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**India's Exports of Food Products:
Food Safety Related Issues and Way
Forward**

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Abstract

Since independence, India has come a long way from being a food-deficit to a food surplus country. With its varied agro-climatic conditions and large production base, the country has become a leading exporter of fresh and processed food products. The Indian government is keen to promote exports of fresh and processed food products and, in recent years, the government has come up with several reforms and schemes to support exports. The Indian government is also undertaking policies and schemes for supporting sustainable agriculture practices and is encouraging organic farming.

Despite these efforts, Indian exporters of agricultural products continue to face rejections and bans in key markets and most of these are related to non-compliance with food safety and health standards. Such non-compliance is because of several reasons including pest infestations, presence of chemical residues that are banned by the importing country's national food law, higher than maximum approved levels of chemical residue and food contamination due to germination of bacteria. Rejection and/or bans have not only led to loss of income for exporters, farmers and processors, but also loss of market to exporters from other developing countries who are able to meet the food safety and health standards of importing countries.

Given this background, this study, based on secondary information analysis and a primary survey, tries to identify the food safety barriers that Indian exports face in key export markets, the reasons for such barriers and the impact of these on exporters and farmers. Based on the survey findings, the study lists three key strategies to address these barriers. These include (a) implementing domestic reforms (b) bilateral discussions with trading partners, mutual collaborations and knowledge sharing, addressing the issue through mutual recognition in bilateral trade agreements, etc., and (c) raising the issue in multilateral forums such as the WTO.

Keywords: *food safety, food products, sanitary and phytosanitary, export, India, World Trade Organization*

JEL classification: *Q17, Q18, F13, C83*

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List of Abbreviation

AIREA	All India Rice Exporters Association
APEDA	Agricultural and Processed Food Products Export Development Authority
APMC	Agricultural Produce Market Committee
ccc	chlormequat chloride
CII	Confederation of Indian Industry
DGCI&S	Directorate General of Commercial Intelligence and Statistics
DoC	Department of Commerce
E. coli	Escherichia coli
EC	European Commission
EFSA	European Food Safety Authority
EIC	Export Inspection Council
EU	European Union
EUROPHYT	European Union Notification System for Plant Health Interceptions
FDA	Food and Drug Administration
FDI	foreign direct investment
FICCI	Federation of Indian Chambers of Commerce & Industry
FMD	foot and mouth disease
FSSAI	Food Safety and Standards Authority of India
FTPA	Foreign Trade Performance Analysis
GAP	good agricultural practices
GATT	General Agreement on Tariff and Trade
HACCP	Hazard Analysis and Critical Control Point
HTST	high temperature short-time pasteurisation treatments
INR	Indian Rupee

IOPEPC	Indian Oilseeds & Produce Export Promotion Council
IPT	Integrated Pest Thermography
MAFF	Ministry of Agriculture, Forestry and Fisheries
MRA	mutual recognition agreement
MRLs	maximum residue limits
NABL	National Accreditation Board for Testing and Calibration Laboratories
NCCD	National Centre for Cold-chain Development
NITI Aayog	National Institution for Transforming India
OASIS	Operational and Administrative System for Import Support
OIE	Office International des Epizooties
PB	Pusa Basmati
ppm	parts per million
RASFF	Rapid Alert System for Food and Feed
SITC	Standard International Trade Classification
SPS	sanitary and phytosanitary
STCs	specific trade concerns
UAE	United Arab Emirates
UHT	ultra high temperature
UK	United Kingdom
UKIBC	UK India Business Council
US	United States
USD	United States Dollar
WITS	World Integrated Trade Statistics
WTO	World Trade Organization

India's Exports of Food Products: Issues and Way Forward

Tanu M. Goyal, Arpita Mukherjee and Avantika Kapoor

1. Introduction

Since independence, India has come a long way from being a food-deficit to a food surplus country.¹ With its varied agro-climatic conditions and large production base for cereals, pulses, oilseeds, fruits, vegetables, dairy, poultry and meat products, the country has become a leading exporter of fresh and processed food products. Today, India is one of the largest producers of milk, rice, groundnuts and various fruits and vegetables such as mangoes and eggplant.² Given these advantages, India is now exporting fresh and processed food products to a number of developed and developing country markets including the United States (US), the European Union (EU), Vietnam and the Middle Eastern countries. India has a positive trade balance in this sector, which is an important contributor to India's trade earnings. According to the World Trade Organization (WTO), in 2015, India was the 9th largest exporter of agricultural products after the EU, the US, Brazil, China, Canada, Indonesia, Thailand and Australia.³

The Indian government is keen to promote food processing and exports of fresh and processed food products. In recent years, the government has come up with several policies and schemes to support agricultural product exports. For example, in the Foreign Trade Policy 2015-20, the government has focused on extending incentives to promote exports of agricultural products that integrate with the 'Make in India' initiative.⁴ The Ministry of Food Processing Industries is in favour of allowing foreign direct investment (FDI) in food retailing and the government has allowed FDI in horticulture. To improve farmers' incomes, in March 2017, the Cabinet Committee on Economic Affairs, chaired by the Prime Minister, removed the quantitative ceilings on organic product exports, allowing unrestricted exports of organic agricultural and organic processed products irrespective of any existing or future restriction/prohibition on the export of conventional (non-organic) products.⁵

¹ Hoda and Gulati (2013)

² Annual Report of the Ministry of Food Processing Industries for 2014-15 accessible at http://mofpi.nic.in/sites/default/files/annualreport201415eng.pdf_0.pdf (accessed on June 21, 2017)

³ For details see WTO's World Commodity Profile, 2016 accessible at https://www.wto.org/english/res_e/statis_e/world_commodity_profiles16_e.pdf. The data given by the WTO corresponds to a calendar year while the data released by the Indian government departments is for a financial year. Thus, there can be minor discrepancies in the data from these two sources. Further, there can be variations in the classification of agricultural commodities and what have been included in the sector.

⁴ For details see <http://www.financialexpress.com/economy/narendra-modi-govt-unveils-its-first-trade-policy-targets-900-bn-in-exports/59535/> (accessed on June 21, 2017)

⁵ Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=160382> (accessed on June 21, 2017). However, this will not be applicable to organic pulses and lentils; in view of their shortage in the country, the quantitative ceiling on exports will continue but the limit has been increased from the existing 10,000 metric ton (MT) per annum to 50,000 MT per annum.

While there is a strong commitment from the government to promote exports of fresh and processed food products, global agricultural trade faces a number of tariff and non-tariff barriers. With the inclusion of agriculture under the General Agreement on Tariff and Trade (GATT) in the Uruguay Round of the WTO negotiations and in regional and bilateral trade agreements, tariff rates have come down. However, non-tariffs barriers continue to be an impediment to international trade in fresh and processed produce. The WTO data on notifications show increasing use of sanitary and phytosanitary (SPS) measures by WTO member countries since the mid-1990s, which acts as barrier to trade. Sometimes these measures are implemented as consumers demand higher food safety and health standards (WTO, 2012). In India, the Agricultural and Processed Food Products Export Development Authority (APEDA) has prepared a list of non-tariff barriers faced by food products in export markets, which includes lack of harmonisation of standards, different maximum residue limits (MRLs) for pesticides, drugs and other contaminants, and definitional issues,⁶ which are largely related to health and safety standards adopted by importing countries. A number of studies have shown that Indian exporters have been facing difficulties in exporting food products to key markets such as the European Union (Chaturvedi and Nagpal, 2003; Mehta, 2005; Chaudhari *et al.*, 2012; Das, 2008) and many of these are related to non-compliance with food safety and health standards. Some of these studies also refer to unreasonable food safety standards, which are often difficult for Indian exporters to comply with.

In terms of specific products, in the past, Indian exports of mangoes, table grapes, okra, peanuts, curry leaves, chillies, shrimps, prawns, and tamarind have faced rejections or bans in markets such as the US, Vietnam, EU, Saudi Arabia, Japan and Bhutan due to issues related to health and food safety standards. For instance, in the US, Saudi Arabia and Bhutan, Indian chillies were rejected and even faced temporary bans due to the presence of higher than approved levels of chemical residues.⁷ Pest infestation has also led to rejection of export consignments. For example, in the recent past, the EU had imposed a ban on import of mangoes from India due to the presence of fruit flies. Similar issues have adversely affected the exportability of other Indian agricultural products such as eggplant. This is a cause for concern, especially because such bans have both short run and long run adverse effects on exporters and farmers. In the short run, there are financial losses due to the rejection of consignments, and in the long run, exporters and farmers lose their market share to exporters from other countries that are able to meet the food safety and health standards of importing countries.

Given this background, this study tries to identify the food safety barriers that Indian exports face, the reasons for such barriers, the impact of the barriers and how such barriers can be addressed through domestic reforms, by raising the issues in the WTO and through bilateral forums. The study is based on secondary data analysis and a primary survey. Secondary information and data has been used to examine the agriculture trade pattern with a focus on

⁶ http://apeda.gov.in/apedawebsite/Databank/NTBs_July_08.pdf (accessed on August 1, 2017)

⁷ For details see <http://www.ap7am.com/lv-185946-indian-chilli-banned-in-america-nris-unhappy-as-kg-sold-for-rs1000.html>; <http://www.thehindubusinessline.com/markets/commodities/saudi-arabia-bans-indian-green-chilli/article6075698.ece>; <https://qz.com/879677/after-a-bland-new-year-bhutan-is-reversing-an-import-ban-on-indias-toxic-chillies/> (accessed on June 21, 2017)

exports, to identify the key markets, the export barriers in selected markets, etc. A primary survey of exporters was conducted to understand a) the issues they face b) their causes and effects and c) how they can be addressed to enhance exports.

The layout of the paper is as follows. The next section, Section 2, presents broad trends and patterns in India's export of fresh and processed food products. Section 3 examines the secondary data and information on SPS barriers raised by different countries on imports from India. Section 4 presents some of the issues faced by Indian exporters of fresh and processed food products in some key markets. Section 5 summarises certain domestic barriers that affect the exportability of fresh and processed food products from India and the last section, Section 6, presents the conclusions and way forward.

2. Exports of Fresh and Processed Food Products from India: Trends and Patterns

This section presents the trends and patterns in the export of fresh and processed food products from India over the last ten years. It identifies key export destinations and export products. The analysis is based on data available from the website of the Department of Commerce (DoC), Government of India. The data is collected by the Directorate General of Commercial Intelligence and Statistics (DGCI&S) (Kolkata). For international comparisons, data from the World Integrated Trade Statistics (WITS) of the World Bank is used.⁸

2.1 India's Export of Fresh and Processed Food Products

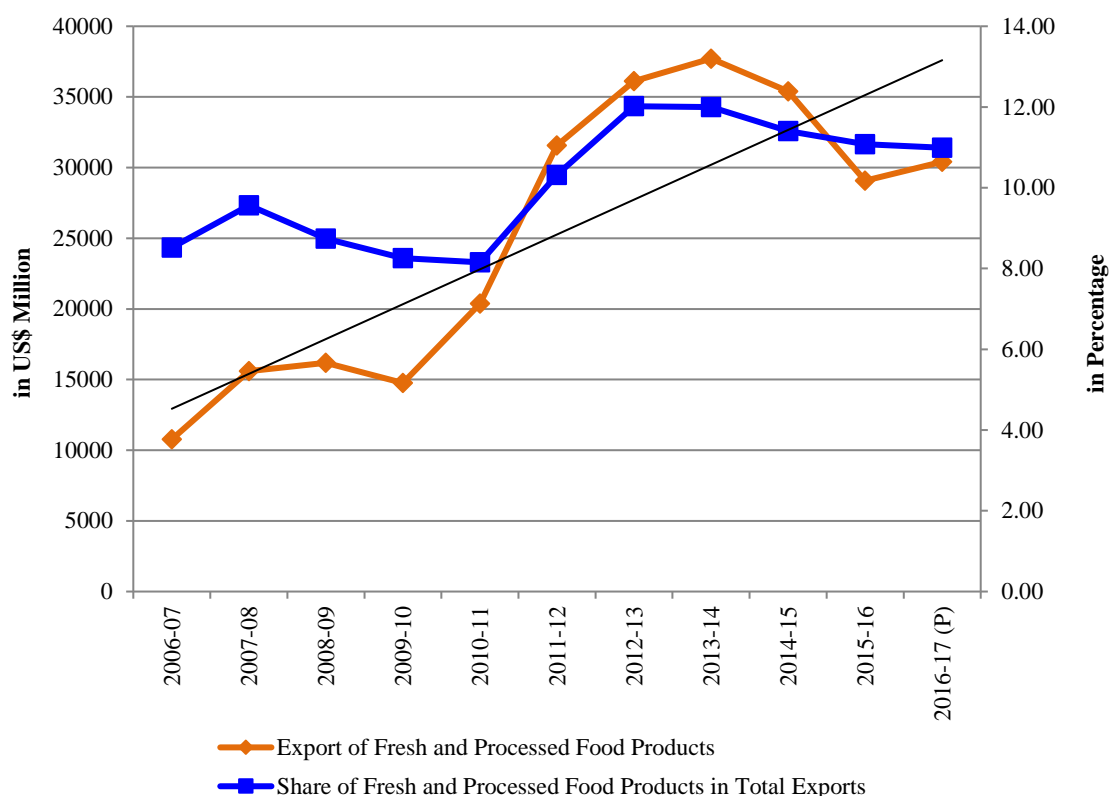
According to the DoC's Foreign Trade Performance Analysis (FTPA) data, in 2016-17, India's export of fresh and processed food products was USD 0.40 billion.⁹ The share of India's export of fresh and processed products in India's overall export basket was 11 per cent in the same year. Over the last decade, even though exports of fresh and processed products have fluctuated, overall, exports have exhibited a rising trend (see Figure 1). As seen in the figure, India's export of fresh and processed food products peaked in 2012-13 with a share of 12.02 per cent in India's total exports.

