EXPORT ORINTETED VALUE CHAIN STUDY

VALUE CHAIN STUDY

Cumin - Rajasthan

Prepared by:
Sunil Kumar
Pratyush Ranjan Singh

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A. ABBREVIATIONS

AEP	Airport Entry Pass
AEZ	Agri Export Zone
AISEF	All India Spice Exporters Forum
AMD	Agricultural Market Development
APEDA	Agricultural and Processed Food Products Export Development Authority
APMC	Agriculture Produce Market Committee
ASTA	American Spice Trade Association
BRCGS	British Retail Consortium Global Standards
BSCI	Business Social Compliance Initiative code of conduct
C&F	Clearing and Forwarding
CHCs	Custom Hiring Centres
CRE	Cargo Report Export
CSR	Corporate Social Responsibility
DA&FW	Department of Agriculture and Farmer welfare
DGCIS	Directorate General of Commercial Intelligence and Statistics
ESA	European Spice Association
ETI	Ethical Trading Initiative
EU	European Union
FAO	Food and Agriculture Organization
FOB	Freight on Board
FPC	Farmer Producer Company
FPO	Farmer Producer Organization
FSSC	Food Safety System Certification
GAP	Good Agricultural Practices
GFSI	Global Food Safety Initiative
GI	Geographical Indication
GS	Global Standards
GST	Goods and Services Tax
Ha	Hectare
ICAR	Indian Council of Agricultural Research
IFS	International Featured Standards
KVK	Krishi Vigyan Kendra
MoU	Memorandum of Understanding
MRL	Maximum Residue Limit
MSP	Minimum Support Price
MT	Metric Tonne
NABARD	National Bank for Agriculture and Rural Development
NAFED	National Agricultural Co-operative Marketing Federation of India Limited
NAFTA	North American Free Trade Agreement
NGO	Non-Government Organization
NIAM	National Institute of Agricultural Marketing
NRCSS	National Research Centre on Seed Spices
NRLM	National Rural Livelihood Mission
PA	Pyrrolizidine Alkaloids
PoP	Package of Practices
PQI	Portfolio Quality Index

QCI	Quality Council of India
RSAMB	Rajasthan State Agricultural Marketing Board
SAFTA	South Asian Free Trade Area
SAU	State Agriculture University
SEDEX	Supplier Ethical Data Exchange
SKNAU	Sri Karan Narendra Agriculture University
STDF	Standards and Trade Development Facility
TRACES	Trade Control and Expert System
UAE	United Arab Emirates
UNDP	United Nations Development Programme
USA	United States of America
WSO	World Spice Organization
WTO	World Trade Organization
Yr	Year
%	Percent
€	Euro
µg	Microgram

B. EXECUTIVE SUMMARY

India is the homeland of spices since ancient times. It is the largest producer, consumer and exporter of spices, with 48 per cent share by volume and 43 per cent share by value, in the world. In India, Rajasthan is the second leading state after Gujarat in cumin production, accounting for 0.53 MT/Ha productivity in the year 2021-22 due to favourable agro climatic conditions in the state. The cumin produced in the state have a high potential of export but lack of proper supply chain development has restricted the global market. To promote the export of cumin from Rajasthan, the Indo-German Cooperation on Agricultural Market Development (AMD) project is envisioned to support sustained economic growth in the agricultural sector and improved livelihoods in rural regions of India.

The study on "Export Oriented Value Chain of Cumin" deals with the assessment of existing value chain of cumin in Rajasthan and recommends the development of sustainable export-oriented value chains for the cumin in the state. The study was conducted at Jaisalmer clusters where four FPC's were shortlisted for the promotion of export of Cumin from the state. Existing value chain studies revealed that the cumin are sold at domestic as well as foreign market. Various gaps like low production (yield) of cumin as compared to Gujarat, market risk as price fluctuation and product quality, wild animal conflict and pest infestation, poor post-harvest management and lack of knowledge about storage, handling and food safety management system for the produce were observed during the study which hampers the production of quality produce for export.

There are vast opportunities for cumin growers in both domestic as well as export market, but to gain profit from market access, they need to substantially increase the quality of their produce. Various interventions are suggested to mitigate the gaps by providing support at various stages of the supply chain i.e. production, postharvest and enterprise, market development and Institutional support. The suggested interventions are depicted hereunder:

Production support	Reducing Cost of production of Cumin
	Development and Introduction of export-oriented agronomical practices
	Developing a mechanism for product traceability
	Facilitation in creating field level post-harvest management infrastructure
Postharvest and Enterprise support	Infrastructure for sorting, grading and packaging as per export requirement
Market Development	Introduction of entrepreneurs, FPO and other stakeholders to export markets and buyers
Institutional Support	Training and capacity building of value chain stakeholders
	Efficient convergence with public sector schemes
	Strengthening of FPOs

There is a need to improve the efficiency along with whole value chain and reduction in cost of doing business through investments in production, postharvest infrastructure, storage and aggregation facilities for promoting the export of cumin from the state.

1. INTRODUCTION

India has emerged as one of the leading producers of various agricultural products globally. This increase in production has created a marketable surplus and therefore, various Indian products need to explore global markets. However, access of Indian products in global markets has remained limited due to issues relating to competitiveness, quality, market access, and other factors (policies, phytosanitary restrictions, trade agreements, and non-tariff trade barriers) affecting exports. The supply chains of various agri-commodities have not evolved to meet the requirements of the global markets because of general inefficiencies that exist at different levels and negligence towards the understanding of the global market requirement.

The Indo-German Cooperation on Agricultural Market Development (AMD) project, therefore, is intended to support India's strategy in modernizing its agricultural markets leading to the sustainable economic growth of India's agricultural sector and improving livelihoods in the rural regions. To achieve its project activities, the project strategically endeavors promoting exchange of technical dialogues between the German and Indian stakeholders, imparting export-oriented trainings & capacity building measures, and strengthening sustainable and market-oriented value chains enabling ecosystem for Farmers Producer Organization's (FPOs). As part overarching project objectives, one of the key result areas of the project is to demonstrate with pilot activities how the integration of FPOs into sustainable and market-oriented value chains can work. During the project's inception phase (August 21 to April 22), under this result area, various analytical studies were undertaken by the project, both based on empirical evidences and providing strategic guidance. Specifically, the studies were commissioned to identify the export potential of 23 different Agri-commodities, under the frame of "One District One Product list" (listed in the project's pilot states as proposed by DA&FW[1]) and assessed its export potential to the European Union markets. Secondly, State's agri-food profile assessment was carried out for Rajasthan, Odisha, and Uttar Pradesh to outline the broad contours of agri-food systems existing in the states. Furthermore, a diagnostic study was undertaken to identify the learning and challenges faced by the FPOs engaged in export-oriented activities. The findings of the different studies, later coupled with the state level consultations, the Project's Steering Committee agreed to strengthen the value chain of up to six most potential commodities in its pilot states and recommended to undertake three inclusive strategic pathways during its implementation phase (May 2022 onwards), namely-

1. Implementation of the export-oriented sustainable value chain for Coriander and Cumin from Rajasthan;
2. Piloting a model that would Institutionalize Agricultural Produce Marketing Committees (APMCs) as an export-oriented service provider; and
3. Supporting FPOs in development and implementation of viable export-oriented business plans in the three project pilot states.

This particular study deals with the assessment of the existing value chain of Coriander and Cumin value chain in Rajasthan state and recommends the development of sustainable export-oriented value chains for these two commodities. Scope of the study covers following aspects -

[1] Project pilot states are Rajasthan, Uttar Pradesh, and Odisha states.

- Exploring commodity-wise value chain structures, activities, seasonality and the relationships among agents (Input suppliers, Government department & institutions, farmers, cold storage/warehouse, processors, commission agents, traders, wholesalers, exports, transports and logistic);
- Examining the infrastructure capacity and utilization capacities/efficiencies, testing and quality facilities, traceability, certification, packaging, labelling, logistics and transport systems;
- Examining the flow of commodities and their distribution patterns through different agents and through different channels;
- Understanding the value-added for different agents and analysing their costs, margins, profits, and losses;
- Identifying the bottlenecks, opportunities, and areas of potential improvement for export-oriented value chain development; and
- Proposing areas of interventions and strategic recommendations that strengthen and promote export-oriented value chains from pilot regions to the EU markets

The approach adopted to conduct this particular study has been discussed in the following chapter.

2. METHODOLOGY

For conducting the value chain study of cumin, initially, intensive interactions were held with the ADT team to understand the overall objectives of the project. After rounds of discussion, the approach for the project was concluded, which included secondary research, a literature review and detail methodology for primary survey in the project area.

For the promotion of exports of Cumin and Coriander, the project has targeted Kota cluster for coriander and Jaisalmer cluster for Cumin, and four Farmer Producer Companies (FPCs) have been shortlisted for this purpose. Therefore, for primary research, value chain stakeholders were selected from these clusters. Respondents for the primary survey included representatives of these FPCs, traders / aggregators and exporters already working in the project area.

For interactions, an interview guide was prepared in consultation with the ADT team and other consultants. These interview guides included roles and responsibilities of various value chain players, costs, margins and mark-ups at different levels, key challenges, and inefficiencies in the value chain.

Based on the analysis of secondary literature and information compiled from the field, the value chain analysis report has been prepared. The report has been divided into different chapters, such as a Review of Existing Value chain studies, Product profile, Value Chain analysis, and Proposed Interventions for Export.

3. REVIEW OF EXISTING VALUE CHAIN STUDIES

Cumin is seed spice of an annual herb, botanically known as *Jeeraum cyminum* L. In various Indian languages, it is also referred to as jeera and is a common flavour in India. It has pharmaceutical, nutraceutical, perfumery and cosmetic uses. It enhances the flavour of spices and is also frequently utilised for its therapeutic properties. Cumin is mostly produced and consumed in India.
For long-term sustainability and improving production and market efficiency, interventions at different levels such as supply of quality inputs, following scientific cultivation practices, improved market facilities in APMCs, strengthening of extension services, suitable price policy, encouragement of contract farming, promotion of organic farming to exploit the trade opportunities and encourage eco-friendly approach for cumin seed production, i.e. integrated nutrient and pest and disease management practices to avoid indiscriminate use of chemical fertilizers and pesticides are recommended in major production clusters (NABARD). The domestic price of cumin seeds mainly depends on the forecast of area, production, weather during crop development stages, carryover stocks and export demands, etc. The major trading centres for cumin seeds are Unjha, Patan, Mehsana, Visnagar in Gujarat and Jaipur, Kishangarh, Kekri, and Jodhpur in Rajasthan.

Given the important place of cumin in Indian spices, numerous studies of the cumin value chain have been conducted by various agencies and departments. However, the majority of these value chain studies only pay attention to the domestic markets. Important findings from some of these studies have been discussed hereunder–
As per the respondent and secondary literature, the fallowing supply chain has been referred for further study purposes.

A value chain study of Cumin "Scope of Cumin Value Chain Promotion in Rajasthan" (Kamlesh Pal, NRLM) has given a reference that there are two channels of marketing of cumin exists in the state, which are as below -
Supply Channel-1 (Domestic Market): Farmers –Middleman- Small trading unit (processing unit)-Major trading canters (Like Unjha & Jaipur)-Trading centres (Domestic and foreign)-Small units (Wholesaler)-Shopkeeper –Retailer.
Supply Channel-2 (International Market): Farmers –Middleman- Small trading unit (processing unit)-Major trading canters (Like Unjha & Jaipur)-Trading centres (foreign)-Small units (Wholesaler)-Shopkeeper –Retailer.

The most popular channel in the Rajasthan APMC markets is Channel 1 (Domestic) & Channel 2 (Foreign/ Export). This channel is most often found in major trading centres, such as Unjha, and Jaipur. Farmers sell their produce through this channel to middleman, while small trading units (processing units) are the direct purchasers of this produce from middleman. Then small traders sold goods to major trading centres/major traders located at Unjha and Jaipur. Wholesalers purchase the produce from major traders through different trading centres for domestic and foreign market. Shopkeepers purchase goods from the wholesaler and then sell them to retailers.

