

Trade liberalisation and domestic reforms in Indian oilseeds sector

Murlidhar Meena¹ and Khorajiya Mahammadhusen²

¹ICAR-Directorate of Groundnut Research, Junagadh-362001, Gujarat, India

²Department of Agricultural Economics, Junagadh Agricultural University, Junagadh- 362001, Gujarat, India

ABSTRACT

Present study has tried to capture the changes took place in oilseed economy of the country during pre- (1970-71 to 1994-95) and post-WTO (1995-96 to 2012-13) periods. The expansion of acreage under oilseeds (from 16.6 in 1970-71 to 26.7 Mha in 2012-13), coupled with yield improvement from 519 to 1164 kg/ha, resulted in increased production by more than three and half times from 8.6 to 31.1 Mt in respective periods. The share of area and production of different oilseeds have changed in study period. The groundnut and other oilseeds viz.; safflower, sesamum, niger, castor, and linseed were the major oilseed crops in 1970's, have been displaced by soyabean and rapeseed & mustard in the recent period. TMOP in 1986 results in higher growth in area and production in pre-WTO than that of post-WTO period in all the oilseeds. Higher instability in production than area and yield was observed in all the oilseeds, except sunflower because more than 70 per cent of oilseeds in the country are grown under rain fed and resource poor situations. In case of edible oils, production, availability and per capita consumption increased in study period. But the consumption pattern has drastically changed from domestically produced groundnut, rapeseed & mustard oils in pre-WTO period to mostly imported palm, sunflower and soya oils in post-WTO period. India attained almost self sufficiency in edible oils during early 90's, but import dependence has increased then after which may further like to increase in future. Hence study suggests the need of policy reforms for development of oilseeds sector and to become self sufficient in edible oils.

Keywords: Oilseeds, edible oils, WTO, CGR, instability index

Oilseeds occupy an important position next to foodgrains in agricultural economy of India. It accounts for 3 per cent of the Gross National Product (GNP) and 10 per cent value of all the agricultural commodities produced in India (GOI, 2014). Total nine oilseeds viz., groundnut, rapeseed & mustard, soyabean, sunflower, safflower, sesamum, niger, castor, and linseed are cultivated in India which occupy nearly 14 per cent of the gross cropped area. The 4th advance estimates of

Access this article online	
Publisher	Website: http://www.ndpublisher.in
	DOI: 10.5958/0976-4666.2016.00007.3

Address for correspondence

Murlidhar Meena: ICAR-Directorate of Groundnut Research, Junagadh-362001, Gujarat, India

E-mail: meenamurlidhar@gmail.com

2013-14, reported that highest ever oilseeds production (32.9 Mt) from 28.5 Mha acreage. Groundnut (18% and 15%), rapeseed & mustard (24% and 26%), soyabean (41% and 47%) and sunflower (3% and 2%) are the major oilseeds, contributing 86 and 90 per cent of total oilseeds area and production in the country (2012-13). Over the study period, proportionate share of individual oilseed crop to total oilseeds have changed.

Edible oils are vital food ingredients; provide energy and essential fatty acids. Indian edible oils economy is the fourth largest in the world after USA, China and Brazil (GOI, 2014). In India, consumption of edible oils has grown faster than domestic production in the last two decades, led to increased import to bridge the gap between demand and supply. India imported more than 11.0 Mt edible oils during 2012-13 (valued ₹ 56,489/-), representing about 53 per cent of its annual edible oil consumption and more than 55 per cent of the value of its total agricultural imports.

In India, agriculture trade was regulated till early 1990's by government using restrictions and quotas. Trade liberalisation in early 90's followed by WTO agreement on agriculture in mid 90's resulted changes in domestic as well as international trade policies. These policy changes have transformed Indian agriculture especially oilseeds sector. The present study has tried to capture the changes occurred in oilseeds and edible oils sector in pre- and post-WTO periods.