⁸ The data for top export destination is collected from WITS based on the Standard International Trade Classification (SITC), Revision 4.⁸ Under the SITC, Revision 4, the following categories are selected that match with the Foreign Trade Performance Analysis data categories:

Meat and meat preparations (01), dairy products and bird's egg (02), fish (03), cereals and cereal preparations (04), vegetables and fruits (05), sugar, sugar preparation and honey (06), Coffee, tea, cocoa, spices, and manufactures thereof (07), Miscellaneous edible products and preparations (09), non-alcoholic beverages (1110), oil-seeds and oleaginous fruits (22).

⁹ All dollar figures are in United States Dollar (USD). Fresh and processed food products include agriculture and allied products, marine products and plantation products as given under the FTPA Version 3 database of the Department of Commerce. The above calculations exclude tobacco, natural rubber, ayurvedic and herbal products, alcoholic beverages and floriculture products.

Figure 1: India's Export of Fresh and Processed Food Products (2006-2017)



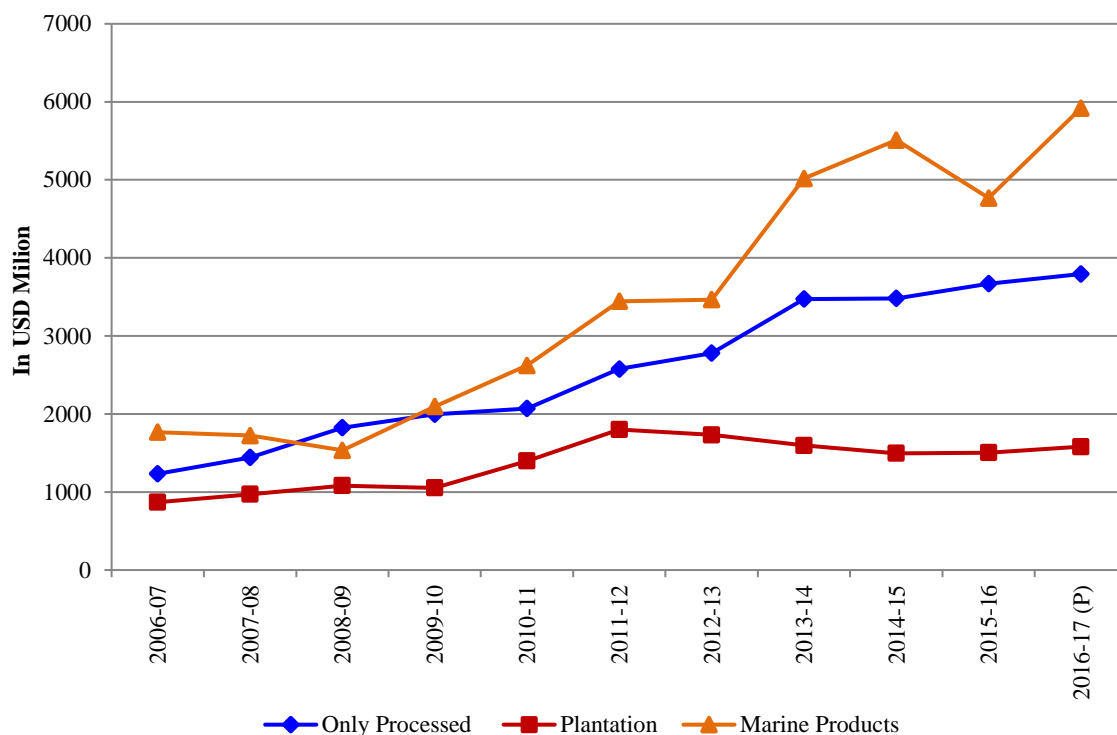
Source: Compiled from the Department of Commerce database on Foreign Trade Performance Analysis (FTPA) accessible at <http://commerce.gov.in/FTPA.aspx> (accessed on June 9, 2017).

Note: The figure for 2016-17 was provisional figures as of June 6, 2017).

As regards the export of processed food products, the DoC's FTPA database provides data for processed food products and products of allied activities, which include fruits and vegetables, seeds and other miscellaneous products.¹⁰ The data shows an increase in India's export of processed food products and products of allied activities (excluding tobacco, ayurvedic and herbal products, alcoholic beverages and floriculture crops) over the last decade with minor fluctuations (see Figure 2). Overall, there has been an increase in India's export of processed food products. There is no official data on agriculture and processed food export growth projections.

¹⁰ This does not include marine products and plantation products like tea and coffee. That data is separately listed in the database.

Figure 2: India's Export of Processed Food Products, Plantation and Marine Products (2006-2016) (in USD million)



Source: Compiled from the Department of Commerce database on Foreign Trade Performance Analysis (FTPA) accessible at <http://commerce.gov.in/FTPA.aspx> (accessed on June 9, 2017).

2.2 India's Country-wise Export of Fresh and Processed Food Products

This section is based on data collected from WITS, using the Standard International Trade Classification (SITC), Revision 4.¹¹ The data is available for the calendar year (January to December).

In 2016, Vietnam was India's largest export partner for the export of fresh and processed food products, with a share of 14.2 per cent in India's total export of fresh and processed food products. Some of the key items of export to Vietnam include meat and meat products, dairy products and bird's eggs, and oilseeds and oleaginous fruits. The US is the second largest importer, followed by the United Arab Emirates (UAE) and Saudi Arabia. The value of exports to these markets and their share in the total export of fresh and processed food products is presented in Table 1.

¹¹ See Footnote 8 for coverage of fresh and processed food products. These products have been selected as they match with the DoC FTPA data. However, in the WITS, the data is available for a calendar year (January to December) while in the DoC the data is available for a financial year (April to March). Since the two reporting periods are different, there might be slight variations in the data. Yet, the broad trends remain the same.

Table 1: Top Destinations for Fresh and Processed Food Products exported from India in 2016

Country	Exports (Million USD)	Share in Total (%)
Vietnam	3709.5	14.2
United States	2861.2	11.0
UAE	1894.4	7.3
Saudi Arabia	1404.7	5.4
Malaysia	802.6	3.1
Iran, Islamic Rep.	794.7	3.0
United Kingdom	637.1	2.4
Iraq	576.0	2.2
Nepal	569.7	2.2
Indonesia	561.9	2.2
Japan	536.8	2.1
World	26090.5	-

Source: Calculated by authors from the data available at WITS.

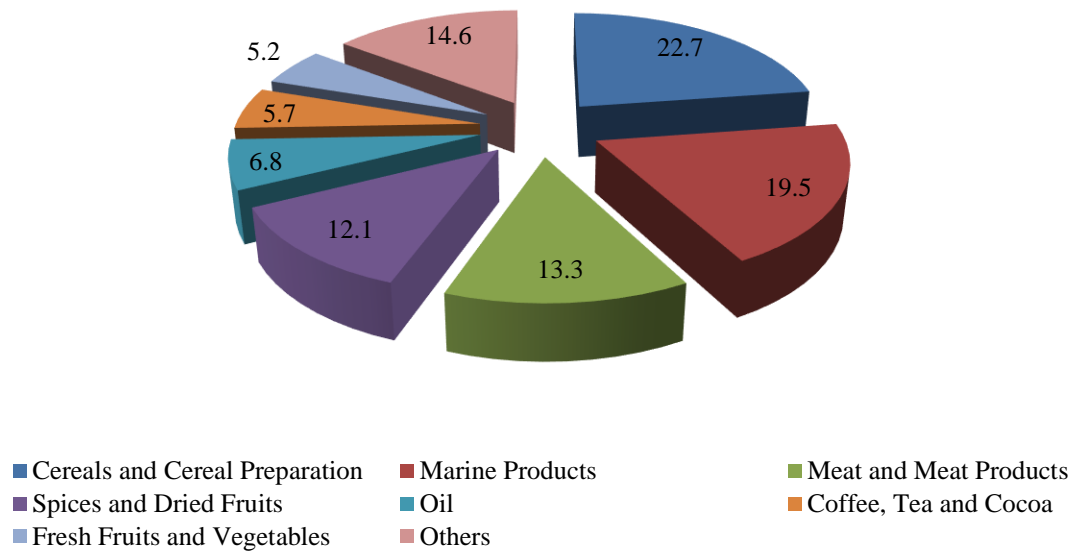
In terms of region-wise exports, the EU (including the United Kingdom (UK)) is the largest importer of fresh and processed food products from India. India's export of fresh and processed fruits and vegetables to the EU is around USD 3112.1 million. Within the EU, the highest export by value is to the UK (around USD 637.1 million) followed by the Netherlands, Italy, Spain, Germany and France.

The largest component in India's export basket for fresh and processed food products is cereals and cereal preparations (see Figure 3) – which is mostly exported to Saudi Arabia (12 per cent of India's total export of cereal and cereal preparation in 2016), followed by the UAE (11.6 per cent), Iran (8.2 per cent) and Iraq (6.7 per cent).

The second largest category of export is marine products namely fish (not marine mammals), crustaceans, molluscs and aquatic invertebrates, and preparations thereof – which is largely exported to the US (29.8 per cent of the total export of the commodity in 2016) followed by Vietnam (22.9 per cent), Japan (7.02 per cent), Spain (4.1 per cent) and Thailand (3.5 per cent).

The third largest item of export is meat and meat products, most of which is exported to Vietnam (48 per cent of the total export of the commodity in 2016), followed by Malaysia (9.04 per cent), Egypt (8.5 per cent), Saudi Arabia (5.2 per cent) and Indonesia (5.1 per cent). Other key commodities of export are spices, coffee, tea, cocoa and fruits and vegetables.

Figure 3: Share of Different Commodities in India Fresh and Processed Food Export in 2016-17



Source: Calculated and Compiled from the Department of Commerce database on Foreign Trade Performance Analysis (FTPA) accessible at <http://commerce.gov.in/FTPA.aspx> (accessed on June 9, 2017).

Note: The figures for 2016-17, as provided by the FTPA database are provisional. The categories are aggregated to fit the broad product classification and match the SITC Revision 4 classification, which is used for bilateral trade analysis. The category 'Others' include seeds, edible oil and other processed products.

Overall, the country-wise export data shows that fresh and processed agricultural products are exported to a number of developed and developing countries. In this regard, India's exports of fresh and processed food products are well-spread across different countries. This also implies that while exporting food products, India has to follow the standards and requirements laid down by all its importing partners.

Even though there are international standards such as the standards laid down by the Codex Alimentarius Commission (known as the Codex Alimentarius standards), often countries, especially developed countries, tend to have their own national/domestic standards, which are more stringent than international standards. In most countries, these standards are equally applicable to domestic market and imports and are imposed to protect their consumers against potential health threats arising from the consumption of certain types of food products (for example, see Nielsen and Anderson, 2001). Studies have also shown that rigid food safety and health standards can act as a major non-tariff barrier to exports from developing countries such as India (Henson *et al* (2000); Das (2008)). However, there are not many studies on food safety related issues faced by exports from one developing country such as India to another such as Vietnam. Given that India's exports are diversified across developed and developing country markets, and, of late, Indian exports are facing issues even in developing country markets, it will be interesting to identify food safety issues raised by different markets.

3. Raising Issues Related to Food Safety and Health Standards: Evidence from Secondary Sources

According to the WTO's Agreement on the Application of Sanitary and Phytosanitary Measures (known as the "SPS Agreement"), every country has the right to set and implement food safety and health standards provided they are based on scientific justification and are implemented to protect human, animal or plant life. The agreement states that regulations should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail. The SPS Agreement also sets out the basic rules for food safety, and animal and plant health standards, which WTO member countries, including India, follow. If a member country feels that the importing country has implemented measures that are not based on scientific justification, it can raise the issue in the WTO's Committee on Sanitary and Phytosanitary Measures (the SPS Committee).

Further, the WTO member countries are encouraged to use international standards, guidelines and recommendations, where they exist. Specifically, the agreement encourages harmonisation on the basis of standards, guidelines and recommendations set by three international organisations, including the Codex Alimentarius Commission, the International Office International des Epizooties (OIE), and the relevant international and regional organisations operating within the framework of the International Plant Protection Convention (see the text of the WTO SPS Agreement). Article 12 of the SPS Agreement established the Committee on Sanitary and Phytosanitary Measures to provide a regular forum for consultation, implement the provisions of the Agreement and further the objective of harmonisation of standards across countries.

It is important to note that globally acceptable standards such as the Codex Alimentarius standards can be higher than the national requirements of developing countries such as India for specific products such as dairy and governments may choose to have a lower standard. However, if countries align themselves to globally acceptable standards such as the Codex Alimentarius standards, then it is likely that a majority of the SPS issues in international trade could be resolved. The bigger concern is that, time and again, many countries, especially developed countries, impose more stringent standards than international standards with a view to protect their nations against potential health threats arising from the consumption of certain types of food products originating in developing countries (Nielsen and Anderson, 2001), which can act as a major non-tariff barrier to exports from developing countries (Henson and Loader, 2000) such as India. India has small farm sizes, and poor farmers. While these farmers are keen to export, they may not have the right technology and training or access to the right inputs, including seeds and fertilisers, which could enable them to meet the conditions imposed by importing countries.

