Chapter II

PRODUCTION, PRODUCTIVITY AND PROFITABILITY IN THE OILSEED SECTOR

The present chapter deals with trends in production, productivity and profitability in oilseed sector, in the light of relevant policies for promotion of production of oilseeds/edible oils. Section I deals with trends in production and area under cultivation at national level based on available data during 1984-85-2009-10, the period when the Technology Mission on Oilseeds and later Integrated Mission on Oilseed, Pulses, Maize (ISOPOM) were in place. Section II deals with the yield trends during the same period at national level for major oilseeds. Section III looks at the edible oil production from primary and secondary sources.

Section IV attempts to look at the remunerative aspect of oilseed cultivation with the help of very broad and readily available indicators such as Public Procurement Policies, market price and whole sale price index trends and compares the relative returns for farmers in major oilseed growing states for various crops to capture the profitability implication for oilseed vis-à-vis non oilseed crops. Distribution measures are discussed briefly. Section V summarizes the major observations of the Chapter.

I

Area and Production Trend in Oilseeds, Coconut and Oil Palm

The Technology Mission on Oilseeds (TMOP) was launched in May, 1986 with a view to increase the production and productivity of oilseeds to

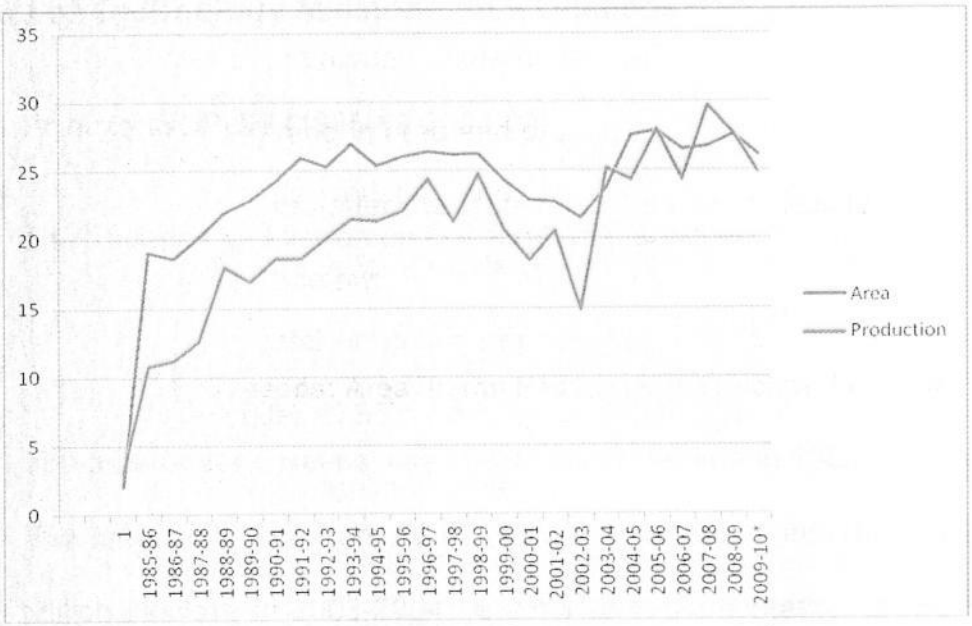
make the country self reliant in this vital sector in a stipulated time frame. In the strategy followed, importance was given to rabi groundnut production, promoting rapeseed/ mustard in Rajasthan as well as non traditional areas in central, south and rest of India, extending area of cultivation and intensifying production and processing technologies of soybean, introduction of oil palm and sunflower, introducing rice bran cotton seed oil extraction technologies, and oil extraction from other non conventional sources like Forest species like Mahua. In the first ten years of the Mission, CSIR made valuable contribution to the post harvest technologies which enhanced the skills of oilseed processing industry especially soybean. Subsequently Oilpalm was also brought in to the ambit of the Technology Mission in 1992-93. In order to provide flexibility to the States in implementation based on regionally differentiated approach, to promote crop diversification and to provide focused approach to the programmes, the four erstwhile schemes of Oilseeds Development Programme (OPP), Oil Palm Development Programme (OPDP), National Pulses Development Programme (NPDP) and Accelerated Maize Development Programme (AMDP) were merged into a Centrally Sponsored Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (ISOPOM) which is being implemented from 1.4.2004. ISOPOM is continuing in XI plan period as a routine Departmental programme.

Trends in Oilseed Area and Production

The diverse agro-ecological conditions in the country are favourable for growing 9 annual oilseeds which include 7 edible oilseeds (groundnut, rapeseed mustard, soybean, sunflower, sesamum, safflower and niger and

two non-edible oilseeds (castor and linseed). Production of oilseeds underwent expansion after efforts made by the Oilseeds Mission established in the 80's bore fruit. Total production of oilseeds, which was only about 12 million tonnes in the later 1980's went up to more than 20 million tonnes in 1992-93. This increase in growth in area under cultivation played an important part in the 1990s. The trend in area and production for nine oilseeds over the 1985-86 to 2009-10 period after the launch of Technology Mission in 1986 is summarized in the Chart below.

Chart II.1 Nine Oilseeds: Area (in mn Hect.) and Production (in mn MT)



Source: Agriculture Statistics At a Glance.,2010

The graph plotted above show the tremendous increase in the total oilseed production in the first few years after the Technology Mission was launched. However, the growth momentum of oilseeds production seen in the early 1990s was not maintained and the trends in area and production tapered off after 1997-98. The trends have remained erratic in the last ten years with a steep drop first in 2002-03 and then in 2007-8 to 2009-10 in area

as well as production due to more liberal import duty regime since 1997-98, weakening of the mission mode and relatively lower profitability of oilseed cultivation in dry land areas.

It will be useful to analyse the developments in the production of various oilseeds, and their contribution to the edible oil production during the operation of these promotional programmes. Progressively more liberal import policies were followed in the later period of the TMOP and ISOPOM period. Export restrictions on edible oil export were imposed in 2008.

Impact of Technology Missions on 9 Oilseeds

I. Prior to ISOPOM (1985-86-2003-04)

- The Technology Mission on Oilseeds was launched in year 1985-1986.

Area:

- The area under oilseeds was 10.73 Million Hectare in 1950-1951.
- The area increased from 19.02 Million Hectare in 1985-1986 to 23.66 Million Hectare in 2003-2004 i.e. prior to implementation of ISOPOM. Increase in Area under oilseeds by 4.64 Million Hectares (24.39%) during above period. However, due to year to year variations, the annual average growth rates was only 1.4 %.
- During the period from1985-1986 to 2003-2004, maximum Area under oilseeds was in the year 1993-1994 i.e. 26.90 Million Hectares.

- The average of Area under Oilseeds during the last 5 years of TMO (from 1999-2000 to 2003-2004) was 22.97 Million Hectare. The average area under the entire TMOP period was 23.66 mn hectare.

Production:

- The Production of oilseeds was 5.16 Million Tonnes in 1950-1951.
- The Production increased from 10.83 Million Tonnes in 1985-1986 to 25.19 Million Tonnes in 2003-2004 i.e. prior to implementation of ISOPOM increased by 14.36 Million Tonnes (132.59%) over a period of about 17 years. The average annual growth rate was 5.2 %
- During this period (1985-1986 to 2003-2004) the maximum Production of oilseeds was achieved in the year 2003-2004 i.e. 25.19 Million Tonnes.
- The average of Production of Oilseeds during the last 5 years of TMO (from 1999-2000 to 2003-2004) was 19.97 Million Tonnes. The average production during the entire TMOP period was 19.07 mn MT.

II **Area and production during the ISOPOM Period (2004-05-2009-2010)**

- The ISOPOM was launched in year 2004-2005 and is still in place.

Area:

- In the first year of ISOPOM, area was 27.52 Million Hectare in 2004-2005 which declined to 26.11 Million Hectare in 2009-2010. This is a decrease in Area under oilseeds by 5% as compared to 2004-05.

- During this period (2004-2005 to 2009-2010) the maximum Area under oilseeds was in the year 2005-2006 i.e. 27.86 Million Hectares.
- The average of Area under Oilseeds during the last 5 years of ISOPOM (from 2005-2006 to 2009-2010) was 26.95 Million Hectare against preceding 5 years average of 23.62 million ha which is more by 3.33 million ha (14.14%). The average area under the ISOPOM period was 27.04 mn hectares.

