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Commodity Revenue Management: India's rapeseed/mustard oil sector

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Tackling Commodity Price Volatility
This paper is published as part of a larger project, sponsored by the Norwegian Government, on policy options to tackle the problem of commodity price volatility. More research and papers can be found at http://www.iisd.org/trade/commodities/price.asp

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Acronyms

APMC	Agriculture Product Marketing Committee
CACP	Commission on Agriculture Costs and Prices
CIF	tariff adjusted landed price
CUTS	Consumer Unity & Trust Society
GST	Goods and Service Tax
MIO	market intervention operation
MSP	minimum support price
NAFED	National Agricultural Cooperative Marketing Federation of India
NDDB	National Dairy Development Board
NSSO	National Sample Survey Organisation
NMCE	National Multi-Commodity Exchange
PDS	public distribution system
PSS	Price Support System
PUFA	polyunsaturated fatty acid
RBI	Reserve Bank of India
U.S.	United States
VAT	value-added tax
WTO	World Trade Organization

Introduction

India's rapeseed/mustard seed and oil prices have experienced a significant amount of volatility, which has been problematic for both the government and the farm sector as they fight to stabilize commodity revenues. When revenues are high, they tend to distort fiscal responsibility. When revenues fall, they reduce government revenues, drive mass unemployment, increase national debt and undermine health and education spending. This study aims to highlight the tools available to the Indian government and to the country's farm sector for managing the volatile revenues related to their rapeseed/mustard crops.

Commodity price volatility is not a new problem in India, but has grown in the wake of recent liberalization and globalization programs and the opening of the domestic sector. The government and private sector have tried to stabilize prices through a variety of means, including compensatory funds and price hedging on futures markets, but few, if any, of these mechanisms have been successful.

This study is divided into three sections. Section 1 introduces the rapeseed/mustard oil sector, highlighting its importance to the Indian economy. Section 2 discusses the national revenue management of the rapeseed/mustard oil sector, and Section 3 provides recommendations for improving and stabilizing the earnings of the government and farm sector from rapeseed/mustard oil sector in India.

1. The rapeseed/mustard oil sector in India

India is the third largest rapeseed/mustard seed producer in the world,[1] with 12 per cent of world's total production grown domestically. The crop accounts for nearly one-third of the oil produced in India, making it the country's second most important edible oil after groundnut.[2]

Due to their similar genetic make-up, rapeseed and mustard seed share the same growing areas throughout India. A large number of species and sub-species of oilseed are cultivated in India under the name rapeseed/mustard seed, including *Rai, Torah, Brown Sarson, Yellow Sarson, Swedi, Rape/Karan Rai* and *Taramira*. Some of these are hybrid and some locally grown seed varieties.[3] In a drive for further crop diversification, government agencies are currently promoting the cultivation of a hybrid variety called *Hyola*, a strain which gives both higher yields and oil content.[4]

Traditionally, the rapeseed/mustard seed grown in India contains a high amount of euric acid and glucosinolates, and as such does not conform to the international standard, "Canola[5] quality." The rapeseed/mustard seed produced in India is mainly for domestic consumption, and is mostly consumed in the northern, central and eastern parts of the country. A study by CUTS on the rapeseed/mustard seed sector in Rajasthan found that 82 per cent of rural consumers use the oil as their staple edible oil, with monthly consumption varying between two and four kilograms per family in the state.[6]

Rapeseed/mustard seed accounts for 65 per cent of India's total winter, or *Rabi*[7] oil crop, which is made up of rapeseed/mustard seed, sunflower, castor seed, linseed and safflower.[8] Rapeseed/mustard oil content typically varies between 36 and 42 per cent; of this, average oil recovery is approximately 34 to 35 per cent.[9] Once the oil is extracted, the remaining part of the seed is used to produce rapeseed/mustard meal, an important source of cattle and poultry feed. This represents a significant source of oil meal in the country, supplying on average about 3 to 3.2 million tonnes of meal annually.

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[1] Rapeseed/mustard plants grow all over the world, but their cultivation is mainly confined to India, China, Canada, Germany, France, Australia and the United States.

[2] Damodaran, T. & Hegde, D. M. (2005) "Oilseeds Situation: A Statistical Compendium 2005," *Directorate Oilseeds Research*, Indian Council of Agricultural Research, Hyderabad,
Table 1.4, p.5

[3] For more details, see Annex 1.

[4] Punjab initiated the contract farming of Hyola on around 10,000 acres of land during 2002–2003.

[5] The term "Canola" is a registered trademark of the Canola Council of Canada and refers to rapeseed/mustard seed with low euric acid and glucosinolate.

[6] Pahariya N. C. (2006) "Impact Assessment of Trade Liberalisation in Oil seed Sector, Case Study of Rajasthan," CUTS International, http://www.cuts-citee.org/documents/Oilseed-study-final.doc accessed in 2007

[7] Rabi crops are sown in the months of November and December and harvested in March and April. Apart from oilseeds, other Rabi crops include wheat, gram, cumin seed and onion. The second important crop in India is known as Kharif (Summer Crop), which is sown in June and July and harvested in September and October. Crops for this season include rice, maize, groundnut and soyabean.

[8] Damodaran, T. & Hegde, D. M. (2005) "Oilseeds Situation: A Statistical Compendium 2005," *Directorate Oilseeds Research*, Indian Council of Agricultural Research, Hyderabad, Table 1.4, p.5

[9] Srinivasan P V. (2005) "Impact of Trade Liberalisation of India's oil seed and edible oils sector," Indira Gandhi Institute of Development Research (IGIDR), Mumbai, p.20

Box 1: The Rapeseed/Mustard Oil Sector in India

- India is world's fourth largest edible oil economy after the U.S., China and Brazil, and is the second largest importer after China.
- India accounts for seven per cent of global oilseeds output; seven per cent of global oil meal production; six per cent of global oil meal exports; six per cent of global vegetable oil production; 14 per cent of global vegetable oil imports; and 10 per cent of global edible oils.[10]
- The total market size of the Indian oilseed sector is about Rs 600 billion (US$13.4 billion). India's international trade in oilseeds is Rs 130 billion (US$2.9 billion). The sector directly or indirectly employs more than a million people.
- Oilseed cultivation in the country takes place on about 26 million hectares of land. Groundnut, soyabean oil and rapeseed/mustard are the major oilseeds and contribute approximately 80 per cent of production. Other oilseeds produced include sesame, castor, linseed, safflower, sunflower, soyabean and niger, along with coconut oil, palm oil and secondary oil crops such as maize and cotton.
- In the Indian agriculture sector, oilseeds occupy 13 per cent of the country's gross cropped area and account for nearly three per cent of gross national product. They also account for 10 per cent of the value of the agriculture produced.

Sources: (National Commodity & Derivative Exchange, undated; CRN India, undated; India Mart–Market Watch, undated; Karvy Comtrade, undated).

Rapeseed/mustard oil, used primarily in cooking, is a rich source of monosaturated fatty acids, making it a healthier option than most other cooking oils.[11] Over the years, its health advantages have continued to improve, especially with the recent, limited introduction of the "Canola" strain of the seeds. Two varieties of the oil are popular in India: the *Kaccha Ghani* (preferred by most consumers due to its characteristic colour and pungency) and *Pakki Ghani* (refined rapeseed/mustard oil preferred mostly by health conscious people). Other than its culinary advantages, rapeseed/mustard seed and its oil also hold a number of diverse applications, from fertilizers to lubricants to massage oils.

Box 2: Rapeseed/Mustard Oil – Health Benefits

A study by researchers at the Department of Medicine in Safdarjung Hospital, New Delhi, links the increase in heart diseases and diabetes to increased consumption of refined vegetable oils. While such oils contain the dangerous type-6 polyunsaturated fatty acid (PUFA), rapeseed/mustard seed are low in PUFA and high in monosaturated fatty acid. In fact, researchers at the College of Pharmacy, South Dakota State University have found that the omega-3 PUFA found in rapeseed/mustard oil reduces the risk of chemically induced cancer.