In terms of reporting of product rejections, the EU and some countries such as the US, Australia and Japan have established a fairly robust system of reporting the reasons for interception/rejection/withholding of consignments from exporting countries. For instance, in the case of the EU, risk communication is done through two main portals – Rapid Alert System

for Food and Feed (RASFF)¹² and European Union Notification System for Plant Health Interceptions (EUROPHYT).¹³ The RASFF provides food and feed control authorities with an effective tool to exchange information on measures taken to eliminate serious risks detected in relation to food or feed. This exchange of information helps EU member states to act rapidly and in a co-ordinated manner in response to a health threat caused by food or feed. EUROPHYT is a notification and rapid alert system dealing with interceptions of consignments of plants and plant products (including fruits and vegetables) imported into the EU or being traded within the EU itself for plant health reasons.

In the case of the US, the Food and Drug Administration (FDA) releases the Import Refusal Report, which gives details of those products that were refused admission into the US. The report is generated from data collected by FDA's Operational and Administrative System for Import Support (OASIS) and is updated monthly.¹⁴ In Australia, the Department of Agriculture and Water Resources releases a monthly report called the 'failing food report' that lists products (country-wise) that pose a high or medium risk to public health.¹⁵ In Japan, the Ministry of Health, Labour and Welfare releases a monthly statement on cases of violation of their Food Sanitation Law, along with the details of the exporting country, product and the Article of the Food Sanitation Law, which has been violated.¹⁶

Using these sources, the issues faced by Indian exports in selected markets are examined below.

In the year 2016, the India's share in EU's imports of fresh and processed food products was 2.9 per cent, which was lower than that of other developing countries including Brazil (7.8 per cent), China (4.9 per cent), Turkey¹⁷ (4.5 per cent) and Vietnam (3.4 per cent).¹⁸ As shown in the Table 2, India has a larger number of notifications raised by the EU on its RASFF portal as compared to other selected exporting countries. Border rejections as a percentage of total notifications raised are the highest for India, when compared to other developing countries. Moreover, severe consequences of these notifications such as destruction of consignment, was also the highest in the case of India. Thus, not only are Indian exports facing more rejections compared to the volume of trade, the country is definitely in a disadvantageous position vis-à-vis its competitors from other developing countries in the EU market.

¹² For details see https://ec.europa.eu/food/safety/rasff_en (accessed on June 21, 2017)

¹³ For details see https://ec.europa.eu/food/plant/plant_health_biosecurity/europhyt_en (accessed on June 21, 2017)

¹⁴ For details see <https://www.fda.gov/forindustry/importprogram/importrefusals/default.htm> (accessed on June 21, 2017)

¹⁵ For details see <http://www.agriculture.gov.au/import/goods/food>; <http://www.agriculture.gov.au/import/goods/food/inspection-compliance/failing-food-reports> and for a sample report see <http://www.agriculture.gov.au/SiteCollectionDocuments/biosecurity/import/food/failing-food-reports/failing-food-january2017.pdf> (accessed on June 21, 2017)

¹⁶ For details see <http://www.mhlw.go.jp/english/topics/importedfoods/> (accessed on June 21, 2017)

¹⁷ According to the International Statistical Institute, in 2017, Turkey continues to be in the list of developing countries. For details see <https://www.isi-web.org/index.php/resources/developing-countries> (accessed on June 21, 2017)

¹⁸ The shares are calculated using the WITS database using SITC Revision 4. For calculating the share in total import of the EU, inter-EU trade has been removed. The shares have been calculated taking into account all the exporting countries other than the EU member states.

Table 2: Number of Notifications Raised by the EU in RASFF Portal (April 1, 2005- May 31, 2017)

Country	Notifications	Border Rejections	Border Rejections in Proportion to Notifications (%)	Serious Cases	Destructions of Consignment
Brazil	1139	717	62.9	419	None
China	3374	1730	51.3	577	391
India	2240	1490	66.5	672	583
Turkey	3296	2018	61.2	874	431
Vietnam	1049	372	35.5	256	136

Source: Compiled from the WITS database and RASFF portal of the EU

As regards the EUROPHYT notifications, between 2005 and 2017 (May 31, 2017), India had the highest number of interceptions raised for the presence of harmful organisms in the plant and produce imported as compared to other developing country exporters to the EU. The interceptions for India during the period were 1,324 as compared to 452 for Brazil, 602 for China, 114 for Turkey and 922 for Vietnam. A majority of the interceptions for India were raised in the years 2012 and 2013 and these pertained to eggplant, mangoes, bitter gourd and taro (*arabi*), among others.

Over the years, the number of notifications raised by the EU against India on its RASFF portal has fluctuated. Moreover, concerns were raised for different products in different periods. For instance, in 2012, there were around 263 notifications and a large number of them pertained to shrimps, vegetables such as okra and herbs such as curry leaves. The number of notifications declined marginally to 183 in the year 2014. However, it increased to 267 notifications in 2015, a number of which were related to fish, betel leaves, sesame seeds and chilli powder. In 2016, the number of notifications declined marginally to 189.¹⁹

As regards the US, the FDA refusals for selected food products from India between January, 2014 and May, 2017 are presented in Table 3. As shown in the table, refusals are high for basmati rice, shrimp and prawns, aquaculture harvested fishery/seafood products and spices and seasoning (ground, cracked, with salt), among others.

¹⁹ Information compiled from the WITS database and RASFF portal of the EU.

Table 3: Number of FDA Refusals for Selected Product Categories

Product Category	Number of refusals				Total
	2014	2015	2016	2017 (Jan-May)	
Shrimp and prawns, aquaculture harvested fishery/seafood products	61	59	119	15	254
Basmati rice, processed and packaged	180	132	65	67	444
Rice, plain (white or polished) processed (packaged)	63	16	25	8	112
Mixed spices and seasoning with salt	37	45	66	10	158
Spices and seasoning, ground, cracked, with salt	37	81	57	27	202
Capsicums (cayenne chilli, hot peppers), whole (spice) and ground, cracked (spice)	76	59	56	6	197
Tamarind (dried or paste)	23	20	30	18	91
Tamarind (subtropical and tropical fruit)	5	11	13	5	34
Mango (subtropical and tropical fruit)	13	15	10	1	39
Mango (subtropical/tropical fruit pulp)	4	1	1	1	7
Pepper, black, whole, ground, cracked (spice)	15	16	16	14	61
Coriander, ground, cracked (spice)	8	29	5		42
Okra (fruit used as vegetable)	11	3	3		17
Peanut, shelled	7	9	2	1	19
Cinnamon, cassia, whole (spice)	3	17	1		21
Total of Selected Commodities	543	513	469	173	1698

Source: For details see <https://www.accessdata.fda.gov/scripts/importrefusals/> (accessed on July 4, 2017)

Further, as shown in Table 3, the number of FDA refusals for selected Indian products have decreased from 543 in 2014 to 469 in 2016. There are variations across products. For example, there has been a huge decline in the cases against basmati rice while the number of cases against shrimp, prawns, etc., have increased.

In 2016, Japan had a share of 2.1 per cent in India's total fresh and processed food export, making it an important trading partner. An analysis of the cases of violation released monthly by Japan's Ministry of Health, Labour and Welfare highlights a decline in the number of cases against India. In 2012, there were 64 cases of violation against India, which declined to 19 cases in 2016. Further, there has been a decline in India's share in the total cases of violation by all exporting countries. In 2012, India's share in the total cases of violation was around 6 per cent, which declined to 2.4 per cent in 2016. Thus, overall, India's performance in terms of compliance with the Japanese Food Sanitation Law has improved over time.

India's export of fresh and processed food products to Australia has been much lower compared to the EU, US and Japan with a share of only 0.7 per cent in India's total exports in the year 2016. Nonetheless, over the years, compliance of India's export products with the health and safety standards of Australia has increased. As per the January-June (2016) Import Inspection

Data report,²⁰ India is among the top three countries, after Thailand and China, with a compliance rate of 99.1 per cent. During the period, 6.6 per cent of the total lines from India were inspected at Australian borders. The total number of cases of non-compliance was 11 during this period. In 2012, there were 58 cases of non-compliant exports to Australia, which fell to 21 cases in 2016.²¹

Thus, India's experience with different trading partners has been different. In some markets, Indian exporters have faced a lower number of rejections compared to earlier periods, indicating an improvement in compliance while in others, the number of rejections continues to be large. The products that face rejections have also changed. Given this, the next section discusses some of the specific cases of non-compliance against Indian exporters and how this has affected the overall export of fresh and processed food products from India. The cases were largely identified from secondary sources such as the respective websites of key export destinations, APEDA website and media reports. To analyse their impact on exporters, farmers and other stakeholders, a primary survey was conducted. The survey examines how non-compliance with international standards affects Indian exporters and farmers adversely.

4. Barriers to Exports Related to Food Safety and Health Standards: Evidence from the Primary Survey

A survey of Indian exporters was conducted between June 2016 and January 2017 to understand their views on food safety and standards related issues in key export markets. The exporters were selected from the APEDA and other export promotion councils' databases. The list of products that faced rejections or bans in different importing countries is available from secondary sources as given in Section 3. Only exporters exporting products that have faced rejections or bans in the past were selected. Care was taken to select exporters operating across different key markets including the US, EU, Japan, Middle East and the Association of Southeast Asian Nations (ASEAN) countries.

Exporters in the National Capital Region, Mumbai, Ahmedabad, Kolkata, Pune, Bengaluru and Chennai were contacted through electronic mail, requesting them to participate in the survey and give time for face-to-face interviews. In total, completely filled-in questionnaires were received from 145 exporters (86 of whom are exporters-cum-processors/manufacturers). In-depth meetings were conducted with state government officials in selected states such as Maharashtra, Gujarat, West Bengal and Karnataka. Meetings were also held with industry associations and export promotion bodies such as the APEDA, the Indian Oilseeds & Produce Export Promotion Council (IOPEPC), Grapes Exporters Association of India, Maharashtra *Rajya Draksha Bagaitdar Sangh* (Maharashtra State Grape Growers Association), Maratha Chambers of Commerce, the Darjeeling Tea Association, All India Rice Exporters Association (AIREA), Vegetables and Fruit Exporters Association, the Federation of Indian Chambers of

²⁰ For details see the Imported Food Inspection Data Report for January to June, 2016 accessible at <http://www.agriculture.gov.au/SiteCollectionDocuments/biosecurity/import/food/ifid-jan-jun-2016.pdf> (accessed on July 7, 2017).

²¹ For the year 2017, data is available from January to April (as of July 10, 2017). As per the data, between January-April, 2017 there were 5 cases of non-compliance.

Commerce & Industry (FICCI), and the Confederation of Indian Industry (CII) to understand the issue. Further, in-depth meetings were held with 12 buyers in the UK to understand their perspective. The UK India Business Council (UKIBC) helped fix the UK meetings. Meetings were held with 10 policymakers and businesses in Bhutan with help from the Ministry of Agriculture and Forests in Bhutan.

The survey covered the perception of Indian exporters on reasons for product rejection and subsequent ban in key markets. Further, it tried to assess the impact of a ban on different stakeholders including the financial loss and the corrective measures taken to meet the importing country's requirements. The survey was based on semi-structured questionnaires and most of the questions were kept open-ended to get the views of the exporters. The survey findings are given below.

4.1 Issues in Export Destination/Key Markets

Secondary data on import refusals from different countries indicates that food products get rejected due to several reasons. These include pest infestations in the product, presence of ingredients or chemicals, which are banned by the importing country's national food law, presence of chemical residues in excess of the prescribed limits, and food contamination due to germination of bacteria, etc. Different cases related to these were inspected and their causes and effects were analysed.

- **Pest Infestation:** Pest infestation is a common issue faced by Indian food products – particularly fresh food products – which results in rejection in the importing country. Secondary data throws up several cases.

For example, Vietnam temporarily suspended the import of groundnuts from India in 2015 due to the presence of peanut beetle and Khapra beetle in export consignments.²² Russia threatened to impose a temporary ban on Indian potatoes in 2014 after the Russian authorities intercepted 23 consignments from India with pests and diseases.²³ In 2014, the EU banned the import of fresh mango, and four vegetables, namely eggplant, snake gourd, bitter gourd and taro, from India due to the persistent presence of pests such as fruit flies in mangoes and thrips in eggplant. According to survey participants, the EU imposes a ban if the incidence is more frequent and if it is of the view that no corrective actions have been taken even after repeated alerts. In the case of mangoes, 137 alerts were raised on the EUROPHYT portal between 2005 and 2015 for fresh mangoes and 108 alerts were raised for eggplant between 2005 and 2014 for the presence of pests in the shipments, prior to the ban.

