



Indo-German Cooperation on Agricultural Market Development

Building sustainable partnerships

Mustard (Brassica Juncia L)



Prepared by the

Short-term Expert

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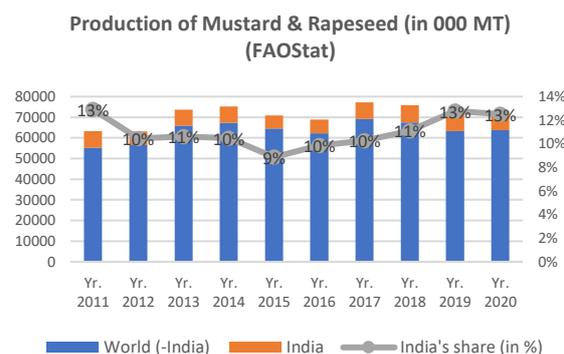
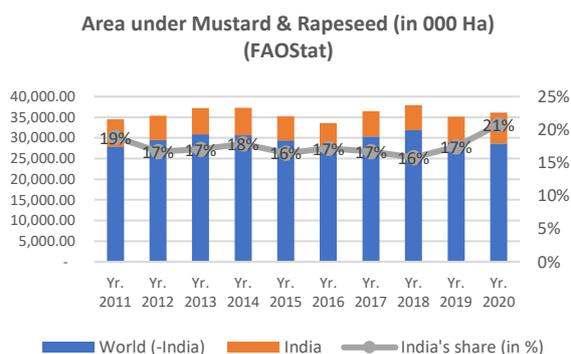
on behalf of the German project implementation consortium of



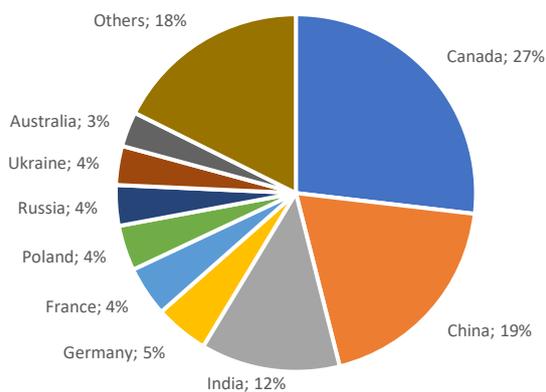
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1 Production scenario:

Rapeseed-mustard (RM) is a group of crops comprising rapeseed (toria, brown sarson, and yellow sarson) that are cultivars of *Brassica campestris* or *Brassica rapa* and Indian mustard (*Brassica juncea*), black mustard (*Brassica nigra*), and taramira (*Eruca sativa*). Rapeseed and mustard are widely grown across the world. Globally, area and production of Rapeseed and mustard have remained fluctuating, which is linked to variation in area and production under various other oilseed crops. Area under the RM crops have been hovering between 33.60 million hectares to 37.90 million hectares and production between 63.10 million MT to 77.10 million MT during last decade. India is one of the important producers of rapeseed and mustard crop in the world, contributing 12.5% of total production.



Share of countries in Rapeseed & Mustard production (2020) (FAOStat)



Canada is the leading producer of the rapeseed and mustard, contributing 27% of total production, followed by China (19%), India (12.5%), Germany (5%), France (4%), Poland, Russia (4%) and Ukraine (4%). Most of the leading countries grow rapeseed; India has the largest area under mustard cultivation. Europe, jointly is the second largest producer of rapeseed and mustard, after Canada.

