

## AN OVERVIEW OF TOMATO ECONOMY OF PAKISTAN: COMPARATIVE ANALYSIS

Ayesha Tahir, Hassnain Shah, Muhammad Sharif, Waqar Akhtar and Nadeem Akmal\*

**ABSTRACT:-** This paper reflects the overtime changes in global tomato production and export trends, market destinations for Pakistani tomato, regional acreage comparison, country's share in tomato export and revealed comparative advantage (RCA) of tomato. Pakistan's share in world tomato exports was negligible in 2000. The results of global and domestic tomato production and export trends depict that the export share in production for the world and Pakistan increased significantly since 2007. At present, Pakistan has no RCA in tomato trade as the value of RCA is much below the unity. However, keeping in view the 8% growth rate in tomato area and 5% in production, there are opportunities in tomato production for export from Pakistan. At present Pakistan's exports are heavily focused on Middle East and Afghanistan markets. Therefore, there is a need to look for other markets to increase the tomato exports during the glut supply season.

*Key Words: Tomato; Revealed Comparative Advantage; Compound Annual Growth Rates; Pakistan.*

### INTRODUCTION

Tomato is one of the most popular vegetables in the world. The products of tomato like paste, juice, ketchup, etc. are widely used in kitchens all around the world. Tomato is considered an important fruit vegetable in the region. It has high contents of vitamins A and C and is widely used in various dishes (AVRDC, 1996). With the increasing affluence of the world, its demand has increased very rapidly resulting in wide scale development of tomato industry for production of tomato. Rise of the fast food industry in the country is also having a significant impact on the demand for tomato products. It is expected that this trend will continue in the near future

and the consumption of tomato will increase.

Among agricultural products, onion, tomato and chilies are most common vegetables in Pakistan and other South Asian countries. These vegetables are co-cooked with other vegetables and meat in addition to be consumed as salad. Therefore, the demand of these vegetables is relatively inelastic in Pakistan (Lohano and Mari, 2005). On the supply side, onion, tomato and chilies are important crops. These crops provide high profits to farmers and employment opportunities to rural laborers as these crops require more labor inputs as compared to other crops (Mari et al., 2007). Pakistan devoted 0.34 mha to produce 4.8 mt of vegetables and

---

\* Social Sciences Research Institute, National Agricultural Research Centre, Islamabad, Pakistan.  
Corresponding author: ashfju1@gmail.com

---

condiments during 2003-04 (GoP, 2004). Besides, Pakistan also earned valuable foreign exchange to the tune of \$ 128.4 million by exporting different vegetables across the world including Middle East and South Asian countries during 2004-05 and \$109.6 million in 2003-04, there by showing 17 % increase overtime. Major buyers of vegetables and fruits from Pakistan were Dubai, India, Afghanistan, Saudi Arabia and United Kingdom (EPB, 2006).

Keeping in view the increasing production and demand along with its importance in the daily diet, prospects in local and internal market the study presents an overview of the tomato economy of Pakistan, trade scenario and examines the revealed comparative advantage in tomato production for Pakistan.

## MATERIALS AND METHOD

The paper is based on the review of literature and comparison of tomato statistics among different tomato producers based on secondary data for ten years (1998-2008) from different sources like FAO Stat, various issues of Pakistan Economic Survey, and Agricultural Statistics for the period under study.

The compound annual growth rates (CAGR) for area and production of tomato will be calculated by using the formula:

$$\text{CAGR} = \left( \frac{\text{End value}}{\text{start value}} \right)^{\frac{1}{\text{period}-1}} - 1$$

The revealed comparative advantage (RCA) for Pakistan in tomato trade was also measured to look at the extent of relative advantage or disadvantage to capture the degree of

trade specialization. Several researchers have determined comparative advantage like Balassa, (1989); Hsu and Wann (2001), Laursen (1998), and Mahmood (2005) etc. It is based on the Ricardian comparative advantage concept. It refers most commonly to an index introduced by Balassa (1965) as follows:

$$\text{RCA} = \frac{(E_{ij} / E_{it})}{(E_{nj} / E_{nt})}$$

where:

$E_{ij}$  = Exports of product j from country i,

$E_{it}$  = Total exports from country i,

$E_{nj}$  = Total exports of product j from the reference area (e.g. the world),

$E_{nt}$  = Total exports from reference area.

