Competitiveness in spice export trade from India: A review

L Thomas* & P C Sanil

ICAR-Indian Institute of Spices Research, Kozhikode-673 012, Kerala.
*E-mail: lijo.iari@gmail.com

Received 17 June 2019; Revised 11 July 2019; Accepted 15 July 2019

Abstract

Spices are one of the most traded agricultural commodities across the globe. India, as the world’s leading producer and exporter of spices is a significant stakeholder in spices export trade. The paper reviews the studies conducted on the spices export sector with special focus on India and the policy issues applicable to this sector. The review focuses on the history, trade competitiveness and issues related to regional trade agreements, trade barriers and food safety in the export trade of spices. Research gaps on issues like linkages between economic development and spice export are identified. The review concludes with suggestions for promoting growth and development of the spice export sector in India.

Keywords: Spices, export, trade, competitiveness

Introduction

Trade is considered one of the most important engines for economic development at the global level (Riedel 1984; Wilson et al. 2005). Spices have a long history of being one of the most highly traded commodities across the globe. Food and agricultural trade forms the vital functional link between the global trade network and developing economies (Jaffee 2005) and many Asian countries have leveraged trade for fuelling economic growth (Kenichi 2003; Bernhofen & Brown 2005). Spices form an important component of trade, which has influenced the course of economic, social and political development across the globe. Developing countries including India are a dominant source of supply for world spice trade (Jaffee 2005). Though the importance of spices and its trade as an agent shaping the history of economies has diminished in recent years, they played a significant role in determining the course of economic interaction between nations (Pollmer 2000). Trading of spices across complex trade routes and networks, established over centuries, played a critical role in the exchange of ideas between the east and the west.

India is the leading producer and exporter of spices in the world. Some commodities like black pepper among others, have driven the trade policies since time immemorial (DeWaal & Brito 2005). The fortunes of spice trade have significant implications for the export performance of
agricultural sector in the country. In value terms, the share of spices in total agricultural exports was 8.4% during 2017-18 and global spice exports were valued at 4.69 billion US Dollars during 2016 (ITC 2018).

Though the general welfare gains from free trade has been well established (Baldwin 1992; Redding 1999; Holmes et al. 2014), the specific issues related to commodity sectors like spices have not been exhaustively studied. The theory of comparative advantage, which forms the cornerstone of the theoretical foundation for welfare gains, does not offer detailed understanding of the underlying variables influencing trade. Hence, a comprehensive review of the work done with direct implications to spices export trade is needed to develop a better understanding of the various facets of economic factors influencing the relative strengths, efficiency and competitiveness of spice export trade. This is especially relevant when the traditional networks of spice trade, established over the centuries are undergoing transformation due to increase in demand coupled with stringent quality measures (Box 1989).

Outline and scope

Though trade encompasses both export and imports, we place our focus on export trade of spices since they are a significant component in India's agricultural exports. Spices stands fourth in terms of export value among agricultural exports from India. After a brief overview of the historical context and importance of spice export trade, an outline of the policy environment for spice export is detailed followed by a brief examination of trade agreements and its effect on spice exports. Major studies on trade competitiveness in the spices sector, either as individual commodities or as a commodity group are presented after this. Studies on trade efficiency and market power in global spice trade is also examined as a part of this section along with a description of the tools for measuring trade competitiveness. The barriers to trade are of special significance to spice exports and this forms the following section which reviews the attempts to study the trade barriers in spices, both using tariff and non-tariff measures. Though concerns about food safety are often used as non-tariff barrier to agricultural trade in general (Henderson & Lorder 2001) and spice trade in particular (Henson & Jaffee 2007), we treat it as a separate issue and review trade issues and research work undertaken in the spices sector focusing on food safety. Based on the review of the research work on trade economy aspects of spices, the research gaps are identified. The last part concludes with suggestions for improvement in the spice export trade sector in the country.

History of spice trade

The history of spices as a traded commodity has been examined through several means including textual and archaeological evidences. However, a consensus on the earliest trade contacts through which spices produced from South Asian region reached Mediterranean and European regions remains elusive. Though strong archaeological and textual evidence exist with regard to spice trade between South Asia and early Greek and Roman Empires, the earliest period such spice trade could have occurred was during 11th-12th century BCE or even earlier (Gilboa & Namdar 2015). Spices were one of the most important constituents of trade from the Indian subcontinent to various parts of the Roman Empire during the 1st to 3rd Century CE (Galli 2017), which encompasses most of the present-day European economies. Though the use of spices in rituals, perfumery and medicines were prevalent even before the medieval period, some spices like black pepper gained prominence across both Middle East and Europe (Van der Veen & Morales 2015).

Ever since spices rose to prominence in the European region, they have been given an aura of mysticism and remained a favourite symbol to denote an elite status in the society due to its shortage and high cost of acquisition (Keay 2006). The European interest in spice trade was further fuelled by the excessive control over the spice trade maintained by Arab traders and later by the Ottoman empire, resulting in high price of this commodity. The unfamiliarity of the land-based trade routes extending across the deserts separating the Asian continent from Europe was also one of the major reasons for the quest for a new trade route over sea to the East.
Spices were traded through a complex network spanning the oceans and land routes and were the focus commodity of trade for several centuries. The name ‘spice route’ denoting the trade routes arises from this fact. Among the major traded spices during the 1st to 3rd century CE, cinnamon, ginger, cassia, cardamom and several unspecified spices are mentioned in the ancient nautical handbook *Periplus Maris Erythraei* (Galli 2017). The discovery of direct sea routes brought in vast changes in the social, political and cultural linkages between the Indian subcontinent and the rest of the world. Trade in commodities like black pepper, clove, nutmeg, etc., originating from the East Indies including Indian subcontinent, flourished during the 16th century and the trade volumes increased progressively (Halikowski 2015). The wave of traders from major economies of the 16th and 17th centuries, with an eye on the lucrative spice trade brought in acolonial culture and introduced early capitalism in the Malabar coast (Kalidasan 2015). The competitive challenges in spices trade have increased in the recent years with multiple sources of supply for bulk spices.

