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STRATEGIES TO BOOST INDIA'S GRAPES EXPORTS

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LIST OF ABBREVIATIONS

AAGR	Average Annual Growth Rate
AEZ	Agri-Export Zone
APEDA	Agricultural and Processed Food Products Export Development Authority
APHIS	Animal and Plant Health Inspection Service
ARRA	Advanced Research and Development in Agriculture
ASEAN	Association of Southeast Asian Nations
ASOEX	Association of Fruit Exporters of Chile
BRCGS	Brand Reputation Compliance Global Standards
CAG	Certificate of Agmark Grading
CAGR	Compound Annual Growth Rate
CEPA	Comprehensive Economic Partnership Agreement
CETA	Comprehensive Economic and Trade Agreement
CIB&RC	Central Insecticides Board & Registration Committee
CIF	Cost, Insurance and Freight
CIS	Commonwealth of Independent States
DGCIS	Directorate General of Commercial Intelligence and Statistics
DGFT	Directorate General of Foreign Trade

DSS	Decision Support System
EBU	Export Business Unit
ECGC	Export Credit Guarantee Corporation of India
ECTA	Economic Cooperation and Trade Agreement
EFTA	European Free Trade Association
EPA	Environmental Protection Agency
ESS	Electrostatic Spraying System
ETL	Economic Threshold Level
EU	European Union
FAOSTAT	Food and Agriculture Organization Statistics Database
FAS	Financial Assistance Scheme
FDA	Food and Drug Administration (USA)
FFV	Fresh Fruits and Vegetables
FOB	Free on Board
FPC	Farmer Producer Company
FPO	Farmer Producer Organisation
FSMA	Food Safety Modernization Act
FSSAI	Food Safety and Standards Authority of India
FSVP	Foreign Supplier Verification Program
FTA	Free Trade Agreement

FY	Financial Year
GACC	General Administration of Customs of China
GAP	Good Agricultural Practices
GEAI	Grapes Exporters Association of India
GI	Geographical Indication
GIS	Geographic Information System
GLOBAL G.A.P.	Global Good Agricultural Practices
GPS	Global Positioning System
GRASP	GLOBALG.A.P. Risk Assessment on Social Practice
GSP	Generalized Scheme of Preferences
HACCP	Hazard Analysis and Critical Control Points
HS	Harmonized System
HSN	Harmonised System of Nomenclature
ICAR	Indian Council of Agricultural Research
ICRIER	Indian Council for Research on International Economic Relations
INR	Indian Rupee
IoT	Internet of Things
IPM	Integrated Pest Management
ITC	International Trade Centre
JNPT	Jawaharlal Nehru Port Trust

KII	Key Informant Interview
MIDAGRI	Ministry of Agrarian Development and Irrigation (Peru)
MIDH	Mission for Integrated Development of Horticulture
MMT	Million Metric Tonnes
MoAFW	Ministry of Agriculture and Farmers' Welfare
MRDBS	Maharashtra Rajya Draksha Bagayatdar Sangh
MRL	Maximum Residue Limit
MSAAPC	Maharashtra State Agricultural and Agro Processed Products Export Company
MT	Metric Tonne
NHB	National Horticulture Board
NPC	Nominal Protection Coefficient
NPPO	National Plant Protection Organization
NRCG	National Research Centre for Grapes
NTB	Non-Tariff Barrier
NTM	Non-Tariff Measure
PHC	Pre-Harvest Contractor
PRA	Pest Risk Analysis
PSC	Phytosanitary Certificate
PTA	Preferential Trade Agreement
RBI	Reserve Bank of India

RCA	Revealed Comparative Advantage
RODTEP	Remission of Duties and Taxes on Exported Products
RWBCIS	Restructured Weather Based Crop Insurance Scheme
SAMPADA	Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters
SATI	South African Table Grape Industry
SEDEX	Supplier Ethical Data Exchange
SENASA	National Agrarian Health Service (Peru)
SFS	Sustainable Food Systems
SMETA	Sedex Members Ethical Trade Audit
SPS	Sanitary and Phytosanitary
SQF	Safe Quality Food
TAG	Tas-A-Ganesh
TBT	Technical Barriers to Trade
TE	Triennium Ending
TEPA	Trade and Economic Partnership Agreement
TERI	The Energy and Resources Institute
TMT	Thousand Metric Tonnes
TS	Thompson Seedless
TSS	Total Soluble Solids
UAE	United Arab Emirates

UK	United Kingdom
UN	United Nations
USA	United States of America
USD	United States Dollar
USDA	United States Department of Agriculture
UVP	Unit Value Price
WITS	World Integrated Trade Solution

FOREWORD

India's grape sector represents a rare and notable success story within the country's horticulture exports. At a time when most fruit crops in India remain largely domestically oriented with exports accounting for barely 1 per cent of production in crops like mango and banana; grapes stand out with nearly 9 per cent of production entering global markets. This orientation has positioned India among the top ten exporters globally, with exports valued at over USD 340 million in recent years.

This success has been driven by a unique combination of factors, favourable agro-climatic conditions, a well-defined seasonal advantage, progressive farmer practices, and the development of a robust export ecosystem. Regions such as Nashik have emerged as globally competitive production clusters, supported by strong adoption of Good Agricultural Practices (GAP), traceability systems, and modern post-harvest infrastructure. As a result, Indian grapes have secured a strong foothold in premium markets, particularly in the European Union.

However, sustaining this success will require navigating an increasingly complex and competitive global landscape. Changing consumer preferences, rising demand for new and patented varieties, tightening quality standards, and growing competition from countries such as Peru and Chile are reshaping global trade dynamics. These shifts call for continuous upgradation in production systems, diversification of export markets, strategic utilisation of recent Free Trade Agreements (FTAs), and investments across the value chain.

Recognising the need for a deeper assessment of India's grape sector amid evolving global trade dynamics, this study has been jointly undertaken by the Agricultural and Processed Food Products Export Development Authority (APEDA) and the Indian Council for Research on International Economic Relations (ICRIER). The report analyses India's production and export landscape, evaluates competitiveness, and identifies key bottlenecks and emerging opportunities across the value chain. Drawing on ICRIER's analytical expertise and APEDA's close engagement with exporters, Farmer Producer Organisations (FPOs), and industry

stakeholders, it proposes actionable strategies for market diversification, value addition, and strengthening India's global position in grape trade.

We hope that this report will serve as a valuable resource for policymakers, exporters, farmer organisations, and industry stakeholders. As India seeks to scale up its agricultural exports, commodities like grapes, which are high-value, export-oriented, and capable of delivering strong farm-level returns, will play a critical role in driving growth, enhancing farmer incomes, and building a resilient agri-export ecosystem.

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PREFACE

India's grape sector has emerged as one of the most successful and export-oriented segments within the country's horticulture landscape. With production of around 3.9 million metric tonnes and exports of nearly 0.3 million metric tonnes (valued at over USD 340 million), grapes account for a significantly higher share of exports compared to most other fruits. While commodities such as mango and banana export barely 1 per cent of their production, grapes stand out with 9 per cent export orientation, making it a rare success story in India's fresh fruits and vegetables (FFV) sector.

This success has been driven by a unique combination of favourable agro-climatic conditions, a well-defined seasonal advantage, and the development of a robust export ecosystem. India's harvesting window from February to April enables it to supply grapes to global markets during a period when availability from major Southern Hemisphere exporters is limited. Production clusters, particularly in Maharashtra and Karnataka, have evolved into globally competitive hubs, supported by widespread adoption of Good Agricultural Practices (GAP), traceability systems, and modern post-harvest infrastructure.

Over time, the sector has also benefitted from strong institutional support and industry participation. Initiatives led by APEDA, along with the role of exporters, farmer producer organisations (FPOs), and private players, have enabled Indian grapes to consistently meet stringent international standards and build a strong presence in premium markets such as the European Union and the United Kingdom.

However, sustaining and scaling this success is becoming increasingly challenging. The global grape market is evolving rapidly, with rising demand for new and patented seedless varieties, tighter sanitary and phytosanitary standards, and intensifying competition from countries such as Peru and Chile. India continues to rely heavily on a limited basket of varieties, while gaps in branding, logistics efficiency, and market diversification constrain its ability to fully capitalise on emerging opportunities. In addition, increasing compliance requirements and cost

pressures across the value chain add to the complexity of maintaining export competitiveness.

In this context, the present report assumes considerable relevance. While India has established a strong foothold in global grape exports, the next phase of growth will depend on its ability to transition from a volume-driven to a value-driven export strategy. This study provides a comprehensive and forward-looking assessment of the sector, covering production systems, value chains, market dynamics, competitiveness, and policy environment.

The report is structured across seven sections. Section 1 outlines the background, objectives, and methodology of the study. Section 2 presents market intelligence, including global and domestic scenarios and value chain mapping. Section 3 evaluates competitiveness using key indicators. Section 4 assesses export potential across existing and emerging markets. Section 5 examines the policy environment, including tariff and non-tariff measures. Section 6 identifies key challenges and opportunities, while Section 7 presents a set of actionable short, medium-, and long-term strategies to strengthen India's export performance.

The focus must shift from sustaining current export levels to unlocking the next phase of growth. This requires a clear strategy to enhance value realisation, diversify markets, upgrade varieties, and strengthen supply chain efficiencies. The present report is intended to support this transition by identifying targeted, actionable interventions grounded in data and stakeholder insights. Its relevance lies in providing a practical roadmap to consolidate India's position in existing markets while enabling expansion into new geographies, thereby ensuring that the grape sector continues to deliver higher returns to farmers and contributes meaningfully to India's agri-export growth.

AUTHORS

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AUTHORS

EXECUTIVE SUMMARY

India's grape sector represents one of the most successful examples of export-oriented horticulture in the country. Unlike most Indian fruits, where exports account for barely 1 per cent of production, grapes have achieved an export orientation of nearly 9 per cent, positioning India among the world's leading fresh grape exporters. Over the past two decades, the sector has evolved into a globally competitive industry supported by favourable agro-climatic conditions, a strong seasonal advantage, improved production systems, robust traceability mechanisms, and growing institutional support.

The study evaluates India's competitiveness in global grape markets, analyses production and export dynamics, identifies emerging opportunities and challenges, and proposes strategic interventions to strengthen India's long-term export performance. The analysis is based on secondary data from ITC Trade Map, FAOSTAT, APEDA, DGFT, NHB, and NRC Grapes, along with stakeholder consultations involving exporters, FPOs, and industry representatives.

PRODUCTION SCENARIO

Global Production Scenario

Globally, grape production averaged around 75.8 million metric tonnes (MMT) in TE 2023, cultivated over 6.7 million hectares with an average productivity of 11.3 tonnes per hectare. China emerged as the world's largest producer with 14.6 MMT, accounting for nearly 19 per cent of global production. European producers such as Italy, France, and Spain collectively accounted for another 19.2 MMT. India ranked as the seventh-largest grape producer globally, contributing around 3.9 MMT annually with productivity levels significantly above the world average. India's yield of around 21.7 tonnes per hectare reflects relatively efficient cultivation systems and intensive management practices.

Globally, the grape industry is witnessing rapid transformation driven by consumer preference for patented seedless varieties with superior taste, shelf life, colour, and texture. Countries such as Peru, Chile, and South Africa are rapidly transitioning

toward modern proprietary cultivars like Sweet Globe, Autumn Crisp, Allison, and Sweet Celebration. Peru, in particular, has emerged as the world's leading exporter despite relatively lower production, primarily because of varietal innovation, superior logistics, and strong institutional support.

Indian Production Scenario

India produced around 3.9 MMT of grapes in 2023–24 from 179.6 thousand hectares, compared to only 1.2 MMT in 2010–11, indicating substantial growth in both area and production. Maharashtra dominates production with nearly 68 per cent share, followed by Karnataka at 28 per cent. Nashik remains the country's most important grape cluster and produces over 70 per cent of Maharashtra's grapes and contributes nearly 80 per cent of India's grape exports.

Indian grape cultivation is heavily dependent on Thompson Seedless and its clones, which account for nearly 79 per cent of production. While these varieties historically supported India's export growth, increasing global preference for premium patented cultivars presents new challenges. In response, efforts are underway to diversify into new varieties such as ARRA series grapes, Allison, Timco, and domestically developed cultivars like Manjari Naveen and Manjari Medika.

GLOBAL AND INDIAN EXPORT SCENARIO

Global Export Scenario

Global fresh grape exports under HS 080610 reached nearly USD 9.9 billion in TE 2024, accounting for around 4.8 MMT of trade. Peru emerged as the world's largest exporter with exports valued at USD 1.6 billion, followed by Chile, the Netherlands, and Italy. The European Union collectively accounts for nearly 30 per cent of global imports, making it the most important destination market globally. The United States is the single largest importer globally, accounting for nearly 23 per cent of world imports, followed by Germany, the Netherlands, and the United Kingdom.

India's Export Performance

India's grape exports have expanded significantly over the past decade, increasing from USD 85.8 million in 2010–11 to USD 353.5 million in 2024–25. Export volumes

rose from 0.09 MMT to approximately 0.3 MMT during the same period, registering an average annual growth rate of around 13 per cent. India currently is the 9th largest exporter of fresh grapes and accounts for around 4 per cent of global grape exports. Major export destinations include the Netherlands, Bangladesh, UAE, UK, Germany, Russia, Malaysia, Saudi Arabia, Nepal, and Hong Kong. The Netherlands alone accounts for over 40 per cent of India's grape exports, highlighting heavy dependence on European markets.

Competitiveness analysis using Revealed Comparative Advantage (RCA) indicates that India's grape exports have become increasingly competitive globally, with RCA values remaining above 1 since 2016. Similarly, India's Nominal Protection Coefficient (NPC) remains significantly below one, suggesting strong price competitiveness in international markets. However, India's unit value realization remains considerably lower than major competitors such as Peru, the USA, and the Netherlands, indicating substantial scope for quality upgrading and value enhancement.

STRENGTHS AND OPPORTUNITIES

India's grape sector possesses several structural strengths that position it favourably in global markets:

- **Unique seasonal advantage**: India's February–April harvest window allows exports during a lean global supply period, particularly when Southern Hemisphere shipments from Peru and Chile begin tapering, giving India strong access to EU markets.
- **High productivity**: India records average grape yields of around 21.7 tonnes per hectare, nearly double the global average of 11.3 tonnes per hectare, reflecting efficient cultivation practices and intensive farm management.
- **Strong traceability and compliance systems**: APEDA's GrapeNet platform provides end-to-end traceability and residue monitoring, forming the backbone of India's compliance with stringent EU food safety standards and MRL requirements.

- **Growing adoption of international certifications**: Export-oriented clusters increasingly follow GLOBALG.A.P., BRCGS, HACCP, and related standards, strengthening access to premium retail chains in Europe and other developed markets.
- **Strong export competitiveness**: India has maintained a Revealed Comparative Advantage (RCA) of 1.2–1.6 since 2016, while a low Nominal Protection Coefficient (NPC) of around 0.21 indicates significant price competitiveness in global markets.

India also has substantial untapped opportunities in emerging and high-value markets:

- **Untapped high-value markets:** The USA and Canada remain major untapped destinations despite their combined grape import market exceeding USD 3 billion. Similarly, CIS countries beyond Russia, such as Kazakhstan and Belarus, offer strong growth potential, while Southeast Asian markets including Malaysia and Indonesia are witnessing rising demand for imported fruits driven by urbanization and changing dietary preferences.
- **Trade agreement advantages:** Recent trade agreements including the India–UAE CEPA, India–Australia ECTA, India–UK CETA, and the proposed India–EU FTA are expected to improve market access and reduce tariff disadvantages vis-à-vis competitors such as South Africa and Chile. In particular, the India–UK and India–EU agreements could help eliminate tariff gaps of around 7.7–9.5 per cent, significantly improving India's competitiveness in premium markets.
- **Rising global demand for premium varieties:** International demand is increasingly shifting toward seedless, coloured, and premium grape varieties with superior taste, shelf life, and appearance. India has substantial scope to expand cultivation of patented varieties such as ARRA and Allison through FPO-led production models and buy-back arrangements with exporters.
- **Diversification into value-added products:** The sector has strong potential to reduce dependence on fresh grape exports by expanding into raisins, grape juice, wine, nutraceuticals, grape seed oil, and juice concentrates. Development of agro-

processing clusters near major production centres such as Nashik and Sangli can support value addition and improve farmer returns.

- **Technology-led quality improvement:** Adoption of precision viticulture technologies including IoT-based monitoring, drones, AI-enabled pest detection, and digital advisory systems can improve productivity, optimize input use, and reduce export rejections through better quality management.
- **Branding and GI-based positioning:** GI-recognized products such as Nashik Valley Grapes, Bangalore Blue Grapes, and Cumbum Grapes offer opportunities for premium branding, product differentiation, and stronger positioning in niche international markets.

CHALLENGES

Despite impressive export growth, India's grape sector continues to face several structural, regulatory, and operational challenges that constrain its long-term global competitiveness.

1. **Varietal Limitations & Patent Barriers:** India remains heavily dependent on Thompson Seedless, which accounts for nearly 78 per cent of cultivated area, while global demand is shifting toward premium patented varieties such as Sweet Globe and Autumn Crisp. High licensing costs and limited access to proprietary genetics restrict adoption, especially among small farmers.
2. **Climate Variability & Weather Risks:** Unseasonal rainfall, hailstorms, heat stress, and humidity fluctuations continue to affect productivity and export quality. In 2024, rains affected nearly 45,000 hectares in Nashik, causing major yield losses in some areas. Disease outbreaks such as powdery mildew and downy mildew further increase production costs and rejection risks.
3. **Logistics and Infrastructure Bottlenecks:** Cold chain gaps, outdated packhouses, high logistics costs, electricity disruptions, and labour shortages remain key concerns. Shipping disruptions during the Red Sea crisis increased transit time to Europe from around 22 days to nearly 60 days, affecting freshness and quality.
4. **Compliance Costs and Regulatory Risks:** Stringent SPS standards, residue monitoring, and certifications such as GLOBALG.A.P. and BRCGS increase

compliance costs. India also faces non-tariff barriers including US pest-risk restrictions, China's orchard registration requirements, and Indonesia's import quota delays.

5. **Market Concentration Risk:** Over 70 per cent of India's grape exports are concentrated in the EU market, with heavy dependence on the Netherlands as a redistribution hub. Limited presence in North America and East Asia increases vulnerability to market and policy shocks.
6. **Limited Value Addition & Processing:** India's grape exports remain heavily dominated by fresh produce, with limited processing infrastructure for raisins, juice, wine, and other value-added products. This restricts value realization, increases dependence on fresh exports, and contributes to higher post-harvest losses during periods of oversupply or export disruption.

STRATEGIC RECOMMENDATIONS

The study recommends a combination of short-term, medium-term, and long-term interventions to strengthen India's grape export competitiveness.

Short-Term Strategies

1. **Mitigate Production and Price Risks:** Strengthen farmer and exporter resilience through weather-based insurance, protected cultivation, climate-smart farming, and real-time advisory systems. Expand ECGC coverage and liquidity support for exporters, while promoting diversification and integrated pest management to reduce production, market, and export risks.
2. **Leverage Preferential Market Access under Recent FTAs:** Strengthen utilisation of FTAs through targeted training, simplified digital guidance, and improved dissemination of tariff and compliance information. Enhance coordination among APEDA, DGFT, and Indian missions while supporting trade promotion and market-focused export strategies in key FTA destinations such as the UAE and Australia.
3. **Upgrade Post-Harvest Infrastructure:** Modernise cold-chain infrastructure, including cold storages, reefer transport, and logistics connectivity, to reduce transit losses and extend shelf life. Promote sustainable packaging and strengthen FPOs and Export Business Units to improve aggregation, quality management, and supply chain coordination.

Medium-Term Strategies

4. **Promote Climate-Resilient and Globally Demanded Varieties:** Promote adoption of export-oriented grape varieties with better shelf life, climate resilience, and quality attributes through targeted incentives, technical support, and private-sector partnerships. Strengthen farmer capacity on GAP, MRL compliance, and integrated pest management through extension services and digital platforms such as GrapeNet.
5. **Expand Export Market Access and Diversify Destinations:** Accelerate market diversification through trade negotiations, targeted market-entry strategies, and stronger engagement with global buyers in regions such as the US, CIS, Africa, and Southeast Asia. Support this with investments in traceability systems, certification mechanisms, resilient varieties, and export infrastructure.
6. **Develop Value-Added Grape Products and GI Branding:** Develop agro-processing clusters in major grape belts with facilities for raisins, juice, wine, and packaging to promote value addition and quality consistency. Support FPOs and SMEs through financial assistance, technical training, market linkages, and R&D while strengthening branding, GI promotion, and supply chain integration.

Long-Term Strategies

7. **Adopt Digital and Precision Viticulture Technologies:** Promote technology-driven viticulture through precision tools such as IoT sensors, drones, GIS mapping, and AI-based pest detection. Support farmer training, FPO-led technology sharing, and pilot models such as Sula Vineyards' GPS-enabled irrigation systems to improve productivity, quality, and export compliance.