## RESULTS AND DISCUSSION

### Performance of Tomato Industry at Global Level

The ranking of countries in terms of production and value of production for top ten countries showed that China and USA remained at first and 2nd place during last ten years while India jumped from 4th to 3rd position replacing Turkey (Table 1). Similarly Egypt replaced Italy for 5th position. Iran and Brazil shifted upward on 7th and 8th position while Spain went to 9th position from 7th. Mexico remained at the same position. The interesting thing to note is that China doubled its production during the study period followed by India where tomato production increased by 67% and Egypt with 60 % increase in production. Percentage change in production by countries is elaborated (Table 1).

**OVERVIEW OF TOMATO ECONOMY**

**Table 1. Top ten tomato producing countries**

Rank	Country	1998		Country	2008		%age change
		Production value (\$1000)	Production (t)		Production value (\$1000)	Production (t)	
1	China	4050772	17096915	China	8034699	33911702	98.3
2	USA	2371432	10009000	USA	3250246	13718171	37.1
3	Turkey	1669524	8290000	India	2441089	10303000	66.7
4	India	1464227	6180000	Turkey	2212343	10985355	32.5
5	Italy	1416178	5977200	Egypt	2180726	9204097	60.0
6	Egypt	1363124	5753279	Italy	1416109	5976912	0.0
7	Spain	784333	3560400	Iran	1143518	4826396	50.6
8	Iran	759141	3204076	Brazil	916363	3867655	38.9
9	Brazil	659639	2784111	Spain	905664	3922500	10.2
10	Mexico	642985	2713820	Mexico	695809	2936773	8.2

Source: FAO Stat, 2008

**Area and Production Growth Rates**

China is at the top in the production of tomato followed by Turkey, India, Iran and Bangladesh. The tomato production growth rate for last decade as per FAO Stat (2008) indicates highest value (9%) for Sri Lanka followed by Kazakhstan and Azerbaijan (8%). The growth rate of tomato in China remained 7% followed by Pakistan and India at 5% each. According to FAO Stat (2009), global area under tomato has increased from 4022729 ha to 4837576 ha from 2000 to 2008. Globally tomato acreage has a growth rate of 2% from 2000 to 2008. The growth rate of Pakistan is 8% which is highest from other mentioned countries like China, Bangladesh, Azerbaijan, Sri Lanka and India.

**Tomato Production and Export Trends**

Tomatoes are widely grown commodity with 136 mt production in the world (FAO Stat, 2008). In

Pakistan, tomato is grown on 53.4 thousand ha producing 561.9 thousand tons of tomato while the tomato area in Punjab is 5.6 thousand ha producing 72.5 thousand tons of tomatoes resulting a higher yield of 12.9 tha<sup>-1</sup> in Punjab as compared to country average (GoP, 2008).

The export value of tomato is 12453 thousand rupees and the quantity is 997147 kg. The import value of tomato is 502286 thousand rupees and the quantity is 35860265 kg (GoP, 2008).

The information on the global and domestic tomato production and export trends indicate that export share in production for the world and Pakistan increased significantly since 2000. In the world as whole, it also increased from 3.51% in 2000 to 4.56% in 2007 showing an increase of 30% during the period while in Pakistan, the share of tomato exports in total production was 0.004% in 2000 and it reached to 0.10% in 2007.

**Table 2. Changes in prices of tomato export from top ten tomato exporting country**

Country	US\$ t <sup>-1</sup> 2000	Country	US\$ t <sup>-1</sup> 2007	%age change
Spain	728.1	Mexico	1137.2	36
Mexico	670.4	Syria	455.5	-47
Netherlands	1117.3	Spain	1329.2	16
USA	874.7	Jordan	4532.6	81
Jordan	176.0	Turkey	588.3	70
Syria	404.8	Belgium	1460.6	72
Belgium	1064.0	India	274.7	-287
Morocco	490.5	Canada	2166.6	77
Italy	1081.9	Italy	2197.1	51
Turkey	312.7	Netherlands	1830.2	83
World	743.0	World	1074.8	31

Source: Authors calculation using FAO data, 2007

### Overtime Export Price Change

The comparison of change in export prices of tomato in top ten tomato exporting countries from 2000 to 2007 revealed a net increase of 31% in tomato export prices through the world (Table 2). However, some countries like Netherlands got high export price (83%) followed by Jordan (81%), Canada (77%), Belgium (72%), Turkey (70%) and Italy (51%). Overtime, the export price of some countries also decreased like Syria and India.