**Policy backdrop for spice export trade**

Trade policies adopted by the government play an important role in shaping the export sector of any commodity. Historically, India had a trade surplus for centuries through export of spices, handicrafts, textiles, etc. and no official restrictions on imports or exports were maintained (ICAI 2008). Though the Government of India Act 1935 gave exclusive legislative power to regulate trade, it was not used in practice. The Import and Export (Control) Act, was enacted in 1947 which guided export policies until 1992 when the Foreign Trade (Development and Regulation) Act was passed. The trade policy in general was generally considered to be inward looking until 1980’s and these policies were based on the fear that liberalized trade in agricultural commodities like spices could lead to a secular deterioration in terms of trade (RBI 2003). Since the period of economic reforms in 1991, foreign trade policies starting from the Exim Policy 1992-97 have explicitly tried to promote exports by rationalizing export procedures and documentation while liberalizing imports. These policies had direct impact on agricultural commodities in general and spices in particular. Though there are apprehensions that the global trade liberalization policies could restrict domestic income growth (Patnaik 1996), trade policies have continued to support generation of exportable surplus and dismantling of trade barriers. With the formation of WTO, India was obliged to reduce or discard several protective trade policies. Spices are considered as sensitive products, the imports of which are monitored so that appropriate tariff measures can be taken in case of import surges. This is indicative of the domestic trade protection offered to this sector.

The spices sector also benefitted from general schemes and programmes intended for export promotion in the agricultural sector as a whole. The concept of agri-export zone was introduced in EXIM policy 1997-2001 with the primary objective of boosting agricultural exports. Some of the agri-export zones were specifically designated for spice crops like ginger, turmeric, chillies and seed spices (APEDA 2015). A comprehensive approach to incentivize spice exports is seen under the *Vishesh Krishi Upaj Yojana* (VKUY) (Special Agricultural Produce Scheme) introduced in the Foreign Trade Policy 2004-2009, under which spice exporters could get duty credit equivalent to 5% of the free on-board value (FOB value) of exports. However, the scheme excluded black pepper, chillies and cardamom (DGFT 2005). In 2006-07, VKUY was renamed as *Vishesh Krishi and Gram Udyog Yojana* (VKGUY) (Special Village and Agriculture Industry Scheme). In the Foreign Trade Policy 2009-14, spices were excluded from the ambit of VKGUY and placed under the Focus Products Scheme (FPS) where the incentive of duty credit was only 2% for spice exporters as against 5% under the VKGUY. The current Foreign Trade Policy (2015-2020) has sought to merge several export promotion schemes like FPS, Focus Market Scheme, VKGUY etc. into a single scheme namely, Merchandise Export Scheme from India (MEIS). Exported spice commodities are eligible for incentive duty credit under this scheme (GoI, 2015).
Apart from enabling policy stance, institutional support has also been provided for promoting export of spices. The Spices Export Promotion Council was established in 1960 with this explicit objective. Later Spices Board was established as a commodity board in 1987 by merging Spices Export Promotion Council and Cardamom Board. Several schemes for supporting spice exporters are operated by the Board (Spices Board 2019). The spice parks, established by Spices Board, providing advanced infrastructure facilities for quality improvement, grading, packing, warehousing etc. is one such scheme, with an objective of enhancing the quality and safety of spices from India (Chawla 2016). At the policy level, trade facilitation and infrastructure are often taken in the general sense and only partly address the specific issues related to the reduction of risks and transaction costs in the context of agricultural exports. The invisible infrastructural facilitation such easy documentation, customs procedures, and fair regulatory regimes specific to the export commodities are required to enhance trade from developing countries (Kumar 2011).

Trade Agreements

While several factors like foreign direct investment, movement of exchange rates and domestic demand affect the export performance (Sharma 2003), trade agreements among nations are gaining significance in determining the quantum of trade and the gains from trade. Apart from being a signatory of the multilateral World Trade Agreement, India has also effected regional trade agreements which has shaped the spice exports from the country. The major regional trade agreements include Free Trade Agreement with Association of South East Asian Nations (ASEAN) for trade in goods and South Asia Free Trade Agreement (SAFTA) which are of particular importance because the member countries in the agreement are major producers and market competitors for several spice commodities. The multilateral trade agreements with significant implications for spice exports is presented in Table 1. Apart from these multilateral trade agreements, there are also bilateral trade agreements for spice exports. Among them bilateral agreements with Sri Lanka, Malaysia, Singapore and Japan are important.

The nature and extent of benefits to the agricultural export sector from trade agreements are subject to debate. While the net benefits of trade liberalization in agriculture through multilateral trade agreements are suggested to be positive (FAO 2003), there have been some counter arguments also. Francis (2011) states that India’s relative share in global exports of labour-intensive and natural resource-based commodities like spices have declined during the first decade of the 21st century as a result of liberalized trade agreements. The study by Jeromi (2007) argues that in the absence of safety nets trade liberalization could lead to economic decline of export oriented agricultural sector in developing countries. Bellmann et al. (2010) also concluded that poorer developing countries could be the worst affected from global economic slowdown. The analysis of the impact of regional trade agreements usually traces the movements in terms of trade of various sectors.

