The Texas Panhandle Rainfall Signal, a Regional Weather Magnitude Overlay on Live Cattle

Why CHIRPS Texas Panhandle precipitation, sign-flipped and z-scored on two years, catches cattle supply pipeline disruption through either drought-forced feedlot placements OR wet-pasture retention – both tails bullish forward LC.

David Stendahl · Market Lab Analytics · November 1, 2026

What this signal is, with the limits stated upfront

The Texas Panhandle is the largest US cattle feedlot region, housing roughly 25 percent of national on-feed inventory. Precipitation conditions in the Panhandle affect feedlot operations directly (mud, water availability, pen conditions) and indirectly (regional pasture quality drives placement timing).

This signal reads CHIRPS satellite precipitation data over the Texas Panhandle cattle-feedlot region, SIGN-FLIPS (dry conditions read positive composite), z-scores on a 504-day rolling window with 60-day minimum sample, and bounds with tanh. State thresholds at plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme). Daily CHIRPS release cadence.

Daily Spearman IC against LC fwd60d is plus 0.107 at p-value less than 1.0e-5 across 9,049 trading days – significant daily. Non-overlapping (every-60-day) IC is plus 0.012 at p-value 0.89 – not significant. Phase +1 (Dry) delivers +2.56 percent fwd60d at 62 percent hit rate, +1.54 pp above the +1.02 percent baseline. Phase –1 (Wet) delivers +2.85 percent fwd60d at 64 percent hit rate, +1.83 pp above baseline. Phase 0 (Normal) delivers minus 0.18 percent fwd60d, –1.20 pp below baseline.

This is a Grade B magnitude-not-direction weather overlay. BOTH extreme tails deliver positive forward returns above baseline via supply-pipeline disruption mechanisms. The Normal zone (57 percent of sample) underperforms because the pipeline is in equilibrium.

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How the dual-tail mechanism composes

Dry Panhandle (positive composite) triggers forced feedlot placements. Drought collapses regional pasture conditions, forcing ranchers to move cattle off pasture into feedlots sooner than planned.

Short-term feedlot inventory spikes, but the net effect is a compression of the near-term feeder-cattle supply pipeline. Historical response is bullish-LC forward.

Wet Panhandle (negative composite) triggers pasture retention. Heavy regional rainfall improves pasture conditions. Ranchers hold cattle on pasture rather than placing into feedlots. Feedlot placements compress. The near-term supply pipeline tightens through retention. Historical response is also bullish-LC forward.

Normal Panhandle (composite within plus/minus 0.2) is where precipitation tracks baseline. Pasture conditions, feedlot operations, placement timing all in equilibrium. Forward returns compress to below baseline because there is no supply-disruption catalyst.

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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, 9,049 trading days with observable fwd60d.

Phase plus 1 (Dry Panhandle, composite greater than plus 0.3) covers 2,968 trading days – 32.8 percent of the sample. Per-day mean fwd60d is plus 2.56 percent, hit rate 62 percent. Edge above baseline: plus 1.54 pp.

Phase 0 (Normal, composite between plus and minus 0.3) covers 5,147 trading days – 56.9 percent of the sample. Mean fwd60d is minus 0.18 percent, hit rate 48 percent. UNDERPERFORMS baseline by 1.20 pp.

Phase minus 1 (Wet Panhandle, composite less than minus 0.3) covers 934 trading days – 10.3 percent of the sample. Per-day mean fwd60d is plus 2.85 percent, hit rate 64 percent. Edge above baseline: plus 1.83 pp.

Both tails outperform baseline. Normal zone underperforms. The signal fires in roughly 43 percent of sample combined.

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Three cases that frame how to read this signal

Case 1: June 2011. Dry Panhandle – 2011 Texas drought.

Firing window: 2011 at composite above +0.90. The worst Texas drought since the 1950s dust-bowl era collapsed Panhandle pasture conditions. Ranchers were forced to move cattle to feedlots or liquidate herds. The 2011-2012 drought triggered the largest US herd liquidation in decades. Forward LC rallied through Q3-Q4 2011 as the near-term supply pipeline compressed. Canonical Dry Panhandle anchor.

Case 2: August 2005. Wet Panhandle – pasture retention.

Firing date: August 12, 2005 at composite –0.81. Forward 60-day LC return: +16.09 percent (from $79.08 to $91.80).

Context: heavy summer rainfall through 2005 improved Panhandle pasture conditions materially. Ranchers held cattle on pasture rather than placing into feedlots. Forward LC rallied 16 percent as the retention tightened the near-term supply pipeline. Canonical Wet Panhandle anchor.

Case 3: July 2003. Dry Panhandle – pre-BSE drought.

Firing date: July 18, 2003 at composite +0.85. Forward 60-day LC return: +35.47 percent (from $72.95 to $98.83).

Context: Panhandle precipitation was deeply below baseline through summer 2003. Live cattle rallied 35 percent before the December 2003 BSE discovery collapsed exports. The 2003 case documents the Dry Panhandle signal firing bullish in a window later disrupted by exogenous event.

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How to use the signal today

As of November 1, 2026, the composite reads minus 0.338 – Wet Panhandle moderate-negative, 25 trading days running. Texas Panhandle rainfall has firmed above the 2-year baseline. CME Live Cattle trades the $220-230 range.

Historical Phase –1 delivers +1.83 pp above baseline at 64 percent hit rate – modestly constructive via pasture-retention mechanism.

Pair with four confirming reads for direction:

- **LC-Corn Ratio Signal (Z15201)**. Grade A LC fundamental anchor on supply.
- **LC Term Structure Curve (Z3260)**. Strongest-IC directional signal.
- **LC US Beef-Belt Drought (Z3727)**. Multi-state drought coverage.
- **LC Cattle Inventory Semi-Annual (Z15208)**. Longest-lead structural supply.

Texas Panhandle rainfall is a focused regional overlay. Treat as a weather-regime read alongside the broader drought and supply signals.

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Methodology notes

Data source. CHIRPS (Climate Hazards Group InfraRed Precipitation with Station data) satellite precipitation over the Texas Panhandle cattle-feedlot region.

Signal construction. Rolling precipitation anomaly z-scored on 504-day window with 60-day minimum sample. SIGN-FLIPPED so dry conditions read positive composite. Tanh-bounded to [–1, +1]. State thresholds plus or minus 0.2 (moderate) and plus or minus 0.5 (extreme).

Validation statistics. Daily Spearman IC against LC fwd60d is +0.107 at p 0 (n = 9,049). Phase +1 state-conditional per-day mean fwd60d plus 2.56 percent (+1.54 pp above baseline). Phase 0 mean minus 0.18 percent (-1.20 pp below baseline). Phase –1 per-day mean plus 2.85 percent (+1.83 pp above baseline).

Independence test. Non-overlapping (every-60d) sampling yields Spearman IC +0.012 at p-value 0.89 – not significant.

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What this signal does not cover

First, this is a magnitude-not-direction signal. Composite sign does not drive forward direction; magnitude of deviation does.

Second, Texas Panhandle is one feedlot region. National cattle supply integrates across all regions.

Third, non-overlapping independence test is non-significant (p=0.89).

Broader caveat: Grade B regional weather magnitude overlay. Belongs as a focused regional weather read alongside the broader US beef-belt drought signal and the LC fundamental stack.

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: CHIRPS satellite precipitation; CME Live Cattle back-adjusted continuous (LC20040BD). State-conditional statistics computed through 2026-10-30.