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India's Edible Oil Sector: Imports Fill Rising Demand

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Abstract

India is the world's leading importer of edible oils and is likely to remain an important source of global import demand for the foreseeable future. A large population and steady economic growth are important contributors to India's increasing consumption and imports, but policy has also played a key role. Trade policy reforms in the mid-1990s have increased market access, and domestic price support policies have generally favored production of crops that compete with oilseeds, resulting in waning oil crop production and stagnant yields. Efficiency gains in the oilseed processing sector have also been hampered by poor infrastructure and policies restricting the scale of processing plants. Despite increased imports, U.S. prospects for market share gains in India are likely to be limited by competition from palm oil producers in Malaysia and Indonesia, and soybean oil exports from Argentina and Brazil.

Keywords: India, oilseeds, edible oil, soybean oil, palm oil, policy, trade.

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Introduction

India attracted over 15 percent of global vegetable oil imports in 2002/03,[2] making it the world's leading importer, ahead of the European Union and China. Imports represent about 55 percent of India's edible oil consumption and about half the value of its total agricultural imports. With more than a billion consumers—and a pattern of sustained economic growth—imports are likely to remain an important source of supply for India's growing consumption. Its actual level of imports, though, will continue to be influenced by important trade policy changes adopted in the mid-1990s, as well as other policies that have contributed to inadequate domestic oilseed production and an inefficient processing sector.

Reflecting the importance of policy developments, India's ascendance from a relatively small importer of edible oils in the mid-1990s to the world's leading net importer since 1998 was quite rapid. In the late 1980s and early 1990s, India pursued self-sufficiency in vegetable oil production, but trade policy reforms in the mid-1990s, followed by declining domestic oilseed production, fueled the resurgence of imports. As a result, total vegetable oil imports—mostly palm and soybean oils—rose from an annual average of about 0.3 million metric tons (mmt) in 1988/89-1993/94 to 5.2 mmt in 1998/99-2001/02.

In the United States, increased imports by India raised expectations of higher overall sales to the Indian market. India was, in fact, a moderately important source of demand for U.S. soybean oil exports in 2001/02, accounting for about 8 percent of the U.S. total. U.S. soybean oil exports to India were valued at $35 million in 2001/02 and about $30 million in 2002/03. Nevertheless, the U.S. share of India's vegetable oil imports has remained under 3 percent since 1994/95, and prospects for increased exports are constrained by a number of factors, including:

- Continued competition from inexpensive palm oil from nearby Indonesia and Malaysia,
- Price competition and a seasonal pattern of imports favoring Southern Hemisphere (Brazil and Argentina) soybean oil exports to India, and
- Reduced concessional (i.e., food aid) sales to India, which previously were an important source of U.S. exports.

Although prospects for U.S. exports are modest, India will likely remain an important source of global demand for edible oil exporters. Population and income growth continue to spur demand, while domestic support policies generally favor production of competing crops—such as wheat and rice—resulting in waning oil crop production and stagnant yields. Efficiency gains by oilseed processors, together with infrastructure improvements, could strengthen returns to oilseed growers and boost production, but such gains remain hampered by policies restricting a large share of domestic oilseed processing to small, inefficient enterprises. In addition, although India has very high "bound" (maximum allowable) tariff rates on vegetable oils—300 percent for most oils—the government's ability to limit imports is constrained by a comparatively low bound rate of 45 percent on soybean oil.[3]

[2] Dates in this report with forward slashes are marketing years.

[3] Bound rates refer to the maximum tariff rate a country is permitted to charge under World Trade Organization agreements.

Income and Population Growth Underlie Consumption and Import Gains

In 2001/02, India consumed more than 10.6 million metric tons (mmt) of edible oils, up from just over 2 mmt annually in the early 1970s, placing India behind only China and the European Union in total edible oil consumption. Although influenced by an array of policies affecting domestic oil supplies—through changes in oilseed production, the efficiency of the processing sector, and imports—consumption growth has been propelled by the demands of a rapidly expanding population that has experienced strong gains in per capita income.

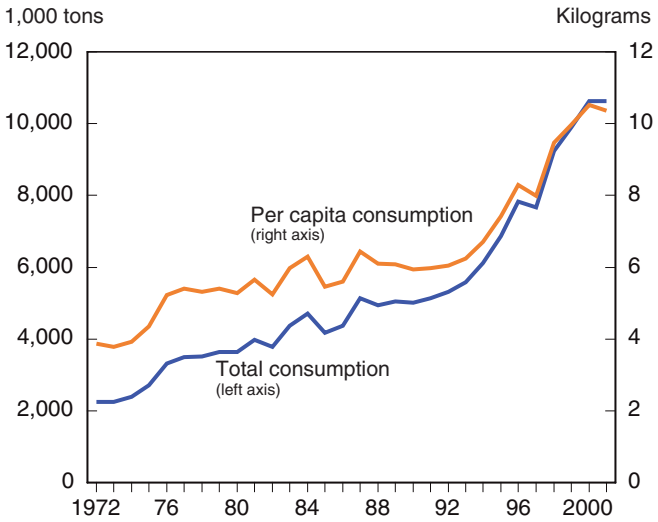
With the population growing from about 550 million in 1970 to over 1 billion in 2001, and per capita income growth rising throughout the 1970s (1.4 percent annually), 1980s (3.1 percent), and 1990s (3.7 percent), consumption growth in India has been almost uninterrupted. The most rapid growth occurred when government trade policy changes allowed increased access to imports, such as in the early to mid-1970s, when the monopoly State Trading Corporation was allowed to import substantial amounts of oil, and after 1994, when private traders were first allowed to import vegetable oils (see section on "Role of Trade Policy" for further detail). By 1999/2000-2001/02, per capita oil consumption had climbed to an annual average of 10.2 kilos—still far below the U.S. average of 33 kilos—but well above the 4.0 kilos per person India averaged in the early 1970s (fig. 1).

Consumption Shifts Toward Imported Palm and Soybean Oils. Consumption trends in India are marked not just by rising overall consumption, but by changing patterns of consumption as well. Reflecting traditional patterns of domestic oilseed production, for example, almost all vegetable oil consumed in India in the early 1970s was peanut oil (53 percent of consumption in 1972/73-1974/75), rapeseed oil (25 percent), and cottonseed oil (9 percent). Palm, soybean, and sunflower oil together accounted for less than 4 percent of the total. More recently, though, palm and soybean oils have become the leading edible oils consumed, accounting for 38 and 21 percent of total consumption, respectively, in 1999/2000-2001/02 (fig. 2). (See also app. table).

Market share gains for palm and soybean oils are largely due to increased access to imports, as well as increased domestic soybean production. With palm oil generally the lowest priced on world markets, it has experienced the most rapid import growth—garnering two-thirds of vegetable oil imports by 1999/2000-2001/02, compared with 23 percent for soybean oil (fig. 3).

Figure 1

Indian consumption of vegetable oils, 1972-2001



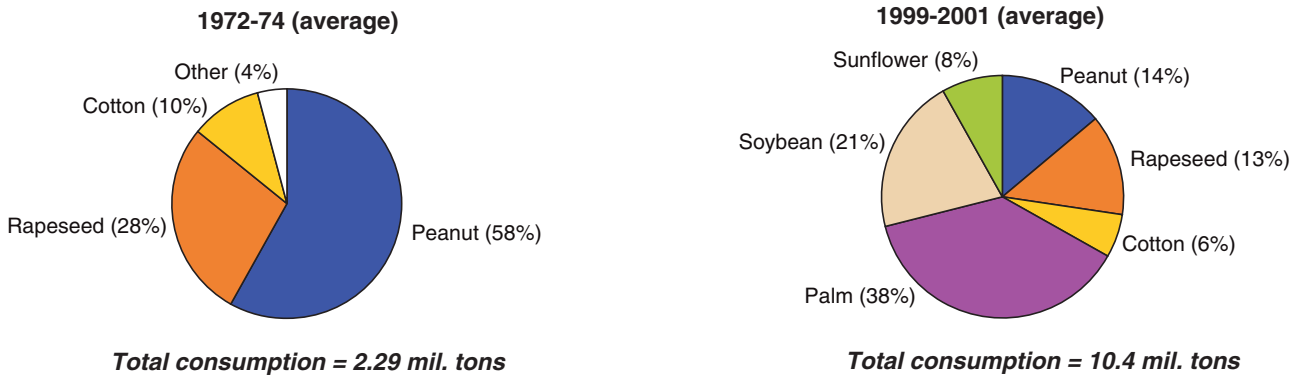
Sources: Production, Supply and Distribution database, USDA and United Nations Food and Agriculture Organization (UNFAO).

