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ARGUS BRAZIL GRAINS AND FERTILIZER

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The most up-to-date Argus Brazil Grains and Fertilizer methodology
is available on www.argusmedia.com

Introduction

Argus Brazil Grains and Fertilizer is a weekly report on the Brazilian market for fertilizer components. The report features price assessments, market commentary, logistics costs, barter rates, fundamentals, news, and analysis.

Price assessments are normally published on Thursdays, and market commentary on the following day. For a full publication calendar, including non-publication dates, see Argus' publishing schedule.

Methodology rationale

Argus strives to construct methodologies that reflect the way the market trades, and to produce price assessments which are reliable indicators of commodity market values, free from distortion. As a result, the specific currencies, volume units, locations and other particulars of an assessment are determined by industry convention, and Argus mirrors this.

Survey process

Argus price assessments are informed by data received from a wide cross-section of market participants, including producers, consumers and intermediaries. Argus reporters engage with the industry by proactively polling participants for market data. Argus will contact and accept market data from all credible market sources, including front and back office of market participants and brokers. Argus will also accept market data from electronic trading platforms and directly from the back offices of market participants. Argus will accept market data by telephone, instant messenger, email or other means.

Argus encourages sources to submit all market data that meets Argus' methodological criteria for the relevant assessment. Argus is constantly seeking to increase the number of companies willing to provide market data. Reporters are mentored and held accountable for expanding their pool of contacts. The number of entities providing market data can vary significantly from week to week based on market conditions. Should the number of entities providing market data repeatedly fall to a level where assessment quality may be affected, supervising editors will review the viability of the assessment. Should more than 50pc of the market data upon which an assessment is based come from a single entity, the supervising editor will engage in an analysis of the market data to ensure that the quality and integrity of the assessment has not been affected.

Market data usage

In each market, Argus uses the methodological approach deemed to be the most reliable and representative for that market. Argus will use various types of market data in its methodologies, to include:

- Transactions
- Bids and offers
- Other market information, to include spread values between grades, locations, timings, and many other data.

In many markets, Argus will assign a higher importance to transactions over bids and offers, and a higher importance to bids and offers over other market information. Certain markets will exist for which such a hierarchy would produce unreliable and non-representative price assessments, and so the methodology must assign a different relative importance in order to ensure the quality and integrity of the assessment. Even in markets for which the hierarchy normally obtains, certain situations may emerge for which the strict hierarchy would produce non-representative prices, requiring Argus to adapt in order to publish representative prices.

Verification of transaction data

Reporters carefully analyze all data submitted to the price assessment process. This data includes transactions, bids, offers, volumes, counterparties, specifications and any other information that contributes materially to the determination of price. This high level of care applies regardless of the methodology employed. Specific to transactions, bids, and offers, reporters seek to verify the price, the volume, the timing, the specifications, location basis, and counterparty.

Several tests are applied to transactional data to determine if it should be subjected to further scrutiny. If a transaction has been identified as failing such a test, it will receive further scrutiny. Should this process determine that a transaction should be excluded from the price assessment process, the supervising editor will seek documented management approval.

Primary tests applied by reporters

- Transactions not transacted at arms-length, including deals between related parties or affiliates.
- Transaction prices that deviate significantly from the mean of all transactions submitted for the relevant period.
- Transaction prices that fall outside of the generally observed lows and highs that operated throughout the trading period.
- Transactions that are suspected to be a leg of another transaction or in some way contingent on an unknown transaction.
- Single deal volumes that significantly exceed the typical transaction volume for that market.
- Transaction details that are identified by other market participants as being for any reason potentially anomalous.
- Transaction details that are reported by one counterparty differently than the other counterparty.
- Any transaction details that appear to the reporter to be illogical or to stray from the norms of trading behavior. This could include but is not limited to divergent specifications, unusual delivery location and counterparties not typically seen.
- Transactions that involve the same counterparties, the same price and delivery dates are checked to see that they are separate deals and not one deal duplicated in Argus records.