While the rejection of a consignment due to the presence of pests is justifiable, imposition of a complete ban is often an extreme measure taken by the importing country, which is likely to have adverse effects on the exporting country in the long run. There is loss of

²² Source: <http://pib.nic.in/newsite/mbErel.aspx?relid=135973> (accessed on June 13, 2017)

²³ For details see http://www.business-standard.com/article/markets/russias-interception-of-pests-in-potato-consignments-threatens-agriexports-to-europe-114061700821_1.html (accessed on July 13, 2017)

revenue for exporters and loss of income for farmers in subsequent years and, more importantly, there is loss of market share, despite export competitiveness. These adverse effects persist even after the ban is lifted. For instance, although the bans such as the one on mangoes and eggplant in the EU and groundnuts in Vietnam were later lifted,²⁴ the survey participants pointed out that buyers in countries such as the UK have shifted their sourcing of products such as eggplant from Indian suppliers to suppliers from African countries such as Kenya. The buyer survey shows that they perceive that Indian eggplant consignments can be frequently rejected for the presence of thrips, silverleaf whiteflies, eggplant fruit and shoot borers and moths. Thus, although India is the second largest producer of eggplant after China, exporters find it hard to penetrate the UK market again after the ban has been lifted. This not only affects long-term relations of Indian exporters with their foreign buyers which is based on trust but also leads to a permanent loss of income.

Thus, there is a need for two-fold action – one to overcome the incidence of pest infestation and second, to overcome the ban.

Pest infestation can occur at any point in the supply chain; however, exporters pointed out that it mostly takes place at the field level. They, therefore, suggested that the issue of pest infestation should be addressed at the field level through the use of appropriate in-farm practices such as netting. It was also pointed out during the survey that due to the incidence of pest infestation, different importing countries have specified different practices to be followed before export to ensure that consignments are pest free. For instance, in the case of export of mangoes, the EU prescribes hot water treatment, the US prescribes gamma irradiation, and Japan and Australia prescribe vapour heat treatment; in South Korea, pest risk analysis²⁵ is mandatory, along with hot water treatment and vapour heat treatment.²⁶

Different prescriptions by different countries are themselves barriers for exporters as many large exporters export to more than one market, and thus, they have to adhere to different practices. Further, the infrastructure required for the products to undergo the prescription may not be available in the state where the product is produced or the exporter is located. Therefore, different consignments have to be sent to different locations for undergoing treatment. For instance, it was pointed out during the survey in Ahmedabad (Gujarat) that there is no facility for gamma irradiation treatment in Gujarat. Therefore, products have to

²⁴ For example, the ban on mangoes was lifted in January 2015 (see <http://pib.nic.in/newsite/PrintRelease.aspx?relid=114841>, accessed on July 3, 2017) and the ban on groundnuts was lifted in February 2016 (see <http://pib.nic.in/newsite/mbErel.aspx?relid=135973>, accessed on July 3, 2017) after India took corrective measures.

²⁵ Pest risk analysis (PRA) is a science based tool to tackle alien pests of concern to any nation while facilitating international trade. PRA is a process which helps assess the risks of entry, establishment and spread potential of exotic pests. PRA helps identify the options to prevent the entry and management in the event of pest establishment. For more information see <http://niphm.gov.in/bspq.html> (accessed on June 13, 2017)

²⁶ Source:[http://apeda.gov.in/apedawebsite/Announcements/import_requirements_on_the_Indian_mango\(from%20QIA\)_04.05.2016.pdf](http://apeda.gov.in/apedawebsite/Announcements/import_requirements_on_the_Indian_mango(from%20QIA)_04.05.2016.pdf) (accessed on June 13, 2017)

be sent to Vashi (Mumbai, Maharashtra). This entails cost and the process is time-consuming and cumbersome. It was further pointed out that while irradiation facilities are Indian facilities, the inspecting officer is appointed by the importing country – that is the US. This increases the cost by almost INR 12 per kilogram.

Sometimes, the treatment affects the shelf-life and quality of the product. For instance, in the case of the EU, hot water treatment is prescribed and for Japan and Australia, vapour heat treatment is prescribed. As per the prescription, hot water immersion treatment at 48 degree Celsius for 60 minutes (fruit size up to 500 grams), and the vapour heat treatment either at 46.5 degree Celsius for 30 minutes or 47.5 degree Celsius for 20 minutes has to be ensured before exporting the products to these markets.²⁷ While the same prescription may apply to exporters from other countries as well, product quality may differ. For instance, there are different varieties of mangoes, and Indian mango varieties such as *Kesar* and *Alphonso* have a thinner outer skin compared to other varieties such as *Tommy Atkins* and *Keitt* from South America, which have a thicker skin; hence, these Indian varieties may not be able to withstand the hot water treatment at a particular temperature. Consequently, such treatments may reduce the shelf life of the Indian product and make it more susceptible to spoilage. To avoid this, immediately after the treatment, the products have to be transported to the destination market by air, which increases the cost.

The case of vegetables is even more complex. Washing and cleaning the produce before export is not sufficient to get rid of pests in the case of vegetables such as eggplant. Some exporters are trying hot water treatment but they pointed out that this does not exterminate pests; however, it leads to product spoilage. For most vegetables which are exported in small quantities, the exporters source the best products from different *mandis* or through middlemen. They do not know what the field level agriculture practices are, and thus, they are unable to advise on or control the practices followed at the field level. At the most, the exporters try to ensure that the products comply with the MRL for chemicals as prescribed by the importing country by testing products in approved laboratories. However, they were not aware how to ensure that their consignment is pest free if there is pest infestation in fields.

The survey also found that often, pro-active measures taken by the home country after facing export rejections can help in overcoming a situation where a ban is imposed by the destination market. For instance, in 2013, interceptions faced by mangoes exported from Pakistan were more than three times that faced by exports from India (Pakistan: 136 interceptions; India: 37 interceptions). In 2014, the EU banned imports of mangoes from India, but no such ban was imposed on exports from Pakistan. This is because when the European Commission (EC) issued a warning to Pakistan, the country stopped exporting

²⁷ For details see <http://apeda.gov.in/apedawebsite/Announcements/EUMango.pdf> (accessed on July 3, 2017)

mangoes, introduced new hot water treatment plants²⁸ and made the hot water treatment mandatory for exports.²⁹

- **Presence of Higher than Approved Level of Pesticide Residue:** In the past, a number of Indian consignments to markets such the US and the EU have faced notifications, rejections and alerts due to the presence of higher than approved levels of pesticide residue. For example, in the US, the FDA Import Refusal Report recorded that between January 2014 and May 2017, there were 444 import refusal reports for basmati rice, 112 for plain (white or polished) rice, and 41 in total for capsicum (whole)³⁰ and okra, most of which were due to the presence of higher than approved levels of pesticide residues. This has also been the case in the EU; the RASFF portal reported 36 notifications for higher than permissible limits of different pesticide residues (such as carbendazim and acephate) in basmati rice between January 2000 and April 2016. Between January 2014 and May 2017, there were 33 alerts on the portal and shipments were not allowed to be distributed in the EU; they were all rejected at EU ports for the presence of chemicals such as oxytetracycline and sulphites above the permissible maximum residue limits (MRLs), and for the presence of prohibited chemicals such as nitrofurantoin and chloramphenicol. In Japan, Indian shrimps have faced rejection due to the presence of furazolidone and ethoxyquin in excess of acceptable MRLs. The consignments were either returned or abandoned, thus resulting in losses to exporters.

In 2010, the rejection of an Indian consignment of table grapes in the EU due to higher than permissible level of chlormequat chloride (ccc) received significant attention in the media and among policymakers as the EU is the largest market for export of table grapes from India, accounting for around 60 per cent of the exports. A number of exporters and farmers in states such as Maharashtra were adversely affected by this rejection.

Although developed countries have higher standards, India's exports to developing countries have also faced the issue of higher than approved level of chemicals. In May 2015, Saudi Arabia temporarily banned the import of Indian green chillies due to the presence of high levels of pesticide residues.³¹ In the year 2016, in the UAE, there were concerns over shipments of mangoes, chillies and cucumbers being brought in from India, which contained pesticide residues beyond the Codex Alimentarius Commission's limits. More recently, in July 2016, Bhutan banned imported chillies from Faklakata town in West Bengal. Bhutan does not have food testing laboratories and it sent the imported products to Export Inspection Council (EIC) laboratories in Kolkata, and the ban was based on that laboratory test reports from India.³² In Australia, processed food products and nuts have

²⁸ Source: <http://nation.com.pk/business/15-Jul-2014/govt-introduces-hot-water-treatment-plants-for-mangoes> (accessed on March 3, 2017)

²⁹ Source: <http://gulftoday.ae/portal/53d50e1d-0801-4bb5-9ab5-dfaac9945cc6.aspx> (accessed on March 3, 2017)

³⁰ As per the US FDA data, two varieties of capsicum are listed – whole and ground. Individually, there were 24 notifications for whole capsicum and 173 for ground.

³¹ Source: <http://pib.nic.in/newsite/mbErel.aspx?relid=116998> (accessed on June 13, 2017)

³² Source: <http://www.moaf.gov.bt/press-release-5/> (accessed on June 14, 2017)

faced rejections due to the presence of harmful chemicals and residuals. For instance, aflatoxin³³ in peanuts, acids or adulterants in tapioca chips and the presence of adulterants and chemicals in other processed food products such as *aloo bhujia* and nut crackers have led to the rejection of food products in Australia.

If food products violate the internationally recognised standards of MRLs for chemicals and pesticides, then according to the survey participants, it is advisable that good agricultural practices (GAP) should be followed at the farm level for products meant for export. However, if individual countries observe standards that are more stringent than international standards and revise them frequently, making them more and more stringent, then it becomes a barrier for exporters. While there are cases of product rejection due to the presence of higher than prescribed MRLs for chemicals and pesticide residues in products owing to increasingly stringent standards imposed by the importing countries, in a number of cases Indian consignments have failed to meet the international standards set by Codex Alimentarius Commission and other bodies.

The issues of the presence of excessive pesticide residues, according to the survey participants, usually arise at the field level and have to be addressed in terms of use of right chemicals and fertilisers, pesticides, etc. It cannot be addressed through trade policy but will require holistic domestic policy measures. Indian farmers use chemicals such as pesticides, growth regulators such as ccc and fungicides such as carbendazim on their crops to protect and increase yield. In some cases, exporters and farmers are not aware of the MRLs and, therefore, the necessary test to identify the presence of chemicals is not done in India.

The survey also found that 86 per cent of the exporters depend on their buyers or export promotion bodies such as APEDA to provide them with the necessary information on the residue levels. If there is an information gap, the product can get rejected. For example, in the case of higher than approved level of ccc in table grapes in 2010, it was pointed out during the survey that this chemical was not included in the list of chemicals given by APEDA to the exporters and laboratories for laboratory testing. As a consequence, none of the APEDA approved laboratories conducted any test for checking the level of ccc in food products. This led to the rejection of Indian consignments at the EU port of entry on grounds of higher than approved level of ccc. It was pointed out during the survey that the rejection was a result of a communication gap between APEDA and the exporters, for which some exporters have filed lawsuits against APEDA.

In the aftermath of export rejections and product bans, exporters and farmers expectedly faced financial losses. For example, in the ccc case, while the overall loss to the industry was estimated to be around INR 2500 million (USD 38.78 million), the loss of individual companies ranged between INR 25 million (USD 387874.12) to INR 100 million (USD 1.5

³³ Aflatoxins are produced by fungi *Aspergillus flavus* and *Aspergillus parasiticus* that contaminate a variety of agricultural commodities including rice and groundnuts when exposed to heavy rain, humidity or poor storage conditions.

million) depending on the size of the export consignments.³⁴ Some exporters diverted their products to other markets with less restrictive MRL levels, while for some exporters, the whole consignment was destroyed; in other cases, the product that had a low shelf life got spoiled.

Exporters and the Indian government are trying to work together to reduce the incidence of such events. For example, *TraceNet* has been developed in the case of exports of products such as grapes to key markets such as the EU and the exports are carefully monitored by APEDA. In order to resume export of green pepper to Saudi Arabia, APEDA has put in place some conditions for meeting the food safety standards, such as approving laboratories to test for pesticide residues, making the test report a pre-requisite to issuing the phytosanitary certificate, and identifying GAP-certified green chilli farmers in vegetable clusters for sourcing. It is also trying to increase awareness among farmers and exporters to produce and export good quality chillies.³⁵

In some cases, importing countries have put in place certain requirements that exporters have to follow. For example, in the UAE, the Ministry of Climate Change & Environment mandated that, after May 1, 2016, the entry of chilli peppers, mangoes and cucumbers will not be permitted without a residue analysis report accompanying the shipments.³⁶ This has made exports to the UAE more difficult even for exporters whose consignment did not face any issues with respect to MRLs in the past. Thus, importing countries may implement strict vigilance to ensure compliance with their MRLs, which can make export procedures cumbersome and time-consuming.

- **Frequent Lowering of MRLs:** In the case of certain chemicals, developed countries often lower MRLs frequently, sometimes more than 2-3 times in a year, which creates barriers for exporters. This is because farm-level practices have to adhere to new requirements and it is not easy to alter farm practices frequently. For example, a number of exporters in the survey pointed out that the EU lowers the MRLs of chemicals very frequently, which is substantiated by the fact that in the case of basmati rice exported to the EU, the EU published MRL changes for several chemicals (such as carbetamide, cymoxanil and acrinathrin) between June 2015 and April 2016 (see Appendix A1).³⁷ Although in the EU, the MRL change notifications are followed by a 6-month notice to implement the new limits, this period may not be sufficient for Indian farmers to change the cropping pattern in their fields. The exporters also pointed out that every time the MRLs change, they may have to change the farms from which they source and conduct tests in laboratories to ensure

³⁴ See <http://timesofindia.indiatimes.com/city/pune/Grape-export-suffers-loss-of-Rs-250-crore/articleshow/6216912.cms> (accessed on June 30, 2017) and findings from primary interactions. INR figures are converted in USD using the Reserve Bank of India (RBI) exchange rate of USD1 = INR 64.4539 as on July 17, 2017.

