

RESEARCH ARTICLE

Indian oilseed sector : Need for self-sufficiency in oilseed production

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SUMMARY

Oil crops are an ideal component in the sustainable production system in Indian agriculture. But, the area under oilseeds has experienced a deceleration in general, due to their relative lower profitability against competing crops like maize, cotton, chickpea, etc. under the prevailing crop growing and marketing situations. Despite being the fifth largest oilseed crop producing country in the world, India is also one of the largest importers of vegetable oils today. The country now imports nearly 60 per cent of the annual consumption of 259.22 million tonnes. However, increasing demand for edible oils necessitated the imports in large quantities leading to a substantial drain on foreign exchange. Edible oil consumption in the country has been consistently rising faster than production due to growth in population, increasing income levels and the emerging dietary changes are driving increasing use of edible oils. An immediate action towards this sector is utmost required or the dependency on import will certainly increase in the days to come due to mushrooming population and increased per capita consumption. It is, therefore, necessary to exploit domestic resources to maximize production to ensure edible oil security for the country.

Key Words : Demand, Edible oil , Oilseeds, Production, Import

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India is the fifth leading oilseeds producing country in the world, next only to the Brazil, USA, China and Argentina (USDA, 2021) and accounts for about 15-20 per cent of global oilseeds area, 6-7 per cent of vegetable oils production, and 9-10 per cent of the total edible oils consumption (Kumar and Tiwari, 2020). In

terms of acreage, production and economic value, oilseeds are second only to food grains. As per the fourth advance estimates for 2019-20, the area and production of nine oilseed crops is 27.04 million hectare (Mha) and 33.42 million tonnes (MT), respectively (Anonymous, 2020). India's diverse agro-ecological conditions are ideally suited for growing nine annual oilseeds crops: groundnut, rapeseed and mustard, sunflower, sesamum, soybean, safflower, castor, linseed and nigerseed. India also grows two perennial oilseed crops *i.e.* coconut and

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oil palm. Crops such as cotton and maize also contribute to the production of edible oils. Moreover 100 tree species of forest origin, if efficiently exploited, can add one million tonnes of vegetable oil to the domestic output. The area and production of oilseeds is concentrated in the central and southern parts of India, mainly in the states of Madhya Pradesh, Rajasthan, Maharashtra, Gujarat, Andhra Pradesh and Karnataka. Among different oilseeds, groundnut, rapeseed-mustard and soyabean account for about 80 per cent of area and 87 per cent of production of oilseeds in the country during 2018- 19. Currently, the share of oilseeds is 14 per cent of the total area under major crops. Nine oilseeds are the primary source of vegetable oils in the country. Among these, soybean (34%), groundnut (27%), rapeseed and mustard (27%) contributes to more than 88 per cent of total oilseeds production and more than 80 per cent of vegetable oil with major share of mustard (35%), soybean (23%) and groundnut (25%). Andhra Pradesh (groundnut) and Gujarat (groundnut), Haryana (Mustard), Karnataka (G.nut), M.P. (Soybean), Maharashtra (Soybean), Rajasthan (Mustard and Soybean), Tamil Nadu (G. nut), U.P. (Mustard), West Bengal (Mustard) contributing more than 95 per cent of total oilseed production in the country. India is producing about 7-8 million tonnes of vegetable oils from primary sources. In addition to nine oilseeds, 03 million tonnes of vegetable oil is being harnessed from secondary sources like cottonseed, rice bran, coconut, Tree Borne Oilseeds (TBOs) and Oil Palm.

The oilseed scenario in India had undergone dramatic change with the initiation of Technology Mission on Oilseeds (TMO) in 1986. Yield of oilseeds increased significantly after launch of technology mission but it has become stagnant in last one decade. This dramatic change of Indian oilseed production from a net importer to a self-sufficiency and net exporter during early nineties has been popularly known as Yellow Revolution. Again, it has come back to net importer status importing more than 50 per cent of its annual edible oil needs. In India, majority of the oilseeds are cultivated under rainfed ecosystem (70%). Only 28 per cent of oilseeds area is covered under irrigation. The cultivation of oil crops, in general, is not labour intensive and thus these crops can be managed in labour scarce areas. Their cultivation is very economical and remunerative, and thus, helps in improving the socio-economic status of the farmers. Thus, oil crops are an ideal component in the sustainable production system in Indian agriculture. But, the area

under oilseeds has experienced a deceleration in general, due to their relative lower profitability against competing crops like maize, cotton, chickpea, etc., under the prevailing crop growing and marketing situations. Despite being the fifth largest oilseed crop producing country in the world, India is also one of the largest importers of vegetable oils today. There is a spurt in the vegetable oil consumption in recent years in respect of both edible as well as industrial usages. Though India is a major oilseeds growing country in the world, it has faced the problem of supply-demand gap in respect of both edible oils and the country has been importing considerable quantities of edible oils to meet the domestic demand. In the backdrop of this, the present study aimed to (i) examine the status of production and productivity of oilseed crops in India, (ii) analyse trends in the consumption of edible oils, thus, assessing the demand and supply scenario of oilseeds and edible oils in the country and (iii) suggest measures to increase the production of oilseeds as to bridge demand-supply gap and to make the country self-reliant in edible oil production.