Secondary tests applied by editors for transactions identified for further scrutiny

Transaction tests

- The impact of linkage of the deal to possible other transactions such as contingent legs, exchanges, options, swaps, or other

derivative instruments. This will include a review of transactions in markets that the reporter may not be covering.

- The nature of disagreement between counterparties on transactional details.
- The possibility that a deal is directly linked to an offsetting transaction that is not publicly known, for example a “wash trade” which has the purpose of influencing the published price.
- The impact of non-market factors on price or volume, including distressed delivery, credit issues, scheduling issues, demurrage, or containment.

Source tests

- The credibility of the explanation provided for the outlying nature of the transaction.
- The track record of the source submitting the data. Sources will be deemed more credible if they
 - Regularly provide transaction data with few errors.
 - Provide data by Argus’ established deadline.
 - Quickly respond to queries from Argus reporters.
 - Have staff designated to respond to such queries.
- How close the information receipt is to the deadline for information, and the impact of that proximity on the validation process.

Assessment guidelines

When insufficient, inadequate, or no transaction information exists, or when a transaction based methodology will not produce representative prices, Argus will make an assessment of market value by applying intelligent judgment based on a broad array of factual market information. Reporters must use a high degree of care in gathering and validating all market data used in determining price assessments, a degree of care equal to that applying to gathering and validating transactions. The information used to form an assessment could include deals done, bids, offers, tenders, spread trades, exchange trades, fundamental supply and demand information and other inputs.

The assessment process employing judgment is rigorous, replicable, and uses widely accepted valuation metrics. These valuation metrics mirror the process used by physical commodity traders to internally assess value prior to entering the market with a bid or offer. Applying these valuation metrics along with sound judgment significantly narrows the band within which a commodity can be assessed, and greatly increases the accuracy and consistency of the price series. The application of judgment is conducted jointly with the supervising editor, in order to be sure that guidelines below are being followed. Valuation metrics include the following:

Relative value transactions

Frequently transactions occur which instead of being an outright purchase or sale of a single commodity, are instead exchanges of commodities. Such transactions allow reporters to value less liquid markets against more liquid ones and establish a strong basis for the exercise of judgment.

- Exchange one commodity for a different commodity in the same market at a negotiated value.

- Exchange delivery dates for the same commodity at a negotiated value.
- Exchange a commodity in one location for the same commodity at another location at a negotiated value.

Bids and offers

If a sufficient number of bids and offers populate the market, then the highest bid and the lowest offer can be assumed to define the boundaries between which a deal could be transacted.

Comparative metrics

The relative values between compared commodities are readily discussed in the market and can be discovered through dialogue with market participants. These discussions are the precursor to negotiation and conclusion of transactions.

- Comparison to the same commodity in another market center.
- Comparison to a more actively traded but slightly different specification commodity in the same market center.
- Analysis of prices in forward markets for physically deliverable commodity that allow extrapolation of value into the prompt timing for the commodity assessed.
- Comparison to the commodity’s primary feedstock or primary derived product(s).
- Comparison to trade in the same commodity but in a different modality (as in barge versus oceangoing vessel) or in a different total volume (as in full cargo load versus partial cargo load).

Transparency and confidentiality

Argus values transparency. As a result, we publish lists of deals in our reports that include price, basis, and volume information. The deal tables allow subscribers to cross check and verify the deals against the prices. Argus feels transparency and openness is vital to developing confidence in the price assessment process.

Publications and price data

Subsets of the prices published in this report appear in other Argus market reports and newsletters in various forms. The price data is available independent of the text-based report in electronic files that can feed into various databases. These price data are also supplied through various third-party data integrators. The Argus website also provides access to prices, reports and news with various web-based tools. All Argus prices are kept in a historical database and available for purchase. Contact your local Argus office for information.

Corrections to assessments

Argus will on occasion publish corrections to price assessments after the publication date. We will correct errors that arise from clerical mistakes, calculation errors, or a misapplication of our stated methodology. Argus will not retroactively assess markets based on new information learned after the assessments are published. We make our best effort to assess markets based on the information we gather during the trading day assessed.

