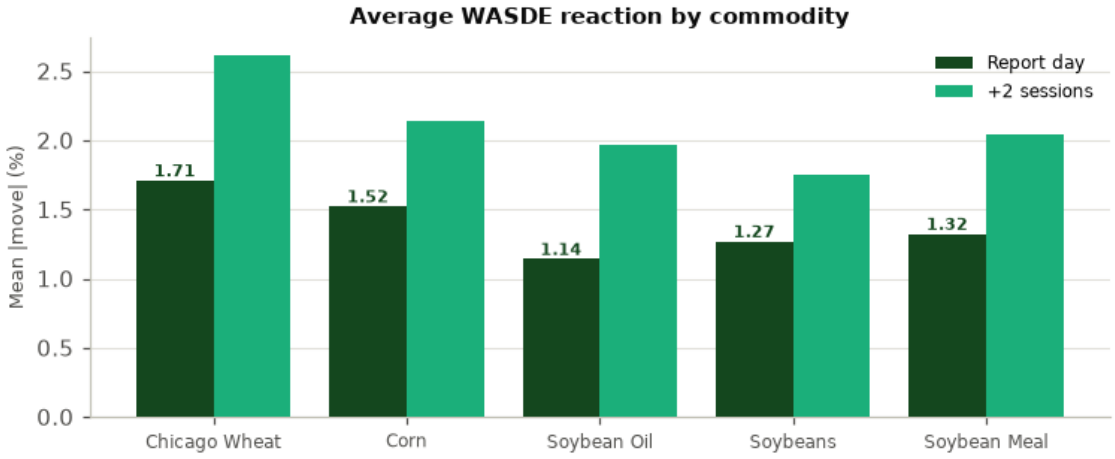


The reason the balance sheet alone underperforms is that the market prices each number against trade expectations, not against last month. The clearest illustration in the sample is the August 2012 report. In the depth of that summer's drought, USDA cut the corn carryout by 533 million bushels, one of the most bearish supply revisions on record, and yet December corn settled lower on the day because the drought was already fully in the price. A month-over-month model reads that report as violently bullish; the market read it as old news. This is the empirical foundation for pairing the WASDE balance sheet with a pre-release expectations survey, as AgResource does in Bill Tierney's wheat work, so that the real-time letter measures the surprise against what the trade already expected rather than against the prior month.

4. How fast the market absorbs the report, and what follows

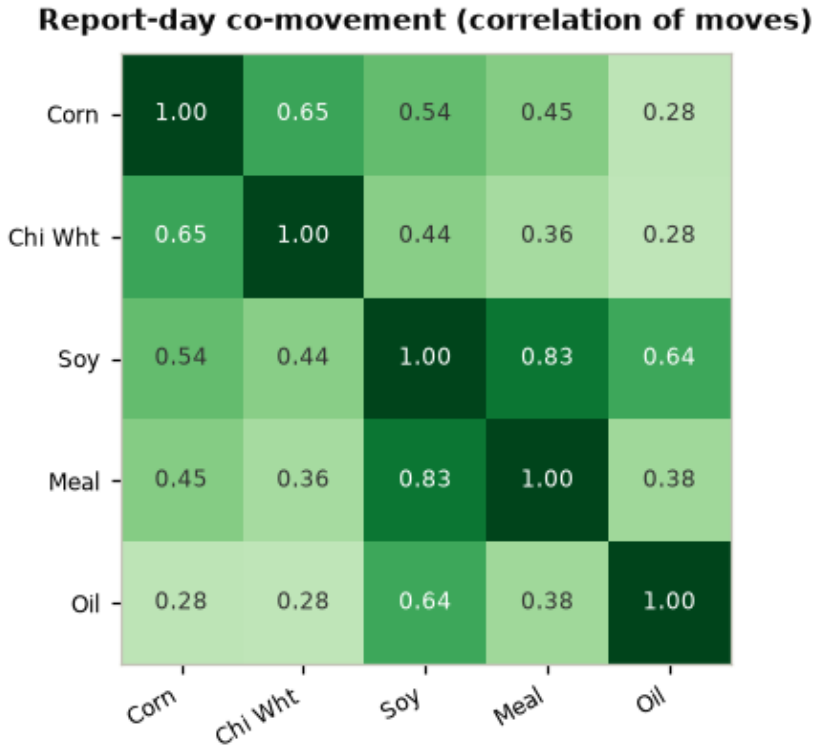
WASDE is released intraday, and the market does not wait. Between 58 and 72 percent of the eventual two-session move is already complete by the report-day settlement, with corn and soybeans the fastest to absorb the news and soybean oil the slowest. This is a strong statement of informational efficiency: the bulk of the price discovery happens in the two to three hours between the noon release and the close.