Production:

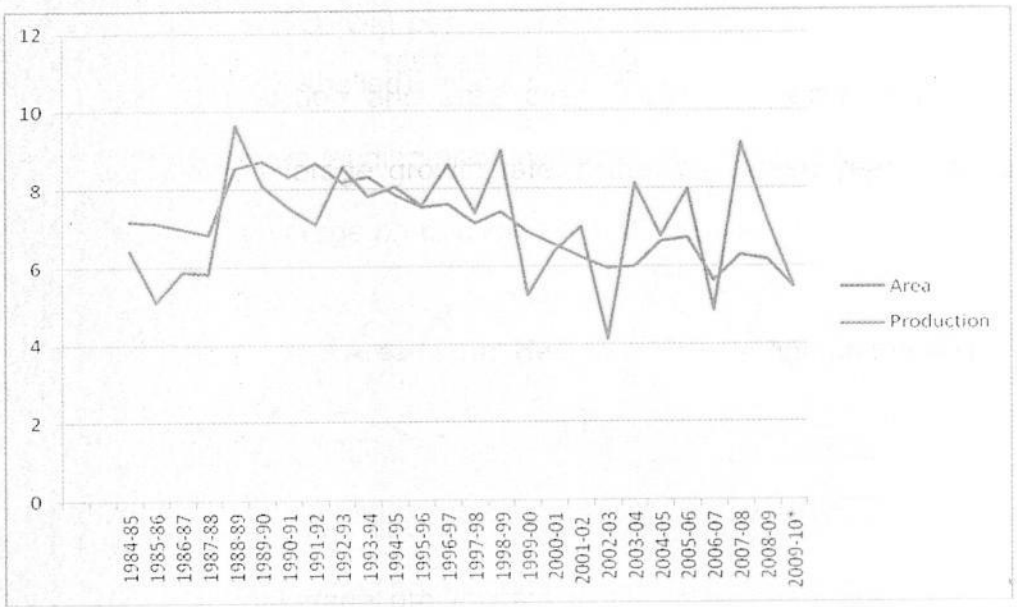
- The Production increased from 24.35 Million Tonnes in 2004-2005 to 24.93 Million Tonnes in 2009-2010 during ISOPOM. This is an increase in Production of oilseeds by barely 0.58 Million Tonnes.
- During this period (2004-2005 to 2009-2010) the maximum Production of oilseeds was achieved in the year 2007-2008 i.e. 29.76 Million Tonnes.
- The average of Production of Oilseeds during the ISOPOM (from 2004-2005 to 2009-2010) is 26.51 mn MT.
- Overall it is observed that while in the ISOPOM period average area under cultivation rose by 14% the average production rose by 39 % over the TMOP period average.

Area and Production of major oilseeds under Technology Missions

Groundnut: India is the second largest producer of groundnuts in the world. Indian groundnuts are available throughout the year due to a two crop cycle harvested in March and October. On an average, India produces 7-8 million

tons of groundnuts (unshelled) every year. Gujarat, Andhra Pradesh and Tamil Nadu are the three leading producers of groundnut. About 20 % area is under irrigation. The average production fell from 7.22 million tonnes in TMOP period to 6.73 million tonnes in the ISOPOM period. The average area under groundnut also came down from 7.1 million hectare in TMOP period to 5.9 million hectare in the ISOPOM period. The trend plotted in chart also shows erratic trend in production and area over the entire Technology Mission period. The annual average growth rate in the last fifteen years has been 4.87%.

Chart II.2 Groundnut: Area (in mn Hect.) and Production (in mn MT)

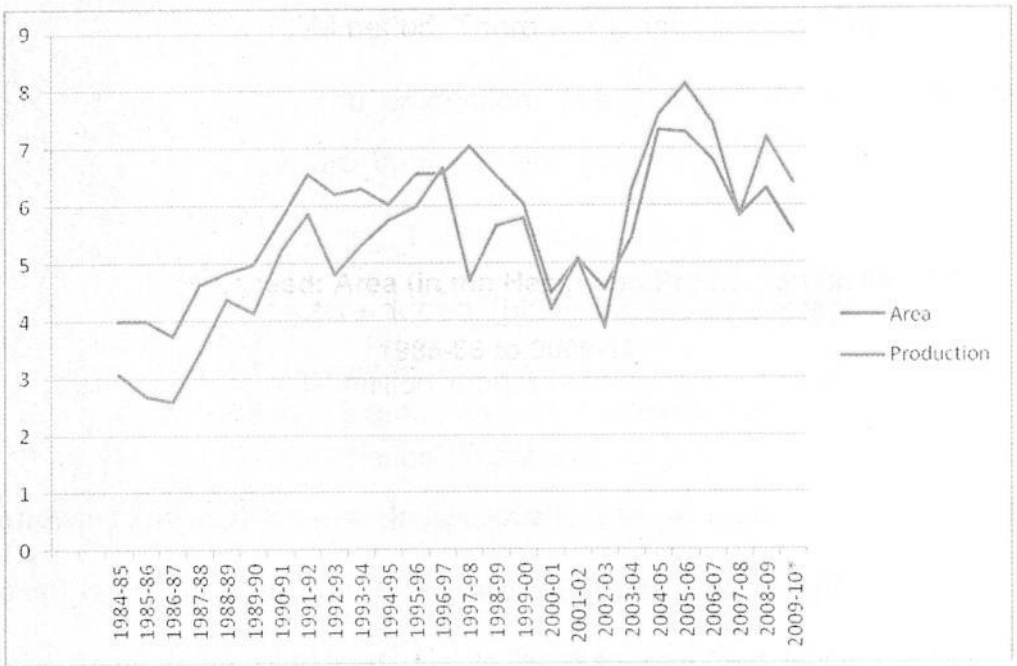


Source: Agriculture Statistics At a Glance, 2010.

Rapeseed: Predominantly grown in the northern belt in India, the production of rapeseed has made rapid progress in the last decade. The biggest advantage is that they can be grown in a wide range of agro-climatic conditions. In India rapeseed and mustard are grouped together, amongst the

nine major oilseeds cultivated in India, they come second, only after groundnut. The oil content in rapeseed and mustard is between 36 and 42%. The area under irrigation is highest among oilseeds at an average of 70%. Rajasthan, MP and UP are three largest mustard growing state. While the area under rapeseed during the ISOPOM period was 6.5 mn hect as compared to 5.1 mn hectare during TMOP period the average production of rapeseed grew from 4.87 million tonnes in the TMOP period to 7.1 million tonnes during the ISOPOM period. There were, however, considerable year to year fluctuation in area and production. The growth rate in the last fifteen years has been 3.11%.

Chart II.3 Rapeseed: Area (in mn Hect.) and Production (in mn MT), 1985-86 to 2009-10



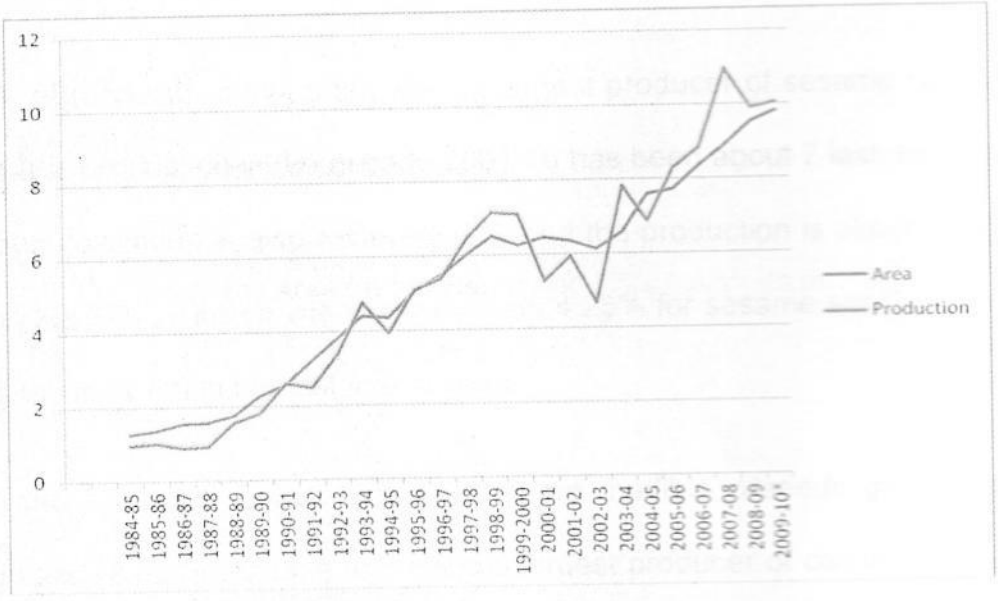
Source: Agriculture Statistics At a Glance, 2010.

Soybean: In the post TMOP period the area and production rose substantially in the case of soybean. The average area under soybean rose from 4.28 mn

hectare in the TMOP period to 8.63 million MT in the ISOPOM period. The average production also rose from an average of 4.12 million MT during the TMOP period to 9.15 mn mt over the ISOPOM period. The three leading growers are MP, Rajasthan and Maharashtra. The increasing trend in area and production is clearly visible from the chart although it is accompanied with year to year fluctuation. The annual average growth rate during last fifteen years has been 6.7%.

Chart II.4 Soybean: Area (in mn Hect.) and Production (in mn MT)

1985-86 to 2009-10



Source: Agriculture Statistics At a Glance, 2010.

Sunflower and Safflower: Indigenously, use of safflower oil as cooking medium is on increase due to low saturated fats. Indian safflower seed has special demand for bird feed due to its bold size and whitish colour. The sunflower seed production has registered a quantum growth with sunflower oil gaining popularity as a cooking medium in recent years, due to increasing health awareness among urban Indians. The oil content in Indian sunflower

seed ranges between 38 and 44 % whereas protein content is 18-20%. In recent years, exporters have invested in developing technology for hulling of sunflower seeds. Few plants are now processing sunflower kernels and their product has gained importers attention in major markets. The average annual production of sunflower and safflower seed is about 10-12 lakh tonnes. The three important states are Karnataka, Maharashtra and Andhra Pradesh (Agriculture Statistics At a Glance). The average production rose from 0.86 mn MT in TMOP period to 1.22 mn MT in ISOPOM period. The area rose from 1.63mn Hect in TMOP period to 1.97 mn Hect in ISOPOM period. The growth rate has been (-)1.44% and 2.10% respectively in the last fifteen years.