8. **Strengthen Continuous Varietal Innovation and R&D:** Strengthen breeding and R&D programs for climate-resilient, pest-resistant, and export-oriented grape varieties and rootstocks suited to Indian conditions. Promote collaboration among ICAR-NRCG, universities, private firms, and global research centres to accelerate innovation, including drought- and salinity-tolerant rootstocks such as Salt Creek and 110-R.

1 INTRODUCTION

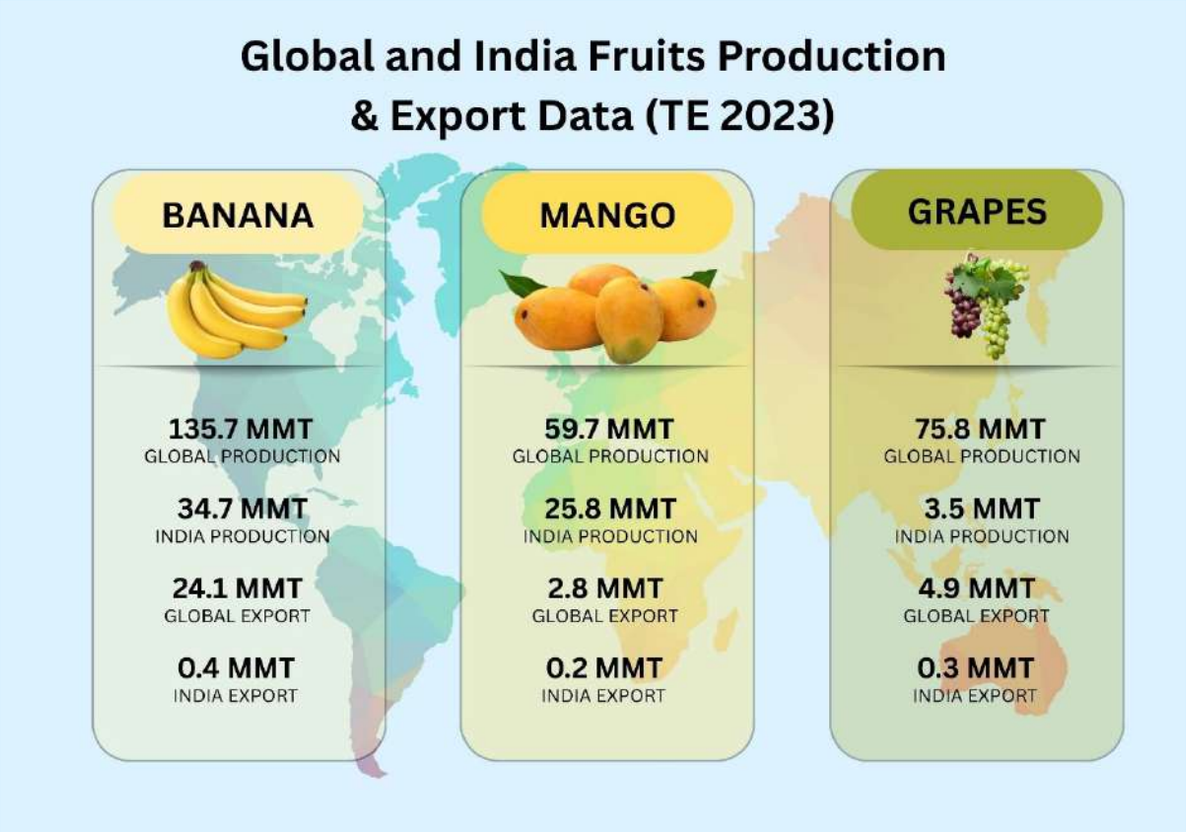
1.1 Backdrop of the Commodity

Grapes are one of the most important commercial fruit crops globally as well as in India. They are consumed fresh, dried as raisins, or processed into juices and wine. Over the last two decades, India has emerged as a significant player in the global fresh grape market, with its reputation as a table grapes exporter, particularly in the seedless varieties such as Thompson Seedless, creating a niche in select export destinations. Grapes rank among India's top three fresh fruit exports, alongside mangoes and bananas.

Globally, grape production was around 75.8 million metric tonnes (MMT) in the triennium ending (TE) 2023. Of this, approximately 4.96 MMT with a value of USD 9.53 billion was exported, which is about 7 per cent of the global production (FAOSTAT, 2025). China leads global production with 14.6 MMT but exports only 3 per cent of its output, reflecting strong domestic consumption. In contrast, Peru has emerged as the world's leading exporter, accounting for 15 per cent of the global grape exports by value (USD 1.4 billion) while exporting nearly 61 per cent of its production.

India is the world's seventh largest grapes producer with its production reaching 3.7 MMT in TE2023–24. During the same period, India exported around 0.3 MMT grapes valued at USD 345.5 million, representing about 9 per cent of the total production (APEDA, 2025). This positioned India as the ninth-largest global exporter, accounting for 4 per cent of world grape exports. Notably, while banana and mango exports from India account for only about 1 per cent of their respective production, grapes stand out with nearly 9 per cent of its production (3.5 MMT) exported (0.3 MMT), underscoring their strong export orientation and commercial significance (**Figure 1.1**).

Figure 1.1: Comparing grapes with bananas and mangoes



Note: For mango, data is for HS Code 080450 (Mangoes, Guavas & Mangosteens)
Source: Authors' illustration using data from FAOSTAT and ITC Trademap

India's production is highly concentrated in two states: Maharashtra that contributes over 68 per cent of the national output, followed by Karnataka with a share of 28 per cent. Together they account for 96 per cent of the total grapes production of India. In Maharashtra, Nashik, Sangli, Solapur, and Pune are the major districts with Nashik referred to as the "Grape Capital of India" due to its extensive vineyards and advanced post-harvest infrastructure. Nashik produces over 70% of Maharashtra's grapes and 80% of India's grape exports, making it the "Grape Capital of India." Its seasonal window (Feb-April) is crucial for EU-bound shipments due to off-season advantage over Southern Hemisphere exporters.

A major advantage for India is its favourable seasonality window. Indian grapes are harvested primarily between February and April when supplies from major Southern Hemisphere exporters like Chile, South Africa, and Australia are limited. This enables India to target high-demand markets like the European Union (EU)

and West Asia when global availability is low. Export-grade grapes fetch significantly higher returns, encouraging farmers to adopt advanced, quality-focused production practices like drip irrigation, regulated deficit irrigation, integrated pest management (IPM), and the use of growth regulators for uniform berry development. Over the past decade, India has also developed modern post-harvest infrastructure including packhouses, pre-cooling units, cold storage facilities, and refrigerated transportation, all of which are essential for meeting stringent international quality standards.

The EU has emerged as India's most important export destination for grapes, currently accounting for over 70 per cent of the total shipments, with key markets including the Netherlands, Germany, and the UK. Other significant destinations include Russia, Bangladesh, and Gulf countries such as the UAE and Saudi Arabia. India's strong presence in the EU market is supported by preferential tariff access under the Generalized Scheme of Preferences (GSP) and widespread adoption of Global Good Agricultural Practices (GAP) standards that have enhanced the credibility and marketability of Indian grapes.

India's grape export ecosystem has also witnessed significant strengthening over the years, with the establishment of robust quality assurance systems, traceability mechanisms, and institutional support led by agencies such as APEDA, MRDBS, Mahagrapes, among others. These efforts have enabled Indian exporters to consistently meet stringent international standards and build long-term relationships in premium global markets.

There is also growing momentum towards varietal diversification, improved farm practices, and greater adoption of advanced technologies such as precision irrigation, fertigation, and climate-resilient cultivation techniques. These developments, combined with a maturing export ecosystem, position India's grape sector as one of the most dynamic and high-potential segments within the fresh fruits and vegetables (FFV) industry.

On the other hand, sustaining and accelerating export growth will require continued focus on enhancing productivity, improving supply chain efficiencies, strengthening branding and market positioning, and expanding the basket of export-oriented

varieties. Despite this, grape cultivation is a high-value enterprise in India, contributing significantly to rural incomes and generating employment in allied sectors such as packaging, logistics, and cold chain services.

In this context, this study undertakes a comprehensive assessment of India's grape sector, focusing on its strengths, emerging opportunities and evolving market dynamics. It aims to provide actionable insights to further enhance export competitiveness and support sustainable growth of this strategically important horticultural commodity.

1.2 Objectives and Scope of the Study

The primary objective of this study is to assess India's current export capacity, identify emerging opportunities, and recommend strategic interventions to strengthen India's position in the global fresh grape trade.

The scope of this study includes:

- Market trend analysis: Examining domestic and international trends in grape production, trade, and price competitiveness.
- Value chain mapping: Identifying bottlenecks in production, aggregation, processing, and logistics.
- Policy and trade environment review: Assessing tariff and non-tariff barriers, SPS measures, and bilateral agreements.
- Strategic recommendations: Outlining actionable steps to improve quality, diversify markets, and enhance India's global competitiveness.

1.3 Methodological Framework

The methodological framework adopted for this study combines multiple analytical tools, data sources, and stakeholder inputs to assess India's competitive position in global grapes markets, identify challenges in the grapes value chain, and propose actionable strategies for boosting grapes export.

Approach

The study employs a multi-pronged approach considering India's production strengths, export performance, and challenges in meeting global market requirements. First, the competitiveness of Indian grapes was assessed using two key indicators, Revealed Comparative Advantage (RCA) and Nominal Protection Coefficient (NPC).

Revealed Comparative Advantage: It is a widely used trade measure to assess a country's comparative advantage for a particular product relative to the global trade scenario. An RCA value greater than one means the country has a comparative advantage in the export of that product, whereas an RCA value less than one means the country does not have a comparative advantage. The formula for calculating India's comparative advantage in grapes is given by:

$$RCA=(E_{ij}/E_i)/(E_{wj}/E_w)$$

Where:

- E_{ij}= Exports of grapes by India
- E_i = Total agricultural exports by India
- E_{wj} = Exports of grapes by the world
- E_w = Total world agricultural exports

Nominal Protection Coefficient: NPC assesses whether domestic prices for grapes are competitive with world prices, providing insights into export viability. NPC measures the relationship between domestic and world prices for grapes to evaluate if domestic prices are aligned with international benchmarks, assessing the competitiveness of Indian grapes for exports. The formula to calculate NPC for grapes is:

$$NPC=P_w/P_d$$

Where:

- P_d = Domestic price of grapes
- P_w = World reference price (export parity price)

Benchmarking of best practices: Benchmarking of best practices is undertaken by studying the leading grape-exporting country, Peru and the leading grapes exporting company, Sahyadri Farms. These case studies highlight global standards in production, post-harvest handling, cold chain management, packaging, branding, and marketing.

Forecasting: A comprehensive analysis of India's grape export data from 2010-11 to 2023-24 was done to forecast future export values up to 2034-35. The study employs multiple projection scenarios using the historical export data, calculating future values based on:

- Long-term historical growth rates (15 years),
- Recent performance (last 5 years),
- Adjusted scenarios excluding Covid-affected years.

Data Collection and Sources

The study is based on both secondary and primary data sources, ensuring a comprehensive and accurate analysis. Secondary data was sourced from global sources such as the International Trade Centre (ITC) Trademap, United Nations Commodity Trade Statistics Database (UN Comtrade), World Integrated Trade Solution (WITS), and the United States Department of Agriculture (USDA); national databases from the Directorate General of Foreign Trade (DGFT), Agricultural and Processed Food Products Export Development Authority (APEDA), National Research Centre for Grapes (NRC-Grapes), and the National Horticulture Board (NHB) among others; and state-level repositories, as well as published literature (academic studies, research papers, and online reports related to grape exports and value chains).

Primary data was gathered through stakeholder consultations and Key Informant Interviews (KIIs) to complement secondary data and capture on-ground realities.

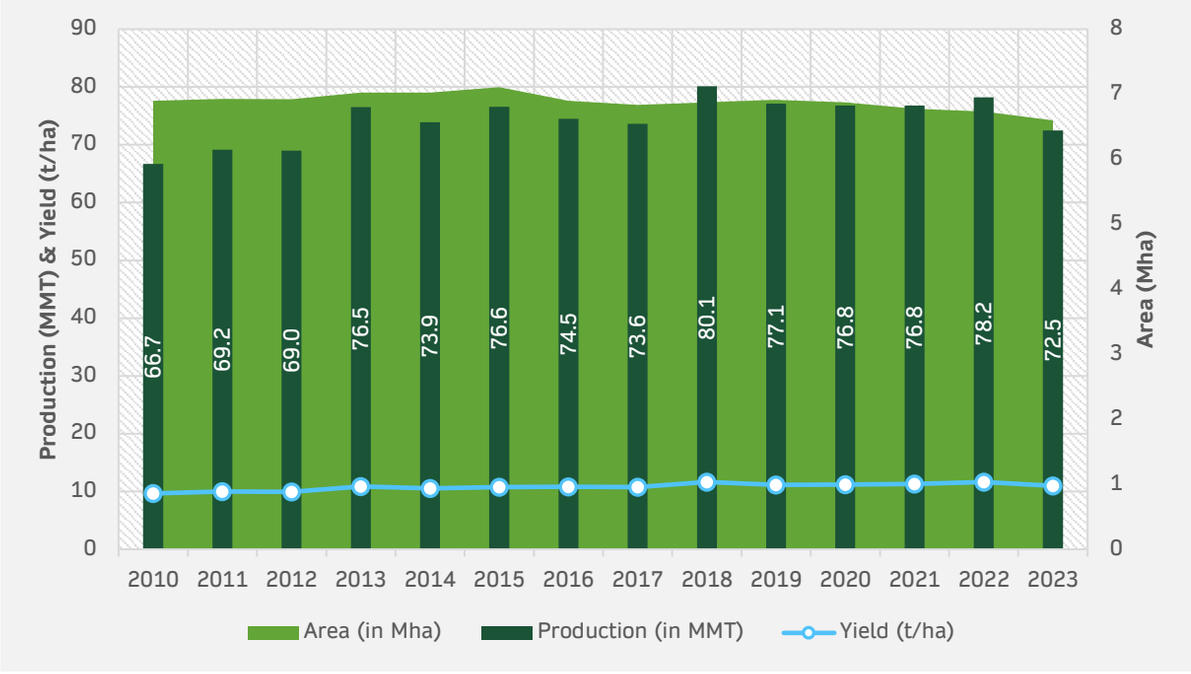
2 MARKET INTELLIGENCE

2.1 Global Scenario

Global Production Scenario

Global grape production has expanded at a modest average annual growth rate (AAGR) of 1 per cent, rising from 66.7 MMT in 2010 to 72.5 MMT in 2023. In the TE 2023, production averaged 75.8 MMT, cultivated over 6.7 Mha. The corresponding average yield during this period was 11.3 tonnes per hectare (t/ha) (FAOSTAT, 2025) (**Figure 2.1**).

Figure 2.1: Global production, Area and Yield of Grapes



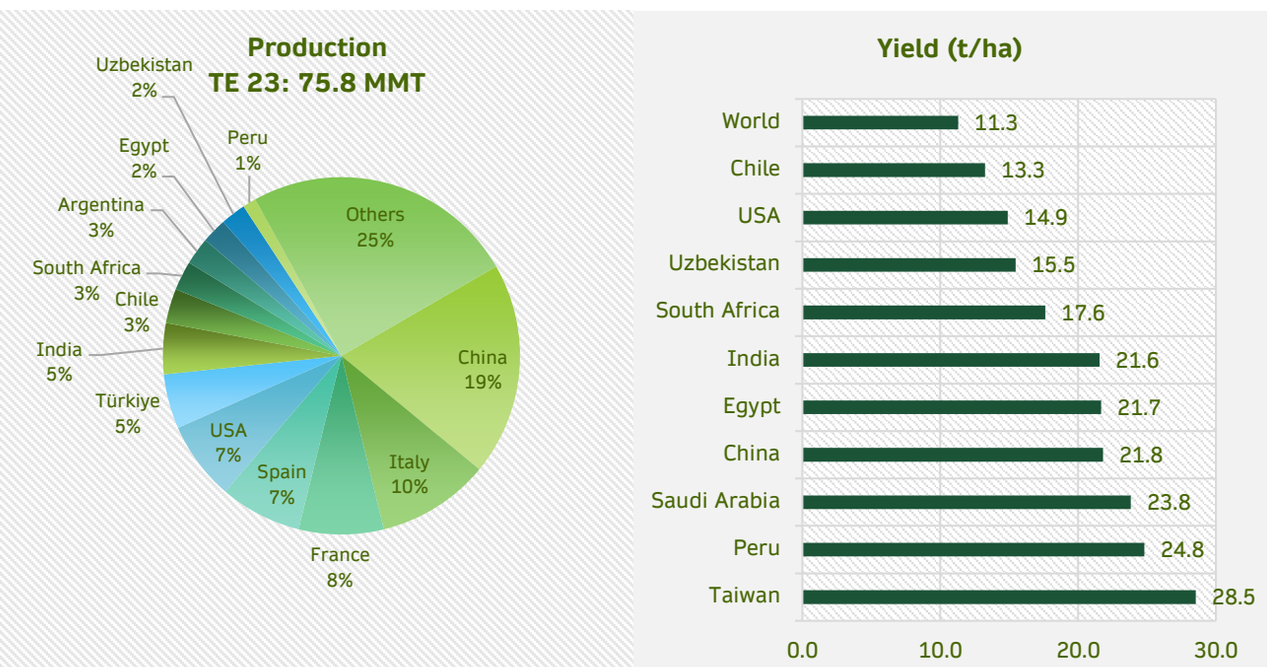
Source: FAOSTAT, 2025

In the TE2023, China emerged as the largest producer of grapes, contributing 19 per cent of global output (14.6 MMT). Among European producers, Italy (10 per cent), France (8 per cent), and Spain (7 per cent) together accounted for 19.2 MMT, consolidating their position as key contributors. India ranked seventh globally, with

a 5 per cent share of world production (3.5 MMT), while Peru, despite being the leading global exporter, ranked only 19th in production with a 1 per cent share (0.9 MMT). The global average yield in TE2023 stood at 11.3 t/ha, with Taiwan recording the highest productivity at 28.5 t/ha, followed by Peru at 24.8 t/ha. India also reported a significantly above-average yield of 21.6 t/ha, underscoring its relative efficiency in grape cultivation (FAOSTAT, 2025) (**Figure 2.2**).

China's rise as the leading producer is due to the adoption of advanced viticultural techniques, such as rain-shelter cultivation, grape bagging to prevent pest damage, and vine-burying methods to protect plants from extreme cold. Taiwan's high yields reflect intensive farming practices and careful management of resources. Peru's success is particularly noteworthy, while its total production volume remains relatively low, regions like Ica, Piura, and Lambayeque offer ideal climatic conditions with warm days and cool nightly winds that favour consistent fruit quality. Moreover, Peru has strategically shifted its production from traditional varieties like Red Globe to high-demand, patented seedless varieties such as Sweet Globe and Autumn Crisp, boosting both yield and export value (Agronometrics, 2025).

Figure 2.2: Production and Yield of Major Grapes Producing Countries

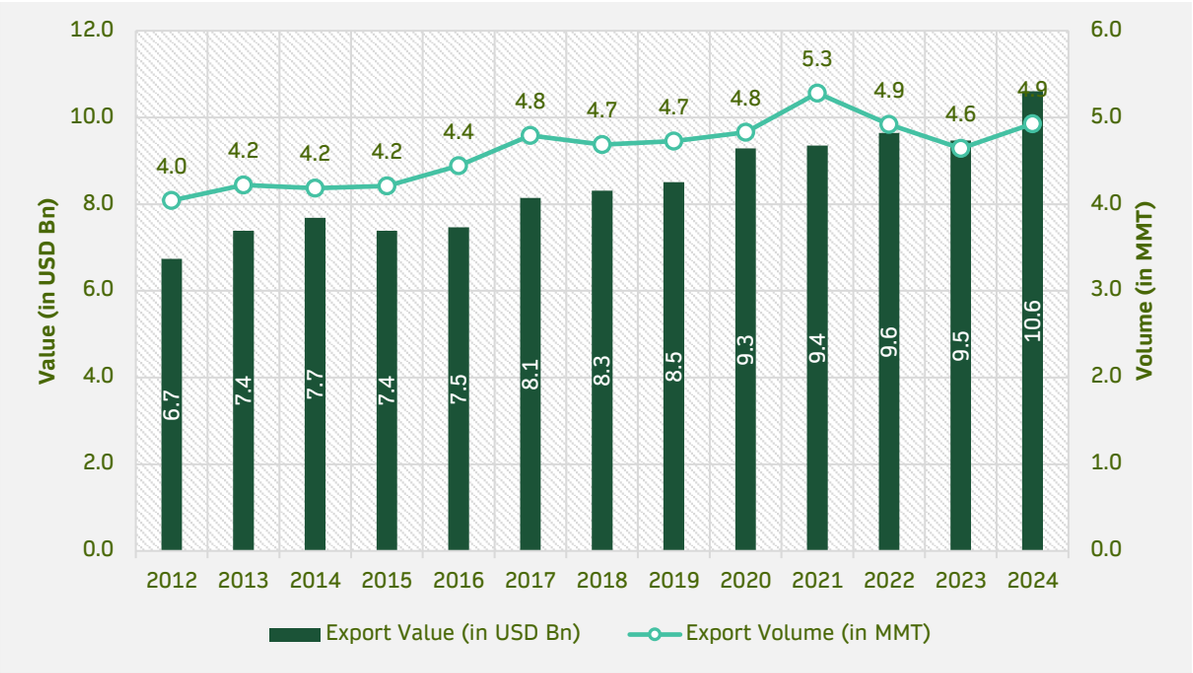


Source: FAOSTAT. 2025

Global Trade Scenario

Under the Harmonised System of Nomenclature (HSN), fresh grape trade is classified under HSN 080610. In the TE 2024, global exports of fresh grapes stood at USD 9.9 billion, amounting to 4.8 MMT. During 2012 to 2024, exports increased at an AAGR of 4 per cent, rising in value from USD 6.7 billion in 2012 to USD 9.9 billion in 2024. In TE 2023, fresh grapes exports accounted for 6.5 per cent of total global grape production (ITC, 2025) (**Figure 2.3**).

