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El Niño and
Agriculture: Weather
Shocks, Supply Risk
and Market Pricing

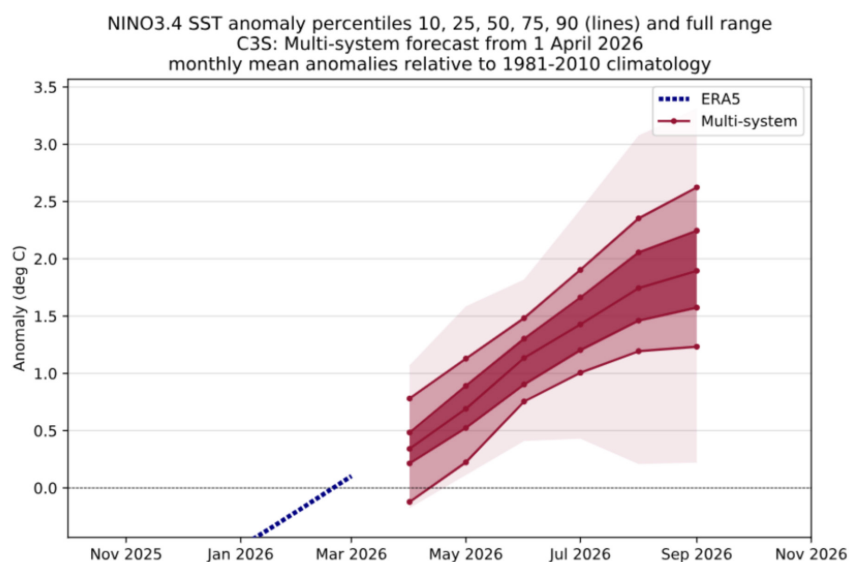


Marex Agriculture

Introduction to El Niño

The El Niño–Southern Oscillation (ENSO) is a naturally recurring climate pattern in the tropical Pacific Ocean that has a global influence on temperature and precipitation patterns. El Niño is the warm phase of ENSO. During an El Niño event, ocean temperatures in the central and eastern tropical Pacific become warmer than average, while low-level surface winds weaken or may even reverse direction. El Niño events are an important source of predictability for weather and climate impacts around the world.

An El Niño event is declared when sea surface temperature (SST) anomalies in the central-eastern Pacific Ocean exceed $+0.5^{\circ}\text{C}$ for several consecutive months and the atmosphere responds to this warming. Confidence has been growing in recent months for an El Niño to develop later this year. Recent model guidance indicates that a strong El Niño, with anomalies above 1.5°C , or even a very strong event above 2.0°C , could develop, however there is still uncertainty in the potential strength. In NOAA's April ENSO update, the probability of El Niño emerging in May–July was raised to 61%, up from 45% in the March update. NOAA places the likelihood of El Niño developing this year at over 90% and gives a one in four chance of a very strong El Niño developing by the end of the year.

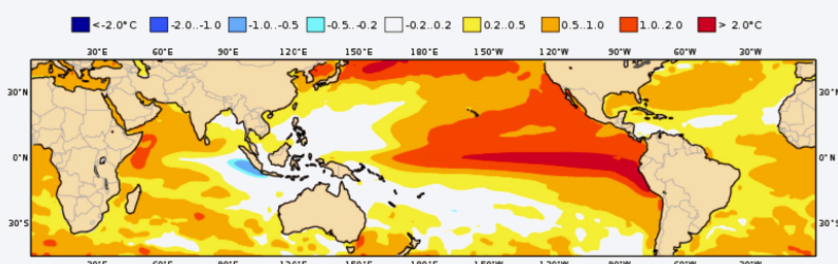


Source: C3S climate.copernicus.eu Produced by the Copernicus Climate Change Service, using Copernicus data.

July – September sea surface temperature anomaly forecast from the C3S multi-system ensemble:

The ensemble mean anomaly forecast shows an El Niño SST pattern along the equatorial Pacific with warmer than normal SSTs in the eastern Pacific, off the coast of South America which extend into the central-eastern equatorial Pacific.