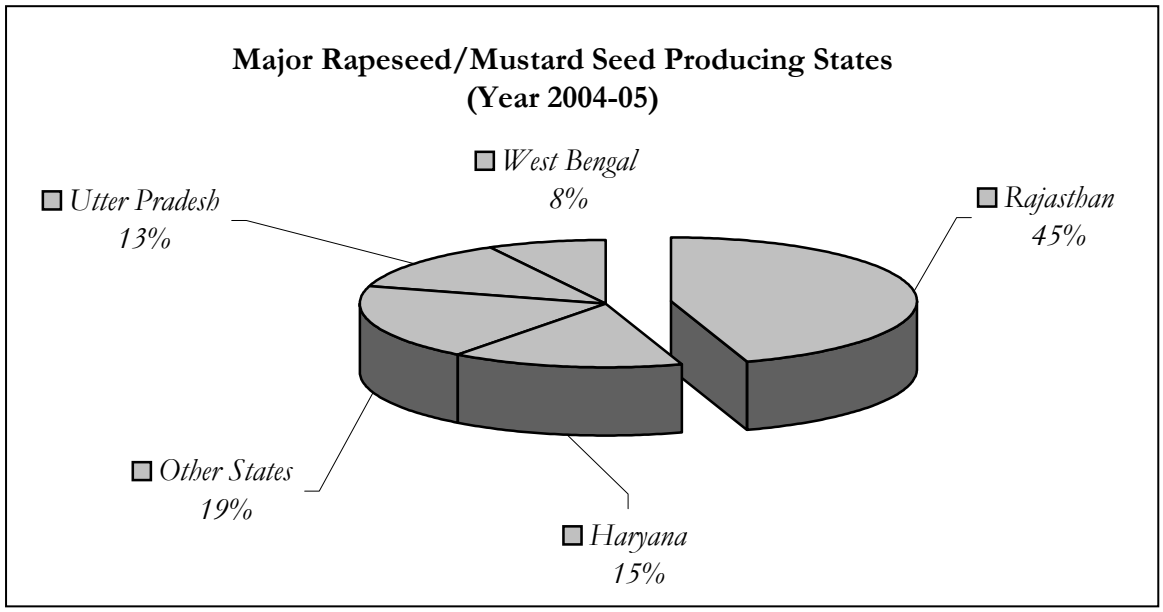
Source: (Varshney, 2005)

[10] KS Oils, Home Page, http://www.ksoils.com/index.php accessed in 2007.
[11] For more details, see Annex 2.

1.1 The production of rapeseed/mustard seeds in India

Rapeseed/mustard seed cultivation is carried out widely in 13 states of India. However, most production takes place in the states of Rajasthan (45 per cent); Uttar Pradesh (13 per cent); Haryana (15 per cent); and West Bengal[12] (eight per cent)[13, 14] (see Figure 1). Nearly 60 per cent of the land under rapeseed/mustard seed cultivation is irrigated.[15] Typically, the rapeseed/mustard seed sector has been the most unorganized sector in the country when compared to other edible oils in India; almost 90 per cent of producers operate as small oil mills throughout the rapeseed/mustard-growing belt.[16]

Figure 1



Source: (Damodaran & Hegde, 2005)

The production area and yield of rapeseed/mustard seed experienced significant growth from 1984–85 to 1994–95, due primarily to the increase in irrigated land and the availability of high yielding seeds in the country. [17, 18] This upward trend was, however, partly reversed from 1994–95 to 2003–04 due to intermittent famine conditions in some of the major production states, such as Rajasthan.[19] Production bounced back in 2004 as yields and the total area under rapeseed/mustard seed cultivation increased in Rajasthan, Haryana, Uttar Pradesh and Gujarat. Peak production increased to seven million tonnes in 2005–06, up

[12] It is also produced in the states of Punjab, Gujarat, Madhya Pradesh, Jammu and Kashmir, Assam, Bihar, Himachal Pradesh & Orissa.
[13] All figures are to the nearest round figure.
[14] Damodaran, T. & Hegde, D. M. (2005) "Oilseeds Situation: A Statistical Compendium 2005," *Directorate Oilseeds Research*, Indian Council of Agricultural Research, Hyderabad, Table 3.4, p. 68
[15] ibid, p. 67
[16] Dohlman, E., S. Persaud & R. Landes (2003) "India's Edible Oil Sector: Imports Fill Rising Demand," United States Department of Agriculture (USDA), http://www.ers.usda.gov/publications/OCS/nov03/OCS090301/ocs090301.pdf accessed in 2007, p. 11
[17] The Technology Mission on Oilseeds was launched by the Central Government to increase the production of oilseeds, in order to reduce imports and achieve self-sufficiency in edible oils.
[18] Based on a calculation by the authors from Damodaran & Hegde, 2005.
[19] Damodaran, T. & Hegde, D. M. (2005) "Oilseeds Situation: A Statistical Compendium 2005," *Directorate Oilseeds Research*, Indian Council of Agricultural Research, Hyderabad, Table 3.4, p. 68

from six million tonnes in 1995–96 and 6.65 million tonnes in 1996–97.[20, 21] This represents an overall increase in acreage and production of rapeseed/mustard seed since 1984–85, reflecting the preferences farms have for rapeseed/mustard seed over competing crops.

1.2 Household dependence on revenue from the rapeseed/mustard oil sector

Almost 58 per cent of the country's population depends on agriculture, which accounts for 22 per cent of India's gross domestic product.[22] The 60th Round of National Sample Survey Organisation (NSSO) report on employment, conducted between January and June 2004, showed that 72 per cent of households (with an average size of five family members) belonged to rural India, accounting for 75 per cent of population. Again, in rural areas, about 66 per cent of usually employed men and 84 per cent of usually employed women were engaged in agriculture sector.[23]

This high level of dependence would indicate that a large proportion of the population of the 13 rapeseed/mustard producing states (which are all heavily populated and consist of relatively poor people) is involved in agriculture. With rapeseed/mustard seed a dominant crop in these states, many rural Indians are therefore directly or indirectly involved in its production, either as large, small or marginal farmers, or as casual agricultural labour.[24]

In Rajasthan, a CUTS survey on the sector revealed that the average size of families dependent on producing rapeseed/mustard seed ranged from five to eight persons; almost 45 per cent of these producers are marginal (with landholdings of less than two hectares), while 32 per cent are smallholders (two to five hectares). Less than 10 per cent have large holdings (above 10 hectares).[25] The earning level of the marginal farmers is very low, with more than 60 per cent of such families falling below the poverty line.

1.3 Government dependence on revenue from the rapeseed/mustard oil sector

The rapeseed/mustard seed produced in India is sold in the form of both oil and oil meal. On average, the country produces around five million tonnes of rapeseed/mustard seed annually. Around 80 per cent of this is marketed by the small-scale sector in loose form, with only 20 per cent sold by the organized sector. A major portion of seeds enters the regulated *mandis* (organized markets for selling agricultural products) and is purchased by oilseed crushers across the country.

As India's rapeseed/mustard seed is produced mainly for domestic consumption, the agricultural and fiscal policies formulated by the government influence the production and

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[20] For more details, see Annex 3

[21] Damodaran, T. & Hegde, D. M. (2005) "Oilseeds Situation: A Statistical Compendium 2005," *Directorate Oilseeds Research*, Indian Council of Agricultural Research, Hyderabad, Table 3.4, p. 68–75

[22] Ministry of Finance (2007) "Economic Survey 2006-2007," *Union Budget,* Government of India

[23] Ministry of Finance (2006) "Economic Survey 2005–2006," *Union Budget,* Government of India, http://indiabudget.nic.in/es2005-06/chapt2006/chap104.pdf accessed in 2007

[24] Additionally, a large number of people are involved on the processing side of oil production.