The strong growth of palm and soybean oil imports and their rising share in consumption largely reflects the sensitivity of Indian consumers to price changes. With an annual per capita income of only $460 and the average family spending 55-60 percent of its income on food, small price changes for staples such as vegetable oil can therefore have a large effect on both total consumption and the share allocated to each type of oil. Rapid consumption gains since the mid-1990s, for example, were stimulated by increased imports, keeping domestic edible oil prices low relative to other foods (fig. 4). Palm and soybean oils have generally been the lowest priced alternatives (fig. 5).

Contributing further to increased consumption of palm and soybean oils is the nature of vegetable oil sales and marketing in India. Producers and merchants face strong incentives to supply blends that include lower cost oils, both to compete for price-sensitive consumers and to seek higher margins by marketing unlabeled blends as pure traditional oils, such as peanut or rapeseed-mustard oil, which usually sell at a premium (see box, "Marketing of Edible Oils in India").

Figure 2

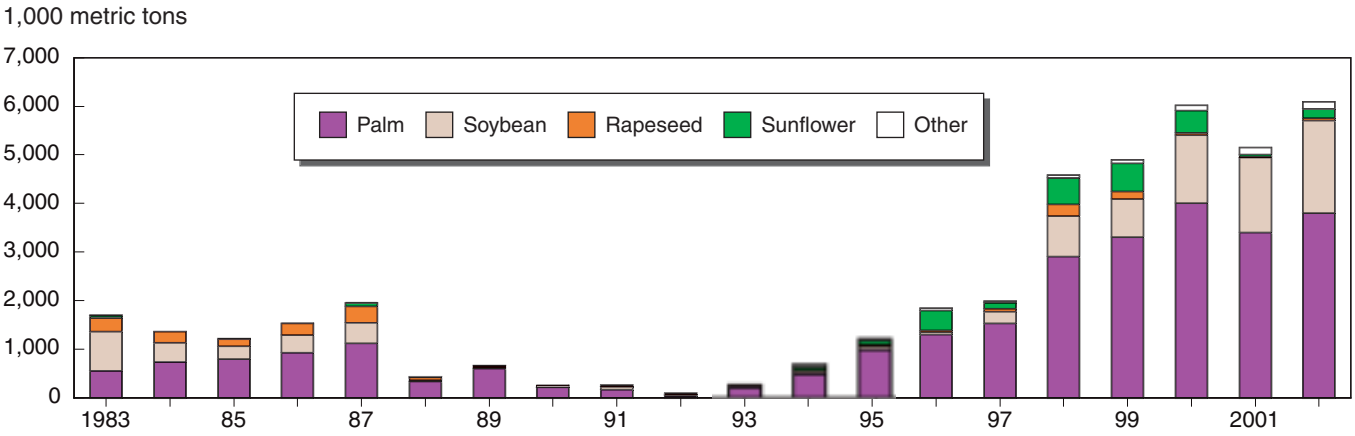
India's consumption of palm and soybean oil rise dramatically



Source: Production, Supply and Distribution database, USDA.

Figure 3

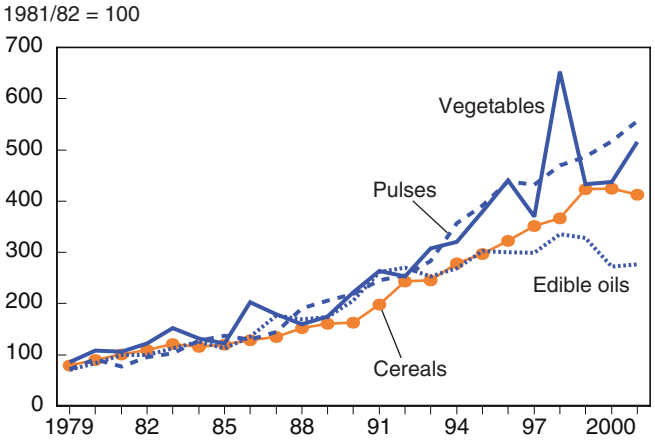
Composition of India's edible oil imports



Note: "Other" includes coconut, palm kernel, and cottonseed.
Source: Marketing year data, Production, Supply and Distribution database, USDA (March 2003).

Figure 4

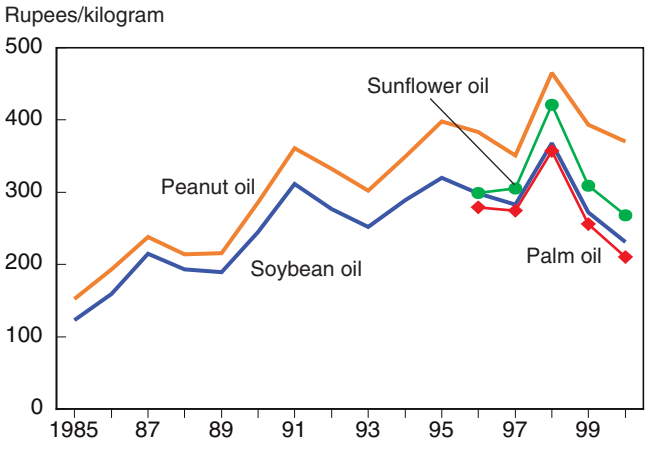
India's wholesale price trends for major food commodities



Source: Economic Survey, Ministry of Finance, Government of India, various issues.

Figure 5

India's domestic oil prices (Mumbai)



Nominal prices.
Source: *Oil World*.

Marketing of Edible Oils in India

In India, most vegetable oil is purchased by household or institutional users (food processors, restaurants, and hotels) for frying or baking foods and is mostly sold loose or as vanaspati, a hydrogenated (hardened) vegetable oil shortening often used for baking. Only a small percentage is sold with a name brand and packaged for sale at the retail level.

Loose oil—"Loose oil" refers to unrefined oils sold in bulk to institutional users or to household consumers without consumer-ready packaging or name branding. Traditionally, most of the oil consumed in India has been purchased in this form. At the household level, this reflects the needs of India's predominantly low-income consumers, who typically make frequent, relatively small, purchases from neighborhood shops using their own reusable containers. According to estimates by Indian Agribusiness Systems Limited (IASL), roughly 61 percent of vegetable oils consumed in 2001/02 was sold in loose form (see table). Almost all peanut, cottonseed, sunflowerseed, and rapeseed oils are sold in loose form as pure oil or are blended with lower cost oils. Blending is legal only if the product is labeled as a blend, but it appears that, in order to increase profit margins, many merchants blend higher priced oils with as much as 30-35 percent of lower priced (palm or soybean) oil and market it as pure oil (IASL).

Vanaspati—Another major source of demand is from vanaspati (refined, hydrogenated vegetable shortening) producers. According to estimates by IASL, about 12 percent of vegetable oil use in 2001/02 took the form of vanaspati—more than three-quarters of which was made from palm oil, with the remainder made from soybean oil. Although regulations required that one-quarter of the oil used in making vanaspati be of domestic origin, this regulation has not been effectively enforced. Instead, vanaspati is typically made from the lowest cost combination of oils that meet product specifications (IASL). The required domestic content was lowered to 12 percent in April 2003.

