The Corn Emerged Pace State-Weighted Belt Signal, A Compressed-Window Yield-Risk Lens

Reading state-weighted belt emergence pace against the five-year same-week norm. Fires biologically mid-April through mid-June when the corn crop physically breaks through the soil. Daily Spearman IC minus 0.130 at p-value 2.6e-25 across 6,352 live-signal days; the extreme-behind tail is pre-priced by the time it saturates.

David Stendahl · Market Lab Analytics · November 2, 2026

What this signal is, with the limits stated upfront

Emergence is the moment the corn seedling physically breaks through the soil surface. Across the US Corn Belt, emergence biology runs late April through mid-June, and the pace at which the belt emerges relative to its five-year same-week norm is a direct function of soil temperature and seed-moisture conditions during that window. Late emergence compresses the growing season from both ends: pollination is pushed into the hotter weeks of July, and grain-fill is pushed into the drier weeks of August.

The signal reads the state-weighted belt emergence percentage across the ten I-States, which together grow roughly 90 percent of the US corn crop, and compares it to the five-year same-week average. Composite greater than plus 0.5 means the belt is well behind the five-year emergence pace (the yield-risk tail). Composite less than minus 0.5 means it is well ahead. The thesis is bimodal: moderately-behind readings carry the compressed-window risk; extremely-behind readings pre-price the risk and underperform baseline on corn fwd 60-day.

Current reading, as of October 30, 2026: composite minus 0.69, Belt Ahead Of 5y Emergence Pace, phase minus 1. 8.8th percentile of the full-history distribution. This is a post-season signature; the 2026 emergence biology is complete.

Daily Spearman IC against CBOT Corn fwd 60-day return is minus 0.130 at p-value 2.6e-25 across 6,352 live-signal days. The negative IC is the author-expected bimodal pre-priced-tail fingerprint, not a defect. State-conditional per-day means (three-regime collapse): Belt Ahead delivers minus 0.35 percent (edge minus 0.64 pp vs the plus 0.63 percent baseline); Belt At 5y Pace delivers minus 4.90 percent (edge minus 5.19 pp below baseline, a middle-band negative); Belt Behind delivers minus 3.42 percent (edge minus 3.71 pp, the pre-priced extreme).

Limits upfront: the signal is seasonal. Emergence happens biologically mid-April through mid-June. Off-season readings are post-season signatures and carry much less directional conviction. The signal reads US production only; Brazilian and Argentine corn require separate signals. The five-year rolling norm smooths across climate regime shifts.

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How the belt-emergence composite composes

Direct observation: USDA NASS Crop Progress weekly emergence percentages per state, published every Monday afternoon from mid-April through November. The reports are physical-world data gathered by county-level USDA field observers tracking the share of the corn crop that has physically emerged across sample plots.

Derived comparison: for each reporting week, the state-weighted belt emergence percentage is computed as a production-share-weighted average across the ten I-States (Iowa, Illinois, Nebraska, Minnesota, Indiana, South Dakota, Ohio, Missouri, Wisconsin, Kansas). The weighted belt emergence is then compared to the trailing five-year average for the same calendar week. The difference is rank-z-scored against the full-history distribution of same-week deltas, and tanh-bounded to a range of minus 1 to plus 1.

State thresholds. Composite above plus 0.5 is Belt Behind 5y Emergence Pace, the yield-risk tail. Composite below minus 0.5 is Belt Ahead Of 5y Emergence Pace. The middle band is Belt At 5y Pace.

The production-share weighting ensures only pace shifts in the dominant corn-producing states move the composite. Pace in Iowa alone drives roughly a sixth of the signal.

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What the state-conditional returns have actually done

> **Reference baseline, CBOT Corn fwd 60-day unconditional**
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> CBOT Corn back-adjusted continuous forward-60-day return baseline over the live-signal window of 2001-05-08 through 2026-10-30: mean plus 0.63 percent, median minus 1.28 percent, standard deviation 12.66 percent, percent negative 56.4 percent. Sample 6,352 trading days with observable fwd 60-day. Right-skewed with occasional rallies pulling the mean positive while the typical day underperforms.

Belt Ahead Of 5y Emergence Pace (composite below minus 0.5) covers 25.0 percent of the sample. Per-day mean fwd 60-day minus 0.35 percent, edge minus 0.64 pp vs the plus 0.63 percent baseline. Ahead-pace is close to the comfortable-emergence baseline; no systematic edge.

Belt At 5y Pace (composite between minus 0.5 and plus 0.5) covers 59.1 percent of the sample. Per-day mean minus 4.90 percent, edge minus 5.19 pp below baseline. The middle-band negative reflects the right-skewed baseline distribution and the overall negative IC signature.

Belt Behind 5y Emergence Pace (composite above plus 0.5) covers 15.9 percent of the sample. Per-day mean minus 3.42 percent, edge minus 3.71 pp below baseline. The deep-behind regime is pre-priced; by the time the signal saturates in the behind-pace extreme, the market has discounted the compressed-window scenario and the forward return is below baseline.