[25] Pahariya N. C. (2006) "Impact Assessment of Trade Liberalisation in Oil seed Sector, Case Study of Rajasthan," CUTS International, http://www.cuts-citee.org/documents/Oilseed-study-final.doc accessed in 2007, p .8

revenue generated by the rapeseed/mustard oil sector. A portion of this revenue flows to the state through the following channels:

- *mandi* cess;[26]
- commission charges;
- excise duties;
- intra-state and inter-state central sales taxes;
- *octroi* duties (municipal charges levied upon entry of goods into a municipal/local area for use, consumption or sale);
- customs duties (from the import duty of rapeseed/mustard oil into the country); and
- export revenues.

Buyers of rapeseed/mustard oil in the *mandis* pay cess. The rates are fixed by the Agricultural Product Marketing Committee (APMC) in states such as Gujarat and Maharashtra, and by State Marketing Regulations Acts in other states.[27] This rate varies between one and two per cent.[28] A rural development tax is also occasionally levied along with the market cess. Additionally, commission agents exist in some of the *mandis,* whose charges range from two to 2.5 per cent.[29]

The personal income derived from agriculture in India is exempt from income tax, and as such government revenues must come from other sources. Sellers pay taxes for intra- and inter-state sales to both the state and central government, however in many states this sale tax has been replaced by a value added tax (VAT) system— which for edible oils is four per cent. In addition, merchants for extracting/processing oils pay an excise duty of eight per cent on branded, packaged edible oils. Municipalities may also charge *octroi* duties, to varying degrees, for rapeseed/mustard oil products entering their markets. Finally, in some states charges fixed by the *mandi* committee are levied for activities such as loading, unloading, weighing, brokerage and cleaning.

Government policies in other agricultural sectors could also impact the amount of revenue the state derives from rapeseed/mustard seed. Revenues could decline with an increase in the minimum support price (MSP) for wheat; as a production substitute, a higher MSP for wheat could tempt farmers to switch crops, thereby reducing taxable rapeseed/mustard seed production.

While India has not traditionally imported rapeseed/mustard seed, recent domestic production declines have made the country change its policy[30]; it now accounts for nearly four per cent of global imports.[31] Under World Trade Organization (WTO) rules, both the

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[26] A *cess* is a charge collected by government from oilseed crushers directly against the purchases they make from the growers.

[27] Agriculture Marketing Information Network (2004) "Post Harvest Profile of Mustard-Rapeseed," *Agriculture Marketing Information Network*, Government of India, http://www.agmarknet.nic.in/mustard-rapeseed-profile.pdf accessed in 2007

[28] A sample of *cess* charges in various states: Rajasthan (1.6 per cent), Madhya Pradesh (2.0 per cent), Utter Pradesh (2.0 per cent), Gujarat (0.5 per cent) and Haryana (2.0 per cent)

[29] Agriculture Marketing Information Network (2004) "Post Harvest Profile of Mustard-Rapeseed," *Agriculture Marketing Information Network*, Government of India, http://www.agmarknet.nic.in/mustard-rapeseed-profile.pdf accessed in 2007

[30] For more detail, see Annex 4.

[31] FAO STAT, Home Page, http://faostat.fao.org/default.aspx accessed in 2007

bound and applied tariff duty on rapeseed/mustard seed is 75 per cent,[32] with an additional special duty of four per cent applied to refined oil. However to compensate for the recent supply-demand mismatch, the government has released a tariff-rated quota[33] of 150,000 tonnes per year for rapeseed/mustard seed imports, which can enter the country at a reduced 45 per cent duty.

India does not generally export its rapeseed/mustard seed, as most of its crop contains high levels of euric acid, and hence does not meet international quality standards.[34] The country does, however, export rapeseed/mustard oil meal, with annual exports of approximately 400,000 tonnes. This accounts for about 4.2 per cent of India's total agricultural exports, and is therefore an important source of revenue for the country.

[32] Directorate of Edible Oil page, Department of Food and Distribution, Government of India, http://fcamin.nic.in/dfpd/EventDetails.asp?EventId=561&Section=Edible%20Oil&ParentID=0&Parent=1&check=0 accessed in 2007

[33] Tariff-rated quota: A tariff quota is a two-tiered tariff. In a given period, a lower in-quota tariff (t) is applied to the first Q units of imports and a higher over-quota tariff (T) is applied to all subsequent imports. This tariff-rated quota is applied only in years when imports are required to increase by a certain amount to make up for domestic shortages.

[34] For more detail, see Annex 4.

2. National Revenue Management

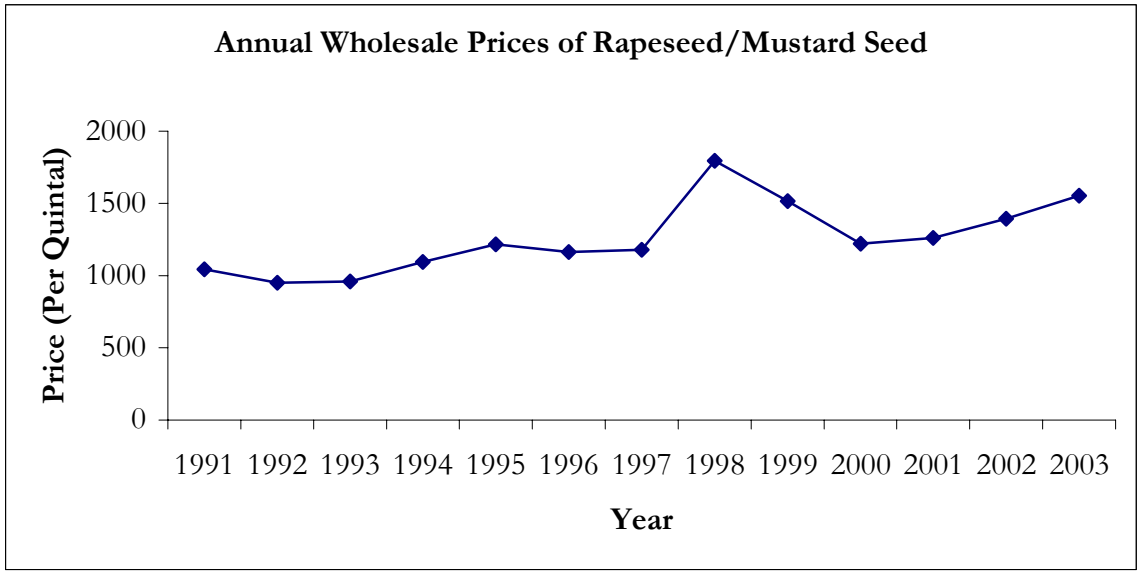
2.1 Price trends and volatility in the rapeseed/mustard oil in India

A long-run trend analysis (Figure 2[35]) of month-end wholesale prices for rapeseed/mustard seed shows that there have been fluctuations in price over the 12-year study period, but that overall, prices have increased.

Price increases were gradual until 1997, but experienced a sharp increase from 1998 to 1999 due to India's domestic supply-demand mismatch at that time: a domestic rapeseed/mustard seed undersupply drove up prices, increasing the country's reliance on imports.

Prices quickly fell again from 1999 to 2000 as production caught up with demand. Since 2001, prices have risen, primarily because of a drought in 2002–03 and the subsequent steep rise in demand for rapeseed/mustard seed in the country. Overall, during the 12-year period under study prices have increased by 30 per cent. However there have been fluctuations in wholesale prices within the different *mandis*, indicating inter-state price differences for rapeseed/mustard seed throughout the country.

