The KC PSD Brazil Arabica Production YoY Signal: USDA Supply Anchor for Arabica

Why USDA PSD Brazil Arabica production year-over-year delivers a 3.29 pp directional spread on Arabica forward 60-day returns across 36 years.

David Stendahl · Market Lab Analytics · November 5, 2026

The signal with the limits stated upfront

Three things the reader must know before the rest of this brief lands.

First, the full-distribution daily Spearman information coefficient against Arabica forward 60-day returns is plus 0.125 at p-value 2.7e-32 on a sample of 8,947 daily observations spanning 1990 through 2026. Strongly significant on the 36-year window; this is one of the highest-conviction supply signals in the KC library.

Second, Phase +1 (Supply Tightening) delivers plus 2.04 percentage points above baseline across 4,082 trading days (45.6 percent of sample) and Phase –1 (Supply Loose) delivers minus 1.25 percentage points across 3,970 days (44.4 percent). 3.29 pp directional spread between the extremes.

Third, the phase pattern is non-monotone around Phase 0. The middle bucket (On Trend) delivers minus 3.77 pp edge across a 10 percent share. The extreme buckets carry the directional information; readers must not treat On Trend as neutral.

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The thesis: USDA PSD Brazil Arabica production as a systemic supply read

Brazil produces roughly 40 percent of global Arabica. The USDA Production Supply and Distribution database for Coffee is the cleanest systemic supply read on the Arabica market and the single most-watched annual Arabica supply number. The USDA Foreign Agricultural Service publishes the Coffee World Markets and Trade semiannual report with the June release as the primary annual update and the December release as supplementary.

Year-over-year changes in the Brazil Arabica production forecast are directly interpretable as supply regime signals. When the forecast falls year-over-year the supply is tightening and KC prices tend to

rally over the following quarters. When the forecast rises YoY the supply is loose and KC underperforms.

The signal takes USDA PSD Brazil Arabica production, computes year-over-year percent change, z-scores on a rolling window, inverts so production decline reads positive composite, and tanh-bounds. 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. Target: ICE US Coffee C first-nearby back-adjusted close.

Historical window: USDA PSD Coffee series from 1960; engine runs from 1990 onward with 504-bar warmup.

What the firings have actually done

Computed over 8,947 daily observations post-warmup from 1990 onward. The baseline Arabica forward 60-day return is mean plus 2.32 percent and median plus negative 0.96 percent across the live-window sample.

> **Baseline Arabica forward 60-day return:** mean plus 2.32 percent / median minus 0.96 percent across the live-window sample.
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> **Daily Spearman IC (fwd 60d):** plus 0.125, p-value 2.7e-32, N equals 8,947. Strongly significant.
>
> **Non-overlap IC (60-day step):** plus 0.134, p-value 0.10, N equals 150. Sign-consistent, borderline significant.
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> **Phase-conditional forward 60-day Arabica returns:** Phase +1 (Supply Tightening, 4,082 days / 45.6 pct): plus 4.36 percent, edge plus 2.04 pp. Phase 0 (On Trend, 895 days / 10.0 pct): minus 1.46 percent, edge minus 3.77 pp. Phase −1 (Supply Loose, 3,970 days / 44.4 pct): plus 1.07 percent, edge minus 1.25 pp.
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> 3.29 pp directional spread between Phase +1 and Phase −1. Non-monotone around Phase 0.

Three findings. The daily IC is strongly significant on the 36-year window. Phase +1 and Phase −1 are the directionally meaningful buckets with 3.29 pp spread. Phase 0 (On Trend) delivers a surprising minus 3.77 pp edge across the 10 percent sample share; this is non-monotone and the signal must be read strictly on the extremes.

Three cases that frame how to read the signal

The canonical anchors are the 2021-2022 Arabica frost rally, the 2014-2015 Brazil drought rally, and the 2018-2019 record-crop collapse.

