OPEN ACCESS
AMERICAN JOURNAL OF SOCIAL ISSUES AND HUMANITIES

Fenugreek: An Analysis from Trade and Commerce Perspective

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Abstract
Fenugreek (*Trigonella foenum-greacum* L.) is an annual forage legume and is also grown as a spice crop and a medicinal herb in different parts of the world. India is the largest producer of fenugreek in the global market but a substantial amount of the produce is consumed internally within the country. This chapter makes an attempt in understanding the regional and international market operations of the fenugreek mostly as a spice crop from the perspective of trade and commerce. The author through his long association wit the Indian Spice Board has investigated into the present volume of existing trade in fenugreek compared to other major spices and have highlighted about the opportunities as well as challenges associated with fenugreek in terms of its share in the regional as well as the international market, exports and imports, important commercial hubs and further future opportunities of this spice crop.

Keywords: Fenugreek, *Trigonella foenum-graecum* L., spices, international, trade, world, market, seeds

Abbreviations: EU: European Union; **MT**: metric tonnes; **INRs**: Indian rupees; **UAE**: United Arab Emirates; **UK**: United Kingdom; **US**: United States; **YAE**: Yemen Arab Republic

INTRODUCTION

India is the land of spices. There are a number of spices grown in India. The history of spices in India dates back to the beginning of human civilization [1]. Spices, in the history, have induced wars, voyages, expeditors and romances too and were inevitable part of life even from the very early stages of human history [2]. Spices are produced all over the world. However each country produces only few items. Leading spices producing countries in the world are Brazil (pepper), Indonesia (pepper, cloves, nutmeg, mace, ginger, and cinnamon) Malaysia (pepper), Vietnam (pepper, star anise and cinnamon), China (pepper, ginger, garlic, and cinnamon), Sri Lanka (pepper and cinnamon). No country in the world grows as many kinds of spices as India. India produces more than 5.95 million MT of spices and holds top position in spice production the world. Because of the variety of climates from tropical, sub-tropical to temperate, almost all spices are grown in this country. In all the States and union territories of India, one or more spices are grown in abundance. Pepper is called the king of spices and cardamom, the "*Queen of Spices*". The other major spices such as chili, ginger, turmeric, chilies, cumin and coriander are grown to a large extent. If south India commands sole or near monopoly in the production of pepper, cardamom, ginger and turmeric, northern India contributes other spices in sizable quantities. The major spices produced in India are presented in Table 1.

Table 1. Spice wise area and production in India for 2011-12.

Spice	2010-11		2011-12	
	Area[1]	**Production[2]**	**Area**	**Production**
Pepper	183780	48000	201381	43000
Cardamom (Small)*	71012	10380	71285	15000
Cardamom (Large)*	26984	3918	26460	3860
Chilli	716428	1299191	804792	1276301
Ginger	167432	937043	155063	755618
Turmeric	232022	1268280	223452	1171054
Coriander	474250	372366	557870	532947
Cumin	625087	403744	593980	394328
Celery	3776	4609	4174	5264
Fennel	81890	125710	99554	142949
Fenugreek	94760	127850	93605	115929
Ajwain	27257	19327	35376	26778
Dill seed	26698	33090	21900	23632
Garlic	202888	1085740	242491	1228324
Tamarind	56530	203936	58428	202574
Clove	2195	963	2387	1105
Nutmeg	17760	12088	17485	12574
Cinnamon	187	36	508	35
Saffron	2715	7.99	2989	9
Grand total including others	**3043583**	**5933126**	**3213180**	**5951281**
In million metric tones (MT)		**5.93**		**5.95**

Source: State Agriculture/Horticulture. Departments; *Cardamom: Spices Board
[1]Area in hectare; [2]Production in million MT