What happens over the next two sessions differs by market and is the more tradeable observation. Chicago wheat tends to keep moving in the report-day direction, continuing 59 percent of the time, a mild momentum effect. The soybean complex does the opposite: meal and oil reverse more often than they continue (42 and 41 percent continuation), a mild fade. Corn is close to a coin flip. For a hedger this means the report-day close is a reasonable execution point in corn and soybeans, whereas in wheat there is a modest edge to waiting for the follow-through, and in the soy products there is a modest edge to fading the initial reaction. The averages below show both the report-day and the two-session magnitude.



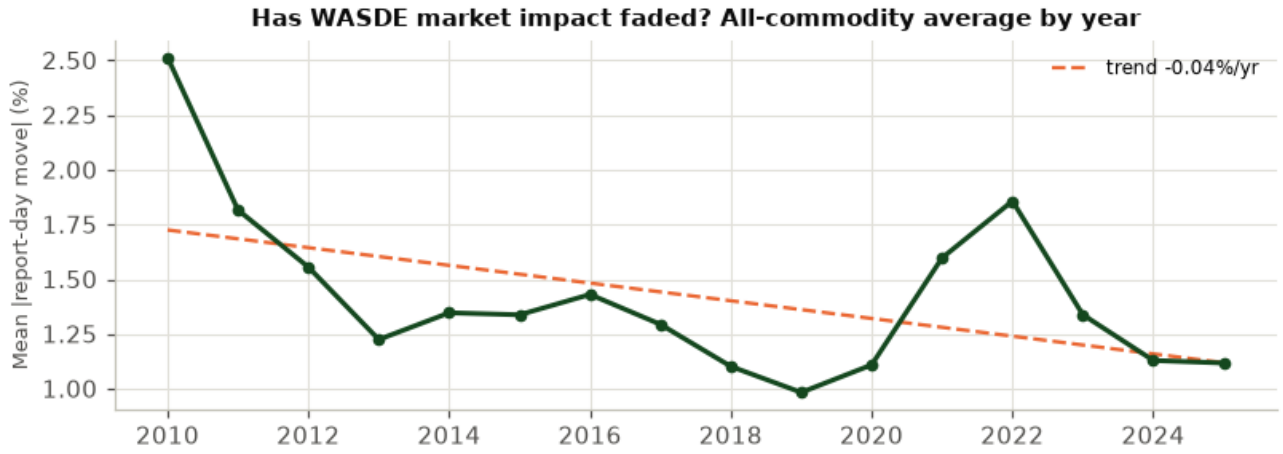
5. Cross-market behavior on report days

WASDE is a joint release: corn, soybeans, and wheat balance sheets all print together, and their prices move together on the day. The correlation of report-day moves is highest between corn and Chicago wheat at 0.65 and between corn and soybeans at 0.54, reflecting the shared macro and demand drivers and the acreage competition among the row crops. Soybean oil is the most independent at a 0.28 correlation with corn, because it trades increasingly on biofuel policy and the vegetable-oil complex rather than on the grain balance sheet. The practical implication is that WASDE risk is not diversifiable within a grain book: a bearish corn surprise usually drags wheat and beans with it, so hedges should be sized against the joint move rather than each market in isolation.