In terms of productivity levels, European countries have highest productivity (ranging between (2.5 – 3.7 MT per hectare), followed by Canada (2.32 MT per ha) and China (2.05 MT / Ha). India has lowest level of productivity (1.22 MT/ Ha) amongst the leading rapeseed and

mustard producing countries. Therefore, there exists wide scope for improving yield levels in India, which can enhance India's global competitiveness by increased production and reduction in cost of production.

| Global Rapeseed & Mustard scenario (Quantity in Mn MT) | | | |
|--|---------|---------|-------------|
| Particulars | 2018-19 | 2019-20 | 2020-21 (P) |
| Beginning Stocks | 7.86 | 9.80 | 7.60 |
| Production | 72.41 | 69.00 | 71.40 |
| Imports | 14.32 | 15.90 | 17.10 |
| Total Supply | 94.60 | 94.70 | 96.10 |
| Exports | 14.30 | 15.90 | 17.20 |
| Domestic Consumption | 71.47 | 71.30 | 73.10 |

| | | | |
|-----------------------|------|------|------|
| Ending Stocks | 8.83 | 7.60 | 5.80 |
| Source: www.ncdex.com | | | |

2 Global Trade –

In exports of rapeseed and mustard, Canada is the major player, exporting over 63% of total world exports and European Union is the major importing player, covering 38% total world import.

| Rank | Top 10 Major Exporting Countries | | | Top 10 Major Importing Countries | | |
|-----------------------|----------------------------------|---------|-------------|----------------------------------|---------|-------------|
| | Country | 2019-20 | 2020-21 (P) | Country | 2019-20 | 2020-21 (P) |
| 1 | Canada | 10.04 | 10.70 | European Union | 6.21 | 6.40 |
| 2 | Australia | 1.66 | 2.90 | China | 2.56 | 3.20 |
| 3 | Ukraine | 3.00 | 2.41 | Japan | 2.24 | 2.30 |
| 4 | Russia | 0.42 | 0.53 | Mexico | 1.29 | 1.35 |
| 5 | European Union | 0.33 | 0.25 | UAE | 0.99 | 1.10 |
| 6 | United States | 0.18 | 0.13 | Pakistan | 0.66 | 0.83 |
| 7 | United Kingdom | 0.07 | 0.10 | United Kingdom | 0.43 | 0.58 |
| 8 | Kazakhstan | 0.07 | 0.06 | United States | 0.57 | 0.49 |
| 9 | Moldova | 0.09 | 0.06 | Bangladesh | 0.39 | 0.40 |
| 10 | Argentina | 0.02 | 0.02 | Belarus | 0.19 | 0.20 |
| | Others | 0.02 | 0.02 | Others | 0.41 | 0.26 |
| | World Total | 15.90 | 17.17 | World Total | 15.93 | 17.09 |
| Source: www.ncdex.com | | | | | | |

EU countries import mustard and rapeseed from most of the exporting countries. Important countries, exporting mustard and rapeseed to European Union countries have been depicted in the table below.

| Import of mustard and rapeseed of select EU countries from non-EU countries (2020) | | | |
|--|------------------|---------------------|--------------------|
| Exporting Country | Quantity (in MT) | Value (in 000 US\$) | Rate (000 US\$/MT) |
| Canada | 2523397.00 | 974591.00 | 0.39 |
| Ukraine | 1983554.00 | 840408.00 | 0.42 |
| Australia | 1129024.00 | 527917.00 | 0.47 |
| Russian Federation | 202105.00 | 79665.00 | 0.39 |

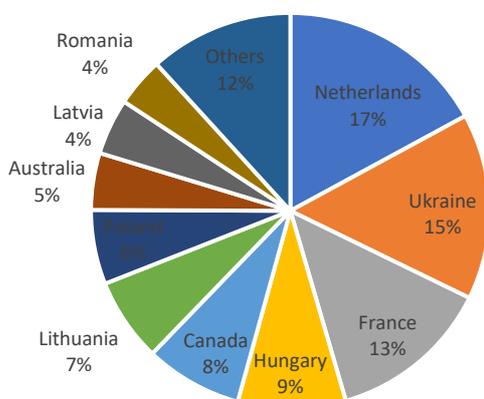
| | | | |
|---|------------|------------|------|
| United Kingdom & Northern Ireland | 114248.00 | 55850.00 | 0.49 |
| Turkey | 9465.00 | 6440.00 | 0.68 |
| New Zealand | 1875.00 | 6575.00 | 3.51 |
| Argentina | 688.00 | 686.00 | 1.00 |
| Kazakhstan | 625.00 | 297.00 | 0.48 |
| Chile | 176.00 | 556.00 | 3.16 |
| United States of America | 140.00 | 694.00 | 4.96 |
| Brazil | 82.00 | 62.00 | 0.76 |
| Uruguay | 51.00 | 24.00 | 0.47 |
| Grand Total | 5965430.00 | 2490571.00 | 0.42 |
| Import Data of EU countries namely Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Czechia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Romania, Spain and Sweden; (import from other EU countries) has been considered. | | | |

