

MENTHA OIL
HEDGING PRICE RISK

MCX METAL & ENERGY
Trade with Trust

MCX INVESTOR PROTECTION FUND



Mentha (also known as mint, from Greek míntha), is a genus of plants in the family Lamiaceae (mint family). The genus has a sub-cosmopolitan distribution across Europe, Africa, Asia, Australia, and North America. Mints are aromatic, almost exclusively perennial, rarely annual, herbs. The leaves are arranged in opposite pairs, from oblong to lanceolate, often downy, and with a serrated margin. Mints will grow 10–120 cm tall and can spread over an indeterminate area.

Mentha oil is derived by steam distillation of the leaves, the basic raw material required for the production of menthol. In India, there are two types of menthol: crystals and flakes. Menthol is available in different shapes and sizes such as large crystals (bold), medium crystals, small crystals, and flakes in shape of powder. Menthol crystals are the basic ingredients for toothpaste, mouth fresheners, pharmaceuticals, ayurvedic and Unani medicines, chewing tobacco, pan masala, pain balm, confectioneries, cosmetics, and fragrances industries, etc.

Source: The American Horticultural Society: A-Z Encyclopedia of Garden Plants.

OVERVIEW

Mentha is an aromatic herb, which also goes by the name *'Shivalik'* in India. Steam distillation and filtration of dried Mentha arvensis leaves produces mentha oil, which can be processed to yield menthol and other derivatives. Mentha oil and its derivatives are extensively used in food, pharmaceutical, perfumery, and flavouring industry.

Before World War II, production of menthol was controlled exclusively by Japan and China. Later, Japanese and Chinese immigrants in Brazil rapidly began planting Mentha arvensis for menthol production, where production increased from 5 tonnes in 1941 to 3,000 tonnes by the 1960s. However, beginning the 1960s, China too began supplying menthol again.

Mentha arvensis was first introduced in India between 1958 and 1964 by the Regional Research Laboratory, Jammu Tawi. In the 1980s, new strains were introduced by the Central Institute of Medicinal and Aromatic Plants (CIMAP) that gave improved oil yields. By 1996, India was producing 6000 tonnes of mentha oil and surpassed 32,000 tonnes in 2016-17, according to CSIR- CIMAP. Much of the increase in mentha oil production, particularly its exports, came in after 2004, after the introduction of futures contracts based on mentha oil as the underlying.

India is the largest producer and exporter of mentha oil and its derivatives. The other major producers are China, Brazil, the U.S. and Japan. During the last five years, India has exported nearly 15,000 tonnes to 20,000 tonnes of mentha oil and its derivatives each year (Figure 1).

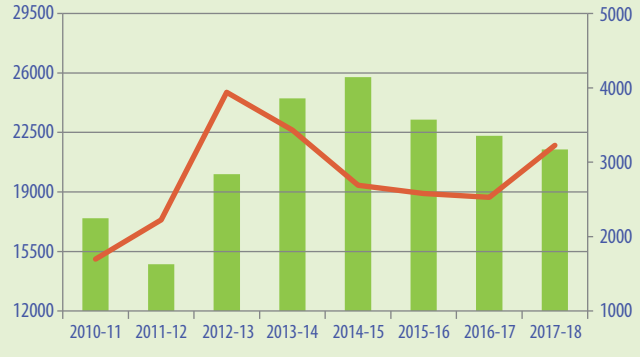
MAJOR STAKEHOLDERS

Major stakeholders include farmers, distillers, crystallization units, quality certifying agencies, corporate buyers, and exporters.

MAJOR IMPORTING COUNTRIES

The major importers of this commodity have been China, U.S.A., Singapore, the Netherlands and Germany (Figure 2).