MARKET

Out of 5.93 million MT of spices produced in India, over 0.6 million MT of spices are exported. Rest 5.35 million MT are consumed with in the country. This earns India the distinction of not only the largest producer but also the largest consumer of spices. Spices are used not only in whole form but also in the form of powder, blends, paste and extracts. Spices form an integral part of the food industry all over the world. The increased health consciousness and the preference for natural colour and flavour have resulted in the increased demand for spices in the last two decades. The demand for spices is growing around 5.4 % per annum, according to International Trade Center, Geneva [3]. Countries like India, China, Indonesia, Vietnam, Madagascar, Brazil, Guatemala and Sri Lanka mainly produce spices. World trade in spices during 2010-11 was estimated at 11,50,000 MT valued US$ 3,475 million. Pepper and capsicum including chilies share nearly 50 % of the world spice trade in volume. Other spices that contribute significantly to both volume and value are seed spices, vanilla, cinnamon, cloves, nutmeg and mace, cardamom and value added products of mint and spice oils and oleoresins. World trade in major spices for 2010-11 is presented in Table 2.

Table 2. World trade in spices in 2010-11 as estimated by Spices Board, India based on export data of different countries.

Spices	**Quantity (MT)**
Pepper (Black, White & Ground)	2.80,000
Capsicum/Chilli	400,000
Ginger Dry	45,000
Cinnamon/Cassia	39,000
Seed Spices	140,000
Turmeric	80,000
Nutmeg & Mace	9,000
Clove	21,000
Curry	18,000
Cardamom	35,000
Saffron	100
Vanilla Beans	1,100
Spice Oils & Oleoresins	11,000
Other Spices	70800
Total	11,50,000

INTERNATIONAL TRADE TRENDS AND DEVELOPMENTS

The Americas and the European Union (EU) continue to be the most important block regions in terms of import demand for most spices. The United States (US) is still the world's largest individual market for spices with imports running over 3,50,000 MT valued at US$925 million. Since 1976, the European Economic Council taken as a whole has been a larger market for spices in terms of both quantity and value. The EU imports around 4,00,000 MT valued at US$ 1.3 billion. Germany (even prior to unification) is the single largest market in Europe and the second largest after the USA, importing over one third of total spice imports into western European countries. The United Kingdom (UK), Netherlands, France and Spain are next in the European league table. In the Pacific and Asian region the major importer of spices is Japan which has registered a startling growth rate of 5 % in the 5 years between 2005 and 2010 in value terms in a market driven by an almost obsessional imitation of Western eating habits. Other growth areas which are currently showing a healthy upward trend are the Middle East, which estimated to account for about 80 % of all world-wide cardamom exports (particularly Saudi Arabia), north Africa (Algeria, Morocco and Libya who all have bought substantial quantities of price sensitive pepper and Latin American countries (particularly Mexico) who are significant importers of cinnamon and cassia. It is estimated that the vast majority of spices around 80 % - are traded in whole ungrounded (non-powdered) form. The balance is made up of spice essential oils, ground spices and blends and spice oleoresins.

EXPORT OF SPICES FROM INDIA

Export of spices from India was 243,203 MT valued at Indian rupees (INRs). 1940.54 crores (Us $ 404.87 million with 1 US $ = 47.93 INRs) in 2001-02 has reached to 575270 MT valued at INR 9784crore (US $2037.76 million with US $ 48.03INRs) during 2010-11 [4]. The major spices exported from India are pepper, chili, turmeric, seed spices, spices oils and oleoresins. The major spices exported from India are presented in Table 3.

Table 3. Estimated export spices from India during March-April, 2011-12.

	April-March 2011-12	
Spices	**Quantity (MT)**	**Value (INRs 00,000)**
Pepper	26,700	87,813.45
Cardamom (Small)	4,650	36,322.28
Cardamom (Large)	935	6,830.00
Chilli	241,000	214,408.00
Ginger	21,550	20,420.02
Turmeric	79,500	73,434.40
Coriander	28,100	16,401.85
Cumin	45,500	64,442.05
Celery	3,650	2,340.05
Fennel	8,100	7,209.20
Fenugreek	**21,800**	**7,275.20**
Other Seeds[1]	13,050	5,881.25
Garlic	2,200	1,415.70
Nutmeg & Mace	3,620	24,097.51
Other Spices[2]	35,900	32,033.00
CURRY POWDERS/PASTE	17,000	25,208.25
Mint products	14,750	222,372.00
Spice Oils & Oleoresins[3]	7,265	130438.28
Total	**575,270**	**978,342.48**
Value in million US $		**2037.76**
[1]Include Mustard, Aniseed, Ajwain seed, Dill seed, Poppy seed etc		
[2]Include Tamarind, Asafoetida, Cassia, Saffron etc		
[3]Include Mint Oils, Menthol & Menthol Crystal		

