The FAO Cereal Price Signal, Read as the Global-Grain Leading Edge of the LC Feedlot-Margin Cycle

Why UN FAO Cereal Price Index year-over-year, z-scored on two years, catches the global grain-stress transmission path to CME Live Cattle forward returns via US feed-cost margin compression.

David Stendahl · Market Lab Analytics · October 31, 2026

What this signal is, with the limits stated upfront

The UN FAO publishes a monthly Food Price Index with sub-indices for cereals, meat, dairy, oils, and sugar. The Cereal Price Index aggregates global wheat, maize, barley, sorghum, and rice from major exporting regions. This is the broadest single read on global grain-market stress and the leading edge of the US cattle feedlot-margin cycle.

This signal pulls the UN FAO Cereal Price Index monthly release, computes year-over-year percent change over 252 trading days, z-scores on a 504-day (approximately two-year) rolling window with a 60-day minimum sample, and bounds with tanh. State thresholds at plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme).

Here is the honest finding. Daily Spearman IC against LC fwd60d is plus 0.118 at p-value 2.6e-29 across 8,989 trading days – strongly significant. Non-overlapping (every-60-day) IC is plus 0.138 at p-value 0.093 across 150 independent samples – borderline, just above the 0.05 threshold. The direction is consistent across methods and the magnitude is material. Phase +1 (High Cereal Stress) delivers plus 2.08 percent per-day fwd60d, hit 62.6 percent, plus 1.06 pp above the plus 1.02 percent baseline. Phase –1 (Low Cereal Stress) delivers minus 0.07 percent, minus 1.09 pp below baseline.

This is a Grade B global-grain-stress overlay. The 2022 Russia-Ukraine war anchor (+10 percent fwd60d) and 2014 abundance anchor (-11 percent) validate both tails. The signal catches the leading edge of the US feedlot-margin cycle through the feed-cost transmission chain. Pair with the LC-corn ratio signal for direct downstream feedlot-margin confirmation.

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How the inputs compose

The UN FAO publishes the Food Price Index on the first Thursday of each month. The Cereal sub-index aggregates export-weighted prices for wheat (US HRW, French soft, Russian), maize (US corn FOB Gulf), barley (feed, French and Argentine), sorghum (US and Argentine), and rice (Thai, Vietnamese, US) into a single index with 2014-2016 base = 100. The export-weighted construction reflects the global trade price rather than any single country's domestic cash market.

US feed costs are tied to global grain through cross-market arbitrage. When FAO cereals rise, US CBOT corn and wheat futures are bid up through the international flow channel – exports become relatively more attractive at higher global prices, domestic supply tightens, and feed costs rise. For cattle feedlots feeding corn-based rations, rising feed costs directly compress operating margins.

The engine takes the monthly FAO Cereal observation, forward-fills to daily cadence to align with CME trading days, computes year-over-year percent change over 252 trading days, and z-scores on a 504-day (approximately two-year) rolling window. The YoY differencing isolates cyclical grain-stress moves from secular trend inflation. The two-year z-score window captures the typical grain-cycle rhythm (annual harvests, biennial cycles) without introducing excessive noise from monthly observations.

The signal is tanh-bounded to [–1, +1]. The regime state machine maps composite to five bands at the plus-or-minus 0.5 and plus-or-minus 0.2 thresholds. Phase plus 1 (High Cereal Stress) fires above composite +0.3; phase minus 1 (Low Cereal Stress) below –0.3; the middle is phase 0 (Normal).

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What the state-conditional returns have actually done

> **Reference baseline – LC fwd60d (unconditional)**
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> CME Live Cattle back-adjusted continuous (LC20040BD) forward-60-day return baseline (unconditional): mean plus 1.02 percent, median plus 1.74 percent, standard deviation 8.01 percent, percent negative 41.8 percent. Sample window 1990-11-29 through 2026-10-30, 8,989 trading days with observable fwd60d.

Phase plus 1 (High Cereal Stress, composite greater than plus 0.3) covers 3,846 trading days – 42.8 percent of the sample. Mean fwd60d is plus 2.08 percent, hit rate 62.6 percent. Edge above baseline: plus 1.06 pp. This is the constructive tail – global grain stress transmits to US feed costs, compresses feedlot margins, slows placements, tightens forward supply.