### Export Share of Main Tomato Exporting Countries

The increasing demand by consumers in developed countries in 2007 for tomato exports indicates that Netherlands is ranked on the top as a country with total export of 22% followed by Mexico (18%) and Spain (17%). The value of Pakistan's tomato exports is so low that its share in tomato export is negligible in the world (FAO Stat, 2007) (Table 3).

**Table 3. Main tomato exports in the world, in value term (2007)**

Country	Exports ( US000\$)	% share
Netherlands	1527534	22
Mexico	1219875	18
Spain	1170556	17
Belgium	297015	4
Canada	271280	4
Italy	240716	4
Syria	224908	3
Jordan	175397	3
Turkey	218915	3
India	37050	1
Pakistan	94	0
others	1463165	21
World	6846505	100

Source: FAO Stat, 2007

### Comparative Analysis of Tomato Export

It is evident from FAO Stat 2007, that overtime global average export unit value is \$ 933 per ton and \$132 per ton for Pakistan. The results revealed that tomato exports from Pakistan fetched lower prices as compared to that of the world. On an average, Pakistan is exporting 9949t which is very less as compared to world's average exports of 37.7 mt.

There is a need to explore new markets for Pakistani tomato to fetch better prices. Pakistan exports are heavily focused on Middle East market which is the low tomato fetching prices market.

**Global Tomato Imports**

Global imports of tomato were 3.6 mt in 2000 and it increases to 6.1 mt in 2007. The major importing countries in 2007 are Iraq, Germany, France, UK, Canada, UAE, El Salvador, Czech Republic, Italy and Belgium. The ranking in share of major importers of tomato in 2007 is Iraq at top with 11% share followed by Germany (11%), France (8%) and UK (7%) (FAO Stat 2007).

**Market Destinations for Pakistani Tomato**

Afghanistan imported 4963850 mt tomato in 2005-06 representing over 46 % of the total tomato exported from Pakistan. Qatar, Saudi Arabia represented 18 and 13% of the total tomato supply from Pakistan in 2005-06. Middle East market region collectively represent 90 % of the total Pakistani tomato export. The proportion of export to

Maldives is 11 % and UK is 2 %. In 2006-07, the participation of Middle East market came down to 85 % showing 34% share of Afghanistan as major contribution followed by Bahrain and Canada at the proportion of 21% and 20% respectively (FAO Stat, 2008).

**Overtime Revealed Comparative Advantage of Tomato Exports by Pakistan**

Jordan is the country which has revealed comparative advantage (RCA) value of 53.25 in 2008 which is the greatest value amongst all the countries. The overtime value of RCA of Pakistan's exports is approximately negligible but for 2007 it is 3.77 which is so low that we can say that Pakistan has no RCA in tomato export. So there is a need to increase the productivity beside the availability of supply with respect to demand and prices in the international market (Table 4).

A very small proportion of tomato is used for processing mostly into tomato paste which is used in canned form. The small producers are disadvantaged within a new trading environment. Within the

**Table 4. RCA of tomato exports by Pakistan**

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Netherlands	5.50	6.32	5.69	4.45	4.45	5.78	4.84	5.37	4.70	1.98	5.94
Mexico	17.68	14.27	11.82	12.04	11.50	16.79	16.07	16.06	13.88	3.21	9.04
Spain	10.51	11.61	12.06	9.89	8.70	9.46	9.51	10.86	8.42	3.30	9.51
Belgium	0.00	0.00	2.18	1.57	1.36	1.82	1.29	1.50	1.25	4.91	1.33
Canada	0.87	0.99	1.33	1.20	1.06	1.45	1.53	1.52	1.36	4.61	1.48
Italy	0.86	0.94	1.20	1.00	0.95	0.88	0.84	0.86	0.81	3.50	0.94
Syria	48.17	52.95	36.32	21.12	12.65	15.36	7.19	7.06	26.23	1.39	17.64
Jordan	49.46	43.96	40.11	39.88	32.11	29.93	34.42	46.91	34.15	2.20	53.25
Turkey	3.77	1.38	3.00	2.84	2.83	3.15	3.10	3.79	2.82	1.46	6.43
India	0.01	0.01	0.01	0.01	0.07	0.04	0.03	0.05	0.11	1.80	0.33
Pakistan	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.00	0.08	3.77	0.02

Source: Authors calculations using FAO data 2008

trading environment, small producers are facing the problem of access to the markets (Humphrey et al., 2004; Kleinwechter and Grethe, 2006; Maertens and Swinnen, 2006; World Bank, 2005). In spite of these problems the dynamics of the Pakistan tomato production are impressive. Pakistan has maintained its position as a sixth largest producer in the Asian market (FAO Stat, 2008). Hence focusing from commodity to product approach and linking tomato production with the product and global tomato value chain may help to fetch higher prices, increase competitiveness, maintain prices and create employment opportunities through adding value across the tomato value chain.