The major markets for Indian spices and spices products are US, Malaysia, China, Germany, Bangladesh, UK, the United Arab Emirates (UAE), Sri Lanka, Singapore, Netherlands, Saudi Arabia, Indonesia, Nepal and Brazil. India is the largest exporter of spices in the world exporting around 180 spices/spice Products to over 150 countries. During 2009-10 India's share in the world trade was 50 % in terms of quantity and 44 % in terms of value. Indian spice industry has made rapid progress in the recent years. Today there are more than 3000 registered exporters out of which 530 exporters are manufacturer exporters. Out of these manufacturing units 98 units have in-house laboratories.

MAJOR CHALLENGES TO THE WORLD SPICE INDUSTRY

Today major percentages of spices are produced in developing countries. The world spice industry is facing many challenges in spite of continuous export growth. If these challenges are not addressed properly in time, the spice industry may have to face difficult times and the growth rate may not be sustainable. The following are the major challenges.

1. *Challenge of Productivity*: Increase productivity to bring down the cost.
2. *Challenge of Food Safety and Quality*: The major importing countries are coming out with more stringent legislation on quality requirements.
3. *Challenge of Technology*: New products requirements imposing need to constantly innovate.
4. *Challenge of tariff and non-tariff barriers*
5. *Challenge of Equity*: Internal challenge to increase income of farmers so that they continue to produce the raw material. Though the requirements of quality are more compulsory for exports, the present as well changing regime of food safety norms world-wide calls for strict vigil in terms of quality parameters for consignments traded.

However, all these point to the very important fact of strengthening the supply chain starting from the farmer.

TRADE IN FENUGREEK SEED

Fenugreek seed is not such an important spice in trade arena compared to chili, turmeric, garlic, black pepper or even cumin. However, it has an important place as for as culinary world is concerned. The major fenugreek producing countries are India, Morocco, Egypt, Ethiopia and Turkey [5]. There are many other countries. It is difficult to record production date of fenugreek as in most of production data fenugreek production is clubbed with other seed spices. In recent years Ethiopia is emerging as second largest producer of fenugreek [6]. Indian is the largest producer of fenugreek seeds in the world. In India fenugreek seeds are produced in the large quantities in the states of Rajasthan, Gujarat, Madhya Pradesh and Uttaranchal. The state of Rajasthan produces the lion's share of India's production, contributing nearly 80 % of the country's output. Fenugreek seeds in an important winter crop in Rajasthan and has an important role in the rural economy of Rajasthan, The area under fenugreek and its production is showing an increasing trend in the last four years. In the year 2010-11 the area under fenugreek was 80378 hectares and the production was 94200 MT. The state-wise production of fenugreek from 2007-08 to 2010-11 is presented in Table 4.

Table 4. State wise fenugreek area and production during 2007-08 to 2010-11.

STATE	2007-08		2008-09		2009-10		2010-11	
	Area[1]	Prod.[2]	Area	Prod.	Area	Prod.	Area	Prod.
RAJASTHAN	49797	48914	62894	77319	58917	70328	80378	94200
GUJARAT	4503	16118	4296	10308	4399	9015	5244	13910
HARIYANA	0	0	3442	1700	5356	4300	5241	12157
WEST BENGAL	0	0	2444	2585	2451	2649	2452	2650
UTTARANCHAL	379	2402	400	2540	433	2532	461	2951
TOTAL INCLUDING OTHERS	55520	70155	74512	97533	71985	88979	94760	127850

[1]Area in hectare; [2]Prod. (Production) in MT; **Source**: Horticultural departments of concerned states