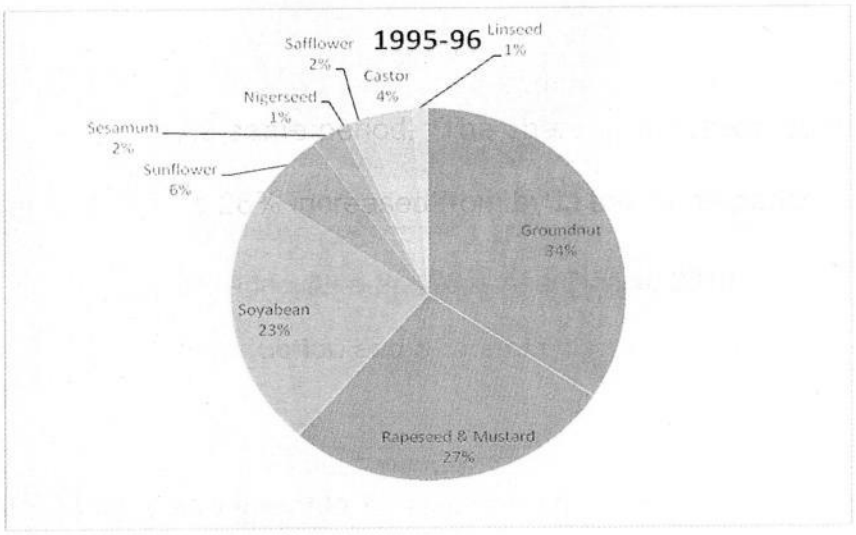
Sesame, nigerseed: India is the world's largest producer of sesame seeds. The average production in the decade 2001-10 has been about 7 lakh tonnes. Niger seed cultivation is also relatively new and the production is about1 lakh tonnes in 2009-10. The growth rate has been 4.25% for sesame seed and (-) 2.75% for niger seed in the last fifteen years.

Castor and Linseed: Castor and linseed are inedible oilseeds grown for industrial and export purposes. India is the largest producer of castor seed in the world. The average production of these oilseeds in the last 15 years has been 10-12 lakh tonnes. The growth rate has been 5.05% in the last fifteen years.

The change in relative contribution of 9 oilseeds in total oilseed production can be observed in the snapshot charts for 1995-96, 2003-04 and 2009-10. It shows how the contribution of major oilseeds like soybean has improved from 23% to 40 % in the last 15 years while that of groundnut fell

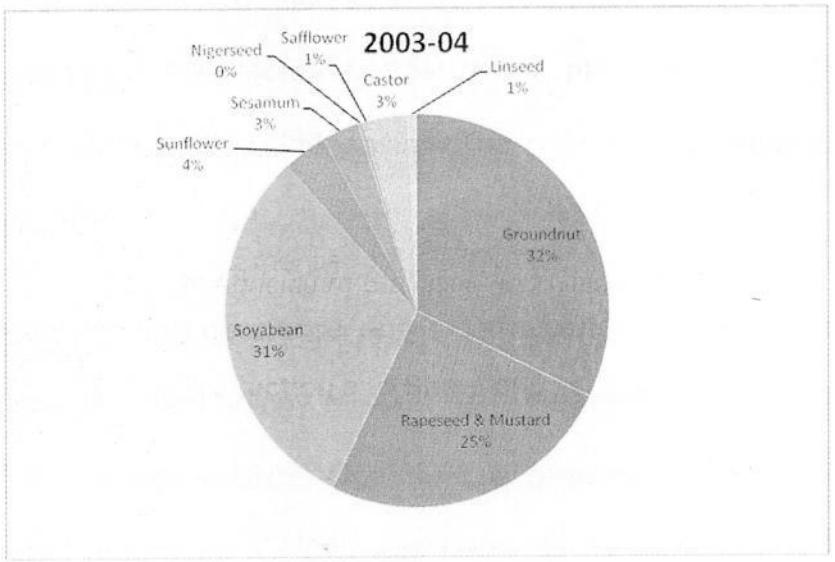
from 34% to 22% in the same period. The share of rapeseed production fell marginally from 27 % to 26% increased from by in the same period.

Chart II.5 Production and Share of Oilseeds (1995-96)



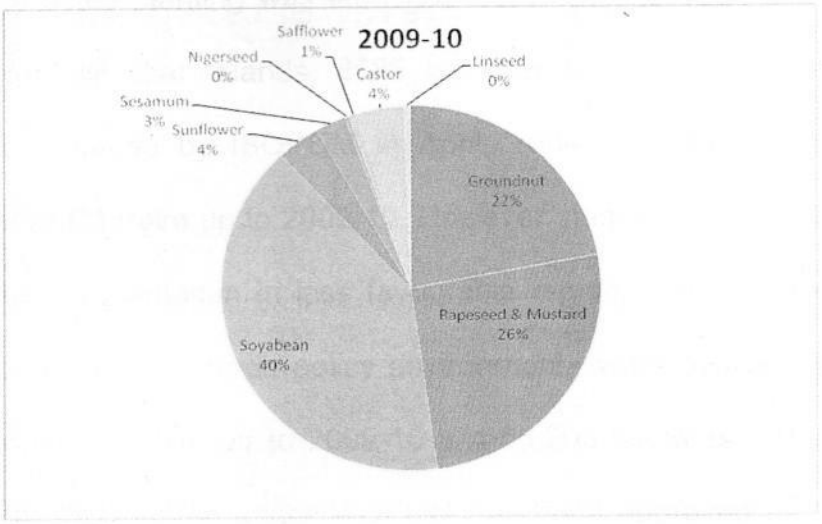
Source: Agriculture Statistics At a Glance, 2010.

Chart II.6 Production and Share of Oilseeds (2003-04)



Source: Agriculture Statistics At a Glance, 2010.

Chart II.7 Production and Share of Oilseeds (2009-10)



Source: Agriculture Statistics At a Glance, 2010.

Oil palm

With 26.19% of vegetable oil requirement in the world is provided by Oilpalm (2008-09) it is the most important source of vegetable oil in the world. It has 40% share of the world's trade in edible oil. The worldwide area planted under Oilpalm has increased by more than 150% in the past few decades. Most of this increase has taken place in South-East Asia, particularly in Malaysia and Indonesia. The palm oil has highest edible oil yield per hectare.

In view of the importance and significance, oil palm cultivation was included under the Technology Mission on Oilseeds & Pulses as early as in 1991-92. A comprehensive Centrally Sponsored Scheme Oil Palm Development Programme (OPDP) was taken up during Eighth & Ninth Plan under irrigated conditions in India.

Large scale planting was launched from 1971 to 1984 in Kerala and Andaman and Nicobar Islands, 8585 hectares were covered till 1991-92. TMOP was replaced by ISOPOM in April, 2004. 1,73,143 hectares were covered under Oil Palm up to 2009-10. However, nearly 17900 hectares were uprooted due to plantation in less favourable region, long gestation period, uncertain domestic and trade policy environment, water availability etc. The net area under Oil Palm up to 2009-10 is 1,55,203 hectares. The Oil Palm Development Programme under ISOPOM has been approved for 12 States. However, it is being implemented in 72 districts of only 8 States viz. Andhra Pradesh, Karnataka, Tamil Nadu, Orissa, Gujarat, Goa, Mizoram, Kerala. Four identified States i.e. West Bengal, Maharashtra, Assam and Tripura are not implementing the Programme. The implementation is insignificant in Goa. The total quantity of crude oil produced has increased from 0.25 mn MT in 1991-92 to about 0.48 mn MT in 2009-10. Highest annual production was reported in 2006-07 at 0.50 mn MT. The contribution to domestic availability is less than 1%. Presently India has 18 palm oil processing mills with capacity ranging from 0.30 MT/ha to 20MT/hour in various States of the country with overall processing capacity of 115MT/hour which has potential to process of (Fruit Flower Bunch) FFBs from 19,931 ha mature oil palm plantation based on 16% FFBs arrival in peak month assuming production of 18MT/ha/year. The capacity is low with capacity utilization of merely 12 %.The progress of OPDP is unsatisfactory with little growth in area of cultivation, processing capacity and utilization of created capacity over this period. Ironically it is resulted in a situation where the plant which provides highest yield per hectare is contributing less than 1% of the national requirement.

Recommendations of Chaddha Committee: With a view to exploiting the huge potential of oilpalm in the country, a Committee under the Chairmanship of Dr. K.L. Chadha, to re-assess the scope of oilpalm cultivation, was constituted by the Department of Agriculture & Cooperation in November, 2005. The Committee had submitted its report in 2006. The Committee, in its report, submitted to DAC, has identified 10.36 lakh ha. as potential area for oilpalm plantation and has recommended that 2.24 lakh ha. be brought under oilpalm cultivation in the 11th Five Year Plan with a total investment of Rs.1175.00 crores comprising central share of Rs.912.00 crores. The Government of India however could not achieve area under oil palm plantation targets as recommended by Chaddha Committee in 11 plan period.

