SOY– The Golden Bean Losing Its Sheen

The production of oil seeds for 2005/06 is forecasted at 384 MMT on the global front. The bumper yields of cotton seed and huge stocks of mustard may put pressure on the prices of Soy beans. The prices are expected to fall to the levels of 1070-1130.

Soy Bean	Outlook	Reasons
Oil Seed demand		Higher production of oil seeds and higher imports of vegetable oils.
Oil Meal		Indian soy meal preferred by the Asian countries and exports expected to be higher
Soy Oil	**Outlook**	**Reasons**
Vegetable oil supply		Imports of vegetable oils is higher leading to higher stocks
Vegetable oil Demand		The vegetable oil demand lagging the supply

Introduction

Soybean (*Glycine max L.*), is known as the *"GOLDEN BEAN"* of the 20th Century. A native to tropical and warm temperate regions of Asia, where it has been cultivated as a principal crop for at least 5,000 years, it is an important source of oil and protein in the world. As a crop, soybeans are high in yield and easy to harvest; they grow well wherever corn is cultivated. Soybean was cultivated in China before the times of written records.

The seeds are eaten whole, split or sprouted. The soybean can be crushed to yield oil, which is edible. The bulk of the oil is used for salad oil and cooking oil. The oil can also be used industrially in the manufacture of paints, linoleum, oilcloth, printing inks, soap, insecticides, disinfectants, etc.,

Soy meal, the residue after the extraction of the oil is a very rich protein feed stuff for livestock for which there is an increasing demand. The meal and soybean protein are used in the manufacture of synthetic fiber, adhesives, textile, sizing, waterproofing, firefighting foam etc.

Major constituents of Soybean:

Components	Percentage
Proteins	40
Carbohydrates	30
Fibre	05
Lecithins	0.5
Saponins	04
Oil	18-20

Soy bean is the largest produced oil seeds in the world and has a vibrant trade over the world. The widely traded forms of soy beans are

- **Mature Soy Beans**
- **Soy Oil**
- **Soy meal**

The prices of soy beans, oil and meal are determined by the Supply and Demand factors. The substitutable nature of these commodities necessitate the analysis of production and consumption of the oilseeds and vegetable oils as a whole and the relative production, consumption and prices of other oil seeds, oils and meals.

Supply Analysis:

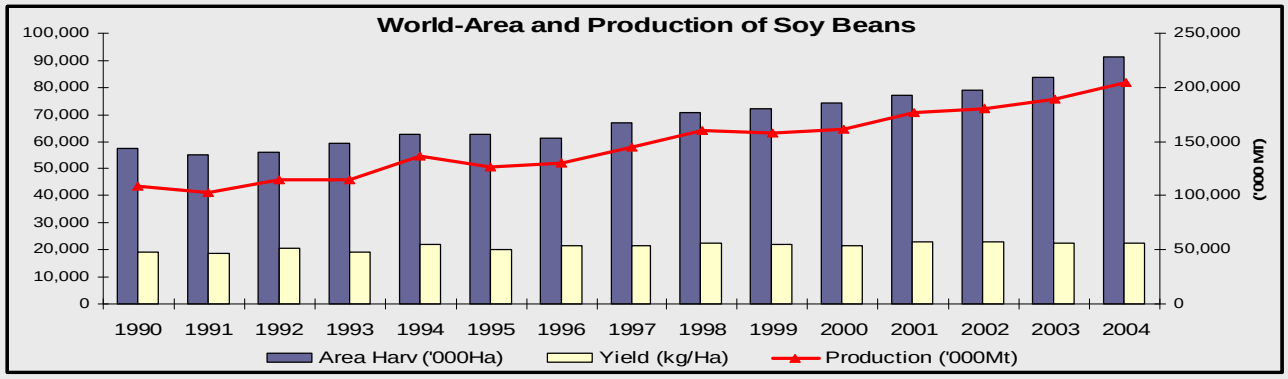
Global Scenario:

The Soy Bean acreages have been increasing during the period 1999 to 2005 at a Compounded Annual Growth Rate of 2%. The acreages increased rapidly in the South American countries of Brazil and Argentina on account of increased returns to the farmers per acre.

Soy Bean World Statistics

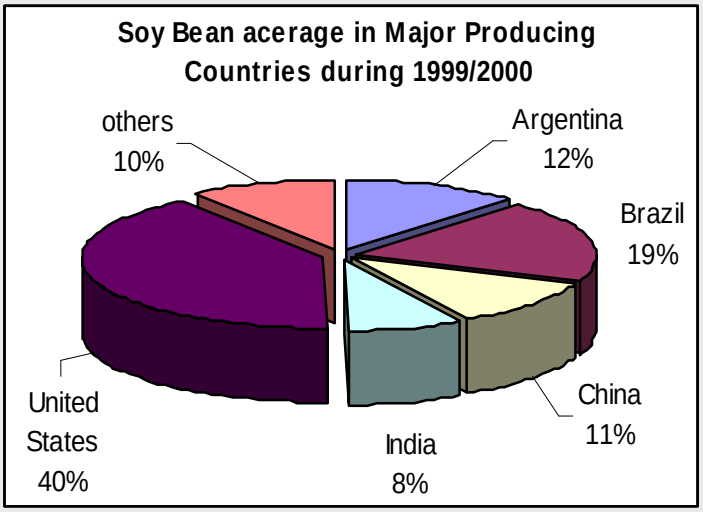
SOY BEAN	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005
Area Harvested (1000 HA)	72122	75602	79665	81663	88434	92708
Beginning Stocks (1000 MT)	27502	28574	31914	33262	40397	35006
Production (1000 MT)	160669	175878	185089	197033	186257	214425
Imports (1000 MT)	45886	53161	54453	62924	54246	63853
TOTAL SUPPLY (1000 MT)	234057	257613	271456	293219	280900	313284

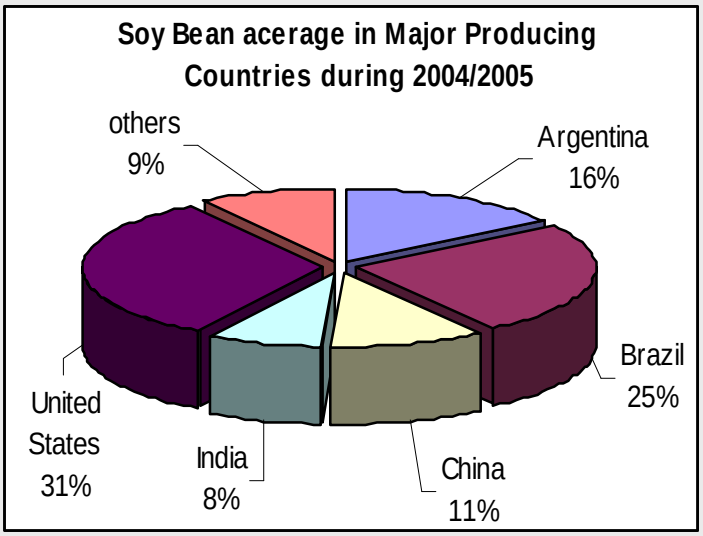
(Source: USDA)