Branded oil—Only a small amount, about 3 percent in 2001/02, of vegetable oil consumption is accounted for by branded, pure refined oil packaged for household use. Consumers who purchase the more expensive branded oils, mostly middle and upper class urban consumers, tend to purchase traditional oils such as rapeseed and peanut oils as well as sunflower oil—not a traditional oil but favored as a more healthful alternative. Almost a quarter of sunflower oil was sold branded in 2001/02, and sunflower oil represents about 45 percent of the overall branded segment.

Estimated consumption of major oils by end use, 2001/02

End use	Soybean oil	Cotton-seed oil	Peanut oil	Sunflower oil	Rapeseed oil	Palm oil	Total
				1,000 tons			
Vanaspati	333	0	0	0	0	858	1,208
Branded oil	24	29	17	132	40	72	302
Blended oil	1,191	0	0	0	0	1,072	2,215
Loose oil[1]	786	533	1,627	416	1,279	1,573	6,142
Other uses	47	11	17	0	13	0	101
Total	2,381	573	1,660	548	1,332	3,575	10,069
				Percent			
Vanaspati	14	0	0	0	0	24	12
Branded oil	1	5	1	24	3	2	3
Blended oil	50	0	0	0	0	30	22
Loose oil[1]	33	93	98	76	96	44	61
Other uses	2	2	1	0	1	0	1
Total	100	100	100	100	100	100	100

[1] Includes both blended and loose oils for cottonseed, peanut, sunflower, and rapeseed oils.

Sources: Based on survey estimates of end use patterns (IASL), and Production, Supply and Distribution database, USDA (March 2003).

Role of Trade Policy

Import policies have played a key role in determining the overall level and type of India's edible oil imports for decades. Although significant imports were permitted prior to 1994, they were controlled directly by India's State Trading Corporation (STC) and subject to state-imposed import quotas. In 1994, the import regime changed fundamentally when, as part of its obligations under WTO rules, India eliminated the state monopoly on imports and placed imports under a privatized open general license (OGL) system. Under the new rules, India also agreed to eliminate import quotas and placed upper "bound" (maximum) limits on tariff levels. These changes made the rules governing edible oil imports more transparent and imports more responsive to market forces.

Privatized Imports and Tariffication Key Policy Changes. Prior to 1994, edible oil import levels were determined by the government and made by the monopoly STC, based on such factors as domestic market conditions, producer versus consumer interests, international prices, and foreign exchange availability. Although the government did at times permit relatively high imports—averaging as much as 1.3 million tons annually between 1976/77 and 1987/88—imports were sharply curtailed in 1988/89-1993/94, when the government promoted domestic oilseeds production under its Technology Mission on Oilseeds (TMO) program. During the TMO program, oil imports averaged only 325,000 tons per year, leading to increased domestic oilseed prices and a temporary surge in domestic production.

When edible oil imports were placed under the OGL system in 1994, private traders were permitted to import any quantity of vegetable oils, subject only to a tariff. The tariff was initially set at 65 percent on all edible oils—still relatively high, but significantly below the implied tariff when imports were under quantitative controls. Under the Uruguay Round Agreement on Agriculture (part of the agreement establishing the WTO) India also agreed to bound (maximum) tariffs of 45 percent for crude or refined soybean oil imports. Tariffs on all other edible oil imports were bound at 300 percent, except refined rapeseed oil and crude sunflower-safflower oils, which were subject to over-quota tariffs of 75 and 85 percent, respectively.[4]

In 1995-98, India's tariff structure was relatively simple and increasingly liberal—with a common applied *ad valorem* (percentage) tariff for all oils progressively lowered to a uniform rate of 16.5 percent by the middle of 1998.[5] Importers responded to the lower tariffs and declining international prices by importing 4.6 million tons of vegetable oil in 1998/99, up sharply from earlier levels, and more than double the level of imports in 1997/98.

Beginning in 1998, however, the Indian Government began making frequent tariff adjustments to protect domestic oilseed producers and processors from imports and to smooth the effect of fluctuating world prices on domestic consumers (figs. 6a and 6b). Although applied tariffs fell in 1999 after an initial hike in June 1998, the trend after April 2000 was incremental increases to applied rates for all oils, with adjustments being made to the relative rates on different types of oil—e.g., palm versus soybean oil and crude versus refined oil—creating a more complicated tariff structure.

The main effect of these changes was to slow the growth of imports, which declined from 6.0 mmt in 2000/01 to 5.2 mmt in 2001/02—but rebounded to 5.8 mmt in 2002/03. The tariff hikes also made the tariff on soybean oil increasingly preferential, since tariffs on palm, rapeseed, and sunflower oils could be raised well above the 45-percent tariff binding on soybean oil, although recent adjustments to the palm oil tariff have reduced this preference (see appendix, "Chronology of Trade Policy Changes Since 2000").

In addition to adjusting tariffs, the government established a tariff rate value (TRV) system for palm oil in August 2001 and for soybean oil in September 2002. The TRV system is intended to prevent underinvoicing (reporting low import prices to evade tariffs) by importers and establishes a government reference price for tariff calculations. The reference prices are supposed to be periodically revised to reflect actual market prices, but in practice, delays in making these adjustments have resulted in tariff assessments different from what would have occurred had tariff rates been applied to actual market prices. In September-

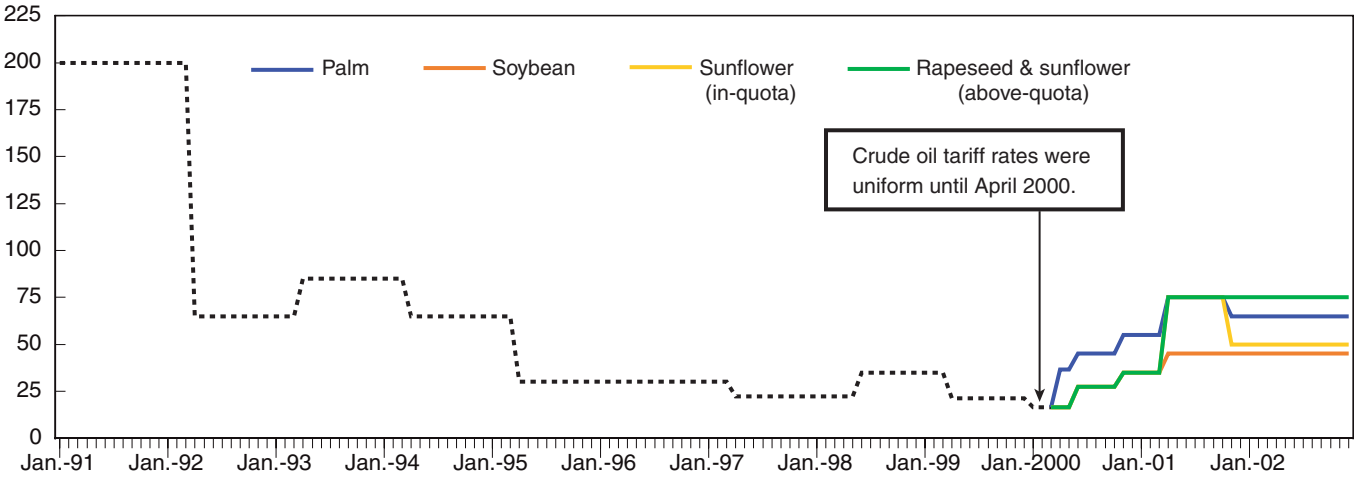
[4] Over-quota tariffs refer to the higher of a two-tiered tariff system called a tariff-rate quota (TRQ), which places a low tariff on imports up to a certain limit and a higher tariff on imports beyond the over-quota level.

[5] In 1997, a tariff surcharge and a special additional duty were added to the basic duty, but these were applied uniformly across all products and did not affect relative tariffs.