The Department of Agriculture has taken into cognizance the importance of oilpalm and has in a recent meeting with experts and stakeholders, is considering to launch a Technology Mission in the XIIth Plan on oilseeds and oil palm. The Ministry has identified the constraints which will be addressed in the Mission proposed to be launched.

Constraints/Issues in Oil Palm development identified by the Ministry of Agriculture

i. Slow pace of area expansion: only 1.78 lakh hectares covered against assessed potential of 10.36 lakh hac.

ii. Planting oil palm in less suitable regions. Targets based on macro level projections of potential area.

iii. Uncertainty regarding area expansion programme/ targets.

iv. Improper and inadequate guidance for new plantations.

v. Oil Palm is a water loving crop with requirement of 120 to 150 mm per month. Poor water availability throughout the area is leading to instability in production.

vi. Low yield realization in general.

vii. Competition: Sharp spurt in the prices of traditional crops like Arecanut in Karnataka, rubber in Kerala, sugarcane in Gujarat.

viii. Availability of quality planting material of correct age is inadequate and uncertain.

ix. Non availability of quality hybrid seed.

x. Crop nutrition is inadequate and imbalanced.

xi. Processing problems: lack of processing plants in States like Mizoram and Gujarat; non optimal utilization of existing Mills and other inefficiencies in processing.

xii. Low oil extraction ratio.

xiii. Import Policy: Import of edible oil was brought under OGL in 1995. Present import duty is nil on CPO and 7.5% on refined oil. Domestic prices of oil palm are significantly affected by cheaper imports from Malayasia and Indonesia hence fluctuate considerably. FFB price is unrumenerative to enthuse farmers for intensive palm cultivation.

xiv. The present cost of cultivation is approximately Rs. 8750/- MT of FFB produced (source: National Oil Palm Farmers' Association). The prices of oil palm/ FFB increased steadily from Rs. 2000/- MT in 1993 to Rs. 5434/- in 2008. But there was a sudden fall in FFB during 2009-10 to

Rs. 4075/- per MT. Thus farmers are incurring loss to the tune of Rs. 4750/- MT of FFB.

xv. The FFB price fixing formula (12% of CPO plus 1/3rd of Kernel value) is adhoc and un-remunerative.

xvi. Returns from oil palm are not being maximized through diversification. There is lack of utilization of bio products by processing industries.

xvii. Inadequate financial support by Government: The total expenditure for the last 6 years has been Rs. 170 crores at an average of Rs. 28 crores p.a. reaching Rs. 40 crores p.a. in the last 2 years only. A minimum amount of Rs. 645 crores is required as share of GOI for assistance for new plantations to achieve the Chadha Committee target of 2.20 lakh hac. by the end of XIth Plan (i.e. 1.29 lakh hac. in 2010-11 and 2011-12).

xviii. Resource and security related issues viz. credit from commercial Banks and NABARD, implementation of crop insurance schemes, enactment of legislation etc.

xix. The Market Intervention Scheme (MIS) has been applied to oil palm but it has not been facilitative or encouraging; operated only once in Andhra Pradesh and Karnataka in 2008.

Clearly, the above constraints identified by the Ministry reveals that the Oil Palm Mission did not run in Mission mode with focus, thrust and end to end approach. Besides, it did not have the necessary procurement, public investment or trade policy support.

Coconut

The yield, output and area have remained stagnant over the last 25 years. It has diversified uses and is a way of life in the Southern states. The total area fell from 1.93 mn Hect in 2001-02 to 1.90 mn Hect. in 2008-09. The Production also fell from 129.63 mn Nuts in 2001-02 to 101.48 mn Nuts in 2008-09. Traditionally coconut was grown for edible oil. The changed food habits and availability of cheaper oils has led to decline in demand for coconut oil. The price of coconut oil has remained depressed as compared to other oils despite price support. Technology Mission on Coconut (TMC) was launched in 2002 with focus on diversification of coconut derived products and value addition that could help the coconut growers in getting remunerative prices and fighting disease. TMC did not focus on oil.

II

Productivity in Oilseeds

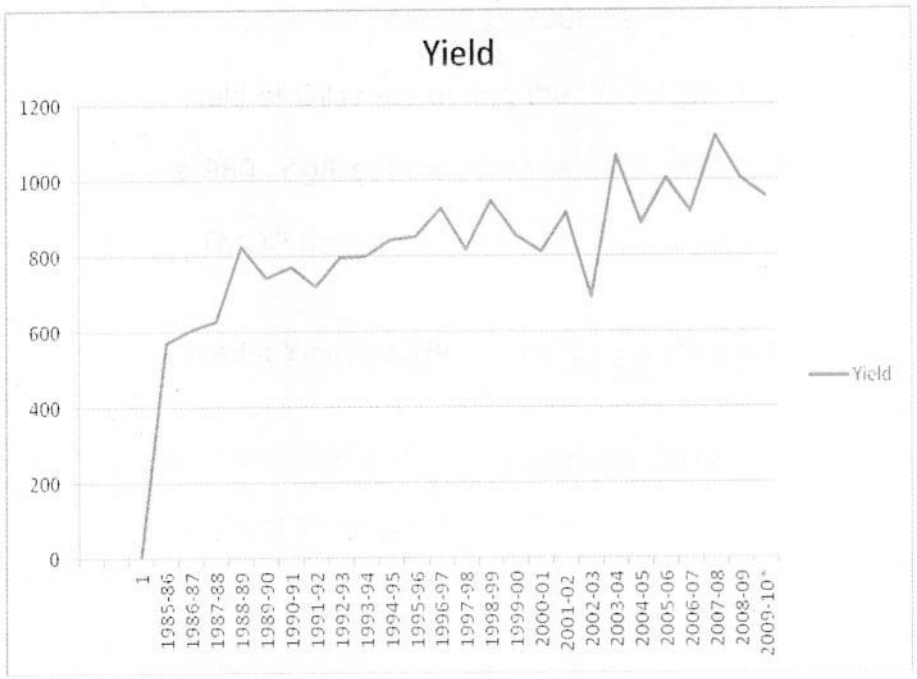
Yield in TMOP Period:

- The Yield of oilseeds was 481 Kg/Hectare in 1950-1951.
- The Yield of oilseeds increased from 570 Kg/Hectare in 1985-1986 to 1064 Kg/Hectare in 2003-2004 i.e. prior to implementation of ISOPOM. Increase in Yield was of 493 Kg/Hectare (86.49%).
- During this period (1985-1986 to 2003-2004) the maximum Yield of oilseeds was achieved in the year 2003-2004 i.e. 1064 Kg/Hectare.
- The average of Yield of Oilseeds during the TMOP (from 1985-86 to 2003-2004) was 798 Kg/Hectare.

Yield in ISOPOM Period:

- The Yield of oilseeds increased from 885 Kg/Hectare in 2004-2005 to 1026 Kg/Hectare in 2008-2009 during ISOPOM. This is an increase in Yield of oilseeds by 141 Kg/Hectare (15.93%).
- During this period (2004-2005 to 2008-2009) the maximum Yield of oilseeds was achieved in the year 2007-2008 i.e. 1115 Kg/Hectare.
- The average of Yield of Oilseeds during the ISOPOM (from 2004-2005 to 2009-2010) is 980 Kg/Hectare which is 22 % higher than average yield achieved in TMOP period.

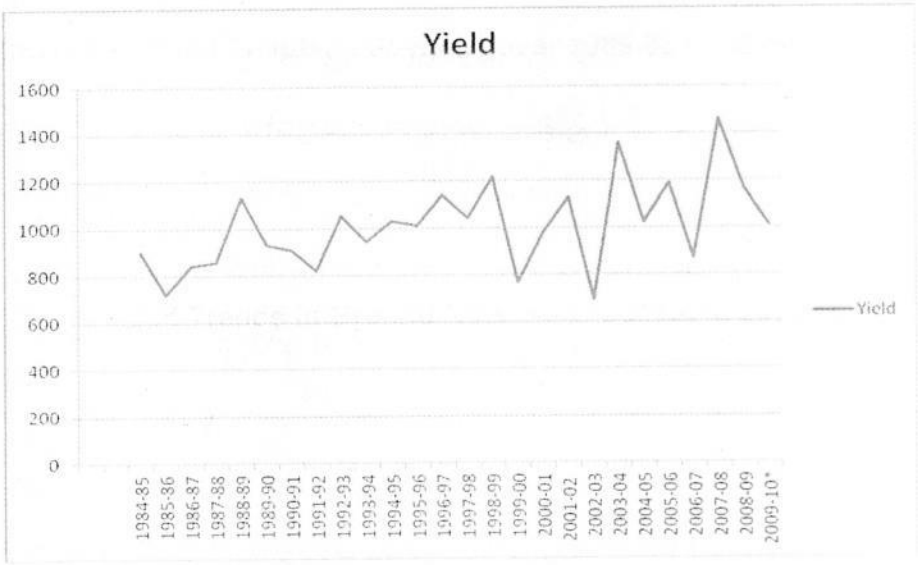
Chart II.8 Nine Oilseeds: Yield (KG/Hect.) trend 1985-86 to 2009-2010



Source: Agriculture Statistics At a Glance, 2010.