The major producers of Soy Bean in the world are

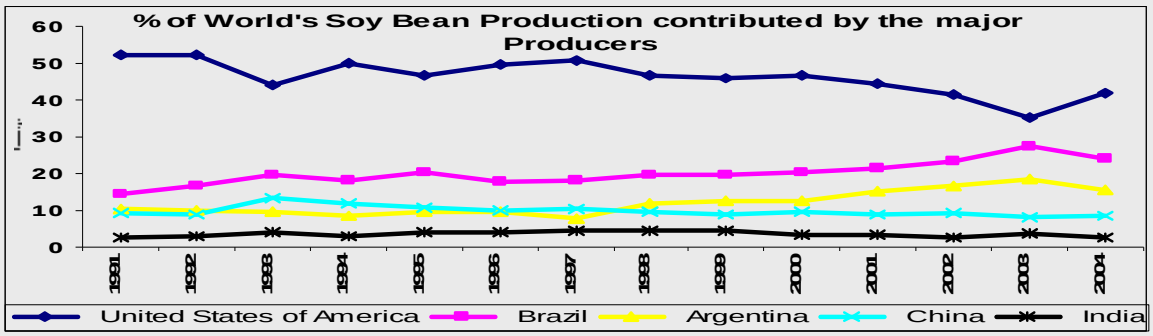
- **United States**
- **Brazil**
- **Argentina**
- **China**
- **India**

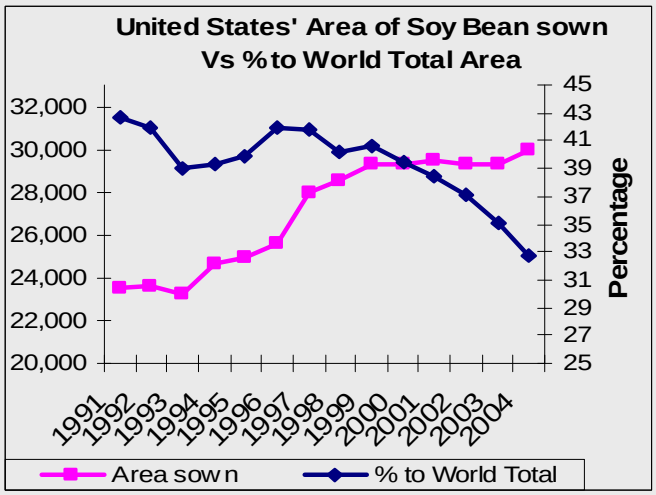




Since these five countries plant roughly 90% of the world's Soy Bean area, the Agro economic and Agro climatic conditions of these countries have an implication on the supply and therefore the prices of Soy complex.

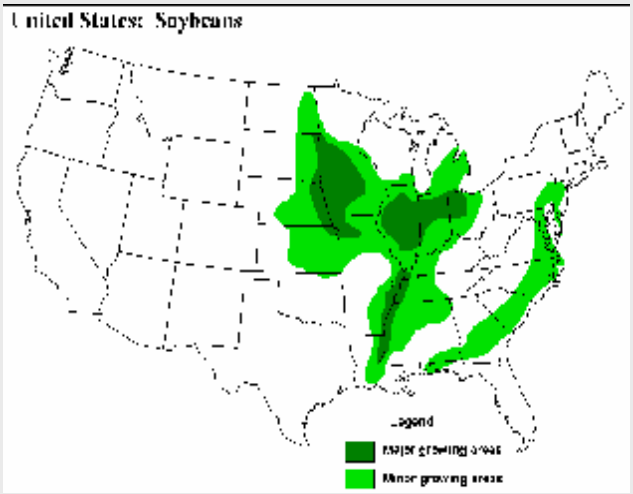
The composition of the world Soy Bean acreage has been changing. The acreages in the South American countries have been growing at a faster rate than those in the United States and Asian countries. Argentina and Brazil constitute 31% of the world's Soy Bean acreage. The percentage of world's production in US has been growing slower than that in Argentina and Brazil. The increase in acreages in India and china which are the largest consumers of vegetable oil and oilseeds in the world has been lagging consumption. These countries are the largest importers of oil seeds/ vegetable oils and depend heavily on imports for meeting the growing consumption needs.





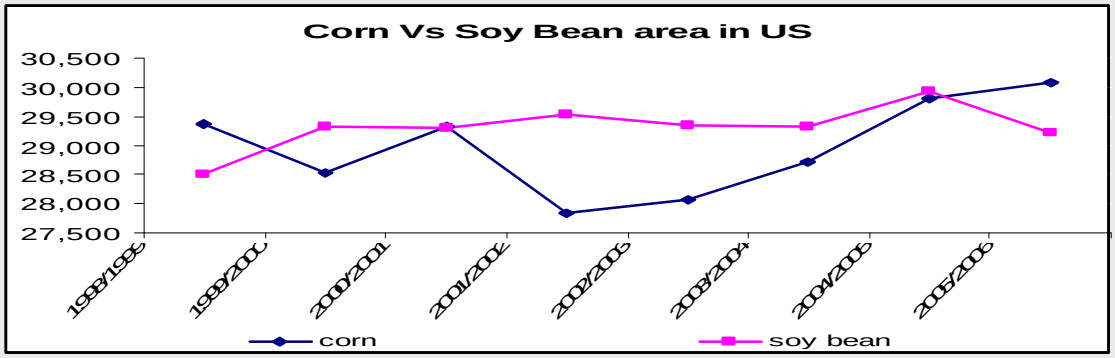
United States:

United States is the world's largest producer and exporter of Soy Beans. The area under Soy Bean in the US has been increasing but could not keep pace with other countries. The major growing regions of Soy Beans in the US are concentrated in the central states of Iowa, Illinois, Minnesota, Indiana and Ohio. The weather conditions in these states during the crop growth season are to be closely observed for estimating the production.



Soy Bean is planted during the first week of May till first week of July. The flowering starts from July till august and the market arrivals start from the last week of September and reach peak during the last fortnight of October and continue till the last week of November.

The yields and therefore the production of Soy Bean depend on the amount of rainfall during the flowering and grain filling stages (July to September) and the extent of crop damage caused by pests and diseases. the Soy Bean competes with corn for acreage in the major producing states of US and the acreage depends on the relative prices of corn and net returns to the farmer from these two crops.



Brazil:

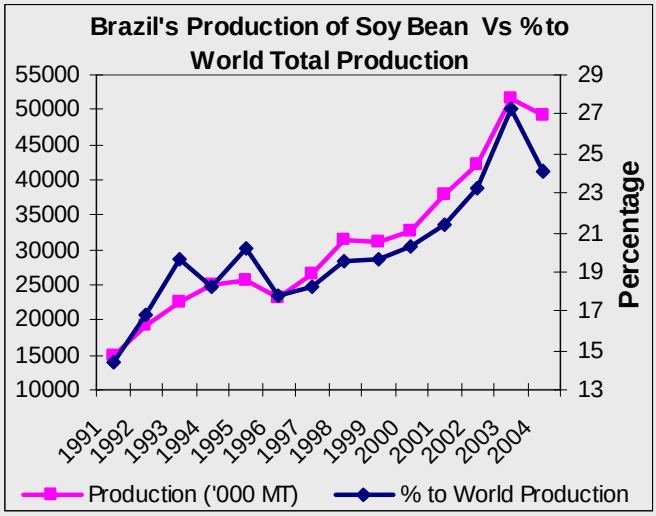
Brazil is the second largest producer and exporter of Soy Beans in the world. The acreages of Soy Bean in Brazil have been growing faster than any other major producer in the world.

The production has overtaken the domestic consumption in terms of growth YOY which has contributed to the increase in exports of the Soy complex especially in the case of Soy Beans where consumption has fallen from 65% of production to 51% of production as the latter grew faster.