Figure 6a

India's import tariffs on crude oils

Ad valorem (percent)

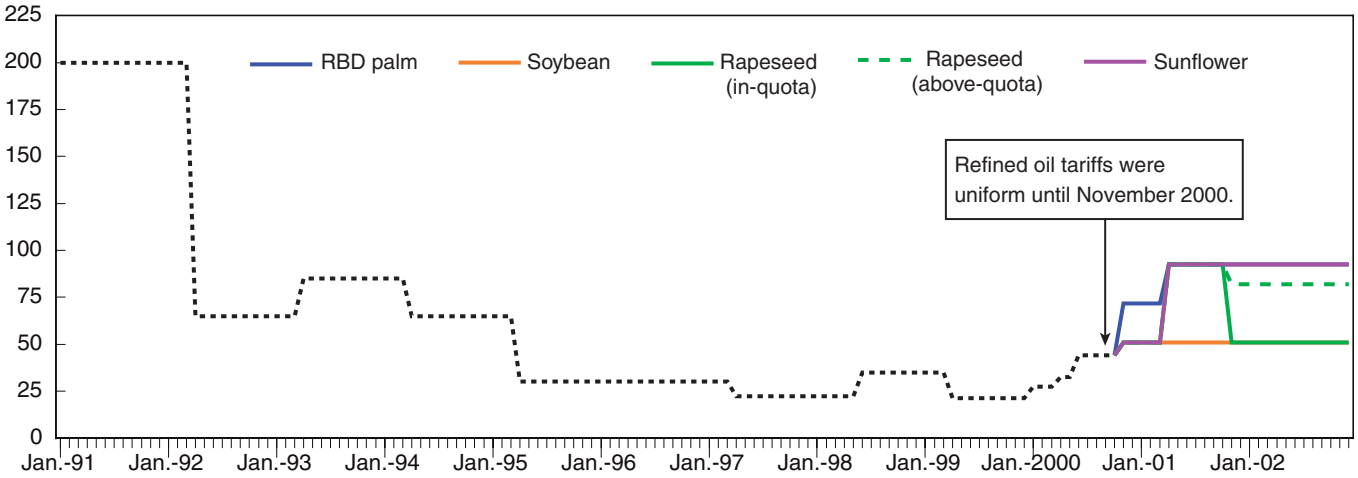


Source: Government of India.

Figure 6b

India's import tariffs on refined oils

Ad valorem (percent)



Note: RBD = Refined, bleached, and deodorized.
Source: Government of India.

December 2002, for example, differences between reference and market prices resulted in an estimated actual tariff of 59 percent for crude palm oil (compared with the declared rate of 65 percent) and 48 percent for crude soybean oil—above India's WTO bound tariff rate on soybean oil of 45 percent. Thus, the TRV system could shift the composition of imports between palm and soybean oils depending on the relationship between reference prices and prevailing market prices.

In summary, although Indian import policy is more transparent and liberal than prior to the mid-1990s, India has also used the flexibility within its WTO commitments to make frequent policy adjustments in response to evolving domestic and international market conditions. These adjustments make overall import demand and the market shares of different imported oils uncertain.

Indian Oilseed Production Characterized By Low Yields, Waning Output

While strong demand and the emergence of a more liberal edible oil trade regime in the mid-1990s were key factors underlying the surge of Indian imports, stagnating domestic oilseed production also played an important role. India's oilseed sector is beset by a number of structural and policy-induced problems that have hindered its ability to meet rising demand, as evidenced by declining production and poor yields.

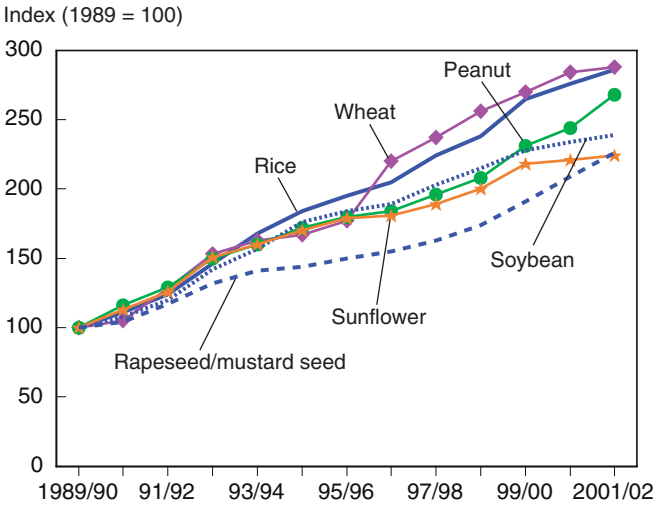
Domestic Policies Targeted At Other Crops Affect Oilseed Production. One factor contributing to insufficient domestic supply of oilseeds is India's domestic price support program which has often favored production of crops that compete for area with oilseeds. Under the Minimum Support Price (MSP) program, the Indian Government annually sets minimum prices—based primarily on estimated production costs—for crops such as rice, wheat, coarse grains, pulses, and various oilseeds, and is supposed to defend these prices by making purchases after harvest.

The Indian Government attempted to boost oilseed production in the late 1980s and early 1990s under its Technology Mission on Oilseeds (TMO) program. During that time, MSPs for grains were kept in check relative to oilseeds and the government-controlled import monopoly dramatically lowered oil imports. This contributed to a sharp improvement in oilseed prices relative to competing crops and a 70-percent increase in oilseed production between 1987/88 (14 mmt) and 1994/95 (24 mmt).

Beginning in the late 1990s, however, oilseed prices have declined relative to other crops, initially in response to the earlier increase in domestic oilseed supplies and subsequently due to the liberalization of edible oil imports initiated in 1994. MSP levels for grains have also been raised more than for oilseeds since the mid-1990s (fig. 7). In addition, although the government had regularly supported wheat and rice MSPs—mainly in several important cereal-producing states—price support operations for oilseeds have usually not been funded. As a result, increasingly favorable returns to wheat and rice have drawn area away from oilseeds, lowering oilseed production from an average of 26 mmt annually in 1994/95-1996/97 to 23.3 mmt in 1999/2000-2001/02 (fig. 8).

Figure 7

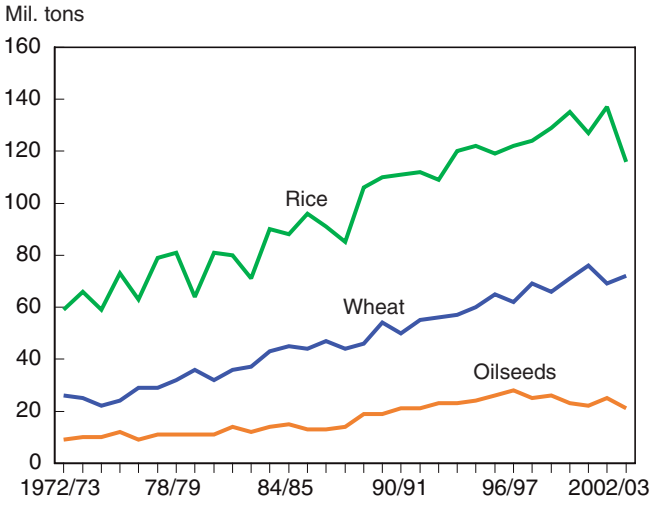
India's minimum support price index for selected oil crops and grains, 1989/90-2001/02



Source: Ministry of Agriculture, Government of India.

Figure 8

Indian oilseed production lags behind wheat and rice, 1972/73-2002/03



Rice: Rough basis. Oilseeds include soybean, peanut, sunflower, rapeseed, cottonseed, copra, and palm kernel.

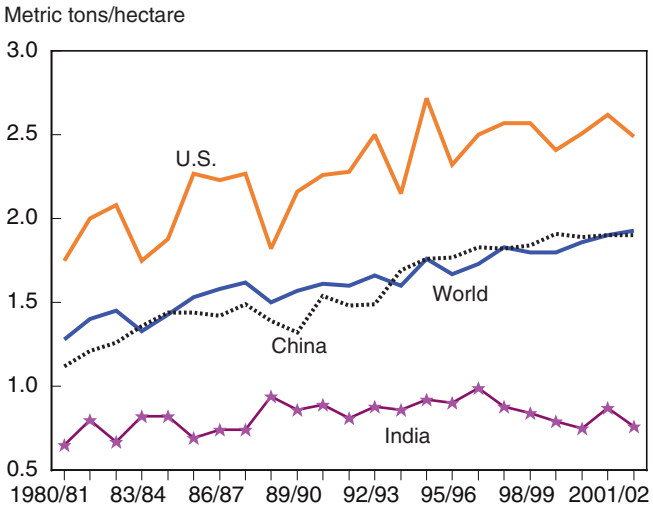
Source: Production, Supply and Distribution database, USDA. May 2003.