³⁵ Source: <http://pib.nic.in/newsite/mbErel.aspx?relid=116998> (accessed on June 13, 2017)

³⁶ Source: <http://apeda.gov.in/apedawebsite/Announcements/Pesticide-Residues-UAE.pdf> (accessed on June 13, 2017)

³⁷ Source: Extracted from https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S005.aspx (accessed on June 22, 2017)

that the chemicals in their products conform to the new standards. This adds to the cost and affects their sourcing strategies.

- **Lowering of MRLs without any Scientific Justification:** Sometimes, MRLs may be lowered without scientific justification under the precautionary principle of the WTO SPS Agreement (Article 5.7) and this may go unchallenged in the WTO. In 2010, the EU lowered the MRL of ccc to 0.05mg/kg for table grapes, which is in line with the Codex standards. In 2016 again, the EU proposed to lower the MRL for ccc from 0.05 mg/kg to 0.01 mg/kg³⁸ for table grapes. India argued in the WTO's SPS Committee³⁹ that approximately 24.5 per cent of Indian table grapes exported to the EU may not meet this requirement and asked the EU to provide the scientific justification for lowering the MRL. The EU responded that it would collect the trial data from manufacturers, and in the meantime, it would consider maintaining the MRL of 0.05mg/kg for a temporary period until the data is collected and as long as no concerns are raised by the European Food Safety Authority (EFSA).
- **Lack of Harmonisation of Standards across Countries:** Secondary research and the primary survey revealed that different countries permit different MRLs and exporters have to meet individual country requirements to be able to export to the respective markets. The survey found that different countries have fixed different tolerance limits for tricyclazole,⁴⁰ which is used by rice farmers in India.⁴¹ The US and Japan have fixed the import tolerance in rice at 3 parts per million (ppm)⁴² while the EU has a MRL of 1 ppm,⁴³ which they propose to revise to 0.01 ppm effective from December 30, 2017.⁴⁴ This is a virtual ban on the use of the particular chemical and it would create issues for a majority of rice farmers and exporters in India. This is because two key basmati rice varieties, namely Pusa Basmati (PB) 1 and PB1401, which are the major varieties of rice exports to the EU, have been accepted with tricyclazole MRL at 0.03 mg per kg so far from India.⁴⁵ According to a

³⁸ For details see http://ec.europa.eu/health/endocrine_disruptors/docs/wto_eu166_en.pdf (accessed on June 28, 2017)

³⁹ WTO Committee on Sanitary and Phytosanitary Measures Document G/SPS/GEN/204/Rev.17 Dated March 2, 2017. Available at <http://spsims.wto.org/en/OtherDocuments/Search?DoSearch=True&DocumentSymbol=G%2FSPS%2FGEN%2F204%2FRev.17&DistributionDateFrom=07%2F03%2F2017&DistributionDateTo=07%2F03%2F2017&SubmittingMembers=&SubmittingObservers=&SubmittingObserverOrganizations=&Secretariat=&DevelopmentStatus=&GeographicGroups=&Title=&Keywords=&DocumentTypes=> (accessed on July 3, 2017)

⁴⁰ It is a blasticide for rice blast disease control and it also improves grain quality, grain shining, grain weight (yield) and reduces milling losses.

⁴¹ For detailed description see <https://indofilcc.com/business-area/agricultural-chemicals/fungicides/indofil-baan/> (accessed on July 17, 2017)

⁴² Source: <https://www.globalmrl.com/db#query> and http://www.m5.ws001.squarestart.ne.jp/foundation/agrdtl.php?a_inq=44800 (accessed on June 14, 2017)

⁴³ Source: <http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database/public/?event=pesticide.residue.displayMRL&language=EN> (accessed on June 14, 2017)

⁴⁴ As per the COMMISSION REGULATION (EU) 2017/983 of 9 June 2017 amending Annexes III and V to Regulation (EC) No 396/2005 of the European Parliament and of the Council as regards maximum residue levels for tricyclazole in or on certain products

⁴⁵ For details see http://economictimes.indiatimes.com/articleshow/59455983.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst (accessed on July 17, 2017)

report,⁴⁶ India exports INR 17 billion (USD 263.75 million)⁴⁷ worth of basmati rice to the EU; as a result of this revision of MRL for tricyclazole, India is likely to lose its market share to Pakistan, which also produces basmati rice but does not use the same chemical. An alternative to tricyclazole is Integrated Pest Thermography (IPT). However, it is banned in the US. In this scenario, if both alternatives used by the farmers are banned in either of the countries (the EU or the US), it will be problematic for farmers as they will be able to cater either only to the EU or to the US, but not to both.

Similarly, in the case of peanuts, the EU has laid down more rigid MRLs for aflatoxin permitted to be present in peanuts (based on whether they are meant for human consumption or animal/bird feed), than that imposed by other countries such as the US.

- **Rigid Import Requirements Imposed by Importing Countries:** Often, the importing countries have specific requirements regarding technology used, laboratory testing procedures, etc., which exporters have to comply with. For example, in the case of dairy products, the EU and many developed countries want to have a detailed residue monitoring plan. A number of countries including the EU, Australia and Canada have not approved Indian processing plants; hence India cannot export to these countries. In this context, it is worth mentioning the case of India's dairy exports to Russia. India's dairy exports to Russia had been made tough after Russia's Federal Service for Veterinary and Phytosanitary Surveillance (*Rosselkhoznadzor*) approved only Indian farms that owned at least 1,000 cattle. While the objective of *Rosselkhoznadzor* was to ensure the quality of milk procurement and traceability of cheese plants, only two Indian farms were approved in this process.⁴⁸

Further, animal feed and MRLs on chemicals present in the feed provided to cattle (for example, chlormequat present in cereals) can act as a barrier to export. Some importing nations such as the EU insist on the installation of specific infrastructure such as mechanised methods of milking for dairy exports and flake ice machines (for cooling purposes), which may be possible for private dairies to abide by but which may be difficult to implement for milk co-operatives and small farmers with 2-3 cows.

- **Lack of Mutual Recognition of Conformity Assessment System:** The WTO's SPS Agreement encourages member countries to recognise each other's conformity assessment systems based on international standards so that products certified in one country are accepted without the need for further inspection/testing by other countries through equivalence or mutual recognition agreements (MRAs). Codex Alimentarius Commission also encourages such agreements to avoid duplication of inspection and testing, which can increase the cost of exports, and to address health and safety concerns. For this to happen, the importing country has to have faith and recognise the testing procedures of the exporting

⁴⁶ See: http://economictimes.indiatimes.com/articleshow/59455983.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst (accessed on July 17, 2017)

⁴⁷ INR figures are converted in USD using the Reserve Bank of India (RBI) exchange rate of USD1 = INR 64.4539 as on July 17, 2017.

⁴⁸ For details see <http://dairynews.in/russia-opens-dairy-market/#> (accessed on July 21, 2017)

country. One of the key issues raised by exporters is that importing countries do not recognise India's export inspection and control processes, and export control bodies such as the EIC do not have any MRA. Although APEDA earlier had a unilateral equivalence agreement for export of processed and fresh organic products with the EU, in 2013, it lost the unilateral equivalence for processed food products, despite APEDA having set up organic standards for exports in line with the EU Directives.⁴⁹

Further, in the case of products where there is a mandatory requirement of export inspection and laboratory procedures in India, some importing countries have raised concerns over the official testing procedures. For example, recently, the EC decided to test up to 50 per cent of India's shrimp consignments for residues such as chloramphenicol and nitrofurans,⁵⁰ citing certain deficiencies in the official control process. The survey participants pointed out that if shrimp export is going through a strict official control process, it should not face rejections in the importing country's market.

Exporters pointed out that they face several issues due to the lack of recognition of Indian testing procedures and conformity standards by developed countries. They have to first test the product in a laboratory that is approved by the official export control agency for that particular product and then again in buyer-approved laboratories as the buyer and the importing country's government do not recognise the test results of the laboratories approved by official Indian control bodies. This case is common for basmati rice, processed organic spices, organic tea, etc. This leads to escalation of cost and waste of time.

- **Increased Use of Risk Analysis Technique and Awareness of Consumer Health and Well-Being among Developing Countries:** The issues related to product rejection on grounds of food safety and health standards are more of a concern today than before because many developing countries are adopting risk analysis techniques, stringent MRLs for chemicals, banning harmful chemicals and paying attention to consumer health and food safety regulations. Therefore, they may not support India if cases are raised in the WTO or may reject Indian consignments if they do not meet the standards. Further, the buyers can shift their sourcing from India to other countries. For example, in Cambodia, the Ministry of Agriculture, Forestry and Fisheries (MAFF) announced a ban on all imports and agricultural pesticides containing tricyclazole, after the EU proposed to lower the MRLs recently. It also imposed a ban on the use of tricyclazole on crops meant for domestic consumption and exports.⁵¹ Argentina is able to meet the requirements for peanuts and African countries such as Kenya and Uganda are able to meet the food safety standards of developed markets such as the EU in the case of fresh vegetables. Countries such as Cambodia have been able to implement sustainable development practices and meet the

⁴⁹ Source: <http://spsims.wto.org/en/SpecificTradeConcerns/View/378> (accessed on July 3, 2017)

⁵⁰ Source: COMMISSION IMPLEMENTING DECISION (EU) 2016/1774 of October 4, 2016. Available at <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016D1774&from=EN> (accessed on July 3, 2017)

⁵¹ Source: <http://www.khmertimeskh.com/news/36979/ministry-bans-tricyclazole-imports/> (accessed on June 28, 2017)

standards set by developed countries by using international funding to change field level and processing practices and by imposing higher food safety and traceability standards. As a result, India is losing its market share to such countries. Even among its least developed neighbours, Bhutan came up with an act to ban certain pesticides and to adopt integrated pest management – “The Pesticides Act of Bhutan, 2000”.⁵² The Bhutanese government also imposed restrictions on the import, sale and use of pesticides, ensuring their judicious use based on the controlled, need-based usage instead of scheduled usage. Such measures have helped Bhutan to move towards organic farming. The country, although dependent on India for imports of certain vegetables such as green chillies, can now take measures to impose a ban in cases where there are food safety and health issues.

- **Hygiene Issues and High Risk Country for Certain Diseases such as Foot and Mouth Disease (FMD):** The survey participants pointed out that despite being the largest producer of milk and there being a high demand for Indian dairy-based processed products such as cottage cheese, ethnic sweets (*gulab jamun* and *ras malai*) and ready-to-eat meals such as *palak paneer*, India is not able to export such products to key markets due to the risk arising from hygiene problems that often result in bacterial infestations, threat of diseases in animals and concerns about animal feed.

Bacterial infestation such as formation of *Escherichia coli* (*E. coli*) and salmonella in cottage cheese is very common and it has resulted in the rejection of consignments from India in countries like Australia and Japan. In the US, according to the FDA Import Refusal Report, between January 2014 and May 2017, there were cases of refusals of shrimps and prawns (254 reports), basmati rice (444 reports), plain (white or polished) rice (112 reports), tamarind fruit (34 reports), tamarind in dried or paste form (91 reports), ground spices and seasoning (202 records), mixed spices and seasoning (158 records), and ground capsicum (173 records). The major reasons for the refusal included the presence of the harmful bacteria salmonella in the shipment. This can be attributed to poor storage and hygiene conditions. More importantly, in some cases such as shrimps, the importing country (in this case the EU) has blamed Indian export control processes. It is also important to investigate why EU has raised objection to the quality of shrimp exported from India. Similarly in Japan, frozen and ready-to-eat food products have faced rejections due to the presence of live bacteria.

There are issues related to rearing animals in hygienic conditions and providing appropriate feed to them. Animals have to be reared in proper, hygienic conditions to ensure that their by-products are not adulterated, and consequently, rejected in the export market. Special attention has to be paid because animal and animal by-products will not be accepted if the animal is prone to diseases. India has not been declared free from FMD by the OIE and has been identified by the EU as one of the third countries⁵³ with the risk of FMD. This implies

⁵² Source: http://www.nationalcouncil.bt/assets/uploads/docs/acts/2017/Pesticides-Act-of-Bhutan-2000Engl_ish1.pdf (accessed on July 3, 2017)

⁵³ Third countries are countries that are outside the EU.

that dairy products from India have to undergo various heat treatments before being exported to the EU.⁵⁴ For example, imports are allowed only if dairy products have undergone, or have been produced from raw milk that has undergone heat treatment involving a sterilisation process, ultra high temperature (UHT) treatment and various high temperature short-time pasteurisation treatments (HTST).⁵⁵

Overall, the survey found that while maintaining reasonable food safety standards is not a barrier, if the standards are extreme or if they are changed rapidly, they often become a barrier. Further, sometimes the prescription made by importing countries act as a barrier a) if they affect the quality of the products adversely, b) if there are procedural complexities in following them or c) if they lead to an increase in overall cost of production and export leading to low profit and or loss of price competitiveness.