The fenugreek arrival in the assembling begins during the month of February and continues till April. The major assembling markets for fenugreek seeds in India are Bundi, Kota, Ramganj Mandi, Jaipur, Sumerpur, Bikaner, Chomu, Srimadhopur, Nimbaheda and Rani in the state of Rajasthan; Unjha, Gondal and Amreli in the state of Gujarat; and Mandsaur, Piplya and Neemuch are the other major assembling markets in the state of Madhya Pradesh [7]. The market structure and market channels for fenugreek is as typical as any agricultural in any developing country with the product moving from farmers to collecting agents or aggregators then to primary/terminal or local markets. From primary/terminal markets the product moves to processors and exporters. In case of exporters, the procurement will be from directly either from primary markets and in some cases collecting dealers. The major issue here is casual handling of product at the lower level of marketing channel which creates quality issues. In fact lack of direct connection between the processor/exporters has created such a big communication gap in the trade that the farmers or collecting agents never know to whom the product is sent and at the same time the processors are unable to track which area the product has come from. A schematic diagram representing the Indian business supply chain on fenugreek is presented in Fig. 1.

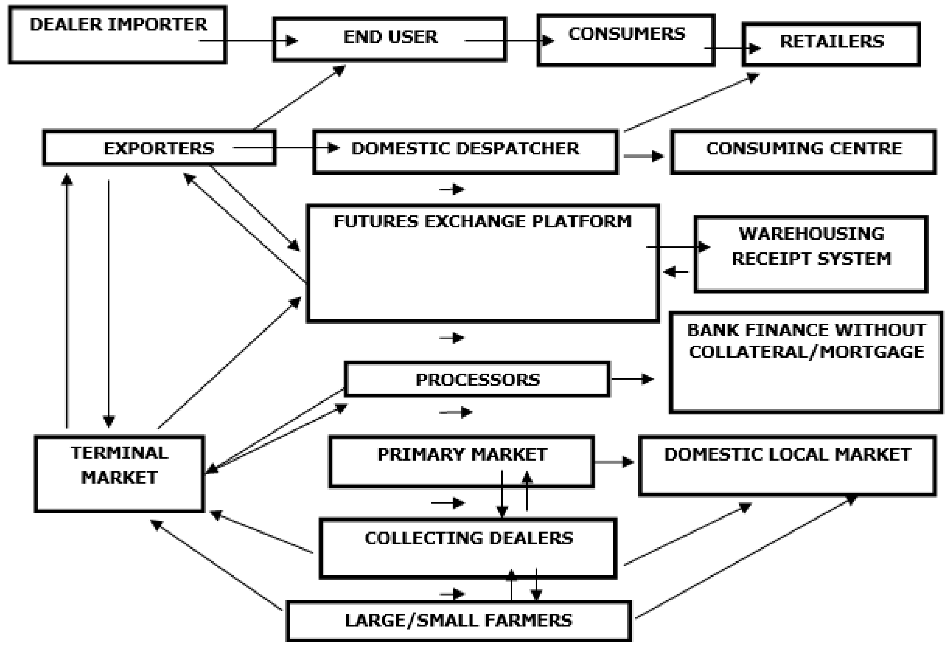

Figure 1. Word diagram representing Indian supply chain for fenugreek.

INTERNATIONAL TRADE IN FENUGREEK

It is very difficult to calculate international trade in fenugreek as most of the statistics/ data published by different trade agencies club fenugreek with other seed spices such as cumin, fennel, coriander and ajwain. However, based on trade estimate and India's exports which is the leading exporter of fenugreek in the world, the world trade in fenugreek is estimated around 35,000 MT with around 63 % of the supply coming from India. The major importers of fenugreek in the world in terms of quantity are UAE, Yemen Arab Republic (YAE), Japan, South Africa, UK, US, Egypt, Bangladesh, Saudi Arabia, France and Germany, Malaysia, Netherlands and Nepal. Thus India continues to be not just the largest producer but also largest exporter of fenugreek. During 2011-12 India exported 21,800 MT of fenugreek to all the major countries. The major markets for Indian fenugreek exported are Japan, UAE, YAE, Egypt, Bangladesh and South Africa.