Ethics and compliance

Argus operates according to the best practices in the publishing field, and maintains thorough compliance procedures throughout the

firm. We want to be seen as a preferred provider by our subscribers, who are held to equally high standards, while at the same time maintaining our editorial integrity and independence. Argus has a strict ethics policy that applies to all staff. The policy can be found on our website at www.argusmedia.com. Included in this policy are restrictions against staff trading in any energy commodity or energy related stocks, and guidelines for accepting gifts. Argus also has strict policies regarding central archiving of email and instant messenger communication, maintenance and archiving of notes, and archiving of spreadsheets and deal lists used in the price assessment process. Argus publishes prices that report and reflect prevailing levels for open-market arms length transactions (please see the [Argus Global Compliance Policy](#) for a detailed definition of arm length).

Consistency in the assessment process

Argus recognizes the need to have judgment consistently applied by reporters covering separate markets, and by reporters replacing existing reporters in the assessment process. In order to ensure this consistency, Argus has developed a program of training and oversight of reporters. This program includes:

- A global price reporting manual describing among other things the guidelines for the exercise of judgment.
- Cross-training of staff between markets to ensure proper holiday and sick leave backup. Editors that float between markets to monitor staff application of best practices.
- Experienced editors overseeing reporting teams are involved in daily mentoring and assisting in the application of judgment for illiquid markets.
- Editors are required to sign-off on all price assessments each day, thus ensuring the consistent application of judgment.

Review of methodology

The overriding objective of any methodology is to produce price assessments which are reliable indicators of commodity market values, free from distortion and representative of spot market values. As a result, Argus editors and reporters are regularly examining our methodologies and are in regular dialogue with the industry in order to ensure that the methodologies are representative of the physical market being assessed. This process is integral with reporting on a given market. In addition to this ongoing review of methodology, Argus conducts reviews of all of its methodologies and methodology documents on at least an annual basis.

Argus market report editors and management will periodically and as merited initiate reviews of market coverage based on a qualitative analysis that includes measurements of liquidity, visibility of market data, consistency of market data, quality of market data and industry usage of the assessments. Report editors will review:

- Appropriateness of the methodology of existing assessments
- Termination of existing assessments
- Initiation of new assessments

The report editor will initiate an informal process to examine viability. This process includes:

- Informal discussions with market participants
- Informal discussions with other stakeholders
- Internal review of market data

Should changes, terminations, or initiations be merited, the report editor will submit an internal proposal to management for review and approval. Should changes or terminations of existing assessments be approved, then formal procedures for external consultation are begun.

Changes to methodology

Formal proposals to change methodologies typically emerge out of the ongoing process of internal and external review of the methodologies. Formal procedures for external consultation regarding material changes to existing methodologies will be initiated with an announcement of the proposed change published in the relevant Argus report. This announcement will include:

- Details on the proposed change and the rationale
- Method for submitting comments with a deadline for submissions
- Notice that all formal comments will be published after the given consultation period unless submitter requests confidentiality

Argus will provide sufficient opportunity for stakeholders to analyze and comment on changes, but will not allow the time needed to follow these procedures to create a situation wherein unrepresentative or false prices are published, markets are disrupted, or market participants are put at unnecessary risk. Argus will engage with industry throughout this process in order to gain acceptance of proposed changes to methodology. Argus cannot however guarantee universal acceptance and will act for the good order of the market and ensure the continued integrity of its price assessments as an overriding objective.

Following the consultation period, Argus management will commence an internal review and decide on the methodology change. This will be followed by an announcement of the decision in the relevant Argus report and include a date for implementation. In addition, publication of stakeholders' formal comments that are not subject to confidentiality and Argus' response to those comments will also take place. These formal comments should be published in a manner described by management but must be available to all market participants and stakeholders.

Updates to methodology

Argus methodologies are constantly updated and revised. The latest available methodology (which may supersede the one you are reading) is available at www.argusmedia.com.

Price types

Prices are expressed as a low-high range, where the low and the high are defined as follows:

Low — the lowest price transacted since last publication date, or, in the absence of validated trade, the lowest price that could have transacted.

