

Parameters for Performance Review of Commodity

TURMERIC

1. Background

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

Turmeric is one of the most important spices as well as medicinal agent and is grown during Kharif season in India. The commercial part of Turmeric is rhizome or underground stem. Its active ingredient is curcumin. It is used as a spice in curries and other South Asian and Middle Eastern cuisine, for dyeing, and to impart color to mustard condiments. Turmeric oleoresin, which is obtained by solvent extraction of the ground spice, is used in brine pickles and to some extent in mayonnaise and relish formulations, non-alcoholic beverages, gelatins, butter and cheese etc. Indian Ayurvedic and Chinese medicines are found to be using turmeric for the treatment of inflammatory and digestive disorders since ages. Turmeric has been considered as an excellent natural cosmetic.



It requires a hot and moist climate and hence can be grown on different types of soil under irrigated and rainfall conditions and has crop duration of 7-9 months. Sowing period varies from June to August while harvesting takes place between Dec-March. Important producing states are Telangana, Andhra Pradesh, Tamil Nadu, and Maharashtra.

Crop Cycle (India)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Sowing			Harvesting								

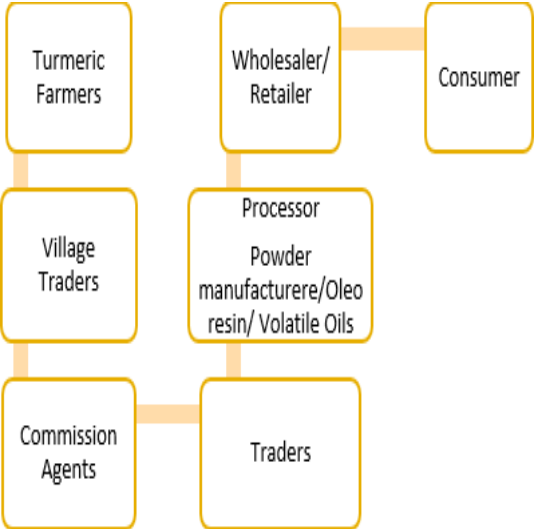
Life Cycle: Value Chain of the Commodity	Major Varieties /Grade
 <pre> graph TD A[Turmeric Farmers] --> B[Wholesaler/Retailer] B --> C[Consumer] A --> D[Village Traders] D --> E[Commission Agents] E --> F[Traders] F --> G[Processor: Powder, Oleo resin, Volatile Oils] G --> B </pre>	<p>Major Varieties</p> <p>Alleppey Finger (Kerala) and Erode and Salem turmeric (Tamil Nadu), Rajapore and Sangli turmeric (Maharashtra) and Nizamabad Bulb (Andhra Pradesh) in Tamil Nadu.</p> <p>NCDEX: Quality Parameters (Farmer Polished Turmeric Fingers)</p> <ul style="list-style-type: none"> Inferior quality Turmeric* should not be more than 2.25% Length: Fingers that are broken/those less than 15mm should not be more than 3.0%; Fingers less than or equal to 3 cm in length should not be more than 15% Damage due to moisture (i.e., Lokhandi) or over boiling (i.e. Kadh) should not be more than 1.2% Unboiled or less boiled (Gajarthod) Turmeric should not be more than 0.5% Bhusa, chaff dirt, earth clods and stones should not be more than 0.75% Bulbs should not be more than 3% Moisture: 12% max Turmeric should be free from fungus Turmeric should not be artificially colored with dyes or chemicals <p>* Chora/atthu finger, khota gatha, markha</p>