Case 1: The 2021-2022 Arabica frost rally

Supply Tightening firing anchored the 2021-2022 Arabica rally after the July 2021 Minas Gerais frost collapsed the Brazilian Arabica production forecast. USDA PSD revised Brazil Arabica production down materially in the October 2021 release. Composite held in Phase +1 territory through the full rally into 2022; KC traded from roughly $1.20 per pound pre-frost to above $2.40 at the 2022 peak.

Case 2: The 2014-2015 Brazil drought rally

Supply Tightening firing anchored the 2014-2015 Arabica rally after the 2014 Brazil drought materially reduced the Brazilian Arabica crop forecast. USDA PSD revised production estimates down in the June 2014 release. Composite held in Phase +1 territory through 2014-2015 consistent with the rally that took KC from roughly $1.00 per pound to above $2.10 at the peak.

Case 3: The 2018-2019 record-crop collapse

Supply Loose firing through 2018-2019 after USDA PSD confirmed a record Brazilian Arabica crop forecast in the June 2018 release. Composite held in Phase −1 territory through 2018-2019 consistent with sub-baseline Arabica forward returns and the cycle-low pricing regime that took KC below $1.00 per pound.

How to use this signal today

Composite is currently reading plus 0.778 in the Supply Tightening band. The HEALTHY phase began October 2026, 25 trading days ago. USDA PSD Brazil Arabica production forecast ran meaningfully below the trailing year-over-year trend in the most recent release consistent with supply tightening.

Pair with the following for stacked conviction: ENSO dipole (long-lead weather structural), ENSO dry season weight (weather magnitude), CHIRPS Brazil rainfall (short-lead weather), Cecafe realized price (transaction confirmation), and CFTC COT (positioning). This supply anchor is the systemic read; pair with short-lead confirmation for timing.

Reader rule: Supply Tightening firings flag bullish regimes with Arabica strength historically following at 60-day horizon. Supply Loose firings flag bearish regimes. On Trend is a surprisingly weak bucket; use strictly on the extremes.

Methodology

Data source: USDA Foreign Agricultural Service Production Supply and Distribution database, Brazil Arabica production series from the Coffee World Markets and Trade semiannual release. Computation: year-over-year percent change in forecast, z-scored on a rolling window, inverted so production decline reads positive composite, tanh-bounded. 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. Target: ICE US Coffee C first-nearby back-adjusted close.

Historical window: USDA PSD Coffee series from 1960; engine runs from 1990 onward with a 504-bar warmup for the rolling z-score.

Validation computed on 8,947 post-warmup daily observations. Daily Spearman IC plus 0.125 at p-value 2.7e-32 across 8,947 observations, strongly significant on 36-year window. Phase +1 per-day forward return plus 4.36 percent (plus 2.04 pp above plus 2.32 percent baseline). Phase −1 per-day forward return plus 1.07 percent (minus 1.25 pp below baseline). 3.29 pp directional spread. Non-overlap IC at 60-day sampling plus 0.134 at p-value 0.10 across 150 samples, borderline significant.

What this signal does not cover

The signal does not cover short-lead weather conditions (see CHIRPS Brazil rainfall and SPEI Minas Gerais drought). It does not cover non-Brazilian Arabica supply (Colombia, Central America, Ethiopia

— see country-specific PSD signals). It does not cover Robusta supply (see LRC Vietnam soil moisture). USDA PSD annual cadence means composite ffills forward between June and December releases; the signal is a slow-moving regime anchor.

Disclaimer

This brief and the signal it describes are for informational purposes only and do not constitute investment, legal, tax, or trading advice. Hypothetical or simulated performance results have certain inherent limitations. Unlike an actual performance record, simulated results do not represent actual trading. Also, since the trades have not been executed, the results may have under- or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. The phase-conditional forward-return stats reported above are a full-sample unconditional measurement. Readers should consult a licensed financial professional before taking any trading action.

References

USDA Foreign Agricultural Service, Coffee World Markets and Trade, semiannual report, fas.usda.gov/data/coffee-world-markets-and-trade.

USDA PSD Online database, production.psd.fas.usda.gov.

ICE Futures US, Coffee C first-nearby back-adjusted continuous contract (ticker KC), end-of-day settlement.