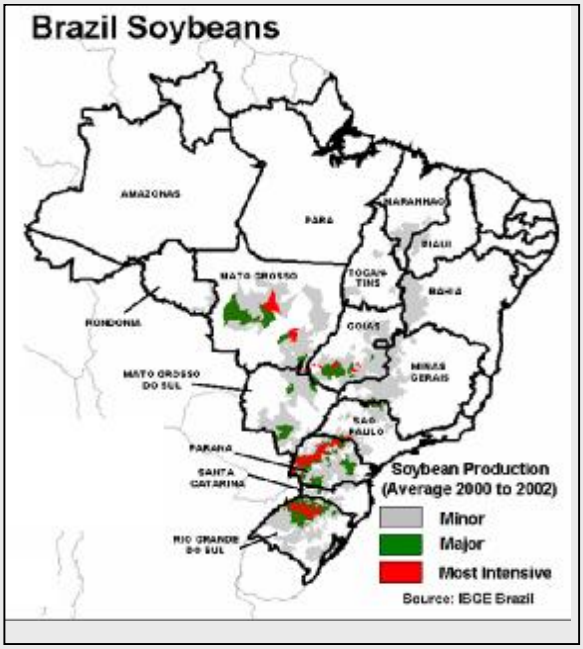
The major producing centres are concentrated in the southern coastal regions of Brazil which are nearer to the ports. The development of infrastructural and transport facilities have facilitated the expansion of Soy growing regions in the interior regions also.

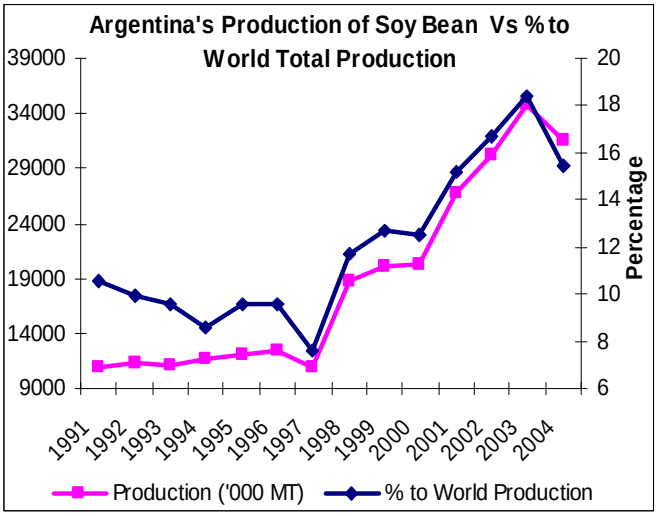
The sowings for Soy Bean commence from the last fortnight of October till December, the harvest of which arrives in the markets in the months of March to May. The critical stages for moisture stress are the flowering and grain filling stage (second fortnight of January to first week of March).

The major producing centers are Mato Grosso, Parana, Rio Grande Do Sul, and Goias which contribute to 80% of Brazil's production.

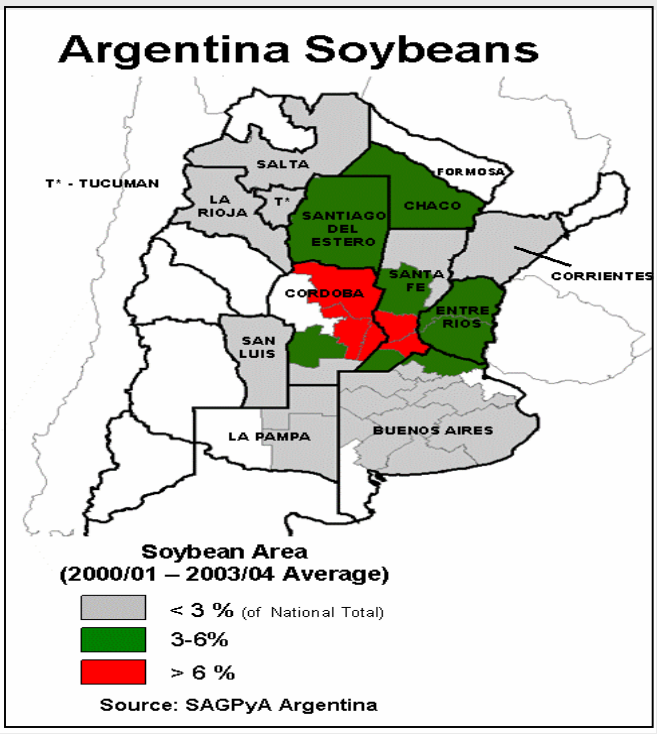


	Consumption	Exports
Soy Bean	51-65%	35-49%
Soy Oil	34-39%	61-66%
Soy meal	34-39%	61-66%





	Consumption	Exports
Soy Bean	78-85.5%	14.5-22%
Soy Oil	4-10%	90-96%
Soy meal	3-10%	90-97%



Argentina:

Argentina contributes roughly 17-18% of world's production of Soy Bean and is the third largest producer of Soy Beans. The Soy Bean acreage in Argentina has shown a tremendous rise since 1990-91. The tax structure of Argentina has been responsible for the skewed ness towards the exports of processed products like Soy Oil and Soy meal compared to the unprocessed Soy Beans (as shown in the table on the left). The major Soy Bean growing regions of Argentina are Cordoba, Santa Fe, Buenos Aires which are located on the eastern side of the country and constitute 77% of the area.

The Soy Bean crop in Argentina is sown during November-December the harvest of which arrives in the markets during April-may. The flowering and grain filling stages during February-march which are critical for moisture stress. In the areas where Soy Bean is double cropped after winter wheat, the crop calendar is delayed by one month.

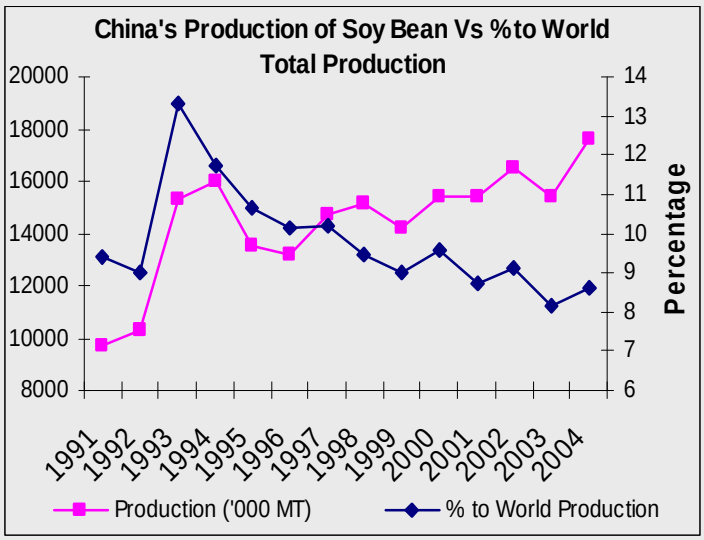
China:

China is the world's most populated country and is the largest importer of Soy Beans in the world. The change in the trade policies of the country have given the access to the world's largest exporters and thus influenced the world's Oilseed trade. The rapid economic and population growth have increased the consumption of Soy complex in the country.

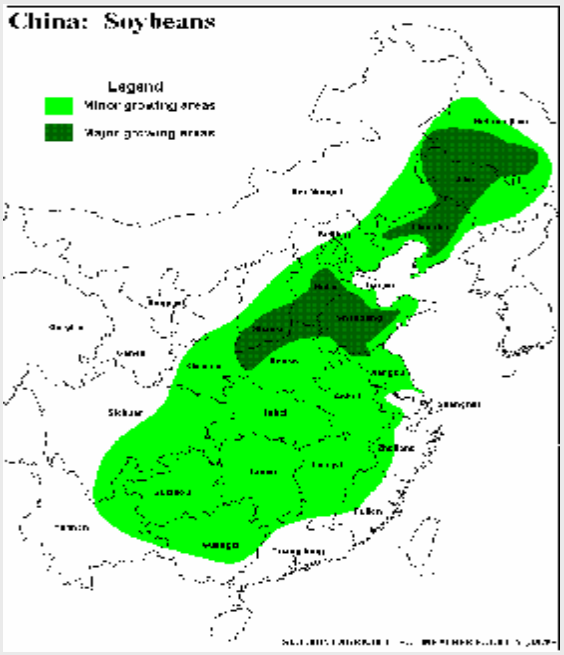
China typically imports high quantities of Soy Bean and processes them into Soy Oil and meal. The table on the right indicates that the imports (as a percentage of total availability) of Soy Oil and Soy meal have been less compared to those of Soy Beans.