MAJOR CHALLENGES TO FENUGREEK PRODUCTION AND EXPORTS

The fenugreek industry is facing host of challenges today. The major challenges are:

1. Challenge of productivity: The unit price realization of fenugreek is very low compared to other spices like cumin, turmeric, chilli where as the proclivity is also very low. This translates in to lower returns on farming of fenugreek compared to other spices and other crops. The only way to increase return on farming of fenugreek is increase productivity of fenugreek resulting in higher returns; otherwise sustaining farmers interest to grow fenugreek will become very difficult.

2. Challenge of quality and food safety: The challenge of quality and of safety in supply chain management has become the more critical in the recent days in spices trade in general and fenugreek trade in particular. Being a spice with lots of medicinal and nutritional properties, fenugreek is being used in varied sectors including household sector. Meeting quality specifications of importing countries has become most critical factor to survive and grow in fenugreek exports. With newer stringent food safety laws being enforced an over the world establishing total food safety in supply chain management and farms adopting Good Agricultural Practice (GAP) has become critical to sustaining fenugreek exports. The import alerts issued by leading importers like USA and Rapid Alert System for Food and Feed (RASFF) by EU due to outbreak infections due to Salmonella in spices in general and fenugreek in particular stresses the urgent need to address food safety in supply chain management.

FINAL THOUGHTS AND RECOMMENDATIONS

Spices form an important part of life of people around the world and it is a very important part of life of Indians. Spices find place in every aspect of life whether it is a religious ceremony, home remedy, cooking or body care. Fenugreek is one of the important spices that is extensively used in many regions of the world. Even though fenugreek is of minor importance as far as trade statistics is concerned, it has a unique and distinctive place in the world of cooking and in the pharmaceutical/nutraceutical industries. Fenugreek is being used as traditional remedy since ages. India is the largest producer of fenugreek followed by Ethiopia, Egypt, Morocco and Turkey. In recent years, Ethiopia is emerging as one of the prominent producer of fenugreek. The trade data indicates that this crop has great potential for growth and development in different African regions with suitable climatic and agrological conditions. The consumption of fenugreek in the world is increasing so as its area and production. Area under fenugreek in India has increased from 55520 hectares in 2007-08 to 94760 hectares in 2010-11. Correspondingly the production has also increased from 70155 MT in 2007-08 to 127850 MT in 2010-11. The Indian state of Rajasthan is the largest producer of fenugreek and contributes substantially to the average annual percentage of the Indian production.

The market potential of fenugreek as a crop with hosts of medicinal and allied properties are not fully realized. There are umpteen numbers of fields where there are applications of fenugreek and its multiple by-products. Even in a country like India where fenugreek is cultivated in substantially large quantity, it is still mainly used as one of the ingredients in food preparation and in preparation of curry powders. There is a need for propagating the versatile applications/uses of fenugreek based on research already conducted and translate the research findings into daily usable over the counter products. Also further research is needed to expand the application of fenugreek and its extracts in allied fields to increase the consumption of fenugreek. Exploring/expanding uses of by-products of fenugreek, such as fenugreek galactomannan gum in industry use, in one important option. Galactomannan has the property of viscosity which can convert milk into ice cream, cocoa into chocolate and when dissolved in water it forms gum. At least 3000 MT of seed gum is imported annually in to Australia [8]. This property of fenugreek is under exploited and may have huge potential if grown in Africa.

Just like any other food/spices industry, fenugreek industry is also facing number of challenges. The challenges of the productivity, equity and sustainability and the challenges of quality and food safety are the two major concerns bothering the current industry. Both these challenges are in a way inter-connected. Sustaining the interest of farmers and producers in the cultivation of fenugreek will be possible only by bringing equality in terms of returns on fenugreek cultivation through higher annual productivity. Next is the challenge of quality and food safety which is in turn connected to the returns on the investment in fenugreek cultivation. With newer stringent food safety laws being enforced all over the world and the import alerts issued by leading importers like USA and EU as a result of the outbreak of infections due to *Salmonella*, establishing total food safety in supply chain management and farms adopting GAP has become critical for sustaining fenugreek exports in the long term.

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