DATABASE AND METHODOLOGY

The information on area, production, and yield of oilseed crops; domestic availability, import, total availability and per capita availability of edible oils were collected from Directorate of Economics and Statistics, Department of Agriculture and Cooperation, GOI website (<http://eands.dacnet.nic.in>) and Agriculture Statistics at a Glance, 2014. Total nine oilseeds were studied which include four major oilseeds (groundnut, rapeseed & mustard, soyabean and sunflower) and five minor oilseeds (safflower, sesamum, niger, castor, and linseed) represented as other oilseeds. The study period was divided into two sub-periods *viz.*, pre-WTO (1970-71 to 1994-95) and post-WTO (1995-96 to 2012-13). The growth and instability of variables were measured using

the compound growth rate (CGR) and instability index.

$$CGR = Y_t = Y_0 (1+r)^T e^u$$

Where

Y_t = Value at time 't'

Y_0 = Initial value

r = Growth rate

T = Time in years; 0, 1, 2n and

u = Random error-term.

Instability Index = STDEV of $1_n (Y_{t+1}/Y_t)$

Where

STDEV = standard deviation

Y_t = area/production/yield of oilseed crops or import in quantity/value of edible oil and

Y_{t+1} = area/production/yield of oilseed crops or import in quantity/value of edible oil for the next year (Chand, 2011).

RESULTS AND DISCUSSION

Globally, India accounts for 12-15 per cent of oilseeds area, 7-8 per cent of oilseeds production, 6-7 per cent of vegetable oils production, 9-12 per cent of vegetable oils import and 9-10 per cent of the edible oils consumption (Jha *et al.* 2012). Oilseeds are largely grown in central (Gujarat, Madhya Pradesh, Rajasthan and Maharashtra) and southern states (Andhra Pradesh, Karnataka and Tamil Nadu) of India. The changes in area, production and yield of major oilseeds, other oilseeds and total nine oilseeds have been studied to measure the intra-sector dynamics in Indian oilseeds sector. Because during this period, the land use statistics among different oilseed crops have changed significantly. In last four decades (since 1970), the oilseeds acreage in the country has been expanded by 10 Mha, resulting their area has increased from 16.6 Mha in TE 1973 to 26.7 Mha in TE 2013. Moreover, the area under soyabean and rapeseed & mustard has expanded appreciably during this period. The commercial cultivation of soyabean was started in the country in late 1960's. Area of soyabean which was mere 0.03 Mha in TE 1973 has increased to 10.2 Mha in TE 2013. Similarly sunflower area also expanded

just from 12,000 ha in early 70's to 2.0 Mha in mid 90's but later on it showed decreasing trend. On the other hand, the area under groundnut and other oilseeds have reduced by 27 and 30 per cent, respectively from 7.3 to 5.3 Mha in groundnut and from 5.7 to 4.0 Mha in other oilseeds between TE 1973 and TE 2013.

The total acreage under oilseeds has rose to 26.2 Mha in TE 2013 from 16.2 Mha in TE 1973 similarly, yield has doubled from 519 kg/ha during TE 1973 to 1165 kg/ha by TE 2013. As a result, total oilseeds production increased from 8.6 Mt in TE 1973 to 31.1 Mt in TE 2013. The highest improvement in oilseeds yield have been observed between the TE 2003 (805 kg/ha) and TE 2013 (1165 kg/ha) with an improvement of 360 kg/ha in last decade. The yield of sunflower has decreased between early 70's and 80's; similar fall was recorded in yields of soyabean between TE 1993 and TE 2003 (Table 1). Technology mission on oilseed and pulses (TMOP) launched in 1986 by GOI had significant impact in oilseed sector where, the acreage under total oilseeds has increased by 7 Mha during TE 1983 and TE 1993. The area under the total oilseeds has increased mainly due to the increase in the acreage of the four major oilseeds in general and soyabean in particular. However, the area of the other oilseeds decreased during this period.

CGR and instability indexes were used to measure the growth and variations in the area, production and yield of oilseeds during the pre- and post-WTO periods (table 2). The Nine oilseeds have showed positive growth in area, production and yield however, sunflower had a negative growth in yield (-1.3%) and other oilseeds had negative growth in area (-0.5%) during the pre-WTO period. The area, production and yield growth of all the nine oilseeds was high in pre-WTO period compared to post-WTO period. There was equal variation in area and production in both the periods but yield become more volatile in post-WTO period. The area, production and yield of groundnut have a positive growth in pre-WTO period. In the post-WTO period, trade liberalisation has adversely affected groundnut where negative CGR was observed in both the area (-2.1%) and production (-1.0%). During the whole study period, acreage of groundnut showed negative growth (-0.6%), it has shrunken from 7.3 Mha (TE 1973) to 5.3 Mha (TE 2013)

but the production (0.5%) and yield (1.1%) showed positive growth. Instability in area, production and yield of groundnut increased in post-WTO period.

