MCX
METAL & ENERGY
Trade with Trust



# COTTON

## PERFORMANCE REVIEW
## 2020-2021

## FOREWORD TO THE COTTON PERFORMANCE REVIEW

The Cotton Performance Report (PR) is the outcome of the SEBI circular SEBI/HO/CDMRD/DNPMP/CIR/P/2020/21 dated February 04, 2020 directing all recognized Stock Exchanges offering commodity derivatives segment to create a 'Performance review of the commodity derivatives contracts'. The PR, based on SEBI directive, has to be uploaded on the Exchange website by June 30, 2021 after consultation with the respective Product Advisory Committee (PAC).

Following the above directive the Agri - Product Management Team (PMT) at the Exchange has created PRs for all the listed Agri products. These have since been prepared in consultation with the respective Commodity/Commodity Complex PACs.

The Cotton Performance Report highlights the important aspects of the trade like the domestic and international supply, import and export statistics, etc. There is also extensive information on the volume, turnover, open interest, deliveries of Cotton on the Exchange, along with the price correlations with spot markets, international market and hedging efficiency to help the market participants get an empirical understanding of the performance of the Cotton contract on the Exchange.

*Acknowledgement*

*We have been ably guided by the MCX Cotton Complex PAC members in improving the content of the report and we are extremely thankful to them. We hope to keep improvising the report going forward.*

1. **Background**
   a. **Brief about the commodity such as sample picture, lifecycle and various varieties/grade of the commodity found in India**

Brief about Cotton

Cotton is a natural fiber and one of the most important textile fibers. Cotton is classified based on staple, grade and character of each bale-staple refers to the fibre length; grade ranges from coarse to premium and is a function of colour, brightness, and purity; and character refers to the fibre's strength and uniformity.

It is a heavily traded agricultural commodity with a number of countries involved in exporting or importing cotton. India is the largest cotton producing and 3rd largest exporting country in the world.

Sample picture



Life cycle

Cotton is grown in India in three zones with different sowing and harvesting periods during the season from October-September.

| North zone | Central zone | South zone |
|---|---|---|
| **Punjab, Haryana, Rajasthan** | Gujarat, Maharashtra, Madhya Pradesh | Telangana, Andhra Pradesh, Tamil Nadu, Karnataka |
| | **Sowing** | |
| **April, May** | June, July | July, August, September |
| | **Harvesting** | |
| **September, October** | October, November, December | December, January, February |
| | **Staple length** | |
| **Medium & Short Staple** | Medium & Long Staple | Long & Extra Long Staple |

Cotton in India is generally not stored for more than a year. This stored Cotton can be prone to deterioration in grade, colour and quality. The extent of deterioration depends on the condition and period of storage, the variety of Cotton, the atmospheric conditions like humidity, rainfall, etc., prevailing during this period, ventilation and incidence of pests in the godowns, etc.

Various varieties/grade

The Cotton is classified in five different groups of staple lengths of fibers. India has the advantage of growing all species of cotton i.e. from short staple 20mm & below, medium staple (20.5 to 24.5mm), medium long (25.0 to 27.0mm), long (27.5 to 32.0mm) and extra-long staple cottons (32.5mm and above).

**b. Commodity fundamentals and balance sheet as pe the following format ( to be prepared based on publicly available information on best effort basis):**

Cotton fundamentals

- Demand and supply scenario and inventory levels
- Weather, pests, diseases and other risk factors associated with agricultural crops
- Government policies on Imports- Exports, Kapas MSP, Tariff & Non-tariff barriers including taxes, quota
- Cotton yarn prices in different markets across the country
- Economic conditions e.g. recession, inflation
- Trend in other fast-growing economies
- Geo-political factors – Global and India
- Prices ruling in the international markets
- Forex rates