Table: Reference Years for Commodities

Sl. No.	A	B	C
Crop Season	Kharif	Kharif (Long Duration crop)	Rabi
Crops	Paddy, Maize, Bajra, Moong, Soybean, Guar seed, Kapas, Sesame Seed	Castor seed and Turmeric	Wheat, Barley, Chana, RM Seed, Coriander, Jeera
Relevant Processed commodities	Guar gum, Soybean meal, Soy oil, Cotton, Cotton seed Oil cake, Gur, CPO	Castor Oil	-
Sowing Time	July onwards	July onwards	October onwards
Harvesting Time	Oct onwards	Jan onwards	March onwards
Reference Year			
Financial Year 2022-23 (Apr-Mar)			
Corresponding Years			
Production Year (PY)	2022-23 (July-Sept)	2021-22 (July-June)	2021-22 (July-June)
Marketing Year (MY)	2022-23 (Oct-Sept)	2022-23 (Jan/Feb-Dec/Jan)	2022-23 (Mar/Apr - Feb/Mar)
Calendar Year (CY)	2022 (Jan-Dec)	2022 (Jan-Dec)	2022 (Jan-Dec)
Relationship b/w Various Years	Current Financial Year = Current Production Year = Current Marketing Year = Calendar Year	Current Financial Year = Previous Production Year = Current Marketing Year = Current Calendar Year	Current Financial Year = Previous Production Year = Current Marketing Year = Current Calendar Year
Example	FY 2022-23= PY 2022-23= MY 2022-23= CY 2022	FY 2022-23= PY 2021-22 = MY 2022-23= CY 2022	FY 2022-23= PY 2021-22 = MY 2022-23= CY 2022

Note: Coffee is a plantation crop; hence, it is not classified under either Kharif or Rabi season in the above table.

Explanatory Notes:

- India is a vast country and various crops are sown and harvested at different point of time. However, two major crop seasons, are there i.e. Kharif & Rabi. Apart from it, Zaid/Summer season is also there.
- Crop seasons are classified based upon sowing time. Normally Kharif season sowing starts from mid-June/July and new crop arrivals begin from Oct/Nov. However, early/late sowing/harvesting also takes place. Rabi season sowing usually takes place mainly from October/November and harvesting starts from March/April. Early/late sowing/harvesting also takes place. Summer crops/Zaid crops are short duration crops mainly sown during January-March and harvested during April-June.
- “Production Year” is considered as “July to June”. With the start of monsoon rains during June/July the sowing of Kharif season starts and they are harvested during Sept/Oct. From Oct onwards the sowing of Rabi season crops starts and harvesting usually takes place during March/April. Thus, a single production cycle completes between July-Sept period covering Kharif, Rabi and Zaid crops. Thus production year remains same for all season crops and the period corresponds to July-Sept.
- “Marketing Year” for each crops starts from beginning of the harvest time i.e. from start of new crop produce arrivals in the market. Thus, for Kharif crops Marketing Year is generally considered as “October to September”, while for Rabi crops Marketing Year is considered as “April to March”. However, Marketing Year may vary slightly for some of the crops depending upon early/late maturity/harvesting.

- For processed commodities, their production starts after the start of new season crop arrivals of their underlying crop.

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

Table - Fundamentals & Balance sheet (quantity)

(In Lakh Tonnes)

Global Scenario	Previous FY (2021-22)*	Current FY (2022-23)*(P)
Opening Stocks	NA	NA
Production	NA	NA
Imports	1.52	0.96
Total Supply	NA	NA
Exports	2.15	1.64
Domestic Consumption	NA	NA
Closing Stocks	NA	NA

Source: UN Comtrade; HS code used is 091030;NA: Data is not available in the public domain; P: Provisional

*Data is not available as per financial year. It is provided as per Calendar Year (CY) (Jan-Dec);

(In Lakh Tonnes)

Indian Scenario	Previous FY (2021-22)	Current FY (2022-23) (P)
Opening Stocks	NA	NA
Production	11.24	13.31
Imports	0.24	0.19
Total Supply	NA	NA
Exports	1.52	1.63
Domestic Consumption	NA	NA
Closing Stocks	NA	NA

Source: Production: Spices Board of India and Import/Export: Ministry of Commerce; HS code used is 091030;

For FY 2022-23, import and export data is available only for period of Apr 2022 to Feb 2023

P: Provisional;

NA: Data is not available in the public domain

(In Lakh Tonnes)

Rank	Top 10 Major Producing Countries			Top 10 Major Consuming Countries		
	Country	Previous FY	Current FY	Country	Previous FY	Current FY
	NA			NA		

Data is not available in public domain. As per market feedback, India is considered as the largest producer, consumer and exporter of Turmeric in the globe contributing over 80% of the world production. Other major producers of Turmeric in Asia are China, Myanmar, Bangladesh, Pakistan, Sri Lanka, Taiwan, Burma and Indonesia, etc. Turmeric is also produced in the Caribbean and Latin American countries like Jamaica, Haiti, Costa Rica, Peru and Brazil.

India holds key position in world trade of Turmeric. India is the largest exporter of Turmeric in the world. It also accounts for considerable share in world Turmeric imports.