Yield trends of major oilseeds: The yield of ground nut in the pre TMOP period touched a low of 718 in 1985-86 but rose in the TMOP period (1986-2003-04) and touched a high of 1357 in 2003-04. The average yield in the TMOP period was 975 kg/hectare. In the period after ISOPOM (2004-05-2009-2010) was launched the highest yield of 1459 kg/hect was achieved in 2007-08.The average yield in ISOPOM period rose to 1117 kg/hect. The increase in average yield in ISOPOM period average over TMOP period was 14 %.

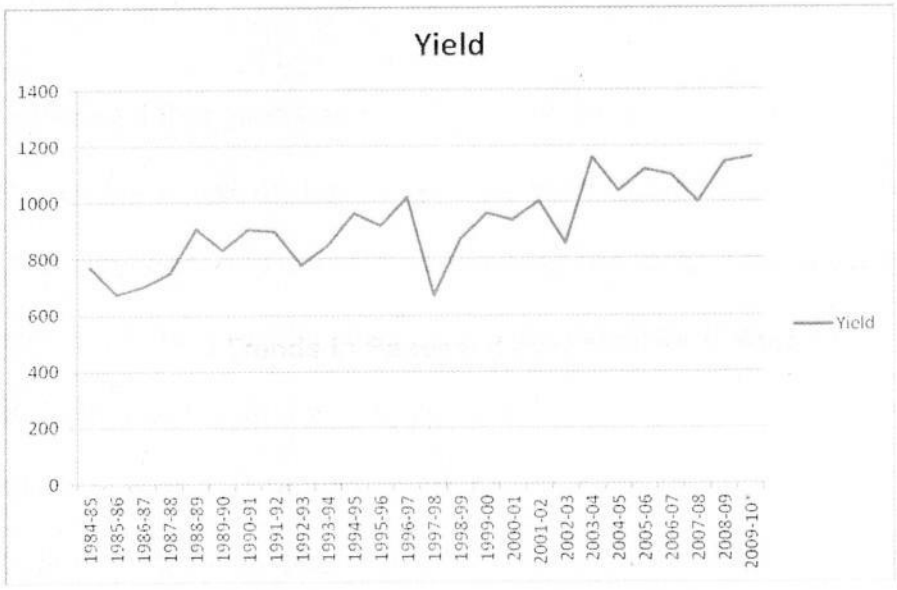
Chart II.9 Yield Trends in Ground Nuts over 1985-86 to 2009-10



Source: Agriculture Statistics At a Glance, 2010.

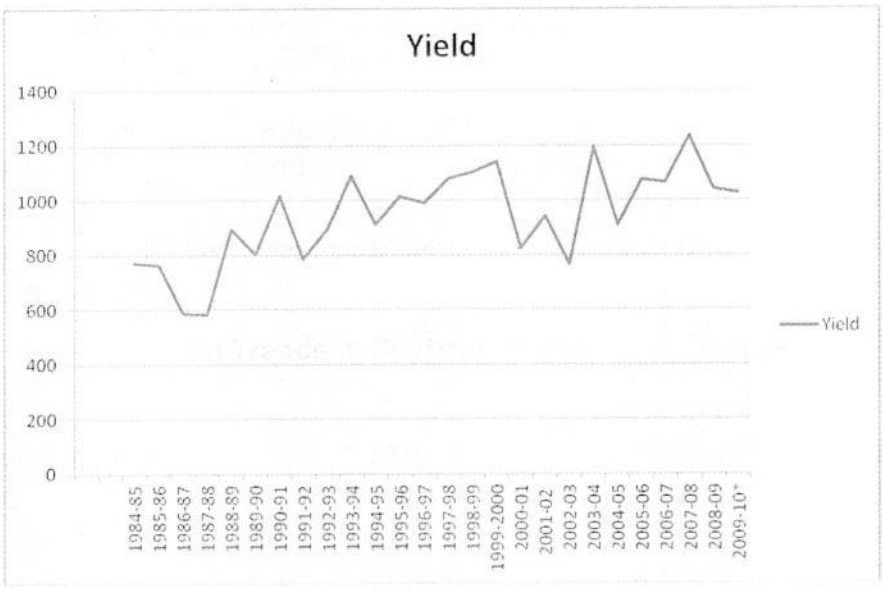
The rapeseed yield in 1985-86 was 674 kg/hect and did not make substantial jump in TMOP period and the average yield was only 510 for the TMOP period. Substantial progress was however made during the ISOPOM period when the average yield rose to 1092.2 kg/hect. The rape and mustard yield average thus saw a major jump of 100 %.

Chart II.10 Yield Trends in Rapeseed over 1985-86 to 2009-10



Source: Agriculture Statistics At a Glance., 2010

Chart II.11 Yield Trends in Soybean over 1985-86 to 2009-10



Source: Agriculture Statistics At a Glance, 2010.

In the case of soybean, in the post TMOP period the area and production rose substantially, however, yield did not grow to the same extent. The yield was 764 kg/hect in 1985-86 prior to the launch of TMOP and rose to

an average of 921 in the TMOP period and further to 1058 in ISOPOM period (14%) over TMOP period.

It is observed that yield has seen a growth in the ISOPOM period over the TMOP period, however the maximum yield jump was observed in rapeseed and soybean and groundnut experienced only 14% growth rate which is lower than the growth rate for the total oilseeds. If we compare the Indian yields with world yield it will be observed that in most of the edible oils the productivity (Table II.1) ranges from 1/3rd to 2/3rd of world yields . This could offer opportunity for putting in required policy measures to enhance the yield. It is also noted that oil palm the highest oil yielding plant in the World has no presence in spite of policy push under Technology Mission in India.

Table II.1 Comparison of India Yield with World Yield in Major Oil Crops (2006-2008 averages)

Yield Hg/Ha	avg yield India	avg yield World	India/world
Castor oil seed	12775.3	10071.7	126.84
Coconuts	56154.0	53916.0	104.15
Groundnuts, with shell	11775.0	16021.3	73.50
Linseed	3499.7	8973.0	39.00
Mustard seed	0.0	7291.7	
Oil palm fruit	0.0	140353.0	
Other Oilseeds	2890.7	15602.7	18.53
Rapeseed	10864.3	18642.0	58.28
Safflower seed	6528.3	8742.7	74.67
Sesame seed	3704.3	4728.7	78.34
Soybeans	11132.3	23612.7	47.15
Sunflower seed	6595.3	13368.3	49.34
Oilcakes Equivalent (Total)	5554.3	11438.3	48.56
Oil crops Primary (Total)	2748.3	6058.3	45.36
Source: FAO			

The efforts under the Technology Missions did contribute in the yield increase, however, it was not enough to fulfil domestic requirements nor attain world levels. A large number of studies have shown significant yield and production losses due to various biotic and abiotic stresses in oilseeds and pulses (Acharya S.S. 1993, Sathe 2004, Chand, 2003). A reduction in these losses would not only improve profitability of these crops but cater to the diversifying needs of the economy. Increase in yields will also help in bringing down the prices. Therefore, investment in crop research and development, with the help of appropriate technology should be the key research priority to bridge yield gap especially in oilseeds. There is also a need to work on yild stabilization as there is large year to year fluctuation.

III

Primary Sources of Edible Oil Production

Department of Food and Public Distribution prepares information on edible oil requirements in the country (Appendix Table(I). However, the relevant data is available for the period 1995-96 to 2009-10 only. Based on the tables the changes in share of various oilseed and edible oils can be seen over the last fifteen years in the following charts. It is interesting to note that the contribution of groundnut to total oilseed production fell from 34 % in 1985-86 to 32 % in 2003-04 and to 22% in 2009-10 and the contribution to edible oil fell from 23 % in 1995-96, 2003-04 to 16% in 2009-10. The contribution of rapeseed in the oilseed cultivation has remained constant at 24-25% in the entire period after the launch of TMOP. Likewise, the contribution in edible oil has remained constant at 26-27% in the same period.

The share of soybean in total oilseed production rose from 23% in 1995-96 to 31% in 2003-04 and dramatically to 40% in 2009-10. However the contribution to domestic oil availability rose from 11% in 1995-96 to only 16% in 2003-04 and remained at the same level in 2009-10.Soybean has diversified uses with an oil content of merely 18%. The sunflower and safflower contribute 4-5 lakh tonnes to the edible oils Together Niger and sesame seed contribute to about 2-3 lakh tonnes of edible oils, India is the largest exporter of sesame seed in the world and niger seed is also exported as bird feed. Castor and linseed contribute oil production of 4-5 lakh tonnes to inedible oil production. Castor oil is exported and linseed is used for industrial purposes.