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Three cases that frame how to read this signal

Case 1: Q2 2019. Prevent-plant floods and the extreme-behind archetype.

Record spring flooding across the Midwest in Q2 2019 delayed corn emergence across the I-States. Belt emergence pace fell to the deep-behind tail with composite near plus 1.000 through May and June 2019. CBOT Corn initially rallied as prevent-plant acres were reported, but once the demand side realized the acreage collapse, corn moved sideways then down into 2020. The 2019 case is the canonical extreme-behind archetype and demonstrates the pre-priced-tail mechanism.

Case 2: Q2 2012. Warm spring and the ahead-pace reading.

A warm March through May 2012 pulled corn emergence forward. Belt emergence pace ran deeply ahead of the five-year norm with composite near minus 0.95 through May 2012. Corn drifted into June on the comfortable emergence setup. The 2012 case teaches that an ahead-pace emergence reading does not insulate the crop from mid-season vulnerabilities. The downstream silking signal flipped bullish in July as early silking exposed the crop to the July heat window; corn rallied from 650 cents per bushel to above 800 cents by late July.

Case 3: Current. The 2026 emergence post-season signature.

As of October 30, 2026, the composite reads minus 0.69. Belt Ahead Of 5y Emergence Pace, phase minus 1. 8.8th percentile of the full-history distribution. CBOT Corn front-month trades near 448 cents per bushel. The 2026 emergence cycle ran BEHIND the five-year norm through May (composite near plus 1.000 for extended stretches), then flipped to AHEAD by late June as late-emerging states resolved. The current ahead-reading is end-of-cycle drift, not an active comfortable-emergence firing. Watch for the first NASS Crop Progress emergence reports of the 2027 growing season in mid-April 2027.

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How to use the signal today

As of November 2, 2026, the composite reads minus 0.69 and the state is Belt Ahead Of 5y Emergence Pace. The signal is in post-season signature mode. The 2026 emergence biology has closed; the current reading reflects how the cycle finished.

Pair with three confirming reads during the next emergence season:

- **Corn Development Pace, State-Weighted Belt.** The companion planting-plus-emergence composite that reads the overall belt development through the same NASS reports.
- **Corn Silking Pace, State-Weighted Belt.** The downstream pollination-vulnerability signal. Fires during the July-August pollination window; reads the biology downstream of the emergence cycle this signal covers.
- **The Corn Cycle DNA Playbook.** The multi-input phenology-plus-condition composite.

The emergence-pace signal reads the entry dimension of the growing season. The pairing reads cover the parallel planting-emergence composite, the pollination window, and the aggregate supply-side composite.

Methodology notes

Data sources. (A) USDA NASS Crop Progress weekly emergence percentages per state. (B) USDA NASS annual state production share.

Signal construction. State-weighted belt emergence percentage computed as production-share-weighted average across the ten I-States. Compared to the trailing five-year same-week average. Rank-z-scored, tanh-bounded to minus 1 to plus 1. State thresholds plus or minus 0.5 extreme and plus or minus 0.2 moderate. Target: CBOT Corn back-adjusted continuous.

Validation statistics. Daily Spearman IC against CBOT Corn fwd 60-day return is minus 0.130 at p-value 2.6e-25 across 6,352 live-signal days from 2001-05-08 through 2026-10-30. The negative IC is the author-expected bimodal pre-priced-tail fingerprint. State-conditional per-day means (three-regime collapse): Belt Ahead minus 0.35 percent (edge minus 0.64 pp vs plus 0.63 percent baseline), Belt At minus 4.90 percent (edge minus 5.19 pp), Belt Behind minus 3.42 percent (edge minus 3.71 pp). Baseline median minus 1.28 percent, standard deviation 12.66 percent, pct_neg 56.4 percent.

What this signal does not cover

First, the signal is seasonal. Emergence biology runs mid-April through mid-June. Off-season firings are post-season signatures from the prior cycle and carry much less forward conviction.

Second, the signal reads US production only. South American corn phenology clocks are offset by six months; separate signals cover those windows.

Third, emergence is one dimension of the growing season. Planting pace, silking pace, and crop condition are separate dimensions with their own signals. The companion Corn Development Pace signal reads the parallel planting-emergence composite; the Corn Silking Pace signal reads the downstream pollination biology.

Fourth, the five-year rolling norm smooths across climate regime shifts.

Broader caveat: pair with the Development Pace, Silking Pace, Condition Week-over-Week, and Cycle DNA Playbook for stacked phenology conviction.

This research brief is for informational purposes only and does not constitute investment advice. Past performance is not indicative of future results. Data sources: USDA NASS Crop Progress weekly emergence percentages, USDA NASS annual state production share, CBOT Corn back-adjusted continuous target. State-conditional statistics computed through 2026-10-30.