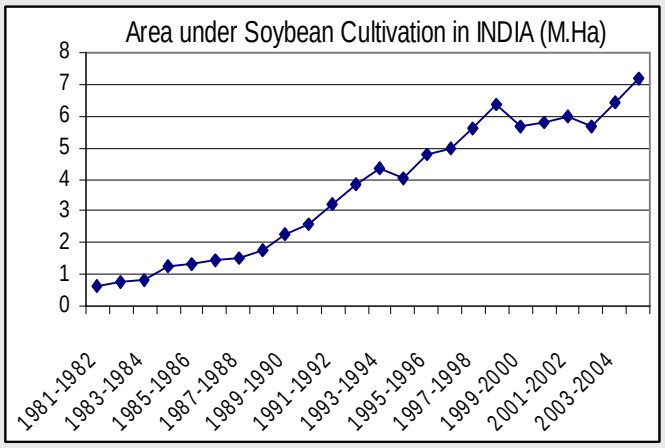
The major growing regions of china are in the north eastern provinces of china. The sowing of Soy Bean starts in the months of April-may and the market arrivals of the fresh crop start in the months of September-October.

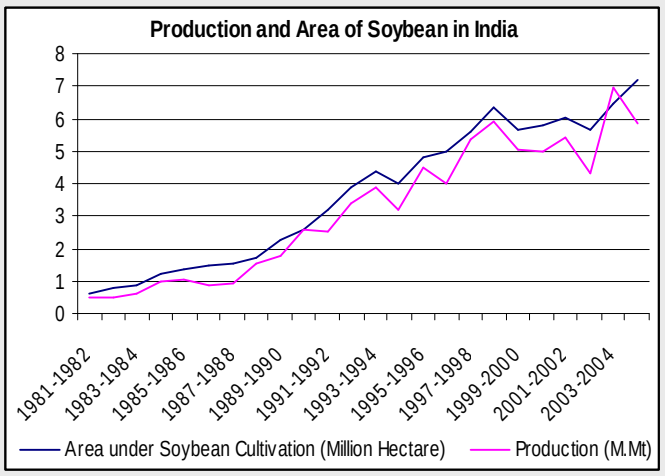
The provinces of Heilongjiang, Shandong and Henan have the major Soy Bean growing regions of china.



	Production	Imports
Soy Beans	40-50%	50-60%
Soy Oil	73-83%	17-27%
Soy meal	94-100%	0-6%





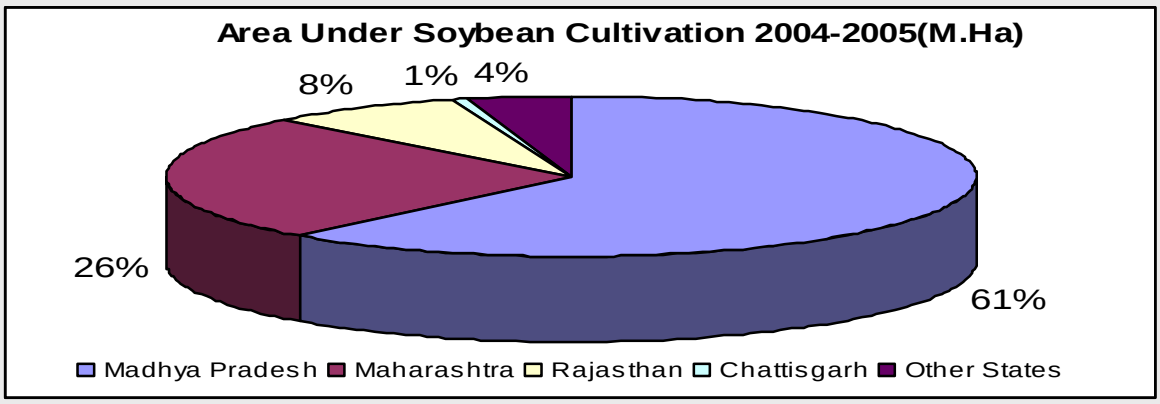


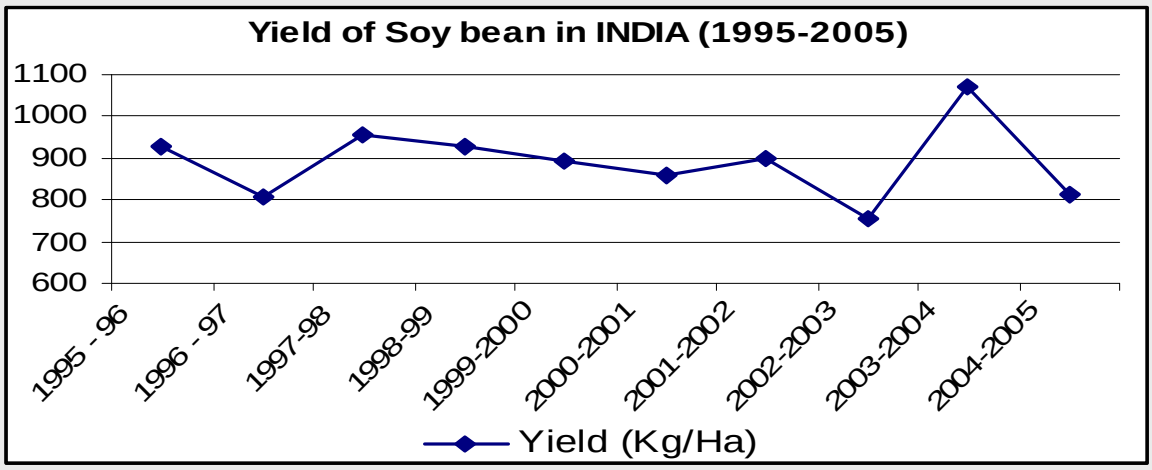
India:

India is one of the largest importers of vegetable Oils in the world. The area under Soy Bean cultivation in India has been increasing since 1991 but the production has been unpredictable due to the fluctuations in the yield. Over the last 25 years the yield of Soy Bean in India has been fluctuating in a wide range of 582-1074 Kg/Ha.

In India Soy Bean is mainly cultivated in the states of Madhya Pradesh, Maharashtra, Rajasthan, Andhra Pradesh etc.

Madhya Pradesh accounted for more than 60% of country's Soy Bean cultivated area and largely influences the production of Soy Bean in India.