The Global Trade Analysis Project model (GTAP) was employed in studies by Ahmed (2010) and Sikdar & Nag (2011) to analyse the welfare and trade impact Indo ASEAN agreement for trade in goods on the agricultural sector. Both the studies conclude that there will be welfare gains for both India and ASEAN, but they also point out that terms of trade for India will decline arising from allocative inefficiency. The comprehensive analysis of SAFTA indicate that all the member countries stand to gain substantially in terms of trade growth and economic growth (Ahmed et al. 2010). The gravity model, a standard analytical tool to estimate trade flows between countries (based on factors such as countries’ income, proximity and trade agreements) has been used in analysing multilateral trade agreements like SAFTA (Baroncelli 2007), GSTP (Masahiro 2005) and ASEAN-India FTA (Veeramani& Saini 2010). All these studies, while affirming the benefits from the trade agreement, also flag potential issues like the need for domestic institutional reforms and infrastructural development to reap full benefits from these agreements. Harilal (2009 & 2014) contends that the tropical commodities like spices could also become more vulnerable to price fluctuations and the share of producers in the value chain could be adversely affected with the implementation of ASEAN-India free trade
A similar conclusion was put forth earlier by Harilal & Joseph (1999) in their analysis of India-Sri Lanka Free Trade Agreement. The study also highlights the role of factors beyond the control of primary producers of commodities like the relative value of currency and rates of inflation which can determine the gains from such regional trade agreements.

### Competitiveness and market power in spice trade

The concept of competitiveness has been defined as a measure of a country’s advantage or disadvantage in selling its products in the international markets (OECD 2014). Typically, export competitiveness is linked to or measured in terms of export growth, shares of export markets etc. competitiveness in spice trade also can be assessed in a similar manner. The colonial control of spice trade starting from the 16th century meant that the producers of spices in the East Indies and South Asia could not garner a significant share of the profits from the trade. Driven partly by the competition among the colonial powers for spices, the availability of spices increased through increased production and spread of the crops in non-traditional areas (Pickersgill 2017). Spice exports from India continued unabated during 17th and 18th centuries mainly through British East India Company, United East Indies Company and French East India Company (Robins 2012) and later under the British rule from 1857 till independence in 1947. Spices export trade from India has witnessed substantial growth in terms of volume and value in recent decades. One of the first attempts on a detailed analysis of the export parameters and potential of spice crops

<table>
<thead>
<tr>
<th>Name</th>
<th>Member countries</th>
<th>Nature of trade agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia Pacific Trade Agreement (APTA)</td>
<td>Bangladesh, China, Republic of Korea, Sri Lanka, India</td>
<td>PTA</td>
</tr>
<tr>
<td>India ASEAN Trade in Goods Agreement</td>
<td>Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam, India</td>
<td>FTA</td>
</tr>
<tr>
<td>Global System of Trade Preferences (GSTP)</td>
<td>Algeria, Argentina, Bangladesh, Benin, Bolivia, Brazil, Cameroon, Chile, Colombia, Cuba, Democratic People's Republic of Korea, Ecuador, Egypt, Ghana, Guinea, Guyana, Indonesia, Iran, Iraq, Libya, Malaysia, Mexico, Morocco, Mozambique, Myanmar, Nicaragua, Nigeria, Pakistan, Peru, Philippines, Republic of Korea, Romania, Singapore, Sri Lanka, Sudan, Thailand, Trinidad and Tobago, Tunisia, Tanzania, Venezuela, Viet Nam, Yugoslavia, Zimbabwe, India</td>
<td>PTA</td>
</tr>
<tr>
<td>South Asia Free Trade Agreement (SAFTA)</td>
<td>Pakistan, Nepal, Sri Lanka, Bangladesh, Bhutan, Maldives, India</td>
<td>FTA</td>
</tr>
</tbody>
</table>

PTA = Preferential Trade Agreement; FTA = Free Trade Agreement
Source: Department of Commerce, Government of India

Table 1. Multilateral trade agreements with significant impact on spice exports
was by the Spices Enquiry Committee constituted by the Indian Council of Agricultural Research in 1951. The committee, which submitted its report in 1953 studied four major export earning spice crops namely, black pepper, ginger, turmeric and cardamom, along with cashew nut and lemon grass oil (ICAR 1953). The report highlighted the trends in the export quantity and earning from these crops during the two decades leading up to 1950’s and pointed out the importance of these spices as foreign exchange earners. The report also indicated the potential forces of competition and their implications for exports in these commodities. The volume of spice exports from India crossed 1lakh tonnes for the first time during the late 1970’s. From that point, the volume doubled in a short span of two and a half decades. At present India exports more than 1million tonnes of spices valued at 2.8 billion USD (Spices Board 2019). The share of spice exports in India’s agricultural exports have also increased consistently during the last four decades (Table 2).

One of the major debates in India regarding competitiveness in spice exports relate to the impact of trade liberalization policies implemented in the Indian economy. This is of importance in spices where the country had a comparative advantage in the decades prior to trade liberalization. The impact of trade liberalization on Indian agricultural exports have been examined by several researchers (Chand 2004; Chand & Bajar 2012, Harilal & Dhanya 2015; Ghosh 2017) and most of the studies indicated a better integration of Indian agriculture with the global trade. The impact of trade liberalization on spices exports has also been examined in detail. Shinoj & Mathur (2008), using revealed comparative advantage approach, concluded that India has been able to retain its competitiveness in spice exports in the Asian context. Predominantly tropical commodities like spices suffer from typical commodity problems, such as short-run instability in prices and long-term deterioration of the terms of trade which is also related to the nature of demand and supply. The demand for primary commodities does not grow as fast as income does and if supply is not adjusted accordingly, the prices and terms of trade would decline for the producing centres of these primary commodities (Harilal & Dhanya 2015). Upward mobility along the commodity value chain is suggested as a remedy to solve this situation which could be appropriate for commodities like spices. Though most of the impact studies looked at the aggregate spice sector, individual commodity level studies have also been attempted. The study on the impact of globalization on turmeric trade from India by Angles et al. (2011) is one such study. Ghosh (2017) reported that spices have increased their share in agricultural exports in the post reforms period. The impact of globalization and trade liberalization measures ultimately affected the competitiveness of spices exports.