Figure 2

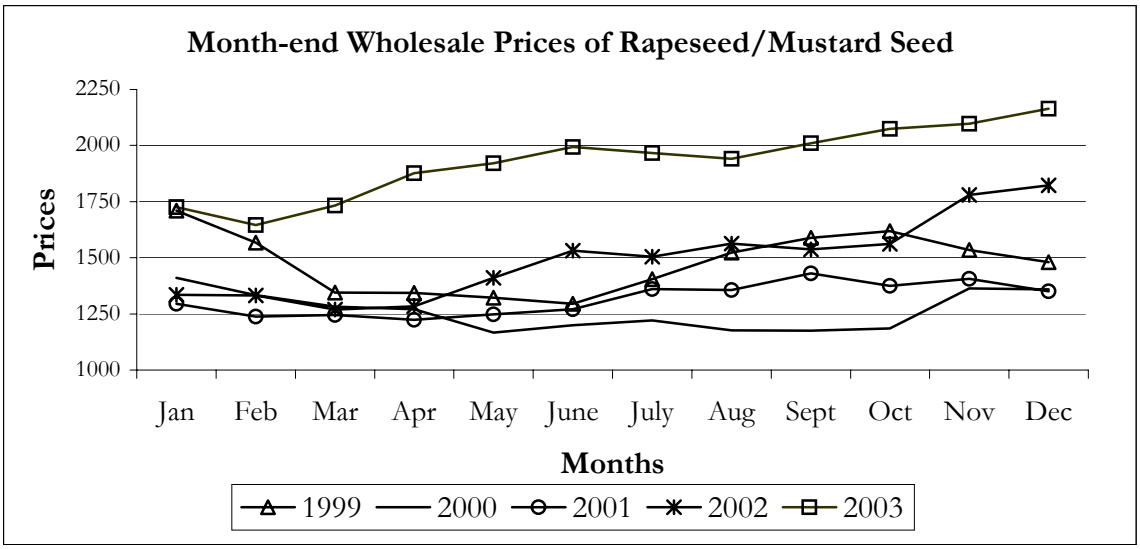


Source: (Damodaran & Hegde, 2005)

A short-run trend analysis of the wholesale price of rapeseed/mustard seed (Figure-3[36]) for the five years starting in 1999 shows that until 2002 there are seasonal variations in price, with March, April and May experiencing low prices due to the peak arrival periods of the crop in the *mandis*. In September, October and November of the same years, prices rose. These trends were disrupted in 2003 by a poor monsoon season and subsequent drought, eliminating any past seasonal variations and leading to a steady increase in price throughout the year. In general, prices remained low in 2000 and 2001 when compared to 1999, 2002 and 2003.

[35] For more detail, see Annex 5.
[36] For more detail, see Annex 6.

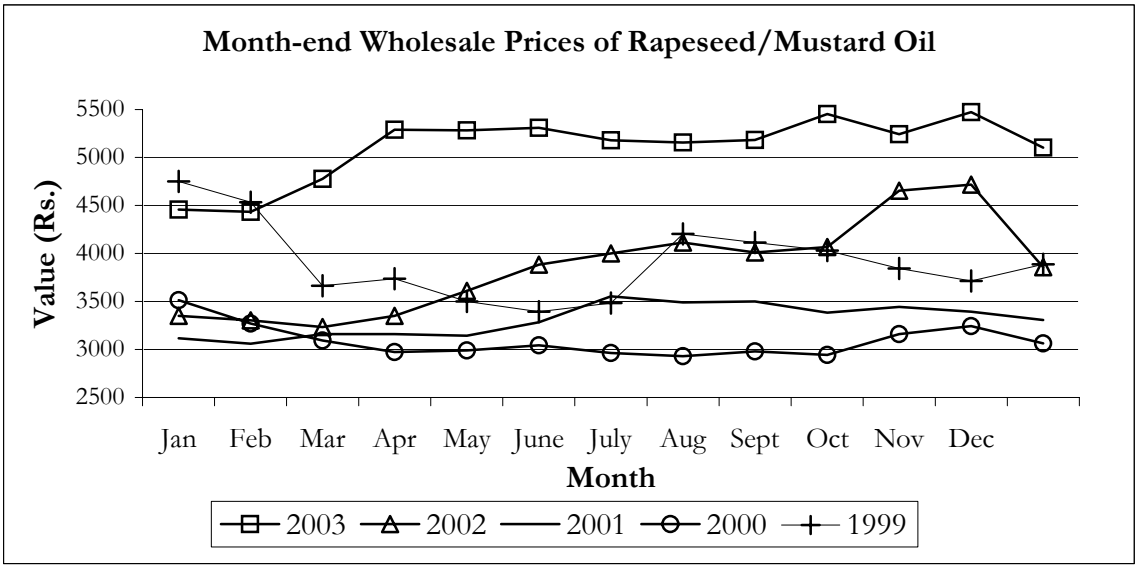
Figure 3



Source: (Month-end Wholesale Price of Rapeseed and Mustard page, average of the prices in the six mandis is taken)

Rapeseed/mustard oil prices largely followed the same trend as seeds (see Figure 4[37]), with low prices in 2000 and 2001 in comparison to 1999, 2002 and 2003. Overall, taking into consideration monthly fluctuations for all five years, wholesale oil price movements are mostly irregular and random, with fluctuations throughout the year.

Figure 4



Source: (Month-end Wholesale Price of Rapeseed and Mustard page, average of the prices in the six mandis is taken)

Generally, the wholesale price of rapeseed/mustard oil in India is determined by the domestic production of rapeseed/mustard seed. Fluctuations in price can, therefore, be largely attributed to ups and downs in seed production and its market availability. Other volatility drivers include the seasonal nature of production and the crop's vulnerability to inclement weather.

[37] For more detail, see Annex 7.

Due to a glut in production and a lack of storage facilities, producers flood the markets with rapeseed/mustard seeds just after harvesting. In addition, farmers are frequently pressured into rushing their product to market by the need to repay moneylenders for old debts. Other factors like the nature of existing supply and of the value chain, the availability and prices of substitute oils (mostly soya and palm oil), the MSP of production substitutes likes wheat and changes in consumer preferences have had an impact on wholesale price of rapeseed/mustard oil in the country. In addition, delayed crop arrivals in *mandi*, the heavy presence of speculators and stockpilers in the market and the presence of a large unorganized crushing sector[38] will drive volatility.

Imports of rapeseed/mustard oil have traditionally been too small to be a cause for concern among India's farmers, however imports of competing oils are increasingly important for the sector. In 2002-03, edible oils constituted 2.9 per cent of total commodity imports to the country; this rose to 3.4 per cent in 2003-04.[39] Differences between the domestic wholesale price and the tariff-adjusted landed price (CIF) of imported rapeseed/mustard oil (a difference of almost 0.07 per cent, with domestic prices lower than imports) have depressed prices and caused fluctuations in the market.[40]

2.2 Impacts of price volatility

In recent years, Indian households have earmarked an increasing portion of their budgets to rapeseed/mustard oil. This has played an increasingly important role in ensuring the nutritional security of a large section of population. Price volatility therefore has a large impact on vulnerable consumers, especially in households where food takes up a significant portion of the family budget.

Based on the elasticity of oilseed supply and demand, Indian consumers are more responsive to changes in oil prices than farmers are to changes in oilseed prices.[41] With a variety of edible oils in the market, made similar through modern refining, bleaching and de-odourization processes, consumer substitutability has increased. This does not apply, however, to the production side; land suitable for the production of rapeseed/mustard seed is not necessarily suitable for groundnuts or other edible oil crops. In short, it is not easy for farmers to quickly react to market forces with production changes. Hence, any fluctuation in rapeseed/mustard oil price could increase the vulnerability of farmers, particularly small and marginal ones.