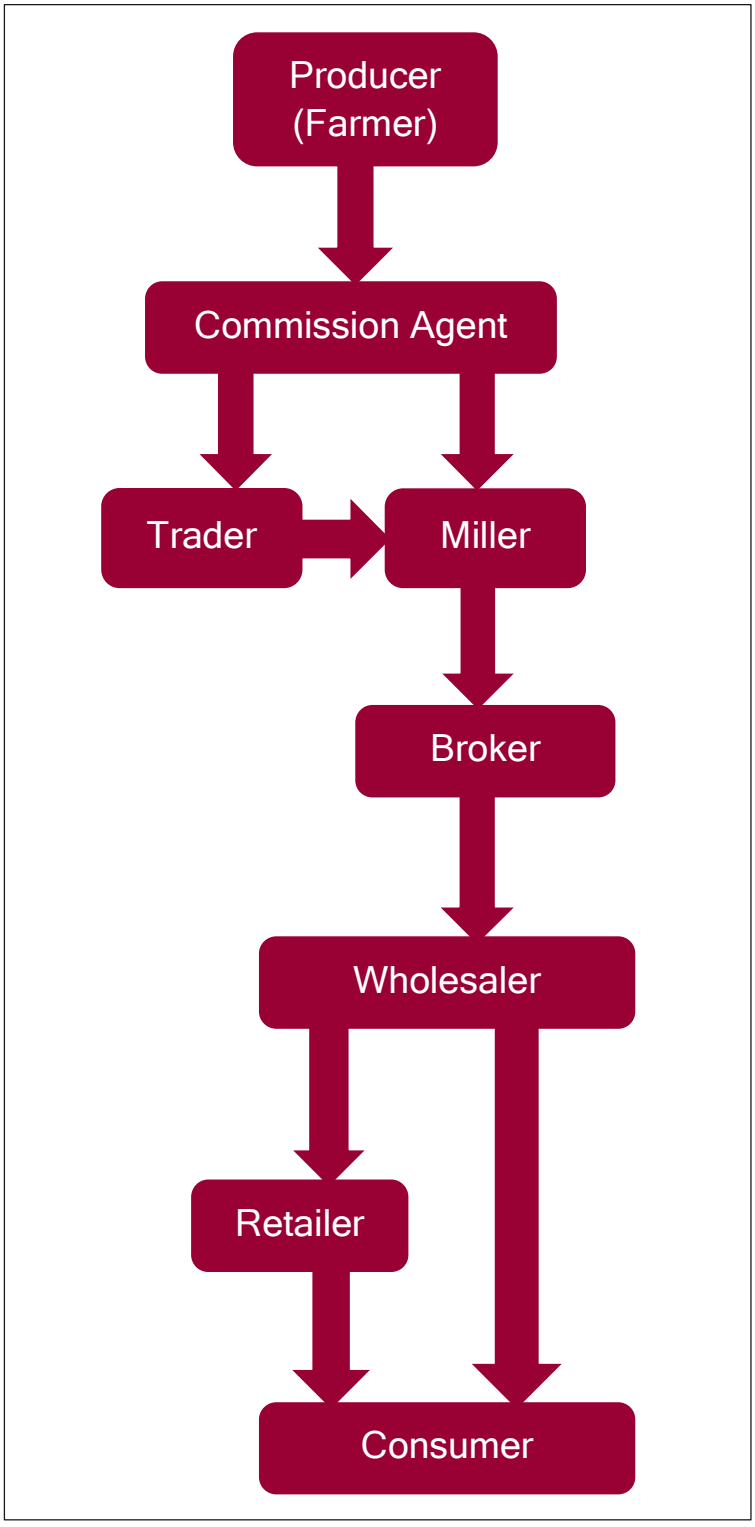

Producer (Farmer)
Middleman
Small Trading Unit (Processing Unit)
Major Trading Centres (Unjha & Jaipur)
Trading Centres (Domestic & Foreign)
Wholesaler
Shopkeeper
Retailer

Marketing channel that we observed for Cumin during the field study of Cohesion Foundation Trust, Ahmedabad (by Nirmal Munda & Munaram Naik):

Channel 1: Farmer – commission agent –Miller – Wholesaler – Retailer- consumer.
The most popular channel in the Gujarat APMC markets is Channel 1. This channel is most often found in markets with a high density of mills, such as Dessa, Chandisore, Unjha, and Radhanpur. Farmers sell their produce through this channel to commission agents, while millers are the direct purchasers of this produce from commission agents. Then Miller sold his products to wholesalers. Retailers purchase goods from the wholesale market and then sell them to customers. The cost incurred between the commission agency and millers is in the form of bag costs, market charges, dalali, loading and unloading charges, transporting, bill commissions, and weighing charges, and it is paid by millers. Retailers are responsible for paying the costs associated with transporting and loading goods between wholesalers and retailers.

Channel 2: Farmer – commission agent – Trader– Miller –Broker-Wholesaler – Retailer- consumer.
Channel 2 is mostly the same as Channel 1 and is generally found in places where millers are not available, like Dessa, Unjha, and Chandisore, and buyers need to sell their cumin to outside millers. The only player between millers and commission agents is the trader. During the auction, this trader purchased cumin from a commission agent and sold it to millers at their own risk and on their own terms. The expenditures incurred between the miller and trader are often paid for by the miller in the form of Dalali, loading and unloading, transportation, etc.

Channel 3: Farmer – commission agent – Trader – Miller –Broker-Wholesaler – Consumer.
The only difference between Channel 3 and the other channels is that consumers on Channel 3 buy cumin directly from the wholesale market. Only transporting, loading, and unloading are done at this expense, which is covered by consumers.


Producer
(Farmer)
Commission Agent
Trader
Miller
Broker
Wholesaler
Retailer
Consumer

Cumin Export – Policy Thrust –

For promotion of export of Cumin, government has established an Agricultural Export Zone for Cumin, which covers districts of Nagaur, Barmer, Jalore, Pali and Jodhpur. The State Government coordinates services provided by State and Central Government agencies, including agricultural universities, which includes programs that assist with pre- and post-harvest treatment, plant protection, processing, packaging, storage, and research and development. The AEZs are designed to help producers and exporters develop and source raw materials, process goods, and secure proper packaging. The AEZs have adopted an end-to-end approach, integrating the entire value chain for the focus products, from the initial stages of the product's production to its entry into global markets. Although, AEZs for cumin was rated as good performing AEZ at the national level, however, in general, following issues have been raised by a study in operation of AEZs at pan India level -

- Lack of Ownership by Government Authority and Their Agencies.
- Lack of Awareness About the Scheme and Its Conceptual Framework Among Stakeholders Including State Government Field Establishments
- Lack of Project Orientation in the Conceptual Design of AEZ
- Lack of Coordination/Monitoring System in AEZs
- Non-Materialization of Adequate Public Investment from Central and State Governments o Indiscreet proliferation of AEZs

Challenges across value chain -

Different previous studies have highlighted various challenges across the cumin value chain. Some of the important challenges and gaps identified in these value chains are as under -

At the production level –

- Very low yield levels of cumin in Rajasthan (compare to Gujarat)
- Market risk: fluctuating market prices, product quality.
- Production risk: loss from wild animals, and pest infestation.
- Production quality: lower production and quality due to improper planting decisions and input use.

At the post-harvest level -

- In storage, decrease in weight leads to a poor selling price and rodent damage.
- Risks related to logistics and infrastructure include improper truck loading procedures, which can cause product loss or damage while in transportation, as well as a lack of accessibility to properly maintained market canters, collection stations, or other transaction locations.

At the Market level -

- Market risk includes product quality and price volatility.
- Traders face challenge of non-receipt of payment from the buyers in the market.
- Weight loss due to moisture content loss during storage.
- Millers sometime face constraints in capacity utilization due to lack of sufficient supply.

- Increased processing costs as a result of utility and energy outages
- High level of wastage in the supply chain at different levels.
- Poor quality and food safety management system at various levels in the supply chain and high cost of setting-up measures for fulfilling the norms of food safety.
- Rejections of products, recalls, and penalties

Cumin Export from India – Stability and Competitiveness -

Export of cumin from India has high volatility and this volatility of export varies for different importing destinations. Large number of studies have been conducted to assess the stability of various importing markets. In some studies, UAE, Malaysia and USA have been identified as a relatively stable trade partner for importing cumin from India.

As per study titled "Performance Analysis of Cumin export from India" ((IJARCMSS Volume 05, No. 01(I), January - March, 2022, pp 59-64), The growth of export quantity of cumin was positive and significant. While growth of export value of cumin was positive but non-significant. Quantity of cumin exported was growing at 8.71 per cent per annum. All countries showed more than 25 per cent instability in cumin export during study period. Nepal remains the most unstable market and Malaysia remains more stable markets in terms of export quantity and value of Indian cumin throughout the study period. USA and Malaysia were the most preferable market for the export of cumin. Indian production and exchange rate were the major factors influencing the export of cumin from India. India has comparative advantage in cumin export with Vietnam, Nepal and UAE. Vietnam and Malaysia were the most loyal markets for Indian cumin while the countries such as Nepal and USA were poorly loyal markets. However, UAE and other countries group were the moderately loyal markets. Prediction of future cumin export showed that Vietnam, USA, Nepal and other countries group shows a decreasing trend. However, Malaysia and UAE show an increasing trend.

Different initiatives for promoting exports of Cumin (Spices) –

Spices Board of India, in collaboration with various national and international agencies has taken up various projects to facilitate and promote exports of spices, including cumin. Some of the important projects in this regard are as under -

a) Spices Board in collaboration with World Spice Organisation (WSO), All India Spice Exporters Forum (AISEF), and International agencies like IDH (which supports the sustainable trade initiative) and GIZ, Germany (which works on Biodiversity) is implementing the project titled "National Sustainable Spice Networking Programme". The project's main objective is to ensure food safety, bring in traceability and achieve sustainability with due concern for biodiversity in the spice sector, to address the quality issues related to spices having export demand and to sustain the exports and export growth.
b) The UNDP's Accelerator Lab, India jointly with Spices Board and GS1, is implementing the project "Development of Blockchain platform for Spices". Under this project, blockchain technology will be incorporated into the espicebazaar web portal, which was jointly developed by Spices Board and MeitY. The project will help in ensuring the efficiency of spices processing and bring traceability from the farm to fork level and encourage the farmers, traders, exporters and other stakeholders of spices supply chain to trade through the espicebazaar web portal.

c) Spices Board in collaboration with Standards and Trade Development Facility (STDF) under WTO and Food and Agriculture Organization of the United Nations (FAO), India, is implementing the project entitled "Strengthening spice value chain in India and improving market access through capacity building and innovative interventions". The tenure of the project is three years. The goal of the project is to expand exports of safe and high-quality spices from India to overseas markets. The project targets four spices viz; cumin, fennel (Gujarat and Rajasthan), coriander (Madhya Pradesh) and black pepper (Andhra Pradesh)

d) The Spices Board and QCI have executed a MoU for implementation of the project titled:" Doubling of exports of spices in line with AEP and increasing farmer's income by IndGAP certification", in order to enhance competitiveness of Indian spices in the international market. The project is conceived with multiple objectives such as, Quality assurance, Agro biodiversity, Traceability, GAP certification, Mapping of sustainable development goals, Ensuring social security and Export promotion and sustainable exports. The spices initially considered under the project are Chilli in Warangal, Cumin in two districts of Rajasthan- Barmer and Jalore, Cardamom (small) in Idukki, Black Pepper in Chikmanglur and turmeric in Karimnagar, Telangana.

Key recommendations and suggestions –

Different value chain studies have proposed various interventions and have recommended suggestions for improving efficiency of the cumin value chain. Some of the key recommendations have been highlighted and presented here –

- **Working intensively at production end** – Productivity of cumin in Rajasthan is less than half of the yield levels in Gujarat. The low productivity of cumin in Rajasthan is due to frequent drought, lack of seeds of improved varieties and assured irrigation facilities, while high productivity in Gujarat may be due to the availability of irrigation water from various sources. This shows scope for increasing cumin yield in Rajasthan by implementing various measures at the farm level.
- **Direct marketing:** In this approach, produce, such as cumin, is sold directly by farmers to millers without the involvement of middlemen. Producers, millers, and other bulk customers can reduce transportation costs and increase price realisation by using direct marketing. Additionally, it encourages large-scale marketing companies, such as millers and exporters, to buy directly from the producers. Through "Apni-Mandis" in Punjab and Haryana, the nation has experimented with direct marketing by farmers to customers. Through "Rythu-Bazaars," the approach has gained popularity in Andhra Pradesh with a few tweaks. Currently, these markets are run at the expense of the state exchequer as a marketing incentive to enable small and marginal producers to promote their products without the assistance of the middlemen.
  Direct marketing will increase the producer's profit, minimise marketing costs, encourage the distribution efficiency of the marketing system, enhance consumer satisfaction, provide better marketing techniques to producers, encourage direct contact between producers and consumers for demand driven production, and encourage the farmers to sell their produce at retail.
- **Contract marketing:** Contract marketing is a system of marketing, where a farmer will plant a particular crop for marketing under a "buy-back" arrangement with a company (an entrepreneur, trader, processor, or manufacturer). Following economic liberalisation, it has

received attention as national and multinational companies enter into contracts for the marketing of agricultural products. Additionally, they offer technical support, capital, and input supplies to contracted farmers. Contract marketing guarantees timely marketing of the produce as well as a constant supply of high-quality produce to contracting agencies at a price that is mutually agreed upon. Farmers and contracting organisations both benefit from contract marketing. (i) Contract marketing is advantageous to farmers in multiple ways: it ensures price stability, provides an assured marketing outlet, involves no middlemen, Prompt and assured payments; technical advice in the field of production until harvesting; fair trade practices; credit facility, crop insurance, and exposure to new technology and best practices. (ii) Contract marketing benefits contracting agencies in a number of ways: it ensures a supply of produce (raw materials) and allows for control over need-based production and post-harvest handling; control over the quality of produce; stability in price in accordance with mutually agreed contract terms and conditions; opportunities to acquire and introduce desired crop varieties; assistance in meeting specific customer needs and preferences; better control over logistics; and strengthen the producer-buyer relationship.

- **Co-operative marketing:** The cooperative societies sell their members' produce directly in the markets, which fetch remunerative prices. Co-operative societies market the products their members produce collectively and secure economies of scale for their members. The benefits of Co-operative marketing are: Remunerative price to producers; reduction in cost of marketing; reduction in commission charges; effective use of infrastructure; credit facilities; timely transportation service; reduction of malpractices; Marketing information supply of agricultural inputs; collective processing.
- **Institutional marketing channel:** Some institutions, such as the National Agricultural Co-operative Marketing Federation of India Limited (NAFED), have been entrusted with the marketing of cumin. NAFED is the nodal agency for procuring cumin and providing minimum support prices (MSPs) to the farmers for their produce.