Canada, Ukraine and Australia, these three countries are fulfilling almost 90% of European Union import demand for the crop. Most of the mustard and rapeseed imported in Europe during year 2020 costed between USD 386 – 467 per MT, which if translated in Indian Rupees, it is around Rs. 29,000/- to Rs. 35,350 per MT. Canada has got high price advantages over other exporting countries.

| Import of Mustard & Rapeseed by Germany (in MT) (German Federal Statistics Office; www.destatis.de) | | |
|---|------------------------|------------------------------|
| Year | Rapeseed (1205) | Mustard Seed (120705) |
| Yr. 2016 | 5,535,768.80 | 51,160.30 |
| Yr. 2017 | 6,056,512.50 | 50,636.80 |
| Yr. 2018 | 5,746,370.30 | 47,943.00 |
| Yr. 2019 | 5,712,995.70 | 54,474.30 |
| Yr. 2020 | 5,866,597.80 | 48,951.10 |

Rapeseed import in Germany, 2020

(German Federal Statistics Office;
www.destatis.de)



Germany has diversified sourcing from various countries. In year 2020, Germany imported Rapeseed from almost 34 countries. Major suppliers for Germany are Netherlands, Ukraine, France, Hungary and Canada. However, the large part of import from European countries is reexport of Canadian rapeseed, imported on some of the ports Netherlands and France.

The rates for imported rapeseeds have been between USD 410 to 480 per MT of rapeseed in the Germany, which if translated in Indian Rs., it will range between Rs. 31000/- to 36,000/- per MT. Majority of import in Germany Rapeseed only (HS Code 1205), mustard seed constitutes less than 1% of import of

mustard and rapeseed import.

3 Snapshot of global market scenario

The global mustard market will keep growing at a CAGR of 5.7% during the forecast period (2020-2025) (Source: Mordor Intelligence, market research paper on mustard). Canada is by far one of the most important mustard seed suppliers for the EU.

The global mustard seeds market has seen a significant growth which is mainly attributed to use in non-conventional segments i.e., in the food and beverage industry, pharmaceutical industry, personal care, and cosmetic industry and others. The growth of the market across the globe is expected to depict significant growth in the overall market owing to increasing demand for mustard seeds in cooking and as a substitute for other oils such as sunflower oil and other oils in the market especially in India.

The global mustard market has been segmented by form into seed, powder, oil, and paste, and by application into food, beverage, and personal care. The food segment is further bifurcated into cooking oil and seasoning and spices industries.

According to the ITC Trade Map, the world imported value has been increasing steadily since 2016. The major countries with the increasing imported values include Germany, Belgium, Poland, Romania, Switzerland, Brazil, and Ukraine among others. Also, mustard oil and organic mustard seeds are the current trends that are further boosting the global mustard market. In addition, having therapeutically benefits, mustard herb & oil has been in the rising demand.