High edible oil prices, which in turn lead to inflation, can have a destabilizing impact on the economy. Any benefits from high oil prices are primarily won by oil processors and other intermediaries; these benefits rarely trickle down to small and marginal farmers in the country, as few sell products in the *mandi* directly. This creates an imbalance in the economic

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[38] The unorganized nature of the crushing sector in India is due to the fact that numerous small crushers are dispersed throughout the mustard growing belt.

[39] Ministry of Finance (2006) "Economic Survey 2005-2006," *Union Budget,* Government of India, http://indiabudget.nic.in/es2005-06/chapt2006/chap104.pdf accessed in 2007

[40] Srinivasan P.V. (2004) "Managing Price Volatility in an Open Economy Environment: The Case of Edible Oils and Oilseeds in India," *MTID Discussion Paper No. 69*, IFPRI, http://www.ifpri.org/divs/mtid/dp/papers/mtidp69.pdf accessed in 2007

[41] World Bank Report (1997). "The Indian Oilseed Complex: Capturing Market Opportunities," *Report No. 15677-IN*, World Bank Rural Development Sector Unit, South Asia Region, http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1997/07/31/000009265_3971104184215/Rendered/PDF/multi_page.pdf accessed in 2007

conditions of people who are linked (through a forward linkage and/or a backward linkage) with production of oil.

Small-scale rapeseed/mustard seed processors have also been affected by price volatility, as they cannot adjust their processing costs to match sudden fluctuations, making them susceptible to changes in edible oil prices. Internationally, Indian exporters are also at a disadvantage, with unit costs 17 per cent higher than those in China, and 40 per cent higher than those in Canada and the U.S.[42, 43]

2.3 Revenue management strategies in the rapeseed/mustard sector – Impacts on government and households in the country

Price stability in the edible oil sector is important to India for two main reasons: a) to realize the growth potential of the sector; and b) for the nutritional security of Indian households. Given the volatility of rapeseed/mustard oil price in India, various initiatives from the government and the private sector have been undertaken to stabilize prices.

The tools used could be classified as: a) indirect support to producers through input subsidies; b) direct support by providing compensatory revenues; and c) strategies to ensure increased and stable government revenues.

The mechanisms applied to stabilize edible oil prices and incomes could be broadly categorized as:

- subsidies to farmers;
- market intervention by the National Dairy Development Board;
- price support to farmers (Minimum Support Prices) and government procurement;
- tariff protection on imports, to regulate fluctuations in domestic prices due to international price changes;
- risk management through trading in the futures market; and
- Public distribution system (PDS) by the government.

The effectiveness of individual revenue management tools, however, has varied among the oilseed crops produced in the country.

2.3.1 Subsidies to farmers

The only subsidy provided to the rapeseed/mustard seed sector (also to the overall agriculture sector) by the Indian government (at both the central and state levels) is in the form of fertilizer, irrigation water and power. Despite the small size of the subsidy,[44] it has supported farmers indirectly, and has helped reduce the production costs of oil and increase their margins.

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[42] Pahariya N. C. (2006) "Impact Assessment of Trade Liberalisation in Oil seed Sector, Case Study of Rajasthan," CUTS International, http://www.cuts-citee.org/documents/Oilseed-study-final.doc accessed in 2007, p.8

[43] Chand R., D. Jha and S. Mittal (2004) "WTO and Oilseeds Sector," *Economic and Political Weekly*, V. 39 (6): 533-537, February 7, 2004

[44] According to a study by R Chand (1999), oilseed production in India receives less than one-fourth of the input subsidy for rice (Pahariya, 2006, p. 8).

2.3.2 Market intervention by the National Dairy Development Board

The Market Intervention Operation (MIO), implemented by the National Dairy Development Board (NDDB) between 1989 and 1994, was the first major attempt by the Government of India to directly stabilize seed and edible oil prices within a predetermined price brand. This policy sought to fix procurement prices of rapeseed/mustard seed and groundnut at 40 per cent above the levels recommended by the Commission on Agriculture Costs and Prices (CACP)[45] in 1989–90. The NDDB was to achieve this with buffer stocks from both domestic and import sources, from which they would sell seeds and edible oils to achieve the intended stabilization. In subsequent years, no specific price band was set; instead, the NDDB aimed to stabilize prices within a range of 30 to 45 per cent above CACP recommendations. This policy was eventually declared unsupportable and discontinued in 1994, but had provided favourable price incentives for farmers to grow rapeseed/mustard seed rather than other crops.

2.3.3 Minimum support price and government procurement

The Ministry of Agriculture, in consultation with the CACP, fixes the minimum support price (MSP) of rapeseed/mustard seed along with other agricultural crops in India. This direct price support is given to ensure farmers fair prices and prevent distress sales (Figure 5[46]).

The MSP is linked to the costs of production, changes in oilseed input prices (fertilizers, seeds, irrigation), trends in market prices, and other factors.[47] It is administered through a cooperative marketing agency called the National Agricultural Cooperative Marketing Federation of India (NAFED).[48]

Through NAFED, the government of India intervenes in the market to procure rapeseed/mustard seed at the MSP under the Price Support System (PSS), when the price of oilseeds and other products covered under the scheme (like pulses) are at or below the declared market support prices. NAFED, through seed procurement, also provides regular marketing support to farmers to sustain and improve the production of rapeseed/mustard seeds in the country.

The MSP for rapeseed/mustard seed sector has increased since 1991, indicating the reliance of farmers on the MSP to protect their revenue and thus food and livelihood security from price volatility. A striking observation is that the MSP for other oilseeds like groundnuts and soyabeans has not increased to the same level during this period.[49] This indicates that rapeseed/mustard seed producers have been much more inclined to rely on the MSP scheme to stabilize prices and protect livelihoods.

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[45] Shenoi, P.V. (1989) "Oilseeds Situation in India," Department of Agricultural Research and Education, Ministry of Agriculture, Government of India, New Delhi

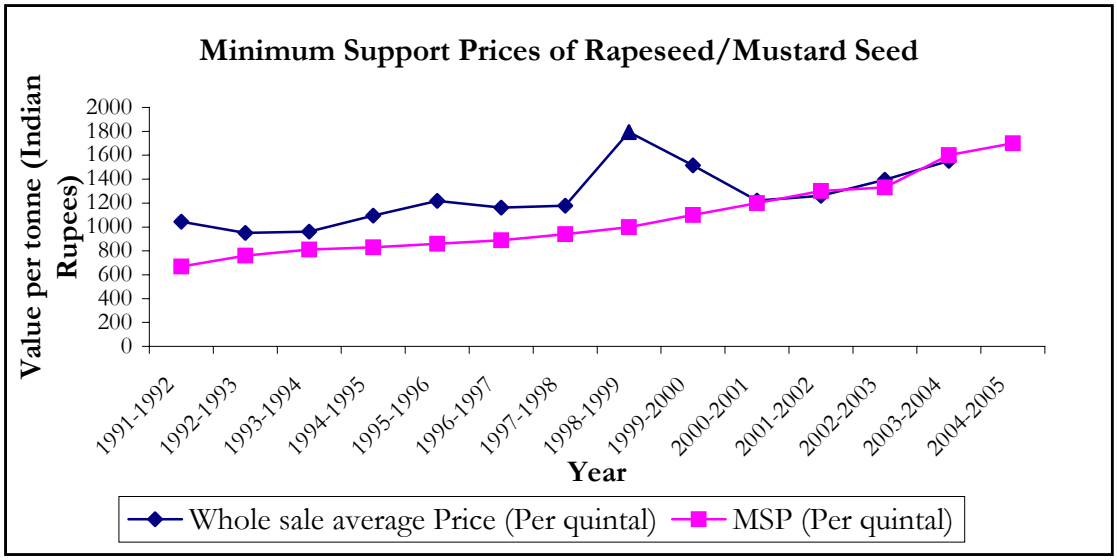
[46] For more details, see Annex 8.