FIG. 1: MINT PRODUCTS EXPORTS FROM INDIA



*Source: Spices Board, India | *estimate*

MENTHA OIL VALUE CHAIN

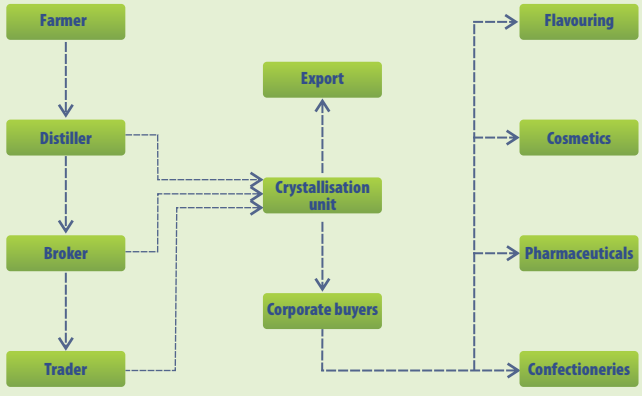
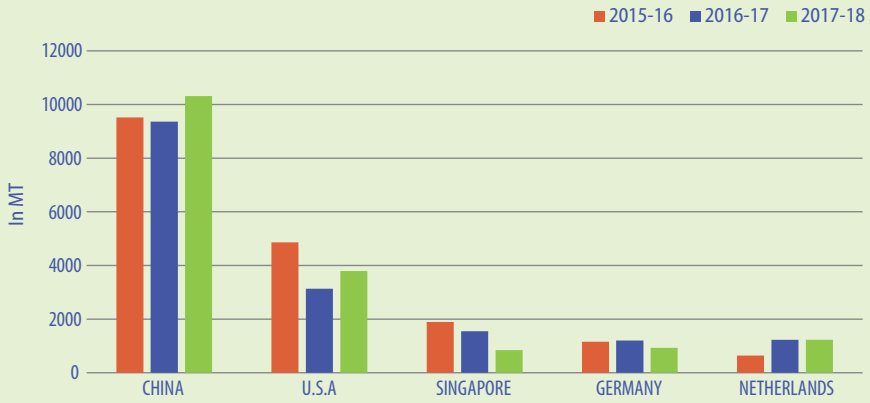
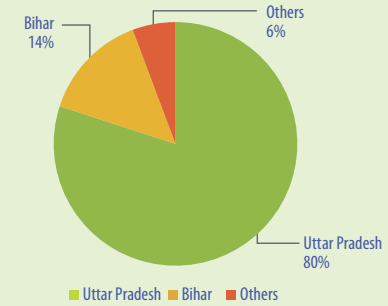


FIG. 2: TOP FIVE IMPORTING COUNTRIES OF INDIAN MINT PRODUCTS



Source: Spices Board, India

FIG. 3: STATEWISE SHARE IN TOTAL PRODUCTION



Source: CSIR- CIMAP

TABLE 1. INDIA – MENTHA OIL PRODUCTION

YEAR	Production (tonnes)
2013-14	40,000
2014-15	38,000
2015-16	30,000
2016-17	32,000
2017-18	35,000
2018-19	37,000

Source: Trade Estimates, CSIR- CIMAP

TABLE 2. MAJOR MENTHA OIL PRODUCING DISTRICTS

State	District
Uttar Pradesh	Barabanki
	Moradabad, Rampur,
	Bareilly, Sambhal,
	Badayun
Bihar	Begusarai
	Buxar
Punjab	Ludhiana
	Jalandhar

Source: Trade estimates

PRICE RISK MANAGEMENT

Mentha oil prices have always been quite volatile, with annualized volatility in spot prices hovering around 20% to 30%. In the last few years, India has emerged as an export hub for mentha oil and its derivatives, exposing exporters to high price volatility. Due to the presence of futures contract, the value chain participants are able to hedge this price risk on the exchange platforms.