It can be concluded that the global production and trade of tomato increased considerably since 2000. Pakistan's share in world tomato exports was negligible (0.004%) in 2000 and it increased considerably overtime (0.10%) in 2007. The volume of world export as a whole also increased from 3.51% in 2000 to 4.56% in 2007. The comparison of change in prices of tomato exports depicted an increase of 35%.

Pakistan exports are heavily focused mostly to Afghanistan and in Middle East market. Therefore, there is a need to look for other non-traditional markets to increase the tomato export. The export volume is also not consistent due to fluctuations in production and prices. At present, Pakistan has no comparative advantage in tomato trade. However, considering the production potential, there is lot of opportunities in tomato production

for export from Pakistan through better production technology.

### LITERATURE CITED

- AVRDC, 1996. Vegetable research networking in South Asia: Savernet Phase I final report; Asian Vegetable Research and Development Center (AVRDC), Shanhua, Tainan, Taiwan 741, ROC. p.76.
- Balassa, B. 1965. Trade Liberalization and Revealed Comparative Advantage, The Manchester School, 33: 99-123.
- Balassa, B. 1989. Comparative Advantage, Trade Policy and Economic Development, Harvester Wheatsheaf, London.
- Export Promotion Bureau (EPB), 2006. www.epb.org. Website, Accessed in March 2006.
- FAO Stat, 2008. <http://faostat.fao.org/site/567/default.aspx#ancor>
- Ferto, I. and Hubbard, L.J. 2003. The Dynamics of agri-food trade patterns. The accession countries' case. Proc. International Conference Agricultural Policy Reform and the WTO: Where are we heading? Capri, Italy June 23-26.
- GoP, 2004. Agricultural Statistics of Pakistan 2003-04. Economic Wing, Ministry of Food Agriculture and Livestock, Islamabad.
- GoP, 2008. Agricultural Statistics of Pakistan 2008-2009. Economic Wing, Ministry of Food Agriculture and Livestock, Islamabad.
- Hsu, J.L. and Wann, J.J. 2001. Competitiveness and consumer preference of US fruits

- in Taiwan. Proc. Annual Meetings of the American Agricultural Economics Association-Canadian Agricultural Economics Society, Chicago, USA 5-8 August.
- Humphrey, J. McCulloch, N. and Ota, M. 2004. The Impact of European market changes on the employment in the Kenyan Horticulture Sector. *J. International Development*, 16 (1): 63-80.
- Kleinwechter, U. and Grethe, H. 2006. The adoption of the Eurep gap standard by mango exporters in Piura, Peru. Paper presented at the 26th Conference of the International Association of Agricultural Economists, Queensland, Australia, August 12-18.
- Laursen, K. 1998. Revealed comparative advantage and the alternatives as measures of International Specialization. ISBN 87-7873-069-4.
- Lohano, H.D. and Mari, F.M. 2005. Spatial price linkages in regional onion markets of Pakistan. *J. Agric. Soc. Sci.* 1(4): 318-321.
- Maertens, M. and Swinnen, J. 2006. Standards as barriers and catalysts for trade and poverty reduction. Invited paper prepared for the invited panel session on Food Safety Standards and Agri-food Exports from Developing Countries at the 26th Conference of the International Association of Agricultural Economists, Queensland, Australia, August 12-18.
- Mahmood, A. 2005. Export competitiveness and comparative advantage of Pakistan's Non-agricultural production sectors: Trends and Analysis Pakistan Institute of Development Economics (PIDE) (Pakistan). Paper presented at 20th Annual General Meeting and Conference.
- Mari, F.M. Rajab, A. M. and Lohano, H.D. 2007. Measuring returns to scale for onion, tomato and chilies production in Sindh province of Pakistan. *Int. J. Agri. Bio.* 9(5) 788-790.
- World Bank (WB), 2005. Food safety and agricultural health standards: Challenges and opportunities for developing countries. World Bank Sector Report, World Bank, Washington, DC.
-