**Table - Balance sheet**

| Global Scenario ('000 MT) | 2019-20 | 2020-21 |
|---|---|---|
| **Opening Stocks** | 17423 | 21297 |
| **Production** | 26436 | 24626 |
| **Consumption** | 22414 | 25563 |
| **Closing Stocks** | 21297 | 20284 |
| **All figures are in '000 MT. Source – USDA, May 2021 Estimates** | | |

| Cotton Balance sheet | | |
|---|---|---|
| **Indian Scenario ('000 MT)** | **2019-20** | **2020-21** |
| **Opening Stocks** | 544 | 2125 |
| **Production** | 6120 | 6120 |
| **Imports** | 264 | 187 |
| **Total Supply** | 6928 | 8432 |
| **Exports** | 850 | 1105 |
| **Domestic Consumption** | 4250 | 5355 |
| **Closing Stocks** | 1828 | 1972 |
| **Source- Cotton Association of India Ltd., 30th April 2021 Estimates. Crop Season October-September** | | |

| Top 10 Major producing countries ('000 MT) | 2019-20 | 2020-21 |
|---|---|---|
| **India** | 6271 | 6205 |
| **China** | 5933 | 6423 |
| **USA** | 4336 | 3181 |
| **Brazil** | 3000 | 2504 |
| **Pakistan** | 1350 | 980 |
| **Australia** | 136 | 544 |
| **Turkey** | 751 | 631 |
| **All figures are in '000 MT. Source – USDA, May 2021 Estimates** | | |

| Top 10 Major consuming countries ('000 MT) | 2019-20 | 2020-21 |
|---|---|---|
| **China** | 7185 | 8655 |
| **India** | 4355 | 5117 |
| **Pakistan** | 2003 | 2243 |
| **Bangladesh** | 1502 | 1698 |
| **Turkey** | 1437 | 1633 |
| **Vietnam** | 1437 | 1568 |
| **Uzbekistan** | 653 | 686 |
| **All figures are in '000 MT. Source – USDA, May 2021 Estimates** | | |

| Top 10 Major exporting countries ('000 MT) | 2019-20 | 2020-21 |
|---|---|---|
| **USA** | 3381 | 3538 |
| **Brazil** | 1946 | 2330 |
| **India** | 697 | 1197 |
| **Australia** | 296 | 305 |
| **Greece** | 319 | 294 |
| **Benin** | 261 | 283 |
| **Mali** | 256 | 131 |
| **All figures are in '000 MT. Source – USDA, May 2021 Estimates** | | |

| Top 10 Major importing countries ('000 MT) | 2019-20 | 2020-21 |
|---|---|---|
| **China** | 1554 | 2613 |
| **Bangladesh** | 1633 | 1633 |
| **Vietnam** | 1411 | 1568 |
| **Pakistan** | 865 | 1154 |
| **Turkey** | 1017 | 1045 |
| **Indonesia** | 547 | 490 |
| **India** | 496 | 174 |
| **All figures are in '000 MT. Source – USDA, May 2021 Estimates** | | |

| Top 10 Major producing states in India ('000 MT) | 2019-20 | 2020-21 |
|---|---|---|
| **Punjab** | 162 | 179 |
| **Haryana** | 434 | 383 |
| **Rajasthan** | 476 | 553 |
| **Gujarat** | 1615 | 1649 |
| **Maharashtra** | 1479 | 1360 |
| **Madhya Pradesh** | 306 | 306 |
| **Telangana** | 884 | 816 |
| **Andhra Pradesh** | 259 | 272 |
| **Karnataka** | 340 | 400 |
| **Tamil Nadu** | 85 | 119 |
| **Others** | 81 | 85 |
| **All India** | 6120 | 6120 |
| **Source -Cotton Association of India, 30th April, 2021 Estimates. Crop season October-September** | | |

**c. Major changes in the policies governing trade in the spot markets of the commodity.**

There is no major change in policies governing trade in the spot market of Cotton.