(In Lakh Tonnes)

Rank	Top 10 Major Exporting Countries			Top 10 Major Importing Countries		
	Country	Previous FY(2021-22)*	Current FY (2022-23)*(P)	Country	Previous FY(2021-22)*	Current FY (2022-23)*(P)
1	India	1.54	1.49	India	0.24	0.18
2	Netherlands	0.04	0.04	USA	0.13	0.10
3	Fiji	0.02	0.02	Malaysia	0.09	0.09
4	Germany	0.02	0.02	United Kingdom	0.07	0.03
5	Spain	0.01	0.01	Netherlands	0.07	0.05
6	Malaysia	0.01	NA	Germany	0.06	0.05
7	USA	0.01	0.01	Japan	0.04	0.04
8	United Kingdom	0.01	0.00	Canada	0.02	0.02
9	Belgium	0.00	0.00	Spain	0.02	0.02
10	Pakistan	0.00	0.00	Australia	0.01	0.01
	Others	0.49	0.05	Others	0.75	0.44
	World	2.15	1.64	World	1.52	0.96

Source: UN Comtrade; HS code used is 091030; P: Provisional;

*Data is not available as per financial year. It is provided as per Calendar Year (CY) (Jan-Dec);

Countries are arranged in descending order based on the data in the Current Year;

(In Lakh Tonnes)

Top 10 Major producing states in India			
Rank	States	Previous FY (2021-22)	Current FY (2022-23) (P)
1	Telangana	3.20	3.30
2	Karnataka	1.31	1.31
3	Tamil Nadu	0.87	1.04
4	Andhra Pradesh	0.73	0.75
5	West Bengal	0.48	0.51
6	Orissa	0.44	0.69
7	Maharashtra	2.31	3.68
8	Mizoram	0.30	0.30
9	Assam	0.25	0.21
10	Gujarat	0.18	0.17
	Others	1.17	1.35
	All India	11.24	13.31

Source: Spices Board of India; P: Provisional;

States are arranged in descending order based on the data in the Current Year;

c. Major changes in the policies governing trade in the spot markets of the commodity (FY 2022-23)

Date	Major Policies Governing Trade and related Changes
-	No Turmeric specific policy change is seen during FY 2022-23

d. Geo political issues in the commodity and its impact on Indian scenario (FY 2022-23)

Date	Event	Key Details	Key Implications/Impact
	No geo-political issue regarding turmeric is seen during FY 2022-23	NA	NA

NA: Not Applicable

2. Trading related Parameters

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

Month	Year	Symbol	Traded Volume (MT)
April	2022	TMCFGRNZM	132,005
May	2022	TMCFGRNZM	109,420
June	2022	TMCFGRNZM	83,860
July	2022	TMCFGRNZM	94,840
August	2022	TMCFGRNZM	100,175
September	2022	TMCFGRNZM	85,635
October	2022	TMCFGRNZM	96,175
November	2022	TMCFGRNZM	80,080
December	2022	TMCFGRNZM	62,320
January	2023	TMCFGRNZM	45,255
February	2023	TMCFGRNZM	39,365
March	2023	TMCFGRNZM	45,170
Yearly Traded Volume			974,300

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

Symbol	Traded volume (MT)	Deliverable supply(MT)	Proportion
TMCFGRNZM	974,300.00	1,345,932	0.72

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

Symbol	Traded volume (MT)	Production(MT)	Proportion
TMCFGRNZM	974,300	1,330,932	0.73

d. Annual average Open interest as proportion of total production

Symbol	Avg Open Int (MT)	Production(MT)	Proportion
TMCFGRNZM	15,327.89	1,330,932	0.01

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

Symbol	Avg Open Int (MT)	Deliverable supply (MT)	Proportion
TMCFGRNZM	15,327.89	1,345,932	0.01

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

Month	Year	Symbol	Traded Value(in Cr.)
April	2022	TMCFGRNZM	1,224.80
May	2022	TMCFGRNZM	899.01
June	2022	TMCFGRNZM	671.28
July	2022	TMCFGRNZM	748.45
August	2022	TMCFGRNZM	738.21
September	2022	TMCFGRNZM	606.29
October	2022	TMCFGRNZM	705.69
November	2022	TMCFGRNZM	599.48
December	2022	TMCFGRNZM	489.52
January	2023	TMCFGRNZM	354.57
February	2023	TMCFGRNZM	280.68
March	2023	TMCFGRNZM	313.06
Yearly Value of Trade			7,631.03