Rajasthan, Madhya Pradesh, Haryana, Uttar Pradesh, West Bengal and Gujarat contribute to more than 90 per cent of total area and production of rapeseed & mustard in India. The acreage gain (from 3.4 to 6.4 Mha) together with yield enhancement (from 511 to 1189 kg/ha) from TE 1973 to TE 2013 increased its production (from 1.7 to 7.6 Mt) in the country. Rapeseed & mustard and soyabean recorded positive growth in their area, production and yields all the phases of study period. But the rate of growth decreased and instability increased in post-WTO period in rapeseed and mustard. Whereas, the performance of soyabean area, production and yield became more consistent in post-WTO period as indicated by decreased instability index in this period. This may be due to the higher demand for de-oiled soyabean cake in international market caused increase in the domestic cultivation of soyabean. In Indian oilseeds trade, soybean cake was a major source of foreign exchequer which contributes almost 50 per cent of total export value of de-oiled cake, seeds and oils/fats (GOI, 2014).

Sunflower was introduced to India as an oilseed crop during late 70's, with an area of 12,000 ha mainly in Karnataka. During pre-WTO period its area and production have increased at higher growth rate next to soyabean and reached to 2.7 Mha and 1.3 Mt, respectively in 1993-94. But after WTO agreement, its area and production have fallen drastically and with highest negative growth of -3.0 and -1.8%, respectively.

In India, oilseeds production has grown at higher rates during the pre-WTO period when compared to post-WTO period; this was due to the combined effect of increased area and enhanced yield. But oilseeds production in the country was found to be more volatile because large portion of oilseeds acreage (>70%) was found to be rainfed and the crops were grown in resource poor situations.

Traditional oilseed crops such as, groundnut, rapeseed & mustard and other oilseeds were grown during early 70's where their collective share was 99 per cent of total

oilseeds acreage. Groundnut contributed major share till 1970, then it has contributed 63 per cent of total oilseeds production from 44 per cent of total oilseed acreage because the yield (747 kg/ha) was higher when compared to total oilseeds (519 kg/ha). Groundnut was immediately followed by other oilseeds and rapeseed & mustard, with 35 and 21 per cent area and 15 and 21 per cent production of total oilseeds, respectively during 70's. Soyabean and sunflower had very low (<1%) area and production share to total oilseeds. With the lapse of time, groundnut has lost its crown to soyabean as the

later has a share of 38 per cent to the total oilseed area and 42 per cent to the total oilseed production in TE 2013. Rapeseed & mustard stood second to soyabean with a share of nearly 24 per cent of total oilseeds in both the area and production. The share of groundnut to the total oilseeds acreage has nearly halved in its (from 44% in TE 1973 to 19.8% in TE 2013) and production share reduced one third (from 63% in TE 1973 to 21.3% in TE 2013). This is the biggest transformation have taken place in the oilseeds arena of the country.

Table 1: Intra-sectoral changes in Indian oilseeds (1970-71 and 2012-13)

Particulars	Crops	TE 1973	TE 1983	TE 1993	TE 2003	TE 2013
Area (in million hectare)	Nine oilseed	16.57	18.09	25.09	22.3	26.67
	Groundnut	7.28	7.15	8.38	6.25	5.28
	Rapeseed & Mustard	3.42	4.11	6.17	4.7	6.38
	Soyabean	0.03	0.62	3.18	6.29	10.18
	Sunflower	0.12	0.29	1.94	1.3	0.83
	Other oilseeds	5.72	5.92	5.42	3.77	3.99
Production (in million tonnes)	Nine oilseed	8.62	10.48	19.11	17.98	31.07
	Groundnut	5.46	5.84	7.72	5.85	6.64
	Rapeseed & Mustard	1.74	2.3	5.3	4.38	7.6
	Soyabean	0.02	0.43	2.83	5.3	13.21
	Sunflower	0.08	0.15	1.08	0.73	0.57
	Other oilseeds	1.32	1.77	2.18	1.71	3.05
Yield (in Kg per hectare)	Nine oilseed	519	578	762.33	804.67	1164.67
	Groundnut	747.33	813.33	923.67	932.67	1243
	Rapeseed & Mustard	511.67	559.33	858.33	930.41	1189.33
	Soyabean	557	702	897	841.33	1296
	Sunflower	653	538.67	555.67	570	688.67
	Other oilseeds	230.1	299.47	403.68	452.23	763.7