The main institutional marketing channels for cumin are as under:

1. Producer → Procuring Agency → Miller → Consumer
2. Producer → Procuring Agency → Miller → Wholesaler → Retailer → Consumer
3. Producer → Procuring Agency → Miller → Retailer → Consumer

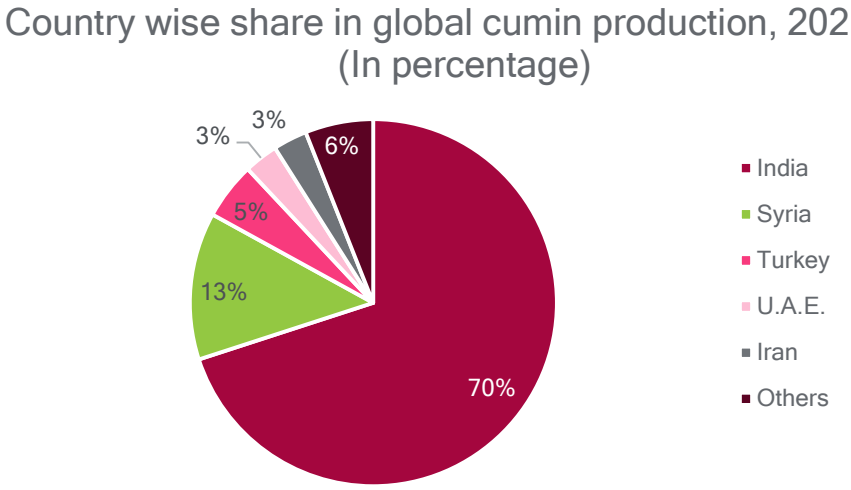
- **Farmer Association**: - A farmer's association is an autonomous, self-managed group of farmers who have a common objective and interest. Access to technical and market information, increased purchasing and selling power, the chance of continuing valuable and relevant activities, strong incentive for sustainability, and the development of social cohesiveness are all advantages of forming a farmer's association.

4. COMMODITY PROFILE – CUMIN

4.1 Market Overview

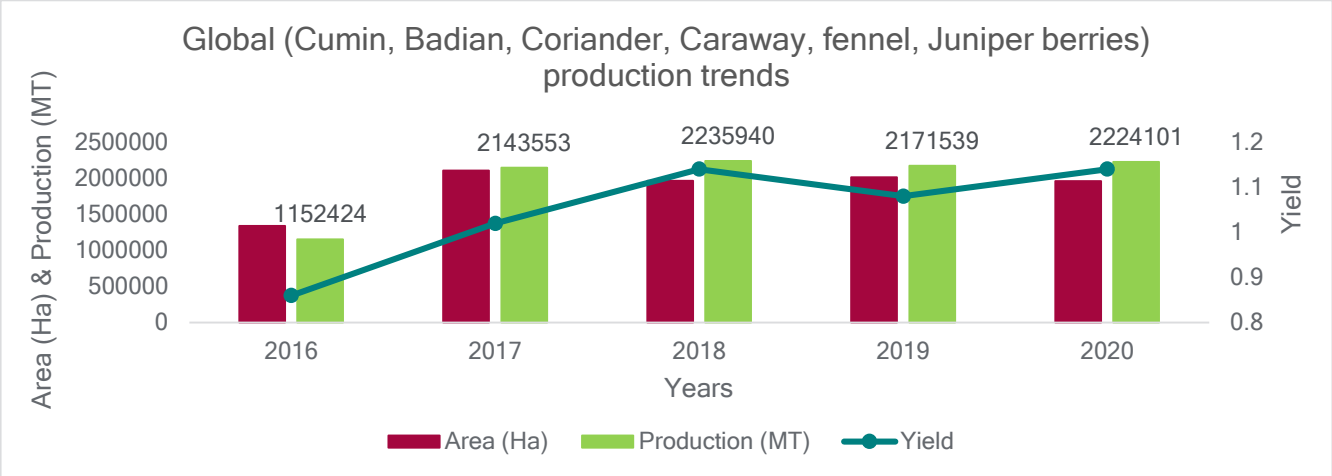
4.1.1 Global Production of Cumin

Cumin is largely produced in five countries. Today, India accounts for approximately 70% of the world's cumin production and is also the largest exporter (30-35% of its production). Apart from India other cumin producing countries are Syria (13%), Turkey (5%), U.A.E. (3%), and Iran (3%).[2] A shortfall in India's cumin production will increase the cumin prices globally.



Source: Cumin turns hot Prices set to touch a five-year high as production shrinks by a third- CRISIL

It has been observed that the global data (production, area and yield) for cumin is not available. The combined data of cumin along with Badian, Coriander, Caraway, fennel and Juniper berries is available. The total production is about 22,24,101 MT (the year 2020, FAO), which has been almost at the same level during the last four years as shown in the graph.[3](Refer graph: 2)

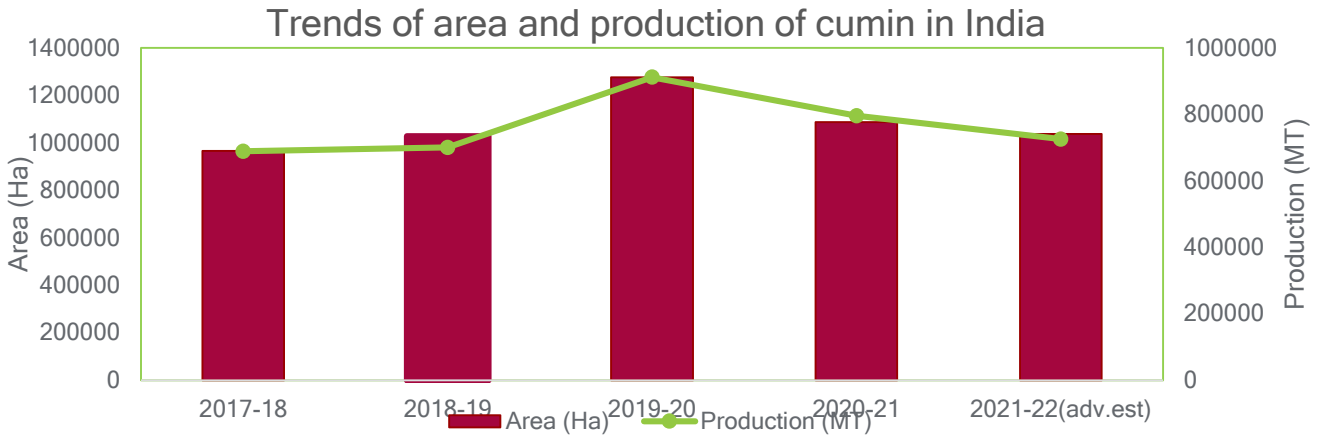


Source: FAO (2020)

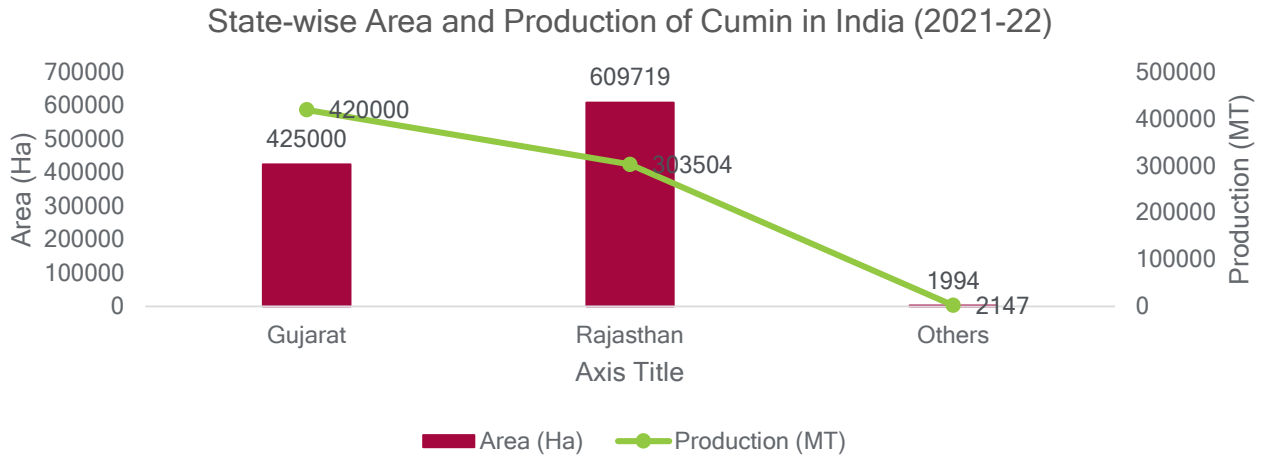
[2] Cumin turns hot Prices set to touch a five-year high as production shrinks by a third- CRISIL
[3] https://www.fao.org/faostat/en/#data/QCL

4.1.2 Indian Production of Cumin

Total cumin production in India during 2021–2022 was estimated to be 725651 MT from an area of 1036713 Ha with average productivity of 0.70 MT/ha. Gujarat is ranked first in cumin production, accounting for 58% of the total production with an area of 41%, followed by Rajasthan, accounts for 42% of the total production with an area of 59% of the total area under cumin production.



Source: Spices Board India



Source: Spices Board India

Important varieties of cumin grown in different states of India are discussed below –

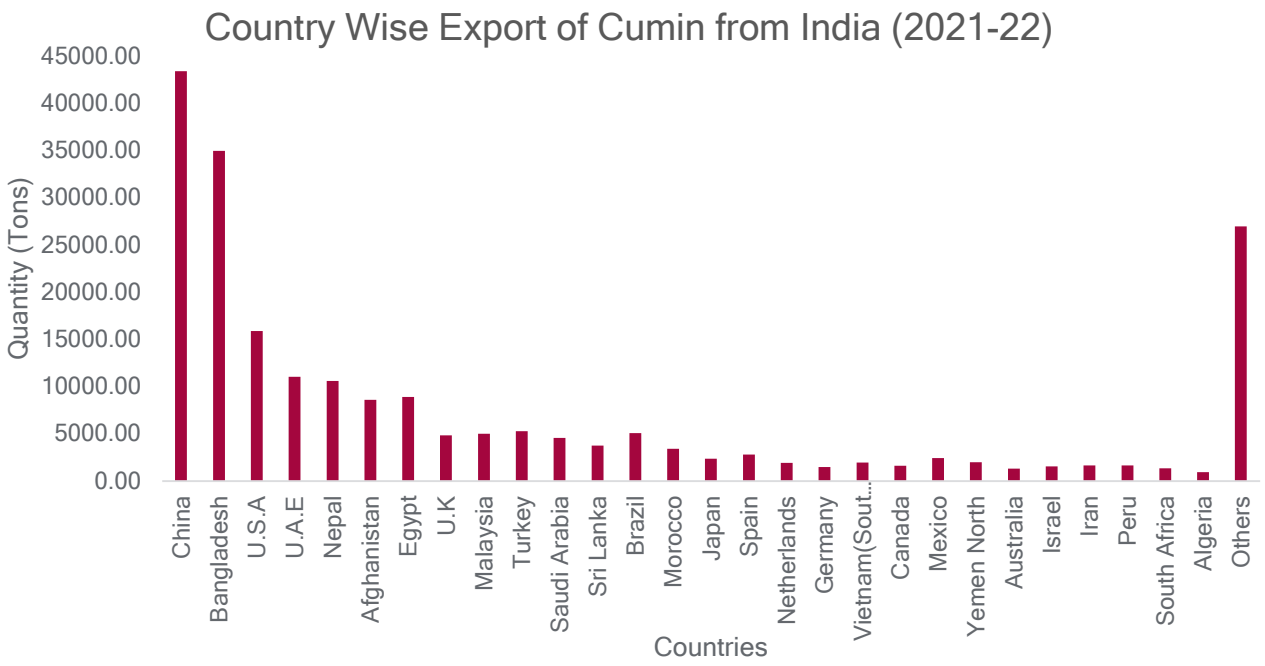
State Name	Important Varieties
Gujarat	GC-1, GC-2, GC-3, GC-4, GC-5
Rajasthan	RZ-19, RZ-209, RZ-223, RZ-341, RZ-345, CZC-94
Himachal Pradesh	Kala Zeera
Source: Agricultural Statistics at a Glance, Government of Rajasthan	

The cumin variety have been received geographical indication (GI) tag due to their specialties.

G.I. Certified cumin varieties from different geographical areas of India				
S. No.	Name of Geographical Indication	Application No.	Specific Geographical Area	State
1	Himachali Kala Zeera	432	Kinnaur, Himachal Pradesh	Himachal Pradesh
Source: www.ipindia.gov.in				

Cumin is the second most popular spice in the world after black pepper. Cumin is known by different names in different geographical region of the world.

Cumin exports from India registered 19.61 and 26.86 percent compound annual growth in quantity and value, respectively, from 2004–05 to 2018–19. Its exports climbed by more than a factor of eleven, from 15767 to 180300 metric tonnes in the respective years. In terms of Value, it grew from 115 to 2884 crore rupees, an increase of more than 25 times. Cumin's volume portion of the nation's overall spice exports climbed from 4 percent in 2004-2005 to 17.75 percent in 2018-19 as a result of increasing exports. Vietnam, the U.A.E., the U.S.A., Nepal, and the U.K. were the top importers of Indian cumin from 2004–05 till 2018–19.