Price instability at the international level has the potential to affect the trade patterns and benefits from trade along the value chain with rising

<table>
<thead>
<tr>
<th>Year</th>
<th>Export value (Rs Crore)</th>
<th>Share of spices in total agricultural exports (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spices</td>
<td>Agriculture &amp; allied products</td>
</tr>
<tr>
<td>1980-81</td>
<td>11</td>
<td>2057</td>
</tr>
<tr>
<td>1990-91</td>
<td>239</td>
<td>6317</td>
</tr>
<tr>
<td>2000-01</td>
<td>1619</td>
<td>28,582</td>
</tr>
<tr>
<td>2010-11</td>
<td>8043</td>
<td>111,393</td>
</tr>
<tr>
<td>2016-17</td>
<td>19,111</td>
<td>226,775</td>
</tr>
</tbody>
</table>

Source: Economic Survey, 2017-18, Ministry of Finance, Government of India
prices affecting importing countries and the falling prices adversely affecting producers and exporting countries (Bale & Lutz 1979). Thought higher magnitude of international price instability continues to be major argument against trade liberalization in agriculture, the study by Sekhar (2003) finds no evidence for significant differences in price volatility at domestic and international markets. However, even though the variability in world prices has been almost entirely transmitted to developing countries in the dollar value of their export unit values, it has not been fully transmitted to average producer prices since real exchange rates, domestic marketing arrangements and government interventions buffered price movements in the interest of producers in many developing countries (Hazell et al. 1990).

Tools for measuring competitiveness

The use of Revealed Comparative Advantage (RCA) as an instrument for analysis of the relative trade competitiveness of individual spice commodities and spices as an aggregate has been resorted to by several researchers. The RCA, which is developed and modelled on the basic tenets of David Ricardo’s theory of comparative advantage, assumes that the countries will specialize on those commodities where it has a comparative advantage and export those commodities at a relatively lower cost (Balassa 1965).

RCA is usually expressed as

\[ RCA = \frac{\left( \frac{X_{ij}}{X_{ik}} \right)}{\left( \frac{X_{nj}}{X_{nk}} \right)} \]

Where, \( X_{ij} \)=Exports of country ‘i’ of commodity ‘j’; \( X_{ik} \)=Exports of country ‘i’ of a set of commodities ‘k’; \( X_{nj} \)=Exports of a set of countries ‘n’ of commodity ‘j’ and \( X_{nk} \)=Exports of a set of countries ‘n’ of a set of commodities ‘k’.

Among the several factors which can influence RCA economic factors, trade structure, world demand scenario and trade specialization can be of immediate significance (Shinoj & Mathur 2008). The Variations of RCA like Revealed Symmetric Comparative Advantage (RSCA) has also been similarly employed. The study by Jambor et al. (2018) measured stability of comparative advantage of individual countries in spice trade treating spices as an aggregate commodity. They found evidence of a general weakening in comparative advantage enjoyed by several countries. The RCA has been found to vary depending on the level of aggregation (Batra & Khan 2005), which calls for exercising caution while using this measure. The Lafay index (Lafay 1992) addresses some of the shortcomings of the RCA technique by incorporating import flows in the analysis. The index is employed in Indian trade competitiveness analysis by Alessandrini et al. (2007).

Another economic tool frequently employed in the analysis of trade performance is the Nominal Protection Coefficient (NPC). The NPC is usually expressed as the ratio between domestic price of the commodity of interest to its external reference price (Gulati et al. 2013), which could cost insurance freight price (CIF price) in case of exportable commodities like spices (the external reference price would be free on board when the commodity is an import substitute). In general, both RCA and the NPC have been used extensively across studies to measure the trends in trade competitiveness. While the NPC stresses on the price factor, RCA is an over measure of the export performance resulting from several underlying factors. A selection of studies on export competitiveness of Indian spices undertaken since the turn of this century is given in Table 3. Apart from RCA and NPC, other tools like the movements in export unit values (EUV) (Nagoor 2010), trade intensity index (Subhash 2016) and producer price ratios (Suresh & Mathur 2016) have also been used in analysis of spice trade competitiveness. An econometric approach using a modified production function was used for studying export competitiveness of Indian spices in the pre- liberalization and post-liberalization period by Sunil & Nair (2018).

Determinants of trade competitiveness

Efforts of producing regions and economies to remain competitive in spice trade is as old as the history of spice trade itself. While the consuming economies searched for cheaper sources and lower transactions cost, the producing regions were able to retain their trade advantage through
a virtual monopoly on supply and control over market and trade information. Understanding the determinants of trade competitiveness in the globalized economy is critical for spice trade from India. Several studies have attempted to analyse the factors that lead to sustainable trade competitiveness in spice commodities. The market power enjoyed by an entity, as determined by the ability to influence market parameters, can determine the nature of agricultural trade and the effectiveness of public policies aimed at influencing the market (Karp & Perloff 2002). The market power enjoyed by countries in specific commodities arising from the nature of concentrated production of the commodity was one of the major sources of trade competitiveness in spices in the earlier decades. Thus India, which was the major and most often the only significant, source of global supply of black pepper, cardamom and turmeric enjoyed a trade competitiveness leveraged on its status as the major producer and supplier of these commodities (ICAR 1953). This enabled the country to emerge as a price setter without being challenged by other competing sources. Gilbert (1996) argues that most of the attempts at cartelization (by the major producing countries) in several agricultural commodities including, nutmeg and black pepper failed to attain its objectives. Cartelization as a means for artificial protection of trade advantage through exercising market power for a group of producing countries had limited scope in spice commodities.