**d. Geo-political issues in the commodity and its impact on Indian scenario.**

There is no major geo-political issues and its impact on Indian scenario of Cotton.

**2. Trading related parameter**

**a. Monthly and Annual traded volume (quantity in appropriate units)**

| Month | Traded Quantity (MT) |
|---|---|
| **APR'20** | 93220 |
| **MAY'20** | 106582 |
| **JUN'20** | 109650 |
| **JUL'20** | 99331 |
| **AUG'20** | 41501 |
| **SEP'20** | 19163 |
| **OCT'20** | 41280 |
| **NOV'20** | 72399 |
| **DEC'20** | 113390 |
| **JAN'21** | 158988 |
| **FEB'21** | 207421 |
| **MAR'21** | 227396 |
| **2020-21** | **1290321** |

**b. Annual traded volume as proportion of total deliverable supply (quantity in appropriate units)**

| | Annual traded volume (MT) | Deliverable Supply (MT) |
|---|---|---|
| **2020-21** | 1290321 | 8432000 |
| **Annual traded volume as proportion of deliverable supply** | 15.3% | |

**c. Annual trade volume as proportion of total annual production (quantity in appropriate units)**

| | Annual traded volume (MT) | Production (MT ) |
|---|---|---|
| **2020-21** | 1290321 | 6120000 |
| **Annual traded volume as proportion of production** | 21.1% | |

**d. Annual average Open interest as proportion of total production**

| | Annual average OI (MT ) | Production (MT) |
|---|---|---|
| **2020-21** | 19761 | 6120000 |
| **Annual average OI as proportion of production** | 0.32% | |

**e. Annual average Open interest as proportion of total deliverable supply**

| | Annual average OI (MT) | Deliverable Supply (MT) |
|---|---|---|
| **2020-21** | 19761 | 8432000 |
| **Annual average OI as proportion of production** | 0.23% | |

**f. Monthly and Annual value of trade (in Rs. Crores)**

| Month | Volume (Rs.cr) |
|---|---|
| **APR'20** | 898.86 |
| **MAY'20** | 986.11 |
| **JUN'20** | 1041.01 |
| **JUL'20** | 941.27 |
| **AUG'20** | 410.06 |
| **SEP'20** | 201.26 |
| **OCT'20** | 470.27 |
| **NOV'20** | 853.04 |
| **DEC'20** | 1354.82 |
| **JAN'21** | 1986.03 |
| **FEB'21** | 2652.65 |
| **MAR'21** | 2915.93 |
| **2020-21** | **14711.31** |

**g. Monthly and Annual quantity of delivery (in appropriate units)**

| Month | Delivery (MT) |
|---|---|
| **APR'20** | 4603 |
| **MAY'20** | 4148 |
| **JUN'20** | 5342 |
| **JUL'20** | 3460 |

| | |
|---|---|
| **AUG'20** | 4497 |
| **SEP'20** | No contract |
| **OCT'20** | 421 |
| **NOV'20** | 3515 |
| **DEC'20** | 5325 |
| **JAN'21** | 9533 |
| **FEB'21** | 9401 |
| **MAR'21** | 8003 |
| **2020-21** | **58246** |

**h. Monthly and Annual value of delivery (Rs. Crore)**

| Month | Delivery Settled Amount |
|---|---|
| **APR'20** | 44.07 |
| **MAY'20** | 37.90 |
| **JUN'20** | 49.37 |
| **JUL'20** | 32.49 |
| **AUG'20** | 45.22 |
| **SEP'20** | No contract |
| **OCT'20** | 4.79 |
| **NOV'20** | 41.37 |
| **DEC'20** | 63.55 |
| **JAN'21** | 117.35 |
| **FEB'21** | 120.11 |
| **MAR'21** | 97.23 |
| **2020-21** | **653.43** |