High — the highest price transacted since last publication date, or, in the absence of validated trade, the highest price that could have transacted.

Fertilizer

Brazil

Imports, cfr Brazil

Assessments are of the range in which trade occurred or could have occurred during the week of assessment. Prices are assessed in \$/t based on a survey of market participants for at least 5,000t of product loading within 40 days meeting the specifications below.

- **Granular urea:** see the [Argus Nitrogen methodology](#)
- **Prilled urea:** see the [Argus Nitrogen methodology](#)
- **Standard ammonium sulphate (caprolactam):** see the [Argus Nitrogen methodology](#)
- **Ammonium sulphate (compacted caprolactam):** see the [Argus Nitrogen methodology](#)
- **Ammonium nitrate 34-00/stabilized 33-03:** 34pc nitrogen and stabilized 33pc nitrogen 3pc P2O5
- **MAP 11-52-0:** see the [Argus Phosphates methodology](#)
- **MAP 10-50-0 (ex-China):** Chinese granular 10pc nitrogen and 50pc P2O5
- **MAP 11-44-0 (ex-China):** Chinese granular 11pc nitrogen and 44pc P2O5
- **TSP:** Granular 46pc P2O5
- **SSP 19% P2O5:** powdered 19pc P2O5
- **SSP 20% P2O5:** powdered 20pc P2O5
- **DAP:** granular 18pc nitrogen and 46pc P2O5
- **Granular MOP:** see the [Argus Potash methodology](#)
- **Sulphur spot:** see the [Argus Sulphur methodology](#)
- **Sulphur quarterly contract:** see the [Argus Sulphur methodology](#)
- **Sulphuric acid:** see the [Argus Sulphuric Acid methodology](#)

Inland, fob Rondonopolis

Prices are published in \$/t and are assessed by market survey for at least 500t of product, to be available for buyer pickup within 40 days, and meeting quality specifications detailed below.

Prices are assessed for: AS, MAP 11-52, SSP, TSP, granular MOP, and granular Urea.

Inland, fob Paranagua

Prices are published in \$/t and are assessed by market survey for at least 1,000t of product, to be available for buyer pickup within 40 days, and meeting quality specifications detailed below.

Prices are assessed for: AS, MAP 11-52, SSP, TSP granular MOP and granular Urea.

Inland, fob Rondonopolis, fob Paranagua

Assessment	Quality
Granular AS	Granular 20-21pc nitrogen
MAP 11-52	11-12pc nitrogen and 52pc P2O5
SSP	Powdered 18-23pc P2O5
TSP	Granular 46pc P2O5
MOP	Granular 60-62pc potassium
Urea	Granular 45pc nitrogen

NPK blends

The price of 16-25t of bagged fertilizer blend, fob at the named location (see the *NPK blends, spot prices table*). Assessments are calculated by weighting the relevant Inland assessments (see the *Inland, bulk assessments table*) according to blend composition and adding the cost of logistics, plant processing, bags, bagging, and distributors' margins.

Barter rates

The number of bags of the crop needed in exchange for 1t of fertilizer.

Barter rates are calculated by dividing the price of the NPK blend by the spot or Cbot parity crop price (see *NPK Blends, spot prices table*).

NPK blends, spot prices table

Crop	NPK Blend	Spot	Parity
Soybeans (60kg bags)	00-18-18 at Rondonopolis, 00-20-20 at Sorriso	Imea domestic soybean price	Imea soybean Cbot parity price
Corn (60kg bags)	08-20-20 at Rondonopolis, 30-00-20 at Sorriso	Imea domestic corn price	Imea corn Cbot parity price
Cotton (15kg bags)	04-20-20/20-00-20 at Campo Novo do Parecis/Sapezal	Imea domestic cotton price	Imea cotton Cbot parity price
Cotton (15kg bags)	04-20-20/20-00-20 at Luis Eduardo Magalhaes	Aiba west of Bahia cotton lint price	
Coffee (60kg bags)	20-05-20 / 25-00-25 at Uberaba/Uberlandia	Conab domestic coffee price	

Paraguay

Imports, cfr Paraguay

Assessments are of the range in which trade occurred or could have occurred during the week of assessment. Prices are assessed in \$/t based on a survey of market participants for at least 1,000t of product loading within 40 days meeting the specifications below.