Cost of production and productivity levels of the commodity can significantly influence competitiveness of a country (Harilal & Joseph 1999). Technological progress in production economy, as expressed through enhancement in yield levels and robust growth in Total Factor Productivity (TFP) has been shown to be a leading factor in determining a country’s international competitiveness in a globalized economic environment. According to the theory of trade (Heckscher-Ohlin), countries with a comparative advantage in the production of a commodity will experience more trade competitiveness in that commodity. Countries with a high degree of TFP relative to their trading partners will have more competitiveness and will export the good produced more efficiently. The rise of TFP and productivity levels in a commodity should lead to increased trade competitiveness and higher export earnings from that commodity. The study on the determinants of competitiveness in spice commodities will be described briefly below.

Table 3. Recent research on trade competitiveness in spices

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Authors</th>
<th>Commodities studied</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Batra &amp; Khan 2005</td>
<td>Spice exports from India (Aggregated and disaggregated levels)</td>
<td>RCA</td>
</tr>
<tr>
<td>2</td>
<td>Shinoj &amp; Mathur 2008</td>
<td>Spices (aggregate)</td>
<td>RCA</td>
</tr>
<tr>
<td>3</td>
<td>Burange &amp; Chaddha 2008</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>4</td>
<td>Nagoor 2010</td>
<td>Black pepper, cardamom</td>
<td>RCA Export Unit Value</td>
</tr>
<tr>
<td>5</td>
<td>Rajur &amp; Patil 2013</td>
<td>Chilli</td>
<td>NPC</td>
</tr>
<tr>
<td>6</td>
<td>Lakra et al. 2014</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>7</td>
<td>Idris et al. 2015</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>8</td>
<td>Karthick et al. 2015</td>
<td>Ginger</td>
<td>NPC</td>
</tr>
<tr>
<td>9</td>
<td>Soumya et al. 2015</td>
<td>Cumin</td>
<td>NPC</td>
</tr>
<tr>
<td>10</td>
<td>Suresh &amp; Mathur 2016</td>
<td>Spices</td>
<td>RCA Producer prices</td>
</tr>
<tr>
<td>11</td>
<td>Jagadambe 2016</td>
<td>Spices</td>
<td>RCA Index Trade Intensity Index</td>
</tr>
<tr>
<td>12</td>
<td>Jambor et al. 2018</td>
<td>Spice traded from multiple countries</td>
<td>RCA</td>
</tr>
<tr>
<td>13</td>
<td>Meena et al. 2018</td>
<td>Seed spices</td>
<td>Export Growth Rate</td>
</tr>
<tr>
<td>14</td>
<td>Sunil &amp; Nair 2018</td>
<td>Spices</td>
<td>Econometric model</td>
</tr>
<tr>
<td>15</td>
<td>Kaur Arvinder 2018</td>
<td>General trade</td>
<td>Factor analysis and composite index</td>
</tr>
</tbody>
</table>

Recent research on trade competitiveness in spices

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Authors</th>
<th>Commodities studied</th>
<th>Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Batra &amp; Khan 2005</td>
<td>Spice exports from India</td>
<td>RCA</td>
</tr>
<tr>
<td>2</td>
<td>Shinoj &amp; Mathur 2008</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>3</td>
<td>Burange &amp; Chaddha 2008</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>4</td>
<td>Nagoor 2010</td>
<td>Black pepper, cardamom</td>
<td>RCA Export Unit Value</td>
</tr>
<tr>
<td>5</td>
<td>Rajur &amp; Patil 2013</td>
<td>Chilli</td>
<td>NPC</td>
</tr>
<tr>
<td>6</td>
<td>Lakra et al. 2014</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>7</td>
<td>Idris et al. 2015</td>
<td>Spices</td>
<td>RCA</td>
</tr>
<tr>
<td>8</td>
<td>Karthick et al. 2015</td>
<td>Ginger</td>
<td>NPC</td>
</tr>
<tr>
<td>9</td>
<td>Soumya et al. 2015</td>
<td>Cumin</td>
<td>NPC</td>
</tr>
<tr>
<td>10</td>
<td>Suresh &amp; Mathur 2016</td>
<td>Spices</td>
<td>RCA Producer prices</td>
</tr>
<tr>
<td>11</td>
<td>Jagadambe 2016</td>
<td>Spices</td>
<td>RCA Index Trade Intensity Index</td>
</tr>
<tr>
<td>12</td>
<td>Jambor et al. 2018</td>
<td>Spice traded from multiple</td>
<td>RCA</td>
</tr>
<tr>
<td>13</td>
<td>Meena et al. 2018</td>
<td>Seed spices</td>
<td>Export Growth Rate</td>
</tr>
<tr>
<td>14</td>
<td>Sunil &amp; Nair 2018</td>
<td>Spices</td>
<td>Econometric model</td>
</tr>
<tr>
<td>15</td>
<td>Kaur Arvinder 2018</td>
<td>General trade</td>
<td>Factor analysis and composite index</td>
</tr>
</tbody>
</table>
Productivity (TFP) can raise the export competitiveness of agricultural commodities including spices (Suresh & Mathur 2016). The government can also influence the level of trade competitiveness indirectly through its policy interventions in currency exchange rates (Bautista & Valdes 1993). One such indirect route espoused is through the exchange rate policies. The exchange rate affects the export competitiveness both directly and indirectly (Schiff & Valdes 2002). This means that a currency devaluation could boost, at least in the short run, the exchange prospects of spice commodities. This indirect influence is especially strong in developing countries, where the share of agricultural exports is significant.