Major Players

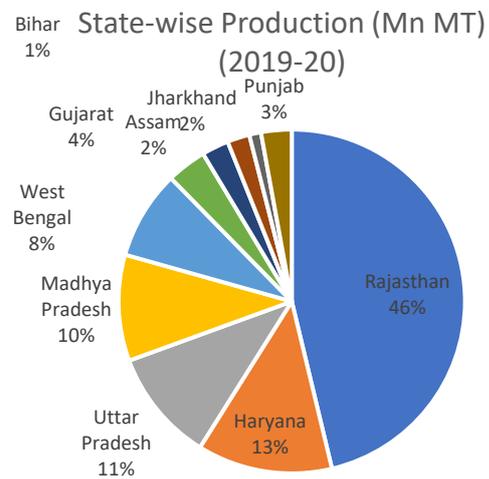
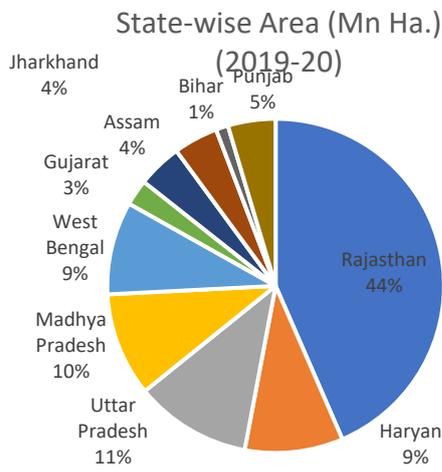
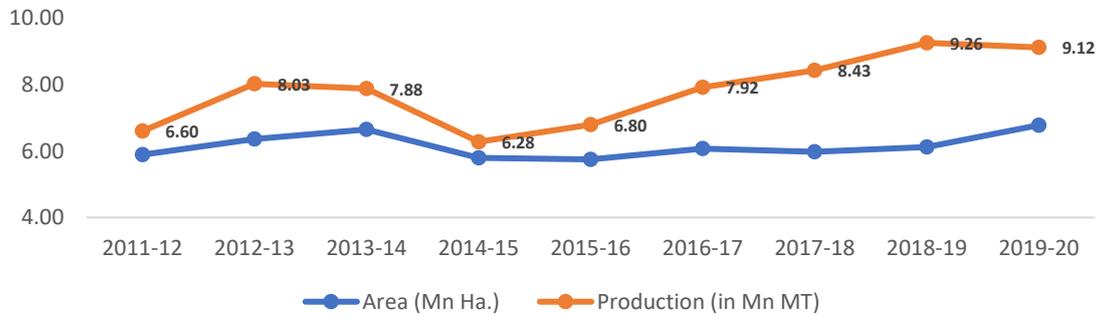
- Backwoods Mustard Company
- Mustard and Co
- Woeber Mustard Manufacturing Company
- Unilever
- Boar's Head Brand

4 Production and market scenario in India –

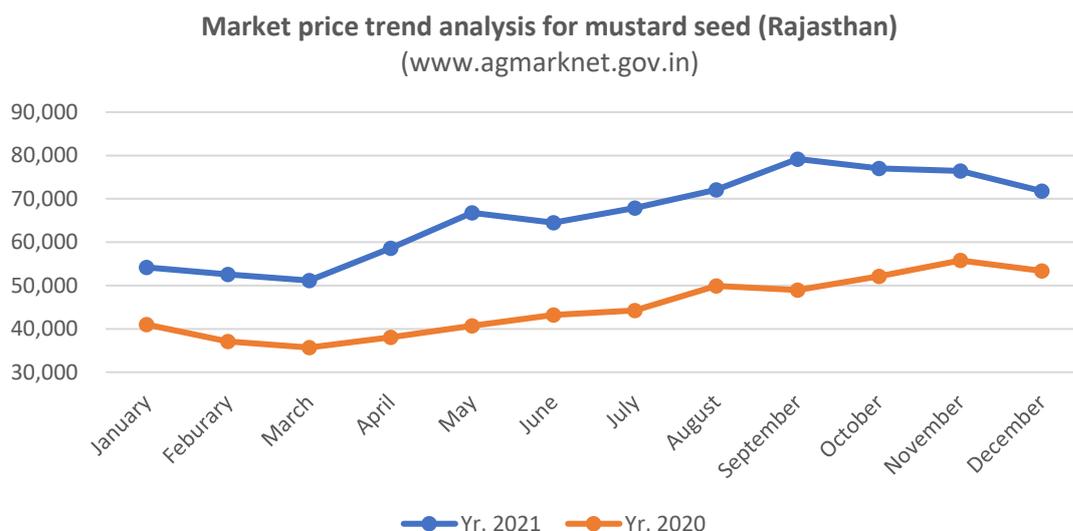
During the last decade, India has seen increasing trend of mustard and oilseed production, which was 6.60 Mn MT in year 2011-12 and has reached to 9.12 million MT in 2019-20, from an area of 6.78 million ha. Western state of Rajasthan is the leading producer, accounting for 46% of production (4.2 million MT) and 44% of the area under cultivation (2.95 million ha). Other producer states are Haryana (13 %), Madhya Pradesh (10%), Uttar