C3S multi-system seasonal forecast ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA/ECCC/BOM
Mean forecast SST anomaly JAS 2026
Nominal forecast start: 01/04/26
Variance-standardized mean





Cocoa

Major production areas impacted: Ecuador and Indonesia. Ecuador's rise as a core producer has increased global sensitivity

El Niño intensity: Over the past 55 years, all strong/very strong events have delivered below trend global production. We estimate global shortfalls versus trend at 4.0%, 6.5% and 8.8% for weak, strong and very strong El Niño events respectively

Timing of impact: Impact is greatest if El Niño coincides with main crop setting and development (Apr–Jul)

Global stock sensitivity: Recent surpluses (~640kt cumulative across 24/25–25/26) imply stocks to grind near 46% by the end of the 25/26 season, cushioning the production risk.

Impact on futures contract: The most recent and strongest analogous year is 23/24 where we saw similar timing and intensity of El Niño forecasted. Poor crop performance and extreme price action followed. However, at this time IVC forward sales were far in excess of what they are now and the resulting origin defaults were a leading factor in the aggressive price action. Given the recent stock rebuild and timing of impacts, there may be a pricing event to account for the forward risks in the medium term, especially if this stimulates short covering from the large spec short position, but potential tightness if we have poor crop yields, will likely be into 2027.

Overall sensitivity rating: 8/10

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Coffee

Major production areas impacted: Dryness in Colombia, Central America, Indonesia and Vietnam. Brazil impact is inconsistent, split between wetter south and drier north. The last 'Super El Niño' was in 2015. The Brazil crops in 2014/15 and 2015/16 were low production.

El Niño intensity: On balance, El Niño poses a negative risk to global coffee production but the extent of production losses, if any, can vary and are not necessarily related to the strength of the event.

Timing of impact: The timing of the impact is crucial. Current climatic forecasts for May – Aug point to a small wet anomaly in Arabica-growing regions of Brazil. This can hamper harvesting and poses a risk to cup quality but will not impact quantity.

Global stock sensitivity: Destination stocks are currently about 40% below the long-term average. Anything that delays the transfer of coffee from origin to destination has an out-sized impact on spreads and price. It is possible that the prospect of a strong El Niño will encourage producers to hold back sales.

Impact on futures: The 26/27 global surplus (about 11.5m bags) derives overwhelmingly from a record Brazil crop that starts harvesting imminently. El Niño in 2026 will not reduce the size of this crop.

Overall sensitivity rating: 2/10

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Cotton

Major production areas impacted: Highest risk in India and Pakistan (~25% of global output) via monsoon delays, heat stress and pests. West Africa faces similar pressure. Australia, though irrigated, remains water constrained. Brazil may avoid early disruption, but delayed soybean harvest can push safrinha cotton into a weaker window later in the cycle. U.S. outcomes are typically supportive, with improved soil moisture and lower abandonment. Xinjiang remains least exposed under irrigation.

El Niño intensity: Cotton's production response is difficult to isolate because yield trends are distorted by seed improvements and changing input intensity. Even so, since 2000, strong/super El Niño years have consistently produced below trend global yields despite yield improvements.

Timing of impact: Timing matters more than headline intensity. June onset would disrupt Indian planting; persistence into late 2026 raises flowering/boll risks. U.S. benefits depend on early moisture; Brazil risk comes via delayed soybean harvest.

Global stock sensitivity: Cotton is emerging from five years of stock build, with nearby spreads still near full carry, high U.S. unshipped volumes, and Brazil able to release export supply. But El Niño now sits alongside other tightening forces: fertilizer risk, firmer man-made fibre costs, reduced Xinjiang planting, and a broader cyclical reduction in oversupply. Stocks may have absorbed El Niño in isolation, but not as easily in combination with these pressures.