MATERIAL AND METHODS

The study is based on secondary data mainly collected from various published sources *viz.*, Agricultural Statistics at a Glance, Handbook of Statistics on Indian Economy and websites of Directorate of Economics and Statistics (DES), Food and Agriculture Organization etc. The study is related to last ten years data from 2008-09 to 2018-2019.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

Global area and production of oilseeds crops and India's share:

India occupies a very important position in the world with respect to acreage under oilseeds as can be seen from Table 1. In case of castor seed, India's share in world area in 2019 was 60.86 per cent while rapeseed and mustard, groundnut and sesame seed accounted for 17.86, 16.25 and 10.99 per cent share in the global area, respectively. The per cent share of other oilseed crops *viz.*, soyabean, sunflower, linseed and safflower varied between 5.27 per cent and 9.40 per cent in the world area. India is one of the leading oilseed producing

countries in the world. India leads in the production of castor, safflower with a share of 85.71 per cent and 40 per cent in the world, respectively. India's share in the global production of groundnut, rapeseed and mustard, sesame seed, soya bean during the said period was 13.72 per cent, 13.12 per cent, 10.70 per cent and 4.13 per cent, respectively.

Area, production and yield of oilseed crops in India:

In the agricultural economy of India, oilseeds sector plays an important role next only to food grains in terms of area, production and value. As per the fourth advance estimates 2018-19, the production of total nine oilseed crops is 32.26 million tonnes, which shows a decrease of 7.47 per cent in production compared to 2008-09 (Table 2). India attained an average productivity of 1265 kg per hectare and there is increase in the productivity from 1006 kg per hectare in 2008-09. However,

productivity of oilseeds in India is low, being around fifty per cent of the world average productivity in different oilseeds (Jha *et al.*, 2012). Besides varietal differences, lower oilseeds production in India is on account of their cultivation largely under un-irrigated conditions, dependence on rainfall and vulnerability to drought, disease and pest damage, and low levels of input-use. The area under oilseeds has experienced a deceleration in general, and this is due to their relative lower profitability against competing crops like maize, cotton, chickpea etc., under the prevailing crop growing and marketing situations.

Regional variations in area, production and yield of oilseeds:

There has been seen large regional variation in area, production and productivity of total oilseeds in India during 2018-19. In India, the total oilseed area occupied 25.50

Table 1: Share of India in area and production of major oilseeds crops in the World: 2019

Sr. No.	Crops	Global area (Million hectare)	Area occupied by India	% share to World	Global production (Million Tonnes)	India's production	% share to World
1.	Soya bean	120.50	11.33	9.40	333.67	13.79	4.13
2.	Groundnut	29.59	4.81	16.25	48.75	6.69	13.72
3.	Caster seed	1.15	0.70	60.86	1.40	1.20	85.71
4.	Sunflower	27.36	0.20	7.36	56.07	0.22	3.92
5.	Rapeseed and mustard	34.88	6.23	17.86	71.16	9.34	13.12
6.	Sesame seed	12.82	1.41	10.99	6.54	0.70	10.70
7.	Linseed	3.22	0.17	5.27	3.06	0.01	0.32
8.	Safflower	0.65	0.04	6.15	0.05	0.02	40.0
9.	Cottonseed	38.64	12.66	32.76	82.58	28.71	34.76

Source: FAO Stat, 2020

Table 2: Area, production and yield of oilseed crops in India during 2008-09 to -2018-19

Year	Area (Million hectares)	Production (Million tonnes)	Area - Million hectares
			Production - Million tonnes
			Yield - kg/hectare
			Yield (Kg/ha)
2008-09	27.56	27.72	1006
2009-10	25.96	24.88	958
2010-11	27.22	32.48	1193
2011-12	26.31	29.80	1133
2012-13	26.48	30.94	1168
2013-14	28.05	32.75	1168
2014-15	25.60	27.51	1075
2015-16	26.09	25.25	968
2016-17	26.18	31.28	1195
2017-18	24.51	31.46	1284
2018-19*	25.50	32.26	1265