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Agricultural Statistics at a Glance 2014

Table 2: Compound growth rate and instability index for area, production and yield (1970-71 and 2012-13)

Crops	Period	CGR			Instability index		
		Area	Production	Yield	Area	Production	Yield
Nine oilseeds	Pre-WTO	2.05	4.09	2.01	0.02	0.07	0.02
	Post-WTO	0.49	2.39	1.89	0.02	0.07	0.03
	Overall	1.39	3.39	1.97	0.02	0.07	0.02

Trade liberalisation and domestic reforms in Indian oilseeds sector

	Pre-WTO	0.69	1.76	1.06	0.03	0.13	0.03
Groundnut	Post-WTO	-2.10	-1.04	1.08	0.04	0.22	0.05
	Overall	-0.61	0.47	1.09	0.04	0.17	0.04
	Pre-WTO	2.80	5.86	2.98	0.07	0.36	0.03
Rapeseed & Mustard	Post-WTO	0.14	2.33	2.18	0.09	0.14	0.02
	Overall	1.83	4.22	2.35	0.08	0.30	0.03
	Pre-WTO	24.86	26.96	1.28	0.53	1.70	0.04
Soyabean	Post-WTO	4.34	5.78	1.38	0.03	0.11	0.03
	Overall	14.73	16.59	1.47	0.41	1.34	0.03
	Pre-WTO	14.39	12.78	-1.35	4.89	0.62	0.03
Sunflower	Post-WTO	-3.02	-1.81	1.17	1.10	1.76	0.02
	Overall	6.48	6.66	0.20	3.82	1.20	0.02
	Pre-WTO	-0.54	2.37	2.93	0.04	0.63	0.02
Other oilseeds	Post-WTO	-0.87	2.05	2.95	0.06	0.44	0.02
	Overall	-1.43	1.33	2.80	0.05	0.55	0.02

Note: Pre- WTO period is 1970-71 to 1994-95 and Post WTO period is 1995-96 to 2012-13 and overall denotes 1970-71 to 2012-13

Table 3: Proportionate share of area and production (in %) of oilseed crops to total oilseeds (1970-71 and 2012-13)

Particulars	Crops	TE 1973	TE 1983	TE 1993	TE 2003	TE 2013	CGR			Instability index		
							Pre-WTO	Post-WTO	Overall	Pre-WTO	Post-WTO	Overall
Area share (in%)	Nine oilseed	100	100	100	100	100						
	Groundnut	43.93	39.53	33.42	28.00	19.78	-1.34	-2.57	-1.97	0.01	0.02	0.02
	Rapeseed & Mustard	20.63	22.73	24.59	21.07	23.92	0.74	-0.34	0.44	0.02	0.03	0.03
	Soyabean	0.18	3.45	12.63	28.21	38.21	22.35	3.83	13.16	0.70	0.02	0.54
	Sunflower	0.73	1.58	7.73	5.85	3.11	12.09	-3.49	5.02	12.98	0.12	10.02
	Other oilseeds	34.53	32.71	21.63	16.87	14.98	-2.54	-1.35	-2.78	0.01	0.03	0.02
Production share (in %)	Nine oilseed											
	Groundnut	62.93	55.35	40.35	32.18	21.33	-2.25	-3.35	-2.82	0.03	0.07	0.05
	Rapeseed & Mustard	20.55	22.12	27.83	24.49	24.43	1.70	-0.06	0.81	0.07	0.06	0.06
	Soyabean	0.21	4.16	14.74	29.61	42.54	21.96	3.31	12.77	0.72	0.04	0.55
	Sunflower	0.94	1.46	5.65	4.23	1.83	8.35	-4.10	3.16	21.31	0.20	16.45
	Other oilseeds	15.36	16.92	11.44	9.50	9.88	-1.66	-0.33	-1.99	0.04	0.06	0.05

Source: Estimated from Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Agricultural Statistics at a Glance 2014