Price competitiveness is established as one of the key prerequisites for trade competitiveness in horticultural commodities including spices (Sengupta & Roy 2011) while they also hint at the significant influence of non-price factors in determining overall trade competitiveness. The producer prices of several agricultural commodities in India has remained competitive even after the period of liberalization (Suresh & Mathur 2016). Though India has raised its output and productivity in several spices, the growth in export volumes has not mirrored this growth. However, Jambor et al. (2018) concluded that productivity enhancements in land and labour inputs could positively influence competitive advantage in spice export trade. The high expenditure elasticity of spices (Joshi & Kumar 2016) could mean that the rising per capita income could lead to more domestic demand for spices leading to a reduction in exportable surplus.

The export trade stability and trade direction in spices sector has also received considerable attention among economists. Stability in exports can contribute to export competitiveness. Export trade stability is also important for the exporting countries to implement long-term policy interventions in the export sector. Joshi et al. (2015) using the Markov chain approach analysed the stability of Indian spice exports and found that the level of spice export stability was highly variable across export destinations. A similar study for Indian turmeric had been done by Naik & Hosamani (2013) which suggested the use of the results from Markov chain analysis for targeting stable export destinations for strengthening export profile. The Markov Chain model seems to be the economic model of choice for the analysis of export stability of agricultural commodities like spices (Kumar & Muraleedharan (2007); Angles et al. 2011; Sivasankari & Rajesh (2014); Joshi et al. 2015). The trade competitiveness of spices, like other agricultural commodities, can be sustainable only if continuous efforts are made in technology upgradation, production efficiency enhancement and sustenance of cost advantages.

The sources of supply for spices have diversified over the decades and India faces stiff competition from other countries for marketing its produce. The emergence of alternate sources of global supply of spices has implications for competitiveness of Indian spice exports. The changes in global export sources of selected spices for the five-year period ending 1990 and 2016 is given in Table 4.

For spices like black pepper and ginger, India’s share in quantity exported from top five export sources has declined whereas it has increased for seed spices group of anise, fennel and coriander. India has also been able to enhance its position in the commodity group consisting of nutmeg, mace and cardamoms. The changes in export sources also indicate the sources of export competition for each commodity.

Volatility of farm harvest, domestic and export prices have been found to move together in spices like black pepper (Hema et al. 2007) and this indicates that domestic price volatility could affect export competitiveness also. The domestic price volatility has also been found to affect the volatility of export in commodities like onion (Paul et al. 2015) indicating that the competitiveness of a country could be significantly affected by domestic price volatility. The availability of sufficient exportable surplus is a pre-requisite for spice export trade. The efficiency and productivity of the domestic spice production system influences the creation of an exportable surplus. There is significant yield gap in several spice crops at the national level and it was found to account for a production deficit of about 50,000 tonnes of black pepper during 2013-
Table 4. Changes in global supply of selected spice commodities

<table>
<thead>
<tr>
<th>Spice</th>
<th>1986-1990</th>
<th></th>
<th>Country</th>
<th>Quantity (tonnes)</th>
<th>2012-2016</th>
<th></th>
<th>Country</th>
<th>Quantity (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quantity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>India</td>
<td>Vietnam</td>
<td>38,709</td>
<td>136,841</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indonesia</td>
<td>Indonesia</td>
<td>38,490</td>
<td>51,285</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Singapore</td>
<td>Brazil</td>
<td>29,201</td>
<td>32,624</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brazil</td>
<td>India</td>
<td>26,046</td>
<td>30,784</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malaysia</td>
<td>Singapore</td>
<td>20,633</td>
<td>16,217</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>India's share</td>
<td>25.3%</td>
<td>11.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ginger</td>
<td>Singapore</td>
<td>14,389</td>
<td>China</td>
<td>12,391</td>
<td></td>
<td>409,926</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>China</td>
<td>Netherlands</td>
<td>7504</td>
<td>36,668</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>India</td>
<td>Thailand</td>
<td>6645</td>
<td>31,998</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thailand</td>
<td>India</td>
<td>6638</td>
<td>31,132</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Indonesia</td>
<td>Nepal</td>
<td>20,633</td>
<td>30,305</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>India's share</td>
<td>15.8%</td>
<td>5.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anise</td>
<td>Egypt</td>
<td>13,407</td>
<td>India</td>
<td>12,391</td>
<td></td>
<td>184,313</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fennel</td>
<td>Iran</td>
<td>13,387</td>
<td>Syria</td>
<td>7504</td>
<td></td>
<td>28,835</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coriander</td>
<td>Morocco</td>
<td>10,725</td>
<td>Bulgaria</td>
<td>6645</td>
<td>21,805</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turkey</td>
<td>9402</td>
<td>Russian Federation</td>
<td>6638</td>
<td>21,573</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>970</td>
<td>Egypt</td>
<td>20,633</td>
<td>14,140</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>India's share</td>
<td>2.0%</td>
<td>India's share</td>
<td>15.8%</td>
<td>68.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutmeg</td>
<td>Guatemala</td>
<td>10,371</td>
<td>Guatemala</td>
<td>10,725</td>
<td></td>
<td>32,814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mace and</td>
<td>Indonesia</td>
<td>6801</td>
<td>Indonesia</td>
<td>9402</td>
<td></td>
<td>21,400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardamoms</td>
<td>Singapore</td>
<td>5055</td>
<td>India</td>
<td>10,134</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grenada</td>
<td>2330</td>
<td>Nepal</td>
<td>1481</td>
<td>4072</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>1481</td>
<td>UAE</td>
<td>14,400</td>
<td>3546</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>India's share</td>
<td>5.7%</td>
<td>India's share</td>
<td>2.0%</td>
<td>68.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: FAOSTAT
The gap between achievable yield and realized yield in seed spices is also considerable (Lal 2018). The high level of yield gap in spices is a latent potential for the Indian spices sector since domestic availability and exportable surplus can be enhanced through focused efforts for effective technology dissemination.