Source : Directorate of Economics and Statistics, DAC and FW

* 4th Advance estimate

million hectares which contributed production 32.26 million tonnes during 2018-19. The Table 3 reveals that the area and production of oilseeds mainly concentrated in the central and southern parts of India. Madhya Pradesh topped the list with over 29 per cent of India's total oilseeds area. Rajasthan accounted for 17.11 per cent of India's total oilseeds area followed by Maharashtra (17.06%), Gujarat (10.02%), Uttar Pradesh (4.84%), Haryana (2.55%), West Bengal (3.69%), Karnataka (4.24 %), Tamil Nadu (1.54 %), Telangana (1.26%), Andhra Pradesh (3.41%) and others (5.89%). Five states *viz.*, Madhya Pradesh, Rajasthan, Maharashtra, Gujarat and Uttar Pradesh accounted for 80 per cent of the total area under oil seed cultivation.

The production oilseeds presented in Table 3 reveals that Madhya Pradesh was the largest producer of oilseed crops in the year 2018-19 with the production of 8.99 million tonnes followed by Rajasthan (6.93 million tonnes), Maharashtra (4.79 million tonnes), Gujarat (3.72 million tonnes) and Uttar Pradesh (1.33 million tonnes). The top five states (Table 3) together accounted for about 80 per cent of the country's oilseeds production. The maximum yield was observed in Tamil Nadu with 2310 kg per hectare followed by Haryana (2038kg/ha), Telangana (1773 kg/ha) and Rajasthan (1587 kg/ha).

Domestic production, import and availability of edible oils:

Yet, India is an oil deficient economy. There is a

yawning gap between demand and supply of edible oil. The domestic production of edible oils has also simultaneously increased during the period from 67.78 lakh tonne in 2008-09 to 103.52 lakh tonne in 2018-19 (Table 4). The increase in production of edible oils has, however, not compensated for the increase in demand for edible oils in the country, leading to a substantial increase in the imports of edible oils over time. The per capita consumption of vegetable oils has increased from around 12.7 kg/year in 2008-09 to 18.1 kg/year during 2018-19, thus has shown an increase of about 42 per cent during this period. The country now imports nearly 60 per cent of the annual consumption of 259.22 million tonnes. However, increasing demand for edible oils necessitated the imports in large quantities leading to a substantial drain on foreign exchange. Edible oil imports increased from around 49.76 per cent of total edible oils consumption in 2008-09 to nearly 60.06 per cent in 2018-19. India has been forced to go in for large imports of edible oils since the domestic production of oilseeds falls short of demand. Edible oil consumption in the country has been consistently rising faster than production due to growth in population, increasing income levels and the emerging dietary changes are driving increasing use of edible oils. There is a need formulate appropriate strategies to bridge the demand-supply gap. Furthermore, domestic consumption of edible oil is expected to increase with enhancement in income level and population.

Table 3: Area, production and yield of total oilseeds in major producing states of India during 2018-19

States	Area	% to All -India	Production	Area - Million hectares	
				Production - Million tonnes	Yield - kg/hectare
Madhya Pradesh	7.26	28.49	8.99	27.87	1237
Rajasthan	4.36	17.11	6.93	21.47	1587
Maharashtra	4.35	17.06	4.79	14.84	1101
Gujarat	2.55	10.02	3.72	11.53	1456
Uttar Pradesh	1.23	4.84	1.33	4.13	1080
Haryana	0.63	2.45	1.27	3.95	2038
West Bengal	0.94	3.69	1.16	3.59	1230
Karnataka	1.08	4.24	0.91	2.83	845
Tamil nadu	0.39	1.54	0.91	2.81	2310
Telangana	0.32	1.26	0.57	1.76	1773
Andhra Pradesh	0.87	3.41	0.53	1.64	607
others	1.50	5.89	1.15	3.58	769
All India	25.50	100.00	32.26	100.00	1265

Note: States have been arranged in descending order of percentage share of production during 2018-19

Source: Anonymous, 2020

Global and domestic production of major edible oils:

The perusal of Table 5 reveals India's share in global production of edible oils and major importers and exporters of edible oils in the world. India's share in global production of groundnut, mustard, sunflower, soybean

oil and palm oil in 2018-19 was around 18 per cent, 8 per cent, 5.0 per cent, 3 per cent and 0.2 per cent, respectively. Argentina and Brazil were the top two exporting countries of Groundnut oil in 2018 while China and Italy were the major importing countries of groundnut

Table 4 : Year-wise domestic production, import and availability of edible oils in India: 2008-09 to 2018-19