[47] Commission of Agriculture Cost and Prices page, Ministry of Agriculture, Government of India, http://dacnet.nic.in/cacp/ accessed in 2007

[48] NAFED was established in 1958 with the objective of promoting the co-operative marketing of agricultural produce to benefit farmers. Agricultural farmers are the main members of NAFED, and have a significant say in how the organization operates.

[49] Ministry of Finance (2007) "Economic Survey 2006–2007," *Union Budget,* Government of India, Appendix 5.5, p. S-65

Figure 5



Source: (Damodaran & Hegde, 2005)

It was recommended by the CACP that the MSP be increased from Rs 1100 per tonne (US$25) in 1999-2000 to Rs. 1700 per tonne (US$38.5) in 2004–05. The CACP hoped that by increasing the MSP in such a way, they would be able to address the rapeseed/mustard seed demand and supply imbalance by inducing farmers to switch their crops from wheat and rice to rapeseed/mustard seed.[50] This is what happened, particularly in Rajasthan, and the move pushed rapeseed/mustard seed to the top of domestic production.

During the period under study, the wholesale price of rapeseed/mustard seed has for the most part remained higher than the MSP, meaning that interventions from NAFED have not been required save for the few years that market prices fell significantly and made the crop almost unprofitable. In 1992–93, 1993–94 and 2000–01, the wholesale price of seed fell due to excess supply; NAFED bought the crop in various quantities (30 to 50 per cent of the total produced) to avert a price collapse. In 2004–05, NAFED procured about 2.019 million tonnes of the seeds (roughly one-third of total produced) under the PSS, of which 1.383 million tonnes were from Rajasthan. Without this purchase, prices would have fallen further.[51]

The Government of India arranges funds for procurement activities for NAFED by recommending that the Reserve Bank of India (RBI) provide a cash credit to the organization. For 2004–05, NAFED was given a credit limit of Rs 1423 crore (US$32.2 million) against a 100 per cent government guarantee for carrying out the PSS program for rapeseed/mustard oil in India.[52]

[50] According to the press release of the Ministry of Agriculture at the time of announcement of increased MSP.
[51] Ministry of Finance (2006) "Economic Survey 2005-2006," *Union Budget,* Government of India, http://indiabudget.nic.in/es2005-06/chapt2006/chap104.pdf accessed in 2007
[52] ibid

Table 1: Procurement of rapeseed/mustard seed by NAFED under the Price Support System

Year	*Support Price (Fair Average Quality)*	*Quantity Procured*	*Value Rs Lakh*	*Major States of Procurement*
1992–93	760	2746	148.87	Rajasthan, Gujarat
1993–94	810	66	5.18	Rajasthan, Gujarat
2000–01	1100	247956	29194.1	Rajasthan, Gujarat, Madhya Pradesh, Utter Pradesh, Haryana

Source: (Damodaran & Hegde, 2005)

This credit, however, was low in comparison to the required purchase made by NAFED to stabilize rapeseed/mustard oil prices and prevented them from falling below the MSP. This created a problem for NAFED and delayed payments for farmers due to the shortfall in funding. Due to these limited resources, NAFED could not undertake large-scale price support. The government is now evaluating this system to make provisions for the release of more funds for NAFED to take up price support activity in large scale.

2.3.4 Tariff protection for imports to regulate fluctuations in price due to international price changes

Global oilseed and meal prices have risen over the years, and have an impact on Indian prices. Indian prices track world prices, as rapeseed/mustard seed prices are determined primarily by the price of their derived products (oil and meal), which are traded.

In India, both the applied and bound tariff rate for rapeseed/mustard oil is 75 per cent. India could not influence this tariff structure by imposing further customs duties, as it would be a violation of the WTO rules. Because of these restrictions, tariff protection is not an effective tool for influencing the import volume of rapeseed/mustard oil and providing additional policy space to domestic producers.

2.3.5 Risk management through commodity trading in futures markets

The Government of India has allowed commodity trading in rapeseed/mustard oil—along with other edible oils—on the National Multi Commodity Exchange (NMCE) since November 2003. This exchange holds the promise of being an effective tool in price determination and stabilization for the traded commodities. On the NMCE, buyers and sellers of edible oils who are exposed to price volatility in the international and domestic markets can hedge their risk through the trading of futures contracts.

Trading on commodity derivative markets helps farmers and traders stabilize their incomes by offering them predictable future prices for their products. This can in turn prevent distress sales should prices begin to drop. In India, there are 25 recognized commodity exchanges, of which three are national level multi-commodity exchanges, where agricultural products and other commodities are traded. Prices are derived on the exchanges based on the demand and supply of the commodity. Thus, commodity exchanges give flexibility both to the seller and buyer to earn revenue, and benefit the seller by assuring them a price above the MSP provided by NAFED. That said, traded volumes on India's commodity exchanges

have remained low and access issues persist. At present, traders mostly participate in future markets to hedge their risks from price fluctuations.

2.3.6 Public distribution system by government in the country

Given the importance of edible oils in the diet of Indian households, the Ministry of Consumers Affairs, Food and Public Distribution provides edible oils along with other essential commodities to consumers under the public distribution system (PDS) at below market prices. This supplies edible oil at subsidized rates (of 15–20 per cent less than market price) to vulnerable families, cushioning them from fluctuating oil prices in the country.

3 Conclusions and Recommendations

3.1 Conclusions

Rapeseed/mustard oil has emerged as a leader among edible oils in India, and much opportunity for growth remains. However, the sector continues to be marred by price volatility, which has affected the incomes of both the government and producers.

To date, India has been largely self-sufficient in rapeseed/mustard seed production. However, stabilizing prices and incomes in the sector has become an urgent necessity in the face of greater integration of the Indian economy with the world economy through globalization and liberalization. The government and the private sector must now improve price and income stabilization techniques to ensure steady, increasing revenues from the rapeseed/mustard seed sector.

3.2 Recommendations

The following recommendations are worth consideration for controlling price fluctuations and stabilizing revenues in the rapeseed/mustard oil sector.

3.2.1 Productivity gains in the rapeseed/mustard oil sector

With demand growing faster than the supply of rapeseed/mustard oil throughout the country, the sector should bring additional areas under cultivation to increase production of the seed and reduce the existing demand-supply gap for the oil in India. This production increase can be achieved through intercropping in areas with widely spaced production of crops or by replacing low value crops with rapeseed/mustard seed in areas of similar agro-ecological conditions.

The productivity of rapeseed/mustard seed can be improved through a supply of better seeds at reasonable rates, an integrated nutrient supply, more effective crop management and modernization programs in the sector. This will further help to stabilize rapeseed/mustard oil prices in the country. In addition, proper extraction facilities for better oil recovery and improvements in oil processing facilities are of critical importance for achieving sustained growth in the sector.

3.2.2 Development and regulation of India's futures market

The online trade of rapeseed/mustard seed and oil on commodity exchanges must be further developed and regulated to help ensure stable, predictable incomes for stakeholders directly or indirectly associated with the crop (i.e., domestic farmers, traders and other intermediaries).

The country has to move away from traditional methods of trading through regulated markets and increasingly participate in commodity exchange markets. Presently, participants in commodity exchanges are primarily traders who speculate on future price fluctuations; opportunities for farmers remain quite limited. India must therefore push for more participation from farmers and their cooperatives to ensure that they can protect themselves from future volatility. Also, there must be a common national oilseed market for trading the commodity in futures markets. Entry fees for commodity markets should also be reduced to

a more affordable level.

The state should limit its involvement in the oilseed market to funding NAFED support of the minimum price, and try to allow the private sector and farm cooperatives to manage price volatility through risk management techniques. This will help the government shift a portion of the costs of price stabilization to the private sector, and use their already scarce resources for other developmental work in the country.