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

Month	Year	Symbol	Total Delivery (MT)
April	2022	TMCFGRNZM	1,130
May	2022	TMCFGRNZM	815
June	2022	TMCFGRNZM	95
July	2022	TMCFGRNZM	290
August	2022	TMCFGRNZM	725
September	2022	TMCFGRNZM	1,450
October	2022	TMCFGRNZM	1,280
November	2022	TMCFGRNZM	1,840
December	2022	TMCFGRNZM	990
Yearly Delivery Quantity			8,615

Future contracts expiring in the month of January, February and March are not available.

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

Month	Year	Symbol	Value in Cr
April	2022	TMCFGRNZM	10.26
May	2022	TMCFGRNZM	6.84
June	2022	TMCFGRNZM	0.78
July	2022	TMCFGRNZM	2.33
August	2022	TMCFGRNZM	5.50
September	2022	TMCFGRNZM	10.69
October	2022	TMCFGRNZM	9.25
November	2022	TMCFGRNZM	13.79
December	2022	TMCFGRNZM	7.29
Yearly Delivery Value			66.73

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

Month	Year	Symbol	Avg Open Int (MT)
April	2022	TMCFGRNZM	19,118.42
May	2022	TMCFGRNZM	18,972.62
June	2022	TMCFGRNZM	17,649.55
July	2022	TMCFGRNZM	17,162.62
August	2022	TMCFGRNZM	16,600.00
September	2022	TMCFGRNZM	15,675.68
October	2022	TMCFGRNZM	14,745.83
November	2022	TMCFGRNZM	12,492.86
December	2022	TMCFGRNZM	10,149.55
January	2023	TMCFGRNZM	13,326.43
February	2023	TMCFGRNZM	14,987.50
March	2023	TMCFGRNZM	15,685.00
Yearly Average OI			15,327.89

j. Annual average volume to open interest ratio

Volume to OI Ratio
25.32%

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

Member Count	Client Count
122	2,111

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

	VCPs/ Hedger
Annual Average	13.07%
Maximum Daily value*	14.57%

****It is calculated on the day when commodity has highest open interest during the year.***

Commodity wise client categorization is as per category details as provided by the members.

m. Number of unique FPOs / farmers and VCPs/hedgers who traded in the financial year

Commodity	Count
TMCFGRNZM	27

Commodity wise client categorization is as per category details as provided by the members.

n. Algorithmic trading as percentage of total trading

Commodity	%
TMCFGRNZM	9.01%

o. Delivery defaults

Number of instances	0
Quantity involved	0
Value involved	0

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).

NA

- 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).

NA

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

Correlation			
	Futures	Spot	Mandi
Futures	1	0.343456	0.133342
Spot	0.343456	1	0.034634
Mandi	0.133342	0.034634	1

Standard Deviation			
	Futures	Spot	Mandi
Futures	1	0.500494	4.707422
Spot	1.998024	1	9.405544
Mandi	0.21243	0.10632	1