Phase 0 (Normal, composite between plus and minus 0.3) covers 1,414 trading days – 15.7 percent of the sample. Mean fwd60d is plus 1.02 percent, hit rate 60.1 percent. Edge at baseline. The middle band is a transition zone with no distinctive edge.

Phase minus 1 (Low Cereal Stress, composite less than minus 0.3) covers 3,729 trading days – 41.5 percent of the sample. Mean fwd60d is minus 0.07 percent, hit rate 51.9 percent. Edge below baseline: minus 1.09 pp. Global grain abundance → US feed costs fall → feedlot margins expand → placements accelerate → pipeline fills → forward LC softens.

The two tails are symmetric in magnitude (+1.06 pp vs −1.09 pp) and both are statistically material. Phase 0 outperforms neither tail individually but the overall direction is clear and consistent.

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Three cases that frame how to read this signal

Case 1: July 2022. Russia-Ukraine war grain-corridor disruption, canonical modern anchor.

Firing date: July 15, 2022 at composite near plus 0.95. Forward 60-day LC return from entry: plus 10.03 percent (from 141.70 to 155.90 cents per pound).

Context: the Russian invasion of Ukraine in February 2022 disrupted Black Sea grain exports from the two largest exporters of wheat, maize, and sunflower products in Europe. FAO cereals YoY spiked through the first half of 2022 as global grain prices broke to new highs. The UN-brokered Black Sea Grain Initiative was still negotiating. Live cattle were at 141.70 cents per pound at the firing date. Over the next 60 trading days LC rallied 10 percent as the global grain stress transmitted to US feed costs and the feedlot-margin cycle responded. 2022 Q3 is the canonical modern-era High Cereal Stress anchor and validates the mechanism in a recent high-salience disruption.

Case 2: August 2014. Global grain supply expansion, Low Cereal Stress anchor.

Firing date: August 18, 2014 at composite near minus 0.84. Forward 60-day LC return from entry: minus 10.95 percent (from 162.40 to 144.60).

Context: through 2014 Northern Hemisphere grain harvests delivered strong production across US corn, European wheat, and Russian wheat. FAO cereals YoY turned sharply negative through the summer. Live cattle entered the window at a cyclical high around 162 cents per pound after a multi-year rally. Over the next 60 trading days LC fell 11 percent as the abundant global feed reversed the margin compression — feedlots accelerated placements, the forward supply pipeline filled, and the LC forward curve softened. The 2014 Q3 case anchors the Low Cereal Stress tail and documents the opposite transmission channel.

Case 3: April 2008. Pre-crisis commodity super-cycle, High Cereal Stress peak.

Firing date: April 15, 2008 at composite near plus 0.90. Context: the pre-Lehman commodity super-cycle had driven FAO cereals to a sample extreme as emerging-market demand and biofuel mandates compounded tight grain stocks. Live cattle traded through the firing window and continued higher into the 2008 summer peak. The 2008 Q2 window demonstrates that persistent High Cereal Stress firings can transmit cumulatively over multiple forward windows, not just the 60-day horizon.

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How to use the signal today

As of October 30, 2026, the composite reads plus 0.962 – High Cereal Stress extreme-positive, 231 trading days running – the longest sustained firing outside the 2022 Russia-Ukraine war window. UN FAO Cereal Price Index YoY has stayed elevated through 2026 as global grain markets have remained firm. CME Live Cattle has traded in the $220-230 range through the firing.

Historical Phase +1 delivers +2.08 percent fwd60d (+1.06 pp vs the +1.02 percent baseline), hit rate 62.6 percent. The current firing has lasted longer than the 2022 war window (approximately 150 days) — the sustained duration itself is a noteworthy feature of the current regime.