**i. Monthly and Annual Average Open Interest (OI) (in appropriate units)**

| Month | Average OI (MT) |
|---|---|
| **APR'20** | 29065 |
| **MAY'20** | 21409 |
| **JUN'20** | 19537 |
| **JUL'20** | 18177 |
| **AUG'20** | 8381 |
| **SEP'20** | 4243 |
| **OCT'20** | 4830 |
| **NOV'20** | 8580 |
| **DEC'20** | 14585 |
| **JAN'21** | 25573 |
| **FEB'21** | 38434 |

| | |
|---|---|
| **MAR'21** | 45992 |
| **2020-21** | **19761** |

**j. Annual Average volume to open interest ratio**

| | Average traded volume (MT) | Average OI (MT) |
|---|---|---|
| **2020-21** | 5060 | 19761 |
| **Annual average volume to open interest ratio** | 25.61% | |

**k. Total number of unique members and clients who have traded during the financial year**

| Unique Members | Unique Client |
|---|---|
| 189 | 2839 |

**l. Ratio of open interest by FPOs/farmers/Hedge/VCP positions to total open interest (Annual average as well as maximum daily value)**

| Average based weekly data | | | | | | Maximum Open Interest | |
|---|---|---|---|---|---|---|---|
| Avg Open Interest based weekly data | Unit | FPOs/ Farmers/ VCPs/ Hedgers | | % FPOs/ Farmers/ VCPs/ Hedgers | | FPOs/ Farmers/ VCPs/ Hedgers | |
| | | Long | Short | Long | Short | Long | Short |
| 1,51,772.22 | BALES | 79,594.44 | 70,402.78 | 51.45 | 46.10 | 1,05,550 | 96,850 |

Note: Details are provided based on weekly disclosure on the Exchange website for the period April 2020 to May 2020 in line with SEBI circular no SEBI/HO/CDMRD/DNPMP/CIR/P/2019/08 Dated January 04, 2019 Based on the data provided by the members from time to time pertaining to Farmers/ FPOs, VCPs/ Hedgers for the period April 2020 to May 2020

**m. Number of unique FPOs/farmers and VCPs/hedgers who traded in the financial year. Based on the classification provided by the members as on March 31, 2021 for clients traded during FY 20202-21.**

| Farmers/FPOs | Value Chain Participants (VCPs) |
|---|---|
| 0 | 206 |

**n. Algorithmic trading as percentage of total trading**

| 2020-21 | Algorithmic trading as % of total trading |
|---|---|
| Cotton | 6.68% |