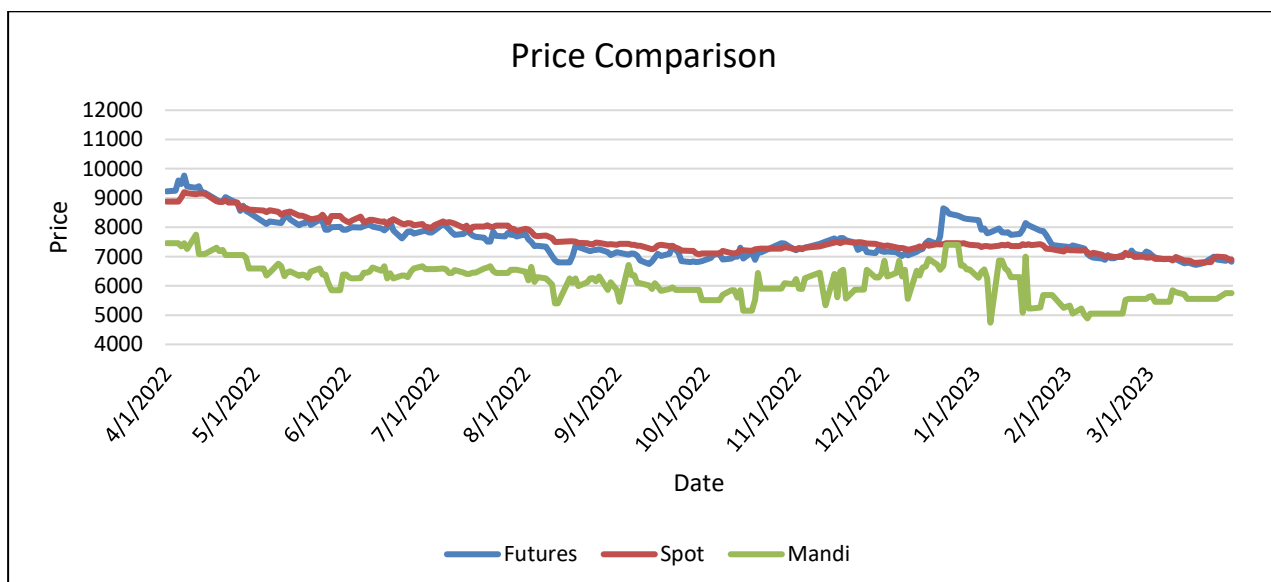
- d. Correlation between international futures & international spot prices along with ratio of standard deviation (wherever relevant comparable are available).

NA

- 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.

Correlation			
	Futures	Spot	Mandi
Futures	1	0.343456	0.133342
Spot	0.343456	1	0.034634
Mandi	0.133342	0.034634	1

Standard Deviation			
	Futures	Spot	Mandi
Futures	1	0.500494	4.707422
Spot	1.998024	1	9.405544
Mandi	0.21243	0.10632	1



Source: Spot and Future Prices: NCDEX, Mandi Prices: Agmarknet

- f. Maximum & Minimum value of daily futures price volatility and spot price volatility along with disclosure of methodology adopted for computing the volatility. (Volatility calculated by Standard Deviation of daily returns for the period from 1 April 2022 to 31 March 2023)

Volatility	Futures		Spot	
	Month	Value	Month	Value
Max	Oct	0.026253	Apr	0.011347
Min	Mar	0.009062	Nov	0.005116

- 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

Contango	36
Backwardation	0

4. Other Parameters

- a. Qualitative and quantitative measure for Hedge effectiveness ratio (Methodology in Annexure I) and basis Risk (Volatility of Basis) along with disclosure of methodology adopted for such calculations. **(Volatility calculated by Standard Deviation of daily returns for the period from 1 April 2021 to 31 March 2022)**

Basis Volatility	10.77899
Hedge Efficiency	38.22%

The methodology for hedge efficiency ratio calculation is appended as Annexure 1

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

State	Major Physical Markets	Availability of NCDEX Delivery center
Telangana	Nizamabad	Basis
	Warangal	
	Ksamudram	
	Vikarabad	
Maharashtra	Sangli	ADC
	Hingoli	
	Basmat	ADC
	Nanded	
	Jalgoan	
Tamil Nadu	Erode	ADC
	Salem	
	Coimbatore	
Andhra Pradesh	Cuddapah	
	Duggirala	

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

Note – The OI for each month is classified based on the Member level. The Average OI is on gross level (Long OI + Short OI)

State	ANDHRA PRADESH (in MT)	MAHARASHTRA (in MT)
Apr-22	202	8,037
May-22	267	9,895
Jun-22	176	12,813
Jul-22	247	13,486
Aug-22	239	14,691
Sep-22	225	12,840
Oct-22	107	9,365
Nov-22	103	10,348
Dec-22	70	6,833
Jan-23	86	8,023
Feb-23	75	7,337
Mar-23	89	6,508

"Note - The OI for CP (Custodian Participant) is not mapped to any State/ location and hence not considered in the above data."

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

Following is the list of Awareness program, Stakeholder engagement program exchange has conducted for FY 2022-23.