Mentha oil witnessed annualized price volatility of about 35% in 2018. This means a mentha oil trader with an annual turnover of ₹10 crore was exposed to a price risk of about ₹3.5 crore in 2018. Overall, India with an estimated mentha oil market of ₹3,000 crore, is exposed to volatility risk of ₹1,053 crore (i.e. 35% of the holding value). Hence, adoption of a risk management practice, such as hedging on exchange platform, can shield against the perils of price volatility.

HEDGING MECHANISM

Hedging is the process of reducing or controlling risk. It involves taking equal and opposite positions in two different markets (such as physical and futures market), with the objective of reducing or limiting risks associated with price fluctuations. It is a two-step process, where a gain or loss in the physical position due to changes in price will be offset by changes in the value on the futures platform, thereby reducing or limiting risks associated with unpredictable changes in price.

IMPORTANCE OF HEDGING

Hedging is critical for stabilizing incomes of farmers, distillers, crystal manufacturing units, exporters, and pharmaceutical and FMCG companies. For these stakeholders, reducing risks may not always improve earnings, but a failure to manage risks will directly affect their long-term incomes. To gain the most from hedging, it is essential to identify and understand the objectives behind hedging. A good hedging practice, hence, encompasses efforts on the part of hedgers to get a clear picture of their risk profile and benefit from hedging techniques.

FACTORS INFLUENCING THE MARKET

International factors

- Import demand from major importing countries such as China, U.S.A., and Singapore.
- USD–INR rate, the commodity being export-oriented.
- Price of synthetic mentha oil in international market.

Domestic factors

- **Production related**
  - Mentha oil price is influenced by an increase or decrease in the mentha crop acreage which depends on the climate during sowing and the price realization in the previous season.
  - Prevailing weather conditions; the incidence of cold wave and heavy rains are harmful during leaf formation.

HEDGING QUOTES

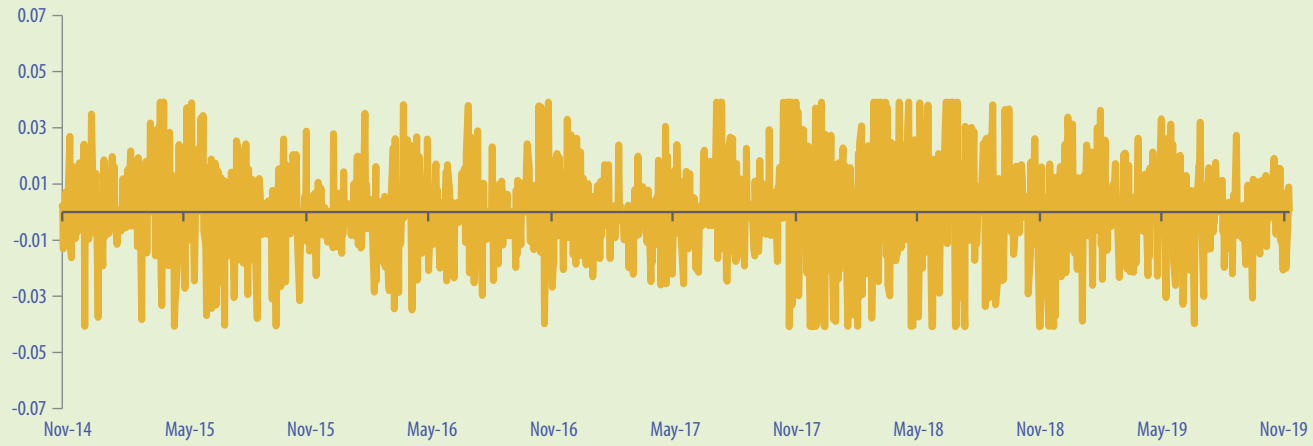
"The monopoly of commission agent in the market has been broken due to successful futures market. Now India is the largest exporter of menthol crystals in the world. It is the only commodity where farmers and exporters both are benefited through commodity futures."

(Mr. S.K. Jindal, Director, Jindal Exports Limited)

"Mentha oil is like gold; it can be sold anytime, anywhere and in any amounts. You will find a trader to buy it."