Figure 2.3: Global Exports of Fresh Grapes (HS: 080610)



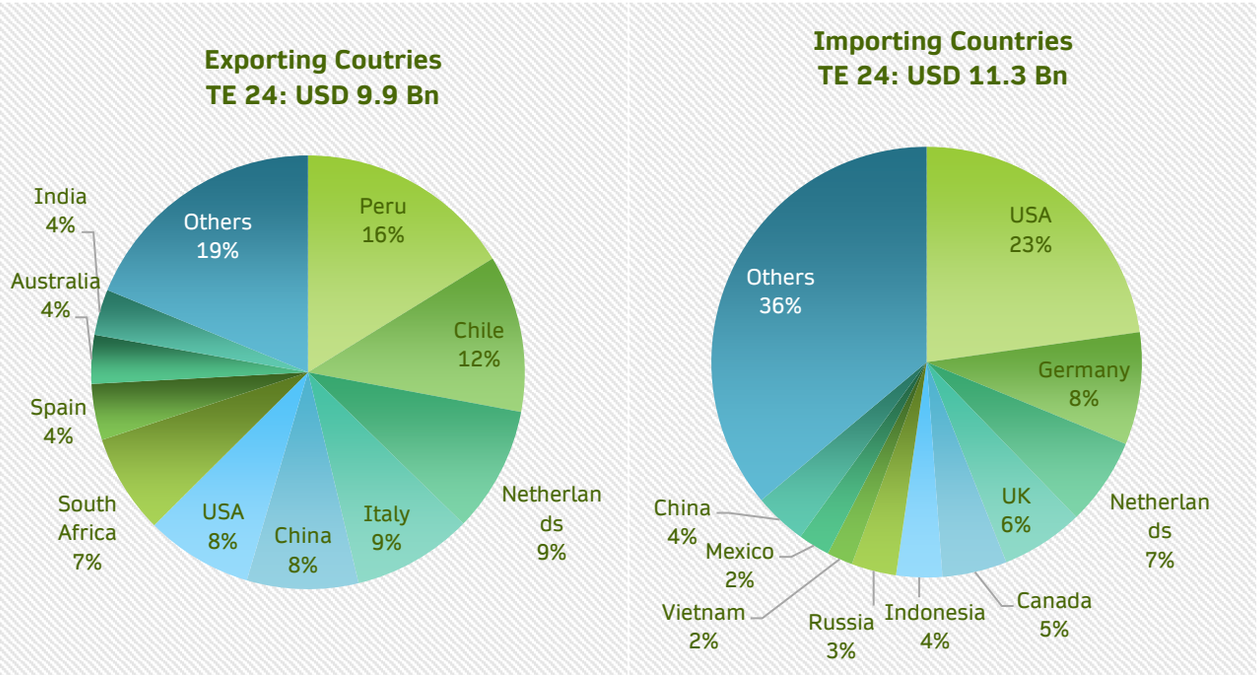
Source: ITC, 2025

In TE 2024, the leading exporters of fresh grapes were Peru, Chile, the Netherlands, and Italy. Peru dominated global trade, contributing 16 per cent of world exports with shipments valued at USD 1,606.2 million (0.59 MMT). Chile followed with a 12 per cent share, valued at USD 1,160.7 million (0.54 MMT). The Netherlands and Italy each accounted for 9 per cent of global exports, valued at USD 927 million (0.31 MMT) and USD 887.1 million (0.41 MMT), respectively. China, despite being the world's largest producer, ranked fifth with an 8 per cent share, valued at USD 822.8 million (0.48 MMT). India held the tenth position, contributing 3 per cent of global exports, valued at USD 338.7 million (0.29 MMT). Collectively, the European

Union (EU)[1] accounted for 25 per cent of global fresh grape exports, valued at USD 2,512 million (1.01 MMT).

On the demand side, the USA emerged as the largest importer, representing 23 per cent of global imports (USD 2,566.7 million) in TE 2024. Germany ranked second with an 8 per cent share (USD 951.3 million), followed by the Netherlands at 7 per cent (USD 740.3 million) and the UK at 6 per cent (USD 698.3 million). Collectively, the EU accounted for 30 per cent of global imports, valued at USD 3,369.7 million (ITC, 2025) (**Figure 2.4**).

Figure 2.4: Value-wise Fresh Grapes Exporting and Importing Countries TE24



Source: ITC, 2025

Global Grape Varieties

The global table grape industry has shifted from a production-led model to one driven by technology, innovation, and consumer preferences. Competitiveness is not determined only by production volumes, but by the type and quality of grape varieties cultivated. In this context, patented and high-performance cultivars have

[1] European Union 27- Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden

emerged as the main drivers of growth. These varieties are developed to meet the needs of the entire value chain, providing higher yields and climate resilience for growers, improved post-harvest durability for exporters, and the desirable taste, texture, and appearance demanded by international retailers and consumers.

Table 2.1: Major global grapes varieties

Country	Exportable Varieties
Peru	Red Globe, Crimson Seedless, Autumn Crisp, Sweet Globe
Chile	Red Globe, Thompson Seedless, Crimson Seedless, Flame Seedless, Autumn King
South Africa	Thompson Seedless, Crimson/Prime/Sugraone, Flame Seedless, Autumn Crisp
India	Thompson Seedless, Sharad Seedless, TAG

Source: Various sources from secondary literature

PERU

Peru is the clearest example of this varietal transformation. In the past decade, the share of vineyards planted with licensed varieties has increased from about 16 per cent to nearly 75 per cent. Peru cultivates more than 60 modern export-oriented varieties, reflecting its rapid and deliberate response to global demand. Traditional varieties such as Red Globe continue to be produced, but their dominance has declined with the rise of high-value seedless grapes (Maxwell, 2025). For Peru's 2023–24 season, white seedless grapes accounted for 54 per cent of total production, followed by red seedless at 25 per cent, red globe at 16 per cent, and black seedless at 5 per cent (The Grape Reporter, 2024).

The most important export varieties include Sweet Globe, Autumn Crisp, Allison, and Sweet Celebration, which account for a growing share of Peru's shipments. The introduction of new cultivars, such as ARRA Fire Crunch (a red grape with high yields and long shelf life) and ARRA Honey Pop (an early white variety), further demonstrates Peru's strategy of aligning production with international market

trends (Agraria, 2025). As a result, Peru has become the world's largest exporter of table grapes, with shipments reaching more than 40 countries.

CHILE

Chile, historically one of the leading exporters, has faced increasing competition from Peru. To maintain its position, the industry, through the Table Grape Committee of ASOEX, now known as Frutas de Chile, has launched a comprehensive program of varietal renewal (Jennifer Strailey, 2022). The objective is to replace older, less competitive cultivars with modern, patented varieties that are better suited to current market preferences.

The renewal program emphasises both red and white seedless grapes. Among red varieties, Timco, Allison, and Sweet Celebration are gaining importance, while among white seedless grapes, Sweet Globe, Autumn Crisp, and ARRA 15 are becoming central to Chile's export portfolio (Maura Maxwell, 2022). Although the transition is ongoing, this strategy signals Chile's recognition of varietal innovation for restoring international competitiveness.

SOUTH AFRICA

South Africa has also experienced a clear shift in its varietal profile. Traditional cultivars such as Crimson Seedless and Thompson Seedless are gradually declining, while modern seedless grapes are expanding rapidly. Varieties such as Autumn Crisp, Sweet Globe, and Sweet Celebration have recorded strong growth in exports. For example, exports of Sweet Globe and Sweet Celebration have grown at annual rates exceeding 40 per cent in recent years, while older varieties have shown negative growth (SATI, 2024).

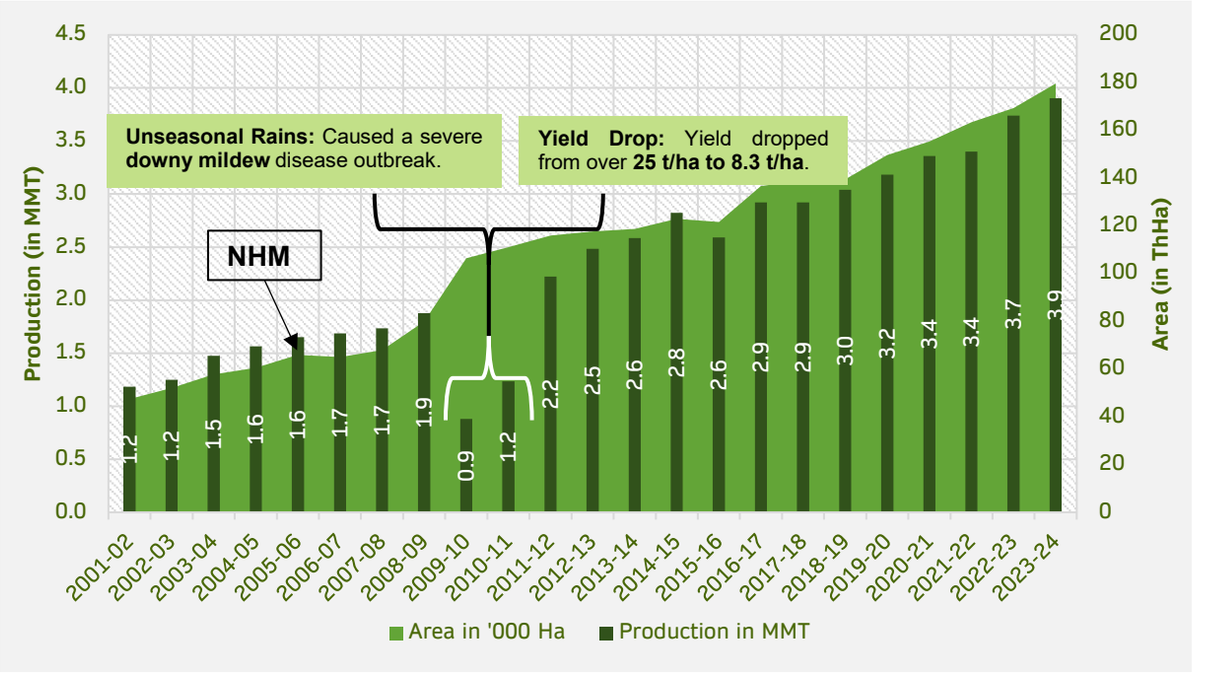
In the 2023–24 season, South Africa exported around 73.5 million cartons of grapes, representing a 17 per cent increase compared to the previous year. The largest growth was recorded in new patented varieties, such as Sweet Globe, Autumn Crisp, Early Sweet, and Ivory, highlighting the strong international demand for these cultivars (SATI, 2024).

2.2 Domestic Scenario

Domestic Production Scenario

According to the Ministry of Agriculture and Farmers' Welfare, India produced 3.9 MMT of fresh grapes in 2023–24, cultivated over 179.6 thousand hectares, with an average yield of 21.7 t/ha. Both production and area under cultivation have expanded steadily over the years: output increased from 1.2 MMT in 2010–11 to 3.9 MMT in 2023–24, while the cultivated area rose from 111 thousand hectares to 179.6 thousand hectares during the same period (MoAFW, 2025).

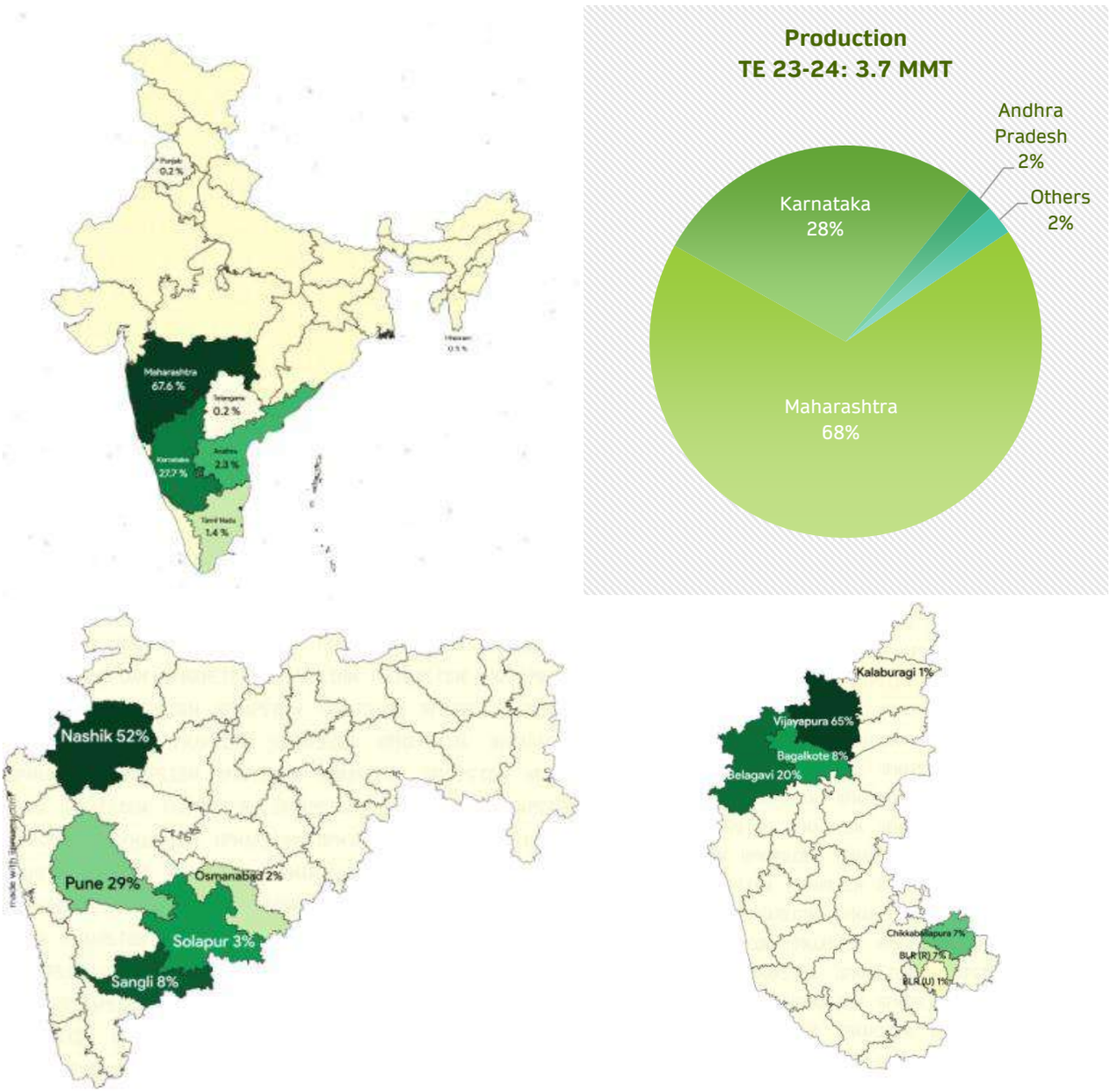
Figure 2.5: India Area and Production of Grapes



Source: MoAFW, 2025

In TE 2023–24, Maharashtra accounted for 68 per cent of national production (2,488.1 TMT), followed by Karnataka with 28 per cent (1,021.0 TMT), and Andhra Pradesh with 2 per cent (83.3 TMT) (**Figure 2.6**). A decade earlier, in TE 2013–14, Maharashtra's dominance was even stronger at 83 per cent (2,006.7 TMT), while Karnataka contributed 13 per cent (303.8 TMT). This shift indicates a gradual diversification of production away from Maharashtra, with Karnataka significantly expanding its share over time.

Figure 2.6: State and District-wise grapes production



Source: MOAFW; Horticultural Statistics at Glance 2018; Government of Karnataka District Statistics 2020-2021

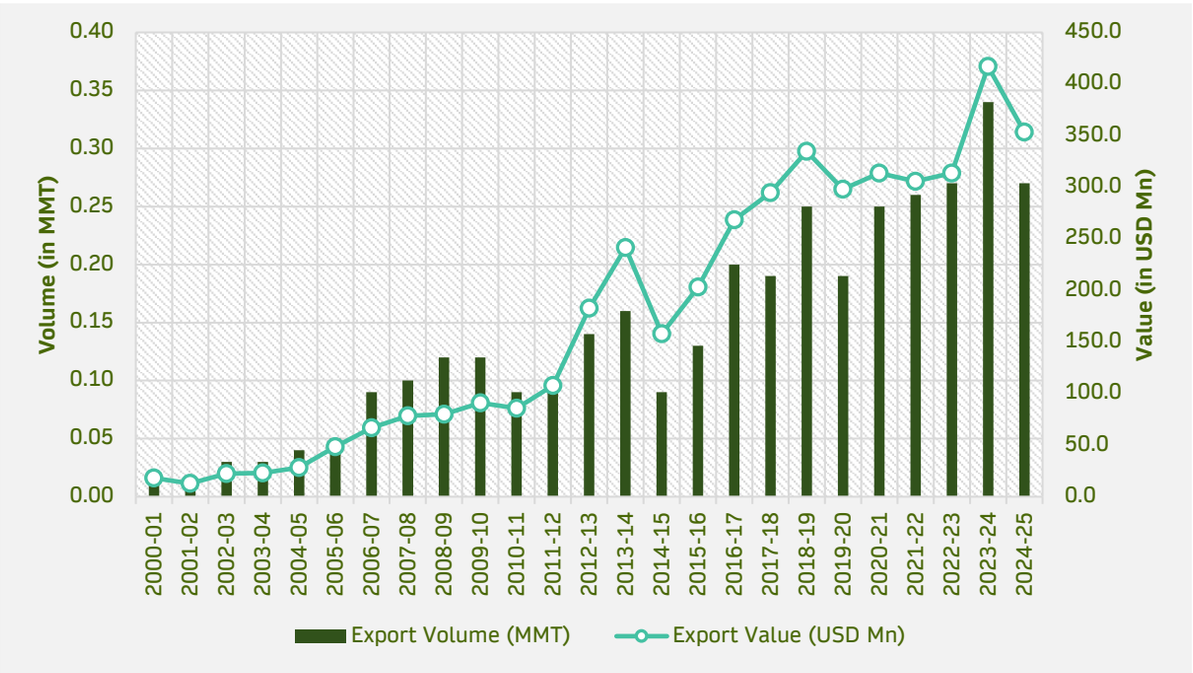
Domestic Trade Scenario

India's fresh grape exports have grown significantly over the past decade, rising from USD 85.8 million (0.09 MMT) in 2010–11 to USD 353.5 million (0.27 MMT) in 2024–25, registering an AAGR of 13 per cent (DGCIS, 2025). In the TE 2024, India

ranked 9th among global exporters of fresh grapes, contributing 4 per cent of world exports, valued at USD 338.7 million (ITC, 2025) (**Figure 2.7**).

Despite being the seventh-largest producer, with 3.9 MMT of fresh grapes in 2023–24, India exported only 0.34 MMT, equivalent to 9 per cent of its total production (DGCIS, 2025). This indicates that the bulk of production continues to be absorbed domestically. In TE 2024, India's major export destinations were the Netherlands, Bangladesh, the UAE, and the UK. The Netherlands alone accounted for 42 per cent of India's exports, valued at USD 144.5 million (0.009 MMT). Bangladesh followed with a 9 per cent share (USD 32.6 million; 0.008 MMT), while the UAE and UK each accounted for 8 per cent, valued at USD 26.4 million (0.002 MMT) and USD 25.8 million (0.001 MMT), respectively. Other important markets included Russia, Germany, Malaysia, Saudi Arabia, Nepal, and Hong Kong.