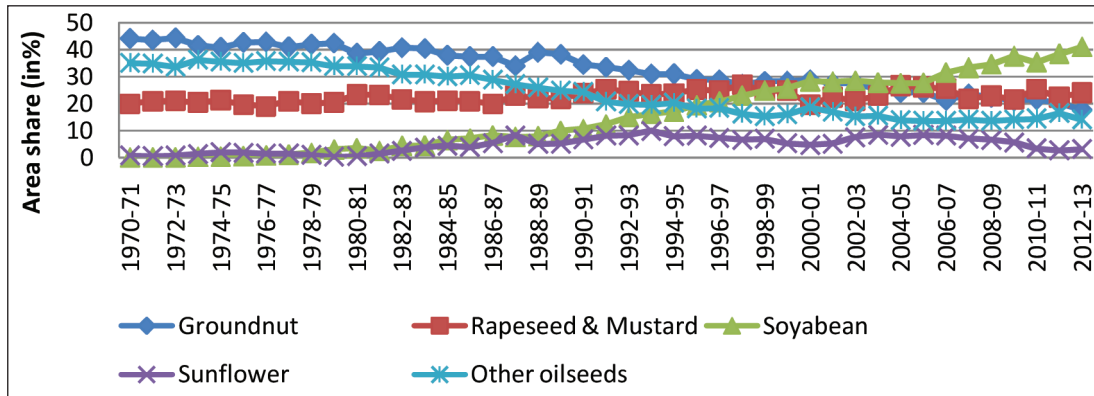


Fig. 1: Share in oilseed crops acreage (in %) to the total oilseeds (1970-71 and 2012-13)

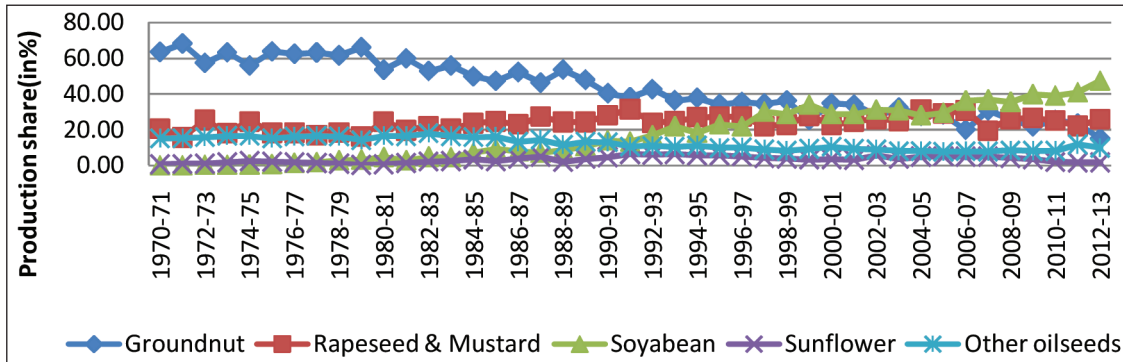


Fig. 2: Share in oilseed crops production (in %) to the total oilseeds (1970-71 and 2012-13)

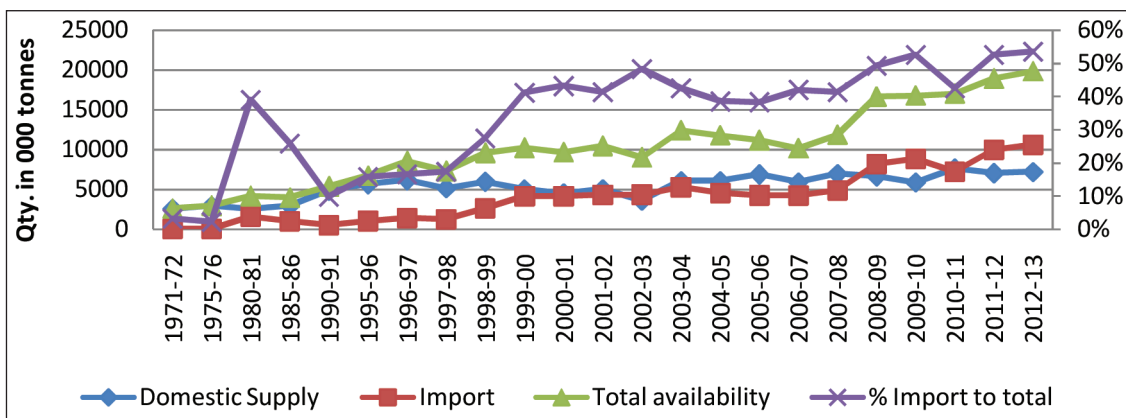


Fig. 3: Domestic supply, import, total availability and per cent share of import to total availability of edible oils in India.