Secondary sources

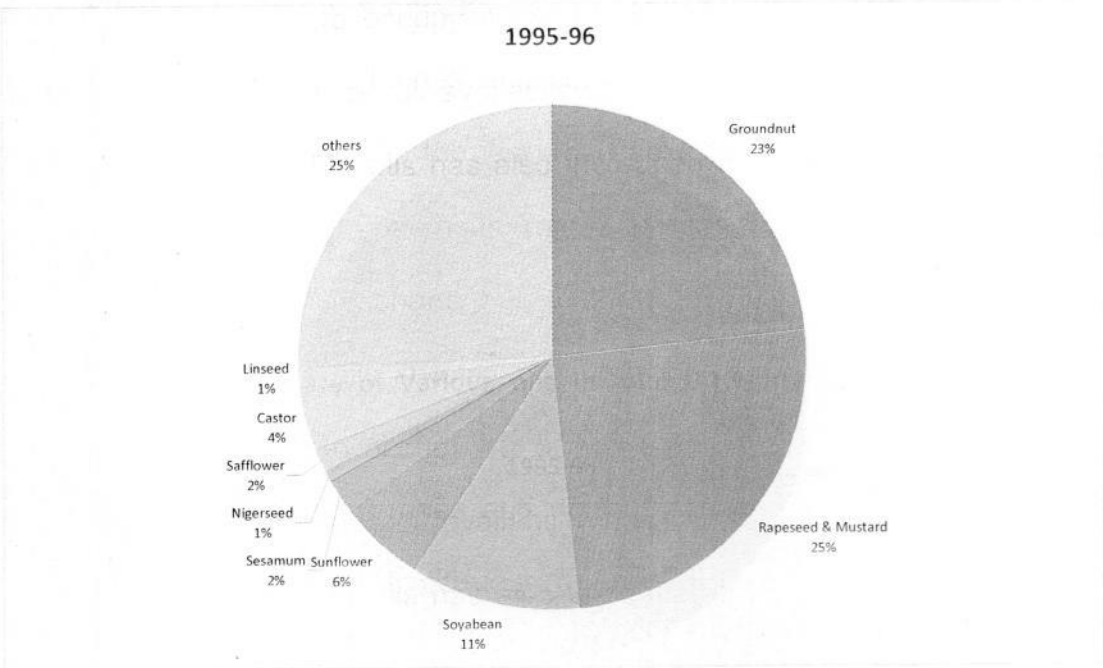
Coconut Oil

The coconut oil is clubbed with the secondary sources of oil in the table and its contribution to the edible oil basket has remained stagnant at 4-5 lakh tonnes annually.

Cottonseed, ricebran and solvent extraction oils: These along with coconut oil form secondary sources of edible oils. The use of extraction from residues of rice, cottonseed and oilcakes have been possible due to technological developments that have taken place under the technology missions and the growth in refining capacities and their contribution in total edible oil basket has been in the range of 25 % in the period 1995-96-2009-10. Rice bran is a bye product of paddy and cotton seed a bye product of cotton has emerged as one of the sources of edible oils due to tremendous

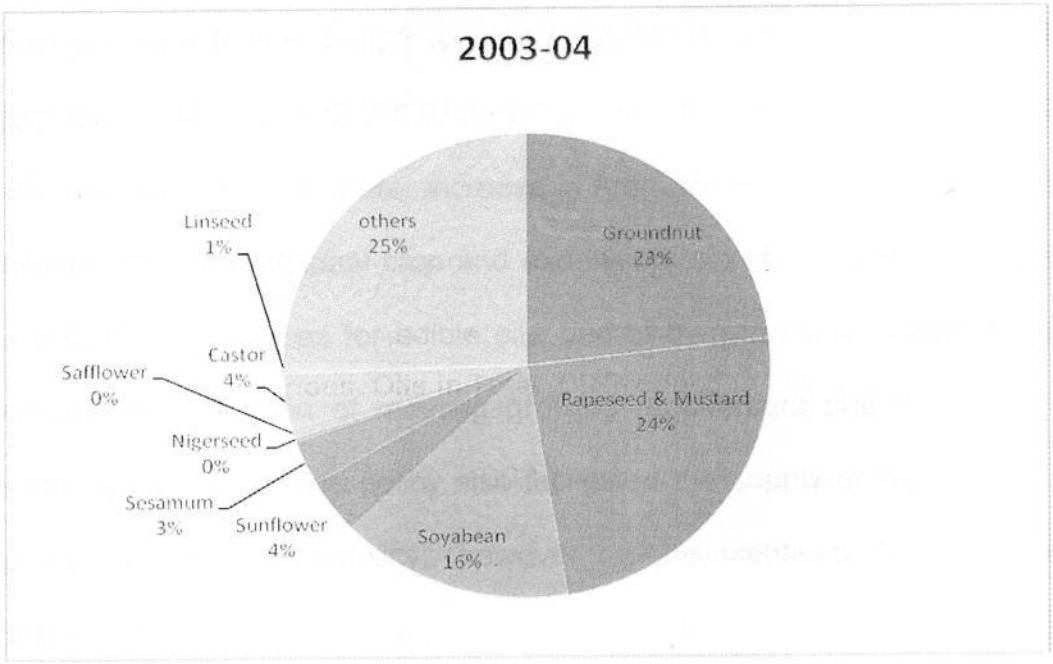
leap in growth in cotton. As noted, coconut oil output has remained stagnant in the range of 4-5 lakh tonnes and solvent extracted oils also contributed roughly the same amount in the last 15 years. However, the contribution of rice bran and cotton seed has risen from 4 lakh tonnes in 1995-96 to 7-8 lakh tonnes in 2009-10. The charts below show the changes overtime in the contribution of various oils in total oil availability. As noted earlier, soybean cultivation has grown to occupy 40 % of oilseed output but over the same period the contribution to oil availability has increased only from 11 % to 16%. The share of other oils has also increased from 25% to 29% over the same period.

Chart II.12 Share of Various oils in Total Oil Production, 1995-96



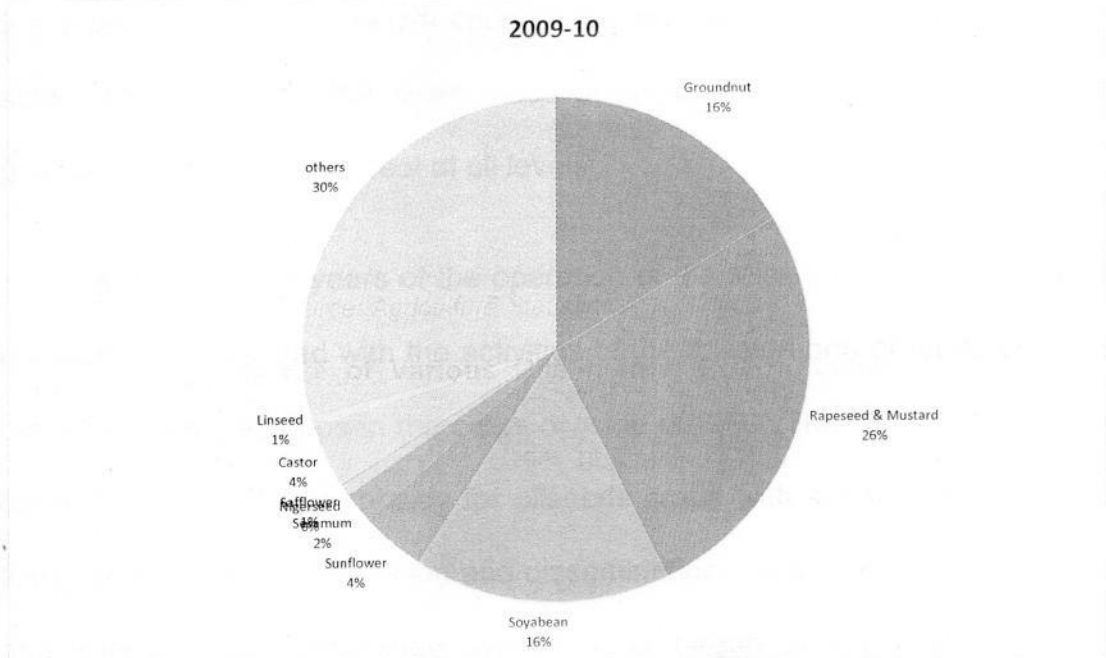
Source: Agriculture Statistics At a Glance, 2010.

Chart II.13 Share of Various Oils in Total Oil Production, 2003-04



Source: Agriculture Statistics At a Glance, 2010.

Chart II.14 Share of Various Oils in Total Oil Production, 2009-10



Source: Agriculture Statistics At a Glance, 2010.

Therefore there is no doubt that the efforts to bridge gaps in yield area production bore fruit in TMOP as well as ISOPOM period, however, in the latter part of TMOP and ISOPOM period the trends were erratic. Some of the noticeable achievements were- increase in Area, Production and Productivity, cultivation of non traditional crop and expansion into non traditional area etc diversification of sources for edible oil , use of bye products, However, the achievements fell short of meeting growing requirement due to dilution of mission mode. The trade policy also facilitated the supply of imported oil to improve domestic availability, however, it disincentived the oil seed production.

The TMOP achieved the success in the initial period because of the success in making it work like a special purpose vehicle with time bound target and one mission director coordinating diverse agencies. The substantial achievement of the TMOP were made possible in no small measure by the political commitment and zeal at all levels.

In the last few years of the operation of the Mission, the Mission mode character was blunted with the activities of the mission and oilseeds became one of the several crops in the crops division of DAC. The Mission became a conduit for passage of subsidy for oilseeds crops with substantially reduced focus on technology generation and dissemination. An era of technology poor and subsidy rich Technology Mission thus began in mid 90s due to a combination of political economic and administrative reasons.(National Commission on Farmers, IIIrd Report, 2005).