Year	Domestic production (Lakh tonne)		Import of edible oils (Lakh tonne)	Total availability of edible oils* (Lakh tonne)	Imports as percentage of total availability	Self sufficiency (%)	Per capita consumption (kg/ annum)
	Edible oilseeds	Edible oils					
2008-09	281.60	67.78	67.14	134.92	49.76	50.24	12.7
2009-10	248.80	61.70	80.34	142.04	56.56	43.44	13.3
2010-11	324.79	97.82	72.42	170.24	42.54	57.46	13.6
2011-12	297.98	89.57	99.43	189.00	52.60	47.40	13.8
2012-13	309.43	92.19	106.05	198.24	53.50	46.50	15.8
2013-14	328.79	100.80	109.76	210.56	52.12	47.88	16.8
2014-15	266.75	89.78	127.31	217.09	58.64	41.35	18.3
2015-16	252.50	86.30	148.50	234.80	63.24	36.76	17.7
2016-17	312.76	100.99	153.17	254.16	60.26	39.74	18.2
2017-18	314.59	103.80	145.92	249.72	58.43	41.57	19.5
2018-19	315.22	103.52	155.70	259.22	60.06	39.94	18.1

*Edible oil plus vanaspati

Source: Economic Survey (various issues), Government of India, New Delhi

Table 5 : Global and domestic production, exporters and importers of major edible oil (Qty in million MT)

Edible oil	Global Production (2018-19)	India's Production (2018-19)	Major Exporters/ Importers (2018)
Ground nut oil	5.57	0.99	Exporters: Argentina, Brazil, Senegal Importers: China, Italy, USA
Mustard oil	27.96	2.13	Exporters: Canada, Germany, Russia Importers: USA, China, Netherland
Sunflower oil	19.45	0.10	Exporters: Ukraine, Russia, Netherland Importers: India, China, Iran
Soybean oil	56.97	1.62	Exporters: Argentina, Brazil, USA Importers: India, Bangladesh, Algeria
Palm oil	73.49	0.20	Exporters: Indonesia, Malaysia, Netherland Importers: India, China, Pakistan

Source: Global Production: USDA, India's Production: DVVOF, Exporters and Importers: Comtrade

Table 6: India's import of major edible oils during 2013-14 to 2018-19 (Qty in Lakh Tonnes)

Year	Soybean oil		Palm oil		Sunflower oil		Major edible oils	
	Crude	Refined	Crude	Refined	Crude	Refined	Crude	Refined
2013-14	13.5	0.0	51.3	25.4	10.8	0.0	75.6	25.5
2014-15	23.2	0.0	69.7	11.9	17.1	0.0	110.0	11.9
2015-16	39.6	0.0	71.1	25.7	14.9	0.0	125.6	25.7
2016-17	34.6	0.0	53.6	29.4	17.3	0.0	105.5	29.4
2017-18	31.5	0.0	67.5	27.7	22.5	0.0	121.5	27.7
2018-19	31.7	0.03	64.2	25.2	25.8	2.0	124.5	25.6

Source: Department of Commerce

oil. Canada was the largest exporter of mustard oil in the world followed by Germany and Russian Federation in 2018. The USA and China were the leading importing countries of mustard oil in the world. Ukraine and Mozambique were the top two global exporters of sunflower oil during 2018. India was the largest importer of sunflower oil followed by China, Italy, and Spain during 2018. Argentina was the largest exporting country of soybean oil in the world followed by Brazil and USA. India was the largest importer of soybean oil that constituted 27.89 per cent of the global import. India is the largest importer of Palm oil in the world followed by China, Pakistan and Netherland. Indonesia and Malaysia are major Palm oil producers in the world.

India imports substantial amount of edible oils for its domestic consumption. Among all edible oils imported into India, palm oil accounted for the lion's share of the total imports (60%). In terms of volumes, crude edible oil contributes about 83 per cent during 2018-19 of which palm oil, soybean oil and sunflower oil contributes about 52 per cent, 26 per cent and 21 per cent, respectively and refined oil contributes about 17 per cent of the total import (Table 6).

Conclusion:

Oilseeds are significant following only to food grains in terms of area production and value and play a vital role in food and nutritional security of the country. Production of different oilseeds was also concentrated

in a few states as more than 80 per cent of oilseeds is mainly coming from Madhya Pradesh, Maharashtra, Rajasthan and Gujarat. The present scenario calls for some urgent measures to be taken to step-up oilseeds production on a sustainable basis since the oilseeds production has not kept pace with their increasing domestic demand. Since the yield of oilseeds is stagnant, low cost technologies with high impact on productivity will result in higher income which will encourage farmers to go for oilseeds farming. Thus, in order to make these crops economically superior and cost-effective, yield-boosting technologies need to be developed.

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