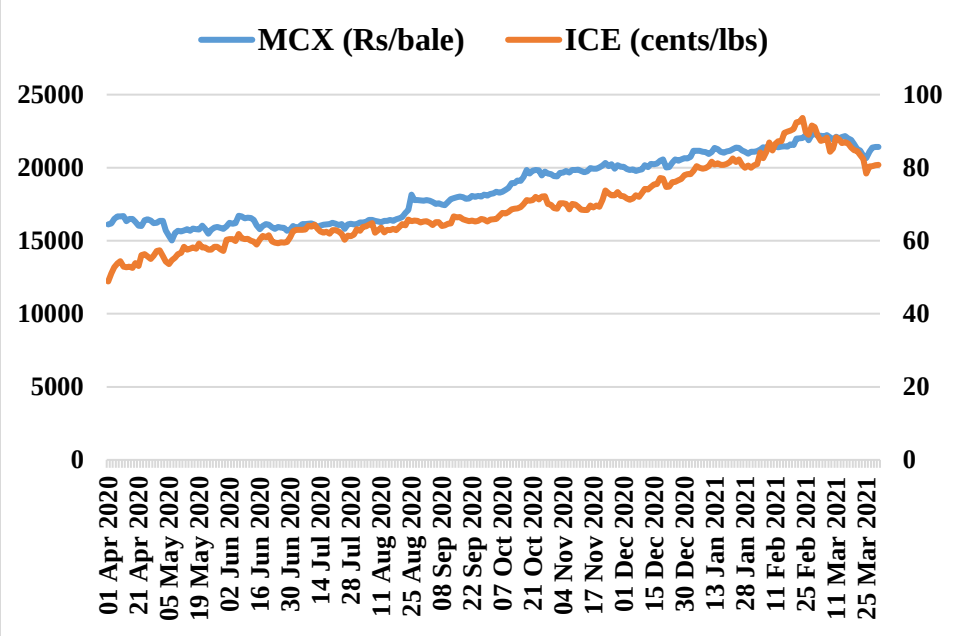
o. **Delivery defaults**

| Number of instances | Quantity involved (MT) | Value involved (Rs. Crs) |
|---|---|---|
| 1 | 8.50 | 0.09 |

3. **Price movements**

a. **Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international futures price (wherever relevant comparable are available).**

Comparison



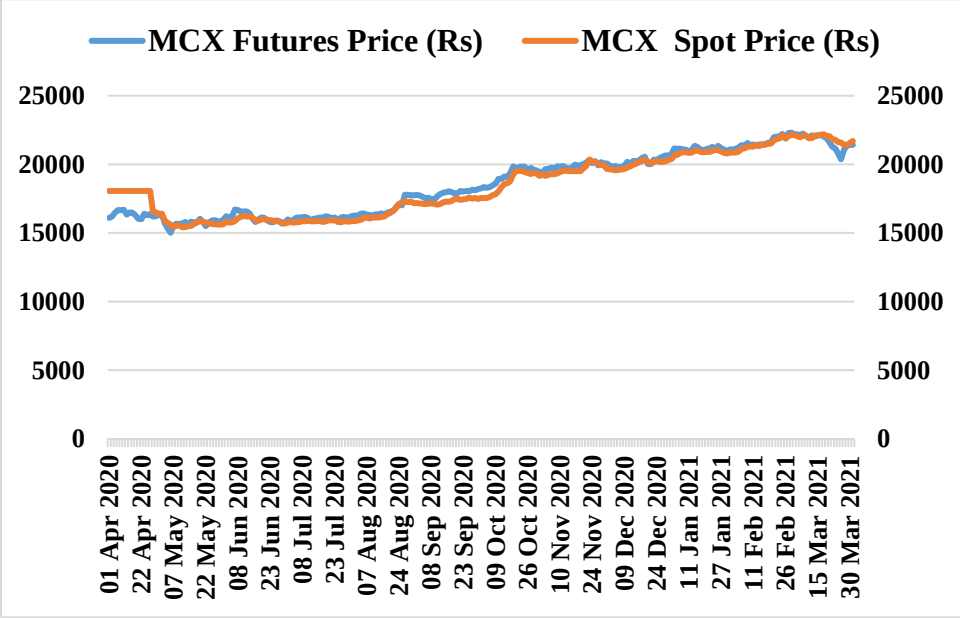

Correlation & Standard deviation of MCX & ICE futures price

| | |
|---|---|
| **Correlation between MCX Cotton futures prices and ICE futures prices in 2020-21** | **94.31** |
| **Standard Deviation of MCX Cotton futures prices in 2020-21** | 1.01 |
| **Standard Deviation of ICE Cotton futures prices in 2020-10** | 1.51 |
| **Ratio of Standard Deviation of MCX Cotton futures prices to ICE prices in 2020-21** | 0.67 |

b. **Comparison, correlation and ratio of standard deviation of Exchange futures price vis-à-vis international spot price (wherever relevant comparable are available) and domestic spot price (exchange polled price).**

The international spot prices (ICE) data for Cotton could not be obtained.

c. **Correlation between exchange futures & domestic spot prices along with ratio of standard deviation.**