(Mentha oil farmer, IIMC-NISTADS report)

FIG. 4: AVERAGE DAILY VOLATILITY - MCX MENTHA OIL (near month continuous futures prices)



  - Quantum of arrivals during the harvest season.
- **Consumption**
  - Domestic demand from pharmaceutical companies which usually increases in winter
  - Export demand from importing countries
- **Stocks**
  - Mentha oil stocks in exchange-accredited warehouses, carry forward stocks, and stocks available with farmers are key indicators of supplies and influence prices.

HEDGING STRATEGY—BUYERS

- Buyers can hedge on a neutral regulated platform i.e. Commodity Derivative Exchange, not associated with either buyers or sellers.
- Standardization of the contract and quality parameters, which are according to physical market practices.
- Buyers can ensure their yearly requirements through futures contract by paying a margin of only 5% and thus lock their price.
- They can keep on procuring mentha oil in the physical market round the year and square off corresponding positions in futures.
- Even if the mentha oil price goes up, they do not incur any loss because they profit from futures market, which offsets their increased cost of procurement.

HEDGING STRATEGY—SELLERS

- Sellers (e.g. farmers) can sell their estimated produce in advance on exchange and lock their price; if the price falls, they are not affected, because they profit from the futures market.
- The seller must confirm to the quality standards specified by the exchange.
- Sellers have both options—either to deliver on exchange on contract maturity or to sell their produce in the local physical market and square off their corresponding position in the futures market. If the price falls, the loss in the physical market is compensated by profit in the futures market.

TABLE 3. ANNUALISED VOLATILITY OF MENTHA OIL

YEAR	Annualised *
2013	29.66%
2014	23.20%
2015	26.70%
2016	22.61%
2017	26.60%
2018	35.10%
2019	21.81%

**MCX near month contract*

FACTS ON HEDGING

- Understand one's risk profile and appetite while formulating clear hedging objectives.
- Hedging can shield the revenue stream and profitability against adverse price movements.
- Common avoidable mistake is to book profits on the hedge while leaving the physical leg open to risk.
- Hedging also significantly lowers distress costs in adverse circumstances.
- A well-designed hedging strategy enables farmers, traders, processors, exporters etc. to reduce risk. Hedging does not eliminate risk; it merely helps to transform risk.
- To gain the most from hedging, it is essential to identify and understand the objectives behind hedging and get a clear picture of one's risk profile.

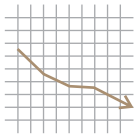


FIG. 5: MENTHA OIL FUTURES PRICE MOVEMENT*



HEDGING ILLUSTRATIONS

Example 1: FALLING PRICES



Assume a mentha oil processor is holding stocks of 3,600 kg of mentha oil in October 201X. By hedging, he can lock in a price for his stock in October 201X itself and protect himself against the possibility of falling prices. The spot price of mentha oil in October 201X is say ₹750 a kg and the price of MCX December 201X futures contract is ₹760 a kg. The processor sells (short) 10 lots of MCX December 201X contracts in October at ₹760 for delivery in December. Importantly, he pays only 5% of the contract value as initial margin to the exchange for entering a position in the futures market. Suppose the prices fall in December.

The processor sells his stock in the physical market for ₹725 a kg and takes an opposite position in the futures market; by buying (long) 10 lots of MCX December 201X contract at say ₹730 a kg.

TIME	CASH	FUTURES
October 201X	Spot market at ₹750 a kg	Sells 10 lots (of each 360 kg contract) of MCX Dec 201X at ₹760 a kg
December 201X	Sells 3,600 kg of mentha oil at ₹725 a kg	Buys 10 lots of MCX Dec 201X at ₹730 a kg
Result	A potential loss of ₹25 per kg	Gained ₹30 per kg

RESULT : Thus, the mentha oil processor protected himself from falling prices with an effective selling price of ₹755 per kg (₹725 + ₹30).