Figure 2.7: India's export of Fresh Grapes

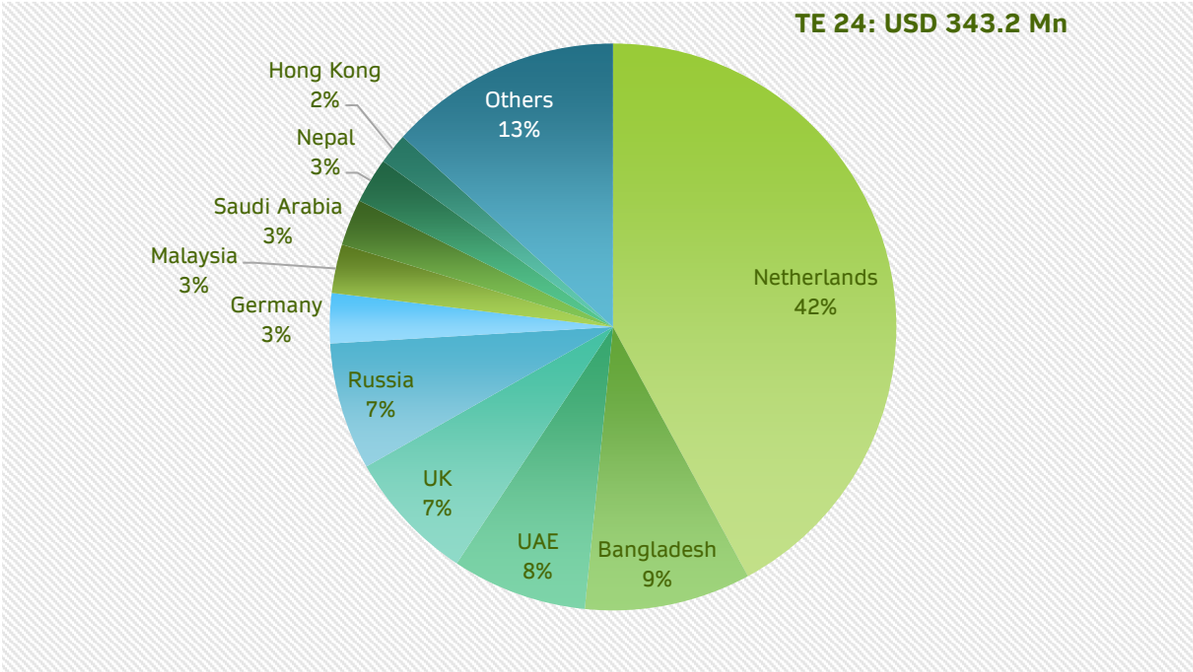


Source: DGCIS, 2025

These markets together account for a significant share of India's grape exports, reflecting established trade linkages and consistent demand across key destinations. Further expansion into new geographies and strengthening of existing

trade relationships are expected to further enhance export performance in the coming years.

Figure 2.8: India's export destinations for grapes



Source: ITC Trademap

Indian Table Grape Varieties

India is one of the world's leading producers of table grapes, with more than 20 varieties under cultivation. However, only a dozen is grown on a commercial scale. These can broadly be classified into four categories: coloured seeded, coloured seedless, white seeded, and white seedless. Thompson Seedless, known internationally as Sultana, is the most important grape variety in India. Together with its popular clones like Tas-A-Ganesh, Sonaka, Manik Chaman, and 2A-Clone, it occupies 78.96 per cent of the country's total grape-growing area.

In 2021, Thompson Seedless accounted for 79.12 per cent of the national production (around 246,631 MT), followed by its clones Tas-A-Ganesh (4.9 per cent) and 2A-Clone (4.6 per cent) (APEDA, 2024). This is highly suited to Indian conditions. It produces large bunches of oval-shaped, amber-green berries with a crisp texture and balanced sweetness that turn golden when fully ripe. Its

versatility has made it popular for both domestic consumption and exports. The rise of Thompson Seedless in the 1960s marked the beginning of India's modern, commercial grape industry, particularly in Maharashtra, which continues to dominate national production (Gawande, 2021).

Table 2.2: Major Indian grapes varieties

State	Cropping Pattern	Grape Availability	Major Varieties
Maharashtra	Double pruning Single cropping	December to May	TS, TAG, Clone 2A, Crimson Seedless, Nanasaheb Purple Seedless, Flame Seedless, Super Sonaka, Sonaka, Manik Chaman, Manjari Kishmish, Manjari Shyama, etc.
Karnataka	Double pruning Single cropping	December to April	TS, TAG, Clone 2A, Crimson Seedless, Nanasaheb Purple Seedless, Flame Seedless, Super Sonaka, Sonaka, Manik Chaman, Manjari Kishmish, etc.

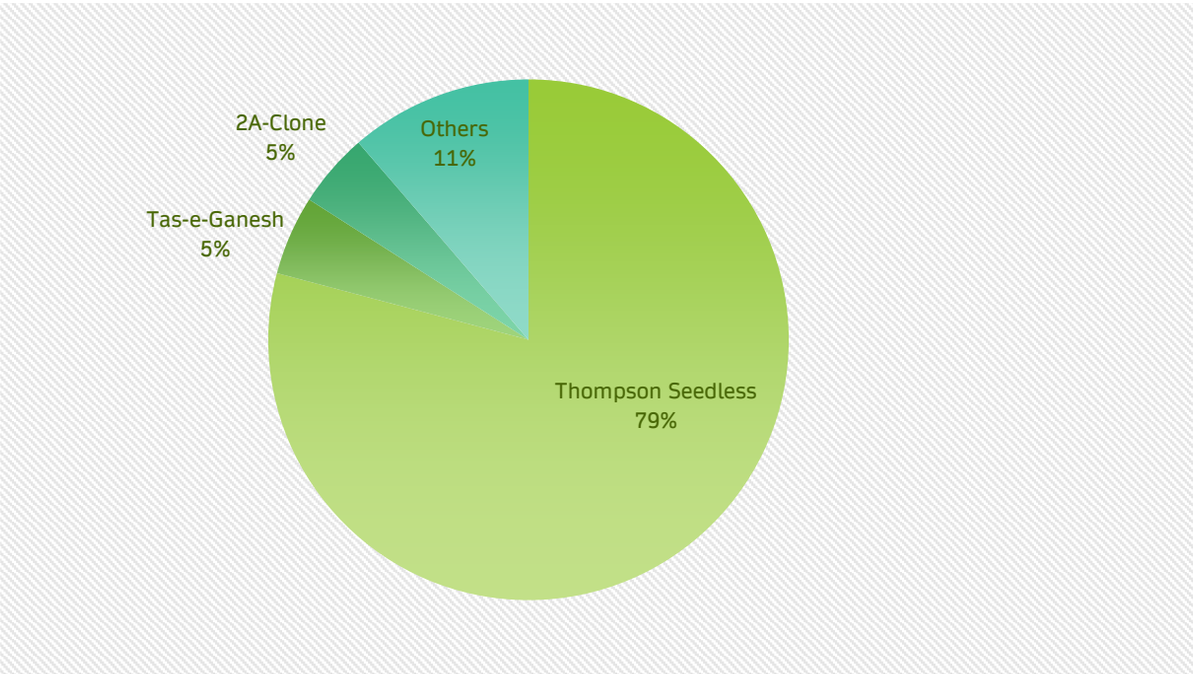
Source: Somkuwar R.G. et al, 2025

However, over-reliance on Thompson Seedless has created risks. Climatic stresses, such as higher temperatures, unseasonal rains, and humidity, are affecting berry size, sweetness, and disease resistance. The variety is especially vulnerable to fungal outbreaks like downy mildew and anthracnose. At the same time, global markets, particularly the EU, are shifting towards newer patented varieties with superior flavour, crispness, colour, and shelf life, reducing demand for Thompson Seedless (Karniel-Padan, 2025).

To address these pressures, efforts are underway to diversify. The Indian Council for Agriculture Research- National Research Centre for Grapes (ICAR-NRCG) has developed new varieties such as Manjari Naveen, Manjari Shyama, and Manjari Medika (NRCG, 2015). Farmer-Producer Organisations (FPOs) like Sahyadri Farms are introducing global patented cultivars, particularly the ARRA series (ARRA-15, ARRA-19, ARRA-32), which are resilient and have higher export-quality recovery rates (Karniel-Padan, 2025). In addition, farmer-led innovation has also

contributed, for example, Sudhakar Seedless (SS), bred in Nashik, produces larger berries, higher yields, and better resistance to cracking compared to Thompson Seedless (Bose, 2020).

Figure 2.9: Cultivar-wise Share of Grapes Production, 2021



Source: APEDA

Geographical Indications (GI) provide legal recognition to products that have a specific origin and unique qualities linked to that region. In the case of grapes, India has a few varieties that have received this recognition, helping protect their identity and improve their market value. Below are the major GI tagged grapes varieties from India (for details, see **Annex 2**).

- **Nashik Valley Grapes (Maharashtra)**: These grapes were the first in India to get a GI tag in 2008. Grown in the Nashik region, they benefit from the valley's soil and climate and are widely used for winemaking.
- **Bangalore Blue Grapes (Karnataka)**: Recognised with a GI tag in 2013, this variety is grown mainly in Bengaluru Rural and Kolar districts. Known for its strong flavour, it is used for eating fresh, making juice, and local winemaking.
- **Cumbum Grapes (Tamil Nadu)**: Cultivated in the Cumbum Valley of Theni district, this grape is known for its sweetness and longer shelf life. The

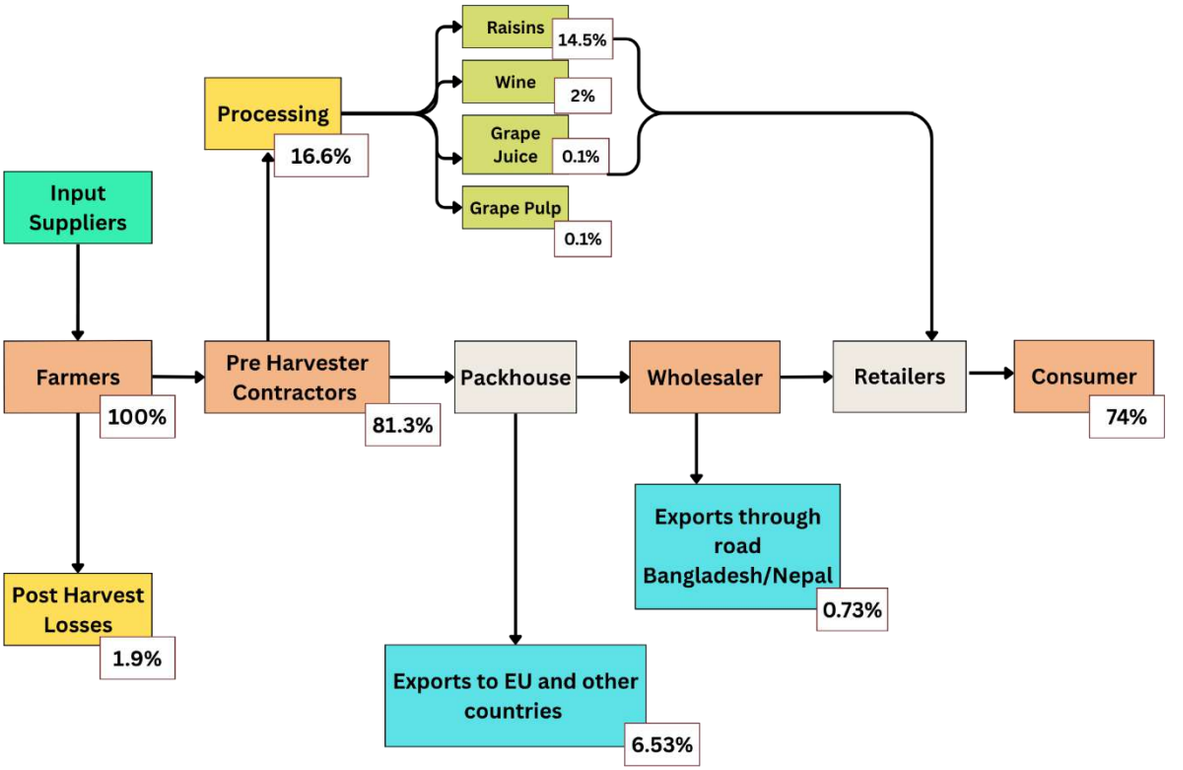
valley's unique climate gives it a special quality. In 2023, it received GI recognition that has boosted its reputation and market opportunities.

2.3 Domestic and Export Value Chain of Grapes

Domestic Value Chain

The domestic value chain of grape crop originating from Nashik, Maharashtra, is an intricate network involving multiple stakeholders, channels, and processing options, ultimately supplying both processed and fresh grapes to diverse Indian markets (**Figure 2.10**).

Figure 2.10: A typical grapes value chain in India



Source: Author's illustration using insights from exporters and secondary literature

Grape farmers in Nashik constitute the first and most critical node of the value chain. While grape cultivation is dominated by medium-sized farmers with average operational holdings of around 4–5 acres, the production base also includes a significant share of small and marginal farmers. As per the latest Agricultural Census data, small farmers account for 51.13 per cent of total cultivators, while

marginal farmers constitute a further 28.39 per cent, indicating a broad-based but heterogeneous production structure (MoAFW, 2019). Growers are increasingly organised into farmer groups, cooperatives, and Farmer Producer Organisations, particularly for export-oriented table grape varieties. Production is capital- and technology-intensive, with widespread adoption of drip irrigation, fertigation, and advanced pest and disease management practices to meet export quality and residue standards.

Grape cultivation involves a long gestation period and significant upfront investment. The first two years are primarily devoted to vineyard establishment, including nursery development, installation of drip irrigation systems, and vine training. Commercial harvesting typically begins in the third year and continues for up to 12 years, with peak productivity observed between the third and tenth years. This production cycle increases farmers' exposure to weather, pest, and price risks, particularly during the early non-bearing years.

A substantial share of grape output, estimated at around 81.3 per cent, is channelled through pre-harvest contractors (PHCs), who play a pivotal intermediary role in the value chain. These contractors typically undertake harvesting, sorting, grading, and aggregation, and manage logistics for onward movement to cold storages, pack houses, or exporters. In many cases, PHCs also provide advance payments or input-linked credit to farmers, thereby easing liquidity constraints but simultaneously increasing farmers' dependence on contractual arrangements. By assuming price and marketing risks and coordinating downstream logistics, PHCs significantly influence price discovery and market access, shaping both farmer incomes and the efficiency of grape exports from the region.

Within domestic trade, PRCs and growers sell directly to wholesalers, large commission agents and market yard operators, who are critical for aggregation, price discovery, and dispatching fruit to distant urban markets. From wholesalers, grapes move to destination market traders, and finally to retailers, supermarkets, and other outlets that reach the end consumer. The value chain also recognizes the importance of FPOs especially in selling both domestically and for export. FPOs and grower exporters can negotiate better prices due to bulk handling, direct retail linkages, and integrated logistics.

In terms of costs and margins, a significant proportion of the grower's expenses arises from agro-inputs, harvesting, and packing. Packaging is a notable cost center, the corrugated boxes and crates contribute about INR 5–6 per kg, nearly 10 per cent of the fruit's farm-gate price, with additional logistics and market charges. When transported by reefer vans, the shelf life increases and losses decrease, but at the cost of an extra INR 7–10 per kg, impacting smallholder margins. Margins are highest for export-grade fruit and for those FPOs or contractors who can efficiently time market arrivals to coincide with high-demand windows. Grower margins shrink for table grapes sold during peak arrivals due to price dips and perishability.

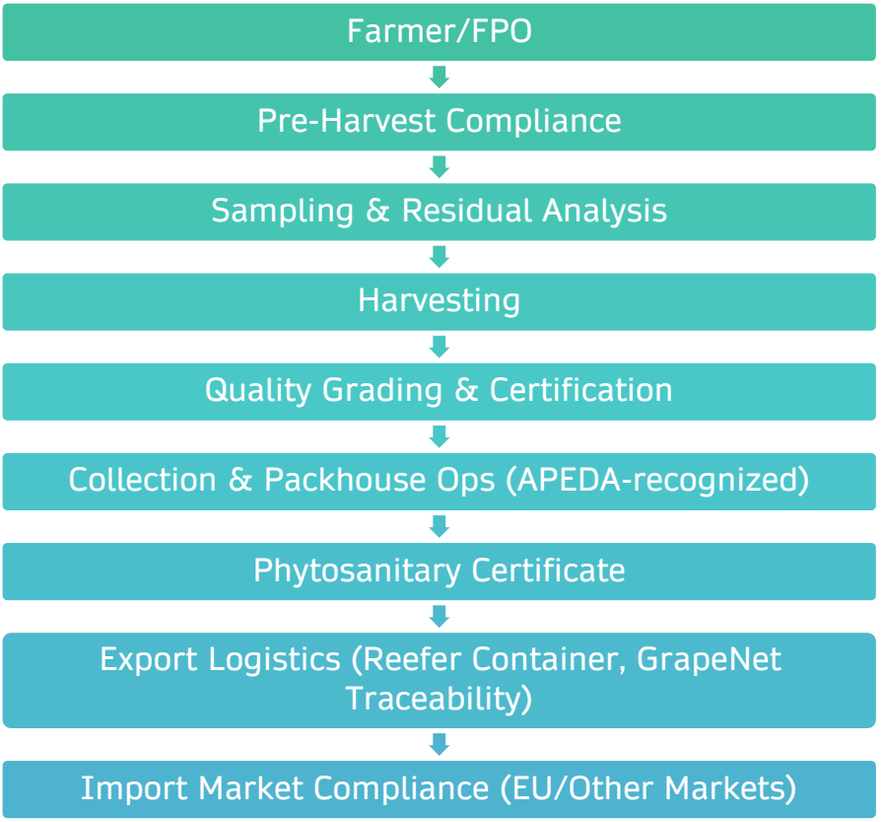
Exports Value Chain

The export value chain for Indian grapes is a well-structured and closely monitored system anchored by GrapeNet, a digital traceability platform developed by APEDA that ensures end-to-end traceability from farm to port (APEDA, 2024a). This system enables real-time tracking of produce, monitoring of agrochemical usage, and compliance with stringent international standards, particularly those of the European Union, thereby strengthening India's credibility as a reliable supplier of residue-compliant grapes.

The export value chain involves multiple stakeholders including farmers, farmer producer organizations (FPOs), aggregators, packhouses, laboratories, certifying agencies, and exporters. Each stage of the chain is designed to ensure that grapes meet strict international standards of quality, food safety, and traceability, which is essential for sustaining access to demanding markets such as the EU, the UK and other high-income destinations. Leading aggregators such as Sahyadri Farms and DeHaat play a key role in organizing farmers, managing certifications, and linking them to export markets. Currently, about 9 per cent of India's grape production is channelled into exports, supported by this coordinated ecosystem.

The export process follows a clearly defined sequence beginning with farm registration under GrapeNet, followed by pre-harvest compliance, residue testing, harvesting, grading and certification, packhouse operations, phytosanitary clearance, and finally export logistics and compliance at the destination market.

Figure 2.11: Export value chain of grapes in India



Source: APEDA, 2025

Farm-Level Registration and Compliance

The export process begins at the farm level, where farmers or FPOs register their vineyards or plots with the District Agriculture or Horticulture Office through the GrapeNet system. Farmers maintain detailed records of all agrochemical applications and cultivation practices, aligned with Good Agricultural Practices (GAP) and the Maximum Residue Limits (MRLs), prescribed by importing countries.

Before harvest, a two-step pre-harvest compliance protocol is followed. First, only agrochemicals approved by the National Research Centre for Grapes (NRC Grapes) or the Central Insecticides Board & Registration Committee (CIB&RC) may be used. Second, agricultural or horticultural officers inspect the plots at registration and again around 20 days before the expected harvest. Farmers adhere to prescribed

pre-harvest intervals (wash-out periods) to ensure residue levels remain within permissible limits. Subsequently, authorized laboratories collect samples of grapes, soil, and water for residue testing. Only consignments meeting destination-specific MRL requirements are cleared for export, ensuring compliance with international food safety standards at the source itself.

Certification and Post-Harvest Management

Once residue clearance is obtained, farmers submit a harvest declaration to exporters confirming that prescribed crop management and food safety protocols have been followed. Grapes are then harvested and transported the same day to APEDA-recognized packhouses to maintain freshness and traceability. At the packhouse level, grapes undergo sorting, grading and packing under hygienic, and temperature-controlled conditions. Consignments are graded according to Agmark standards (Extra Class, Class I, Class II), and a Certificate of Agmark Grading (CAG) is issued by accredited laboratories. Cold storage is maintained at optimal temperature (0–1°C) with 90–95 per cent relative humidity to preserve quality during transit.