Sr. No.	Program Type	Location	Participants
1	Investor Awareness Program	Ahmedabad, Gujarat	32
2	Investor Awareness Program	Rajkot, Gujarat	55
3	Investor Awareness Program	Unjha	60
4	Investor Awareness Program	Kamareddy	72
5	Investor Awareness Program	Nizamabad	77
6	Investor Awareness Program	Islampur Walva Block, Dist. Sangli	67
7	Investor Awareness Program	Vita Block, Sangli (Maharashtra)	45
8	Investor Awareness Program	Jath -Khanapur Block, Sangli	45
9	Investor Awareness Program	Khanapur, Telagana	85
10	Investor Awareness Program	Rayaparthi, Telagana	70
11	Investor Awareness Program	Hingoli, Maharashtra	40
12	Investor Awareness Program	Nanded, Maharashtra	75
13	Investor Awareness Program	Nabarangpur, Odisha	75
14	Investor Awareness Program	Koraput, Odisha	47
15	Investor Awareness Program	Kandhamal, Odisha	53
16	Investor Awareness Program	Beervalli	80
17	Investor Awareness Program	Koratikal, Telangana	70
18	Investor Awareness Program	Sivagiri	40
19	Investor Awareness Program	Kallipatti	30
20	Investor Awareness Program	Perundurai	30
21	Investor Awareness Program	Hyderabad	25
22	Investor Awareness Program	Bangalore	25
23	Investor Awareness Program	Prathipadu, Andhra Pradesh	60
24	Investor Awareness Program	Duggondi, Telangana	50
25	Investor Awareness Program	Harur, Tamil Nadu	40

26	Investor Awareness Program	Petsangam, Telangana	60
27	Investor Awareness Program	Narasaraopet, Andhra Pradesh	60
28	Investor Awareness Program	Parvatagiri, Telangana	60
29	Investor Awareness Program	Kammarpally, Telangana	30
30	Investor Awareness Program	Kallavi, Tamil Nadu	35
31	Investor Awareness Program	Burhanpur	66
32	Investor Awareness Program	Thoockanaickenpalayam	39
33	Investor Awareness Program	Pembi	60
34	Investor Awareness Program	Sangli, Maharashtra	54
35	Investor Awareness Program	Gandhari	45
36	Investor Awareness Program	Rudrur	100
37	Investor Awareness Program	Mugalkhod	50
38	Investor Awareness Program	Deevattipatti	59
39	Investor Awareness Program	Devarasampatti	37
40	Investor Awareness Program	Krishnagiri, Kattinayahalli	40
41	Investor Awareness Program	Parbhani	84
42	Investor Awareness Program	Old Bagalkot	50
43	Investor Awareness Program	Jakranpally	55
44	Investor Awareness Program	Nallbelli	60
45	Investor Awareness Program	Banahatti	50
46	Investor Awareness Program	Hunsur	30
47	Investor Awareness Program	Erode	25
48	Investor Awareness Program	Kudamalai	21
49	Investor Awareness Program	Yavatmal	87
50	Investor Awareness Program	Bhubaneswar	90
51	Investor Awareness Program	Wardha , Maharashtra	45
52	Investor Awareness Program	Amravati, Maharashtra	170
53	Investor Awareness Program	Washim, Maharashtra	50
54	Investor Awareness Program	Banahatti	50
55	Investor Awareness Program	Akola ,Maharashtra	53
56	Investor Awareness Program	Kolkata	35
57	Investor Awareness Program	Surat	18
58	Investor Awareness Program	Guna, Madhya Pradesh	30
59	Investor Awareness Program	Anjar, Lutch, Gujarat	38
60	Investor Awareness Program	Raipur, Chhattisgarh	112
61	Investor Awareness Program	Patan, Gujarat	104
62	Investor Awareness Program	Nashik	200