Oilseed Yields in India are Among World's Lowest. In contrast to the significant progress India has made with wheat and rice yields (and production), oilseed yields in India are well below the world average, and yield trends have been flat to negative in recent years (fig. 9). National average soybean yields, for example, peaked in 1990/91 at just 15 bushels per acre and averaged only 13 bushels per acre in 1993/94-2002/03—compared with a 32-bushel per acre world average. Yields for other oilseeds (peanuts, rapeseed, and sunflowerseed) also rank far below the rest of the world, typically only 50-60 percent of the world average. Several key factors that could continue to constrain oilseed yields and production include:

- *Policies favoring production of competing crops.* Since the 1960s, Indian policies have given the highest priority to increasing wheat and rice production. Agricultural research and infrastructure investment have focused on these crops and on regions where land and water resources were most conducive to their production. Consequently, there is a lack of high-yielding oilseed varieties suited to local growing conditions. A related factor is the poor quality of seed commonly available from many seed merchants and the tendency of farmers to use lower yielding saved (rather than purchased) seed.
- *Lack of irrigated land devoted to oilseed production.* Although India has a large amount of irrigated land, irrigation is relatively uncommon in India's oilseed-producing regions—leaving most oilseed production vulnerable to weather-related yield risks. In 1998/99, about 23 percent of oilseed area was irrigated, compared with 87 percent for wheat, 50 percent for rice, and 35 percent for cotton. In regions where irrigation is most common, other crops remain more profitable than oilseeds.
- *Low overall productivity of India's agricultural sector.* According to the WTO (2002), labor productivity in India's agriculture sector is only a third of the national average for all sectors—reflecting the minimal level of capital machinery used in Indian agriculture, a lack of scale economies, and inefficient production practices. The typical Indian farm, for example, is less than 4 acres, and most farmers lack the capital or credit to invest in high-quality farm inputs.

Figure 9

Indian oilseed yields[1] lag well behind other countries', 1980/81-2002/03



[1]Average for peanuts, soybeans, sunflower seed, and rapeseed.

Source: Production, Supply and Distribution database, USDA. March 2003.

Although MSPs for some oil crops (peanuts and rapeseed) received relatively large increases in 1999/2000-2001/02, increases for other oilseeds (soybeans and sunflower) were relatively small, and the government has yet to actively support these prices. Without significant changes in price support policies, domestic oilseed area and yield growth will likely be insufficient to match the high growth in demand for vegetable oils. So far, the incentives provided by tariffs on edible oil imports and by restrictive barriers on oilseed imports have not stimulated any sustained improvements in domestic production.[6]

[6] Import tariffs on whole oilseeds are 35.2 percent, but oilseed imports, even if assessed low tariff rates, are effectively blocked by phytosanitary and import licensing rules. Phytosanitary rules require that soybeans be split (rendered unusable as seed) prior to importation, making it impractical to export soybeans to India.

Indian Oilseed Processing Sector Is Fragmented and Inefficient

In addition to the low oilseed yields at the farm level, the ability of India's oilseed sector to compete with vegetable oil imports is further hampered by a processing/crushing sector that is fragmented, small-scale, and suffers from low capacity utilization. A more integrated and efficient (lower cost) processing sector, combined with infrastructure improvements, could allow crushers/processors to pay oilseed farmers higher prices and boost production. But, two factors limit the ability of Indian crushers/processors to achieve economies of scale and improve capacity utilization:

- First, India's small-scale industry (SSI) reservation policies confine processing of traditional oilseeds, such as peanuts, rapeseed, sesame, and safflower—but not soybean and sunflower—to small firms, thus allocating a large share of edible oil production to relatively inefficient processors.
- Second, low oilseed yields, poor transport and handling infrastructure, and variability in oilseed production—as well as inaccessibility to imported oilseeds—make it difficult for processors to procure regular supplies throughout the year, resulting in low capacity utilization.

In the oilseed crushing/processing industry, reducing costs depends largely on the scale of operations, with larger plants able to achieve lower unit costs at any given level of capacity utilization. According to one study (Center for Agribusiness and Economic Development), per-unit operating costs are two-thirds higher for a 500-ton-per-day crushing plant than for a 1,500-ton-per-day facility. Since 1977, however, India's SSI system has restricted processing (except solvent extraction of oilcake) of traditional oilseeds (peanut, rapeseed, sesame, and safflower) to units with a capacity of less than 10 tons per day and reserves the manufacture of oilseed crushing equipment used by these units to small enterprises. As a result, about three-fifths of India's domestic edible oil production comes from a vast number of often antiquated village-level crushers (*ghanis*) or other small expellers (see box, "Overview of Processing Sector in India").

In addition, even processors not covered by SSI policies—such as soybean processors and solvent extractors—are small by international standards. For example, although some Indian soybean crushers/processors have a capacity of about 1,500 tons per day, most plants have a capacity of just 125-150 tons per day, about 10 percent of the U.S. and European average.

Increased consolidation and larger plant size could increase domestic oil production in two ways. First, increasing the scale of operations could reduce costs and raise profits for the most efficient processors, creating incentives to offer better returns to oilseed growers and eliciting increased oilseed production. Second, more modern crushing facilities, including greater use of solvent extraction, would improve oil extraction from existing levels of oilseed production. World Bank estimates indicate that India could recover up to an additional 700,000 tons of oil (5-6 percent of current consumption) from high-oil residue oilcake using solvent extraction technology.

Also eroding efficiency in the Indian crushing/processing sector is the chronic underuse of capacity all along the processing chain—ghanis, small-scale expellers, as well as the soybean crushers and solvent extractors/refiners not covered by SSI policies. Ghanis and small-scale expellers usually operate at just 10-30 percent of capacity, and even the more modern solvent extractors use less than 40 percent of capacity on average, compared with rates of 80-90 percent in the United States. According to World Bank estimates, low capacity utilization for solvent extractors has resulted in soybean processing costs in India that are 40 percent higher than in China and 90 percent greater than in the United States.

Low capacity utilization appears to be related to a number of factors. First, many producers face difficulty in obtaining regular supplies of raw materials throughout the season due to low yields and significant yield variability. This, combined with poor roads and limited freight options, leads to relatively high procurement costs. In addition, poor storage facilities, high interest costs, and the lack of risk/supply management tools—such as futures markets or contract farming—also contribute to problems in obtaining supplies. Second, restrictive tariff and phytosanitary import barriers prevent the use of oilseed imports to stabilize supplies for processors. Finally, excess oilseed processing capacity is also related to tax and other incentives that stimulated overinvestment in many rural areas.