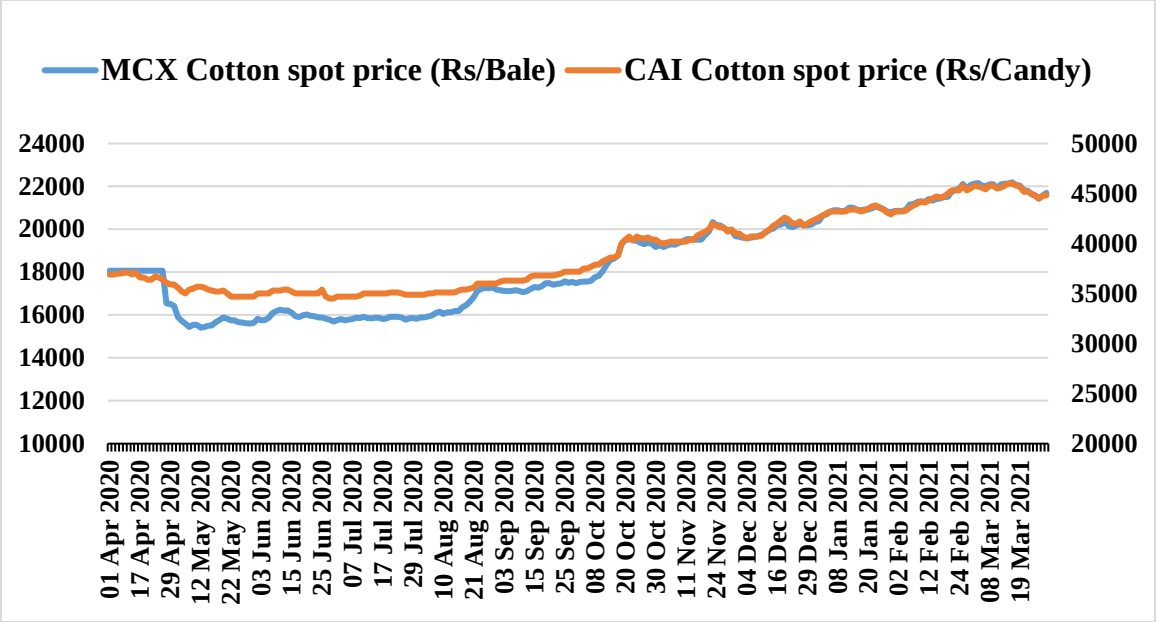



| | |
|---|---|
| **Correlation between MCX Cotton futures prices and spot prices in 2020-21** | **97.19** |
| **Standard deviation of MCX Cotton futures prices in 2020-21** | 1.00 |
| **Standard deviation of MCX Cotton spot prices in 2020-21** | 0.81 |
| **Ratio of Standard deviation of MCX Cotton futures prices to spot prices in 2020-21** | 1.25 |

d. **Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).**

The international spot prices (ICE) data for Cotton could not be obtained.

e. **Comparison of Exchange polled price and mandi price (in case of agricultural commodities) / other relevant price (in case non-agricultural commodities) at basis centre.**




**f. Maximum & Minimum value of daily futures price volatility and spot price volatility along with disclosure of methodology adopted for computing the volatility.**

| | Maximum Daily Volatility | Minimum Daily Volatility |
|---|---|---|
| Futures price | 4.00% | 0% |
| Spot price | 2.78% | 0% |

Methodology adopted for computing volatility -
Volatility in any particular trading day is calculated by the formula given below-
Volatility = LN (Price/Previous day's price)*100

**g. Number of times the futures contract was in backwardation/contango by more than 4% for the near month contract in the period under review.**

Nine (9) times the futures contract was in backwardation/contango by more than 4% for the near month contract in 2020-21.