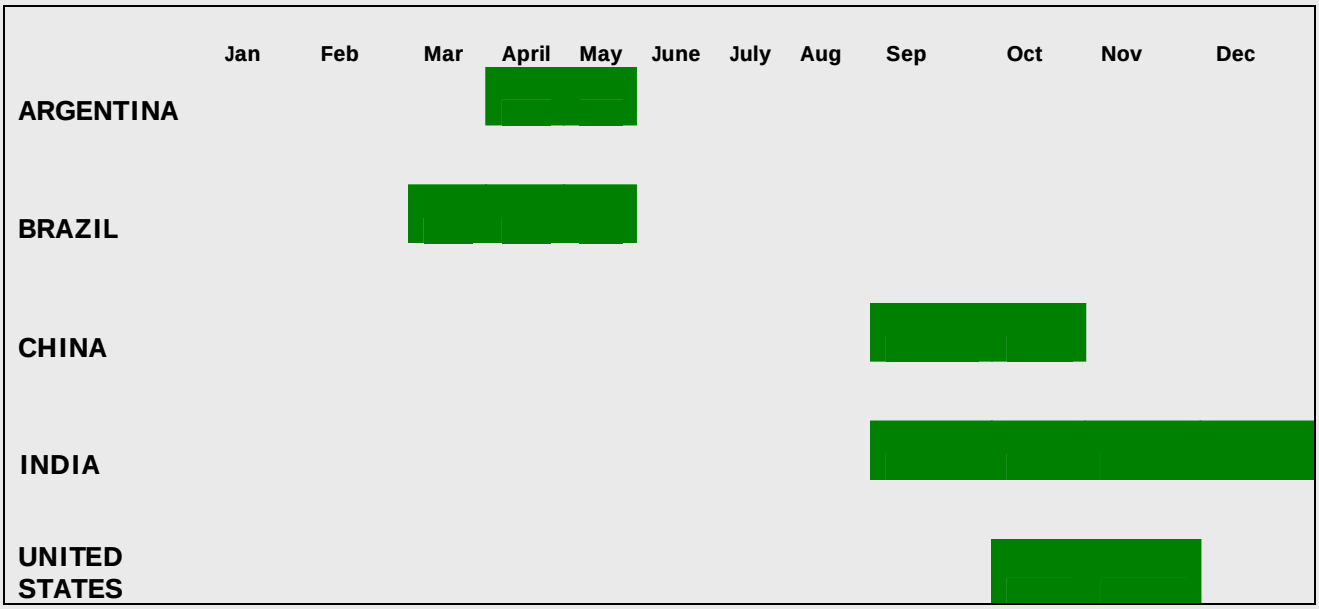
Agronomic Aspects of Soy Cultivation:

Crop calendar: INDIA
Sowings: June to last week of July
Flowering: Second fortnight of July till third week of august
Pod setting: Last week of August till last week of September
Market arrivals: Last week of September till last week of December

The Soy Bean crop is mostly cultivated as rain-fed and therefore the arrival and strength of the monsoon especially the south west monsoon influence the cropped area and the yield of the crop thus dictating the production.
If the arrival of the south-west monsoon is delayed beyond July, the farmers shift from Soy to pulses especially chana and Masur and thus the Soy out put will decrease for that year. Soy Bean faces a serious competition from weeds during the first 7-21 days after sowing and sale of herbicides can also be an indicator of Soy Bean yields for the corresponding year. The main pests and diseases that affect the Soy Bean yields are Soy Bean semilooper, girdle beetle, Soy rust etc. the extent of infestation of these pests and diseases also affects the yields of Soy Bean and thus the production. The moisture content of the harvested crop also determines the price for the Soy Beans.

Crop Calendar for Soy Beans in INDIA:

Arrival Pattern Of Soy Beans In The Major Producing Countries



Trade profile of major producing countries:

	Soy Bean	Soy Oil	Soy meal
ARGENTINA	Most of the production is crushed Less is exported	Majority of the production is exported	Majority of the production is exported
BRAZIL	40% of the production is exported and the rest is either consumed or crushed	60% of the production is consumed and the rest is exported	35% is consumed while the rest is exported
CHINA	Imports Soy Bean heavily	Domestic consumption is met from crushing of imported Beans, the rest is imported	Majority of the consumption is met from the crushing of imported Beans, imports are negligible.
INDIA	Does not import Soy Beans and exports are near zero	Huge importer of Soy Oil	Does not import Soy Meal and exports Soy meal
UNITED STATES	Exports 35% of production	Most of the Oil is consumed domestically very less is exported	Around 15% of production is exported.

Demand analysis:

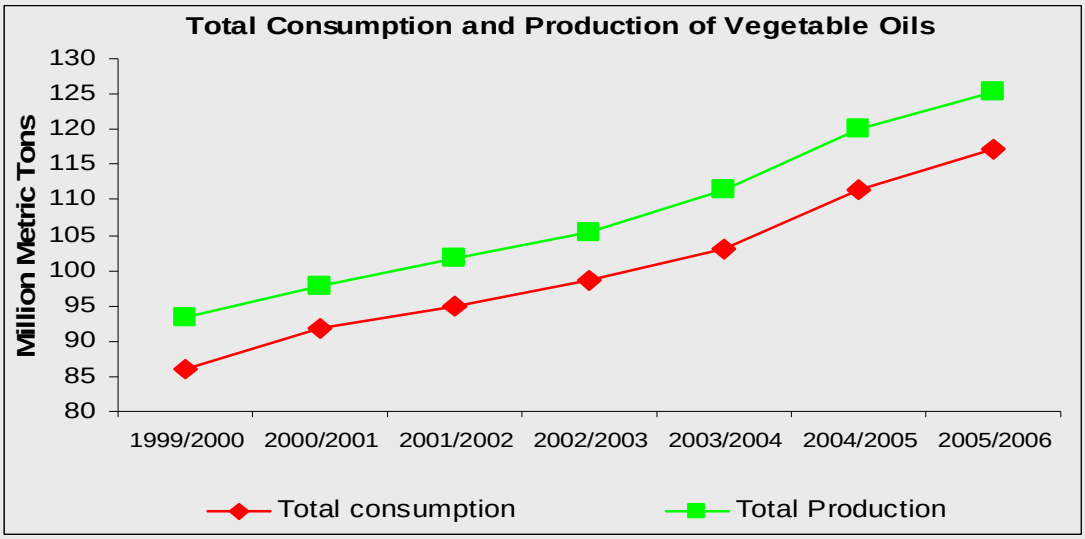
One of the main economic utilities of soy beans all over the world is for extracting edible oil (on an average, 85% of the world's production is crushed for oil). The edible oil recovery is around 17-18% while the meal forms around 72%.

The other uses of soy beans are for preparation of food products like Soya Milk, Tofu, Nuggets, Flour, and Extruded Proteins etc and also as Seed for the next crop.

The soy oil is mainly consumed for the edible purposes while industry also uses the oil for drying purposes in the adhesive and varnishes etc. less than2% of the oil manufactured is used for industrial purposes and the rest is used for edible purposes. The consumption of soy oil for edible purposes depends on the relative production and prices of other oils like palm oil, mustard oil, ground nut oil, sunflower oil etc.

The consumption of vegetable oils has been growing at the rate of 4.54% as compared to production (4.3%). The consumption of soy oil has been growing continuously and the decreasing trend of ending stocks confirms this. The recent development on the demand side of soy oil is the use of vegetable oils for Bio-fuel purposes and this development has created an interest in the vegetable oils trade esp. palm oil and soy oil trade.

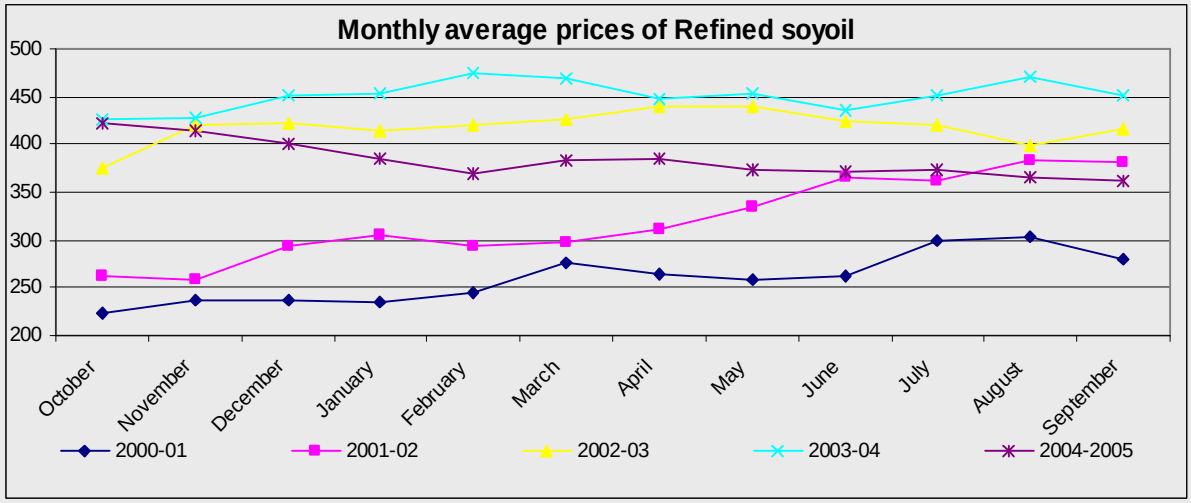
The soy meal is mainly used for feed purposes and is consumed in the poultry industry. The recent concerns of Avian Flu and the issue of transgenic soy have reduced the demand for soy meal. Soy meal has substitutes like meal from Palm, Palm Kernels, Ground Nut, Fish etc. the issue of GM soy bean and preference of Non GMO soy meal will drive the demand for soy meal in the major importing Asian countries , the geographical proximity also provides an edge for exports from India over those of Argentina or US.