Pradesh (11%), and West Bengal (9%). Collectively, these states account for more than 80% of the total domestic production and area under mustard cultivation.

Production trend of Mustard and Rapeseed in India
(Agricultural Statistics (2020))



Prices for mustard seed remains fluctuating and there has been significant increase in prices during year 2021 compared to year 2020. Month-wise price trends in Rajasthan (largest producing state) for two years are depicted in the chart below.



Domestic market prices are way higher than the prices in most European markets, including Germany. In India, the oilseed prices are determined by production scenario of major oilseed producing crops such as Soybean, groundnut and mustard. In addition to this, excise duty on imported vegetable oil also plays important role in domestic market prices.

| Indian Scenario (Quantity in Mn MT) | | | |
|-------------------------------------|---------|---------|-------------|
| Particulars | 2018-19 | 2019-20 | 2020-21 (P) |
| Beginning Stocks | 0.37 | 0.47 | 0.27 |
| Production* | 8.00 | 7.40 | 8.50 |
| Imports | - | - | - |
| Total Supply | 8.37 | 7.87 | 8.77 |
| Exports | - | - | - |
| Domestic Consumption | 7.90 | 7.60 | 8.40 |
| Ending Stocks | 0.47 | 0.27 | 0.37 |

Source: NCDEX *Production data in this differ from the GoI data

5 EU Regulatory Requirements

All foods and food items sold in Europe must be safe for consumption. Mandatory requirements have become equally important to importers irrespective of country of origin. Those include compliance with food safety, quality, and sustainability standards.

Following parameters are to be followed before exporting to EU.

- Contaminants by foreign bodies
- Microbiological contaminants
- Mycotoxins control
- Plant toxins
- Polycyclic aromatic hydrocarbons
- Heavy metals and metalloids
- Irradiation
- Limited use of pesticides
- Control of chlorate and perchlorate

- Safe packaging and informative labelling
- Labelling requirements for retail food products

As per EU regulation Mustard (condiment) Erucic acid, including erucic acid bound in fat, Maximum level (g/kg) is 35.0 and furthermore, the following ingredients should not be added:

- Starchy substances, thickeners, or binders.
- Essential oil of mustard and natural or artificial essences and extracts having essentially the same function.
- Husks separated from the mustard seed. However, those husks which have been removed at an earlier stage of the manufacturing process may be re-incorporated into the final product.

6 Legislative Requirements

EU supports the principles of Good Agricultural Practice (GAP) and Good Manufacturing Practice (GMP). These principles serve all parties involved in the supply chain as they focus on prevention and control rather than reconditioning which is not always technologically possible. The harvest, cultivation, transport, and post-harvest conditions should ensure the material is stored and handled in such a way as to prevent adulteration, contamination, and the growth of micro-organisms.

7 Domestic Value Chain Analysis of Mustard

The actors operating along the mustard value chain in India are.