Moreover, with globalisation and changing demand patterns, consumer preferences are changing. For instance, it was pointed out during the survey in the UK that while previously consumers strongly preferred Indian Darjeeling tea, it is now being replaced by different varieties of tea and herbal infusions. In such cases, the buyer has the opportunity to source from several countries and India's strength in exporting the product is now much weaker than before. A tea manufacturer in the UK pointed out that previously, he used to source 80 per cent of his raw materials from Darjeeling (West Bengal) but now he sources not only from Darjeeling but also from Assam, Nilgiris in South India, Sri Lanka and China. Another exporter in Kolkata added that price realisation is low and, if the product faces any issue, the buyer/manufacturer is not willing to compromise. Similarly, processors and buyers in the UK highlighted that basmati rice is being replaced by other varieties of rice and if Indian rice is not able to meet export requirements, then rice can be sourced from countries like Vietnam and Cambodia. In fact, some of the UK buyers have already started sourcing from Cambodia after the lowering of tricyclazone limits.

4.2 Barriers in India that lead to Non-Compliance with Food Safety and Health Standards

There are issues within the Indian market that result in non-compliance with international health and safety standards. While some of these issues are related to agricultural practices followed in India, others result from the fragmented nature of the supply chain and outdated technologies followed in the country. During the survey, exporters pointed out that certain product-specific issue have been there for many years, yet, there have hardly been any measures taken by the government to overcome these issues. For instance, the issue of aflatoxin contamination in peanuts continues despite several rejections and notifications. Between March 2004 and April 2016, 172 notifications were raised on the RASFF portal of the EU on the

⁵⁴ For more details, see COMMISSION REGULATION (EU) No 605/2010. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:175:0001:0024:EN:PDF> (accessed on April 6, 2017)

⁵⁵ Source:<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:175:0001:0024:EN:PDF> (accessed on October 7, 2016)

presence of aflatoxin in Indian peanuts beyond permissible limits. Other countries such as Japan and Australia have also raised this issue, although their tolerance limits differ.

Delays in action or inaction on the part of the government can be directly traced to the fact that India, unlike most developed and many developing countries, follows dual food and safety standards which are regulated by different authorities. If a standard is imposed in markets such as the US and EU, it is equally applicable to exports, imports and domestic market. In the case of India, export standards are laid out by APEDA and export control bodies such as the EIC. More often than not, these standards are higher than standards laid down by the Food Safety and Standards Authority of India (FSSAI) for food manufactured and imported for consumption in the domestic market. While the FSSAI is trying to implement international standards such as the Codex Alimentarius standards in the domestic market, in the case of certain products such as peanuts and milk, there are gap in standards and its implementation. Especially, in cases where these products are made available in the domestic market through unorganised supply channels, standards are often not followed or it is difficult to implement and/or monitor. The survey found that there is limited control over farm level practices. Further, unlike most countries where the nodal ministry for agriculture is also the nodal ministry for agricultural trade, in India, the nodal ministry – Ministry of Agriculture and Farmer’s Welfare – has seemingly no role in agricultural trade. This undermines the very role of the ministry since, as pointed out by certain state government officials, the clear lack of co-ordination between the ministries and export organisations such as APEDA and the EIC has deprived farmers of the opportunity to export and hence deprived them of an opportunity to earn a premium on their produce.

There are certain other domestic issues that affect the exportability of Indian fresh and processed food products. These are discussed below.

- **Pest Infestation and Use of Chemicals and Pesticides in the Field:** Every year, Indian farmers lose a substantial amount of their crops to pest infestation, which leads to a loss in income. The pest issue persists as poor farmers may not have the knowledge or access to technology, such as the netting of crops, poly houses and sticky traps to catch pests, etc, to prevent it. Indian farmers are heavily dependent on the use of pesticides to protect the crop as well as to increase yield. Sometimes, the chemicals that are used are either banned in other countries or there are strict MRLs on pesticide residues imposed by importing countries. For example, chemicals such as chlorpyrifos and endosulfan that are used by Indian farmers are banned in importing countries such as the US and the EU.⁵⁶ Farmers sometimes use them as they are not aware of alternatives available, or are not aware of the requirements of the importing countries, or they may not be aware of GAP. The survey showed that while there is lack of awareness among farmers about the judicious use of chemicals on the fields, the bigger issue is that India has not banned some restricted chemicals and such chemical inputs may even be subsidised. Fifty one pesticides that have

⁵⁶ Source: <http://www.downtoearth.org.in/coverage/pesticide-trap-33914> (accessed on June 28, 2017)

been banned in various developed countries were still being used in India as of December 2016.⁵⁷

- **Animal Hygiene Conditions and Animal Feed:** There are issues related to rearing animals in hygienic conditions and providing appropriate feed to them. India has been identified as one of the third countries with a high risk of FMD among cattle. The EU has set up the limit for chlormequat present in cereals to 0.5 mg/kg, and if the animal feed is not monitored carefully, the dairy product can get rejected in the EU market. Moreover, importing countries such as the EU have also raised concerns about the feed given to shrimps.⁵⁸
- **Outdated Processing Technology and Unscrupulous Practices:** In certain cases, post-harvest processing technology may be outdated or traders may engage in unscrupulous practices, which can lead to product rejection in importing country markets. For example, in the case of peanuts, water is sometimes used to clean peanuts and to increase the weight of the peanuts, which can cause aflatoxin contamination. If aflatoxin is present above the permissible limit, the peanuts will be rejected by the importing country. Similarly, colouring agents can be used to make the product appear more appealing. In the case of products such as green beans and green peas, a common adulterant called the Malachite green dye is used as a colouring agent to increase the glow of the pea and the bean and make it bright green.⁵⁹ This dye can be harmful for even domestic consumption and if used, it can lead to export rejections. Another adulterant used for pea is argemone seed, which is used to add bulk and weight. Other unscrupulous activities include mixing of organic and conventional products, and labelling and selling them as pure organic products.
- **Issues with Traceability:** Many exporters in the survey said that they do not source agricultural products directly from farmers; rather, they source from *mandis* and other agricultural markets. The survey revealed the following major reasons for this.
 - If farmers know that the produce sourced from them is meant for export, they tend to charge a higher price from exporters, thereby raising exporters' costs.
 - The exporter sources only high quality produce that can be exported. The farmer, on the other hand, sells all his produce to the exporter, both high quality as well as low quality. In this case, the low quality produce will be wasted since it cannot be exported. It is more convenient for an exporter to purchase only high quality products from *mandis*, since the farmers are not able to maintain a uniform quality of supply.

An exporter of horticultural products usually exports small quantities of several products together in the same shipment (for example, vegetables such as okra, eggplant, curry leaves

⁵⁷ Source: <http://www.thehindubusinessline.com/economy/agri-business/use-of-51-pesticides-banned-elsewhere-allowed-in-india-centre-tells-high-court/article9416251.ece> (accessed on August 9 2017)

⁵⁸ For details see <http://www.thehindubusinessline.com/opinion/editorial/eu-shrimp-exports-india-should-take-damage-control-steps/article9625576.ece> (accessed on August 9, 2017)

⁵⁹ For details see http://www.ijst.com/admin/ijst_files/FOOD%20ADULTERATION_1.2.4.pdf (accessed on August 9, 2017)

and chillies may be exported in the same shipment). However, one or two farmers may not be producing all the different vegetables and therefore the exporters generally procure such products from the *mandis*, which leads to a lack of traceability to a single farm. This makes it difficult to pinpoint the source of the SPS issue. The prohibition on direct sourcing and contract farming states such as West Bengal as the Agricultural Produce Market Committee (APMC) Act makes traceability even more difficult. Even in states such as Maharashtra, where direct sourcing is allowed, exporters prefer to go through middlemen, as individual small farmers are not able to ensure uniform quality of supply and handling products of several farmers can be difficult.

- **Slow Reactions to Concerns Raised:** In a number of cases when instances of non-compliance are raised by the key markets, the Indian government has not taken corrective measures as has been taken by other countries, resulting in a ban on Indian products in spite of a lower level of non-compliance. For example, while mangoes from Pakistan faced significantly more interceptions than Indian mangoes for fruit flies during the same time period on EU's EUROPHYT portal, Indian mangoes were banned but not Pakistani mangoes. This is because when the warning was issued to Pakistan by the EC, it immediately stopped exporting mangoes and made hot water treatment mandatory. Similar action was taken by India for okra, which helped the country counter a ban.
- **Infrastructure Bottlenecks:** During the survey, the exporters pointed out that they found it difficult to set up infrastructure required for treating products before they are exported. For instance, for the treatment of mango, there are various prescriptions such as hot water treatment, the vapour heat treatment and gamma irradiation. Conducting different treatments for different export destinations may not be feasible financially for the exporter, and the infrastructure needed to set up these state-of-the-art facilities is also expensive and may not be available in the state from which the product is being exported. As mentioned earlier, transporting the produce from one state (for instance, Gujarat) to another (for instance, Maharashtra) and then back to the state from where it will be exported raises costs and may lead to the spoilage of the product. Moreover, all post-harvest activities are to be done in APEDA approved facilities. Getting the approval for a facility also involves time and cost. It takes about 3-5 months on an average to obtain a licence for sorting, grading and testing facilities while the hot water treatment plant takes about two and a half months. Further, while the cost of obtaining the licence is around INR 50,000, often the facilities have to be re-constructed to suit EU requirements. The cost of setting up the required infrastructure sometimes comes to INR 50-100 million.

The survey also revealed that infrastructure such as cold storages are not equally spread across all states and there is a severe shortage of pack houses, which can lead to product spoilage and fungus (also see National Centre for Cold-chain Development, 2015).

Poor storage and transportation conditions, lack of general cleanliness and the limited number of pack houses cause shipments to be contaminated with fungi and other substances. Products such as basmati rice and groundnuts get contaminated with aflatoxins

due to poor storage, transportation and packaging conditions, which cause their shipments to be rejected in foreign markets. For example, in the EU, there were 12 alerts on the RASFF portal between January 2000 and April 2016 of basmati rice being rejected at EU borders for containing aflatoxins above the permissible limits. In the case of peanut and peanut products being exported from India to the EU, between March 2004 and April 2016, there were 157 alerts on the RASFF portal of shipments being rejected due to the presence of aflatoxins beyond the permissible limits. Aflatoxin contamination can happen during the processing stage (for example, while washing the peanuts) or in transit (for example, during storage and transportation).

- **Market Linkages and Marketing Issues:** The National Institution for Transforming India (NITI Aayog) in the year 2016 launched an index called the “Agricultural Marketing and Farmer Friendly Reforms Index”, which ranked Indian states and union territories based on reforms adopted by them. These indicators reveal the ease of doing agribusiness as well as opportunities for farmers to benefit from modern trade and commerce and the availability of wider options for the sale of their produce.⁶⁰ These indicators also represent competitiveness, efficiency and transparency in agricultural markets in India. In this index, Maharashtra ranks first in implementing marketing and environmental reforms to make agricultural business easier. Gujarat ranks second, followed by Rajasthan and Madhya Pradesh (Figure 12.1).⁶¹ States such as Uttar Pradesh, Punjab and West Bengal have not fared well on the index (scoring less than 50 per cent). This is a cause for concern because these states are major agricultural producers. The survey also found that farmers find it difficult to directly link to domestic and international markets due to certain policies, infrastructure bottlenecks and low marketing budget. At the centre, there is no single agency for agricultural export promotion under the Ministry of Commerce and Industry. Multiple export promotion bodies look after their own interest resulting in a lack of a comprehensive export promotion policy. Further, interviews with state government officials show that in some states the marketing support budget may not be adequate.
- **Multiple Government Agencies Engaged in Piecemeal Regulation:** As developed countries become stricter with their food safety regulations, several agencies in India are getting involved in administering standards for exports. For certain food products, there are agencies such as the EIC, APEDA and the Directorate of Plant Protection, Quarantine and Storage, overlooking importing country requirements; yet, the products face rejection or are banned. In certain cases (such as peanuts), the exporter has to register with several agencies (EIC, IOPEPC and APEDA) for different export activities (such as traceability, laboratory testing, etc.). Each of these agencies can have their own requirements, and some of them can act as a barrier to trade. For instance, there are 112 laboratories accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL), which are also approved by FSSAI for carrying out the analysis of food samples under the Food

⁶⁰ See <http://pib.nic.in/newsite/PrintRelease.aspx?relid=153145> (accessed on December 21, 2016)

⁶¹ Source: <http://pib.nic.in/newsite/PrintRelease.aspx?relid=153145> (accessed on November 9, 2016)

Safety and Standards Act, 2006.⁶² However, different export control bodies and boards have selected certain laboratories out of these 112 laboratories, causing problems for exporters. For example, as on December 7, 2016, 14 laboratories out of the 112 laboratories have been listed on APEDA's website for testing organic products meant for exports;⁶³ prior to this, companies could use any FSSAI approved laboratory. Only 8 of these are recognised by the EIC (the nodal agency for export control of selected food products), 13 laboratories are recognised by the Bureau of Indian Standards (BIS), and 7 laboratories are recognised by Tea Board India. None of the 14 laboratories listed by APEDA are listed by the Spices Board India on its website for testing of spices for export.⁶⁴ While some laboratories may specialise in testing a particular food product, users should ideally have the choice to decide the laboratory they would like to use. In many cases, buyers have their own preferred laboratories, making it necessary for exporters to get the products tested in buyer approved laboratories. As different laboratories are selected by different export control bodies, sometime exporters (such as exporter of organic spices) have to get their product tested in more than one laboratory in India which increases the costs. Further, laboratories now have to go through the process of approval and recognition by multiple agencies. Complicated testing procedures reduce the ease of doing business and increase the cost of compliance. Often, when multiple agencies are involved, there is also lack of accountability.