4. **Others parameters**

**a. Qualitative and quantitative measure for Hedge effectiveness ratio and basis Risk (Volatility of Basis) along with disclosure of methodology adopted for such calculations**

**Qualitative measure for Hedge effectiveness ratio**:

Methodology: Critical terms match method has been adopted for the analysis.
Change in 'average last three days price' of expiry month futures from its 'average three days price at beginning of the month' compared with corresponding average price of the spot.

| Month | Cotton Futures | Cotton Spot |
|---|---|---|
| **APR'20** | -3.33 | Not Available* |
| **MAY'20** | 80 | -390 |
| **JUN'20** | -346.67 | 23.33 |
| **JUL'20** | 223.33 | 83.33 |
| **AUG'20** | 1436.67 | 1313.33 |
| **OCT'20** | 1240 | 1740 |
| **NOV'20** | 476.67 | 763.33 |
| **DEC'20** | 680 | 593.33 |
| **JAN'21** | 53.33 | 283.33 |
| **FEB'21** | 950 | 1106.67 |
| **MAR'21** | -860 | -556.67 |
| **Average**** | 393.33 | 496 |
| **Effectiveness** | | **79.30%** |

There is no September expiry contract

Note: *Spot price was not available till April 27, 2021 due to lockdown.

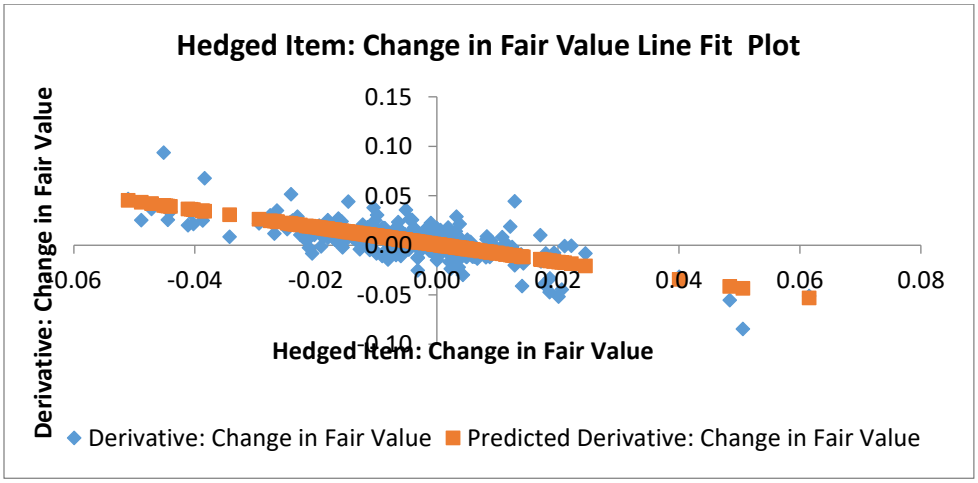
** Average from May 2020 to March 2021.

**<u>Quantitative measure for Hedge effectiveness ratio:</u>**

<u>Methodology</u>:

Weekly change in fair value of expected cash flow of hedging instrument (Cotton-futures) regressed against expected cash flow of hedged item (Cotton-Spot) to determine line of best fit and then goodness fit of the line was assessed i.e. correlation between Cotton-futures and Cotton-Spot was determined through statistical slope of the line and coefficient of correlation of the regression (R-squared). Near month futures considered for the analysis.

<u>Findings</u>:



| *Regression Statistics* | |
|---|---|
| **Multiple R** | 0.721715 |
| **R Square** | 0.520873 |
| **Adjusted R Square** | 0.518825 |
| **Standard Error** | 0.013429 |
| **Observations** | 236 |

| **Hedged Item: Change in Fair Value** | |
|---|---|
| **Slope** | -0.87595 |

Hedge is generally considered to be highly effective if slope parameter is between -0.80 and -1.25, and R-squared parameter is equal to or greater than 0.80.

In this case, hedged item and fair value slope falls within the range of highly effective criteria; however, R Square is less than highly effective criteria. It may be noted that there is time gap of approximately four hours between spot closing and futures closing.
Note: Data from 1st April 2020 to 27th April 2020 not considered due to unavailability of spot price amid the pandemic related lockdown.