3.2.3 Development of an organized market for rapeseed/mustard oil

A significant portion of India's rapeseed/mustard oil is sold in unorganized markets. A huge quantity, therefore, is sold without record, on which tax cannot be charged, thus depriving the government of a large amount of income. Industry analysts estimate that some 70 per cent of edible oil is traded in such a way.[53] The rapeseed/mustard oil sector should continue to move towards becoming an organized market, to improve the information available to stakeholders on price, demand and supply, and to allow the government to capture more tax revenue to increase its own capacity.

3.2.4 Rationalization of the tax structure of the rapeseed/mustard oil

Oils, seeds and meal are subject to multiple taxes throughout the production process, at rates which vary across states within the country. This drives up the cost of doing business and encourages tax evasion— which, in the form of bribes, is said to account for 1.5–2 per cent of product value in India.[54]

The regulatory framework and tax regime, therefore, need to be simplified and rationalized where possible to bring a measure of uniformity to seed and oil tax rates and charges. The introduction of a VAT in all states and streamlining a uniform goods and service tax (GST) are good steps towards this goal.

Charges levied on edible oils should also be standardized to discourage consumers from choosing lower-priced oils over rapeseed/mustard oil. Product substitution could otherwise have an adverse effect on producers. In general, price differences between edible oils should to be minimized to discourage the adulteration of rapeseed/mustard oil by mixing it with cheaper oils like palm oil in the country.

3.2.5 Transparency in the regulated *mandis*

A lack of transparency and unwanted middlemen activities continue to plague most *mandis*. Farmers are cheated by *mandi* officials in a number of ways, including illegal/unwanted deductions in terms of weight, high commission charges and a variety of cesses and taxes. In addition, farmers frequently complain of payment delays.

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[53] World Bank Report (1997). "The Indian Oilseed Complex: Capturing Market Opportunities," *Report No. 15677-IN*, World Bank Rural Development Sector Unit, South Asia Region, www-http://wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1997/07/31/000009265_3971104184215/Rendered/PDF/multi_page.pdf accessed in 2007, Annex 1, p. 17

[54] World Bank Report (1997). "The Indian Oilseed Complex: Capturing Market Opportunities," *Report No. 15677-IN*, World Bank Rural Development Sector Unit, South Asia Region, www-http://wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1997/07/31/000009265_3971104184215/Rendered/PDF/multi_page.pdf accessed in 2007, Annex 1, p. 42

To help combat such illegal activities, *mandis* regulations must be made more stringent to avoid discrepancies and inefficiencies in the price recovery of rapeseed/mustard seeds. Bureaucratic red tape and unnecessary administrative hurdles need to be reduced, and unnecessary delays must be eliminated where possible to allow for a steady working of the *mandis*.

More transparency is also required in the government purchase program under NAFED; without it, this intervention mechanism and its price support and stabilization functions will not operate efficiently in the country.

3.2.6 Technological improvements

Technology upgrades and improvements must be realized for both production and processing, so that the amount of oil derived from the seeds can be increased and more revenue can be achieved from sales. Technology could also help reduce the Indian crop's euric acid content, thus making it more suitable for export and reducing producer dependence on the domestic market (and its price volatilities).

3.2.7 Prevention of adulteration of the oil

Since a large portion of rapeseed/mustard oil is sold in loose form, it is open to adulteration by blending it with lower value oils such as palm oil. This allows sellers to sell large quantities of low-valued oil in the market at rapeseed/mustard oil prices. To address this problem, branding of the rapeseed/mustard oil must be strengthened to ensure that other oils are not taking market share away from legitimate rapeseed/mustard oil producers, and that consumers are not being cheated.

To achieve this, prevailing laws such as the Prevention of Food Adulteration Act, Packaged Commodities Order and the Weights and Measures Act should be implemented more rigorously, and the food and drug administration in the country must be made more stringent, efficient and vigilant.

3.2.8 Exploring export opportunities in the market

There exists huge idle crushing capacity of processing units in India, which could be used for orienting India's rapeseed/mustard oil trade towards export markets. Integrating the domestic market with the world market could immunize farmers to domestic price fluctuations, and help producers and other stakeholders earn increased and stable returns. Opening trade to export markets will also encourage processors/oil millers to optimize their production capabilities—especially their idle capacity—to earn higher returns from their activities.

3.2.9 Supply side management

Marketing and processing efforts must be increased and improved by removing domestic restrictions. A policy framework should be established to promote private investments in markets, logistics and infrastructure in the country, which could bring substantial economic benefits should it reduce the cost of edible oil production.

Cooperatives could also play a role in modernizing oilseed marketing by providing marketing

support services and risk intermediation services to their members. Price information should be disseminated to interested stakeholders through the formation of an agriculture marketing board, which could report on global prices for domestic comparison. This would help stakeholders in making informed decisions and keep them abreast of price movements to which they can react accordingly. One potential means of achieving this is through the Imperial Tobacco Company of India's *e-choupals* (e-business), which can be used for wider and quicker price information dissemination to farmers, making them aware of price volatility in the market.[55]

Proper storage facilities (warehouse/godown) also need to be made available to farmers through public and/or private sector initiatives. Without them, farmers are inclined towards distress sales when an excess supply of seeds following the harvest drives down price. Adequate storage would cut down on this practice, smoothing the supply and thereby steadying the incomes of producers.

Finally, access to affordable credit must be improved throughout the value chain. Oilseed processors currently face regulatory restrictions to getting cheap credit from banks for the storage of seeds and oil. These regulations raise the cost of credit and in turn the costs of seed processing and of the price of the product in the market. With an appropriate credit facility available to producers and processors, prices can be reduced and storage facilities can be used to even out the yearly supply of the product.

By implementing these recommendations, producers and the government can work towards creating a rapeseed/mustard seed market that is both stable and predictable. While rapeseed/mustard seed prices may remain volatile both within India and abroad, farm incomes will become more stable, helping to ensure that livelihoods are protected throughout the country.

[55] CUTS (unpublished) "Advocacy Practices for Involving Local Level Stakeholders with the Process of Trade and Globalization – A case of Rajasthan,," CUTS International

Annexes

Annex 1

Rapeseed/Mustard Varieties in India					
State	**Type of Rapeseed/Mustard**	**Name of Variety**	**Scientific Name**	**Yield (Kg/Hectare)**	**Oil %**
Haryana	Indian Mustard	Pusa Agrani	Brassica Juncea (L.)	1,700	40
UP	Indian Mustard	Narendra	Brassica Juncea (L.)	1,150	43
Punjab	Indian Mustard	PBR 97	Brassica Juncea (L.)	1,900–2,200	41
Punjab	Indian Mustard	PBR 91	Brassica Juncea (L.)	1,600–1,800	40
UP	Indian Mustard	Laha-101	Brassica Juncea (L.)	1,500–2,000	45
UP UP, Rajasthan	Indian Mustard Indian Mustard	Rohini (KRV24) Kranti (PR-15)	Brassica Juncea (L.)	2,200 1,500–1,800	43 40
Haryana & Rajasthan	Yellow Sarson	Pusa Gold	Brassica rapa L	1,800	45
Haryana & Rajasthan	Indian Mustard	RH-30	Brassica Juncea (L.)	1,600–2,000	39
Punjab & Rajasthan	Gobhi Sarson	GSL-2	Brassica napus L	1,700–2,200	45
Haryana & Rajasthan	Gobhi Sarson	PGSH51	Brassica napus L	1,950–2,150	44
Rajasthan	Indian Mustard	Pusa Jai Kisan (BI0902)	Brassica Juncea (L.)	1,600–2,200	40
Rajasthan	Indian Mustard	Durgamani	Brassica Juncea (L.)	1,000–1,200	39
Utter Pradesh & Rajasthan	Toria	T-9	Brassica rapa L	1,200–1,500	40
Madhya Pradesh	Indian Mustard	Vaibhav (RK-1467)	Brassica Juncea (L.)	1,300–1,500	38
Madhya Pradesh	Indian Mustard	Vardan (R.K.-1467)	Brassica Juncea (L.)	1,000–1,600	40
Madhya Pradesh	Indian Mustard	Jawahar Mustard	Brassica Juncea (L.)	2,000	42
West Bengal	Indian Mustard	Seeta (B-85)	Brassica Juncea (L.)	1,200–1,400	38
West Bengal	Yellow Sarson	Benoy	Brassica rapa L	1,400–1,500	46
West Bengal	Indian Mustard	Bhagirathi	Brassica Juncea (L.)	1,400–1,600	36
Assam	Indian Mustard	TM-4	Brassica Juncea (L.)	1,500	42