- **Granular ammonium sulphate (AS):** granular, 20-21pc nitrogen
- **MAP 11-52:** 11-12pc nitrogen, 52pc P2O5
- **MOP:** granular, minimum 60pc K2O

Argentina/Uruguay

Imports, cfr Argentina/Uruguay

Assessments are of the range in which trade occurred or could have occurred during the week of assessment. Prices are assessed in \$/t based on a survey of market participants for at least 5,000t of product loading within 40 days meeting the specifications below.

- **DAP/MAP cfr bulk:** see the [Argus Phosphates methodology](#)

Argentina

Imports, bulk, cfr Argentina

Assessments are of the range in which spot trade occurred or could have occurred during the week of assessment. Prices are assessed in \$/t based on a survey of market participants for at least 5,000t of product loading within 40 days meeting the specifications below.

- **Granular urea:** see the [Argus Nitrogen methodology](#)

Automotive grade urea (AGU)

cfr Brazil

AGU is a low-biuret prilled urea, containing 46pc nitrogen by weight that can be used to produce Arla 32, as defined by quality specifications set by ABNT NBR ISO-22241.

Assessments are of the range in which trade occurred or could have occurred during the week of assessment based on a survey of market participants.

Basis: cfr Brazil

Currency/unit: \$/t

Size: minimum 500t

Timing: loading within 40 days

Biuret: maximum 0.8pc by weight

Aldehydes: maximum 5mg/kg

Arla 32

Arla 32 is an aqueous urea solution that is defined by the ISO-22241 standard with urea content of 32.5pc by weight. It is produced by combining low-biuret urea, termed as automotive-grade urea, with deionised water (produced in situ in an electrolyser).

Prices are calculated by adding the cost of logistics, production costs, taxes and distributors' margins to the cfr Brazil automotive grade urea price assessment.

Logistics costs are calculated using the Brazilian freight rates, assessed weekly as part of the Argus Brazil Grains and Fertilizer service, and assuming a 1-3 week lag according to the location.

Production costs and distribution margins are updated quarterly based on input from market participants. Taxes are applied to the product when relevant.

Basis: fot

Currency/unit: Brazilian real per litre (R/l)

Prices are calculated for the following locations:

- Belo Horizonte (MG)
- Cuiaba (MT)
- Curitiba (PR)
- Florianopolis (SC)
- Salvador (BA)
- Sao Paulo (SP)

Crop futures prices

The settlement price for up to five forward-month futures contracts the day before publication

- Cbot soybeans (\$/bushel)
- Cbot corn (\$/bushel)
- Ice sugar No. 1 (¢/lb)
- Ice coffee (¢/lb)
- Ice cotton (¢/lb)

Domestic crop prices

Argus Brazil Grains and Fertilizer also includes various domestic crop prices produced by third parties.

Domestic crop prices

Commodity	Location	Source
Soybean	Rondonopolis	Instituto Mato-grossense de Economia Agropecuária (Imea)
Soybean	Sorriso	Imea
Corn	Rondonopolis	Imea
Corn	Sorriso	Imea
Cotton	Sapezal	Imea
Cotton	Campo Novo do Parecis	Imea
Cotton	Luis Eduardo Magalhaes	Associação de Agricultores e Irrigantes da Bahia (Aiba)
Coffee	Uberaba-Uberlandia	Companhia Nacional de Abastecimento (Conab)
Corn	Barreiras-Luis Eduardo	Bolsa Brasileira de Mercadorias (BBM)
Corn	Rio Verde	BBM
Soybean	Ponta Grossa	BBM
Soybean	Barreiras/Luis Eduardo	BBM
Soybean	Rio Verde	BBM

Transportation and logistics

Spot inland truck freight rates for fertilizers: the cost of transporting 36-40t of dry bulk, with loading to take place within 15 days, including taxes and toll fees (company freight). Truck freight rates from Rio Grande to Dourados are for bagged fertilizers only.