**Basis Risk (Volatility of Basis)**

Methodology:

Basis = Spot price of the underlying – Near month futures price of the underlying
Volatility of basis: Standard deviation of basis

Findings

Average futures price (near month): Rs 18567
Average spot price: Rs 18449
Average basis: Rs -118
Volatility of basis: 2.15%

**b. Details about major physical markets of the commodity vis-à-vis market reach in terms of availability of delivery centers (information to be provided state-wise and UT-wise)**

| Name of State | Name of the physical markets | Market Reach of Exchange delivery centers |
|---|---|---|
| **Gujarat** | Keshod, Bardoli, Jetpur Pavi, Gondal, Balasienor, Rajkot, Babra, Amreli, Sabarkantha, Visnagar, Vijapur, Halvad, Unai, Manavadar, Bevla, Mansa, Mandvi, Kutch. | Rajkot, Kadi, Mundra |

| | | |
|---|---|---|
| **Maharashtra** | Nagpur, Narkhed, Nanded, Yavatmal, Hinganghat, Wardha, Pulgaon,Akola, Amaravati, Murtizapur, Aurangabad, Jalna, Sillod, Dhule, Jalgaon | Yavatmal, Jalna |
| **Punjab** | Bhatinda, Ferojpur, Sangur, Muktsar, Faridkot, Mansa | No delivery centre |
| **Haryana** | Hisar, Fatehabad, Sirsa, Bhiwani, Rohtak, Panipat, Jind, Kaithal, Gurgoan | No delivery centre |
| **Karnataka** | Bailhogal, Bellary, Bijapur, Gadaj, Haliyal, Hubli, Kottur, Jamkhand, Raichur, Ranebennur, Savadatti, Shimoga, Yellapur | No delivery centre |
| **Madhya Pradesh** | Badwani, Betul, Chindwara, Dhar, Dewas, Harda, Jhabua, Khandwa, Khargone, Ratlam, Shajapur | No delivery centre |
| **Telangana** | Adilabad, Warangal, Nirmal, | Adilabad,Warangal |
| **Andhra Pradesh** | Guntur, Khammam | No delivery centre |
| **Rajasthan** | Hanumangarh, Pili Banga, Sriganga– nagar, Palampur, Sangriya,Suratgarh, Sri Vijayanagar, Shadulshakar, Rawatsar, Kherthal,Bijaynagar, Rajsighnagar. | No delivery centre |
| **Tamil Nadu** | Cuddallore, Villupuram, Vellore, Thiruvannamalai, Salem,Dharamapuri, Coimbatore, Erode, Tiruchilapalli, Thanjavur, Pudukottai, Dindigul, Madurai, Theni, Virudhanagar, Tirunelveli | No delivery centre |
| **Orissa** | Ganjam, Roygoda, Karaput, Kalahandi, Navaranpur, Bolangir, Dhenkenal, | No delivery centre |

*Source: Trade estimate.*

**c. Details about major physical markets of the commodity and average Open Interest for each month generated from those regions.**

Details about physical markets are given above. Region-wise open interest is not available.

**d. Details, such as number and target audience, of stakeholders' awareness programs carried out by the exchange.**

Overall, the PMT – Agri team conducted 57 programs in the Agri segment and the target participants were primarily the physical participants, especially, the Farmers and Farmer Producing Organisations (FPOs) associated with the commodities listed on the MCX platform.

**e. Steps taken / to be undertaken to improve hedging effectiveness of the contracts as well as to improve the performance of illiquid contracts.**

The exchange strives to ensure that the contract remains a healthy replica of the physical market. We do one-on-one meetings and Product Advisory Committee (PAC) meetings with the physical market participants to make modifications in the contract to make it more lucrative for physical participants to participate in the contract.

**4. Any other information to be disclosed as deemed important by the exchange or as suggested by the PAC.**

No other information to be disclosed.

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Disclaimer:

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