Source: DGCI&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and 2020-21/2021-22 figure are taken from DGC&S/MoC&I only

For India, China is estimated the largest importer accounting approximately 20% of total export from India, followed by Bangladesh (~16%), the U.S.A. (~7.3%), the U.A.E. (~5%), Nepal (~4.9%), and Afghanistan (~4%) in the year 2021-22. In the year 2020-21, China imported approximately 35% of total export from India, followed by Bangladesh (~14%), the U.S.A. (~6%), the U.A.E. (~5%), Nepal

(~4%), and Afghanistan (~2%). India is estimated to export approximately 21,6996 metric tonnes of cumin in the years 2021–22. At its peak, India exported approximately 29,8423 metric tonnes of cumin in the years 2020–21.[4]

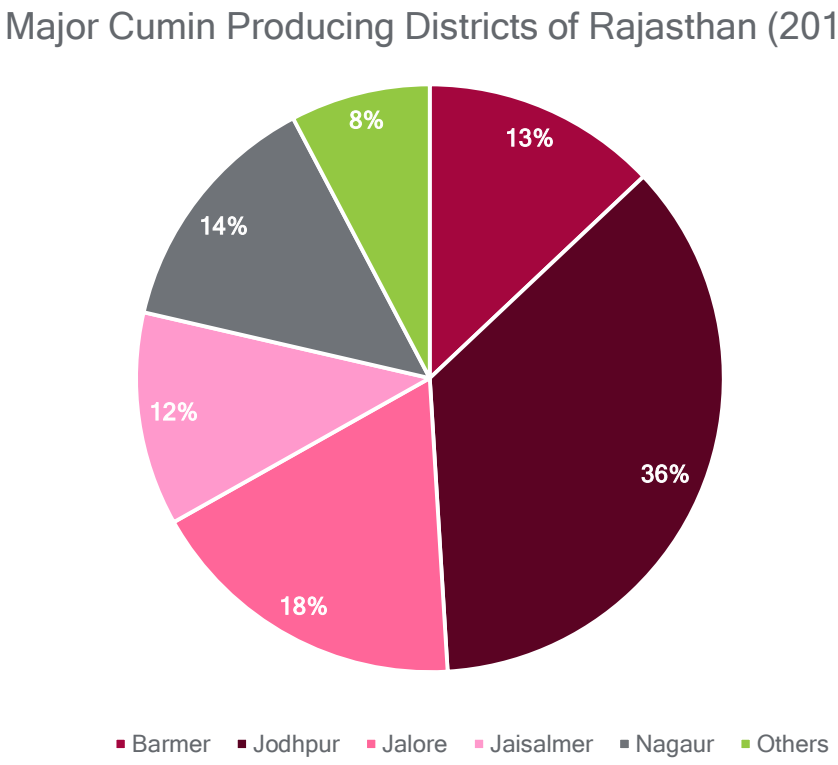
Therefore, cumin exports declined by approximately 24% in fiscal year 2021–22, owing to a 51% drop in exports to China (which accounts for one-third of exports) following a pesticide residue issue in Indian consignments. Exports are expected to fall in this fiscal year as well given that production has likely plummeted by a significant 35%.

4.2 Cumin Production in Rajasthan

4.2.1 Area and Production

Rajasthan is the second largest cumin-producing state in the country, it has 609719 ha of area under cumin production and is producing 303504 MT of cumin in the year 2021-22. The state's share in national production is 42% and the share of area stands at approximately 59%.
Apparently, the average productivity of the cumin in Rajasthan is 0.53 MT/Ha in the year 2021-22, which is substantially lower than the national average productivity of 0.7 MT/Ha.

In Rajasthan, Jodhpur district is the largest producer of cumin, accounts for approximately 36% of the total cumin production, followed by Jalore (~18%), Nagaur (~14%), Barmer (~13%) and Jaisalmer (~12%) in the year 2018-19. The major cumin-producing districts are given below.



[4] DGCI&S Kolkata/Exporters returns/DLE from customs upto 2019-20 and 2020-21/2021-22 figure are taken from DGC&S/MoC only

Source: Agricultural Statistics at a Glance, Government of Rajasthan

4.2.2 Cumin Crop Seasonality

In Rajasthan, the major cumin producing districts are Jodhpur, Jalore, Nagaur, Barmer, Jaisalmer, Pali, Ajmer, Bikaner and Sirohi. All these major cumin producing districts are lies in the western Rajasthan. Agro climatic condition of this region is semi-arid region with less rainfall. The sowing and harvesting season of cumin is mentioned in the table below.

State (Rajasthan)	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Cumin (Harvesting)												

	Sowing Season
	Harvesting Season

5. VALUE CHAIN ANALYSIS

5.1 Major Actors in Value Chain

In Rajasthan, cumin is being produced for a long period and is a traditional spice. The value chain of cumin in the state has evolved over a period of time. Actors in cumin supply chain are same as they are for other seed spices such Coriander.

In the cumin value chain in the project cluster, following actors play important roles –

Actor	Profile and Role & Responsibilities
Agri-input dealer	Cumin is a highly disease and pest susceptible crop, therefore, the input need for the crop is high. Starting from Seed, insecticides, fungicides and weedicide, all types of chemicals are used in the cumin cultivation. Agri-input dealers not only sell the required inputs to the farmers, to certain extent they are also advisors to the farmers on agri-input purchase. In case of cumin, most of the seed varieties are developed by the government research institutions. Major seed suppliers are Rajasthan State Seed Corporation and a large number of local seed companies. In absence of a lack of cumin crop-specific documented protocols for use of important brands, agri-input dealers and retailers are the main influencers to farmers on the use of these pesticides. Agri-input dealers also finance the agri-inputs, as large volumes of these inputs are given on the credit to the farmers. In all, agri-input dealers and retailers are highly influencing actor of the cumin supply chain.
Farmers	As has been discussed, cumin is a disease-prone and weather-sensitive crop; cumin production at times is a high-risk crop for farmers. Although in the cluster, most of the farmers cultivate cumin, however, there is wide variation in crop cultivation practices adopted and yield achieved by progressive ones compare to the others. The availability of irrigation water is also one of the important factors in deciding yield levels. Farmers having assured irrigation have higher yields and relatively less production risks. Starting from land preparation, sowing, fertilizer application, disease and pest management, weed management, harvesting, threshing, drying and winnowing and cleaning etc., all the activities need a good number of labour, which are managed by the farmers and the family. A large number of Farmers from Jaisalmer sells their cumin at Unjha market, which is approximately 425 – 450 Kms away from the production cluster. For this, generally, farmers hire 20 MT capacity truck collectively (2-5 farmers) and take the product to Unjha for selling.
Local Aggregators	In the project cluster, local aggregators are not a very significant actor, however, a small quantity of cumin is marketed through them. These aggregators basically purchase products from small and marginal farmers, who have small quantities. For these farmers, taking it to the market generally cost higher. These aggregators collect cumin from farmers' field/home, transport it to markets (Unjha mandi) for further selling. Sometimes, these aggregators work on behalf of large traders for procurement. Local aggregators generally earn their margin through price difference at village level and in major market.

Actor	Profile and Role & Responsibilities
Commission Agents	Regulated markets are the major place for the marketing of cumin. Major markets in Jaislmer district is Mohangarh and other important markets are Balotra (Barmer district) and Unjha (in Gujarat state). In regulated markets, commission agents play role of transaction facilitators for the farmers through auctioning. The commission agent assures payment to the farmer on behalf of the buyer. Additionally, commission agents also fulfil the credit need of the farmers, either by giving a guarantee for the purchase of agri-input or providing funds as and when required for household needs (such as family functions and festivals etc.) 
Traders	Traders are market intermediaries who connect millers and commission agents. Cumin is bought by traders on behalf of millers. The actors in this segment do not trade in cumin themselves but only arrange for its sale through an auction or bargaining system. The commission agents in the market itself typically include the auctioneers. There is no value addition taking place at the trader level. From a commission agency, he solely buys cumin, which he then sells to millers. These traders enter the picture of the value chain where there is an unavailability of mills, where millers directly are not purchasers, and where purchasers (millers) are from outside cities. At this stage, millers charge a fee known as dalali per quintal of cumin, which likewise varies from location to location. 
Millers	Processing plays a significant marketing role, in the present-day marketing of cumin. Produce is transformed during processing to make it more palatable for human consumption. It aims to expand the product's value by modifying its form.

Actor	Profile and Role & Responsibilities
	Dehulling and seed splitting are common steps in the process of turning spices into finished goods. One of the country's major food processing industries is milling. Millers may buy cumin directly from commission agents or through traders. While procuring this cumin from the commission agent, costs include bagging fees, market fees, loading and unloading fees, shipping, bill commission, weighing fees, and when it buys goods from traders, millers need to pay Dalali to traders, and this charge varies from place to place.
Wholesalers	Cumin is only purchased by wholesalers from millers through brokers. They cannot make possible the procurement of cumin from millers, without a broker. The wholesaler gets a 2% discount on each quintal of cumin procured from the miller. The wholesaler earns a 2 percent margin on each quintal of cumin sold to retailers that pay cash at the time of sale, as well as on sales made directly to consumers. Additionally, the wholesaler earns a margin of 4-5 percent on each quintal of cumin and charges interest of 0.75 or 1 rupees to retailers that take on credit. Wholesalers generally earn their margins in two ways, namely i) through differences in the purchase price and selling price (in case of the supply of product to processors distant) and ii) through time arbitrage (wholesaler purchase the cumin during harvesting season, store it appropriately and sell it during off-season).
Retailers	Retailers purchase cumin straight from wholesalers and resell it to consumers. Retailers purchase cumin in whole quintal quantities and sell it to consumers in fragmented quantities, or a measure of kilos. When selling cumin, retailers make a margin of approximately 10% per quintal. Retailers also provide it to consumers in packaging weighing one kg, two kg, or five kg; in this case, the consumer has to pay a packaging fee of somewhere between Rs. 1-2 per kg.
Market committees	Agricultural market committees facilitate and regulate the trade of cumin (along with other agricultural commodities) in major production clusters. Market yards, having shops and sheds are provided by the market committees for conducting the transactions. Officials from committees ensure fair and transparent auctioning and record each transaction. In addition, market committees contribute in providing market price information to different stakeholders and online platforms such as www.agmarknet.nic.in.

Actor	Profile and Role & Responsibilities
Processors	In the case of Cumin, there are two different types of processors. At the primary level, the processor sort, grade, and pack cumin seed. For this sorting and grading, mechanical as well as sensor-based color sortex machines are used. Primary processors also pack the cumin seed as per the requirement of end buyers/distributors/exporters. Sometimes the packaging material is provided by the buyers only. At the secondary level, processors convert seed into cumin powder and pack it as per requirement (of wholesale or retail). 
Marketing companies & distributers	At the retail level, cumin is sold in two forms as cumin seed and as powder. There are small and large spices marketing companies who have developed their brand and distribution network. Some of them charge high premium for their brand. Marketing companies mostly invest in creating brand image in the market and ensuring availability of their brand on retail shelves.
Exporters	Same to the marketing in the domestic markets, cumin is exported in both forms, as seed, and as powder. In the case of exports of cumin seed, exporters either procure it from primary processors or get job work done (if procured directly from the markets). In the case of the export of Cumin powder, mostly the company's marketing cumin in domestic markets are either exporting directly or supplying to the exporters.
Extension services providers	For promoting improved production practices and training farmers on various other aspects, different government agencies are working in the field. National Research Centre for Seed Spices (ICAR), Ajmer; Sri Karan Narendra Agriculture University, (SKNAU), Jobner; Krishi Vigyan Kendra (KVKs), at the district level and State Agricultural Universities are the key agencies providing extension services. In addition to the government agencies, some NGOs and private agencies (under CSR initiatives) also provide extension support to the farmers.
Farmers Producer Organisations	Farmers producer organisations (FPOs) are relatively very new institutions in cumin value chain. At this stage, most of the FPOs (in selected production cluster of Rajasthan), working in cumin value chain are of nascent stage. Current role is mostly limited to providing agri-inputs and marketing of small quantities of cumin in the market. It is expected that with government thrust on promotion and strengthening of FPOs from government side and also support extended by various private sector players, over period of time, these institutes will have a significant role in the complete value chain.
Spices Board of India	Spices Board is an organisation promoted by the Ministry of Commerce and Industry, Government of India. Board is mandated to promote Indian spices at the international level by implementing various schemes having interventions across spices value chains, starting from production, marketing, infrastructure,

Actor	Profile and Role & Responsibilities
	quality monitoring to exports. Board also run specific programme in partnership with various international agencies in India.

In addition to the above-mentioned cumin value chain actors, there are other actors as well. Such as organised players and new age ag-tech start-ups, developmental agencies, NGOs, etc. who have been working in the supply chain in one way or another.