The following routes are assessed:

- Paranagua (PR)-Rondonopolis (MT)
- Paranagua (PR)-Sorriso (MT)
- Paranagua (PR)-Rio Verde (GO)
- Paranagua (PR)-Uberaba (MG)
- Paranagua (PR)-Dourados (MS)
- Santos (SP)-Rondonopolis (MT)
- Santos (SP)-Sorriso (MT)
- Santos (SP)-Rio Verde (GO)
- Santos (SP)-Catalao (GO)
- Santos (SP)-Uberaba (MG)
- Santos (SP)-Paulinia (SP)
- Sao Francisco do Sul (SC)-Rondonopolis (MT)
- Rio Grande (RS)-Dourados (MS)
- Vitoria (ES)-Uberaba (MG)
- Vitoria (ES)-Catalao (GO)
- Aratu (BA)-Luis Eduardo Magalhaes (BA)
- Laranjeiras (SE)-Catalao (BA)
- Laranjeiras (SE)-Luis Eduardo Magalhaes (BA)
- Sao Luis (MA)-Querencia (MT)
- Sao Luis (MA)-Porto Nacional (TO)
- Miritituba (PA)-Sinop (MT)
- Sao Luis (MA)-Redencao (PA)
- Sao Luis (MA)-Dom Eliseu (PA)
- Sao Luis (MA)-Confresa (MT)
- Sao Luis (MA)-Palmeirante/Colinas (TO)
- Sao Luis (MA)-Campos Lindos (TO)
- Sao Luis (MA)-Gurupi (TO)
- Sao Luis (MA)-Porto Franco (MA)
- Sao Luis (MA)-Balsas (MA)
- Sao Luis (MA)-Urucui (PI)
- Sao Luis (MA)-Bom Jesus (PI)

Spot inland truck freight rates for grains: the cost of transporting 36-40t of dry bulk, with loading to take place within 15 days, including taxes and toll fees (company freight).

The following routes are assessed:

- Sorriso (MT)-Rondonopolis (MT)
- Sorriso (MT)-Miritituba (PA)
- Sorriso (MT)-Santos (SP)
- Rondonopolis (MT)-Paranagua (PR)
- Rondonopolis (MT)-Santos (SP)
- Primavera do Leste (MT)-Rondonopolis (MT)
- Primavera do Leste (MT)-Santos (SP)
- Sinop (MT)-Miritituba (PA)
- Querencia (MT)-Palmeirante (TO)
- Querencia (MT)-Rio Verde (GO)
- Sapezal (MT)-Porto Velho (RO)
- Confresa (MT)-Barcarena (PA)

Storage and other costs: the cost of stevedorage and port fees for a 25,000-35,000t cargo at the named port, normalized for losses; does not include bags and bagging costs.

Demurrage: the prevailing total cost of demurrage for 25,000-35,000t cargoes due for discharge at the named port

The methodology behind some ocean transportation costs resides in other Argus methodology documents:

- For Urea Middle East-Brazil 30,000-35,000t, Urea Black Sea-Brazil 30,000-35,000t, and Urea Algeria-Brazil 25,000-30,000t, see the [Argus Nitrogen methodology](#).
- For MAP Baltic-Brazil 25,000-35,000t, MAP/DAP Morocco-Brazil 25,000-35,000t, MAP/DAP Tampa-Brazil 25,000-35,000t, and Phosphate rock Morocco-Brazil 30,000t, see the [Argus Phosphates methodology](#).
- For Sulphur Middle East-Brazil 30,000-35,000t, Sulphur US Gulf-Brazil 35,000-40,000t, and Sulphur Baltic-Brazil 25,000-35,000t, see the [Argus Sulphur methodology](#).
- For Sulphuric acid NWE-Brazil 20,000t, see the [Argus Sulphuric Acid methodology](#).

US dollar/real exchange rate

The exchange rate published by the Brazilian Central Bank at 1:00pm Brazil Standard Time (Brasilia time) on the day of publication. All currency conversions made in Argus Brazil Grains and Fertilizer use this exchange rate.