Input suppliers: Fertilizer inputs are generally purchased from cooperatives outlets and private retailers. Seed is procured through authorized dealers of private seed brands and through state seed cooperative stores and district sales centres. Some farmers save some produce for seed for the next season.

Growers: Mustard farmers undertake crop cultivation in the rabi season (October–March). The main operations carried out by farmers include land preparation, sowing, irrigation, weeding, application of manure and fertilizers, thinning, and disease and insect pest management. Once the crop is ripe, the farmer does the harvesting, threshing, and cleaning at farm level. Farmers sell the bulk of the produce at APMC mandis to commission agents or traders.

Commission agents and traders: Licensed commission agents and traders generally operate from an APMC market and buy produce from farmers. The produce is cleaned and graded by the commission agent or trader before sale to millers (through brokers) or to wholesalers in other states and distant markets. The cost associated is borne by the agent or trader and includes the market cess (tax), the GST, and labour, transportation, and brokerage charges.

Secondary processors: This includes small, medium, and large-scale milling units engaged in processing mustard seed for oil and production of oilcake as a by-product. There are some solvent extraction units that further process mustard oilcake to produce de-oiled cakes, which are used as animal feed. These units mostly buy from traders through brokers based on criteria such as oil percentage, moisture content, foreign matter, and erucic acid value

| Activities | Agent | Outputs |
|----------------------|--|--|
| Input supply | IFFCO, private vendors, societies, cooperatives, | Seed, fertilizers, and micronutrients, pesticides, farm machinery |
| Training and subsidy | KVKs, Agriculture University, private seed brands, state departments for agriculture and extension services, | Training on cultivation and use of hybrid seeds, subsidies on input supply (machinery, chemicals, planting material) |

| | | |
|---|--|--|
| | ICAR Directorate of Rapeseed-Mustard Research | |
| Production | Farmers | Mustard seeds |
| Postharvest management, transportation and sale | Farmers, hired laborers, Transport service providers, state marketing board, private seed testing labs, commission agents, traders | Harvesting, threshing, cleaning, packing mustard seeds Logistics assistance, trade facilitation, determination of oil percentage and quality, cleaning, packing, marketing produce |
| Secondary processing | Expellers and millers | Mustard oil and oilcakes, packaging, branding and marketing, exports |
| Wholesale and retail Distribution | Wholesalers, commission agents, retailers | Distribution and retail marketing of oil and oil seed cake within the state and to distant markets |

8 Trade Channels for Marketing of Mustard

Channel 1: Marketing through commission agents and traders to nearby large processors. About 60%–70% of RM farmers sell their produce to commission agents or traders in nearby APMC markets, who in turn grade and pack the produce and sell to nearby large oil processing units through brokers. Traders prefer to sell to nearby units as it saves transportation costs and assures more timely payment. Each oil processing unit has its own set of procurement standards, which are known to the supplying traders and brokers. For example, for manufacturing export-quality oil, processors prefer seeds with a low erucic acid level.

Channel 2: Marketing through commission agents and traders. Trading in this channel is the same as under Channel 1, except that some traders and commission agents sell the produce to traders in distant markets, who then sell to bigger traders or brokers. Brokers facilitate transactions between oil mills and traders. Some brokers also invest in mustard seed futures. A small share of mustard seeds is sold by traders to wholesalers and retailers for direct marketing to consumers as spices.

Channel 3: Marketing to traders-cum-oil producers. In this channel, producers sell directly to large traders who own expellers or small mills. These small mills and expellers are important actors in local markets. In markets where such traders are present, farmers prefer to sell directly to them, where there are multiple oil expellers and small processing units. In these markets, RM seed prices fetched by farmers were higher than in other nearby markets. The expellers then sell oil directly to farmers and retailers. Farmers are also able to purchase oilcakes from expellers at a cheap rate, and they are assured of quality as the oil is processed in their presence and less oil is expelled than by the more efficient large-scale processors. A few wholesalers and distributors from distant and nearby markets also purchase oil from these small-scale processors. The cost of transportation is borne by the distributors, but the expellers are required to pay a commission to the broker for the oil sold.