Example 2: RISING PRICES



Assume in December 201X a mentha oil exporter received an order to export 7,200 kg in March 201X. He is planning to buy mentha oil from the spot market and export it in March. The price in the spot market in December 201X is ₹800 a kg, and he is worried that prices would rise by March 201X. By hedging, he can lock in the purchase price in December itself, and protect himself from rise in prices in spot market.

Importantly, he pays only 5% of the contract value as initial margin to the exchange for entering a position in the futures market.

TIME	CASH	FUTURES
December 201X	Spot market at ₹800 a kg	Buys 20 lots (of each 360 kg contract) of MCX March 201X at ₹825 a kg
March 201X	Buys 7,200 kg of mentha oil at ₹900 a kg	Sells 20 lots of MCX March 201X at ₹925 a kg
Result	A potential loss of ₹100 a kg	Gain of ₹100 a kg

RESULT : Thus, exporter hedged himself from the rising prices in the cash market with an effective buying price of ₹800 (₹900 – ₹100) a kg.

SALIENT CONTRACT SPECIFICATIONS OF MENTHA OIL FUTURES CONTRACTS

Symbol	**MENTHAOIL**		
Description	MENTHAOILMMMYY		
Contract Listing	Contracts are available as per the Contract Launch Calendar.		
Contract Start Day	1st day of contract launch month. If 1st day is a holiday then the following working day.		
Last Trading Day	Last calendar day of the contract expiry month. If last calendar day is a holiday then the preceding working day.		
Trading Period	Mondays through Fridays		
Trading Session	Monday to Friday: 9.00 a.m. to 5.00 p.m.		
Trading Unit	360 kg (2 drums)		
Quotation/ Base Value	1 kg		
Price Quote	Ex – Chandausi, District Moradabad, Uttar Pradesh (Inclusive of Mandi Tax, but exclusive of all taxes, purchase tax/ sales tax / GST, if applicable and levies)		
Maximum Order Size	18000 kg (100 drums)		
Tick Size (Minimum Price Movement)	10 paise		
Daily Price Limits	DPL shall have two slabs - Initial and Enhanced Slab. Once the initial slab limit of 3% is reached in any contract, then after a period of 15 minutes, this limit shall be increased further by enhanced slab of 1%, only in that contract. The trading shall be permitted during the 15 minutes period within the initial slab limit. After the DPL is enhanced, trades shall be permitted throughout the day within the enhanced total DPL of 4%.		
Initial Margin*	Minimum 4% or based on SPAN whichever is higher		
Extreme Loss Margin	Minimum 1%		
Additional and/ or Special Margin	In case of additional volatility, an additional margin (on both buy & sell side) and/ or special margin (on either buy or sell side) at such%age, as deemed fit, will be imposed in respect of all outstanding positions.		
Maximum Allowable Open Position	For individual clients: 160 MT For a member collectively for all clients: 1600 MT or 15% of the market wide open position, whichever is higher.		
Near Month Limits	For individual clients: 40 MT Near month member level position limit shall be equivalent to the one fourth of the overall member level position limit		
Delivery Unit	2160 kg / 12 drums (with a tolerance limit of 1% per drum) and direct multiples thereof, though he will get the value only for the actually quantity delivered by him.		
Delivery Period Margin****	Delivery period margins shall be higher of: **a.** 3% + 5 day 99% VaR of spot price volatility Or **b.** 25%		
Delivery Centre(s)	At Exchange designated warehouse at Chandausi		
Additional Delivery Centre (s)	At exchange designated warehouse at Barabanki at a discount of ₹2/- per kg.		
Quality Specifications	Natural Crude Mentha Oil (Arvensis) confirming to the following quality specifications:		
	Appearance	:	Clear liquid
	Colour	:	Pale yellow
	Odor	:	Characteristics of Mentha arvensis
	Optical Rotation (°)	:	-32 to -36
	Specific Gravity at 25°C	:	0.80 to 0.91
	Refractive Index at 25°C	:	1.42 – 1.48
	Solubility in 70% Ethanol at 25°C	:	Soluble (1 : 3.5 volumes of Ethanol)
	L-Menthol	:	73% as per GLC test – Capillary column
			Acceptable upto 67% with 1:1 discount
			Above 73% with 1:1 premium
	Terpene	:	Max 8%
	Menthyl Acetate	:	1.8% to 3.5%
	Total Menthol Content	:	Minimum 78%
	Neo Menthol	:	1.8% to 3.0%
	Total Menthones	:	9 to 13%