More recent exposure to import competition is pressuring small and less efficient processing units to mod-

Overview of Processing Sector in India

In many countries, three separate processing operations—crushing and expelling (separating oil from the solids), solvent extraction (to chemically remove residual oil from the oilcake solids), and oil refining—are conducted by one vertically integrated plant. In India, however, only a small share of oilseed production undergoes solvent extraction and oil refining. This is largely because India's SSI policies make it impractical for most small crushers to make the capital investments to further process their oilseeds, and logistical costs discourage processing facilities from serving multiple expeller plants. Instead, India's processing sector is largely made up of the three groups separately engaged in the processing stages:

- *Ghanis* (about 130,000 units) and small-scale expellers (about 15,000 units) are oilseed crushers covered by SSI policies. Ghanis are very small traditional (cottage industry) crushers usually serving rural villages. Ghanis have an average output of about 60 kilograms per day, often operating at just 10 percent capacity utilization, and accounted for less than 5 percent of industry output in the late 1990s. Small-scale expellers are somewhat more modern facilities with a daily production of up to the 10-ton daily limit set by SSI policies. They operate at about 30 percent of capacity and accounted for about 58 percent of domestic edible oil output in the late 1990s.
- *Solvent extractors* (about 600 plants), which fall outside of the SSI capacity ceilings, tend to crush and process "hard" oilseeds with low-oil content—such as soybeans and cottonseed—as well as chemically extract residual oil from the oilcake processed by SSI crushers. These firms operate at about 35 percent capacity and accounted for about 37 percent of industry output in the late 1990s. This sector represents a growing share of the domestic supply of edible oils and is becoming more concentrated.
- *Oil refiners* (about 400 plants) are a small but growing segment of the processing sector. These plants refine solvent-extracted oil, which must be refined before consumption, but oil refiners are usually not integrated with solvent extraction and expeller plants, as is often the case in other countries.

ernize or close. Although SSI policies remain in place, efficiency gains are occurring due to the growing share of domestic production by modern solvent extractors. In part, this reflects the rising share of soybeans in total oilseed crush. In the soybean-processing industry, the number of larger plants is gradually increasing. Efficiency gains also reflect the development of larger expander-solvent plants, which are allowed to compete with SSI processors of soft seeds.[7] It is likely that further efficiency gains will rely on fundamental changes leading to higher oilseed yields and production, improved transport infrastructure, increased consolidation and integration of oilseed processing, and, possibly, less restrictive policies on oilseed imports.

[7] The expander-extruder technology is a plant modification that evolved as a means of circumventing SSI policies and providing larger scale and greater efficiency than simple expellers and *ghanis*.

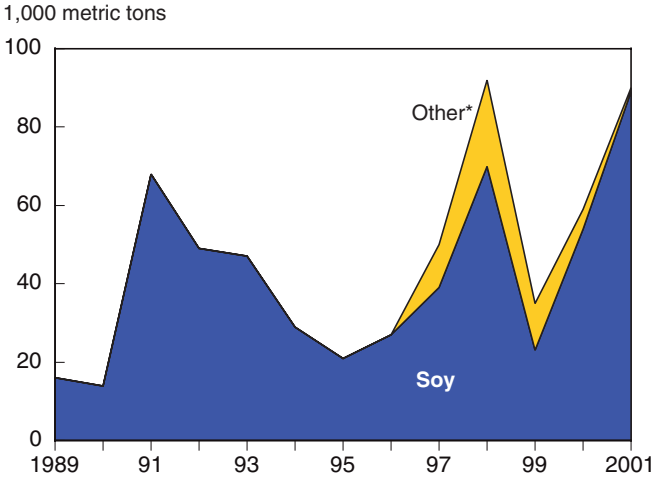
U.S. Prospects for Increased Market Share Are Limited

India's emergence as an important source of import demand sparked expectations in the U.S. oilseed sector of a significant boost in edible oil sales to India. However, although average annual U.S. exports to India climbed about 40 percent between 1989/90-1994/95 and 1995/96-2001/02 (fig. 10), India still represents a relatively modest share of overall U.S. edible oil exports—no more than 6 percent of total U.S. vegetable oil exports (9 percent for soybean oil) since 1990/91 (fig. 11). In addition, with India's imports rising much more rapidly than U.S. exports, the U.S. share of India's total imports has actually declined significantly since the early 1990s, as most Indian imports have been supplied by palm oil from Malaysia and Indonesia and soybean oil from Argentina and Brazil. In 1991/92-1993/94, the United States accounted for an average of about 33 percent of India's total vegetable oil imports but averaged just 1.6 percent during the 1995/96-2001/02 marketing years.

A number of factors affect U.S. competitiveness in the Indian market, but the most fundamental is the price sensitivity of Indian importers and consumers. India's predominantly low-income consumers are very price-conscious and unwilling to pay large premiums for close substitutes with different qualities, such as oils with a slightly different color or flavor, shelf life, or nutritional characteristics. Consequently, Indian importers tend to seek the lowest priced oil available, usually palm oil from nearby Malaysia and Indonesia. When soybean oil is more competitively priced, importers usually seek lower priced soybean oil from Argentina or Brazil, even though it appears that the United States enjoys some perceived quality, service, and reliability advantages over Argentine and Brazilian soybean oil in the Indian market (IASL). In addition to higher U.S. prices, factors such as the seasonal pattern of Indian imports and the decline of concessional sales (e.g., food aid) by the United States to India have kept U.S. market share in India low.

Figure 10

U.S. edible oil exports to India

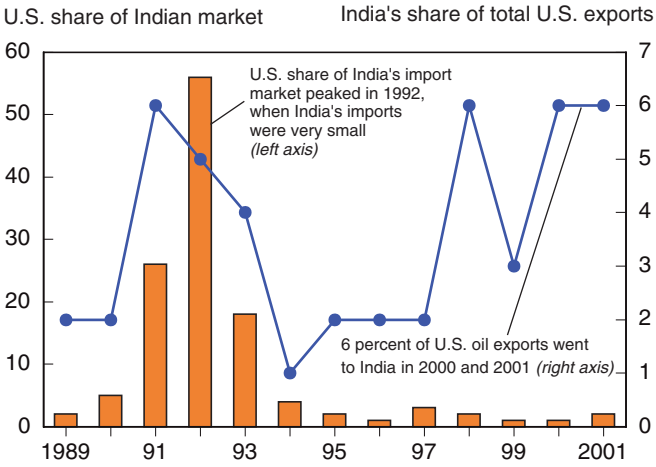


* U.S. edible oil exports include soybean, cottonseed, sunseed, peanut, rapeseed, and safflower oils.

Source: Foreign Agricultural Trade of the United States (FATUS), USDA.

Figure 11

Percentage of U.S. edible oil exports to India rises, but U.S. market share drops



Sources: Production, Supply and Distribution database and Foreign Agricultural Trade of the United States (FATUS), USDA.

Palm Oil Suppliers Benefit from Lower Prices and Freight Advantages Compared With Soybean Oil Exporters. Palm oil is usually the lowest priced edible oil in international markets and has had a consistent price advantage over other imported oils in India since 1980, based on delivered price (excluding tariff) (table 1). In addition to often lower prices at the point of origin, palm oil from Malaysia and Indonesia also benefits from freight cost and shipping time advantages, compared with leading suppliers of soybean oil, as well as from the ability to deliver oil in smaller, more frequent shipments.

Soybean Oil Imports Mostly from South America. When (tariff-adjusted) soybean oil prices have become attractive relative to palm oil, Argentina and Brazil—

Table 1—Indian oil imports and world prices

Year	Soybean oil		Palm oil		Sunflower oil		Rapeseed oil		Total	
	Imports	Price[1]	Imports	Price[2]	Imports	Price[3]	Imports	Price[4]	Imports	Price[5]
	1,000 tons	*$/ton, cif*	*1,000 tons*	*$/ton, cif*	*1,000 tons*	*$/ton, cif*	*1,000 tons*	*$/ton, cif*	*1,000 tons*	*$/ton, cif*
1980/81	639	528	431	597	0	640	124	542	1,194	555
1981/82	460	468	410	302	0	543	78	470	948	396
1982/83	537	464	597	338	0	499	115	468	1,249	404
1983/84	808	728	557	795	54	780	268	728	1,687	752
1984/85	398	643	730	597	0	657	229	620	1,357	614
1985/86	256	379	798	302	0	403	150	370	1,204	327
1986/87	363	346	921	338	0	365	241	329	1,525	338
1987/88	419	443	1,120	430	79	458	337	440	1,955	436
1988/89	30	452	330	386	0	493	60	441	420	398
1989/90	30	465	600	299	0	488	20	455	650	311
1990/91	20	456	209	346	0	472	20	449	249	363
1991/92	65	436	165	393	0	460	23	448	253	409
1992/93	42	455	30	410	0	494	11	474	83	441
1993/94	41	580	200	473	0	615	15	610	256	498
1994/95	60	664	480	679	70	665	20	669	630	676
1995/96	60	572	970	551	80	573	40	598	1,150	556
1996/97	49	553	1,300	554	420	550	30	571	1,799	553
1997/98	236	655	1,530	629	125	683	66	669	1,957	637
1998/99	833	495	2,900	510	550	527	241	514	4,524	509
1999/00	790	369	3,300	337	570	388	160	391	4,820	350
2000/01	1,400	332	4,000	263	455	404	50	404	5,905	291
2001/02	1,550	413	3,400	357	50	560	5	483	5,005	377
Correlation coefficient between imports and price:										
1980-2001	-0.27		-0.22		-0.22		-0.05		-0.21	
1995-2001	-0.82		-0.9		-0.71		-0.25		-0.88	

[1] Argentine, free on board (FOB).
[2] Malaysia, FOB, refined, bleached, and deodorized (RBD).
[3] Argentine, FOB.
[4] Dutch, FOB, ex-mill.
[5] Import-weighted average. All prices converted to cost, insurance, and freight (cif) India basis.