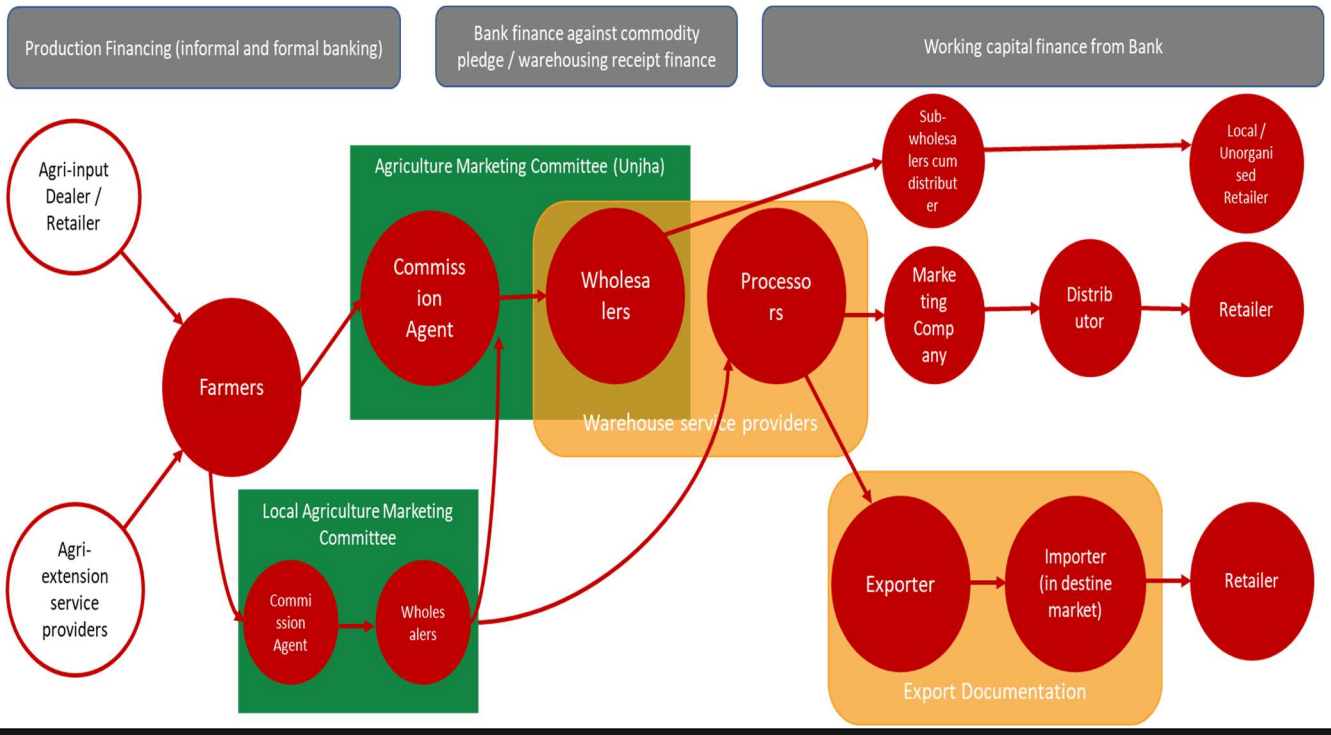
5.2 Commodity Flow Analysis

In market, trade of cumin happens based on the quality of the produce. In market, there are different grades, which are being terms as per the market requirement, are as below –

- European Quality cumin seed
- Gulf quality cumin seed
- Singapore quality cumin seed
- Grinding quality cumin seed

Each of these grades has further been divided into sub-grades. These sub-grades have been discussed in the Annexure.

In production cluster of Jaisalmer, majority of cumin (Approximately 52-55% of the total cumin produce) is marketed through regulated markets (Local APMC Mandi) and Approximately 40-45% of the produce is marketed by the farmers directly to the Unjha APMC mandi (Mehsana, Gujarat). The remaining 5-8% of the produce is marketed through institutions like local FPOs and organised players like Olam, AD Maurya etc. Broadly, the trade channel is straight, however, in many cases, actors in the cumin trade are playing multiple roles. Most common supply chains of cumin have been discussed in the following paragraphs-



5.2.1 Domestic Supply chain –

Mostly the cumin is marketed through the regulated markets (*APMC Mandi*) only. The supply chain gets bifurcated when the cumin is transported directly by the cumin farmers to Unjha mandi and out of the market. This bifurcation is mainly based on two criteria, i) based on the type of processing to be used and ii) type of end markets to be targeted.

Channel 1: Marketing by organised players –

Approximately 52-55% farmers bring their produce in the regulated local APMC mandi (Jaisalmer and Mohangarh) of the Jaisalmer project cluster, mostly in plastic and jute bags or sometimes as loose in the trolly. Each farmer, in general, has relationship with the commission agent at the local mandi. These commission agents facilitate in auctioning of the cumin at the market yard. Technically, the auctioning takes place under the supervision of APMC appointed auctioneer, however, in practice, wholesalers have mutual trust and the auction is organized by a commission agent who can send transaction records to the APMC officials.

While around 40% of the cumin farmers bring their produce directly to the regulated APMC mandi at Unjha just to save the commission charges of approximately Rs. 5.63 per kg of produce that they supposed to pay at the local APMC mandi situated in Jaisalmer project cluster.
Wholesalers and processors having a license as buyers in the APMC market participate in the auction for the procurement of the cumin. After auctioning, material is moved either to a warehouse or to processing facility (for sorting grading or sortex). After sorting and grading, and packaging cumin is supplied to different market players. In some cases, the marketing companies have their own packaging facility, wherein they pack cumin seed in retail packs for further supply. These marketing companies, dealing in multiple products, have their distribution channels in different markets. Distributors appointed in each city further supply to retailers for sale.
The same supply chain is followed in the case of cumin powder.

Channel 2: Marketing through unorganised / non-branded market – In retail market, in addition to packed cumin, large quantity is also sold as loose cumin seed at retail store. In this case, sub-wholesaler cum distributers purchase material from wholesalers based in production clusters. Thereafter these sub-wholesalers market cumin in the local market by placing it at retail shops. Sometimes these supplies are also packed in unbranded retail packets.

5.3 Export supply chain -

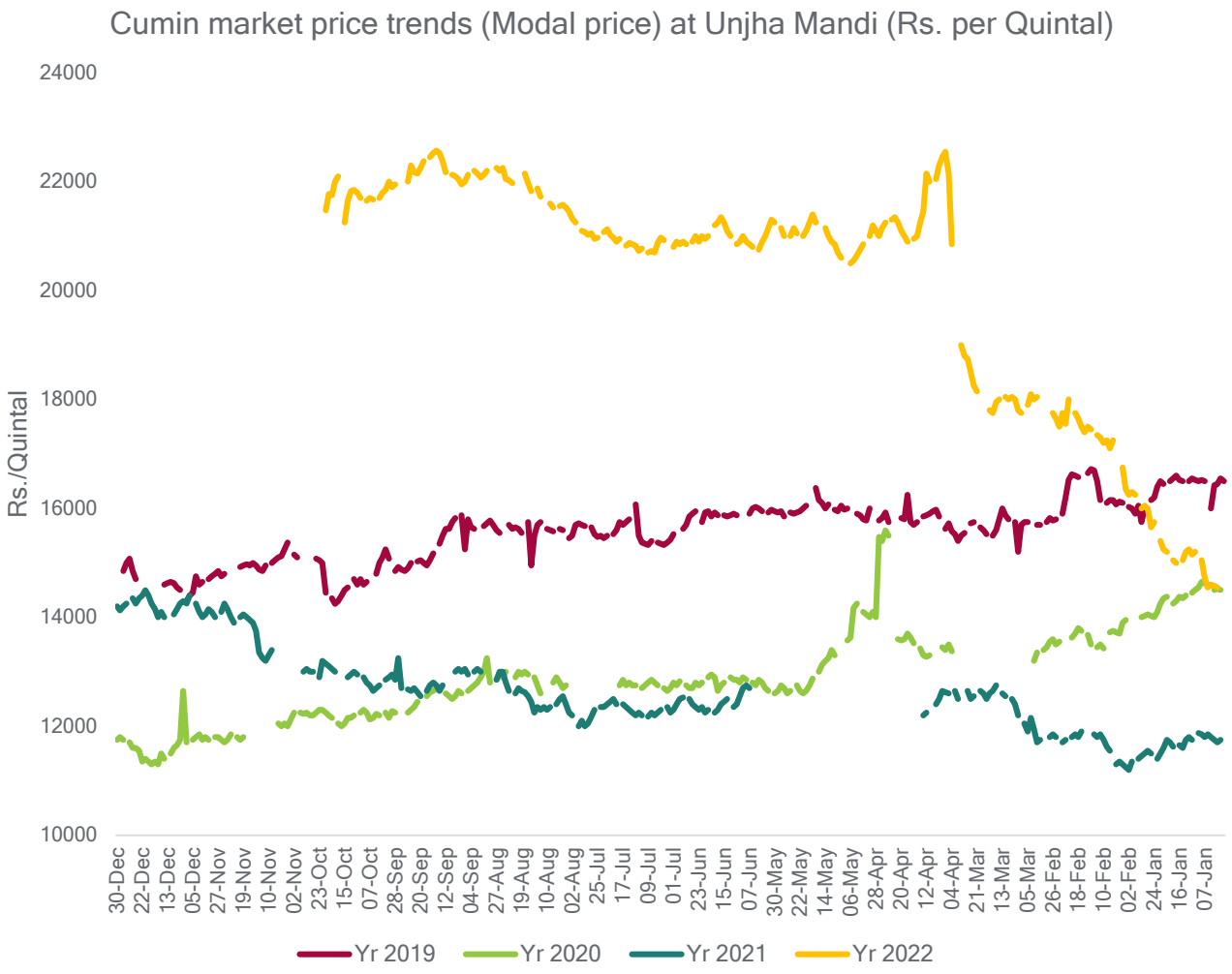
Export supply chain gets separated at Processors' level. Exporters, generally provide quality specifications and packaging requirements to the processors. Accordingly, processors supply the material to exporters at their supply centre. Exporters, further supply them in different markets as per the demand and orders. For exporting cumin to EU requires testing of the sample on different parameters.

The most common requirements regarding contaminants in cumin are related to the presence of pesticides residues, mycotoxins, heavy metals, microbiological organisms, odour and flavour. In

addition to the mandatory requirements, there are many other specific buyer's requests. European Spice Association published Quality Minima Document specifications. These include compliance with additional food safety, quality and sustainability standards. Export supply chain has additional expenses of documentation, which includes certifications under SAFTA, NAFTA, PQI, Species Board of India license, Custom approval requirements and others.

5.4 Price mark-up for Cumin exports

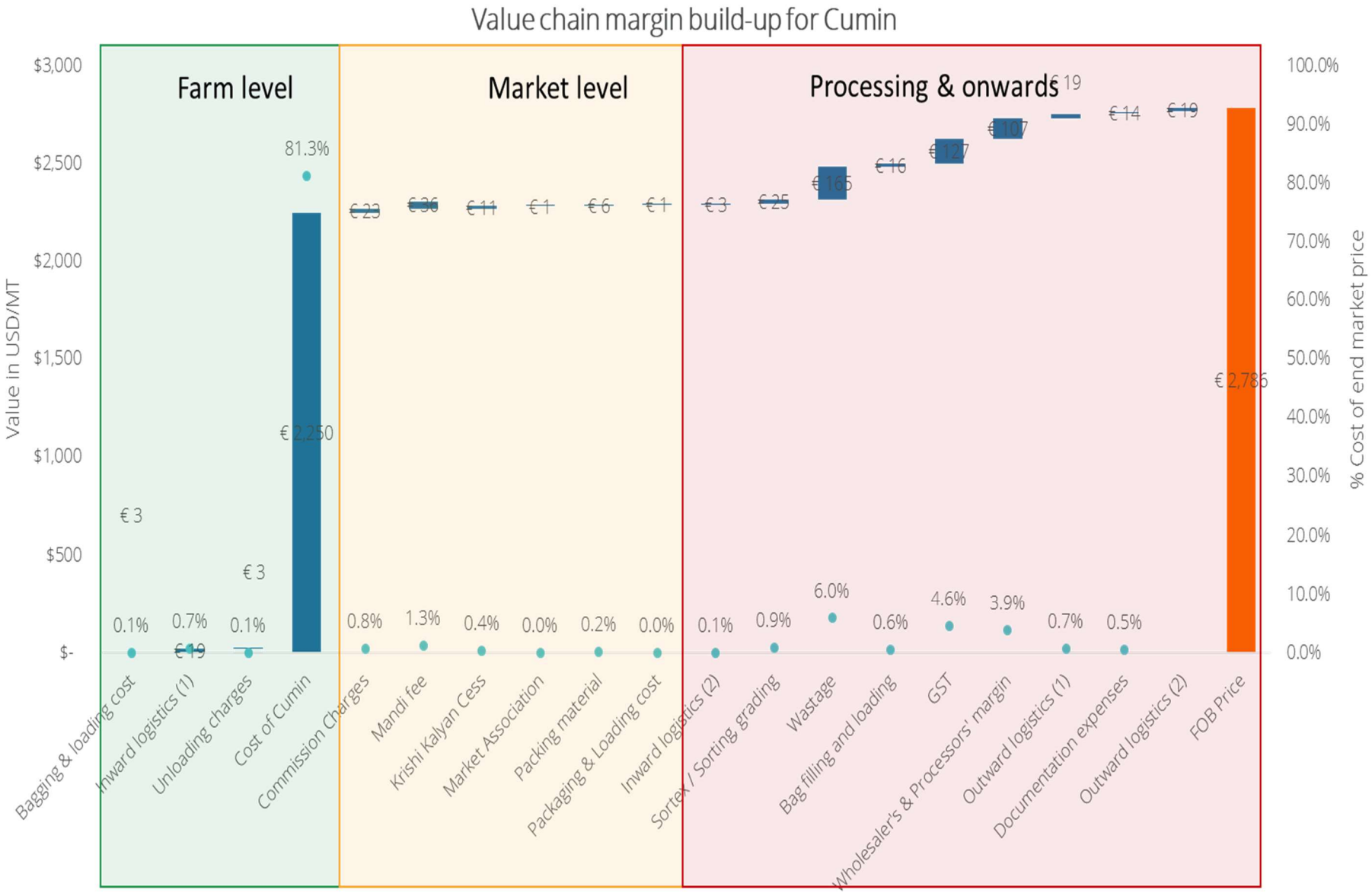
Price mark-up in the cumin value chain is directly linked to the prevalent mandi (regulated market) prices, as many cost components are linked to market price in percentage terms. If trend analysis of last four years of market price is done, it can be observed that there has been wide variation in the market price (from Rs. 110 per kg to 125 per kg) has been observed. For calculation of price mark-up, cumin auction price at Rs. 180 per kg has been considered, which was the approximate price in the market during March 2022.