India's export ecosystem is supported by a comprehensive certification framework aligned with global requirements. GLOBALG.A.P. certification is widely adopted at the farm level, particularly for supplying to most European retailers, while packhouses adhere to standards such as BRCGS for retail supply chains. For the United States, exporters comply with US FDA food safety and traceability norms. Additionally, APEDA registration, GrapeNet registration and adherence to India's Residue Monitoring Plan are mandatory across all exports. Increasingly, certifications such as Rainforest Alliance and Fairtrade, which signal environmental and social responsibility in EU and North American markets are also being adopted. These certification and compliance systems are typically facilitated through aggregators, FPOs, and exporters, enabling efficient coordination, monitoring, and audit processes across the value chain.

Logistics, Export Window and Market Access

The primary export window for Indian grapes is February to April, when supplies are targeted mainly towards Europe and the UK. In a normal season, the ideal sea

transit time is around 22 days, which is just sufficient to land grapes in good condition in European markets. .

Exports are primarily undertaken through refrigerated containers, supported by cold chain infrastructure that maintains product quality during transit. Established trade linkages with key markets such as the Netherlands, the UK, and the Middle East facilitate steady export flows. Exporters align logistics, packaging, and shipment schedules to meet destination-specific requirements related to quality, shelf life, and phytosanitary standards.

Government support mechanisms, including schemes such as RODTEP contribute to improving export competitiveness by partially offsetting logistics and transaction costs. At the same time, continued engagement with international markets has enabled Indian exporters to align with evolving regulatory and buyer requirements.

Regulatory Framework and Institutional Support

Export consignments move through seaports and airports, where customs and phytosanitary clearances are completed and refrigerated containers are sealed for shipment. At the border, a Phytosanitary Certificate (PSC) confirms that consignments are pest- and disease-free. Importing countries, particularly in the EU, then apply strict quality, safety and traceability checks. Failure to comply at any stage can lead to shipment rejection, recalls or suspension of grower or exporter registration, with major financial and reputational costs.

India's grape export ecosystem is supported by multiple institutions, including APEDA, DGFT, port authorities, and research bodies such as NRC Grapes, which collectively facilitate compliance, certification, and market access.

Overall, the grape export value chain reflects a high degree of coordination, standardization, and alignment with global best practices, supported by digital traceability, structured compliance systems, and strong institutional backing.

2.4 Benchmarking Best Practices

Peru: World's largest grapes exporter

Peru has emerged as the world's largest exporter of table grapes, surpassing long-standing competitors such as Chile. This achievement is significant both in scale and impact. In TE 2023, Peru exported about 0.6 MMT of grapes, valued at USD 1.6 billion, while its total production stood at 0.9 MMT, ranking it only 20th in the world by production (ITC, 2025). The country's success lies in its ability to combine modern production practices, efficient institutions, and targeted trade policies to create a globally competitive export sector.

Grape production in Peru is concentrated mainly in the regions of Ica (43 per cent) and Piura (30 per cent). The harvest season begins in late October in the northern regions and gradually shifts south, ending in April. This six-month harvest window allows Peru to supply global markets for a longer period compared to its competitors. A particularly notable innovation has been the introduction of "double harvesting" in Piura, made possible through advanced technological management. This allows growers to harvest in both November–December and March–April, further strengthening Peru's competitive edge (Camacho, 2023).

Peru's varietal mix also reflects a deliberate and rapid strategic shift. The industry has moved away from traditional, public-domain varieties toward high-value, patented cultivars. Today, around 70 per cent of vineyard areas are planted with licensed varieties, while only 30 per cent remain under traditional types. The five most prominent varieties include Red Globe (30 per cent), Sweet Globe (22 per cent), Autumn Crisp (9 per cent), Allison (7 per cent), and Crimson (5 per cent), together accounting for 73 per cent of the production (Camacho, 2023). The country continues to diversify its portfolio by adopting new-generation cultivars from breeding programs such as ARRA, with varieties like ARRA Fire Crunch and ARRA Honey Pop targeting specific market niches. In 2022-23, Peru exported 26 different grape varieties to 53 destinations, underlining its ability to adapt to diverse market demands.

A critical driver of Peru's export success has been its strong focus on phytosanitary compliance. For an industry so heavily dependent on exports, meeting plant health requirements is a fundamental business strategy. Peru has developed a robust system to address the phytosanitary standards of over 50 importing countries, turning what could be a trade barrier into a source of competitive strength. The National Agrarian Health Service (SENASA) plays a central role. Working closely with industry associations such as Provid and with foreign agencies like the USDA-APHIS and China's GACC, SENASA designs and certifies protocols that enable Peruvian grapes to access global markets.

The key components of Peru's phytosanitary framework include:

- **Registration and Traceability**: All vineyards, packinghouses, and treatment facilities approved for export are registered with SENASA, ensuring full traceability.
- **Pest-Free Area Management**: Extensive fruit fly surveillance and eradication programs establish pest-free or low-pest prevalence areas, a requirement for markets such as Japan and China.
- **Multi-Stage Inspections**: Grapes are inspected in the field, on the packing line, and before shipment to ensure compliance with quality and safety standards.
- **Mandatory Treatments**: Depending on the importing country's requirements, shipments may undergo treatments such as cold treatment or SO_2 fumigation.
- **Phytosanitary Certification**: Only after meeting all requirements does SENASA issue the official certificate needed for export clearance.

The institutional framework supporting Peru's grape industry further strengthens its competitiveness. The Ministry of Agrarian Development and Irrigation (MIDAGRI) sets the national policy and invests in technological and infrastructure development, particularly in irrigation. SENASA provides the technical backbone, safeguarding plant health and negotiating market access protocols. PromPerú, the national trade promotion agency, plays a branding role, marketing Peruvian grapes through initiatives such as the "Super Foods Peru" campaign and facilitating global buyer connections. Finally, Provid, the leading private industry association,

coordinates growers and exporters, provides forecasts, and collaborates with public agencies on market access issues.

Peru's success is also rooted in its proactive trade policy. The country has signed more than 24 free trade agreements with major markets, including the United States, the EU, China, and Canada (Camacho, 2023). These agreements have given Peruvian grapes privileged access to high-value markets, further reinforcing the industry's global position.

Peru's rise as the top grape exporter reflects a combination of innovation in production, diversification in varieties, robust phytosanitary systems, supportive institutions, and forward-looking trade policies.

3 ASSESSING COMPETITIVENESS OF INDIAN GRAPES

India is among the prominent producers of grapes globally, with export volumes showing resilience and growth over the past decade. However, international competitiveness depends on several quantitative indicators. This section evaluates India's competitive position in the global grape market, benchmarking performance against leading grape-exporting countries and analysing trends using RCA, UVP, NPC, and seasonality factors.

3.1 Global Price Scenario

UVP benchmarks the price realisation per tonne of exports, providing comparative insights into the ability to generate premium returns in global markets. Indian grapes register the lowest UVP among major exporters, at USD 1,228/tonne.

Figure 3.1: Comparison of country-wise Unit Value Price (UVP) of Grapes

Source: Authors estimation using data from ITC Trademap

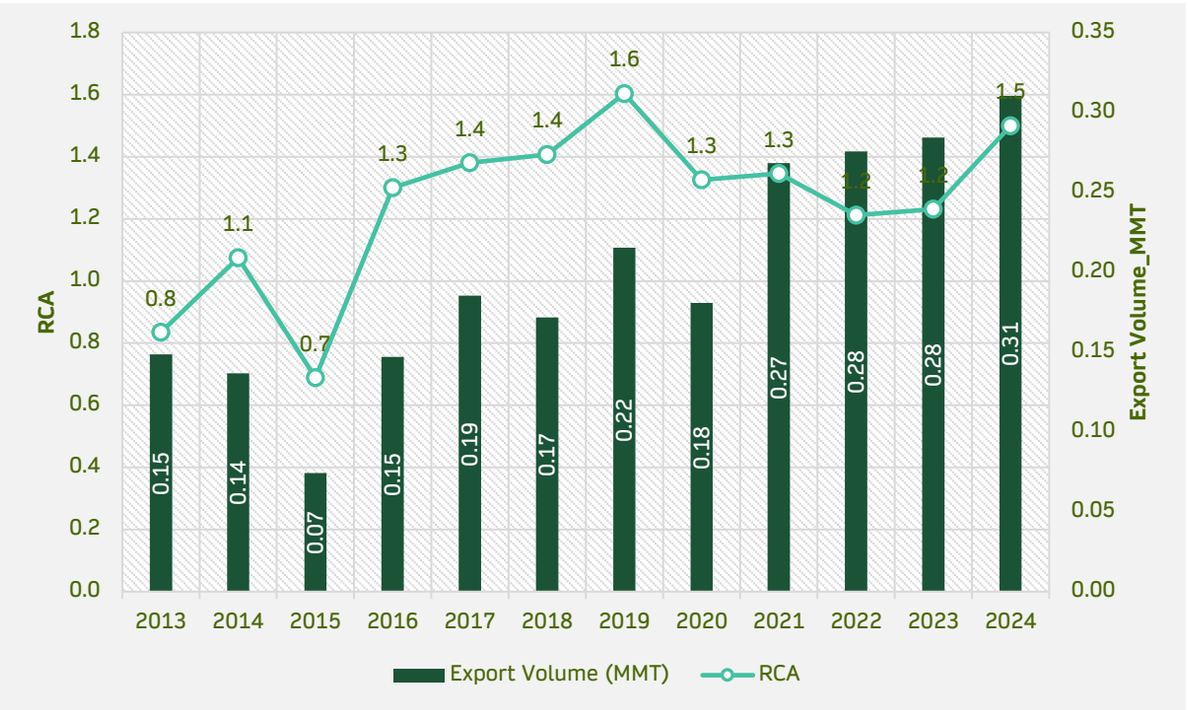
Leading countries such as the USA (USD 3,213/tonne), Netherlands (USD 3,150/tonne) and Peru (USD 3,061/tonne) command more than double or triple of India's unit value. The world average is USD 2,152/tonne, also far higher than India's realisation. South Africa (USD 2,097/tonne), Chile (USD 1,792/tonne), and China (USD 1,563/tonne) all obtain better prices for their exports.

This significant price difference suggests that Indian grapes are highly competitive on cost but highlights the scope to capture higher value through quality upgrades, branding, and supply chain improvements. As with other commodities, price is not the sole determinant of market share; factors such as variety, certifications, and market access conditions also influence competitiveness.

3.2 Revealed Comparative Advantage (RCA)

RCA is a measure reflecting the relative advantage or disadvantage of a country in exporting a specific commodity. For Indian grapes, RCA values indicate a marked improvement in export competitiveness over the last decade. In 2013, the RCA for grapes stood at 0.8 and moved up to 1.1 in 2014, then dipped to 0.7 in 2015.

Figure 3.2: RCA for Indian grapes



Source: Authors estimation using data from ITC Trademap

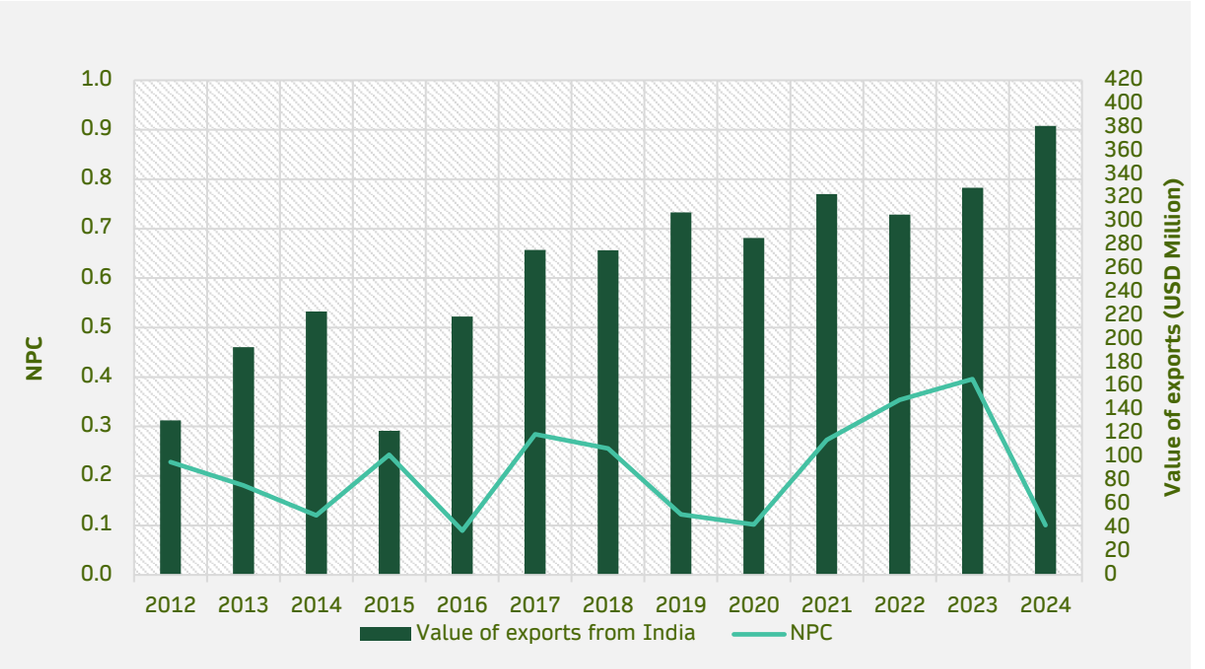
Since 2016, RCA values have consistently stayed above 1, reaching a peak of 1.6 in 2019. The RCA remained robust between 1.2 and 1.5 from 2020 to 2024. Correspondingly, export volumes have grown from 0.15 MMT in 2013 to 0.31 MMT in 2024. This upward trend in both RCA and volume highlights that India's grape exports have transitioned from below-average to strong comparative advantage, signalling increased global market integration and rising export capabilities.

3.3 Nominal Price Coefficient (NPC)

Price competitiveness for grapes is assessed using the NPC, a widely accepted metric that measures how domestic farm gate prices relate to international market prices after adjusting for export-related costs. NPC is calculated as the ratio of the domestic price of grapes to the international Free on Board (FOB) price, adjusted by various cost components incurred in the export process.

The calculation procedure involves starting with the Cost, Insurance, and Freight (CIF) unit value price of grapes at the Netherlands, a key international market reference. From this price, the freight cost from the Netherlands to India's Jawaharlal Nehru Port (JNPT) is subtracted to arrive at the FOB price at JNPT. This FOB price is then converted into Indian Rupees using the Reserve Bank of India (RBI) exchange rate. Subsequently, several export-related costs are deducted from this FOB price to compute the domestic price of grapes including Port handling charges at JNPT (which incorporate regulatory, compliance, and export documentation costs), Exporters' margin (which varies by commodity and agreements), overhead expenses, transportation costs from the port to farmgate or packhouse, operational costs at the packhouse including labour, cold storage expenses and packaging costs at the packhouse.

Figure 3.3: Nominal Protection Coefficient (NPC) of Indian Grapes



Source: Authors estimation using data from ITC Trademap, exporters insights and various other sources

For example, freight from Rotterdam to JNPT is charged at USD 4000 per container with a capacity of 20 tonnes, equating to USD 200 per tonne (around 9.3 per cent of the CIF South Africa price at Rotterdam). Port handling charges are INR 50,000 per container or about INR 2000 per tonne, representing 1.2 per cent of FOB at JNPT. Transportation, cold storage, operational, and packaging costs form significant proportions of costs relative to domestic market prices.

The NPC values if greater than unity signify that domestic grape price exceed global prices, indicating less competitiveness for exports. Conversely, NPC values less than one suggest domestic prices are lower than global prices, reflecting stronger price competitiveness and export potential without needing significant protection. India's NPC for grapes has consistently remained below one, averaging around 0.21, indicative of robust price competitiveness on international markets. This aligns with steady growth in India's grape exports to key markets like the Netherlands and the UK. The NPC graph typically shows fluctuations reflecting changes in export costs, global prices, and domestic price adjustments over time. A declining NPC trend reinforces improving competitiveness, while peaks may indicate temporary cost

hikes or market challenges. The Indian grape export sector's favourable NPC trends demonstrate the effectiveness of efficient supply-chain management and cost control in maintaining export market viability.

3.4 Comparison of Grape Seasonality: India and Competitors

India's grape harvest and export window play a critical role in its competitiveness. The major harvesting period in India is February to April, with exports coinciding with strong international demand for fresh grapes. India and its key competitor countries' distinct harvest windows are presented in **Table 3.1**:

Table 3.1: Grapes harvesting calendar

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
India												
Chile												
S. Africa												
Turkey												
Spain												
Italy												
Brazil												
Peru												
Mexico												
China												
USA												

Source: Tridge 2025

India's main export opportunity is from February to April, when the domestic crop is fresh and other competitors in the northern hemisphere are largely out of season, ensuring a reliable global supply especially to markets in Europe, Asia, and North America. Maintaining quality during peak and off-peak months through cold chain infrastructure allows India to further diversify exports and fill supply gaps globally.

4 EXPORT POTENTIAL OF INDIAN GRAPES

4.1 Realized and Untapped Potential

Indian grapes have established a significant position in the global export market, competing with key players across various international destinations. The competitor analysis reveals diverse market dynamics where India's performance differs based on the country, tariff regimes, export volumes, and pricing strategies (**Table 4.1**).

NETHERLANDS

India ranks third in the Netherlands grape import market with export earnings of USD 87.8 million and a 12 per cent share of imports. South Africa continues to dominate with 31 per cent share (USD 226.1 million), followed by Peru at 17 per cent (USD 128.4 million). India faces a 9.45 per cent tariff under PTA, higher than major competitors like South Africa and Peru who enjoy zero tariffs. The UVP for Indian grapes is USD 1901 per tonne, which is competitive and lower compared to Peru's USD 2305 and South Africa's USD 2091, but the tariff dampens export potential. Despite these challenges, India holds a significant position in the European market where demand for quality grapes remains strong.

UNITED KINGDOM

India is placed 9th with a 4 per cent import share and export revenue of USD 31.6 million. South Africa (23 per cent) and Spain (20 per cent) lead the market with zero tariffs or PTA benefits, while India incurs a high tariff of 12.95 per cent. India's UVP stands at USD 3474 per tonne, significantly higher than South Africa's USD 1580 and Spain's USD 2179, affecting price competitiveness. Peru and Egypt also outperform India with larger shares and lower tariffs.

RUSSIA

In Russia, India remains the third largest exporter with USD 41.7 million in exports and an 11 per cent share. Türkiye leads with 31 per cent, followed by Uzbekistan with 18 per cent. India's tariff is 5 per cent, while Uzbekistan benefits from zero tariffs under PTA agreements. India's UVP is USD 1596 per tonne, priced higher than Türkiye (USD 1019) and Uzbekistan (USD 988), indicating moderate competitiveness. The tariff and pricing dynamics suggest opportunities for India to improve market share by negotiating better trade terms and optimizing costs.

UNITED ARAB EMIRATES (UAE)

India continues to be the leading grape exporter to the UAE, commanding a 29 per cent import share with USD 23.4 million in export earnings. Indian grapes benefit from zero tariffs and have a competitive UVP of USD 1159 per tonne, lower than South Africa (USD 1872) and Egypt (USD 1258). This reinforces India's strong position in the UAE market, driven by geographic proximity, favourable trade relations, and cost-effective exports. The UAE remains a key strategic gateway for Indian grapes in the Middle East.

MALAYSIA

India ranks fifth in Malaysia with a 9 per cent import share and USD 9.5 million in exports. China leads with a commanding 35 per cent share and zero tariffs, followed by South Africa (16 per cent) and Egypt (11 per cent). India pays a 4 per cent tariff under PTA while maintaining a moderate UVP of USD 1755 per tonne, lower than Australia (USD 3508) but higher than China (USD 2056). Although India's position is growing, tariff and competition from strong regional players limit expansion potential in this Southeast Asian market.

NEPAL

In Nepal, India enjoys a near-monopoly with a 99 per cent import share valued at USD 12.9 million exports, despite a 6 per cent tariff imposed via PTA. India's competitive UVP of USD 543 per tonne, the lowest among all markets, reflects strong price competitiveness reinforced by geographical proximity and cultural ties.

This dominant position ensures predictable demand and serves as a stable market for Indian grape exporters, providing an advantage in the South Asian regional trade.

BANGLADESH

India's export to Bangladesh faces a significant tariff rate of 25 per cent, impacting its price competitiveness and export volume. High tariffs suggest a major barrier that restricts growth potential despite geographical proximity and historical trade links.