Source: USDA (February 2003).

which rank ahead of the United States as the leading soybean oil exporters—have captured the major share of Indian soybean oil imports. Similar to the reasons underlying Indian demand for palm oil, Indian importers surveyed by IASL identified price as the key factor in their choice of origin when purchasing soybean oil. Figure 12 shows that the estimated delivered cost to India of U.S. soybean oil has consistently been at a premium to Argentine and Brazilian soybean oil, averaging about $40 per ton above South American soybean oil in 1995/96-2001/02 (fig. 12).

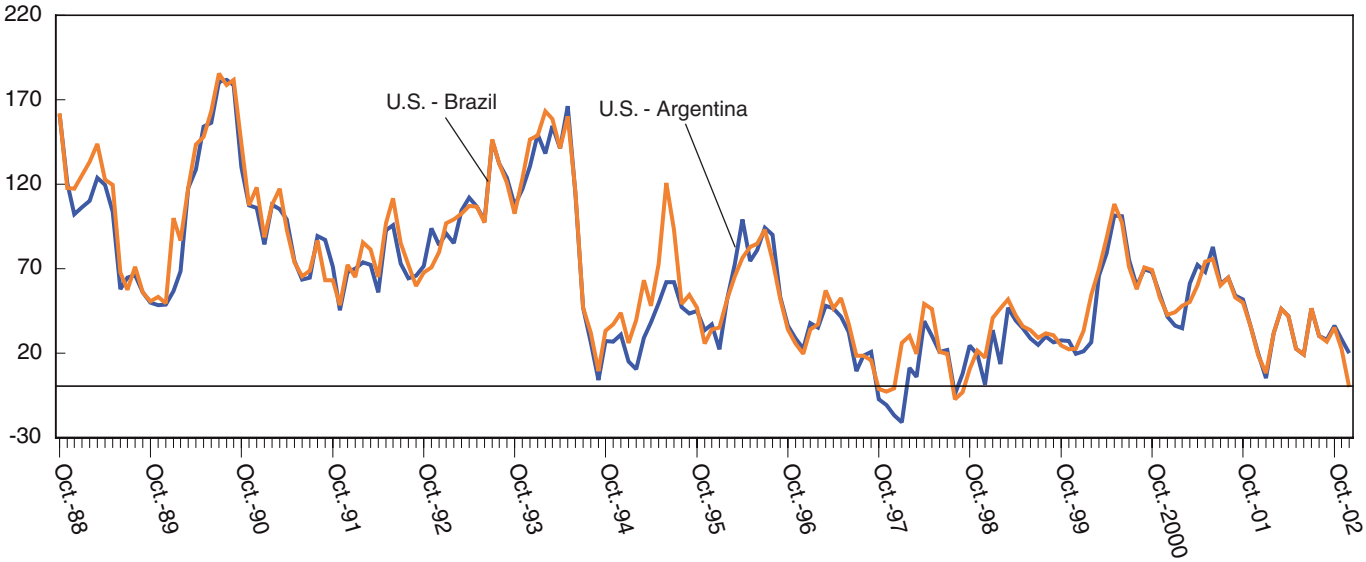
Quality, Service, and Reliability Differences not a Major Factor. According to IASL, Indian importers rated U.S. soybean oil higher overall on quality attributes (taste, color, odor, and free fatty acids), compared with Argentine and Brazilian oil. At the same time, Indian importers and oil refiners surveyed by IASL indicated that there was little or no difference in refining costs of soybean oils of different origins and that any other perceived quality difference was a secondary consideration to price.

Compared with palm oil from Malaysia or Indonesia, imports from the United States and South America have the disadvantage of long voyage time, but delivery times and transportation cost differences between the United States and South America appear to be small. Delivery times from South America are about 25-35 days, with per-ton freight costs of about $30. U.S. delivery times are similar, with freight costs several dollars per ton higher than South American exports.

Figure 12

Estimated price premium of U.S. soybean oil versus Argentine and Brazilian soybean oil (cif India)[1]

$/metric ton



[1]cif is cost, insurance, and freight.

Sources: Foreign Agricultural Service and Economic Research Service, USDA.

Seasonality Favors South American Exporters. India's seasonal crop pattern is similar to that of the United States, with most oilseeds harvested in September-November and supplies being most abundant in the fall and winter. Conversely, domestic supplies in both India and the United States tend to become tighter just as Southern Hemisphere producers (Argentina and Brazil) enter their flush season—roughly corresponding with the second and third quarter of each calendar year. The effect of this seasonal pattern of production is that India imports more—about 70 percent of its annual totals in calendar years 1998-00)—in the second and third quarters, when Argentina's and Brazil's price advantages should be most pronounced. Quarterly price and trade data also indicate that the U.S. price premium generally is highest, and U.S. soybean oil exports to India lowest, in the second and third quarters—based on quarterly commercial sales to India in 1989-00.[8] According to some observers, South America is also becoming more of a year-round exporter due to greater production and a more extended crushing season facilitated by improved storage, processing, and infrastructure.

Decline of U.S. Concessional Sales. With the relatively large delivered cost premium of U.S. soybean oil in India, what explains the high market share the United States enjoyed in India in the early 1990s? Data on U.S. food aid shipments of vegetable oils to India show that most U.S. soybean oil shipments to India in 1989/90-1997/98 were concessional rather than commercial.[9] When the trade data are adjusted to exclude food aid shipments, the resulting rough estimates of U.S. commercial trade indicate that the United States had zero or negligible commercial sales to India between 1989/90 and 1997/98 (table 2). Although U.S. commercial sales in India have increased in recent years, U.S. food aid shipments have declined from earlier peaks, and increased commercial sales have largely been captured by Argentina and Brazil.

[8] The U.S. price premium is most pronounced in the second quarter. The U.S. share of India's soybean oil imports tends to be roughly two to three times higher during the first and fourth quarters than the rest of the year.

[9] The U.S. price data in figure 12 do not reflect concessional sales by the United States.

Table 2—Estimated commercial and concessional exports of U.S. soybean oil to India

Year	Total imports[1]	Imports from the United States			U.S. market shares	
		Total[2]	Food aid[3]	Commercial[4]	Total[5]	Commercial[6]
		1,000 tons			*Percent*	
1989	43.0	25.0	33.4	0.0	58.1	0.0
1990	33.0	16.0	27.3	0.0	48.5	0.0
1991	29.0	13.6	35.8	0.0	46.9	0.0
1992	101.0	74.0	84.3	0.0	73.3	0.0
1993	81.0	61.5	60.8	0.7	75.9	3.7
1994	66.0	30.6	27.3	3.3	46.4	8.5
1995	179.0	30.7	31.4	0.0	17.2	0.0
1996	55.0	17.9	20.0	0.0	32.5	0.0
1997	83.0	27.0	33.2	0.0	32.5	0.0
1998	370.0	45.5	20.3	25.2	12.3	7.2
1999	901.0	66.4	29.5	36.9	7.4	4.2
2000	813.0	44.0	21.0	23.0	5.4	2.9
2001	1,445.0	33.0	14.7	18.3	2.3	1.3
2002	1,592.0	86.0	NA	NA	5.4	NA

NA = Not available.
[1] Indian soybean oil imports, calendar year. Source: *Oil World*.
[2] Indian soybean oil imports from United States, calendar year. Source: *Oil World*.
[3] U.S. exports of vegetable oils to India under food aid programs, calendar year. Source: UNFAO.
[4] Estimated as total less food aid, with negative results converted to zeros. Reporting lags and definitional differences make this a rough estimate.
[5] Total imports from the United States divided by total imports.
[6] Commercial imports from the United States/(Total imports-U.S. food aid).