For estimating price markup at different stages of the cumin supply chain, input data is collected through the primary interaction with supply chain stakeholders. Specifically, for the cost of post harvesting stages. Major observations of cost mark-up are as under –

- In addition to the production cost, farmers incur approximately Rs. 2.00 – 2.50 per kg to bring the cumin to the market. This includes cost of bagging and loading at farm gate and the cost of inward logistics (1) i.e., transport charges from farm gate (Jaisalmer cluster) to nearest or Unjha Mandi,
- At mandi, cost of unloading is charged at the rate of Rs. 0.25per kg (€ 0.00 per kg),
- The cost of cumin at Unjha mandi (based on auction price) is Rs. 180 per kg (€ 2.25 per kg), this makes-up the highest cost in the cumin value chain price mark-up with around 81.3% share.
- The commission charges charged by commission agent is Rs. 1.80 per kg (€ 0.02 per kg),
- The mandi charges and Krishi Kalyan Cess are paid to Unjha mandi at the rate of Rs. 2.88 per kg (€ 0.04 per kg),) and Rs. 0.90 per kg (€ 0.01 per kg) respectively. These charges can vary along with the auction price.
- The cost of packaging material (Bags) for cumin filled at Unjha mandi is Rs. 0.50 per kg (€ 0.01 per kg), and cost of labour charges for packaging and loading is Rs. 0.08 per kg,
- The cost of Inward logistics (2) i.e., transport charges from mandi to processing unit is around Rs. 0.22 per kg (€ 0.00 per kg),
- The cost of sortex/sorting and grading incurred by the facility owner is Rs. 2.00 per kg (€ 0.03 per kg), and around 8% of the material is separated as waste (constituting impurities such as stones, stems, other seeds, etc.) during processing or due to impurities, and the cost of wastage/loss incurred is Rs. 13.19 per kg (€ 0.16 per kg) of the finished product.
- The cost of packaging and loading after processing is Rs. 1.30 per kg (€ 0.02 per kg),
- The amount of Wholesaler's and Processor's margin (varies from 2-5%) is Rs. 8.52 per kg (€ 0.11 per kg),
- The cost of Outward logistics (1) i.e., transport charges from Wholesaler's/ Processor's facility to exporter's facility is Rs. 1.50 per kg (€ 0.02 per kg),
- The cost of documentations such as SAFTA, NAFTA, PQI, C&F is Rs. 1.15 per kg (€ 0.01 per kg),
- The cost of Outward logistics (2) i.e., transport charges from exporter's facility to Mundra port is Rs. 1.50 per kg (€ 0.02 per kg),

- The final FOB (Freight on board) cost is € 2,786 per MT.
- The major cost components in the value chain price mark-up are government taxes, i.e., GST (Goods and Service Taxes), and the profit margin of the wholesaler or processor (which varies from 2–5%) that account for 4.6% and 3.9% of the total value chain price mark-up, respectively.
- Cumin also attracts GST at the rate of 5% and which costs approximately Rs. 10.15 per Kg (€ 0.13 per Kg) that values around 4.6% of the total value chain markup. In case of GST, there is a need for restructuring it, because the government does not include sorting & grading activity as processing activity (as shape and form of product is not changed), therefore, trader, in need to show same quantity of material purchased and sold their books. However, in actual there is a loss of 8% in the process and quantity purchased differs from the quantity sold.


Value chain margin build-up for Cumin
Farm level
Market level
Processing & onwards
Value in USD/MT
% Cost of end market price
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$-
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
€ 3
€ 3
€ 2,250
81.3%
0.1%
0.7%
0.1%
€ 19
€ 23
€ 36
€ 11
€ 1
€ 6
€ 1
€ 3
€ 25
€ 165
€ 16
€ 127
€ 107
€ 19
€ 14
€ 19
€ 2,786
0.8%
1.3%
0.4%
0.0%
0.2%
0.0%
0.1%
0.9%
6.0%
0.6%
4.6%
3.9%
0.7%
0.5%
Bagging & loading cost
Inward logistics (1)
Unloading charges
Cost of Cumin
Commission Charges
Mandi fee
Krishi Kalyan Cess
Market Association
Packing material
Packaging & Loading cost
Inward logistics (2)
Sortex / Sorting grading
Wastage
Bag filling and loading
GST
Wholesaler's & Processors' margin
Outward logistics (1)
Documentation expenses
Outward logistics (2)
FOB Price

The approximate FOB price of cumin to Europe is € 2.786 per Kg and based on these cost estimates, exporters further negotiate their price in the importing market.

Above this, margin for wholesalers cum processers, outward logistics and packaging costs varies on various factors, such as negotiation power of seller, payment terms, packaging types, distance of delivery etc.

With above cost estimates, sorted cumin of average quality is made available at Rs. 221.40 per kg (€ 2.78 – 2.90 per Kg) for further sale in local market as well as for exports. This price further varies depending upon the colour of cumin. There is also difference in price depending on ratio of split seed in the lot. Split seed fetches around 10% lower prices in the market.

5.5 Gaps in the Value Chain

In the complete value chain of cumin, specifically from the export perspective to Europe, there are gaps and challenges across the chain. However, the challenges are more prominent at the back end compare to front end. Detail of these challenges, at each level of the value chain have been discussed hereunder -

Production Gaps:

For farmers, cumin is important commercial crops in Jaisalmer production clusters. Therefore, most farmers engaged in cumin production take this crop very seriously. To ensure maximum yield, farmers try to take best available measure for protecting the crop. However, for farmers, exports to Europe have never been into their mind. Mostly, the cumin value chain gaps at production and farm level are due to lack of knowledge and awareness about the desired practices.

i) **Low yield of cumin in Rajasthan** – In production cluster yield rate of cumin is less than half of yields in Gujarat. This single difference makes cost of production in Rajasthan almost double compare to production cost in Gujarat. Major reason for this low yield level in Rajasthan is lack of adoption of modern technologies at the farm level and absence of assured irrigation, which is a must requirement for cumin cultivation. Undulating field, seeding through broadcasting method results into uneven germination and restrict use of any machine for interculture operation. this further leads to poor management of weeds and high levels of admixture of foreign material at the time of harvesting.

ii) **Absence of export-oriented package of practices at field** – Given that there are no linkages of exporters and farmers, farmers are just not aware of any export-oriented package of practices at field for cumin cultivation. Although general package of practices (PoP's) has been developed by NRCSS (Ajmer) and the State Agricultural Universities (SAUs at Bikaner), however these PoP's are also not adequately promoted at the field level.

iii) **Use of uncertified seed material** – Large number of farmers use cumin saved from the previous season as seed, and this leads to mixing of different varieties. This affects yield and quality of produce. Export of cumin seed to Europe has a requirement of declaration of Variety or the cultivar on the shipment and if the same variety / cultivar is not found in the lot, there is high risk of rejection of the export.

iv) **Injudicious and access use of chemical pesticides** – Cumin is highly disease and pest susceptible crop. With a slight change in weather, the crops attract fungal diseases and other insect pests. To control these diseases and pest attacks, farmers apply multiple rounds of

pesticides as per the advice of agri-input retailers. Given the high economic stack farmers, sometimes keep spraying insecticide till near harvesting. These practices lead to a high level of pesticide residues in the produce. For accessing European markets, high level of pesticide residues is one major cause for rejections.

v) **Lack of Training and capacity building of the farmers for export –** Although, there are multiple government agencies working on extension and capacity building of farmers for adoption of improved packages of practices (e.g., KVK, NRCSS, Department of Agriculture & Farmers Welfare, Spices Board of India, developmental agencies and NGOs), however, on the ground the outreach of these agencies is very limited. Current extension activities are irregular in nature, not having continuity and follow-up with the farmers and without any mechanism to monitor the adoption of packages in the field.

vi) **Absence of farm-level certification for food safety** - Food safety, hygiene, sustainable production system, ethical production, fairtrade are some of the most stringent Sanitary and Phyto sanitary measure these days, being adopted by the importing countries as well as demanded by the importers. However, in cumin production cluster, hardly any farmer is aware of these certifications or is adopting to these certifications. Above this, there has been no such consistent programme at the ground level which promote and support farmers in availing these certifications to qualify for export to European markets.

vii) **Changing climatic conditions and high weather risks** – Cumin is very sensitive to crop to climate change. the yield levels and quality of seed can vary widely due to various climatic factors, such as rain at the wrong time, temperature variations and humidity etc. Climate change and the risks associated with climate change have become a big challenge for farmers.

viii) **Poor reach of Farmers' Producer Companies amongst the member farmers** – FPCs/FPOs, if they have strong relations with their farmers can make bring a lot of changes at the production level. However, most of the FPCs/FPOs in the selected cluster (of Jaisalmer) are being run by influential individuals. These FPCs seldom have any field-oriented activities to improve the production practices or to promote modern production technologies in the field.

Harvest and Postharvest Management Gaps:

Harvesting and post-harvest practices of cumin farmers has wide gaps in fulfilling the required quality criteria and process needs. Although good amount of thrashing is now being done by mechanical thrashers, still farmers some time lack adoption of hygienic conditions in the field. Similarly, drying of cumin seed is also done on open floor in unhygienic conditions, where risk of contamination with micro-organisms due to due to birds, animals, rodents, and dust and dirt at various stages is very high.

Farmers do not have any specific infrastructure at the village level or community level, where processes such as thrashing and drying can be done in a hygienic manner, with the required processes. Another big gap at post-harvest level is lack of a scientific warehousing facility in the production cluster. In Gujarat, farmers can store cumin in warehouses and can avail loans against warehousing receipts and can sell the product as per their choice, but in Jaisalmer area, this practice is almost absent, due to lack of required warehousing facilities for farmers.

Marketing Gaps:

For cumin, the marketing processes are very structured through the regulated markets, however, from the perspective of developing export value chains, there are wide gaps. Some of the important gaps are highlighted here –

i) **Large number of intermediaries** – for export, longer supply chains not only add to the cost and adversely impact the competitiveness in the market, but also is concern from the point of hygiene, food safety and traceability perspective. Additionally, large number of intermediaries also creates communication gap and hamper farmers' access to market information.
In current supply system, actors such as commission agents (who interact with the farmers), wholesalers, processors and exporters are engaged making the supply system three to five layers. Farmers seldom get a chance to hear directly to the exporters and understand the actual market requirement. This information asymmetry makes supply chain inefficient in more than one way.

ii) **Lack of awareness amongst channel partners about export requirements** – Exporters generally would like to keep export markets and terms of trade secret from their supplier. Traders and small processors, though are otherwise capable of supplying cumin directly to export markets, but due to limited access of information, awareness and understanding, they do not enter into exports. In local mandi of Mohangarh in Jaisalmer, there are very few local traders. Most traders in the mandi are from Bikaner, Ganganagar and Hanumangarh districts and they come to Mohangarh only during the harvesting season. This phenomenon has also restricted any long-term investment in infrastructure required for export.

iii) **Lack of support infrastructure and eco-system for export** – Facilitating export of cumin need an eco-system, wherein all the stakeholders are active partners, starting from extension services providers (KVK at Jaisalmer), agri-input seller, farmers, traders, infrastructure service providers (warehousing, sorting/grading etc.), department of Agriculture (for certification support, licenses etc.). However, as of now, things are being done in isolation, in silos. Secondly, for export quality cumin procurement, exporters need initial assurance of the quality of the product and they need laboratory testing of the cumin. However, in the Jaisalmer, no such laboratory facility is available and exporter, if they plan to buy cumin from these areas, need to send their samples to Gujarat for preliminary testing.

Programmes and Policy Gaps:

For promotion of seed spices, including Coriander from Kota cluster and cumin from Jaisalmer cluster of Rajasthan itself, in past, government has taken up various policy initiatives. One of the key initiatives is setting-up of Agri-export zone for Cumin in Nagaur, Barmer, Jalore, Pali, and Jodhpur districts. However, these initiatives have not yielded the desired results. Conceptually, these programmes / schemes should have all the necessary components required for promotion of exports, but due to various challenges, the potential has not been exploited fully.

Another major initiative from government side is to form farmers' collectives in the form of Farmers Producer Organisations (FPOs). Large number of FPOs have been registered in the area under various schemes, however, sustainability of these institutions is still a challenge. Until and unless these institutions stand up on their own feet, it cannot be expected from them to create a visible impact on farming system, including participation in export.

6. INTERVENTIONS TO ACCESS EU MARKETS

6.1 EU market requirements

A detail description of requirement for exporting cumin to European market has been provided in the annexure 1 to 4.

6.2 Potential Interventions

India is the largest exporter of Cumin in the world. However, export of Indian cumin purely as spice and condiment for food. Although India is the second most important exporter of Cumin to Europe after Russia. Ukraine is also one of the key exporters of Cumin to Europe. However, given the current situation of war between these two countries, the supply must have been impacted.

Within Europe, Germany is the second most important market for imported cumin seed after United Kingdom. Given the huge demand, India still has wide scope for exporting to Europe if Indian cumin can be made competitive in aspects of pricing and quality. Some of the interventions required for this purpose are as under.