Table 4.1: Competitor analysis for Indian grapes exports

Netherlands					
Rank	**Exporters**	**TE2024 (Million USD)**	**% Share in Imports**	**Applied Tariff**	**UVP(USD/Tonne)**
1	South Africa	226.1	31%	0% (PTA)	2091
2	Peru	128.4	17%	0% (PTA)	2305
3	***India***	***87.8***	***12%***	***9.45% (PTA)***	***1901***
4	Germany	36.8	5%	0%	2736
5	Brazil	33.0	4%	12.95%	2516
UK					
Rank	**Exporters**	**TE 23 (Million USD)**	**% Share in Imports**	**Applied Tariff**	**UVP(USD/Tonne}**
1	South Africa	167.9	23%	0%	1580
2	Spain	149.9	20%	0% (PTA)	2179
3	Peru	78.6	11%	0%	2350
4	Egypt	68.1	9%	9.45% (PTA)	1880
9	**India**	**31.6**	**4%**	***12.95%***	3474

Russia					
Rank	Exporters	TE 21 (Million USD)	% Share IN Imports	Applied Tariff	UVP(USD/Tonne)
1	Türkiye	117.6	31%	5%	1019
2	Uzbekistan	66.8	18%	0% (PTA)	988
3	**India**	***41.7***	**11%**	**5%**	***1596***
4	Moldova	33.4	9%	0% (PTA)	957
5	Egypt	30.3	8%	3.75% (PTA)	1772

UAE					
Rank	Exporters	TE 23 (Million USD)	% Share in Imports	Applied Tariff	UVP(USD/Tonne)
1	***India***	***23.4***	***29%***	**0%**	***1159***
2	South Africa	15.5	19%	0%	1872
3	Lebanon	12.0	15%	0%	647
4	Egypt	9.3	12%	0%	1258
5	Australia	5.3	7%	0%	2340

Malaysia					
Rank	Exporters	TE 23 (Million USD)	% Share in Imports	Applied Tariff	UVP (USD/Tonne)
1	China	37.2	35%	0% (PTA)	2056
2	South Africa	17.2	16%	5%	2343
3	Egypt	11.3	11%	5%	2125
4	Australia	10.5	10%	0% (PTA)	3508
5	**India**	***9.5***	***9%***	***4% (PTA)***	***1755***

Bangladesh	
Exporters	**Applied Tariff**
India	**25%**

Source: Authors' analysis using data from ITC Trademap

4.2 Untapped and Emerging Markets Potential

Indian grapes hold considerable untapped and emerging market potential in various importing countries across key regions globally, presenting promising avenues for export growth.

Table 4.2: Untapped potential of Indian grapes

Importing Countries	Exporting Countries (080610)
USA	Peru (37%), Chile (33%), Mexico (27%), **India (0%)**
Canada	USA (39%), Peru (21%), Chile (15%), Mexico (12%), South Africa (10%), **India (1%)**
China	Peru (36%), Chile (31%), Australia (25%), South Africa (5%), **India (5%)**
Indonesia	China (36%), Australia (23%), Chile (4%), Peru (4%), USA (3%), **India (1%)**
Malaysia	China (24%), South Africa (20%), Egypt (12%), Australia (10%), **India (8%)**

Source: Author's analysis using data from ITC Trademap

NORTH AMERICA

The United States is the largest global importer of fresh grapes, with imports valued at approximately USD 2.6 billion and volume close to 820 MMT TE2024. Major suppliers to the US market are Peru (37 per cent), Chile (33 per cent), Mexico (27 per cent) contributing to 97 per cent of imports. India's share remains negligible in the US. Similarly, in Canada, India holds only about 1 per cent of the grape import

market, with USA (39 per cent), Peru (21 per cent), Chile (15 per cent), Mexico (12 per cent), South Africa (10 per cent) contributing 97 per cent of the shares.

Despite the negligible current presence, North America represents a significant untapped opportunity for Indian grape exporters, given the region's large, affluent consumer base and growing demand for fresh, high-quality fruits. To capitalize on this market potential, India needs to overcome substantial non-tariff barriers (NTBs), including stringent phytosanitary and quality standards imposed by the United States Department of Agriculture (USDA) and Canadian regulatory authorities. Currently, India lacks market access to the US for grapes due to concerns over pests and diseases and must comply with strict import requirements, such as obtaining APHIS permits and meeting pest risk management protocols. Canada similarly requires import permits, phytosanitary certificates, and virus-free certification programs that India currently does not fully satisfy.

To gain meaningful market access and grow exports, India must invest in extended shelf-life grape varieties suited for longer transit times, such as Timco and Allison, alongside improvements in cold chain infrastructure and post-harvest handling. Strategic partnerships with major North American supermarket chains and importers, coupled with active participation in trade fairs and enhanced compliance frameworks, will be essential to establish India as a reliable grape supplier in the region.

AFRICA

Emerging African economies such as South Africa, Kenya, and Nigeria are witnessing a steady rise in demand for imported fresh fruits, driven by rapid urbanization, changing dietary preferences, and rising disposable incomes. With increasing health consciousness and a shift toward diversified diets, consumers in these markets are seeking a wider variety of high-quality fruits year-round. This trend presents a significant growth opportunity for India, particularly for grapes, given its ability to supply competitively priced fresh produce during the off-season for many African producers.

India's geographic proximity to Africa offers a logistical advantage, enabling shorter shipping times and lower freight costs compared to traditional suppliers

like Peru, Chile, and the European Union. This advantage can help maintain the quality and freshness of Indian grapes upon arrival, which is critical for building consumer trust and long-term demand. India can benefit from expanding bilateral and regional trade agreements that reduce tariffs and streamline customs procedures, making Indian grapes more competitive in price-sensitive African markets. Additionally, investments in port infrastructure, cold chain logistics, and pre-export quality certification can significantly enhance reliability and reduce post-harvest losses.

CIS

Russia is already an established market for Indian grapes accounting for 11 per cent of Russia's grape imports in TE 2021, valued at USD 41.7 million. Türkiye currently dominates this market with a 31 per cent share, followed by Uzbekistan at 18 per cent. Beyond Russia, other CIS countries such as Kazakhstan, Belarus, Azerbaijan remain largely untapped. These markets share similar consumer preferences and logistics networks, often depending on Russian ports and distribution channels for fruit imports. Currently, their grape demand is being met primarily by regional suppliers like Uzbekistan and Moldova due to proximity and preferential trade terms. To expand into these emerging CIS markets, India must strategically address both price and policy barriers. Negotiating preferential trade agreements or leveraging existing bilateral ties could help reduce tariffs and improve competitiveness. Additionally, logistics optimization, including direct shipping routes to Black Sea and Caspian ports, can lower transit costs and ensure freshness. Targeted market development activities, such as promotional campaigns, buyer-seller meets, and participation in regional trade fairs, would also help build brand recognition for Indian seedless table grapes.

Given India's proven success in Russia and its geographic advantage compared to distant suppliers like Peru or Chile, expanding beyond Russia into neighbouring CIS nations represents a significant growth opportunity for diversifying India's export footprint and reducing dependence on a few key markets.

SOUTHEAST ASIA AND OTHER EMERGING MARKETS

Southeast Asian markets such as Malaysia show growing Indian presence at 8 per cent, but higher tariffs and pricing hinder faster expansion. India's foothold is gradually growing in Malaysia (8 per cent), with potential to expand in neighbouring countries such as Indonesia. Indian exporters are also making tentative steps into African markets like Kenya, Ghana, and Uganda through trial shipments, pointing to an emerging regional market beyond traditional European and Middle Eastern destinations. These markets offer less saturated opportunities and increasing demand for quality fresh fruits, thanks to rising incomes and changing consumption patterns.

4.3 Export Projections for Grapes

Here, we undertake a multi-scenario projection of India's grape export potential, leveraging both historical data and alternative growth rate methodologies to provide a detailed, forward-looking analysis. Between 2010-11 and 2024-25, export values surged from USD 85.8 million in 2010-11 to a peak of USD 417.1 million in 2023-24, before a slight dip to 353.5 million in 2024-25. Export volumes similarly increased from 0.09 MMT to 0.34 MMT by 2023-24 and then fell to 0.27 MMT in 2024-25. These figures illustrate a substantial long-term expansion, punctuated by fluctuations that echo changing market conditions and external shocks.

Growth rates varied considerably throughout these 15 years. Early years saw exceptionally high annual growth, for example, 70 per cent in 2012-13 and 32 per cent in 2013-14, while some years were marked by sharp contractions, such as -35 per cent in 2014-15 due to weather related production loss and -11 per cent in 2019-20 due to the pandemic period, contributed significant volatility, with rates oscillating between -3 per cent and small, positive percentages. In the latest available data (2023-24), export value rebounded robustly with a 33 per cent growth over the previous year, demonstrating a strong recovery post-pandemic.

Projection Methodology

For the projection exercise, we calculate Annual Average Growth Rates (AAGRs) over distinct periods to capture multiple market scenarios:

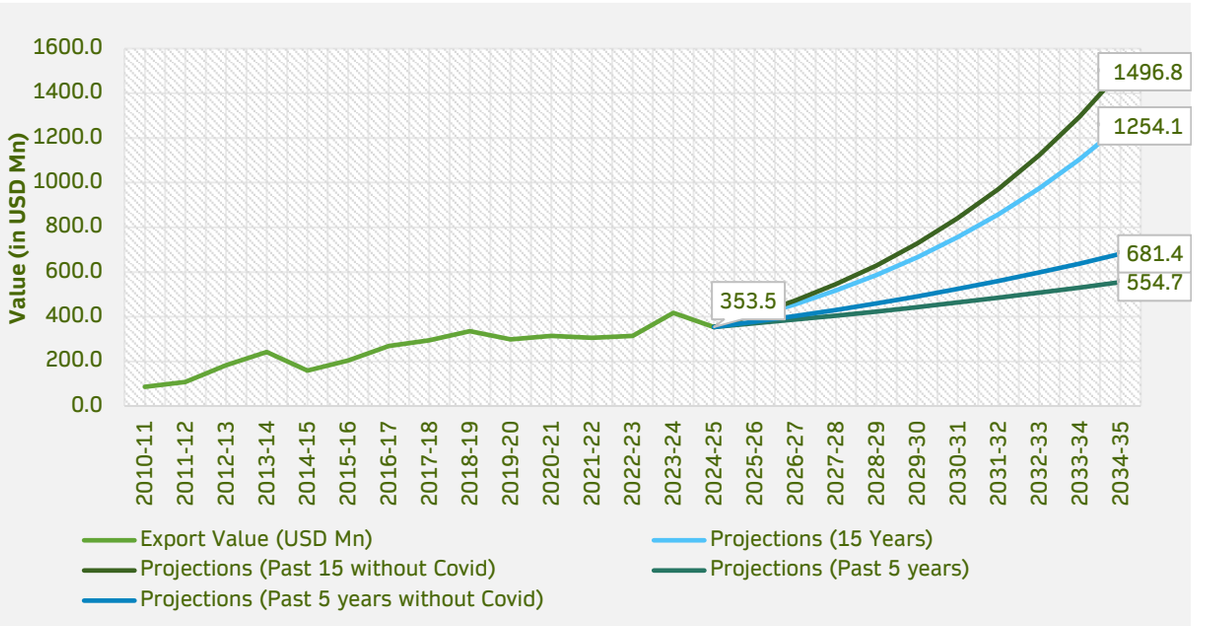
- The full 15-year period (2010-11 to 2023-24)
- The most recent 5-year period (2019-20 to 2023-24)
- Both periods are further adjusted to exclude COVID years, allowing us to estimate growth in an undisturbed environment.

These CAGRs are then used to project India's grape export values annually from 2023-24 through 2034-35. By constructing forecasts based on both short-term and long-term data; while explicitly accounting for pandemic-related anomalies, the multi-scenario approach gives a range of possible trajectories rather than a single, potentially misleading forecast.

Projected Outcomes

The results of these projections are visually depicted in **Figure 4.1**. If recent five-year growth rates continue, exports could grow steadily to USD 554.7 million by 2034-35. If the post-pandemic rebound persists without pandemic interruptions, the value could reach USD 681.4 million by 2034-35. Using the full 15-year CAGR (including pandemic years), exports may climb to USD 1,254.1 million. In the most optimistic scenario, based on long-term growth trends excluding the Covid years, India could see exports soar to USD 1,496.8 million by 2034-35.

Figure 4.1: Projections for Indian grapes exports



Source: Authors' estimations using data from DGFT

The results show that projections vary depending on the method used. By 2034-35, exports could reach between 554.7 million USD (if recent growth rates continue) and 1496.8 million USD (if long-term growth trends without Covid are used). These wide-ranging results highlight how different assumptions and periods can change expectations for future growth, and why considering multiple scenarios is important for planning in the grape export sector.

5 POLICY ANALYSIS

5.1 Tariff Measures

India's exports of grapes are subject to considerable variation in import tariffs across destination markets, with rates ranging from 0 per cent to 18 per cent (**Table 5.1**). In the EU, Indian grapes face a tariff of 17 per cent, whereas competing suppliers such as South Africa and Chile benefit from duty-free access under PTAs. This disparity significantly undermines the price competitiveness of Indian grapes in one of their most important export markets. When competing products enter the EU without any tariff burden, Indian consignments must either absorb the additional 17 per cent cost, thereby reducing exporter margins, or pass it on to consumers, leading to higher retail prices. Such a tariff-induced price differential can have a decisive impact on buyer behaviour, particularly in price-sensitive retail segments, and restrict India's ability to expand its market share.

There is a similar situation in China, where Indian grapes are subject to a 13 per cent tariff, while key competitors such as Peru and Chile enjoy zero-duty access under their respective bilateral or regional trade agreements. Given that China represents a rapidly expanding market for table grapes, this structural disadvantage prevents Indian exporters from fully leveraging growth opportunities, even when product quality and harvest season align favourably with Chinese import demand.

The United States applies a relatively low specific duty of 1.1 cents per kilogram (approximately 1 per cent ad valorem) on Indian grapes. While modest in absolute terms, this still places Indian exporters at a slight cost disadvantage compared to competitors with preferential or zero-duty access. Even marginal differences in landed costs can influence sourcing decisions when coupled with other logistical and compliance expenses. These tariff disparities are further amplified by differences in trade facilitation and supply chain integration. Countries such as Chile and South Africa possess well-established cold-chain infrastructure, longstanding relationships with European and Chinese distributors, and seasonally

complementary production cycles. As a result, India's higher tariff exposure combines with non-tariff disadvantages, including weaker logistical networks and limited brand presence, to create a compounded barrier to competitiveness.

An important precedent for addressing tariff-related challenges can be found in the India–United Kingdom Comprehensive Economic and Trade Agreement (CETA). Under this agreement, tariffs on several agricultural products, including grapes, have been reduced to zero, immediately improving market access for Indian exporters. This outcome demonstrates the tangible benefits of bilateral negotiations and underscores the importance of securing similar concessions in other high-potential markets.

Table 5.1: Tariff analysis of major grape-importing countries

	Exporting Countries (080610)											
Importing Country	**India**	**Peru**	**South Africa**	**Germany**	**Brazil**	**Italy**	**Egypt**	**Chile**	**USA**	**Türkiye**	**China**	**Australia**
Netherlands	**9.45 (P)**	0% (P)	0% (P)	0%	12.95%	0%	0% (P)	0% (P)	12.95%	0% (P)	12.95%	12.95%
Germany	**9.45 (P)**	0% (P)	0% (P)	NA	12.95%	0%	0% (P)	0% (P)	12.95%	0% (P)	12.95%	12.95%
UK	**7.67% (P)**	0% (P)	0% (P)	0% (P)	0% (P)	0% (P)	9.45% (P)	0% (P)	10%	0% (P)	10%	0% (P)
USA	**0%**	0%	0%	0%	0%	0%	0%	0%	NA	0%	0%	0%
Canada	**1.61%**	0% (P)	1.61%	0% (P)	1.61%	0% (P)	1.61%	0% (P)	0% (P)	1.61%	1.61%	0% (P)
UAE	**0%**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Saudi Arabia	**0%**	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Russia	**5%**	5%	5%	5%	5%	5%	3.75 (P)	5%	5%	5%	5%	5%
Indonesia	**5%**	5%	5%	5%	5%	5%	5%	0% (P)	5%	5%	0% (P)	0% (P)
China	**13%**	0% (P)	13%	13%	13%	13%	13%	0% (P)	13%	13%	NA	0% (P)
Malaysia	**4% (P)**	0% (P)	5%	5%	5%	5%	5%	0% (P)	5%	0% (P)	0% (P)	0% (P)

Source: ITC Trademap

The current tariff regime imposes a structural cost burden on Indian grape exporters, particularly in premium markets such as the EU and China. Without preferential market access, India remains at a disadvantage relative to competitors that enjoy lower or zero tariffs through free trade agreements. These tariff barriers, combined with logistical and distributional challenges, limit India's ability to expand its footprint in global markets and capitalize on the growing international demand for table grapes.

Benefits of Recent FTAs for India's Fresh Grape Exports

The recent FTAs with the EU, UK, and EFTA represent a transformational opportunity for India's fresh grape exports. By eliminating tariffs and improving regulatory cooperation, these agreements remove long-standing structural barriers and place India on equal footing with global leaders like Chile and Peru, which already enjoy zero-duty access in these markets.

Under the India–EU FTA, the EU has committed to eliminating tariffs on about 99 per cent of Indian exports, with preferential market access extended to agricultural products including grapes. This is expected to deliver "early and substantive gains" for Indian exports, as noted in official government communication (PIB, 2026).

The India–UK CETA (2025) mirrors this, eliminating tariffs on 99 per cent of Indian export lines and directly benefiting grape shipments to a major destination market. The India–EFTA TEPA (signed March 2024, in force October 2025) covers 92 per cent of tariff lines, with fresh grapes identified as a high-opportunity sector. Switzerland, which imports Indian fresh grapes, nuts, and food preparations, is a particularly promising destination under this pact.

The cumulative effect is a near-complete removal of tariff barriers across India's core export markets, a decisive shift from price disadvantage to parity. In a price-sensitive commodity like grapes, even small tariff differentials influence procurement decisions of large retail chains, so this change is commercially significant.

With tariffs neutralised, India's inherent strengths become more competitive. Compared to Chile and Peru, India offers shorter transit times to Europe (ensuring

better freshness), lower freight costs (improving margins), and a late-season supply window from February to April, when Southern Hemisphere supply tapers. These factors position India well to bridge supply gaps and meet just-in-time retail demand in European markets.

The FTAs are expected to drive growth across the value chain. Export volumes could rise 20–30 per cent over the medium term, particularly in EU and UK markets. Farmer realisation is also expected to improve, as tariff savings give exporters the flexibility either to price more competitively to gain volume, or to retain margins and pass benefits upstream to growers. Market diversification is another gain, while the EU remains the dominant destination, high-income EFTA markets such as Switzerland and Norway offer new premium opportunities, reducing dependence on traditional entry points like the Netherlands.

Beyond tariffs, the EU FTA tackles non-tariff barriers that have historically constrained perishable exports. Provisions on Technical Barriers to Trade (TBT) improve transparency in standards and certification; Sustainable Food Systems (SFS) chapters promote cooperation on food safety and traceability; and trade facilitation measures, including self-certification through Statements on Origin, reduce compliance costs and delays. For a perishable like grapes, where documentation delays translate directly into quality losses, these provisions matter as much as tariff cuts.

However, to fully leverage FTA benefits, complementary policy action is essential, strengthening pesticide residue testing and traceability systems, expanding cold chain and packhouse infrastructure, promoting a "residue-free Indian grapes" brand identity, and supporting exporters in navigating evolving EU phytosanitary standards.

5.2 Non-Tariff Measures

India’s grape exports face a complex set of non-tariff measures (NTMs) across key markets that significantly influence export potential and competitiveness.

EUROPEAN UNION

In the EU, which remains India's largest market, stringent food safety and quality standards govern market access. Grapes must comply with MRLs for pesticides as per EU Regulation 2023/915, with buyers in countries like Germany, the Netherlands, and Austria often imposing even stricter private limits. Contaminants such as cadmium, lead, and perchlorate are tightly regulated, requiring rigorous adherence to GAP. Microbiological safety is also a priority, with Regulation (EC) 2073/2005 mandating zero tolerance for E. coli in pre-cut or packed grapes. Additionally, phytosanitary certificates issued by India's National Plant Protection Organization (NPPO) are compulsory under Regulation EU 2019/2072 to certify pest-free shipments. Quality standards, as outlined in Regulation EU 543/2011, specify parameters for maturity, sugar content, and bunch weight. Beyond compliance, certification schemes such as GLOBALG.A.P., GRASP (for worker welfare), and ethical audits like SEDEX/SMETA are increasingly demanded by European retailers. There is a growing demand for organic grapes under Regulation EU 2018/848, which provides access to premium niche markets but faces stiff competition from EU producers.

UNITED STATES

In the United States, Indian grapes currently lack full market access due to unresolved pest risk concerns. The US Animal and Plant Health Inspection Service (APHIS) requires pest risk analyses (PRA) and treatments like fumigation, cold treatment, or irradiation to address threats from fruit flies and moths. Moreover, compliance with the Food Safety Modernization Act (FSMA) is mandatory, with importers required to verify that suppliers meet safety standards under the Produce Safety Rule and Foreign Supplier Verification Program (FSVP). Pesticide residues must fall within US Environmental Protection Agency (EPA) MRLs, and shipments between April 10 and July 10 must meet additional marketing order requirements on grade, size, and maturity. Certification systems such as GLOBALG.A.P., SQF, or PrimusGFS are widely required by US retailers with voluntary ethical audits.