- **Issues with Data Collection for *TraceNet*:** In order for *TraceNet* to work efficiently, data from the fields and data about farmers fed into it by state department officials must be accurate and helpful to the concerned parties. However, data recording at the state level is not efficient and state department officials in the survey (state horticulture department, district superintending agriculture/*tahsildar*/horticulture officer) of some major horticulture crops such as grapes said that often, they do not have equipment such as internet-enabled mobile tablets to record information directly from the fields. They have to visit the field several times, which is time consuming as they have to manually enter the data in their system. There are also chances of errors and misreporting of data.

The above discussion highlights that there are a number of issues at home that can lead to non-compliance with food safety and health standards. The next section discusses the way forward to improve the exportability of Indian products.

5. The Way Forward

The survey showed that the issues identified in this paper can be resolved through three strategies:

⁶² http://www.old.fssai.gov.in/Portals/0/Pdf/Order_NABL_Lab_09_08_2016.pdf (accessed on May 16, 2017)

⁶³ <http://apeda.gov.in/apedawebsite/HACCP/xlistofauthorizedlaborganicproducts.pdf> (accessed on April 24, 2017)

⁶⁴ According to <http://www.indianspices.com/quality-evaluation-laboratory>, the Spices Board India has 7 laboratories known as Quality Evaluation Laboratories for monitoring food safety in spices and spice products. These laboratories are located at Chennai, Guntur, Kochi, Mumbai, Narela, Tuticorin and Kandla. (accessed on April 10, 2017)

- Implementing domestic reforms
- Through bilateral discussions, mutual collaboration and knowledge sharing, etc.
- Raising the issue in multilateral forums such as the WTO

These are discussed below.

5.1 Domestic Measures

- **Implement Product Traceability:** The survey found that one of the most successful ways of resolving the SPS issues in recent years has been the establishment of product traceability in products such as grapes. During the survey, Indian farmer's associations and exporters pointed out that export markets are crucial due to the high returns they fetch. Thus, most farmers and exporters are willing to follow product traceability laid down by APEDA, at least in the case of export-oriented products. There is an urgent need to implement product traceability for all exported products. The survey found that there are some issues in implementing product traceability to the farm when the product is sourced from the *mandis* in small quantities. Therefore, *mandis* should have a better system of recording from where they get the produce. Also, food safety has to be more rigidly implemented at the *mandi* level and in the domestic market which will force different players in the supply chain to comply with traceability.
- **Implement GAP and Global Best Practices:** Most developing countries address the SPS issues faced in developed country markets by implementing GAP and reducing the use of chemicals and pesticides. For this, initiatives are required at multiple levels. First, chemicals and fertilisers that are banned in other countries should also be banned in India. Second, the survey found that realising the importance of export markets, farmers in India are willing to switch to the use of bio-fertilisers and green inputs, but most of them do not have the knowledge and financial means to make the switch. There is a significant push from the Indian central and state governments to promote organic farming and nutritious food but there is a severe shortage of organic inputs, technology, knowledge and most importantly, funding. Chemical fertilisers are highly subsidised and are available in plenty; in contrast, the availability of bio-chemicals and green inputs is limited and organic inputs for exports have little (or no) subsidies. Therefore, it is important to re-examine the subsidy regime and subsidise the right type of inputs and farm practices. All government departments may work together to design a comprehensive policy on safe agriculture and organic farming. Third, the curriculum in agricultural universities should be updated and students should be imparted with lessons on modern agricultural techniques and GAP, which can be applied at the ground level. Agricultural universities can have farm-level programmes to enable the practical application of knowledge. Fourth, to address issues such as the germination of fruit flies in mangoes, in-farm practices such as netting, and growing crops in a controlled environment like poly houses should be encouraged. While India may continue with the hot water treatment in the short run, for long-run sustainability, there is need to explore alternative farming practices to reduce the incidence of fruit flies at farms. Farmers can be trained in methods like netting/bagging and they may be

encouraged to adopt these to protect their crop. To overcome the financial burden, subsidies can be made available. There is also need for agricultural extension programmes.

- **Implement Best Practices in Livestock:** Major initiatives are needed in the livestock area which will not only address the food safety issue but also lead to an increase in exports. First, in the dairy sector, proper hygiene conditions should be maintained at the farm level to ensure that the milk that reaches co-operatives and private processors is of good quality. The Indian government has renewed its focus on hygienic milk production and marketing and state governments are becoming aware of the importance of rearing animals in an appropriate environment. For example, the Gujarat government has held several cattle health fairs and has been successful in eradicating approximately 121 cattle diseases.⁶⁵ Such initiatives will help improve the health of animals. Second, milking by hand may lead to hygiene issue and the use of automatic milking machines is not feasible in India where dairies have a small number of animals. In order to promote large farms owning 500-1000 cattle, it would be necessary to give certain incentives such as income tax holiday for 10-15 years, assured connectivity to utilities, and a guarantee that government veterinary staff would be posted at the farm to take care of animal health. Third, one of the major issues has been the incidence of FMD, which leads to lower unit value realisation in developing countries and denial of markets in developed countries. Taking action to declare the whole country FMD free is a gigantic endeavour and may take some time. In the meantime, action should be taken to declare identified regions in the country as FMD free with a view to exporting from these regions. Declaration of regions as FMD free is envisaged in the SPS rules of the WTO and other countries have benefited from the rule. This will be an effective way of dealing with FMD. Fourth, in the case of sectors such as milk products and milk-based products, efforts have been put in the right direction to ensure that India has a good inspection procedure for dairy exports. There is need for research in developing efficient testing procedures for milk products and milk-based products. Good hygienic practices, based on the Hazard Analysis and Critical Control Point (HACCP) system for milk production and processing, should be followed throughout the milk supply chain.
- **Initiate Pro-active Measures:** Experience from other countries, such as Pakistan's experience with mango exports, show that pro-active measures will enable India to counter import bans from other countries. Similarly, in the case of okra in India, after facing over 15 cases of non-compliance with the EU in March 2015, the Directorate of Plant Protection, Quarantine and Storage in India issued an order to stop exports of okra from India and field visits were made to check cases of infestation. Fields with more than five per cent infestation were not allowed to export and only fields approved by the Directorate of Plant Protection, Quarantine and Storage in India were allowed to export. This helped in bringing down the cases of non-compliance to zero and prevented a possible ban on the export of okra. The okra example needs to be repeated when frequent cases of interceptions happen, and the Indian government needs to take pro-active measures if issues are raised by export markets. To prevent alerts being converted into bans, there should be a system by which

⁶⁵ Source: <http://www.narendramodi.in/shri-modi-inaugurates-asias-largest-cattle-feed-plant-banas-dairy-cattle-feed-plant-5230> (accessed on July 4, 2017)

export control bodies can raise a “red alert” which should immediately be brought to the notice of the territorial division of the Department of Commerce. The territorial division should immediately come up with a “package of practice” and consultations should be held with the exporters to identify the source of the issue. Since there are multiple export control bodies, only one body should be made responsible so that the issue can be addressed faster. The survey found that agriculture is a state subject and organisations such as APEDA needs to work more closely with the Ministry of Agriculture and Farmer’s Welfare and state governments for products that have been facing issues.

- **Review the Export Control Process:** If a product goes through the export control process and is then rejected in key markets, it is important to review and undertake a third-party audit to examine the efficiency of the control process that has been carried out in India. Further, there should be a single agency for export control, traceability and laboratory testing. Different nodal agencies for export control (such as APEDA for organic spices and Spices Board India for spices) create confusion as it leads to incidence of multiple laboratory test requirements. Registration with multiple agencies also adds to the cost while, on their part, agencies lack accountability. A single nodal agency for export will reduce cost for exporters and increase accountability. It will also reduce cost of governance related to running multiple organisations with overlapping responsibilities. With the advent of technology, a laboratory test result from any of the 112 laboratories approved by NABL and FSSAI should be accepted by all export control bodies. This will reduce the cost for laboratories to get registered with multiple bodies, reduce cost for exporters and save time for both exporters and laboratories.
- **Need for a Single Nodal Agency for the Export and Domestic Markets:** With the inclusion of the agricultural sector in WTO negotiations and given that the exports of agricultural products from India are rising, the Ministry of Agriculture and Farmer’s Welfare and the Ministry of Commerce and Industry cannot be delinked from each other. If these are delinked, then farmers’ welfare cannot be maximised as they have to be seamlessly connected to both the domestic and export markets.

The multiplicity of bodies affects the quality of inspection. For instance, the EU has recently decided to test up to 50 per cent of India’s shrimp consignments for residues such as chloramphenicol and nitrofurans. Earlier, 10 per cent of the consignments were tested. In the document where the new requirement is mentioned, the EU has referred to issues that cannot be resolved if the agriculture ministry is delinked from agriculture trade.

The EC document states as follows:

“Indian guarantees on the residues status of aquaculture products rely to a large extent on the additional pre-harvest and pre-export testing programmes in place and these mitigate to a certain extent the long- standing deficiencies in official controls on farms, and in particular, very unsatisfactory official controls on the use of veterinary medicinal products. Nevertheless, the relatively narrow range of substances tested for in those additional programmes weakens the reliability of those guarantees. To date, the recommendations

from the inspection report concerning official monitoring of aquaculture farms have not been satisfactorily addressed.”⁶⁶

If the issue arises at the farm level, it can only be controlled to some extent at the post-harvest and pre-export stage.

Further, multiple export control bodies can create piecemeal policies and regulations. There should be a single agricultural exports promotion body, whose primary role should be to facilitate marketing. In an ideal situation, both export and import regulations should be under a single nodal agency, which helps in the signing of MRAs. India has not been able to sign bilateral MRAs as export regulations are under multiple bodies and import regulations are under FSSAI. A key drawback of the Indian policy is that FSSAI does not have any authority over exports, which if given to FSSAI would have improved the overall food safety and health standards of the country according to survey participants. A single food safety agency for trade and domestic market would enable India to develop as a food processing hub resulting in inflow of more investment and technology. This will also create employment. At present, India is mainly exporting fresh produce which has limited value addition in the country.

The survey also found that among the different export control bodies, while exporters are fairly happy with the APEDA and found the *TraceNet* to be very useful, there is need to review the role and performance of other export control bodies; independent studies may be conducted in this regard.

- **Have an Agriculture Export Policy:** Studies have highlighted that India should have a comprehensive agro-export policy (see Prasad, 2017). There is an urgent need for such a policy which will identify the issues affecting agriculture exports and clearly lay down measures on how to attain compliance with SPS conditions of the key export markets, and how to create good infrastructure and marketing facilities. Overall, to be a global player, the focus should be to move from subsistence farming to more export oriented farming which meets sustainable goals.
- **Implement Food Safety Regulations in the Domestic Market:** While India may have adopted international standards for the domestic market, the survey found that there are gaps in the adoption and implementation of standards, especially for fresh produce sold through unorganised markets such as *mandis*. In the case of products such as milk, the quality of processing plants varies widely and in many cases, they are below international standards. Buyers in the UK pointed out that for many products, including rice and spices, they started sourcing from other countries as exports from India were not able to adhere to uniform quality standards. It is, therefore, important to focus on quality and standards in the domestic market so that products are produced and processed adhering to international food safety requirements. Poor quality food can be equally harmful for consumers in India

⁶⁶ Extracted from <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016D1774&from=EN> (accessed on April 10, 2017)

and hence, the Department of Consumer Affairs under the Ministry of Consumer Affairs, Food & Public Distribution, and FSSAI should work together on this issue.

It is important to note that food standard is a public policy issue. While exports have to meet the standards of the importing country, health of the Indian consumers cannot be compromised. Food demand patterns are changing in both the domestic and export markets. Consumers have become more health conscious and are aware of food safety issues. India, as of date, exports mainly fresh produce. As the country moves towards semi-processed, processed and specialised food products (such as halal meat or organic spices) export, more value addition will happen in the country leading to more employment creation and growth of food processing sector. Such products also earn a premium price but they will require implementation of proper certification and standards. Further, wide differences in domestic and export standards will make it difficult for India to become a food processing hub as a processor in India will need to source local ingredients to process for exports and the domestic market. Thus, the “Make in India” campaign can only be successful, according to survey participants, if India rigidly implements international food standards from the farm to the consumer. Also, if domestic standards are aligned to international standards, there is less likelihood of product rejections and it is easier to earn a premium price for the certified products such as organic food products. Rejection and bans of products can tarnish the image of India as an exporting country. There is an urgent need to first implement strict quality standard and focus on brand building based on that quality standard.

- **Have World Class Export Infrastructure:** The survey found that India has been increasingly implementing food safety assurance and management systems such as HACCP and the FSSAI has mandated its implementation for all food business operators. This will help exports.

For the treatment and processing of certain products, different importing countries prescribe different treatments that require the installation of specific infrastructure, for example, mechanised methods of milking for dairy exports, which may be possible for private dairies to abide by but may be difficult for milk co-operatives to implement, given the large number of small farms. In this context, it is important to identify and prioritise companies that are ready to export and those that need further training and capacity building prior to export. The survey recommended the creation of model dairy farms with common infrastructure such as mechanised milking facilities to enable training, ensure health care for animals and breeding facilities. This will also enable poor farmers to have access to infrastructure and better revenue.