**Barriers to spice trade**

Trade barriers are considered as increasingly important in determining the extent of global agricultural trade (Roberts et al. 1999). Quality and safety standards are gaining importance in determining the export competitiveness of agricultural commodities since 1990's (Aquila & Caccamisi 2007). Spices being one of the most traded agricultural commodities, understanding trade barriers in international trade could offer better insights on the policies for enhancing global trade share. Trade standards and trade regulations are two aspects which are gaining importance due to their potential use as a trade barrier. The inappropriate use of both trade standards and trade regulations (a document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions) can lead to increased trade inefficiency. Trade standards are defined as “a document approved by a recognised body that provides, for common and repeated use, rules, guidelines or characteristics for goods or services, or related processes and production methods” (UNECE 1998). In the context of the globalized trade, both non-tariff measures and non-tariff barriers are important. Though used interchangeably, there is a subtle difference between the two terms. Non-tariff measures are permissible under WTO to achieve specific and legitimate objectives. A non-tariff measure becomes a non-tariff barrier when it is used to impede trade rather than to achieve a specific legitimate objective.

Though the tariff levels have eased during the last two decades, agricultural commodities continue to be more susceptible to trade barriers (Bown & Crowley 2016). The non-tariff measures have been proliferating and the lack of transparency associated with their use poses new challenges as they act as non–tariff barriers (Hooker & Caswell 1999). Several studies analysing of the level of tariffs and their effect on agricultural commodities including spices trade mainly use classical analytical techniques as seen in Gulati & Sharma (1994), Rao (2001) and Gulati (2002). Non-tariff barriers also play an increasingly important role in agricultural trade and in commodities like spices. These barriers can significantly affect trade variables and create trade frictions between nations (Disdier & Tongeren 2010). The non-tariff barriers take various forms like import licensing, rules of origin, sanitary and phytosanitary rules, import quotas, technical barriers, etc. The study by Disdier et al. (2008) indicated that the imposition of non-tariff barriers significantly reduced the volume of agricultural exports from developing countries to OECD countries. Hooker & Caswell (1999) studied the role of SPS measures in restricting trade flows between countries. Similar to agricultural commodities, the major non-tariff barrier to trade in spices include technical barriers to trade (TBT) and sanitary and phytosanitary measures (SPS) (Henson & Loader 2001). Packaging, and labelling requirements along with SPS rules, though classified as non-protectionist policies (Deardorff 2012), significantly affected spice trade from India. Studies by Muthupandi et al. (2018) and Rajur & Patil (2013) on trade barriers in chilli exports identified the lack of uniformity in food safety standards among the importing countries. This coupled with issues related to pesticide residues created significant barrier for trade in the commodity. The SPS measures and most of the labelling and packaging requirements have food safety as their justification. Research on food safety aspects in spice trade requires a separate analysis in this context. The export rejections have always remained a significant issue associated with spices exports from India. This is more important in case of exports to European Union, which has one of the most stringent terms of regulations on imported products (Jaffee & Henson 2005).

**Food safety issues in spice trade**

Though spices are consumed in small quantities, they are used in a wide range of food products and therefore constitute a unique segment within the food sector (Szekacs et al. 2018). The usage of...
spices and herbs by consumers is increasing, because these products are appreciated as completely natural ingredients, rather than artificial additives. The rise in exports of agricultural commodities from India and the increasing consumer awareness at the domestic level and across the globe has acted as important drivers for increased attention to food safety in India (Umali Deininger & Sur 2007). The spice trade network is one of the most complex among the agricultural-food trade networks and has several features, which makes it substantially vulnerable (Lakner et al. 2018). The rapidly growing trade volume also means that the mechanisms for direct oversight by the importing countries could be compromised and the consumers could be at risk (Buzby & Roberts 2010). Idris et al. (2015) undertook a detailed study on the impact of food safety standards imposed by USA and the European Union on horticultural exports from India including spices and found that spices were among the commodities most affected due to non-compliance with required food safety parameters. However, a study by Kumar & Muraleedharan (2007) finds little evidence for SPS standards adversely affecting India’s export trade of black pepper and capsicum to OECD countries. They suggested that the global demand supply scenario is the dominant factor determining trade volume. Henson et al. (1999) finds that there is lack of unity among the major producing countries with respect to SPS standards and by creating a consensus among these countries, some of the constraints related to SPS measures could be addressed. The developed countries have also progressively raised the bar for food safety and quality which are very difficult to attain for most of the developing countries leading to their exclusion from the export markets (Wilson & Otsuki 2003).

The sanitary and food safety parameters and border clearance issues are the most common hindrances for spices exported from India to EU. A detailed analysis of export rejections of spices and herbs from other countries to EU and United States for the period 2002 to 2008 (Henson & Olale 2011) is illustrative of the magnitude of the problem faced by India. The average rejections were 38.9 for EU whereas it was 194.9 for the US. The rejection rate (Number of rejections per million USD) was 0.208 for EU and 1.666 for US for the period 2006-08. According to the study, in terms of unit rejection rate also, India fared poorly among developing countries. Kumar (2016) analysed the pattern of notifications issued on Indian spice exports by export destinations in European Union based on the data from the Rapid Alert System for Food and Feed (RASFF). He identifies a gradual increase in the number of notifications over 2001 to 2014 with an average of 28 notifications per year during the first 7 years and 53 notifications per year during 2008-14. Apart from increased monitoring of the agricultural imports, the increased vulnerability of spices and herbs to contamination has led to interventions like “Securing the spices and herbs commodity chains in Europe against deliberate, accidental or natural biological and chemical contamination” (SPICED) to address the challenges of food safety (European Commission 2013).