CHINA

In China, access is constrained by administrative barriers. The General Administration of Customs of China (GACC) mandates annual registration of Indian orchards and packhouses, facilitated by APEDA and the Indian Embassy. Since 2022, video inspections have been added, slowing approvals and often causing delays that prevent exporters from capitalizing on India's peak harvest window. In 2024, only 56 facilities were approved, limiting export capacity.

INDONESIA

Similarly, Indonesia operates a strict quota system for grape imports, with annual quota announcements often delayed until February or March, well past India's peak export season. This creates a competitive disadvantage, as Indian exporters must compete with countries like Australia under compressed timelines, discouraging importers from applying for quotas.

These NTMs collectively pose significant challenges to India's grape export sector, highlighting the need for proactive government-industry collaboration to streamline compliance, upgrade infrastructure, and secure timely market access negotiations.

Domestic Policies

Various central and state government initiatives aim to promote value addition, enhance export readiness, and support infrastructure development across agro-processing sectors. While some of these schemes are specific for grapes and can be strategically tapped to address critical gaps in the value chain, from production and processing to marketing and global market access.

Central Government Schemes

India's grape sector has been strategically supported by a mix of national and state-level policies aimed at improving production practices, enhancing quality, reducing post-harvest losses, and boosting exports. These initiatives cover every stage of the value chain, from planting to market access, helping India strengthen its position as a leading global exporter, particularly to the European Union and CIS countries.

At the national level, the Agriculture Export Promotion Plan Scheme (Financial Assistance Scheme - FAS) under APEDA provides comprehensive support for grape exports. It has four main components: Market Development, Infrastructure Development, Quality Development, and Transport Assistance. This includes funding for modern packhouses, cold chain infrastructure, certification processes like GLOBALG.A.P., and assistance in international market promotion. By addressing these core areas, FAS ensures that Indian grapes remain competitive in international markets.

The Mission for Integrated Development of Horticulture (MIDH), launched in 2014-15, is a centrally sponsored scheme for the holistic development of horticulture across India. For grapes, MIDH focuses on providing high-quality planting materials, promoting integrated pest management, and creating post-harvest infrastructure. This end-to-end support has helped farmers modernize cultivation practices and reduce production losses.

To tackle post-harvest challenges, the government introduced Operation Greens (Total) under the Pradhan Mantri Kisan SAMPADA Yojana. This scheme offers a 50 per cent subsidy on transportation and storage costs, stabilizing prices and reducing spoilage for highly perishable produce like grapes. This initiative is particularly valuable for exporters handling long-distance shipments to Europe and Central Asia.

Another critical intervention is the Clean Plant Programme that supplies disease-free, high-quality planting material to grape farmers. This is linked to the National Research Centre for Grapes (NRCG) in Pune, which plays a pivotal role in research and farmer outreach. By ensuring access to superior planting material, the programme enhances productivity and quality, critical for meeting stringent export standards.

State Government Schemes

At the state level, Maharashtra, India's leading grape-producing state, has taken several initiatives to promote export-oriented grape farming. The Agriculture Export Policy of Maharashtra focuses on aligning state schemes with central policies to maximize benefits for farmers and exporters. Additionally, Agri-Export Zones (AEZs)

have been established in key grape-producing regions like Nashik to ensure the availability of raw material and support export-driven infrastructure development.

A notable success story is Mahagrapes, a cooperative federation that is a trusted brand in European markets. It assists farmers in obtaining international certifications like GLOBALG.A.P., consolidates produce for exports, and provides direct market linkages. By doing so, Mahagrapes has helped small farmers access high-value international markets and receive better price realization.

In Karnataka, the government introduced the Grape Processing and Wine Policy, which incentivizes wineries by treating them as food processing units. The policy also provides excise duty relief and led to the creation of the Karnataka Wine Board (KWB) to promote the wine industry. This has encouraged the cultivation of wine grapes and fostered value addition through wine production.

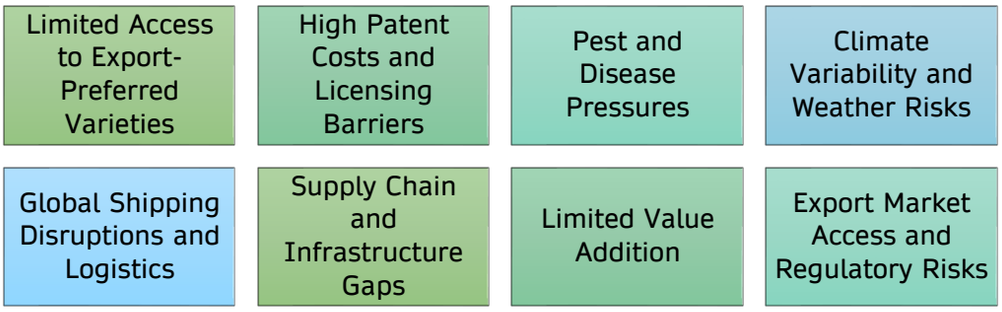
Specialized infrastructure has also been developed to support grape exports and wine production. Wine Parks have been established in Nashik and Sangli under the Maharashtra Industrial Policy 2001 to boost wine processing. These parks provide a cluster-based approach, enabling wineries to access shared facilities and technology.

Collectively, these policies have created a robust ecosystem that supports both table and wine grape production. By combining research, infrastructure development, financial incentives, and market facilitation, the government has strengthened India's grape value chain, positioning it as a reliable and competitive player in global markets.

6 CHALLENGES AND OPPORTUNITIES

Indian grapes have established a strong presence in global fresh fruit markets, driving rural employment and modernization across key regions of Maharashtra and Karnataka. The crop's export-oriented growth is supported by advanced farming practices and an advantageous marketing window. However, the sector faces several challenges, from rising compliance costs and post-harvest losses to logistical bottlenecks and concentrated export markets. Policy gaps and regulatory hurdles strain farmers and exporters. The following section outlines the most pressing challenges and key opportunities for sustaining India's grape export momentum.

Figure 6.1: Key challenges in the grapes sector



Production Related Challenges

1. Limited Access to Export-Preferred Varieties

One of the core structural challenges faced by the Nashik grape cluster is heavy reliance on traditional seedless varieties, particularly Thompson Seedless and its clones. While these varieties have historically supported India's presence in the EU and Gulf markets, global tastes are shifting rapidly toward proprietary, value-added cultivars with superior shelf life, flavour, and appearance, such as Sweet Globe, Autumn Crisp, and other patented grapes now dominating top export markets.

Nashik growers, though increasingly aware of this trend, often lack both the resources and technical support to scale up newer introductions like Manjari Naveen, Manjari Medika, Allison, and Timco. Regulatory hurdles around varietal licensing, limited tissue culture capacity, and insufficient farmer training further slow adoption. Unless Nashik's value chain accelerates the uptake of high-demand global varieties and upgrades marketing and traceability infrastructure, it risks stagnation of export growth and lower unit value realization compared to more nimble competitors.

2. High Patent Costs and Licensing Barriers

Access to patented grape varieties is further constrained by high licensing fees, strict contractual conditions, and limited availability of protected planting material, which restrict adoption primarily to larger growers and exporters. Bloom Fresh International's protected variety licensing model, while providing access to superior genetics, involves significant upfront and recurring costs that are often prohibitive for small and medium farmers. Cultivation of these varieties has so far expanded from pilot levels of around 40 acres to approximately 100 acres in Nashik, involving a limited number of licensed growers. The consolidation of global breeding firms, exemplified by Bloom Fresh's acquisition of International Fruit Genetics (IFG) in 2023, has strengthened intellectual property protection and innovation capacity but has also increased concentration in varietal ownership. This intensifies dependence on proprietary technologies and reduces bargaining power for domestic producers. In the absence of robust public breeding alternatives and structured public–private partnerships, high patent costs and restrictive licensing frameworks risk reinforcing exclusionary access, limiting widespread varietal diversification and slowing India's ability to scale up exports of premium table grapes.

3. Pest and Disease Pressures

India's grape production faces frequent outbreaks of powdery mildew, downy mildew, mealybugs, and other pests, which drive up input costs through intensive pesticide applications and heighten the risk of phytosanitary rejections in export markets. These biological pressures disrupt yield stability, degrade fruit quality, and necessitate repeated interventions that strain farmer finances and environmental

sustainability. Integrated pest management (IPM) adoption remains uneven due to limited extension services and farmer awareness, while emerging resistance to common agrochemicals complicates control efforts. Persistent pest and disease challenges not only erode productivity but also undermine compliance with stringent Maximum Residue Limits (MRLs), constraining reliable export volumes and long-term sector growth.

4. Climate Variability and Weather Risks

Climate variability has emerged as the most serious and persistent challenge for grape cultivation and exports from Maharashtra. Grapes are highly sensitive to changes in temperature, humidity, and rainfall, making them vulnerable to frequent weather shocks. Unseasonal rainfall during critical flowering and ripening stages, typically in February and May, often leads to poor fruit set, fungal infections, and berry cracking. Prolonged cloudy conditions delay ripening and reduce sugar accumulation, directly affecting the share of export-grade produce. In recent years, erratic monsoon behaviour has shortened the effective growing window and increased pest incidence, resulting in annual yield losses of around 10–15 per cent. In 2024, unseasonal rains led to yield losses of up to 50 per cent across large parts of Nashik.

Temperature stress has also become a growing concern. Optimal grape growth occurs within a narrow temperature range of 15–35°C, and deviations beyond this range cause berry softening, reduced shelf life, and lower marketability. With climate change intensifying, the frequency of extreme weather events such as heatwaves, hailstorms, and heavy pre-harvest rains has increased sharply. These shocks disrupt key phenological stages, including budburst, flowering, and harvest, leading to quality deterioration, higher rejection rates, and sharp price declines of up to 30–40 per cent (TERI, 2014). In extreme years, crop losses in Maharashtra have exceeded INR 2,000 crore, undermining farmer resilience and India's credibility as a reliable supplier in global grape markets. In 2024 alone, unseasonal rains caused yield losses of up to 50 per cent across nearly 45,000 hectares in Nashik. Although a secondary harvest and rapid market diversification helped stabilise export volumes, income losses at the farm level remained substantial.

INFRASTRUCTURAL AND SUPPLY CHAIN CONSTRAINTS

1. Global Shipping Disruptions and Logistical Challenges

Geopolitical disruptions like the Red Sea crisis have extended transit times from the standard 19–22 days to nearly 60 days, doubling freight costs and severely compromising grape quality due to their perishable nature. Given the perishable nature of grapes, such delays compromise fruit quality, thus increasing the risk of rejection in export markets. Furthermore, India's cold chain infrastructure remains underdeveloped, with insufficient refrigerated storage and inefficient logistics networks, including road transport and port handling. These infrastructural gaps undermine consistent quality maintenance, affecting India's reputation as a reliable supplier.

2. Supply Chain and Infrastructure Gaps

Post-harvest management infrastructure in Nashik is not keeping pace with the scale and value of grape production, which increases avoidable losses and weakens export competitiveness. Of the roughly 200+ registered packhouses in the district, nearly 80 have become outdated and lack modern facilities such as automated grading, pre-cooling, and precise temperature and humidity control, which are essential for long-distance export requirements and quality standards of importing countries. Cold storage capacity is available but expensive to operate, with electricity bills for a typical facility reported in the range of INR 1.8–2 lakh per month, and frequent power interruptions further raise the risk of quality deterioration and wastage. Farmers and exporters also face regulatory barriers: building or upgrading packhouses on agricultural land is difficult because land must first be converted to non-agricultural us. At the farm level, key operations such as dipping, thinning, lodging, and cutting remain highly labour-intensive and cost between INR 4,000 and 20,000 per acre, at a time when labour shortages and rising wages are already major concerns. Technologies such as Electrostatic Spraying Systems (ESS) can cut labour needs and costs by up to 70 per cent, but their high purchase price and lack of suitable credit products mean that adoption is limited. Without targeted investment in modern packhouses, energy-efficient cold chains, and affordable mechanisation, post-harvest losses will remain high and

Nashik's ability to consistently supply high-quality export grapes will be constrained.

3. Limited Value Addition

The grape sector's profitability is also restricted by the lack of large-scale processing facilities for value-added products such as raisins, juices, and wine. Exports remain dominated by fresh grapes, which are more vulnerable to quality degradation. Absence of upstream and downstream value addition inhibits product diversification and enhances vulnerability to market fluctuations.

MARKET AND REGULATORY RISKS

1. Export Market Access and Regulatory Risks

Nashik's remarkable export concentration, over 70 per cent of shipments headed to the EU, brings substantial vulnerability. Sudden changes in Maximum Residue Limits (MRLs), new import duties, or enhanced sanitary-phytosanitary rules in target markets can result in severe shipment rejections and revenue loss, as witnessed in past EU policy shocks. Compounding the challenge are prolonged export payment cycles (typically 40–60 days), inadequate export credit insurance (with grapes excluded from ECGC coverage), and fragmented certification procedures overseen by multiple regulatory bodies such as APEDA, DGFT, and state agencies. Exporters, especially smaller players, struggle to manage protracted working capital gaps and bear significant risk, resulting in sectoral dependence on large aggregators or capital-rich FPOs. Furthermore, logistical inefficiencies, such as outdated post-harvest infrastructure, inadequate reefer container availability, and high cold chain costs, hinder competitiveness and innovation at the farmer level.

6.1 Opportunities in Grapes Sector

The Indian grape sector holds significant potential for growth and increased export earnings by leveraging its unique strengths, emerging market trends, and strategic interventions. Several opportunities exist in product diversification, market

expansion, government support, technology adoption, and protection of region-specific grape varieties through Geographical Indications.

- **Growing Global Demand and Expanding Markets**

The increasing global demand for high-quality, seedless, and fresh table grapes presents a favourable environment for India to expand its export footprint. Indian grapes currently enjoy market access to over 30 countries, with major destinations including the Netherlands, United Kingdom, Germany, Russia, and the Middle East. Emerging markets such as China, Southeast Asia, and North Africa also offer promising growth prospects, reducing over-dependence on traditional markets and enhancing export resilience. India's 2023-24 export performance, with about 344,000 metric tonnes valued at USD 417 million, illustrates the sector's export agility and scope for further growth (APEDA, 2025; Indo Foods Export, 2025).

- **Product Diversification and Value-Added Opportunities**

Beyond fresh table grapes, there is increasing potential to develop value-added products like raisins, juices, wine, and nutraceuticals. Expansion into processed grape products can boost profitability, reduce post-harvest wastage, and meet diverse consumer preferences both globally and domestically. The global trend toward premium and health-focused grape products underscores the necessity of investing in processing infrastructure and innovative product development in India (Mordor Intelligence, 2025).

- **Strategic Agro-Climatic and Off-season advantages**

India's diverse agro-climatic zones allow for grape cultivation throughout the year, enabling off-season production relative to major global suppliers. This seasonal advantage helps Indian exporters capture premium pricing in European and other markets during their off-season. Technological advancements including precision irrigation, residue management, and improved post-harvest handling further enhance grape quality, strengthening India's competitive edge (Indo Foods Export, 2025).

- **Government Support and Policy Incentives**

Government agencies such as APEDA provide essential support to the grape export sector through quality certifications, export infrastructure development, and promotional activities. Free Trade Agreements with UK, Gulf countries and ASEAN members reduce tariff barriers, facilitating smoother market entry. Policy measures encouraging cold chain investments, packhouse facilities, and traceability systems are enhancing supply chain efficiency and compliance with international standards (APEDA, 2025; Dhanashree Crops, 2025).

- **Adoption of Technology and Sustainable Practices**

The adoption of modern technologies such as precision viticulture, integrated pest management, and Global GAP certification improves productivity and environmental sustainability. These practices align Indian grape production with global organic and sustainability trends, opening pathways to premium market segments that demand sustainably grown produce (Research and Markets, 2024).

- **Leveraging Multi-Standard Certification for Market Upgrading**

Although multiple certification schemes create high fixed and recurring costs, they also offer a clear opportunity to move Indian grapes into higher-value global markets. GLOBALG.A.P. and BRCGS/FDA compliance open doors to major European and US supermarket chains, while APEDA's GrapeNet system helps demonstrate strong traceability and residue control, which are now essential conditions for most importers. Adding sustainability and ethical labels such as Rainforest Alliance and Fairtrade on top of these food safety standards allows exporters to target premium retail channels and long-term contracts, where prices and buyer loyalty are typically higher. Aggregator and FPO-led certification models, such as those used by Sahyadri Farms, which coordinates group GLOBALG.A.P. certification and social or environmental audits for large numbers of smallholders, provide a practical way to spread certification costs, include smaller farmers, and integrate Indian grape clusters more firmly into advanced, high-value global value chains.

- **Expansion into Emerging Markets and Branding**

Targeting emerging markets like China, North Africa, and Southeast Asia reduces export concentration risks. Enhancing brand equity for Indian grapes through quality assurance, traceability, and promotional campaigns can further differentiate India as a supplier of premium, sustainable fruit. These strategies meet increasing consumer preferences for transparency and ethical sourcing in global markets (Export Import Data, 2025).

- **Geographic Indications and Regional Varietal Identity**

The legal recognition of GIs provides a compelling opportunity to protect and promote region-specific grape varieties that are linked to unique environmental conditions and cultural heritage. India currently has several grape varieties with GI status, enhancing their market value and brand credibility such as Nashik Valley Grapes (Maharashtra), Bangalore Blue Grapes (Karnataka), and Cumbum Grapes (Tamil Nadu) (Geographical Indications Registry, 2024; Freshplaza, 2023). GI tagging not only safeguards these varieties from unauthorized use but also promotes rural livelihoods, cultural heritage, and market differentiation. It facilitates premium pricing and improved competitiveness in export markets, allowing Indian grape growers to carve niche positions internationally.

7 STRATEGIES AND POLICY RECOMMENDATIONS

India's position in the global grape export market has steadily increased, supported by a combination of favourable agro-climatic conditions and a growing export ecosystem. During TE 2023-24, India exported approximately 0.3 MMT of grapes valued at over USD 345.5 million, establishing itself as the 9th largest grape exporter worldwide. The sector has experienced robust demand, particularly from European markets such as the Netherlands, United Kingdom, and Germany, and countries such as Bangladesh, UAE and Russia which collectively absorb about three-fourth of India's grape exports. However, despite positive growth trends and increasing global competitiveness, the Indian grape export sector faces important challenges including varietal limitations, compliance issues, infrastructural bottlenecks, and market concentration risks. Drawing on recent export data and market insights, the strategies and policy recommendations outlined below aim to address these constraints, promote diversification, and accelerate sustainable growth in India's grape exports, potentially surpassing current trajectories in volume and market reach through targeted interventions and innovation.

7.1 Short-Term Strategies

7.1.1 Mitigate Production and Price Risks

Rationale: Indian grape farmers regularly confront devastating production risks from unseasonal heavy rains, hailstorms, prolonged cloudy periods, heatwaves, and outbreaks of powdery/downy mildew and pests, which have caused yield losses ranging from 10-15% annually to as high as 50% in extreme events like the 2024 Nashik crisis affecting 45,000 hectares. These uncertainties translate into severe price volatility, unreliable supply chains, depressed farmer incomes, and eroded export credibility. Compounding this, exporters endure 40-60 day payment cycles

and complete exclusion from ECGC coverage, creating acute liquidity stress that disproportionately burdens small and medium players while consolidating power with large aggregators. Immediate stabilization of production, pricing, and cash flows is therefore essential to safeguard livelihoods, maintain supply consistency, and rebuild buyer confidence in Indian grapes as a reliable global source.

Action Points:

- Expand adoption of weather-based crop insurance schemes like the Restructured Weather Based Crop Insurance Scheme (RWBCIS), providing financial protection against losses from adverse weather and pest events. Ensure transparency, timely claim settlement, and affordable premium rates to increase farmer participation and trust.
- Promote the use of protected cultivation such as shade-nets and plastic covers to shield grapevines from hail, excessive heat, and heavy rains, thereby enhancing crop resilience and minimizing weather-related damage.
- Provide farmers with access to weather forecasting, pest outbreak alerts, and market demand insights through platforms like GrapeNet and mobile-based advisory services. This can help farmers adjust planting, harvesting, and marketing schedules to better align supply with demand and reduce price volatility.
- Urgently advocate policy reforms to bring grapes under ECGC export credit guarantee schemes with minimal collateral requirements, alongside dedicated liquidity bridges or factoring mechanisms to bridge 40-60 day payment gaps, ensuring small exporters can compete without chronic cash crunches.
- Offer capacity building and knowledge dissemination on integrated pest management, climate-resilient farming practices, and prudent pesticide application, reducing dependency on chemical inputs restricted by Maximum Residue Limits (MRL) in export markets.
- Encourage risk-spreading through cropping system diversification, promoting rotation with pulses, oilseeds, or intercropping to enhance soil health, stabilize household incomes, and buffer against grape-specific shocks.