Similarly, some countries require hot water treatment or vapour heat treatment for mangoes before export while others require gamma irradiation. At present, the infrastructure available is limited to a few states and it is not evenly spread across the country. For export products such as mangoes, basmati rice and grapes, investments should be made in setting-up relevant infrastructure for export.

Certain types of contamination, such as aflatoxin contamination, can occur in the supply chain of products such as basmati rice and peanuts. The survey found that infrastructure such as cold storages are not evenly spread across states and there is a severe shortage of pack houses, which can lead to product spoilage and fungus. There is need to map infrastructure across different states, identify gaps and create infrastructure where it is required. There should be green channels for agricultural exports in all airports, which will help to reduce wastage.

- **Need for Scientific Research and Data Generation:** There is need for scientific research in India to find methods to address the issues faced by products in key markets. Since an Indian product variety may be different from the product variety of other countries, there is need for research specific to Indian products to address the issue. The research should focus on both short-term and long-term solutions. It was pointed out during the survey that in the case of post-harvest treatment for fruit flies in mangoes, a study was given to Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth Agriculture University in Dapoli, Ratnagiri, to study the efficacy of hot water treatment. While the study findings have not been made available till date, exporters pointed out that they believe that hot water treatment in the prescribed temperature which is agreed with the EU is harmful to the Indian variety of mangoes. Thus, there is need for research and bringing the research to public domain. The research can also be used for discussion with importing countries. The prescribed treatment should be in accordance with Indian requirements. Research findings can be imparted to exporters and farmers through training workshops.

Further, there is a need for state-level data on exports of specific products from each state. While APEDA is trying to create a database for products under its domain through the *TraceNet* system, the data should be made available in the public domain. Since agriculture is a state subject, information on how much land is used for cultivation for export, the export contribution of each state, export infrastructure in each state, etc., will be particularly beneficial for policymakers, exporters and the buyers. The information available through traceability system has to be analysed and shared with state governments on a regular basis. It can be used to challenge or examine concerns raised by trading partners, either bilaterally or in the WTO and other international forums. Moreover, in sectors such as dairy, India must maintain a record of the cases of disease outbreaks among animals. In case there is any improvement with respect to animal health, it should be reported at international forums such as the WTO.

5.2 Bilateral Discussions and Co-operation

The survey showed that SPS issues are discussed bilaterally with the importing country. There is need for cordial inter-government relationship with the importing countries, and a number of issues can be resolved through bilateral discussions, and mutual recognition of standards and procedures. Apart from the inter-government relationship, Indian government and industry bodies should work closely with their counterparts in key export markets. Sometimes such measures enable policy flexibility. Recently, in the case of tricyclazole limit for basmati rice, certain relaxation of the time period for implementation of the measure has been given to

basmati rice growing countries (namely India and Pakistan) at the request of the European food business operators and other stakeholders.⁶⁷

A number of studies point out that lack of mutual recognition of inspections and standards in the case of products such as peanuts and peanut products are a key SPS barrier (Das, 2008). This issue has also been raised in the survey. The WTO's SPS Agreement encourages member countries to recognise each other's conformity assessment systems based on international standards so that products certified in one country are accepted without the need for further inspection/testing by other countries through equivalence or mutual recognition arrangements. The Codex Alimentarius Commission also encourages such agreements with a view to avoid duplication of inspection and testing, which can increase the cost of exports, and to ensure that health and safety concerns are addressed. The EU for instance, does enter into product specific MRAs but, till date, India has not been able to sign any with the EU. There is an urgent need to sign MRAs to facilitate export and reduce the cost associated with laboratory testing in domestic and export markets, and other conformity standards.

Further, countries such as Cambodia have used international funding and joint capacity building projects to address non-compliance and promote exports for products such as rice.⁶⁸ India can learn from such country cases. A number of studies have pointed out that Indian government have given various reasons for non-compliance with standards of developed countries including standards are beyond the technical competence of developing countries and there is no technology transfer at fair and reasonable cost, standards lead to market access barriers and there is no uniformity in standard formulation processes followed by different international bodies, or even in decision-making systems used to arrive at standards (for details see Debroy, 2005). It will be difficult for India to have such positions as other developing countries such as Kenya, Uganda, Vietnam and Cambodia are able to meet the standards laid down by developed economies such as the EU. India is now regarded not as a poor developing country but as a fast growing emerging market. Its approach towards trading partners and bilateral interactions should also reflect the country's position.

In the long run, it is important to negotiate and conclude bilateral trade agreements with some of the key trading partners to ensure that the commitments are binding and not revoked. A trade agreement could provide more certainty to Indian exporters and processors compared to equivalence agreements.

5.3 Raising Issues at the WTO

As a member of the WTO, countries can raise issues faced by them in the SPS Committee. Between 1995 and 2016, 416 specific trade concerns (STCs) have been raised in the WTO by its member countries (as reported by the WTO's SPS Committee)⁶⁹ and among them, 22 have

⁶⁷ Source: https://ec.europa.eu/food/sites/food/files/plant/docs/sc_phyto_20161128_ppr_sum.pdf (accessed on April 12, 2017)

⁶⁸ For details see <https://www.oecd.org/aidfortrade/47450587.pdf> (accessed on August 9, 2017)

⁶⁹ Source: <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/SPS/GEN204R17.pdf> (accessed on June 21, 2017)

been raised by India. Of these, 8 are against the EU, 4 are against the US, 4 are against China, 3 are against Japan, 2 are against the Russian Federation and one is against Australia. Further, the status of 17 out of the 22 STCs raised by India are given as “not reported”, which implies that the current status of the concerns (whether it has been addressed or not addressed) is not known. The remaining 5 STCs have been resolved. Overall, India has raised much fewer concerns related to SPS issues in the WTO compared to other developing countries. For example, Brazil and China have raised 31 and 33 STCs respectively between 1995 and 2016.

The 8 STCs⁷⁰ raised by India (either individually or along with other trading partners) against the EU between since 1995 till 2016 are listed in Table 4. Further, STC Number 374, which relates to the EU ban on mangoes and certain vegetables from India, was raised by India first in July 2014 and was subsequently raised 6 times between October 2014 and June 2016 and the status is still “not reported”.⁷¹ While this issue seems to have been resolved by implementing certain measures and procedures, it has to be reported to the WTO’s SPS Committee.

Table 4: STCs Raised by India against the EU (Either individually or with other WTO Members) between 1995 and 2016

Year	STC Number	Description of Measure	Member Maintaining the Measure	Status *	Whether Discussed Again in 2016
1998	39	Maximum levels for certain contaminants (aflatoxins) in foodstuffs	EU	R	No
2001	96	Geographical BSE risk assessment	EU	R	No
2010	300	Regulation (EC) No. 1099/2009 ⁷²	EU	NR	No
2010	306	Maximum residue levels of pesticides	EU	NR	No
2012	335	EU testing of pesticide residues	EU	NR	No
2014	374	EU ban on mangoes and certain vegetables from India	EU	NR	Yes
2014	378	EU withdrawal of equivalence for processed organic products	EU	NR	Yes
2016	412	EU MRLs for bitertanol, tebufenpyrad and	EU	NR	No

⁷⁰ Source: WTO Committee on Sanitary and Phytosanitary Measures Document G/SPS/GEN/204/Rev.17 Dated March 7, 2017. Available at <http://spsims.wto.org/en/OtherDocuments/Search?DoSearch=True&DocumentSymbol=G%2FSPS%2FGEN%2F204%2FRev.17&DistributionDateFrom=07%2F03%2F2017&DistributionDateTo=07%2F03%2F2017&SubmittingMembers=&SubmittingObservers=&SubmittingObserverOrganizations=&Secretariat=&DevelopmentStatus=&GeographicGroups=&Title=&Keywords=&DocumentTypes=> (accessed on April 12, 2017)

⁷¹ Source: <http://spsims.wto.org/en/SpecificTradeConcerns/View/374> (accessed on April 12, 2017)

⁷² Link to the regulation: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:303:0001:0030:EN:PDF> (accessed on April 12, 2017)

chlormequat (G/SPS/N/EU/168)

Source: WTO Committee on Sanitary and Phytosanitary Measures Document G/SPS/GEN/204/Rev.17 Dated March 7, 2017. Available at <http://spsims.wto.org/en/OtherDocuments/Search?DoSearch=True&DocumentSymbol=G%2FSPS%2FGEN%2F204%2FRev.17&DistributionDateFrom=07%2F03%2F2017&DistributionDateTo=07%2F03%2F2017&SubmittingMembers=&SubmittingObservers=&SubmittingObserverOrganizations=&Secretariat=&DevelopmentStatus=&GeographicGroups=&Title=&Keywords=&DocumentTypes=> (accessed on April 12, 2017)

*NR = Not Reported, R = Resolved.

The EU's response to India's concerns regarding the lowering of MRLs for ccc in table grapes from 0.05mg/kg to 0.01mg/kg (STC number 412) in October 2016 confirms that SPS issues can be resolved, at least temporarily, if raised in the WTO with clear scientific justification. For discussing SPS issues in the WTO, there is need for data on the MRLs level of other countries, what proportion of the exports is likely to be affected, the health-related repercussions of the chemicals, etc. Further, there is need for R&D to show that certain measures may not be based on scientific evidence. Thus, there is need for research and development and scientific data collection to put forward a case in the WTO.

An important concern among exporters is that India is quickly losing its competitiveness and market share to other developing countries such as Kenya, Brazil, Vietnam, Cambodia and Uganda. This can be attributed to factors such as the ability of these countries (a) to meet the quality standards of the destination market (b) to match demand requirements throughout the year and (c) to ensure uniform quality. Some of these countries have opened up their markets to global retailers and retail chains that source directly from these countries. These retailers work directly with farmers and processors to upgrade quality. As mentioned earlier, countries such as Cambodia have used international funding to upgrade agriculture practices and training. In India, state agriculture ministry officials and state agriculture promotion boards have not been made key stakeholders in capacity building initiatives funded by developed countries and regions to address food safety issues. This is a major gap in policymaking. The FSSAI and Ministry of Agriculture and Farmer's Welfare should be the primary stakeholders for any capacity building projects related to SPS issues in the agriculture sector.

It is important to note that most farmers in India are small and mid-sized. While it is possible for large farmers to adhere to the requirements of the importing countries, small and mid-sized farmers face difficulties in doing so. They need specific support like access to the right technology. Further, countries such as Kenya and Brazil have some large farms catering to key markets such as the EU, where traceability can be easily established, unlike in India. Large farms can ensure uniform product quality. In India, state governments can work with the Ministry of Agriculture and Farmer's Welfare to identify and form clusters for different products as is done in the case of organic farming under the Participatory Guarantee System of India to implement GAP across clusters, which will enable farmers to be linked to export markets.

To conclude, while India has a comparative advantage in terms of production of fresh and processed food products, there is need to upgrade quality in order to sustain high exports. With growing global consciousness about food safety and health standards, the way forward requires India to undertake several domestic measures to improve the quality of its fresh and processed products and upgrade standards. Yet, in case of any discrepancy and unreasonably high standards set by importing countries, Indian exporters and export promotion agencies can raise concerns at both bilateral and multilateral forums. For this, there is need to have scientific research and adequate data to establish its case.

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Appendix A1: Some Examples of Chemicals and the Change in their Limits for Basmati Rice

Notification Number: G/SPS/N/EU/163 Date: 6 April, 2016										
Old Chemical Name	Cymoxanil		Phosphines and Phosphides		No Definition					
New Chemical Name	Cymoxanil		Phosphane and Phosphide Salts		Sodium 5-Nitroguaiacolate					
	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL
Rice	0.05	0.01	0.1	0.05	0.03					
Notification Number: G/SPS/N/EU/161 Date: 5 April, 2016										
Current Residue Definitions	Acrinathrin (F)		Bifenthrin (F)		Carbetamide		Cinidon-ethyl (sum of cinidon ethyl and its E-isomers)			
Proposed New Residue Definitions	Acrinathrin and its enantiomer (F)		Bifenthrin (sum of isomers) (F)		Carbetamide (sum of carbetamide and its S isomer)		Cinidon-ethyl			
	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL
Rice	0.05	0.01	0.05	0.01	0.05	0.01	0.1	0.05		
Notification Number: G/SPS/N/EU/160 Date: 5 April, 2016										
Chemical Name	Aclonifen (F)		Deltamethrin (cis-deltamethrin) (F)		Fluazinam (F)		Methomyl (F)		Sulcotrione (R) code 1000000 except 1040000 : CMBA (2-chloro-4-(methylsulfonyl) benzoic acid)	
	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL
Rice	0.05	0.01	2	1	0.05	0.02	0.02	0.01	0.05	0.02

Notification Number: G/SPS/N/EU/144										
Date: 16 September, 2015										
Chemical Name	Atrazine (F)		Potassium Thiocyanate							
	Current MRL	New MRL	Current MRL	New MRL						
Rice	0.1	0.05		0.01						
Notification Number: G/SPS/N/EU/136										
Date: 29 June, 2015										
Old Chemical Name	Diethofencarb		Mesotrione		Metosulam		Propiconazole		Spiroxamine (R)	
New Chemical Name	Diethofencarb		Mesotrione		Metosulam		Propiconazole (F)		Spiroxamine (A) (R)	
	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL	Current MRL	New MRL
Rice	0.05	0.01	0.05	0.01	0.1	0.01	0.7	1.5	0.05	0.01

Source: Extracted from https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S005.aspx (accessed on September 16, 2016)

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