Impact on futures contract: Right now the market is beginning to tighten on a variety of reasons. It's hard to segregate what is down to El Niño risk from other factors. The larger risk is that lower output in India and Pakistan increases import demand just as supply from Australia, Brazil, West Africa and the U.S. becomes less comfortable. That raises the likelihood of tighter export availability, quality risk from wetter harvest conditions, impact on tenderable supplies and further repricing along the curve. The move in N7/Z7 spreads increasingly suggests the market is beginning to price in the prospect of this being a seller's market later in the cycle.

Overall sensitivity rating: 7/10



Global Grains

Major production areas impacted: Events are linked to droughts in Asia and Australia and excessive rain in parts of the Americas. It often reduces global rice, wheat, and corn yields, driving up food prices and impacting global food security due to strained supplies. While it can improve soy yields in Brazil, it generally causes severe local deficits in grain-producing regions.

El Niño intensity: Strong events typically shave 1–4% off global yields for major staples like rice, wheat, and corn, largely driven by severe weather shifts—droughts in some regions and floods in others. The phenomenon tends to raise global food commodity prices by up to 9% if a strong event develops, with particularly pronounced impacts on wheat and rice.

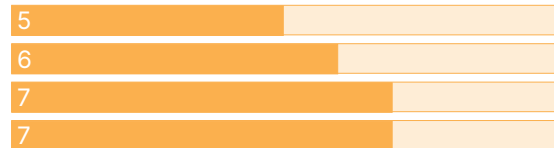
Timing of impact: Impacts are often most acute during the winter and spring planting/growing seasons in the Southern Hemisphere and Asia.

Global stock sensitivity: Whilst US stocks-to-use is comparatively low (~13% driven by strong domestic consumption and export demand), global stocks-to-use is estimated to be higher at ~ 23%. Importantly global soybean stocks are higher at approximately 33% and prices could be vulnerable to additional selling pressure if El Niño conditions increase production in South America (Argentina and southern Brazilian states).

Impact on futures contract: El Niño can have the biggest impact on wheat and rice futures prices (reduced yields in Australia and reduced production in the Russia-Ukraine-Kazakhstan region have been observed during previous El Niño years). Price impact on corn and beans is more muted with El Niño often causing a mixed impact, reducing yields in Asia but sometimes increasing soy production in parts of South America.

Overall sensitivity rating:

Corn: 5/10, Soybeans: 6/10, Wheat 7/10, Rice 7/10





US Grains

Major production areas impacted: El Niño explains <10% of Corn Belt summer variability. For corn and soybeans, a late summer arrival of El Niño could bring cooler and wetter conditions across the primary production states of Iowa, Illinois, and Indiana. This is generally a net positive for US yield potential. For wheat in the U.S., we may see a replenished soil moisture outlook help to incentivize fall planting, though a warmer than normal winter could bring with it an increased risk of winterkill.

El Niño intensity: An intensifying El Niño likely brings additional moisture and cool temperatures. In the face of rising energy costs for drying and harvest logistics, this would be less than ideal and warrants close monitoring.

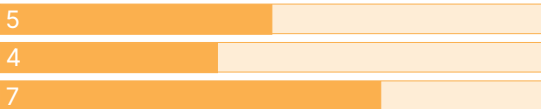
Timing of impact: Positive for yields if confined to late summer. However, if we were to see an autumn escalation, what was once a positive for yields could become a detriment to margins.

Global stock sensitivity: With rising production costs around the world, a farmer facing the negative consequences of El Niño elsewhere may think twice before sinking too much into a crop. Recognizing this, we could see larger world end users move to seek coverage. As seen during Covid, the trade idea of owning it being better than looking for it in a tight market spurs increased coverage around the world.

Impact on futures contract: El Niño is a bit of a gas and a brake at the same time style phenomenon for grains. Depending on how it sets up, we could see massive production losses elsewhere that help to support futures, while also seeing potential record crops in the U.S. once again. This would likely help keep U.S. cash prices supported in the face of comfortable supplies, while seeing shortfalls elsewhere.