7.1.2 Leverage Preferential Market Access under Recent FTAs

Rationale: India's recent trade agreements, particularly the India–UAE Comprehensive Economic Partnership Agreement (CEPA) and the India–Australia Economic Cooperation and Trade Agreement (ECTA), have created new opportunities for fresh grape exports by providing zero-duty access in these markets. In addition, the India–UK Comprehensive Economic and Trade Agreement (CETA), signed in July 2025 and expected to be implemented from April 2026, is set to eliminate tariffs on a vast majority of Indian exports, including fresh produce, thereby opening up a major high-value market for Indian grapes.

However, utilization of these preferential market access provisions remains limited, particularly among small and medium exporters, due to gaps in awareness and compliance readiness. This assumes greater importance as competitors such as Chile and Peru benefit from wider and deeper trade agreements across key markets, strengthening their price competitiveness. At the same time, the operationalization of the India–UK agreement and the recently signed EFTA partnership presents additional opportunities to expand India's presence in premium markets. Focused sensitization and facilitation are therefore critical to translate these market access gains into actual export growth.

Action Points:

- Undertake targeted awareness and training programmes for exporters, FPOs, and aggregators on tariff concessions, Rules of Origin, and documentation requirements under CEPA and ECTA.
- Develop simplified guidance materials and digital tools to help exporters identify product-wise tariff benefits and compliance procedures in FTA partner countries.
- Strengthen coordination between APEDA, DGFT, and Indian missions abroad to disseminate market intelligence and promote utilization of FTA provisions.
- Encourage exporters to align market strategies and shipment planning towards FTA partner countries where tariff advantages can improve price realization.

- Support participation in trade fairs, buyer–seller meets, and promotional campaigns in key FTA markets such as the UAE and Australia to build sustained demand for Indian grapes.

7.1.3 Strengthen Post-Harvest and Infrastructure

Rationale: Grapes' extreme perishability increases losses from Nashik's inadequate infrastructure, about 213 packhouses with nearly 80 outdated and lacking automated grading, pre-cooling, or precise temperature/humidity controls essential for supermarket standards; cold storages burdened by INR 1.8-2 lakh monthly electricity bills and outages; and labor-intensive operations like dipping/thinning costing INR 4,000-20,000/acre amid urban migration-driven shortages. Global disruptions like Red Sea/Suez have ballooned 22-day ideal transits to 60 days, spiking freight costs and rejection rates. Urgent upgrades are critical to slash wastage, preserve quality, and restore competitiveness in distant markets.

Action Points

- Expand and upgrade modern cold storage hubs at production centres such as Nashik, and Sangli. These facilities should incorporate export-safe technologies that maintain optimal temperature and humidity during storage, extending shelf life through lean periods. Invest in refrigerated transport vehicles dedicated to fruit shipments to ensure quality is maintained from farm to port/export destination. Improve road connectivity and port infrastructure to reduce transit times and logistical bottlenecks.
- Promote sustainable and shock-absorbent packaging materials and methods that minimize mechanical damage in transit and extend fruit freshness.
- Strengthen Farmer Producer Organizations (FPOs) and Export Business Units (EBUs) that can coordinate harvesting times, quality sorting, and aggregation, creating economies of scale and ensuring supply chain transparency.

7.2 Medium-Term Strategies (3-5 years)

7.2.1 Promote climate-Resilient and Globally Demanded Varieties

Rationale: India's grape export industry currently relies heavily on the Thompson Seedless variety, which restricts access to premium international markets that prefer coloured and crack-resistant varieties due to their superior appearance, taste, and longer shelf life. Additionally, climate change poses significant challenges, including increased temperature variability, irregular rainfall, and emerging pest and disease pressures, which threaten yield, fruit quality, and export reliability. Promoting climate-resilient grape varieties will thus help mitigate production risks while enhancing global market acceptance and prices.

Action Points

- Facilitate the widespread dissemination of superior grape varieties such as Red Globe, Allison, Crimson Seedless, Timco, Ivory, and other new cultivars developed through research institutions and private sector partnerships. These varieties offer enhanced crack resistance, longer shelf life, and better adaptability to varied climatic conditions. Provide targeted financial incentives, technical training, and buy-back guarantees to encourage farmers to adopt and cultivate these new varieties, ensuring steady supply for export demand.
- Focus particularly on varieties with longer shelf life suitable for distant markets such as North America and Europe. Partner with private exporters and supply chain firms to guarantee procurement and timely market access for grapes grown from these varieties.
- Implement farmer training programs emphasizing compliance with Maximum Residue Limits (MRL), Good Agricultural Practices (GAP), and integrated pest management to meet stringent phytosanitary standards of diverse export markets. Strengthen extension services and digital tools (like GrapeNet) to provide real-time advisory and support to farmers on varietal management, climate adaptation, and quality control measures.

7.2.2 Expand Export Market Access and Diversify Destinations

Rationale: India's grape exports are currently heavily concentrated in a few key markets such as the Netherlands, UK, and Middle East, which limits growth potential and exposes exporters to market-specific risks. Furthermore, lack of market access and stringent non-tariff barriers (NTBs) restrict India's entry into high-value and emerging markets like the United States, Commonwealth of Independent States (CIS) countries, parts of Africa, Southeast Asia, and others. To sustain growth and capitalize on global demand, diversification of export destinations is essential. Simultaneously, ensuring compliance with Maximum Residue Limits (MRL) and other quality standards is crucial to meet the regulatory requirements of these new destinations.

Action Points

- Expedite bilateral trade negotiations coordinated by APEDA and the Ministry of Commerce to reduce NTBs and facilitate market access in priority regions like the US, CIS, Africa, and Southeast Asia.
- Develop tailored market entry strategies in collaboration with key importers, distributors, and retail chains in emerging regions to build sustainable trade relationships. Strengthen production capacity through investments in climate-resilient and long shelf-life grape varieties, enhanced post-harvest infrastructure including cold storages and cold chain logistics to meet demand effectively in new markets.
- Implement farmer training programs focused on pesticide use, MRL compliance, and Good Agricultural Practices (GAP) to align production with the phytosanitary requirements of diverse export markets. Enhance digital traceability and certification mechanisms to ensure product quality and build importer confidence in Indian grapes.
- Establish APEDA-led single-window for certifications (5-year validity) coordinating APEDA/DGFT/NRCG/port authorities to cut delays; target ASEAN/Japan/South Korea/Latin America despite NTBs.

7.2.3 Develop Value-Added Grape Products and GI Branding

Rationale: India's grape exports currently rely predominantly on fresh grapes, which face limitations in shelf life, seasonal availability, and revenue realization. Expanding into value-added products such as raisins, grape juice, and wine can extend shelf life, reduce post-harvest losses, and diversify income streams for farmers and processors. Furthermore, geographical indication (GI) branding of renowned regional grape varieties such as Nashik Valley, Bangalore Blue, and Cumbum grapes can create strong market differentiation, build premium pricing, and enhance global recognition of Indian grapes.

Action Points

- Establish agro-processing clusters close to major grape growing belts such as Nashik, Pune, Sangli, and Bangalore, equipped with modern facilities for raisin drying, juice extraction, winemaking, and packaging. These clusters will help scale production and ensure consistent quality of value-added grape products. Promote GI registration and brand building initiatives for key regional varieties to enable farmers and exporters to command higher prices in domestic and international markets.
- Provide comprehensive support to Farmer Producer Organizations (FPOs) and Small and Medium Enterprises (SMEs) through:
    - Financial assistance: Subsidies, concessional loans, and grants to adopt modern processing technologies and infrastructure.
    - Technical support: Training on value addition techniques, quality assurance, compliance with food safety standards, and product innovation.
    - Market linkage facilitation: Support participation in global trade fairs, buyer-seller meets, and digital marketing platforms to enhance international outreach.
- Facilitate research and development activities focusing on developing new grape-derived products and improving processing efficiencies to increase the global competitiveness of Indian grape products. Encourage backward and forward linkages between farmers, processors, logistics providers, and

retailers to ensure steady supply of quality raw materials and market access for value-added products.

7.3 Long-Term Strategies

7.3.1 Adopt Digital and Precision Viticulture Technologies

Rationale: To sustain global competitiveness, Indian grape growers need integrated digital by improving yield quality, optimizing resource use, and mitigating climate-induced risks. Precision viticulture employs GPS, Geographic Information Systems (GIS), remote sensing (drones, satellites), IoT sensors, artificial intelligence (AI), and data analytics to monitor soil, crop health, irrigation needs, pest detection, and environmental conditions with high accuracy. This technology-driven approach enables targeted interventions, reducing the use of water, fertilizers, and pesticides while increasing productivity and sustainability.

Action Points

- Engage with global viticulture technology leaders and research organizations to gain access to patented, climate-resilient, pest-resistant grape varieties with superior post-harvest qualities suited for export markets. Simultaneously, fund and support domestic breeding programs to develop varieties adapted to India's diverse agro-climatic zones.
- Conduct training programs and workshops for grape farmers on the use and benefits of digital viticulture technologies such as GPS mapping, Geographic Information Systems (GIS), and remote sensing to monitor vineyard health. Educate farmers about using Internet-of-Things (IoT) based soil moisture and climate sensors for optimized irrigation, fertilization, and pest management, reducing input costs while enhancing yield and quality. Introduce AI-powered pest and disease detection tools that enable precision application of treatments, minimizing excessive pesticide use and meeting export quality standards.
- Facilitate farmer cooperatives and Farmer Producer Organizations (FPOs) to collectively invest in or lease precision technology assets like drones for aerial imaging, automated weather stations, and data analytics platforms to reduce upfront costs. Build decision support systems (DSS) integrated with real-time

weather, soil, and crop health data to provide actionable recommendations for vineyard management at the micro-plot level, ensuring precise interventions.

- Showcase successful models of digital viticulture adoption such as Sula Vineyards' GPS-enabled irrigation optimization and automated fertilization systems to encourage wider industrial adoption. Implement pilot projects across major grape-producing regions (Nashik, Sangli, Bangalore) to validate technology benefits and refine best practices before scaling nationwide.

7.3.2 Continuous Varietal Innovation

Rationale: Sustained competitiveness of India's grape export industry hinges on the continuous development and adoption of improved grape varieties. These varieties must adapt to evolving climate conditions such as rising temperatures, irregular rainfall, drought, and new pest and disease pressures observed in key grape-growing regions. Additionally, varieties must respond to changing consumer preferences, especially in premium export markets that favour coloured, crack-resistant, long shelf-life cultivars. Continuous varietal innovation enhances production stability, quality consistency, and access to high-value global markets.

Action Points

- Support and adequately fund public and private breeding programs focused on developing grape varieties with enhanced climate resilience, drought tolerance, heat resistance, and pest/disease resistance, aligned to Indian agro-climatic zones. These programs should integrate modern breeding techniques including molecular marker-assisted selection and epigenetic approaches to accelerate development timelines.
- Foster collaborations between research institutions (like ICAR-National Research Centre for Grapes), universities, private seed companies, and exporters to speed up varietal innovation, commercialization, and dissemination. Such partnerships can leverage resources, expertise, and market insights effectively.
- Maintain active engagement with global research institutes and viticulture centres to access advanced grape germplasm, breeding technologies, and

climate adaptation strategies. Joint breeding initiatives can provide access to valuable wild and domesticated genetic resources for traits such as crack resistance and extended shelf life.

- Invest in R&D for local cultivars and rootstocks that can withstand region-specific challenges such as soil salinity, acidity, drought, and prevalent pests (thrips, flea beetles, mealy bugs). Promote varieties like Salt Creek rootstock and drought-tolerant 110-R rootstock proven in Maharashtra and other zones.

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ANNEXURES

Annex 1: State-wise major grape varieties in India

Variety of Grapes	States	Characteristics
1. Thompson Seedless	Maharashtra Karnataka Tamil Nadu	♦ Popular seedless variety ♦ Known for golden yellow and elongated berries
2. Bangalore Blue	Karnataka	♦ Foxy flavour ♦ Dark Blue colour ♦ Thin Firm skin, slight Tartness
3. Anab-e-Shahi	Andhra Pradesh, Punjab, Haryana Karnataka	♦ Seeded, elongated medium large berries ♦ Juice is sweet with TSS 14-16 % ♦ Susceptible to Downy Mildew
4. Sharad Seedless	Maharashtra Karnataka	♦ Dark Purple colour ♦ Seedless nature ♦ Crisp and rich flavour ♦ Rich in Resveratrol

5. Perlette	Punjab Haryana	♦ Early Maturity ♦ Known for translucence and sweetness
6. Gulabi and Bhokari	Maharashtra Karnataka Tamil Nadu	♦ Purple seeded ♦ Known for juicy flavour

Source: APEDA 2025

Annex 2: Major GI Tagged Varieties of Grapes

Name of GI Tagged Variety	Characteristics
Cumbum Grapes (Paneer Thratchai), Tamil Nadu	♦ GI Tag Received: 2023 ♦ Origin: Cumbum Valley in Tamil Nadu, known as the Grape City of South India. ♦ Unique Feature: Harvested Year-Round ♦ Nutritional Value: High in Vitamins, Tartaric acid, and antioxidants. ♦ Specialty: Cultivated in the Theni district, known for its unique flavour and cultivation practices.
Bangalore Blue, Karnataka	♦ GI Tag Received: 2013 ♦ Origin: Extensively grown in Bangalore Urban, Chikkaballapur, and Kolar districts of Karnataka. ♦ Unique Feature: Known for Foxy Flavour ♦ Nutritional Value: High in vitamin C, potassium, and dietary fibre ♦ Specialty: Crucial for the livelihood of over 15,000 farmers in the Nandi Valley.
Nashik Grapes, Maharashtra	♦ GI Tag Received: 2010 ♦ Origin: Nashik District in Maharashtra, known as the Grape Capital of India. ♦ Unique Feature: Conical Bunch shape, bold, elongated berries. ♦ Nutritional Value: High in antioxidants like resveratrol and anthocyanin. ♦ Specialty: Only Region globally where harvesting takes place from February to April, commands a premium position in the global marketplace.

Source: Intellectual Property of India 2025

Annex 3: Major Exporting Firms

Major Global Players	Major Domestic Players
1. Grapes of Spain S.L. 2. Sun World International LLC (US) 3. Chilean Grape Exporters Association (Chile) 4. The Grapes Company (Italy) 5. Fresh Produce Exporters Inc. (South Africa) 6. Grapes International (Australia) 7. Vinexport (France) 8. California Grapes Exporters (US) 9. Mediterranean Grapes (Greece) 10. Global Grapes Ltd (operation in multiple locations)	1. Sahyadri Farms (Nashik, Maharashtra) 2. Pisum Foods (Pune, Maharashtra) 3. DJ Exports (New Delhi) 4. Mahindra Agri (Mumbai, Maharashtra) 5. Shiva Ruthra Exports (Madurai, Tamil Nadu) 6. Greenland Fresco (Belagavi, Karnataka) 7. Sapphire Agro Tech (Solapur, Maharashtra)

Source: Essfeed, 2025; Sear Exim Solutions, 2025

SUCCESS STORY:

AGGREGATION AND EXPORT LINKAGES IN GRAPES

Sahyadri Farms: India's largest grapes exporter

Sahyadri Farms, established in 2011 in Nashik, Maharashtra, is often cited as one of India's most successful Farmer Producer Companies (FPCs) and the country's largest exporter of fresh table grapes. The organisation originated from a small collective of grape farmers who sought to bypass intermediaries and access European markets directly. Over time, export-oriented grape production became the anchor around which Sahyadri's integrated horticulture value chain was built. Today, Sahyadri represents over 26,000 farmers cultivating nearly 40,000 acres across key horticultural belts of Nashik, Pune, Sangli, and Solapur (Sahyadri Farms, 2024).

Organisational Structure and Governance

Sahyadri operates through a three-tier institutional structure comprising farmer-members, around 24 Farmer Producer Companies (FPCs), and the apex Sahyadri Farmers Producer Company Ltd. Approximately 12,000 member farmers are engaged in grape cultivation, making grapes the single largest commodity within the organisation. The governance model is shareholder-based, with farmers holding equity and equal voting rights, combining the collective strength of cooperatives with the efficiency and accountability of a professionally managed private enterprise. This structure enables aggregation at scale while ensuring farmer ownership, transparency, and disciplined decision-making.

At the grassroots level, FPCs provide input supply, technical advisory, and financial support, while the apex entity coordinates post-harvest infrastructure, logistics, processing, and domestic and international marketing. This integrated approach

has allowed Sahyadri to internalise critical functions of the value chain that are otherwise fragmented in Indian horticulture.

Export Performance and Market Presence

Sahyadri Farms is India's largest exporter of fresh table grapes, accounting for about 17 per cent of the country's total grape exports. The organisation exports grapes to more than 40 countries, with the European Union and Russia as its core markets. Key export varieties include Thompson Seedless and Sonaka (white), Crimson (red), and Sharad (black), harvested primarily between December and March. Annual exports average around 100 containers, with transit times of approximately 22 days. Export prices typically range between USD 3,500–4,500 per metric tonne, while payment cycles average around 40 days. Despite long-distance shipping, post-harvest losses are kept low at 1–2 per cent, reflecting strong cold chain and quality management systems.

Infrastructure, Processing, and Circular Value Chain

Sahyadri has made substantial investments in post-harvest and processing infrastructure. Its facilities include APEDA-recognised packhouses, a 10,000 MT warehouse dedicated to Hindustan Unilever, and a large citrus processing plant with a capacity of 70,000 MT located in Nagpur/Nanded. Grapes follow a circular value chain model, where around 75 per cent of production is sold as fresh fruit, of which nearly 60 per cent is exported and 40 per cent marketed domestically. The remaining 25 per cent is processed into value-added products such as raisins, grape juice concentrate, grape skin extracts, and grape seed oil. Processing residues are further utilised for animal feed, manure, biogas, and power generation, enhancing resource efficiency and sustainability.

Quality Compliance, Technology, and Innovation

Strict adherence to international quality and food safety standards is central to Sahyadri's export competitiveness. The organisation holds multiple certifications, including GLOBAL G.A.P, BRCGS, Fairtrade, FDA, FSSAI, APEDA, Halal, and Tesco compliance. A robust Integrated Pest Management (IPM) framework based on Economic Threshold Levels (ETL) ensures compliance with stringent Maximum

Residue Limits (MRLs) in export markets. Technical support from the National Research Centre for Grapes (NRCG) plays a critical role in maintaining residue discipline and export readiness.

Digital and precision agriculture tools are increasingly embedded in Sahyadri's operations. The organisation has deployed over 200 automated weather stations and soil sensors to provide real-time data on climate, irrigation, and crop health. These systems support data-driven decision-making at the farm level, improving productivity, reducing input misuse, and strengthening climate responsiveness.

Varietal Strategy and Climate Adaptation

Recognising the importance of varietal differentiation, Sahyadri has established exclusive partnerships with global breeding companies such as Bloom Fresh International, Grapa Varieties (ARRA series), and ITUM. Exclusive rights to ARRA grape varieties in India provide a strong first-mover advantage in premium export segments, with varieties like ARRA Cherry Crush being scaled up for commercial production. In parallel, Sahyadri is experimenting with climate-resilient cultivars such as ARD-35 (Fire Crunch) and ARD-36 (Fire Green) to address rising climate risks, particularly unseasonal rains and temperature stress (Karniel-Padan, 2025).

Financial Performance and Human Capital

Sahyadri's financial growth has been rapid. Turnover increased from INR 1,500 crore in FY 2023 to INR 2,000 crore in FY 2024, with a target of INR 3,000 crore for FY 2025 (Sahyadri Farms, 2024). The organisation has paid cumulative taxes of around INR 218 crore and attracted significant foreign investment, including INR 300–350 crore from France and INR 450 crore from other international investors. Infrastructure development has also been supported through NHB subsidies amounting to INR 40–50 crore.

The enterprise employs around 1,500 women and 200–300 men across operations and has expanded from 12 operational zones in 2021 to 25 zones by 2025. Capacity-building initiatives remain central, with over 6,000 farmers trained in soil management, literacy, and improved production practices. Institutional mechanisms such as Sahyadri Post-Harvest Care Ltd., Self-Help Groups, and

incubation programmes have helped onboard around 700 new farmers over seven years.

Key Takeaways

Sahyadri Farms illustrates how farmer-owned, professionally managed organisations can successfully integrate production, processing, and exports in high-value horticulture. Its experience demonstrates the potential of collective models to overcome challenges related to market access, quality compliance, varietal innovation, and sustainability. At the same time, it highlights ongoing constraints related to climate risk, capital-intensive infrastructure, and dependence on global breeding technologies, offering important lessons for scaling similar models across India's grape export ecosystem.

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