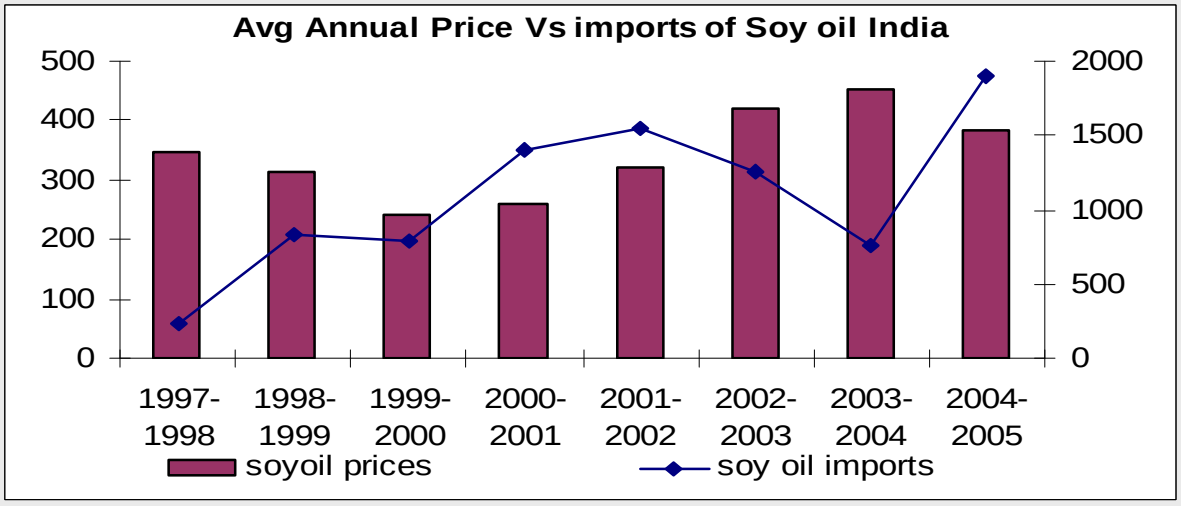


Price analysis:

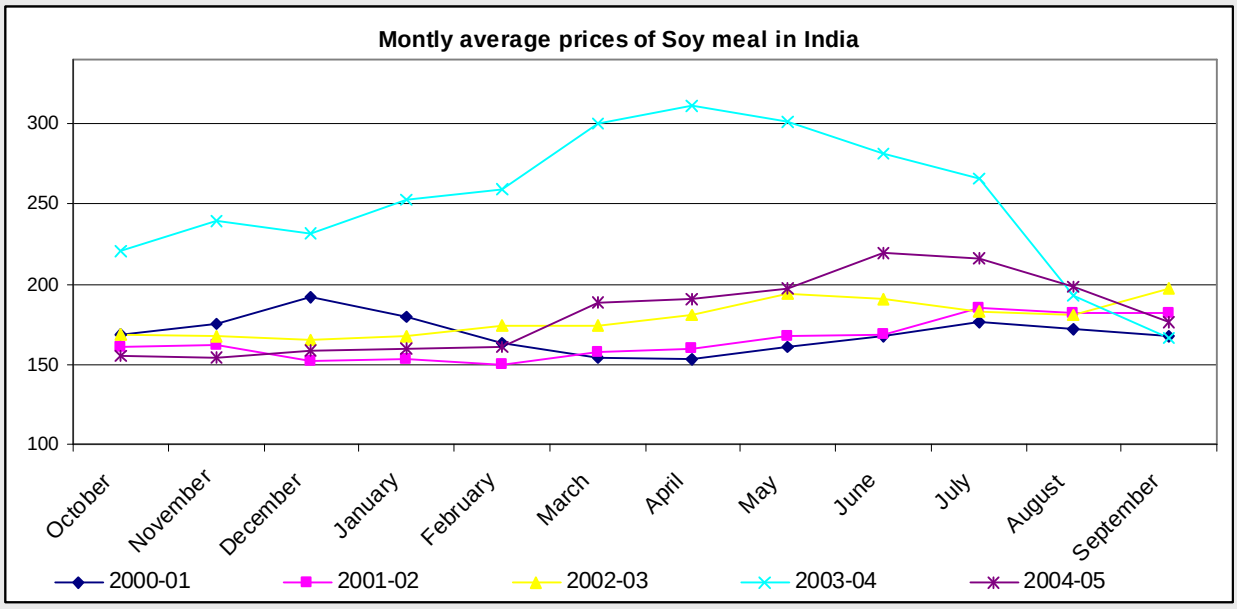
The monthly average price trends of Soy Oil indicate that the prices have been going down since 2004. The prices of Refined Soy Oil have been increasing since 2000 and have reached the highest of 474.85 during February 2004. over the last 20 months the prices have been falling continuously due to the piling up of end stocks (consumption lagging the supply) caused by huge imports. The price competitiveness of the imports as compared to the Oil manufactured locally has led to the fall in the prices since 2004.

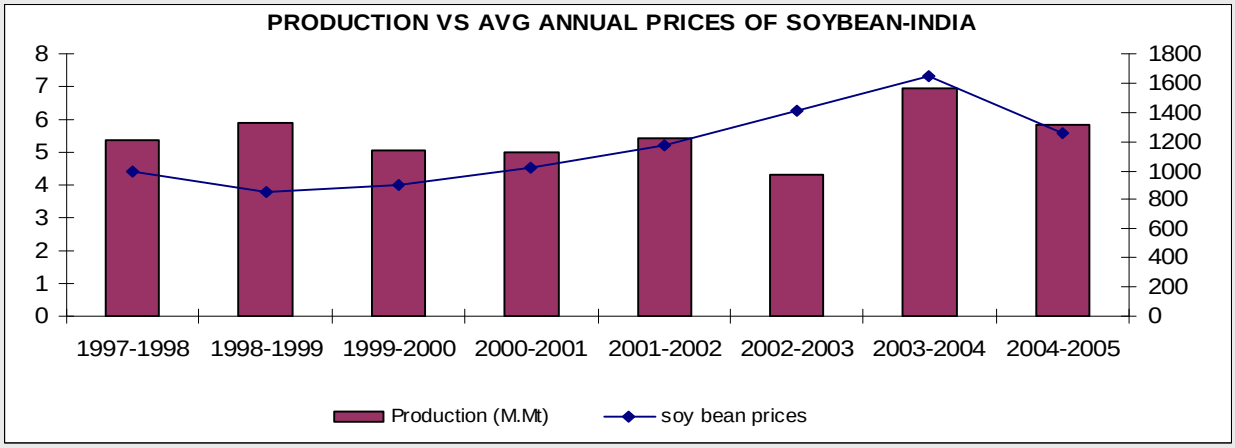
The price pattern also indicates that the prices tend to be high during the months of March and April from where they fall. The month of August also witnesses slight rise in prices as the stocks tend to reach the lower levels all over the world.