Overall sensitivity rating:

Corn: 5/10, Soybeans: 4/10, Wheat: 7/10



Palm Oil

Major production areas impacted: El Niño is a predictable but nonlinear supply disruption for palm oil. Price impact depends critically on a few factors such as event intensity, inventory starting levels and market positioning. Primary exposure is to Indonesia (~60% of global supply) and Malaysia (~30%). The implication, given the high geographic concentration, is always a systemic global supply risk during El Niño.

El Niño intensity: In the event of a weak El Niño, there is limited yield impact. If moderate, there is a measurable production decline. When El Niño is strong or very strong, there are disproportionately large output losses. As a result, the yield losses scale nonlinearly (convex response) and the strong events can cause multi-month to multi-year production drag. This creates an asymmetric upside price risk (tail-driven rallies).

Timing of impact: We typically see 4 phases of the effect. Markets price the shock early, but physical tightness appears later. a) Weather shock: Year 0: Reduced rainfall, heat stress, b) Biological lag: +6–12 months: Impaired fruit development, c) Production decline: Year +1: Lower output materializes, d/ Recovery: +12–24 months: Gradual normalization

Global stock sensitivity: Palm oil operates with relatively tight inventory buffers. Stocks are highly sensitive to weather-driven production shocks and seasonal output cycles. During El Niño, production declines leading stocks to draw down rapidly. Price response is amplified due to low starting inventories. Stocks act as a multiplier on price volatility.

Impact on futures contract:

a/ Directional Bias: Bullish due to anticipated supply tightening, b/ Curve Structure: Tends toward backwardation, c/ Near-term contracts rise on scarcity, d/ Deferred contracts price lagged production losses, e/ Volatility: Weather uncertainty results in a higher implied volatility. Strong El Niño leads to convex upside moves, f/ Cross-Commodity Effects: Spillover into other vegoils like soybean oil and sunflower oil.

Overall sensitivity rating: 7/10





Sugar

Major production areas impacted: Concentrated in Asia (India, Thailand), with secondary impacts in Centre-South Brazil. India is the key swing factor given its scale and low stock cover, though weather impacts are typically lagged. Thailand and broader Asian producers (China, Pakistan, Philippines) are more immediately exposed to rainfall variability, with potential for near-term production losses. In Brazil, El Niño tends to bring above-average rainfall during the crush, disrupting harvest pace and lowering ATR rather than materially reducing cane availability.

El Niño intensity: Clear relationship between El Niño intensity and Asian cane yields. Mild-to-moderate events tend to result in localized yield losses and logistical disruption, while severe events (sub-90% monsoon in India) can reduce Indian production by up to 4–5 mmt and Thailand by 1–2 mmt. However, India's ability to divert 3–4 mmt from ethanol back to sugar significantly dampens the global supply impact, meaning only high-intensity events translate into a meaningful global deficit.

Timing of impact: Typically coincides with the Indian monsoon. This impacts the following crop (2027/28), unless conditions are extreme. Brazilian/Thai effects are more front end.

Global stock sensitivity: India's stocks are currently low (~3 mmt, ~6 weeks consumption), but less fragile than it appears due to ethanol flexibility. In a downside scenario, eliminating ethanol diversion can add 3–4 mmt back into sugar supply, effectively offsetting most weather-driven losses. A material tightening in stocks would require simultaneous losses in Thailand and Asia ex-India, combined with Brazil disruption, rather than India alone.

Impact on futures contract: Typically introduces a weather risk premium into the front and mid-curve, rather than driving immediate structural repricing. Nearby contracts are most sensitive to Brazilian harvest disruption and Thai output, often leading to short-covering and temporary backwardation. The mid-curve prices Indian monsoon uncertainty, with volatility peaking during Jun–Sep. The back-end (2027) only reacts meaningfully if a severe monsoon failure confirms a hit to the next Indian crop. Absent that, Brazil's supply response and ethanol parity dynamics tend to cap sustained upside.

Overall sensitivity rating: 7/10

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For more detailed individual discussions on each product, please get in touch with the respective desk:

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