6. The fifteen-year record

The year-by-year record shows that WASDE impact is episodic rather than trending. The 2010 average is lifted by the October limit-up report, and 2022 stands out for the war-driven volatility in corn and wheat. Between those episodes, the average report-day move drifts modestly lower, but the fitted trend of -0.04 percent per year is small and dominated by the two event years. It is fair to say WASDE impact has been broadly stable, punctuated by supply shocks, rather than fading.



Year	N	Mean |move|	Max	Year	N	Mean |move|	Max
2010	30	2.51%	9.1%	2018	60	1.1%	4.7%
2011	60	1.82%	5.1%	2019	55	0.98%	5.7%
2012	60	1.56%	6.1%	2020	60	1.11%	3.4%
2013	55	1.23%	4.6%	2021	59	1.6%	10.0%
2014	60	1.35%	4.9%	2022	60	1.86%	6.6%
2015	58	1.34%	6.3%	2023	60	1.34%	4.2%
2016	60	1.43%	5.9%	2024	57	1.13%	4.1%
2017	60	1.29%	4.1%	2025	45	1.12%	3.2%

Biggest clean report-day reactions on record

Date	Commodity	Move
2021-06-10	Soybean Oil	-10.0%
2010-10-08	Chicago Wheat	+9.1%
2010-10-08	Soybean Meal	+6.8%
2022-03-09	Chicago Wheat	-6.6%
2010-10-08	Soybeans	+6.5%
2022-07-12	Corn	-6.4%
2015-08-12	Soybeans	-6.3%
2012-01-12	Corn	-6.1%
2022-09-12	Soybean Meal	+6.0%
2010-10-08	Corn	+6.0%

7. Today's report in context

Today's report, released July 10, 2026, falls in one of the higher-impact months of the year. Over the fifteen-year sample the July WASDE moved corn by an average of 2.2 percent and Chicago wheat by 2.7 percent on the day, with soybeans quieter at 1.3 percent. July is the biggest wheat report of the year because it reconciles the winter-wheat harvest and the June acreage estimate. A normal July reaction is therefore on the order of two to three percent in corn and wheat. Once today's session settles and the price archive updates, which currently lags by a few days, the live reaction can be placed directly against this distribution to judge whether the market treated the report as routine or as a genuine surprise.

8. Methodology, self-review, and limitations

Measurement. The reaction is measured settle to settle in the most active (highest-volume) contract as of report day, holding that single contract across the window so that no move is contaminated by a contract roll. Prices are official CME settlements (Databento statistics), and the trading calendar is derived from the data so that weekends and holidays are handled correctly.

Validation. The engine reproduces AgResource's independently tracked July Chicago-wheat report-day moves within 0.1 to 0.4

points across all thirteen years, and the largest measured reactions match the historically recognized shocks (October 2010, the 2022 war reports).

A correction made during review. An earlier cut of this analysis reported a sub-50 percent directional hit rate for the ending-stocks signal. That was an artifact of the roughly one report in four that leaves stocks unchanged, which mechanically counted as directional misses. Excluding those reports restores the correct, above-coin-flip result shown in Section 3.

Daily price limits truncate the largest moves. On October 8, 2010 corn locked at the daily limit; the report-day settlement shows a 6.0 percent move but the reaction continued to 11.5 percent by the second session. Report-day figures are therefore a floor on the true shock for the very largest reports.

The wheat surprise mapping is approximate. Chicago soft red winter wheat is measured against the all-wheat US balance sheet, which is dominated by hard red winter, so the wheat surprise linkage is directional rather than exact, and the wheat surprise sample is smaller.

Coverage. The five markets studied have continuous 2010 to 2026 CME (Databento GLBX) history. KC wheat, cotton, and livestock enter the archive only in mid-2023; spring wheat (MGEX) and sorghum are not in the CME dataset, so all are excluded from the fifteen-year study. Five thin-contract roll artifacts exceeding twelve percent in a single day were removed.

The accompanying file WASDE-CBOT-Response-Data.csv contains every report, commodity, and window used in this study (899 rows) for independent review, including the prior settlement, report-day settlement, the report-day, plus-one, and plus-two moves, and the ending-stocks revision where available.