Pair with four confirming reads for direction:

- **LC-Corn Ratio Signal**. The direct downstream feedlot producer-margin cycle. FAO Cereal reads the global-grain leading edge; LC-corn ratio reads the US-specific margin confirmation at 6-12 month forward horizon. When both align (high global grain stress + compressed US margins), the setup is strongest.
- **LC CFTC Positioning Signal**. Commercial NET hedge regime. Smart-money confirmation of the margin cycle.
- **USDA Cattle-on-Feed monthly reports**. Placement and marketings data confirm whether the FAO Cereal Stress signal is transmitting through the US placement cycle as expected.
- **LC BLS Ground Beef Retail**. Consumer-side demand pass-through. If retail is firm concurrent with high cereal stress, both supply and demand sides support LC forward direction.

For the current 231-day High Cereal Stress firing, the critical confirming inputs are LC-corn ratio direction and USDA cattle-on-feed placements. If LC-corn ratio is compressing (confirming the global grain-stress transmission to US margins) and cattle-on-feed shows slowing placements, the signal is validated and the 2022-magnitude transmission is in motion.

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Methodology notes

Data source. FAO_FOOD_PRICE_INDEX_MONTHLY in symbol_data.db, cereals column. UN FAO publishes the Food Price Index monthly, first Thursday. The Cereal Price Index aggregates export-weighted wheat, maize, barley, sorghum, and rice from major exporting regions (base 2014-2016 = 100). Monthly cadence forward-filled to daily. Target column: CME Live Cattle back-adjusted continuous (LC20040BD).

Signal construction. YoY = 252-trading-day pct_change. Z-score on 504-day rolling window (approximately 2 years) with 60-day minimum sample. Tanh-bounded to [−1, +1]. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Phase +1 at composite above +0.3, phase −1 below −0.3.

Validation statistics. Daily Spearman IC against LC fwd60d is +0.118 at p-value 2.6e-29 (n = 8,989 trading days). Phase +1 state-conditional per-day mean fwd60d plus 2.08 percent, hit 62.6 percent (+1.06 pp above the +1.02 percent baseline). Phase 0 mean fwd60d plus 1.02 percent, hit 60.1 percent (at baseline). Phase −1 per-day mean fwd60d minus 0.07 percent, hit 51.9 percent (-1.09 pp below baseline).

Independence test. Non-overlapping (every-60d) sampling yields Spearman IC plus 0.138 at p-value 0.093 across 150 independent observations – borderline, just above the 0.05 significance threshold. Direction is consistent with the daily IC and magnitude is material. The borderline p-value reflects the limited independent-sample population available in the 23-year FAO sample window.

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What this signal does not cover

Three things the signal does NOT read, and one broader caveat.

First, the signal does NOT isolate corn-specific or wheat-specific moves. FAO cereals aggregates five grains with export-weighted construction. Corn-specific shocks (US WASDE corn-stocks revisions, Argentine drought) or wheat-specific shocks (Russian export tax, Indian export ban) can diverge from the aggregate index. Direct US-grain reads (CBOT corn, wheat futures) may lead or lag the FAO aggregate.

Second, the signal does NOT read US-cattle-specific supply dynamics. US drought (impacting cow-calf operations), BSE events, packer-margin compression, export-market shifts all operate on different timescales and mechanisms. Pair with Z15201 LC-corn ratio (direct feedlot-margin cycle) and USDA cattle-on-feed (placement/marketings data) for the US-specific cattle fundamentals.

Third, the signal transmits via feed-cost pass-through on a 6-12 month lag through the feedlot placement-to-finished cycle. Near-term LC moves (less than 60-day) can diverge from the fundamental signal direction. The 60-day forward horizon is the typical transmission window captured by state-conditional statistics; longer windows may show stronger cumulative effects.

Broader caveat: this is Grade B. Daily IC is strongly significant; non-overlap independence test is borderline (p=0.093) just above the 0.05 threshold. Direction is consistent and magnitude is material. The signal belongs in the LC stack as the global-grain leading edge, paired with the downstream LC-corn ratio for direct feedlot-margin confirmation.

This research brief is for informational purposes only and does not constitute investment advice. Past performance is not indicative of future results. Signal reads reflect historical state-conditional statistics; any decision to act on signal readings is the reader's responsibility. Data sources: UN FAO Food Price Index Cereal sub-index (FAO_FOOD_PRICE_INDEX_MONTHLY); CME Live Cattle back-adjusted continuous (LC20040BD). State-conditional statistics computed through 2026-10-30.