Channel 4: Marketing through village aggregators. Farmers who are unable to make arrangements for distant transportation of their produce or not able to go to a market sell their produce to a village aggregator. Aggregators purchase produce from farmers at lower rates and then sell to local traders or commission agents. Traders subsequently sell to a processor through a broker, who then sells the processed oil and oilcake to wholesalers and retailers.

Value Chain of Mustard

Mustard Value chain up to Oil Mill (Valid in UP/MP/Rajasthan) at current price

| Items | Price | Remark |
|--|----------|------------------------------------|
| Price Received by the Farmer | 7,600.00 | MSP-Rs. 5050 per quintal |
| Commission Agent's Margin | 50.00 | Commission agent margin 1 Percent |
| Commission Agent's Realization | 7,650.00 | Cost to Commission Agent |
| APMC Mandi Tax and cess | 84.00 | APMC Mandi Tax and cess 1 Per cent |
| GST 5% | 168.00 | Charged at 5 Per cent |
| Grading, Cleaning and palledari (by trader) | 50.00 | Rate per quintal |
| Cost of packing | 40.00 | Rate per quintal |
| Secondary Transport | 80.00 | Rate per quintal |
| Traders commission to broker | 5.00 | 0.15 Per cent |
| Discount on quantity sold to millers borne by traders or wastage | 115.00 | 3 Per cent |
| Trader's margin | 30.00 | 1 Per cent |
| Trader's Realization | 8,222.00 | Cost to Trader |
| Broker's commission from oil mills | 10.00 | 0.3 Per cent |
| Cost of mustard seeds incurred by Oil Mills | 8,232.00 | Final Landing Price |

9 Gaps in Mustard Value Chain

Production Gaps

Seed application: Most farmers use a seed rate of more than 6 kg/ha as against the recommended rate of 2.5–3 kg/ha for the hybrid varieties, thus adding to the cost of cultivation through the high price of hybrid seeds marketed by private brands. The productivity of some newer varieties developed by the ICAR Directorate of Rapeseed and Mustard Research (DRMR) is at par with private brand varieties. Thus, enhanced production of certified seeds like these should be made available to farmers in adequate quantities. Farmers should be encouraged to adopt the recommended cultivation practices such as the correct seed rate, seed treatment, timely sowing, management of insect pests and diseases, and planting techniques to enhance crop productivity.

Fertilizer application: There is a lack of awareness among farmers about soil testing facilities. Farmers are applying urea and DAP fertilizers more than the recommended doses. Higher quantities of urea and DAP help plant growth but inhibit seed production and cause increased vegetative growth, which makes the crop susceptible to pests and diseases. Thus, correctly measured applications of urea and replacing DAP with SSP can help reduce the cost of fertilizers in mustard cultivation and improve yields and seed quality. To improve overall soil health and reduce soil moisture loss, organic green manure crops and vermicompost should be encouraged.

Irrigation: Irrigation is done mostly with water pumped from tube wells using diesel pumps, which increases the overall cost of cultivation. The furrow-irrigated raised-bed method can save water and fuel and improve yields, while sprinklers save water and increase seed yield and reduce soil salinity.

Harvesting: A significant number of farmers harvest their crops early owing to constraints in the availability of labour. Early harvest impacts seed quality since such seeds have a higher moisture content, which affects their market price. Early harvesting should be discouraged.

Postharvest Management Gaps

Market Infrastructure

- **Quality assessment:** There is a lack of infrastructure and few mechanisms in place at markets to measure seed quality. Farmers depend on a trader's assessment or a report from a private quality testing lab.

- Labour availability: There is a lack of labour, which slows the overall trade process.
- Storage: In the absence of adequate modern storage infrastructure, farmers tend to sell their produce within 20–30 days of harvest.