Conclusion

With its large population and continued strong economic growth, India is likely to register strong gains in total and per-capita edible oil consumption in the coming decades. The extent to which increased consumption is met by imports—and the types of oil imported—will be strongly influenced by India's trade and domestic agricultural policies, but imports will likely remain strong for the foreseeable future.

Reduced dependence on edible oil imports could be brought about by increased domestic oilseed production, but barring much stronger price incentives, production and yield improvements depend on improved plant varieties and cultivation practices—such as fertilizer use and irrigation—but these changes tend to occur slowly without significant policy shifts. Decades of import barriers and various domestic support initiatives—such as the Technology Mission on Oilseeds—demonstrate the difficulty of sustaining increased oilseed production in India. Similarly, there is potential to boost output by increasing oil recovery and processing efficiency, but these gains will require difficult policy changes and industry restructuring.

A policy shift to reduce barriers on whole oilseed imports is favored by domestic oilseed processors and could potentially reduce oil imports, as it has in China. However, it is unclear whether such a policy shift would have a significant effect on Indian imports. A domestic surplus of soybean meal, along with high logistical costs and relatively small amounts of modern processing capacity in coastal areas, also limit oilseed import potential.

It appears that U.S. soybean oil exporters have benefited somewhat from increased commercial sales to India in the last several years, but various factors point to a continuation of a relatively low market share for U.S. oil. Palm oil continues to be strongly price-competitive in the Indian market, despite a tariff disadvantage relative to soybean oil. With price being the primary concern of Indian consumers and importers, palm oil can be expected to maintain the dominant share of the market. Further, U.S. soybean oil has only rarely been price–competitive with oil from South America, even when South American supplies are seasonally low. Building market share based on the quality of U.S. soybean oil may have some limited potential for success, but large inroads into the market will likely prove challenging.

For Further Information

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Appendix—Chronology of Trade Policy Changes Since 2000

The Indian tariff structure for edible oil imports has been subject to numerous revisions since 2000. The following examples demonstrate the increasing complexity of the import regime:

- In January 2000, the Government of India (GOI) introduced higher tariffs for refined versus crude oils and higher tariffs for traders than for crude oil users, such as refiners. All refined oils would be charged a duty of 27.5 percent (a 25-percent basic duty and 2.5-percent surcharge), compared with a 16.5-percent total duty for crude oils. This change was designed to shift imports from refined, bleached, and deodorized (RBD) palm olein and refined soft oils to crude oils to improve capacity utilization in the refining sector.
- In March 2000, the GOI introduced higher duties on crude palm oil relative to other crude oils in order to slow crude palm oil imports. The duty for crude palm oil users, except vanaspati producers, was raised to 36.5 percent. The duty on other crude oils and crude oil imported by vanaspati units remained at 16.5 percent.
- In June 2000, tariffs on most oils were increased by 10-20 percent, and a 4-percent special additional duty (SAD) was introduced for refined and crude oils imported by traders. The aggregate duty on crude soybean oil became 27.5 percent, and the duty on crude palm oil rose to 45 percent except for crude palm oil used by vanaspati producers, which remained at 16.5 percent. The duty for refined oils rose to 44 percent, except RBD palm oil that faced an aggregate duty of 50.8 percent.
- In November 2000, tariffs on all oil imports were raised. The aggregate duty rose to 35 percent for crude soybean oil and to 50.8 percent for refined soybean oil. Crude palm oil imports rose to 55 percent (25 percent for vanaspati producers) and refined palm oil to 71.6 percent. Higher tariffs for palm oil, particularly refined oil, were designed to strengthen incentives for local oilseed producers and processors, although the tariff hikes in 2000 were largely negated by falling world prices. The differential duties on crude and refined oils did, however, shift demand from refined oil toward less costly crude oils, improving capacity utilization of domestic refiners.
- In March 2001, the GOI increased duties again, eliminated the distinction between actual users and traders in setting tariffs, reduced the differentials between crude and refined oil tariffs, and limited concessions to vanaspati manufacturers. Because of the 45-percent tariff binding on soybean oil, this round of tariff hikes led to large duty differentials between soybean oil and other major imported oils. Aggregate tariffs for crude palm, rapeseed, and sunflower oils were set at 75 percent, compared with 45 percent for crude soybean oil. While aggregate tariffs on refined palm oil and other oils rose to 92.4 percent, the tariff on refined soybean oil could be increased only to 50.8 percent (including the SAD). The tariff adjustments, along with prevailing international prices, led to significant incentives to import soybean oil over other oils.
- In August 2001, the Indian Government modified the oil tariff regime by setting minimum tariff values (reference prices) on palm oil imports and used these values to compute import duties. This change was made to curb the potential for underinvoicing of imports by trading firms to evade the duty. Although the tariff values were amended several times to reflect changing market conditions, the system created new potential distortions when actual market prices diverged from the tariff values established by the government.
- In November 2001, the Indian Government responded to Malaysian concerns about the tariff discrepancy between palm and soybean oil by lowering the duty on crude palm oil from 75 percent to 65 percent. This reduced the differential between crude palm oil and soybean oil from 30 percentage points to 20 percentage points.
- In 2002, India's Solvent Extractors' Association filed a petition—since denied by the government—to have WTO safeguard duties imposed on crude and refined edible oil imports. Safeguard duties are extra tariffs or quantitative limits beyond those normally agreed to under the WTO but are permitted by WTO rules if certain criteria are met, such as proving the industry is threatened with serious injury due to a sudden increase in imports. Although this petition was denied, a considerable constituency remains among oilseed producers and processors in India to increase protection.

- In September 2002, the tariff rate value system was also introduced for soybean oil. In September-December 2002, tariff rate values for soybean oil tended to be set above estimated import prices, while palm oil tariff values were set below estimated import prices. As a result, the effective tariff on crude soybean oil was about 48 percent, while the effective tariff on palm oil was about 59 percent, thus reducing the tariff differential to about 11 percent.
- In April 2003, tariffs on refined palm oil and RBD palm olein was reduced from an effective rate of 92.4 percent (85 percent tariff plus the SAD) to 70 percent with no SAD. With the tariff on crude palm oil and crude olein remaining at 65 percent (with no SAD), the tariff margin for domestic refiners is only 5 percent. In addition, the tariff on vanaspati was raised from 50 percent to 100 percent to stop imports from Nepal and Malaysia.

Appendix table—Trends in Indian oil consumption by type

Year	Total	Soybean oil	Rapeseed oil	Sunflower oil	Peanut oil	Palm oil	Cotton-seed oil
				1,000 tons			
Annual average:							
1972-74	2,288	35	574	13	1,204	40	208
1979-81	3,753	648	721	29	1,377	479	249
1989-91	5,062	403	1,578	297	1,759	353	417
1999-01	10,382	2,053	1,331	803	1,368	3,725	571
				Percent			
Annual growth rates:							
1973-80	7.30	51.90	3.30	11.70	1.90	42.40	2.60
1980-90	3.00	-4.60	8.20	26.20	2.50	-3.00	5.30
1990-00	7.80	17.30	-1.20	11.00	-2.40	27.60	3.10
1995-01	8.50	18.70	-4.80	3.30	0.00	28.40	-3.30

Total includes palm kernel and coconut oil.

Source: Production, Supply and Distribution database, USDA (March 2003).