The 2003-04 prices of Soy meal have been highest in the last 5 years. The fall in production and depletion of stocks during 2003-04 has been the reasons for such a rise. The import demand from china for the corresponding period has helped the ascent in the prices during 2003-04. The price pattern also indicates that the prices tend to peak during April-may and fall thereafter.



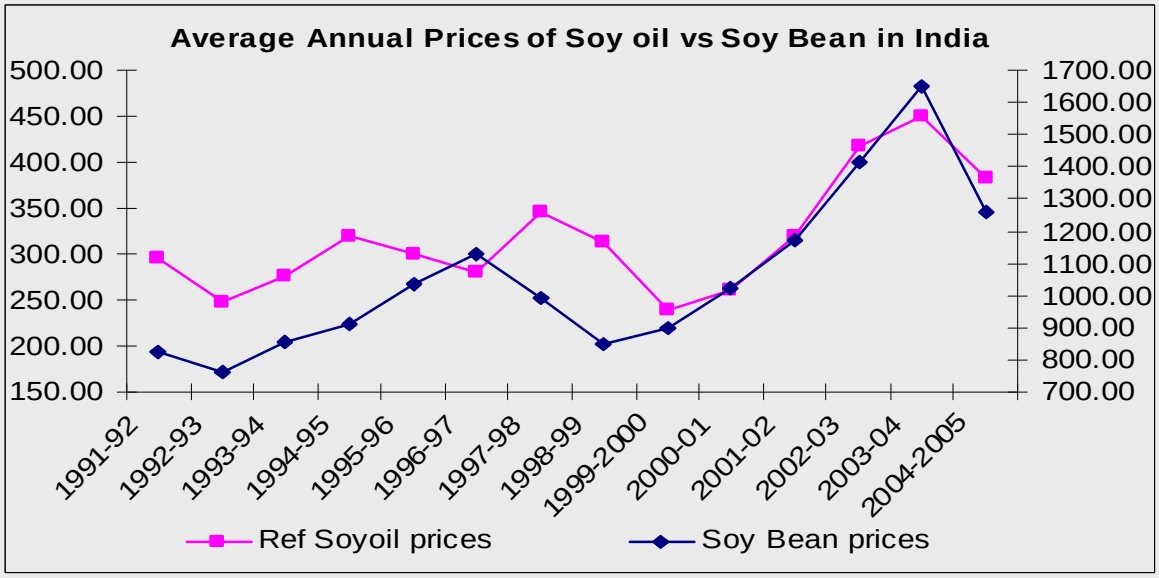


CORRELATION:

The following table gives the correlation among the futures prices of Soy Oil, Soy Bean and Soy meal traded on CBOT; CPO on MDEX and futures prices of Soy Oil, Soy Bean and Soy meal traded on NCDEX. The table indicates a strong correlation between the prices of Soy Bean and Soy meal on the CBOT as United States exports more of Soy meal than Soy Oil and also the consumption of the former is more than the latter. The same was true in case of the prices on NCDEX. The prices of Soy Oil at CBOT also have a strong correlation with the prices of CPO at the MDEX. The prices of the Soy complex are significantly correlated to those on CBOT.

	SOYOIL CBOT	SOYBEAN CBOT	SOYMEAL CBOT	CRUDE PALM OIL	NCDEX SOYOIL	NCDEX SOY BEAN	NCDEX SOY MEAL
SOYOIL CBOT	1	0.88	0.837	0.337	0.552	0.666	0.634
SOYBEAN CBOT	0.88	1	0.985	0.369	0.568	0.715	0.754
SOYMEAL CBOT	0.837	0.985	1	0.292	0.535	0.699	0.728
CRUDE PALM OIL	0.337	0.369	0.292	1	0.587	0.435	0.579
NCDEX SOYOIL	0.552	0.568	0.535	0.587	1	0.929	0.845
NCDEX SOY BEAN	0.666	0.715	0.699	0.435	0.929	1	0.879
NCDEX SOY MEAL	0.634	0.754	0.728	0.579	0.845	0.879	1

Correlation between the refined soy oil NCDEX and Soy bean CBOT



Price outlook for Soy Beans:

The world total Oil seed production for the year 2005/06 is estimated at 384.87 million metric tons as compared to 380.07 Million Metric tons last year. The production estimates for Soy Beans are pegged at 220.868 MMT which should come down to 218.00 as the second survey of SOPA keeps the Soy production in India at 6.1 MMT. The production of Soybeans in the South American countries of Argentina and Brazil (which have a crop calendar that favors the exports to India and other Asia pacific countries) together is estimated at 99 MMT, 9 MMT up from last year's 90mmt. This can ease the supply pressure on the global domain. The shortfall of Soy Bean supply in India is offset by the increased outputs of mustard seed, sunflower seed and palm kernels.
On the domestic front, the production of Soy Beans will fall by 1 million tons; however the bumper yields of ground nut, cotton; increased acreages of sunflower and Niger and huge stocks of mustard seed with NAFED will help the overall supply of Oil seeds and thus put pressure on the prices of Soy Bean. The outlook for the price is bearish till Dec 2005-Jan 2006, the prices will reach the lower levels of Rs. 1070-1130 but the prices will not fall below the MSP of Rs.900/ Quintal for black Soy Bean and Rs 1010/Quintal for yellow Soy Bean. The prices should start moving up from January, 2006 and reach a peak of 1275-1300 during April-may, 2006.

Estimates of world Oil seed Scenario

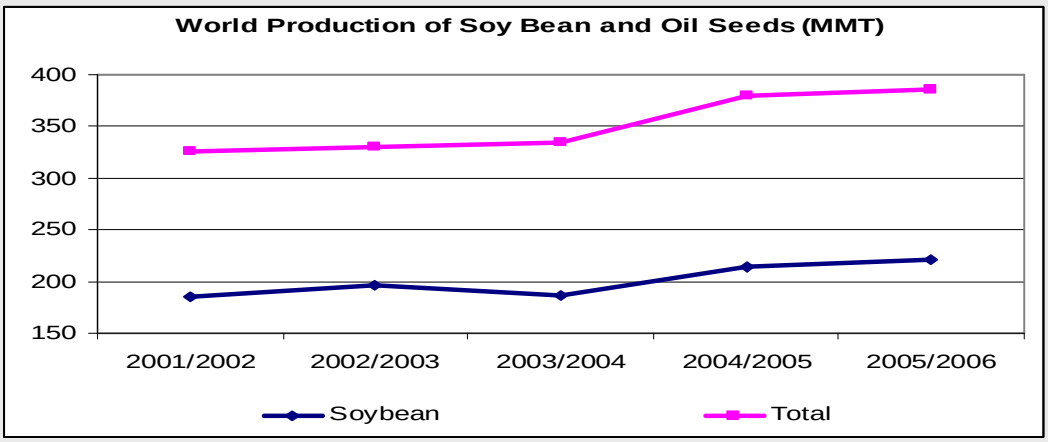
(Million Metric Tons)

	2001/02	2002/03	2003/04	2004/05	2005/06
Production	325.34	330.44	334.46	379.17	384.87
Imports	63.87	71.25	64.44	74.18	78.26
Total Supply	389.21	401.69	398.90	453.35	463.13
Exports	62.77	69.90	67.11	74.98	79.57
Crush	177.41	174.26	190.40	197.73	198.24
Ending Stocks	38.61	44.95	40.22	50.61	54.77

Estimates of world Oil seed Production

(Million Metric Tons)