The ISOPOM which replaced the TMOP was a comprehensive and integrated scheme of oilseeds, pulses, oil palm and maize with substantial outlays and with reasonably differentiated approach and restructuring of the erstwhile Oilseed Production Programme, National Pulse development Project/ accelerated Maize development programme and Oil Palm- was launched in year 2004-2005. A greater flexibility was also provided to the states for inter-component diversion of funds and provision for innovations, participation of private sector in the implementation of the programme etc. Briefly, therefore, the stress on oilseeds, pulses, maize and oil palm was continued without the structure of the Technology Mission. The area, production yield did improve in the ISOPOM period during which more liberal policies were in place. A noticeable development that emerges from this analysis is the significant growth in soybean share in oilseeds. The contribution to edible oil did not rise in similar proportion due to low oil content. The failure in Palm oil cultivation is also glaring and needs to be addressed in any policy initiative in future.

IV

Profitability of Oilseed Cultivation

Public Procurement Policies

The cereal bias in the public procurement policy in the period co terminus with the technology missions is well documented in the literature (R. Chand, 2003, Acharya SS, 1993). R. Chand concludes that the price policy

has been very successful in providing incentive for adoption of new technology for rice and wheat and the price policy failed to induce changes in production pattern consistent with overall needs of the economy. Public procurement and Minimum Support Prices provide the necessary access to assured market which affect sowing decisions favourably. Even in the absence of public procurement, mere MSP announcements have a strong signalling effect on production/acreage decisions. The marketable surplus ratio of oilseed crops at more than 90% is higher relative to cereals. In the case of oilseeds, it is observed from the table II.2 that the procurement of oilseeds by NAFED was insignificant as compared to procurement of cerealss and was not operational every year since 2001-02. Besides, it was not implemented in all states. Further, procurement operations were restricted to few states.

Table II. 2 Procurement of oilseeds and copra under Price Support Scheme

oilseed	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
	quantity MT								
soyabean	55342	0	0	0	0	886	7	0	0
groundnut	28253	164530	0	0	418	3428	117.36	0	40
safflower	6583	3202	2020	0	8942	24278	4932	117	0
mustard	247933	329524	469000	10	403031	1998969	1913437	1923	0
sunflower	46430	26	29		2393	3218	3835	10335	3376
copra	224059	57259	8496	787	0	5144	20941	2672	652
toria	0	0	0	0	90	0	0	0	0
sesame	0	0	0	0	0	0	377	91	0
Total	**608600**	**554541**	**963141**	**797**	**414874**	**2038085**	**1950377**	**40138**	**4068**
in mn mt	**0.6**	**0.5**	**0.96**	ngble	**0.41**	**2.03**	**1.95**	ngble	ngble
paddy	21.1181	22.128	16.422	22.825	24.684	27.656	25.106	28.736	33.684
wheat	16.706	21.031	19.585	16.003	17.161	15.272	9.226	11.194	26.043

Agricultural Statistics at a Glance, 2010

Procurement polices provided support only to rapeseed and Coconut to some extent as observed from data pertaining to 10 years. In response to global food price spike of 2008 and import necessitated by procurement target

shortfall,I MSP was hiked in the case of wheat and rice, however the oilseed MSP were not increased in 2007-08. The MSP for oilseeds was raised substantially only in 2008-09. The MSP is a floor price and procurement not taking place could also implies that the market price is ruling above the MSP during this period. However, MSP announcements have tremendous incentive value that affects crop sowing decisions.

Analysis of Wholesale Price Trends in Oil Seed and Edible oil for the 1997-98-2009 Period.

The market price of oilseeds have remained firm in the period examined as is evident from the market price and WPI index trend analysis for the period for which data was available(Aappendix Tables III, IV and V).

There are significant positive linear trends in WPI of oilseeds pertaining to groundnut, soya bean and rape/mustard but not so in case of coconut. Similar results are found in case of edible oils too.

The estimated average annual growth rates of wpi_groundnut oilseed, wpi_soyabean oilseed and wpi_rape/mustard oilseed are 7.75, 6.76 and 8.10 respectively. In the case of edible oils, the estimated average annual growth rates of wpi of them are 7.15, 4.10 and 6.22 respectively.

A very significant observation which may be noted is that the estimated average annual growth rates of the oil seeds are greater than the growth rates of the counterpart edible oils for all the three cases. The potential growth in wpi's of the edible oils may have been partly suppressed by their large imports during the period. There is also a possibility of stronger demand of oil

seeds than their counterpart edible oils as edible oil is just one of the many useful derivatives from oil seeds.

In the similar way we can analyse the trend of average annual prices of the three major oilseeds namely groundnut, soya bean and rape/mustard in their respective main market centers of Saurastra, Indore and Jaipur respectively.

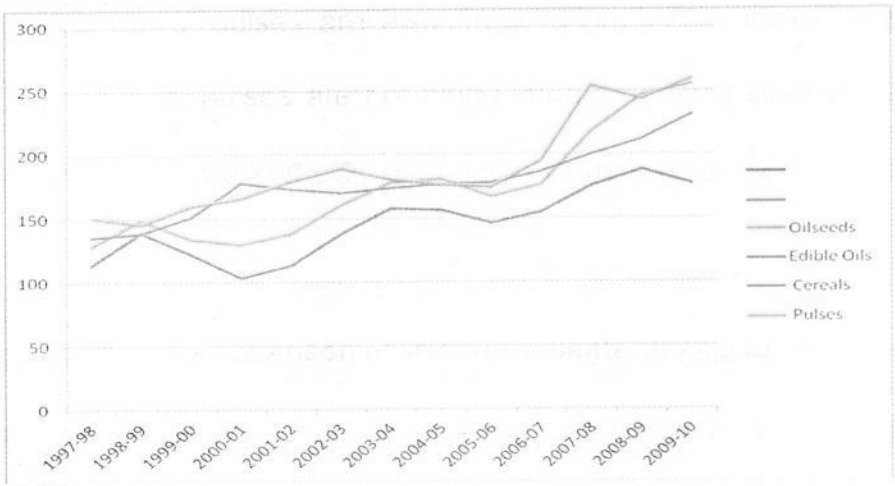
The time regression results for these prices show that there are significant positive linear trends for all the three variables. The estimated average annual growth rates of mean annual prices of groundnut oilseed, soyabean oil seed and rape/mustard oil seed are 3.41, 9.52 and 8.69 respectively.

Almost the whole of imports of crude as well as refined palm oil comes from Indonesia and Malaysia. Let us examine the behaviour of price of crude palm oil in these countries over the period 1993-2009. The time trend of price of crude Palmolive oil in Indonesia and Malaysia is found to be significantly positive. The estimated annual average growth rates of this variable are found to be 3.16 and 2.99 respectively for Indonesia and Malaysia. The international price of soya edible oil is also found to be positively significant with its estimated average annual growth rate of 5.29.

In spite of these upward trends in the price of oils all around, the import of edible oil in the country during this period has increased manifold. In fact the estimated average annual growth of import of edible oil (calculated taking 1995 as the base year) is found to be 37.28, indeed quite a large value.

With the opening of edible oil sector to the international market and the fact that a substantial portion of our domestic requirement is being met with imports since then, we would expect the domestic prices to get aligned to the international prices. In fact it is often said that in an open economy we import the prices along with the goods concerned. The price trend of the goods in the source is expected to be reflected in the domestic prices. Thus it can be said that the trends in WPI of oilseed and oils show a rising trend except coconut after 1997-98. The rise in WPI of oilseeds is not benefitting the oilseed sector as prices of cereals, pulses are also growing negating relative profitability. These crops, except pulses are not being imported and therefore the rise in prices is entirely accruing to domestic farmers keeping their relative profitability higher.

Chart II.15 A comparison of WPI movements1997-98 to 2009-10



Source: Agriculture statistics At A Glance, 2010

Analysis of Return over Cost

Data on cost of cultivation / production of crops are available from the Comprehensive Scheme for Studying the Cost of Cultivation /Production of Principal crops in India of the Directorate of Economics and Statistics, MoA being implemented in all the major states and the results of the which are generally published in the reports of the Commission for Agricultural Costs and Prices. However, this data is available only for a few principal crops for the states. The estimates have been used by various studies (Acharya, SS,1993 Chand, 2003, Mehta, 2005) examining relative profitability. For the purpose of the present study the latest Cost of Cultivation Data were obtained from the Commission on Cost And Prices(CACP) to examine the economics of crop production in 3 major oilseed growing states in the last few years. Gross value of output less total cost (Economic Cost i.e., Cost C2) and paid out Cost (Cost A2) gives the profitability of crop of production as the return over total cost as well as that over paid out cost. While total cost of cultivation is considered as full economic cost as it included all costs both paid out for purchased inputs and well as imputed value cost of owned resources / inputs.

The profitability comparison of oilseed and non oilseed crop based on net returns calculated by the CACP for the 2000-01to 2008-2009 period in table II.3 shows that the profitability of oil crop is less compared to non oil crops even in the states which have comparative advantage in producing oilseed crops. For Crop diversification decision relative profitability is very important. Relative low return and yield instability coupled with bias in

procurement policies may have played a key role in production of oilseeds not keeping pace with demand even in the recent period analysed above. This does not have favourable implications for livelihoods depending on oilseeds. The return over cost will be lower for crop which use less subsidized inputs like water, fertilizer and electricity. The oilseeds are grown in disadvantaged regions where soils are hungry and thirsty with relatively less subsidies as compared to input subsidies.