Trade liberalisation and domestic reforms in Indian oilseeds sector

Table 4: Total and per capita availability of edible oils in India (1980-81 to 2012-13)

Year	Edible oils availability (Mt)				Per capita availability (Kg)		
	Domestic	Import	Total	% Import	Edible oils	Vanaspati	Total
1980-81	2.56	1.63	4.19	38.95	3.80	1.20	5.00
1990-91	4.88	0.53	5.40	9.73	5.50	1.10	6.50
2000-01	4.50	4.18	9.68	43.17	8.80	1.40	10.20
2010-11	7.63	7.24	17.02	42.54	13.60	1.00	14.60
2011-12	7.06	9.94	18.90	52.61	13.80	1.00	14.80
2012-13 (P)	7.20	10.61	19.82	53.50	15.80	0.70	16.50

Source: Economic survey 2013-14, Pdenotes-provisional

Table 5: Compound growth rate and instability index for domestic production, import, total and per capita availability of edible oils in India

Particulars	CGR			Instability index		
	Pre-WTO	Post-WTO	Overall	Pre-WTO	Post-WTO	Overall
Domestic edible oils production	14.07	2.03	4.05	0.03	0.02	0.03
Import of edible oils	88.89	12.18	18.82	0.36	0.03	0.17
Total availability	18.91	5.70	8.18	0.02	0.02	0.02
Per capita Edible oils availability*	2.08	4.75	3.85	0.08	0.07	0.07
Per capita Vanaspati availability*	-1.29	-1.30	-0.41	0.24	1.30	0.95
Per capita total oils availability*	1.31	4.16	3.27	0.06	0.06	0.06

Note: Pre- WTO Period is 1970-71 to 1994-95 and post-WTO period is 1995-96 to 2012-13 and overall denotes 1970-71 to 2012-13; for * marked items Pre-WTO Period is from 1980-81 to 1994-95 and overall denotes 1980-81 to 2012-13 due to unavailability prior information

The major policies which had strong impact on the oilseed sector of India were, firstly, the TMOP (1986) and secondly, trade liberalisation (1991) followed by WTO agreement on agriculture in 1995. There was very impressive positive impact of TMOP on oilseeds area and production in the country. In just six years of implementation of TMOP, oilseeds acreage was pushed up from 19 Mha in 1984-85 to 26 Mha in 1991-92 and an improvement in yield from 570 to 790 kg/ha which resulted in rise in the production from less than 11 Mt to 19 Mt during the same period. In absolute term,

except other oilseeds, the acreage and production of all oilseeds have increased between TE 1983 and TE 1993, which clearly points out the significant positive impact of TMOP to Indian oilseeds sector. But the proportionate share of groundnut area (from 39.5 to 33.4%) and production (from 55.3 to 40.3%) to total oilseeds has fallen significantly from TE 1983 to TE 1993. Similar pattern was observed in case of other oilseeds also. On the other hand share of soyabean has improved during this period (Table 3).

Trade liberalisation and WTO has caused an increase in the interaction between domestic and international markets which threatened the Indian oilseeds and edible oils sector. The flow of subsidized oilseeds and edible oils from developed countries has increased due to the liberalisation of the import policies such as removal of quotas and trade restrictions. It resulted in creation of glut in the market with the import of cheap edible oils such as palm and soya oils. As a consequence, the acreage under the traditional oilseeds (groundnut and other oilseeds) was diverted to trade oriented oilseeds like soyabean (Figure 1 and 2). In India, edible oil consumption pattern was moving away from conventional oils (groundnut and rapeseed & mustard) to imported palm, sunflower and soya oils (Mehta, 2015). In addition, there was an increase in demand for the de-oiled soya cake in international market. These results were in line with the findings of earlier studies. Chadda *et al.* (2008) reported that the total impact of trade liberalization in India will vary with nature of commodity, and there will be significant negative impact of trade liberalisation on edible oilseeds and vegetable oils and fats sector. Chand (2004) observed the output price relation for different commodities and found negative growth in oilseeds output due to fall in oilseeds price in the 1990's as a result of trade liberalisation.