	2001/02	2002/03	2003/04	2004/05	2005/06
Soybean	185.09	197.03	186.26	213.35	220.87
Cottonseed	36.61	32.86	35.72	45.53	41.93
Peanut	33.81	30.82	32.61	33.14	33.83
Sunflower seed	21.39	23.94	26.71	25.88	28.74
Rapeseed	36.03	32.9	39.34	46.59	44.46
Copra	5.21	5.11	5.37	5.39	5.38
Palm Kernel	7.2	7.78	8.45	9.29	9.66
Total	325.34	330.44	334.46	379.17	384.87



World Oilseeds	2005-06 estimates Production (Million Metric Tons)
Soy Bean	220.868
Cottonseed	41.927
Rapeseed	44.464
Groundnut (Peanut)	33.831
Palm Kernel	9.657
Sunflower seed	28.742
Copra	5.376
Major Oilseeds Total	384.865

Forecasted Production of Soy Beans

Country	2005-2006 (Million Metric Ton)	2004-2005 (Million Metric Ton)
United States	80.751	85.48
Brazil	60	51
Argentina	40.5	39
China	17	18
India	6	5.5
Other	16.617	15.42
Total	220.868	214.4

Estimates of Soy Bean All India State Wise Area Coverage and Yield During kharif 2005.

Area in Lakh Ha.
Yield in kg per ha,
Production in lakh Metric tones

	Year 2003			Year 2004			Year 2005		
	Area sown	Yield	Total production	Area sown	Yield	Total production	Area sown	Yield	Total production
Madhya Pradesh	40.908	1019	41.685	44.439	780	34.662	41.922	796	33.351
Maharashtra	15.598	1253	19.540	18.717	914	17.107	23.890	822	19.635
Rajasthan	5.629	1057	5.950	5.562	752	4.183	6.981	704	4.913
Andhra Pradesh	0.820	940	0.771	0.690	800	0.552	1.359	965	1.311
Karnataka	0.600	900	0.540	1.775	790	1.402	1.418	850	1.205
Chattisgarh	0.500	846	0.423	0.400	690	0.276	0.650	750	0.488
Rest of India	0.500	830	0.415	0.500	655	0.328	0.500	725	0.363
Grand Total	64.555	1074	69.324	72.083	812	58.510	76.720	799	61.266

Source: SOPA

Refined Soy Oil:

The world vegetable Oil production is forecasted to be 113.52 million metric tons for the year 2005/06 and the consumption at 112.9 million metric tons. The end stocks are forecasted to be lower than the last year which means a pressure on the supply. This consumption does not include the much discussed use of vegetable Oils esp. Soy Oil and palm Oil for manufacturing of bio fuels.

Indian imports of edible Oils this year have been in the tune of 4.17 million tons which is 26.1% above the last year. The trade expects the Soy Oil imports to rise further at the expense of the palm Oil. The production figures of Cotton and Mustard seed this year are estimated to be higher. The domestic production of Mustard and Cotton seed Oil are expected to put pressure on the prices of Soy Oil. The supply pressure may hinder the prices though the consumption seems to go higher than the estimated (112.5-113 million tons). The growth in consumption will be due to the increase in the per capita consumption of edible Oils supported by the steadily growing GDP and increase in population. The outlook is a downward movement in the prices of Soy Oil. The prices may reach lower levels of Rs.338-344 till the first week of December and the prices are expected to move upwards from then and reach levels of 355-360 by the end of February. Any drought/precipitation deficit in Brazil during the Soybean growing period (January-march) will take the prices further up even to the levels of Rs. 380 by the end of April.

What can push the prices up?

"The Indian market now requires price leadership from the international markets"- Mr. Dorab mistry, Director, Godrej International Ltd., London at the GlobOil India-2005.

The rise in the crude Oil prices from $40 to the levels of $70per barrel have changed the economics of the use of vegetables Oils especially palm Oil and Soy Oil for the purpose of Bio fuel. The setup of units for manufacturing Biofuels indicates the growing interest of the international community on this issue. This can push the prices of palm Oil and Soy Oil in the international exchanges. If the traders in India pile up stocks in anticipation of the biofuel demand the domestic prices are expected to experience a rise.

World vegetable Oil statistics

(Million Metric Tons)

	2003/2004	2004/2005	2005/2006
PRODUCTION	101.67	109.82	113.52
IMPORTS	36.75	40.25	42.81
TOTAL SUPPLY	138.42	150.07	156.33
TOTAL CONSUMPTION	100.07	107.97	112.9
EXPORTS	38.35	41.63	43.70
ENDING STOCKS	7.11	7.59	7.31

Edible Oil scenario of India

(Million Metric Tons)

	2005-06	2004-05
Opening stock	0.6	0.68
Domestic production	6.5	5.44
Total	7.1	6.12
Consumption	11.13	10.72
Difference	4.03	4.59
Closing stock	0.7	0.6
Import	4.73	5.19

Indian imports of vegetable Oil: ('000 Metric Tons)

	2001/02	2002/03	2003/04	Nov '04- Aug '05 (10 months)	corresponding period last year
RBD Palmolein	118.90	319.38	796.85	389.24	562.85
Refined Soy Oil	3.50	28.99	15.32	25.00	4.20
Crude Palm Oil	1891.54	2151.29	2059.58	1993.59	1.60
Crude Olein	920.02	1261.57	491.94	176.56	409.43
Sunflower Oil	2.80	94.60	75.82	2.02	62.65
Soy Bean Oil (degummed)	1475.53	1167.72	890.70	1548.30	596.71
Canola/ Rape Oil	10.40	5.54	-	-	-
Coconut Oil	2.50	7.70	2.03	7.29	0.60
TOTAL	4425.18	5114.45	4396.59	4172.55	3295.41

Source: Solvent Extractors Association of India.

ESTIMATES FOR AVAILABILITY OF VEGETABLE OIL FROM KHARIF OILSEEDS CROP DURING 2005 – 2006 SEASON

(in Lakh Tonnes)

S. NO.	Oil Seeds/S.E.Oils	Oil Recovery %	2004-2005 Season				
			Kharif Oil Seed Production	Marketable Surplus for crushing			Oil Availability
				Kharif	Rabi	Total	
A.	**OIL SEEDS**						
1.	Groundnut (In Shell)	40	51.0	19.7		19.7	7.9
2.	Soybean	17	61.6	54.1		54.1	9.2
3.	Rape/Mustard /Toria	33	1.5	1.5		1.5	0.5
4.	Sunflower	35	5.6	5.5		5.5	1.9
5.	Sesame	45	4.2	1.0		1.0	0.5
6.	Castor	42	8.7	8.7		8.7	3.7
7.	Niger	30	1.1	0.7		0.7	0.2
8	Safflower	30	-	-		-	-
9.	Linseed	43	-	-		-	-
	Sub total		**133.7**	**91.2**		**91.2**	**23.9**
B.	**Other Oilseed**						
10.	Cotton Seed	11	84.9	70.4		70.4	7.7
11.	Copra	65	6.5	6.5		6.5	4.2
	Sub total		**91.4**	**76.9**		**76.9**	**11.9**
C.	**Secondary Source**						
12.	Rice Barn	15	-	-		-	6.8
13.	Rapeseed Cake	9	-	-		-	1.5
14.	Sunflower Seed Cake	12	-	-		-	0.8
15.	Groundnut Cake	7	-	-		-	0.8
16.	Cottonseed & Others	7	-	-		-	0.7
17.	Minor Oilseeds (TBOs)	-	-	-		-	0.8
18.	Local Palm Oil	-	-	-		-	0.4
	Sub Total		-	-		-	11.8
	Grand Total (A+B+C)		**225.1**	**168.1**		**168.1**	**48.5**

Source: SOPA