Table II.3 Comparison of net return from oilseed and non oilseed crop in the 3 leading producing states

in rs/hect	Gujarat	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09
rapeseed	Return over Total cost(gvo-c2)	2605.81	-221.46	7258.77	13162.67	6793.09	8102.72	9876.35	26861.82	4247.46
	Return over paid out cot(gvo-a2)	5989.35	2772.97	11893.26	19477.38	11317.82	12971.21	14703.68	34997.85	9590.37
wheat	gvo-c2	5078.99	6294.89	5824.63	5631.18	6076.55	9432.16	9604.92	15905.66	11191.97
	gvo-a2	9812.22	10887.75	10655.59	10393.88	10895.79	14834.54	15378.16	22782.56	18016.48
cotton	gvo-c2	-1771.37	-2351.22	1899.5	14180.4	7015.58	9111.91	9864.82	14338.2	
	gvo-a2	8869.69	14367.03	17324.42	37526.27	30551.88	40498.98	36998.93	43395.94	
groundnut	gvo-c2	-1990.34	8868.76	1660.05	14584.84	3144.38	7938.46	3130.11	13377.96	
	gvo-a2	390.99	13526	5473.82	20917.58	7238.87	13361.91	7109.81	19912.38	
	MP									
soya	gvo-c2	-51.17	782.58	-1857.84	4240.89	1561.28	1197.3	1680.65	4317.86	
	gvo-a2	2968.19	4297.93	1372.91	9065.39	5668.14	5195.14	5806.85	9805.85	
rapeseed	gvo-c2	3512.56	3593.09	562.08	12986.32	6760.75	5258.23	6463.66	13235.11	10893.4
	gvo-a2	7951.69	9778.79	4008.98	22042.39	12975.02	11272.99	12738.28	22251.84	19912.9
wheat	gvo-c2	618.45	1021.94	518.02	2632.23	2283.21	4293.04	7448.94	10022.02	9286.89
	gvo-a2	5106.5	5578.6	5664.86	8333.84	7704.73	11197.26	15670.68	19314.3	19312.24
cotton	gvo-c2	2198.23	-1842.66	-7052.68	-1588.26	-7259.08	9309.58	497.9	4152.87	
	gvo-a2	5478.68	1212.73	-2053.95	3778.38	-2834.15	22470.14	9938.42	14127.25	
	Rajasthan									
rape	gvo-c2	3800.21	5045.01	10101.64	13376.31	9182.3	8034.59	10786.43	15413.3	11476.6
	gvo-a2	7943.28	8813.68	16257.26	19350.92	14148.43	13327.6	16952.19	22691.67	19350.74
wheat	gvo-c2	6371.32	4446.52	9281.69	7524.39	9989.5	12196.65	15780.3	15107.79	18228.04
	gvo-a2	12168.83	10079.74	16448.61	13579.21	16231.46	19841.52	24573.47	24104.8	28985.32
cotton	gvo-c2	8344.93	4690.97	160.57	7985.31	7964.31	7654.87	11907.48	14848.22	
	gvo-a2	13280.82	8849.51	3984.16	14199.54	14270.96	13657.12	18325.82	22625.05	
soya	gvo-c2	0	246.97	-1887.38	4376.77	4133.56	2528.97	6382.19	6057.47	
	gvo-a2	0	1834.63	550.5	7405.29	6969.32	5265.26	9978.77	9945.63	

Source: CACP, Ministry of Agriculture, Cost of Cultivation Data

Scheme for distribution of Subsidised Imported edible oils through State Govts/Uts :

The import of edible oil as a short term solution is justified on the grounds of rising food inflation. At present the edible oils are not provided through the PDS. In the long run the PDS can play an important role in distributing edible oil for the poor section .Recently, in order to provide relief to the poorer section of the society from the rising prices of edible oils, the Central Government had introduced a Scheme for Distribution of 10 lakh tons of edible oils in 2008-09 at a subsidy of Rs. 15/- per kg. through State Governments/UTs@ 1 kg. per ration card per month with an additional subsidy of Rs 10/- per kg. from January, 2009 to March, 2009 on oils imported by PSUs and not lifted by States. Four Public Sector Undertakings (PSUs), namely, PEC, MMTC, STC and NAFED had been entrusted the job of import, refining, packing and distribution of subsidized edible oils to the States. 29 States who had asked for oil under the Scheme were allocated oil by the Department of Food & Public Distribution from April 2008. The distribution of packed edible oil under this scheme was operational in 12 States. The Scheme has ended on 31-03-2009. Upto 31-03-2009, of the 3.6 Lakh tons of edible oils contracted by the PSUs, of which only 2.61 lakh tons of packed edible oils was handed over to States for distribution. The total amount of subsidy distributed on oils was Rs. 424.25 crores. Government decided that balance quantity of edible oil lying with PSU's may be disposed off in the open marked to augument availability(www.dofpd.nic.in). The reasons for low

offtake from PDS need to be explored. When the necessary infrastructure is in place innovative solutions like supplying oil in small packs etc may help in its success. Any revamp strategy for PDS should take this into account.

V

Chapter Summary

The TMOP, ISOPOM and Technology Mission were launched as a special purpose vehicle to address the production/ profitability/productivity issues in the oilseed sector to make the country self reliant in a stipulated time. The TMOP managed to address successfully many of the issues through the 4 mini missions. The Mission mode, however, diminished with passing of time. ISOPOM included oil palm and allowed more flexibility to the states in implementation based on regionally differentiated approach. However the programme no longer had a missionary zeal and was operating as a centrally sponsored scheme.

The TMOP focused on oilseeds and there was a noticeable jump in area, production, in the period 1984-85-1992-93. In the initial period, growth in area contributed to the growth. Later, growth trend in oilseed production/area became erratic and did not retain the growth momentum of early years. However, it is noted that the average area/production in the ISOPOM period was higher than the average area and production in the TMOP period. The average production of groundnut fell in the ISOPOM period as compared to the TMOP period. The groundnut area and production trends were observed to be erratic in the entire period. Rape and mustard area grew in ISOPOM

period over TMOP period. There was however, wide year to year fluctuation in area and production. In the case of soybean, the area and production doubled in the ISOPOM period over TMOP period. Year to year fluctuations were also observed. There was growth in sunflower, sesame and niger seed although it is not significant from the point of view of edible oil. Castor and linseed are inedible oilseeds. Overall, in the last fifteen years the contribution of soybean in oilseed production has increased while that of groundnuts have fallen. Rapeseed contribution has remained more or less same. Apart from 9 oilseeds coconut is an important source of edible oil however the area, production and yield have remained stagnant. The Technology Mission on Coconut launched in 2002 did not have a focus on edible oil. Rather it is designed to cater to plant disease and diversified use of coconut. The most glaring failure has been in the case of oilpalm which is ironically the plant which yields highest yield per hectare due to various shortcomings such as planting in unsuitable region, uncertain policy environment, long gestation period lowering of import duties, inadequate attention etc. The contribution of oilpalm is less than 1 % in edible oil production. As far as productivity trends are concerned the productivity of oilseeds in ISOPOM period has been higher than TMOP period. However, the trends have remained erratic. The highest growth in yield in the ISOPOM period over the TMOP period was achieved in rape (100%) followed by groundnut and soybean at 14%.Inspite of these yield improvements the gap with world productivity remains. Along with this the yield improvements also failed to catch up with levels of productivity required to meet domestic edible oil requirements or make the crop relatively profitable for farmers.

An analysis of shares of various primary and secondary sources of edible oil reveal that over the last fifteen years the contribution of groundnut oil has fallen to 16 %, whereas the contribution of rape has remained same at 25 %. The contribution of soybean in oil is only 16 % although it has registered sharp increase in area and production. The contribution of secondary sources has also increased from 25% to 29%. Therefore it is clear that The Technology Missions have been successful in bringing about a lot of improvement by promoting diversified use of oilseeds especially soybean. There is unfinished business as far as scope of increasing yield, area and production is concerned to augment the domestic edible oil supply. As far as price policy environment is concerned, the public procurement and price support is less favourable in the case of oilseeds as compared to the cereals. This could reflect the problems in reach of procurement as well as firm market prices for oilseeds not requiring public purchase support. However, the market price trends reflected in the WPI of oilseeds and edible oils do not show a declining trend in the period since 1997-98. The rise in WPI of oilseeds is not benefitting the oilseed sector as prices of cereals, pulses are also growing negating relative profitability. These crops, except pulses are not being imported and therefore the rise in prices is entirely accruing to domestic trader/farmers keeping their relative profitability higher. The profitability comparison of oilseed and non oilseed crop based on net returns calculated using the CACP data for the 2000-01to 2008-2009 period shows that the profitability of oil crop is less compared to non oil crops even in the states which have comparative advantage in producing oilseed crops. For Crop diversification decision relative profitability is very important. Relative low

return and yield instability coupled with bias in procurement policies may be have played a key role in production of oilseeds not keeping pace with demand even in the recent period analysed above.Imports were facilitated by lowering of duties. This does not have favourable implications for livelihoods depending on oilseeds. The return over cost will be lower for crop which use less subsidized inputs like water, fertilizer and electricity. The oilseeds are grown in disadvantaged regions where soils are hungry and thirsty with relatively less subsidies as compared to cereals. This also affects return over costs. The Public Distribution also take a narrow view of food security. There is a large infrastructure already in place for distributing food and expanding the scope of PDS with innovative solutions like selling oil in small pack may shield the poor against rising prices.