SALIENT CONTRACT SPECIFICATIONS OF MENTHA OIL FUTURES CONTRACTS

	Pulegone	:	Max 1.6%
	High Boilers	:	Max 2.0%
	Water and Solid Sediments	:	0.65%
	DL - Menthol	:	Nil
	2-Ethyl 1-Hexanol	:	Nil
	Carbitol	:	Nil
	5-Methyl 2,4 - diisopropylphenol	:	Nil
	It should be free from adulteration or any admixture such as edible oil, petroleum, mineral oil etc. In order to check adulteration, water test, pH paper test, alkali test or any other necessary test will also be conducted, which should confirm to be negative.		
Packing	Mentha oil for delivery would be accepted in brand new galvanized iron container with minimum drum weight of 21 kg containing 180 kg of Mentha oil of specified quality. The cost of container, as fixed by the Exchange, will be payable by the buyer.		
Due Date Rate (Final Settlement Price) ***	For contracts where Final Settlement Price (FSP) is determined by polling, unless specifically approved otherwise, the FSP shall be arrived at by taking the simple average of the last polled spot prices of the last three trading days viz.,E0 (expiry day), E-1 and E-2. In the event the spot price for any one or both of E-1 and E-2 is not available; the simple average of the last polled spot price of E0,E-1, E-2 and E-3, whichever available, shall be taken as FSP. Thus, the FSP under various scenarios of non-availability of polled spot prices shall be as under:		

Scenario	Polled spot price availability on				FSP shall be simple average of ast polled spot prices on:
	E0	E-1	E-2	E-3	
1	Yes	Yes	Yes	Yes/No	E0, E-1, E-2
2	Yes	Yes	No	Yes	E0, E-1, E-3
3	Yes	No	Yes	Yes	E0, E-2, E-3
4	Yes	No	No	Yes	E0, E-3
5	Yes	Yes	No	No	E0, E-1
6	Yes	No	Yes	No	E0, E-2
7	Yes	No	No	No	E0

In case of non-availability of polled spot price on expiry day (E0) due to sudden closure of physical market under any emergency situations noticed at the basis centre, Exchanges shall decide further course of action for determining FSP in consultation with SEBI.*

Delivery Logic	Compulsory

Note: Effective from September 2018 | * The Margin Period of Risk (MPOR) shall be 2 days in accordance with SEBI Circular no. SEBI/HO/CDMRD//DRMP/CIR/P/2016/77 dated September 01, 2016 accordingly, the initial margin shall be scaled up by root 2. | **As per SEBI directive SEBI/HO/CDMRD/DRMP/CIR/P/2016/77 dated Sep 01, 2016 | ***As per SEBI directive SEBI/HO/CDMRD/DRMP/CIR/P/2016/90 dated Sep 21, 2016.