Based on a study on the export value chain in Indian black pepper Aarathi et al. (2018) contend that dissemination of knowledge on Good Agricultural Practices (GAP) among the primary producers holds the key to meet the food safety challenges along the value chain. There are evidences of imposition of trade restrictions under the guise of health concerns (Peterson et al. 1988). The safety of spices also can be compromised due to economically motivated adulteration along the complex supply chains (Galvin-King et al. 2018) which necessitates deployment of quick detection methods for adulteration. A comprehensive review of the cost of compliance and coping strategies necessitated by stringent product standards in high value food products like spices was done by Jaffee (2005). This study identified the lack of harmonization of international standards (which added cost for exporters) as one of the major hurdles for Indian spice exports. Spices Board has taken up the issue of the permissible average daily intake of certain chemicals and chemical compounds in spice commodities before the Pesticide Residue Committee of Codex Alimentarius Commission. The argument calls for differential treatment of spices in matters of food safety since spices constitute a very miniscule proportion of the servings of food and hence the Maximum Residue Limits (MRLs) fixed
for directly consumed agricultural products cannot be applied to spices (Das 2008). In short, it is important to examine the legitimate objective behind standards applied on India’s spice exports and analyse the risk of non-fulfilment. Such risks should commensurate with the effort involved to meet the standard as well as the compliance costs (Mehta et al. 2003).

The growth of trade in organic spices can also be understood in the backdrop of concern for food safety since it is one of the factors (along with inter alia higher income, urbanization and perceptions regarding quality) which has influenced the demand for organic products (Regmi 2001). There is a growing global demand for organic spices with an annual growth rate of about 20% and the price premiums have been observed to be between 10-30% (Parthasarathy et al. 2008). This is another area where spice trade, where higher value realization is possible along the trade value chain.

The role infrastructural facilities gain significance amid increasing concerns of food safety. Detailed audits of physical facilities in the country along the procurement, handling, processing, and packing processes need to be undertaken for ensuring food safety. With regard to trade with the USA the suppliers of spices are asked to address a set of food security concerns including access to factories and laboratories and preventive measures against product tampering and tracking to ensure safety of the food materials like spices (Jaffee 2005). The development of state of the art processing and handling facilities for spices can enhance the capability of the country to address the food safety concerns while enhancing its reputation as a source of safe spices.

**Research gaps and future directions**

Indian spices have created a niche for itself through its historical allure and attributed quality parameters. Spice export trade has been subjected to considerable analysis for its growth, trade direction and competitiveness. However, some of the focus on these areas of spice trade analysis have come at the cost of scanty information with respect to the developmental

---

**Table 5. Information gaps in research on spice trade**

<table>
<thead>
<tr>
<th>Research gap</th>
<th>Area of application and utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on the specific impact pathways and quantification of spice trade expansion to producer welfare</td>
<td>• Spice sectoral development policy</td>
</tr>
</tbody>
</table>
| Linkage between domestic productivity gains and export competitiveness | • Research investment prioritization
• Regional crop planning |
| Returns to investment in crop specific export promotion schemes for spice crops | • Crop specific policy design for export promotion |
| Optimizing spice export portfolio for sustainable growth in spice exports | • Export facilitation
• Export portfolio planning |
| In-depth analysis of underlying factor influencing RCA in spices export | • Targeted development programmes for enhancing competitiveness |
| Role of Total Factor Productivity (TFP) in changes in export competitiveness and exportable surplus | • Study impact of technology investments |
| Factors underlying demand fluctuations in export destinations | • Export capacity planning
• Trade intelligence analysis |
| Movement of terms of trade in spice exports with various regions/economies | • To understand the relative competitiveness of spices for policy planning |
linkages of the spice export sector with the general economy. The spices export sector in the country has developed by leveraging the demand rather than any detailed planned approach. The increased forces of competition and nature of the emerging regulatory scenario across the major export destination economies necessitate astute planning in the developmental process in spices export sector. The portfolio approach for Indian spices export using mean variance optimization (Rao 2013) indicates a step in this direction. We have identified some of the key missing themes in the research narrations focusing on spices. Table 5 summarizes the identified gaps in information with respect to Indian spice export trade and the utility of such information.

Spice export trade constitutes an important segment of the Indian agricultural exports, but there are significant gaps in information either in case of individual crops or the spice export sector. The identified gaps need to be addressed by researchers to ensure better planning and inclusive development of the sector.

Spice crops are treated as crops with an export orientation even though the domestic market consumes nearly 90% of the total spices production in the country. With increasing evidence that regions within the country which diversified into export-oriented crops fared much better in terms of agricultural development (Pingali et al. 2019), spice export trade is of significance for agricultural development in the country. Research on spice export trade has mostly concentrated on analysing the past performance of the sector or individual crops within the sector, and a few of them offered an analysis of the underlying factors. The issues covering barriers to spice trade and food safety concerns regarding spices have also been examined in substantial detail at the global level. The urgent need for coordination of production effort with demands of the global value chains, while remaining cost competitive through reductions in transaction and organizational cost (Sengupta & Roy 2011; Pingali et al. 2019) is perceptible across the studies. The efforts for bringing in transformational change in spices trade through policy interventions should make conscious efforts to avoid market distortions. Apart from addressing the challenges arising from regional and multilateral trade agreements, the sectoral policies should address inter alia, investment facilitation in technology development for post-harvest technologies, promotion of good agricultural practices in primary production, sustainable cost effectiveness across products, trade portfolio planning at the macro level, efforts for harmonization of trade standards across destinations and development of actionable trade intelligence services.

References


European Commission 2013 Securing the spices and herbs commodity chains in Europe against deliberate, accidental or natural biological and chemical contamination. http://spiced.linux17.webhome.at/the-project/

FAO (Food and Agriculture Organization) 2003 Trade reforms and food security: Conceptualizing the linkages. Commodities and Trade Division, Food and Agriculture Organization of The United Nations, Rome. pp.315.


ITC (International Trade Centre) 2018 These are the world’s three most traded spices. ITC News, 06 February 2018. http://www.intracen.org/news/.