63	Investor Awareness Program	Udaipur	150
64	Investor Awareness Program	Rajkot	100
65	Investor Awareness Program	Hissar	100
66	Investor Awareness Program	Nagpur, Maharashtra	120
67	Investor Awareness Program	Raipur	100
68	Investor Awareness Program	Gwalior, Madhya Pradesh	78
69	Investor Awareness Program	Bhopal , MP	54
70	Investor Awareness Program	Indore, Madhya Pradesh	47
71	Investor Awareness Program	Siliguri, West Bengal	39
72	Investor Awareness Program	Alipurduar, West Bengal	31
73	Investor Awareness Program	Meerut, Uttar Pradesh	30
74	Investor Awareness Program	Bhopal, Madhya Pradesh	44
75	Investor Awareness Program	Indore, Madhya Pradesh	80
76	Investor Awareness Program	Chennai, Tamil Nadu	24
77	Investor Awareness Program	Kanpur, Uttar Pradesh	60
78	Investor Awareness Program	Chindwara, MP	50
79	Investor Awareness Program	Seoni , MP	40
80	Investor Awareness Program	Kolkata	25
81	Investor Awareness Program	Raipur, Chattisgarh	136
82	Investor Awareness Program	Lucknow	177
83	Investor Awareness Program	Rourkela	65
84	Investor Awareness Program	Muzaffarnagar	70
85	Investor Awareness Program	Kochi	86
86	Investor Awareness Program	Bhilai	70
87	Investor Awareness Program	Thalamadla	80
88	Investor Awareness Program	Kolkata	45
89	Investor Awareness Program	Online	30
90	Investor Awareness Program	Online	18
91	Investor Awareness Program	Online	23
92	Investor Awareness Program	Odisha	9
93	Investor Awareness Program	Odisha	15
94	Investor Awareness Program	Karnataka	5
95	Investor Awareness Program	Bihar	18
96	Investor Awareness Program	West Bengal	6
97	Investor Awareness Program	Andhra Pradesh	29

98	Investor Awareness Program	Online	11
99	Investor Awareness Program	Online	7
100	Investor Awareness Program	Online	21
101	Investor Awareness Program	Online	6
102	Investor Awareness Program	Online	9
103	Investor Awareness Program	Online	14
104	Investor Awareness Program	Online	82
105	Investor Awareness Program	Online	28
106	Investor Awareness Program	Online	25
107	Investor Awareness Program	Online	50
108	Investor Awareness Program	Online	30
109	Investor Awareness Program	Online	25
110	Investor Awareness Program	Online	5
111	Investor Awareness Program	Online	10
112	Investor Awareness Program	Online	7
113	Investor Awareness Program	Online	13
114	Investor Awareness Program	Online	16
115	Investor Awareness Program	Online	23
116	Investor Awareness Program	Online	53
117	Investor Awareness Program	Online	17
118	Investor Awareness Program	Online	30
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125	Investor Awareness Program	Online	6
126	Investor Awareness Program	Online	7
127	Investor Awareness Program	Online	20
128	Investor Awareness Program	Online	50
129	Investor Awareness Program	Online	30
130	Investor Awareness Program	Online	13
131	Investor Awareness Program	Online	10
132	Investor Awareness Program	Online	6
133	Investor Awareness Program	Online	6
134	Investor Awareness Program	Online	8
135	Investor Awareness Program	Online	13
136	Investor Awareness Program	Online	6
137	Investor Awareness Program	Online	25
138	Investor Awareness Program	Online	8
139	Investor Awareness Program	Online	14
140	Investor Awareness Program	Online	11
141	Investor Awareness Program	Online	10
142	Investor Awareness Program	Online	6
143	Investor Awareness Program	Online	9
144	Investor Awareness Program	Online	14
145	Investor Awareness Program	Online	16
146	Investor Awareness Program	Online	11

147	Investor Awareness Program	Online	8
148	Investor Awareness Program	Online	8
149	Investor Awareness Program	Online	13
150	Investor Awareness Program	Online	15
151	Investor Awareness Program	Online	25
152	Investor Awareness Program	Online	25
153	Investor Awareness Program	Online	26
154	Investor Awareness Program	Online	18
155	Investor Awareness Program	Online	52
156	Investor Awareness Program	Online	16

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

- Creating awareness about hedging and targeting the major Masala processors/ Traders/ Stockiest
- Awareness Programme in major trading centres as well as remote location
- One to one meeting with market participants and hedgers

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

N.A

ANNEXURE I

Qualitative and quantitative measure for Hedge effectiveness ratio

Hedging Efficiency Methodology

Regression analysis is carried out between near month futures returns and NCDEX polled spot prices returns of the FY2022-23.

The R-Square value of the Regression analysis represents the “**Hedging Efficiency**”.

Note: -

Date for which spot prices were not available is not used for analysis.

Weekly returns are used for performing Regression Analysis.

The method used to calculate Hedging Efficiency does not consider liquidity risk because of this reason illiquid commodities can have high hedging efficiency.

References:

Ghosh, Ph.D, Nilanjan & Dey, Debojyoti & Moulvi, Nazir & Jain, Niteen & Sinha, Neha & Rachuri, Sarika. (2013). Hedging Efficiency—Measures and Empirical Study.