REGULATORY BOOSTS FOR HEDGERS:

1. **Income tax exemptions for hedging:** The Finance Act, 2013, has provided for coverage of commodity derivatives transactions undertaken in recognized commodity exchanges under Section 43(5) of the Income Tax Act, 1961, in line with the benefit available to transactions undertaken in recognized stock exchanges.
   This effectively means that business profit / loss can be offset by loss / profit undertaken in commodity derivatives transactions. This enhances the attractiveness of risk management on recognized commodity derivative exchanges and incentivizes hedging. Hedgers are no longer forced to undertake physical delivery of commodities to prove that their transactions are for hedging and not 'speculation'.
2. **Limit on open position as against hedging:** This enables hedgers to take positions to the extent of their exposure on the physical market and they are allowed to take positions over and above the prescribed position limits on approval by the exchange.
3. **Early pay-in:** If a participant makes an early pay-in of a commodity, he may be exempted from paying all applicable margins, except mark to market margins.

A comprehensive Hedge Policy Document is available at:
https://www.mcxindia.com/docs/default-source/market-operations/trading-surveliance/reports/hedgepolicy.pdf?sfvrsn=2

MENTHA OIL STUDIES

Numerous studies were conducted on the effect of futures market on mentha oil value chain participants. These studies were conducted by institutions like United Nations Conference on Trade and Development (UNCTAD), IIM Lucknow, and IIM Calcutta-NISTADS (National Institute of Science, Technology and Development Studies). All these institutions conducted field surveys to analyse the effects of futures trading on mentha oil value chain participants. Some highlights of these studies are given below.

THE FINDINGS OF THE STUDY ON MCX'S MENTHA OIL FUTURES

Study by IIM Lucknow (2007)

- The analysis of the spot market price trends of mentha oil after MCX launched futures in them shows that there was substantial improvement in these (spot) prices which has undoubtedly helped farmers realize relatively higher prices.
  - **First,** the spot market prices of mentha oil have strengthened after the launch of futures.
  - **Second,** the area under mentha cultivation and its production have shown substantial increase after the launch of futures.
  - **Third,** official trade data show that the average export price of mentha oil has recorded substantial increase after the introduction of futures.
- Futures markets benefit farmers in two ways:
  - **Directly:** by participation in the market by initiating positions
  - **Indirectly:** by making use of the price information, which futures markets disseminate to physical markets regularly.

Study by UNCTAD (2009)

- **Increased production.** Production of mentha oil increased from 12,000 tonnes in 2004 to 32,000 tonnes in 2006, and the area under mint cultivation from 100,000 ha to 250,000 ha. In boosting production, the futures market achieved more in one year than what Central Institute for Medicinal and Aromatic Plants CIMAP had achieved in two decades.
- **Improved quality standards.** Quality standards improved as farmers moved away from a low-grade variety to a higher-grade (in efforts to conform to MCX quality standards).
- **Reduced number of intermediaries.** Pre-MCX, the total margin in the marketing chain was 11–12%, which has reduced to 7.5–10.5% after mentha oil futures trading at MCX. The benefit of "breaking the monopoly of the commission agents" accrued to both exporters and farmers.
- **Increased prices.** Mentha oil prices have increased by more than 65%, largely reflecting the fact than Indian exporters are receiving a higher share of the world price.
- **Improved price realization.** Improved price realization has led to rise in incomes of growers.
- **Improved warehousing practices.** Participants are benefitting from the improved warehousing practices brought by MCX. They are also benefitting from warehouse receipt financing.

Study by IIM Calcutta- NISTADS, CSIR, New Delhi, (2013)

- From 2004 to 2005, there has been a rise in crystal manufacturing (and export). Futures platform through trading of the mentha oil contract, and development of the delivery system has helped this transition.



HOW MUCH VOLATILITY RISK ARE YOU EXPOSED TO?

Mentha oil witnessed annualized price volatility of about 35% in 2018

THIS MEANS

A mentha oil trader with an annual turnover of ₹10 crores was exposed to a price risk of about ₹3.5 crores in 2018

India with estimated mentha oil market size of ₹3,000 crores, is exposed to volatility risk of ₹1,053 crores (i.e. 35% of holding value)

ARE YOU PREPARED FOR VOLATILITY RISK?

Adoption of a risk management practice, such as hedging on the MCX, can shield against the perils of price volatility.

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