Assam	Indian Mustard	TM-2	Brassica Juncea (L.)	1,400	33
Orissa	Toria	M-27	Brassica rapa L	1,000–1,200	45
Bihar	Indian Mustard	BR-13	Brassica Juncea (L.)	1,200–1,400	42
Bihar	Toria	BR-23	Brassica rapa L	800–1,000	43
Bihar	Indian Mustard	BR-40	Brassica Juncea (L.)	1,200–1,400	40
West Bengal	Indian Mustard	Varuna (T 59)	Brassica Juncea (L.)	2,000–2,200	43
Gujarat	Indian Mustard	Gujarat Mustard 1	Brassica Juncea (L.)	2,200	38
Gujarat	Indian Mustard	Gujarat Mustard 2	Brassica Juncea (L.)	2,400	38

Source: Agriculture Marketing Information Network (2004) "Post Harvest Profile of Mustard-Rapeseed," Agriculture Marketing Information Network, Government of India, http://www.agmarknet.nic.in/mustard-rapeseed-profile.pdf accessed in 2007

Annex 2

Nutrients Content in Rapeseed/Mustard Oil	
Nutrient	**Amount**
Selenium	9.96 mg
Magnesium	22.28 mg
Dietary Fibre	1.08 g
Omega 3 Fatty Acids	0.20 g
Vitamin b3 (niacin)	0.60 mg
Calcium	38.92 mg
Protein	1.88 g
Zinc	0.44 mg

Source: Agriculture Marketing Information Network (2004) "Post Harvest Profile of Mustard-Rapeseed," Agriculture Marketing Information Network, Government of India www.agmarknet.nic.in/mustard-rapeseed-profile.pdf accessed in 2007

Annex 3

Rapeseed/Mustard Seed Production in India					
Year	**Area ('000 hectares)**	**Total production of oilseeds (million tonnes)**	**Rapeseed/ mustard oilseed production (million tonnes)**	**Percentage Share**	**Yield (kg per hectare)**
1991–92	6,553	18.60	5.86	25.80	904
1992–93	6,193	20.11	4.80	26.50	895
1993–94	6,289	21.34	5.42	26.99	863
1994–95	6,230	22.11	5.88	27.13	944
1995–96	6,546	24.38	6.00	27.31	917
1996–97	6,545	21.32	6.65	22.04	1017
1997–98	7,041	24.75	4.70	22.86	668
1998–99	6,513	20.72	5.66	27.94	870
1999–00	6,027	18.44	5.78	22.72	960
2000–01	4,477	20.80	4.18	24.23	935
2001–02	5,073	26.7	5.10	19.10	1002
2002–03	4,544	20.3	3.90	19.21	854
2003–04	5,387	31.5	6.20	19.68	1151
2004–05	-	29.4	6.60	22.44	-
2005–06	-	32.60	7.0	21.47	-

Source: (Damodaran & Hegde, 2005)

Annex 4

Export/Import of Rapeseed/Mustard during 1998–99 to 2001-02					
Commodity	**Year**	**Export**		**Import**	
		Exported to	**Quantity in tonnes**	**Imported from**	**Quantity in tonnes**
Mustard Seeds	1998–99	Australia, Canada, etc.	314,970	Canada	618,307
Rape/Colza Seeds	1998–99	U.K., Japan, etc.	108,000	Canada	3,925
Mustard Seeds	1999–00	Australia, France, etc.	747,738	Canada	1,590,764
Rape/Colza Seeds	1999–00	-	-	Australia	57,000
Mustard Seeds	2000–01	-	-	Canada, Netherlands	1,488,854
Mustard Seeds	2001–02	Bahrain, Canada, France, etc.	229,950	U.S.	2,632,733
Rape/Colza Seeds	2001–02	Japan Malaysia	510,000	-	-
Mustard Seeds	2001–02	Australia, Bahrain, etc.	7,281,907	-	-
Rape/colza Seeds	2001–02	Taiwan, Korea, Oman	5,810,000	-	-

Source: Agriculture Marketing Information Network (2004) "Post Harvest Profile of Mustard-Rapeseed," Agriculture Marketing Information Network, Government of India www.agmarknet.nic.in/mustard-rapeseed-profile.pdf accessed in 2007

Annex 5

Annual Wholesale Prices of Rapeseed/Mustard Seed (Rs Per Quintal) Long-term Trend	
Year	**Price at Kanpur Mandi**
1991	1043
1992	950
1993	960
1994	1094
1995	1217
1996	1162
1997	1178
1998	1795
1999	1516
2000	1221
2001	1260
2002	1394
2003	1553

Source: (Damodaran & Hegde, 2005)

Annex 6

Month-end Wholesale Prices of Rapeseed/Mustard Seed (Rs Per Quintal) Short-term Trend					
	1999	**2000**	**2001**	**2002**	**2003**
January	1710	1410	1295	1335	1726
February	1567	1333	1238	1332	1645
March	1345	1282	1245	1270	1733
April	1344	1271	1224	1284	1876
May	1322	1167	1248	1410	1921
June	1295	1199	1271	1532	1993
July	1405	1221	1360	1504	1966
August	1523	1177	1357	1563	1940
September	1589	1176	1430	1537	2011
October	1618	1186	1375	1561	2075
November	1535	1363	1406	1779	2097
December	1481	1359	1350	1822	2165

Source: (Month-end Wholesale Price of Rapeseed and Mustard page, average of the prices in the six mandis is taken)

Annex 7

Month-end Wholesale Prices of Rapeseed/Mustard Oil (Rs Per Quintal) Short-term Trend					
Month	**1999**	**2000**	**2001**	**2002**	**2003**
January	4750	3513	3116	3350	4456
February	4533	3270	3061	3305	4433
March	3663	3095	3161	3233	4777
April	3737	2975	3161	3351	5289
May	3500	2990	3144	3611	5283
June	3395	3043	3283	3883	5311
July	3485	2962	3555	4000	5181
August	4204	2931	3489	4114	5156
September	4114	2980	3500	4010	5183
October	4029	2944	3383	4066	5454
November	3843	3161	3444	4655	5244
December	3714	3244	3394	4716	5475

Source: (Month-end Wholesale Price of Rapeseed and Mustard page, average of the prices in the six mandis is taken)

Annex 8

Minimum Support Prices of Rapeseed/Mustard Seed		
Year	**Whole sale average Price (Per quintal)**	**MSP (Per quintal)**
1991–92	1043	670
1992–93	950	760
1993–94	960	810
1994–95	1094	830
1995–96	1217	860
1996–97	1162	890
1997–98	1178	940
1998–99	1795	1000
1999–00	1516	1100
2000–01	1221	1200
2001–02	1260	1300
2002–03	1394	1330
2003–04	1553	1600
2004–05	-slayensslayen	1700
2005–06	-	1715

Source: (Damodaran & Hegde, 2005)

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