Processing

Mandi cess and related taxes: The processors interviewed were of the view that high taxes like the mandi cess and GST impact the procurement costs of millers and, since margins are low in the oil processing industry, the benefits are not transferred to farmers. They also suggested they were on a par with mandi cesses in neighbouring states

Competition from rice bran and palmolein: A number of mills and local retailers mix cheaper rice bran and palmolein with mustard oil and sell the produce at lower prices. This makes it difficult to sell pure mustard oil profitably. The margins are low and, if seed prices go up, it is difficult to maintain a profitable business. The availability of cheaper blends and low awareness among young consumers about the health benefits of mustard have also affected the demand for pure mustard oil in India.

Marketing Gaps

Price-related: Sudden drop in prices during the harvest season forces farmers to sell their produce early to make ends meet. Many farmers said they did not have information about the rate at which seeds are sold. The farmers were aware of initiatives like eNAM and its benefits, and even millers and traders were not clear about these. Farmers reported a lack of training and extension activities on farming practices and marketing initiatives by the government.

Malpractice by unscrupulous parties: A few traders said that, while dealing with unknown parties, they faced significant losses owing to non-payment of dues. Appropriate mechanisms should be put in place to address such concerns. The mandi parishads (council or assembly) can take note of such cases and display the names and details of defaulters on its website as a precaution to traders.

Access to Credit Services

High cost of finance: Farmers face difficulties obtaining credit from formal sources for cultivation and tend to depend on local money lenders who charge high interest rates. Sometimes farmers approach commission agents or traders in the local APMC markets for advances and as a result they become bound to sell their produce only through those intermediaries.

Procurement and payment: Mustard is covered under the MSP scheme of the Government of India. NAFED is the agency that buys mustard from farmers at the MSP. Farmers said NAFED bought in bulk from markets at MSP prices during March and April. Hence, procurement by the government at the MSP will be effective only if it is done from March to April. NAFED sometimes sells oilseed at rates lower than the prevailing market rates; therefore, oil processors find it cheaper to buy from NAFED than from farmers. In Uttar Pradesh, studies have been conducted on rapeseed and mustard production.

Crop insurance: The Government of India has been trying to cover farmers under the Pradhan Mantri Fasal Bima Yojna insurance scheme. Farmers are reluctant to participate in the scheme owing to concerns about delayed or non-payment of claims and the requirement to pay a premium.

10 Potential Interventions

Based on the gaps identified in the mustard value chain, potential interventions are outlined here.

Institutional Development

Encourage and support farmers to adopt better cultivation practices and harvesting and postharvest techniques and improve their knowledge of quality requirements and standards. Promote and strengthen farmer collectives to help them undertake aggregated sales and marketing and disseminate advanced technologies among producer members.

Encourage the use of web-based models of agriculture market information systems among farmers and their collectives for accessing real-time market intelligence, especially grade-specific pricing and transparent price discovery.

Provide training and capacity-building for farmers and their collectives and also for traders and intermediaries to improve their understanding and knowledge of trading requirements and standards for quality, grading produce, and pricing.

Infrastructure Support

Strengthen quality testing infrastructure in major markets, for example, equipping facilities with cleaning and grading machines, moisture meters, and oil content analysers to ensure fair and transparent price setting. Create and augment dry storage infrastructure to cater to the needs of smallholder farmers for storage of mustard produce

11 Recommendation

Rapeseed-mustard (RM) average productivity is 1.22 MT/ha against average productivity of European region is 2.5 to 3.7 MT/Ha, which makes Indian unit production cost is much higher than its other major producing counterparts. Indian RM CIF value in Germany in last 5 year is between USD 410-480, which is Rs 30000 to 35000 per MT. Current MSP is Rs 50500 per MT and current prevailing open market price is Rs. 71000. At this price level, Indian RM is non-competitive in export market especially in German market. We need to work on productivity enhancement and working low erucic acid variety to be competitive in export market.