Edible oils are the vital ingredient of the food basket of Indian consumers, having 3.8 and 2.7 per cent share to total consumer expenditure in rural and urban India, respectively (2011-12). India, a largest importer of palm oil and a fourth largest edible oil economy where, the total edible oils consumption has increased from 4.2 Mt in 1980-81 to 19.8 Mt in 2012-13 this was due to rise in per capita consumption (from 3.8 to 15.8 kg, respectively) and increased population (from 846.4 to 1217 million, respectively). This trend may continue to exist in the near future owing to ever increasing demographics and per capita income. Currently, the per capita consumption of edible oils in India (15.8 kg) was far below the world average (27.0 kg).

In India, domestic production of edible oils has increased to thrice from 2.6 Mt in 1980-81 to 7.2 Mt in 2012-13 but the demand has increased by almost five times from 4.2 Mt to 19.8 Mt, respectively (Table 4). Therefore, the domestic supply fell short in meeting

the ever increasing consumer demand for edible oils in the country and this gap has increased from 1.6 Mt to 10.6 Mt during the this period. The import of edible oils recorded higher growth (89% and 13%) than domestic production (14% and 2%) in both pre- and post-WTO periods (Table 5). Prior to 80's, India was importing more than 1 Mt edible oils however, due to implementation of TMOP the country reached self-sufficiency up to 90 per cent which resulted in fall of edible oils import to 0.1 Mt (1992-93). But imports again rose and crossed 10.0 Mt mark by 2012-13, an important cause for the net drain of the exchequer to the Indian economy. It was expected that WTO agreement would raise international prices of agricultural commodities and would improve the exports prospects of the country like India. But in contrary, the world prices declined sharply lower than the domestic prices, creating a situation more favorable for imports rather than exports (Mittal, 2007). Per capita availability of oils has increased at higher rate (4.7%) in post-WTO period and with assured and increased availability of edible oils (Figure 3). The domestic production and import of edible oils have become less volatile in post-WTO period as the result of integration of domestic and international markets in this period.

CONCLUSION

There occur high intra-sector transformation in Indian oilseeds and edible oils sector, in study period which may continue to exist in near future. There is an urgency to make the groundnut and other oilseeds cultivation more remunerative to halt their decreasing acreage. Efforts must be directed to increase the oilseeds productivity and to make India self-sufficient in edible oils. Policy measures are required to make the domestic oil processing industries more competitive and profitable to enhance edible oils production thus to reduce the import dependency.

REFERENCES

- 2014. Agriculture Statistics at a Glance. Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi. Available at <http://eands.dacnet.nic.in>
- Chadha, R., Pratap, D. and Tandon, A. (accessed 22 July, 2015) Agricultural Trade Liberalisation in General Equilibrium Framework. In: International Workshop Agricultural Trade

Trade liberalisation and domestic reforms in Indian oilseeds sector

- Liberalisation and Domestic Market Reforms in Indian Agriculture, held at Hotel Claridges, New Delhi, June 5, 2008. Available at <http://www.ncaer.org/uploads/photogallery/files/1427085884.pdf>.
- Chand, R. Impact of Trade Liberalization and related Reforms on India's Agricultural Sector, Rural Food Security, Income and Poverty. Institute of Economic Growth, New Delhi. 2004
- Chand, R., Raju, SS., Garg, S. and Pandey, LM. Instability and Regional Variation in Indian Agriculture. Policy Paper 26, National Centre for Agricultural Economics and Policy Research, New Delhi-110 012. 2011; p 1-137.
- Government of India. Status Paper on Oilseeds. Department of Agriculture and Cooperation, Ministry of Agriculture, New Delhi. 2014; p1-452.
- Jha, GK., Pal, S., Mathur, V.C., Bisaria, G., Anbukani, P., Burman, RR. and Dubey, SK. Edible Oilseeds Supply and Demand Scenario in India: Implications for Policy. Division of Agricultural Economics, Indian Agricultural Research Institute, New Delhi, 2012; p 1-113.
- Mehta, BV. (accessed on 22 July, 2015). India as a Strategic Partner in Vegetable Oil Market. In: 26th Annual Palm & Lauric Oils Conference & Exhibition, POC 2015, held Kuala Lumpur, Malaysia, 2-4 March, 2015. Available at <http://www.seaofindia.com/cdn/gallery.pdf>
- Mittal, S. (accessed on 15 July, 2015). OECD agricultural trade reforms impact on India's prices and producers welfare. Indian council for research on international economic relations. Working Paper No. 195. 2007; p.1-51. Available at <http://icrier.org/pdf/WorkingPaperNo195.pdf>.