Stage of Value Chain	Proposed intervention	Implementation mechanism	Partner Institution
Production	Reducing Cost of production of Cumin	There is wide difference in yield levels of Cumin in Rajasthan and in Gujarat and due to this difference, cost of production of cumin (per Kg) is very high compare to Gujarat. Although there are other interventions required to make the supply chain more efficient, however one important intervention to this can be by increasing yield levels. Improved varieties along with improved packages of practices and assuring irrigation can help farmers in improving yield levels by 15- 20%. Additionally, improved weather information and advisory on climate change adaptation can also be a critical intervention for reducing climate risks. Under the project, there is need for innovative collaborative approach, wherein one of the existing research and extension institutions, new age weather and climate advisory service provider (if possible, through *physital* (physical + digital) mode) come together and take-up piloting of advisory services for 2-3 years in a cluster approach.	NRCSS (Ajmer) + Private sector start-ups (WRMS / CropIn or any new age advisory services provider)
	Development and Introduction of export-oriented	One of the key interventions under the project shall be to develop export-oriented package of practices for production and post-harvest practices of Cumin, which can also fulfil the requirement of GAP certification. The PoP shall also include practices for harvesting and post-harvest handling of product at the field in hygienic conditions.	NRCSS, Private sector player for mobilisation of farmers, and follow-up on

Stage of Value Chain	Proposed intervention	Implementation mechanism	Partner Institution
	Agronomical practices	For introduction of these PoP's in field, project shall plan organising extensive demonstrations in the cluster by onboarding progressive farmers. These demonstrations can be used for training of other fellow farmers in catchment area of each mini-cluster. Demo farms can also be integrated with localised weather stations and digital advisory services on climate-resilient production practices. At the field, a collaborative approach will be needed between project officials, scientific institutions, weather, and climate-based advisory services provider and FPO. For proper coordination of these actors, Project can hire services of a project implementing agency in the field for the project period.	adoption in the field. GAP certification agency. FPO can also be made a partner here for field activities and for the continuity of interventions.
	Developing a mechanism for product traceability	Traceability is becoming one of the important requirements for any commodity targeted for export to the European Union, USA, Japan and other developed markets. Currently, there has not been any system in place, where farmers' field is tagged and supply can be traced back to the source of origin. The project shall collaborate with the Spices Board and a couple of exporters to implement the traceability system. For this, the project can also take help of APEDA, wherein HORTINET and/or Tracenet platform. The project can target the piloting of a traceability system for cumin, which can be integrated with APEDA's existing system for continuity.	Spices Board, FPO, and Cumin Exporter collaborated through a field implementation partner.
	Facilitation in creating field level post-harvest management infrastructure	One of the major concerns for the export of cumin has been the unhygienic conditions at the field for the thrashing and drying of the cumin seeds. This leads to many contaminations and causes rejection. To avoid this situation, there is need for the promotion of appropriate practices, use of machinery and post-harvest infrastructure such as mechanical thrasher and dryers for the cumin or covered shed having provisions for checking external contaminations due to animals and rodents and mixing of foreign material etc. For this particular intervention, Project shall explore collaboration with the department of Horticulture/agriculture and explore available subsidy components for farm level infrastructure. Even if required, this may require technical advisory to the government for incorporating some of new components in existing schemes of the Government. Project shall target some demonstration of such facilities in the project area for convincing other farmers to adopt to these practices.	Department of Horticulture, Rajasthan State Agriculture Marketing Board (RSAMB)

Stage of Value Chain	Proposed intervention	Implementation mechanism	Partner Institution
		FPOs can be capacitated (by training and mobilising funds) for creating required post-harvest infrastructure for storage.	
Post-harvest and enterprise support	Infrastructure for sorting, grading and packaging as per export requirement	While interacting with the stakeholders, such as large farmers and KVK officials in targeted production cluster, it was highlighted that there is no facility of sorting/grading and packaging (for export and of sufficiently large industrial size) in the cluster. This is mainly, because the traders participating in the Cumin trade in this area are mostly from other markets and they are not interested in any long-term, high capital infrastructure in the area. To fill this particular gap, project shall facilitate the local FPOs by guiding them properly on business model of cumin trade, its supply chain, technical advisory on setting-up modern sorting/ grading infrastructure. This may need handholding of FPOs in preparing Detailed project report for creating required infrastructure.	NIAM, Private consulting firm having experience of facilitating entrepreneurs.
Market development	Introduction of entrepreneurs, FPO and other stakeholders to export markets and buyers	Lack of awareness of markets, quality requirement, documentation need, terms of trade and other aspects of business, amongst the traders, is one big challenge for promoting direct export from the Jaisalmer cluster. This needs step-wise introduction of these stakeholders to European markets, which may include following activities – - Orientation on export business and requirements - Exposure to existing export facilities in domestic markets - Buyer-seller meets with potential business partners - Exposure to European markets - Initial handholding, facilitation in negotiating the trade for confidence building.	By collaborating with the APEDA, Spices Board and taking help of an agency for facilitating the intervention.
Institutional Support	Training and capacity building of value chain stakeholders	Stakeholders in the value chain, starting from farmers, traders (aggregators), potential entrepreneurs, processors will need training on different aspects of value chain activities of exports. Some of these training activities can be as under – - For farmers – Production practices, GAP certification, safe use of pesticides, Traceability, cumin grades and quality parameters as export markets, hygiene and safety at post-harvest level. - Traders / Entrepreneurs / FPO – Quality parameters for exports, certification requirement, Export documentation requirements, food safety and hygiene requirement.	Project partners (APEDA, RSAMB, NRCSS, Spices Board and others)

Stage of Value Chain	Proposed intervention	Implementation mechanism	Partner Institution
		- Government officials – Need of documentation, convergence, project goals, project implementation structure and schedule, support and deliverables expected from the government officials in successfully implementing the project.	
	Efficient convergence with public sector schemes	Different government departments at Central and state level have large number of schemes and programmes in which provision for various proposed components must already be existing. However, the implementation of these interventions remains a challenge due to various field-level issues. The project shall identify these programs/scheme components and shall try to ascertain bottlenecks or pain area for the concerned department. Based on this assessment, a convergence plan shall be designed and implemented. This will need collaboration with different departments at a different level of hierarchy (at Central, State and District level).	
	Strengthening of FPOs	FPOs, as an emerging collective institution, can play important role in the promotion of the export of cumin from the cluster. The FPO identified in the cluster has poor patronage amongst member farmers, has a very weak understanding of business, limited access to capital for setting-up infrastructure, and no understanding of export businesses. Therefore, a strong handholding mechanism will be required to support FPOs to participate in export activities. The project shall utilise the presence of FPO for onboarding farmers for the project and also for channelizing all other field-based interventions in the project area.	FPO support agency.

After deliberation on the recommendation, project team need to prioritise the activities and establish a project implementation cell in the project cluster area. Learning from past initiatives of promoting export of cumin from the cluster, Indo German Cooperation on Agriculture Market Development (AMD) project shall plan its activities in such a way that impact of activities can be made visible on ground from initiation phase itself. Positive outcome at initial level will help in confidence development amongst the stakeholders.

Project shall also identify very good resources for implementation of project interventions, who have proven track record and commercial orientation so that project can be taken up to a logical conclusion and mechanism can be established for sustainability and continuity of activities initiated under the project.

6.3 Strategic Action Points –

Production –

- Working on reducing the cost of production of Cumin. Working on increasing on yield and reducing cost of inputs are two important areas, where research institutes need to work.
- Development of export-oriented packages of practices for Cumin production. These PoPs shall also fulfil the requirements of GAP certification so that farmers can also take advantage of certification.
- Establish a traceability system from farms to market.

Post-harvest management and marketing –

- Setting-up export aligned processes and infrastructure for post-harvest management for Cumin at the field. (This may need hygienic space for drying, which can help in avoiding contamination in the field and can reduce the risk of rejections)
- Creation of modern warehouses and procurement centre in the field/production cluster for storage and quality control of cumin (modern warehousing facilities can be created through private enterprises or by supporting the FPOs).
- Infrastructure for sorting, gr,ading and packaging as per export requirements. This can either be created by any Public institution (in PPP mode) or can be created in partnership with FPO.
- Training and capacity building of value chain actors on export requirements, e.g. on quality parameters, quality control and management, export processes, export documentation etc. and exposure to the markets.
- Introduction of stakeholders (entrepreneurs and FPO functionaries) to importers and buyers in European markets.

Institutional support–

- Strengthening of cumin-specific FPOs by providing technical and financial support for developing integrated export-oriented value chains. (FPOs need handholding to develop technically capable team and in creating required infrastructure for targeting exports).

Annexure – 1: Entering the European market for cumin seeds
(Last updated:14 December 2021)
Source: https://www.cbi.eu/market-information/spices-herbs/cumin/market-entry

What requirements should cumin seeds comply with to be allowed on the European market?

What are mandatory requirements?

All foods, including cumin seeds, sold in the European Union must be safe. This applies to imported products as well. Harmful contaminants, such as excessive levels of pesticide residues and plant toxins such as pyrrolizidine alkaloids or allergens, are banned. The content of the packaging should be readily obvious from the labelling.

Contaminants control in cumin seeds

The European Commission Regulation sets maximum levels for certain contaminants in food products. Frequently updated, this regulation sets limits for general foodstuffs, in addition to some specific contaminant limits for specific products. The most common requirements regarding contaminants in cumin seeds relate to microbiological contamination and the presence of pesticide residues, foreign bodies, and product composition.

Contamination with foreign bodies

Contamination with foreign bodies is one of the food safety issues concerning cumin seeds in the European market. Therefore, it is particularly important to control the cleanliness of the seeds before exporting. Major foreign body contaminants in cumin seeds include dead insects, insect body parts, excreta of animals (such as mice, rats, cattle, birds, and insects), sand, mud, glass, or metal particles from agricultural machinery. Extraneous matter includes other parts of the cumin plant such as dried stems and leaves.

There is no official limit for foreign bodies in cumin seed shipments to Europe. Most European buyers define their own specification requirements or follow the cleanliness specification of the American Spice Trade Association (ASTA), which defines the maximum levels for the presence of dead insects, excreta, moulds, and other foreign matter. The Quality Minima Document (pdf) of the European Spice Association does not allow the presence of any foreign objects greater than 2mm in diameter, while the limit of extraneous matter is set to 1% by weight.

Microbiological contaminants

Microbiological contamination is one of the most frequent reasons for removing imported cumin seeds from the European market. The most frequently occurring microbiological contamination of cumin seeds is with Salmonella, which can be transmitted to cumin seeds by irrigation with unsafe water, use of untreated manure as fertiliser, or harvesting with dirty hands. In some areas, the drying process is performed in the open air, which increases the risk of infestation with bacteria from animals and birds.

Specific limits for microbiological contaminants for spices are not harmonised on the European Union (EU) level so you should follow the national legislation of your target market. Analytical test results on the presence of microbiological contaminants are a common part of the product specification. Pathogenic bacteria, such as Salmonella or Listeria, must be completely absent. The

presence of aerobic bacteria, Escherichia coli, yeasts and moulds can be tolerated in very small quantities depending on the target market and specific buyer requirements.

To prevent contamination of cumin seeds with insects and microbiological contaminants, you should have preventive measures in place. These could include heat treatment or fumigation. If you use fumigation, you must use only officially approved disinfectants.

The EU has banned methyl bromide and ethylene oxide. Still, European buyers are finding residues of these banned substances in spices. It is therefore strongly recommended to heat treat (sterilise) the cumin seeds, as it is a much safer procedure compared to fumigation. If sterilisation costs are too high for your company, please note that sterilisation services can be done in Europe, for example, by service providers, such as Food Ingredients Service Centre Europe or others.

Pesticides Residues

The European Commission has set maximum residue levels (MRLs) for pesticides in and on food products. Products containing more pesticide residues than allowed will be withdrawn from the European market. The European Commission regularly publishes and updates a list of approved pesticides that are authorised for use in the EU. The European Farm to Fork Strategy aims to reduce the use of pesticides by 50% before 2030.

In 2020 and 2021, several pesticides were withdrawn from the European market, namely: beta-cyfluthrin, benalaxyl, bromoxynil, mancozeb, benfluralin, chlorpyrifos, chlorpyrifos-methyl and thiacloprid. Specifically, chlorpyrifos pesticide is a frequent reason for the rejection at the border of cumin seeds intended for the European market.

Irradiation

Irradiation of cumin seeds is not often used but it is authorised by the European Union as a way of sterilisation. Irradiation must take place in approved facilities and irradiated foods must be labelled. However, European consumers dislike irradiated food. Buyers in Europe are increasingly asking for radioactivity contamination tests for imported cumin seeds. Food irradiation legislation, maximum permitted levels of radioactive contamination, and the European Commission's radiation protection legislation are base regulations for laboratory tests for the detection of increased levels of radioactivity in cumin seeds.

Plant toxins

Some toxins may be naturally present in weeds, which can contaminate cumin in the field. The most important plant toxins in cumin seeds are pyrrolizidine alkaloids (PA). According to the Rapid Alert System for Food and Feed, in 2020, there were 10 officially reported cases of cumin seeds being rejected at the border due to the presence of PA. Since December 2020, on the basis of Regulation (EU) 2020/2040, maximum levels for PA in cumin seeds is set to 400 µg/kg. This regulation will come into force on 1 July 2022.

Common examples of toxic weeds which can transmit PA usually belong to genus Boraginaceae, Asteraceae and Fabaceae. Integrated crop management is recommended to prevent this contamination, such as safe planting distance from potential risk areas and physical removal of weeds while they are in the early development stage.

Product composition

Buyers and European authorities can reject products if they have undeclared, unauthorised, or too high levels of extraneous materials. There is specific legislation for additives (like colours, thickeners) and flavourings that list what E-numbers and substances are allowed. Authorised additives are listed in Annex II to the Food Additives Regulation. Food additives are not allowed in the production and trade of cumin seeds. For cumin powder, anticaking agents may be used such as cellulose or mineral salts to prevent creation of lumps.
Unfortunately, fraudsters also target cumin seeds, as well as several other spices. Replacing cumin seeds with other materials is not common, but it does happen. In the entire cumin seed trade, food criminals sometimes try to cheat buyers by mixing 20% of grass seed and dust with 80% of cumin seeds. Another form of cheating is coating cumin seeds with colour or even adding coloured fennel seeds to cumin seeds. In the case of cumin powder, food fraud can involve adding sawdust, starch or husks of seeds or nuts.

Packaging and labelling requirements

Packaging used for cumin seeds must protect the flavour, colour, and other quality characteristics of the product. The content of the packaging must correspond with the indicated quantity on the label.
In the case of retail packaging, product labelling must comply with the European Union's regulation on the provision of food information to consumers. This regulation defines nutrition labelling, origin labelling, allergen labelling and a minimum font size of 1.2 mm. Retail packs must be labelled in a language that can easily be understood by consumers in the European target country, so generally in the country's official language. This explains why European products often carry multiple languages on the label.
In addition to this regulation, since 1 April 2020, all food in retail packs in Europe must be labelled with an indication of origin. For example, if cumin seeds are imported from India but packed in France, the packaging still needs to indicate the origin of the cumin seeds. This is usually done in the way that package indicates "Packed in France" but next to the lot number, there is simple mark of origin such as 'Produce of India'/'Origine de l'Inde'/'Prodotti del India', etc.
Cumin seeds are not on the list of allergens but sometimes seeds come in contact with allergens (such as grains or nuts) if they are grown in the same field, which is called cross-contamination. Allergens like mustard and sesame are grown in the same region as cumin and are therefore considered a major contamination risk in the cumin supply chain. Also, in India, peanut and cumin crops are sometimes rotated in the same field, which can result in cross-contamination.
Allergen contamination can also occur because of shared transportation, storage, or production equipment or even because of economically motivated adulteration when ground peanut shells are mixed with cumin powder.

What additional requirements do buyers often have?

In addition to the mandatory requirements, many other specific buyer requests have become equally important. These include compliance with food safety, quality, and sustainability standards.

Quality requirements

Several factors determine the quality of cumin seeds, some as subjective as taste or flavour. Other quality criteria relate to the cumin cultivar, such as size of the seeds, shape, or colour. However, the same cultivars can have different qualities, even when produced in the same country, as quality is

influenced by implemented agricultural practices, climatic conditions during the production season and post-harvest operations. Several quality parameters are set by the Codex Alimentarius Standard for Cumin.

The most common parameters for quality specification of cumin seeds include:

a) *Cleanliness or purity:* Cumin seeds should be intact when traded as a whole, and they must be free from diseases, foreign matters, foreign odours, and any other disorders. The European Spice Association (ESA) proposes that the maximum presence of external matter should be below 1% of the weight for all spices. However, this requirement can vary depending on buyers' requests and may involve more specific indicators, such as a maximum allowance of discoloured fruits or fruits damaged by insects.
   In the cumin trade, the ASTA Cleanliness specification is commonly used to determine the cleanliness of cumin seeds by analysing a sample of the seeds. Criteria used to determine cleanliness are the presence of dead insects, excreta, foreign matter, and seeds damaged by mould or insects. Still, buyers can request more strict requirements than determined by ASTA or ESA specifications. Usually, cumin seeds intended for the European market are of 99.5% - 99.99% purity and preferably sorted by an optical sorting machine.
b) *Ash content:* Ash refers to the inorganic residue remaining after burning the organic matter in a cumin seeds sample. Determining the ash content is an important quality attribute and the Codex Standard uses maximum ash content to classify cumin seeds in three quality grades. According to the Quality Minima Document of the European Spice Association, the maximum content of total ash for cumin seeds is set at 14% and acid-insoluble ash at 3%.
c) *Moisture content:* The maximum moisture content for cumin seeds and powder set by the Quality Minima Document of the European Spice Association is 13%, but according to the Codex Standard it is 10%. Still, buyers may request a lower moisture content such as 7-9%.
d) *Mesh or particle size:* When cumin seeds are exported in powdered form, they are ground to pass through a sieve of a specific diameter. Sieves are often specified in micron sizes and typical requirements demand that 95% to 99.5% of ground cumin seeds pass through the specific size of the sieve, usually 500-600 microns. As cumin seeds are fibrous, the size of the sieve is usually larger compared to most other ground spices, such as pepper or chillies.
e) *Odour and flavour:* Cumin seeds must have a characteristic odour and flavour. The flavour profile of cumin seeds mostly depends on the chemical components of the essential oil. The most important essential oil in contributing to the specific flavour is cuminaldehyde (4-isopropylbenzaldehyde). The flavour profile varies depending on the variety, cultivar, geographic, climatic, and growth conditions.
f) *Volatile (essential) oils:* As described above, the content of essential oils is important for the sensorial characteristic of cumin seeds. Cumin seed quality is higher when the percentage of ash is low, and the content of essential oils is high. The minimum content of essential oil in cumin seeds should be 1.5 ml/100 g, but the oil content in first grade quality should be above 2 ml/100 g.

Food safety certification

Although food safety certification is not obligatory under European legislation, it has become a must for almost all European food importers. Most established European importers will not work with you if you cannot provide some type of food safety certification.
Most European buyers will ask for a Global Food Safety Initiative (GFSI) recognised certification. For cumin seeds, the most popular certification programmes recognised by GFSI are:

- International Featured Standards (IFS)
- British Retail Consortium Global Standards (BRCGS)
- Food Safety System Certification (FSSC 22000)

Please note that this list is not exhaustive and food certification systems are constantly developing. Although the various food safety certification systems are based on similar principles, some buyers prefer one specific standard over the other. For example, British buyers often require BRCGS, while IFS is more common for German and French retailers. Also note that food safety certification is only a basis to start exporting to Europe. Serious buyers will usually visit or audit your production facilities before buying.

Packaging requirements

Cumin seeds are mostly exported in bulk and packaged in jute, polypropylene, or paper bags. The size of the bulk packaging varies depending on the buyer's requirements, but it is often 25 kg. The dimensions of the selected packaging size should be conforming the conventional pallet sizes (800 mm x 1,200 mm and 1,000 mm x 1,200 mm). Please note that in some European countries, labour health and safety legislation allow workers to lift a maximum of 20 kg, so smaller weights of packaging are increasingly used, such as 10 kg–20 kg.
The net weight of retail packaging is usually between 20g and 40g. Retail packaging includes glass containers, plastic bags, plastic containers, and paper bags. Transparent glass containers are particularly popular, as they enable consumers to see and visually inspect cumin seeds before buying.
Cumin seeds must be stored in dry and cool places, protected from sun, heat, moisture, insects, and other animals.

Private safety and sustainability requests

Although most European retailers will support the above-listed certification schemes, many of them will have additional requirements. Many supermarket chains will contractually oblige suppliers to meet comprehensive quality assurance requirements, including unannounced inspections at processing facilities.
One of the more recent trends is to ask for laboratory tests proving that specific pesticide residues are present in significantly lower quantities than legally required. Some buyers may provide a list of pesticides and a specific integrated pest management programme that must be followed if you want to export to specific clients.
Many importers will ask you to follow their own specific code of conduct. Most European retailers have their own codes of conduct, such as Lidl, Rewe, Carrefour, Tesco and Ahold Delhaize.

What are the requirements for niche markets?

Organic cumin seeds

Organic certification schemes are becoming increasingly popular in Europe. Although until recently, organic production was reserved for niche markets, organic products are now becoming

mainstream. However, certain types of organic certification such as 'biodynamic' (Demeter or BDA) can still be considered niche requirements.

To market cumin seeds as organic in Europe, they must be grown using organic production methods according to European legislation. Growing and processing facilities must be audited by an accredited certifier before you may put the European Union's organic logo on your products, as well as the logo of the standard's holder, for example, Soil Association in the United Kingdom, Naturland in Germany or Agriculture Biologique in France.

Importing organic products into Europe is only possible with an electronic certificate of inspection (e-COI). Each batch of organic products imported into the European Union has to be accompanied by an electronic certificate of inspection as defined in Annex V of the Regulation defining the imports of organic products from third countries. This electronic certificate of inspection must be generated via the Trade Control and Expert System (TRACES).

Be aware that the new EU regulation on organic production is expected to enter into force in 2022. The new rules will allow for mixed farming and combined conventional and organic production, provided that the two are sufficiently separated.

Sustainability and Corporate Social Responsibility (CSR) certification

Sustainability is a broad term with many aspects and there is still no recognised sustainability certification covering all aspects. Until recently, sustainability certification was aimed at special niche buyers on the market, but now it is becoming a mainstream request, similar to organic certification. One increasingly used aspect is to publish CO2 emission rates on products, but it is difficult to get reliable measurements for those claims. However, some private certification schemes to do this are in development. Currently, the most famous certification schemes focus on environmental impact and ethical (CSR) aspects.

Companies have different requirements for corporate social responsibility. Some companies require adherence to their code of conduct, or one or more of the common standards, such as the Supplier Ethical Data Exchange (SEDEX), Ethical Trading Initiative (ETI), and Business Social Compliance Initiative code of conduct (BSCI).

Currently, the most famous sustainability certification schemes are Fairtrade, which focuses on ethical practices, and Rainforest Alliance, which focuses on environmental impacts. Fairtrade International developed a specific standard for herbs, herbal teas and spices for small-scale producing organisations. This standard defines issues related to traceability, management and production practices and labour conditions. According to this standard, a premium price of 15% over and above the negotiated price between producer and seller must be established.

There are currently (as of September 2021) four Fairtrade certified cumin seed producers in Egypt, three in Sri Lanka, two in Uzbekistan, one in Thailand and one in India. In addition, there are sixteen other Fairtrade certified processors.

In order to improve sustainable production and sourcing of spices and herbs, a group of mainly European companies and organisations formed the Sustainable Spice Initiative in 2012. The major objective of this initiative is to strive for a fully sustainable spice production and trade in the sector. For an overview of sustainable initiative developments in the European spices market, read our study on Trends in the European Spices and Herbs Market.

Ethnic certification

Islamic dietary laws (Halal) and Jewish dietary laws (Kosher) propose specific dietary restrictions. If you want to focus on these niche markets, consider implementing Halal or Kosher certification schemes.

Annexure – 2: Specifications for Export Quality Cumin Seeds

2.1 Specifications of European Quality Cumin Seed

Import European Quality Cre 101 - 99.5% Cumin Seed from India

European Quality CRE 101 - 99.5% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	European - CRE 101
Purity	99.50%
Process	Sortex Cleaned - Without Dust and Stone
Volatile Oil Content	2.5 % - 4.5 %
Admixture	0.50%
Moisture ± 2 %	7%
Origin	India

Import European Quality Cre 102 - 99% Cumin Seed from India

European Quality CRE 102 - 99% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	European - CRE 102
Purity	99%
Process	Machine Cleaned - Without Dust and Stone
Volatile Oil Content	2.5 % - 4.5 %
Admixture	1%
Moisture ± 2 %	7%
Origin	India

Import European Quality Cre 103 - 98% Cumin Seed from India

European Quality CRE 103 - 98% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	European - CRE 103
Purity	98%
Process	Machine Cleaned - Without Dust and Stone
Volatile Oil Content	2.5 % - 4.5 %
Admixture	2%
Moisture ± 2 %	7%
Origin	India

Import European Quality 97% Cumin Seed from India

European Quality 97% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	European
Purity	97%
Process	Machine Cleaned - Without Dust and Stone
Volatile Oil Content	3 % - 5 %
Admixture	3%
Moisture ± 2 %	7%

Origin	India

2.2 Specifications of Gulf Quality Cumin Seed

Import Gulf Quality Cre 104 - 99% Cumin Seed from India

Gulf Quality CRE 104 - 99% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	Gulf - CRE 104
Purity	99%
Process	Machine Clean
Volatile Oil Content	2.5 % - 4.5 %
Admixture	1%
Moisture ± 2 %	7%
Origin	India

Import Gulf Quality Cre 105 - 98% Cumin Seed from India

Gulf Quality CRE 105 - 98% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	Gulf - CRE 105
Purity	98%
Process	Machine Clean
Volatile Oil Content	2.5 % - 4.5 %
Admixture	2%
Moisture ± 2 %	7%
Origin	India

2.3 Specifications of Singapore Quality Cumin Seed

Import Singapore Quality Cre 106 - 99% Cumin Seed from India

Singapore Quality CRE 106 - 99% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	Singapore - CRE 106
Purity	99%
Process	Machine Clean
Volatile Oil Content	2.5 % - 4.5 %
Admixture	1%
Moisture ± 2 %	7%
Origin	India

Import Singapore Quality Cre 107 - 98% Cumin Seed from India

Singapore Quality CRE 107 - 98% Cumin Seed	
SPECIFICATIONS	VALUE
Quality	Singapore - CRE 107
Purity	98%
Process	Machine Clean
Volatile Oil Content	2.5 % - 4.5 %
Admixture	2%
Moisture ± 2 %	7%

Origin	India

Specifications of Grinding Quality Cumin Seed

India Origin Grinding Quality Cumin Seed with 95% Purity

Whole Cumin Seed 95% Pure for Grinding Purpose	
SPECIFICATIONS	**VALUE**
Appearance	Whole Seeds
Purity	95%
Process	Machine Cleaned
Volatile Oil Content	4.5 % - 5.5 %
Admixture	5%
Moisture ± 2 %	8%
Origin	India
Purpose of Use	Grind