

Demand Driven Agriculture to Pull up Rural Value Chains

Policy Imperatives



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Food security concerns prevent India from any sort of innovations in its farm and other rural domains to establish a long run growth and sustain it. The political orientation of farms and the subsistence farming by farmers makes it the case to continue with the conventional subsidy-support nexus for natural growth or even stagnation in the rural domain causing large scale rural distress. Potential value chains are hidden and the agri - ecosystem needs to be brought to the mainstream for sustainable development. This involves fast track reforms to link the farms to market and meet the food requirement of the masses from a market system. The MSP and other modes of supports are pulling farmers from crop diversification and hence the value addition for enhanced incomes and rural standard of living.

Sustainable Agriculture: Policy Imperatives

Agriculture: Outlook & Background

India learned its farming lessons from series of famines and the American rejection to supply food material to India in the time of crises. Agriculture policy of post independent India focused on enhancing the output of essential grains to avoid any future occurrence of a food crisis. Food security occupied the centre stage of India's farm policy while it continued to accommodate the larger share of the work force and remained as the significant contributor to the national income growth. To ensure the food supplies, the country continued the 'rationing' system in its modified form as 'Public Distribution system (PDS)'. Land ceiling was brought as a means to establish socialistic social fabric with reasonable levels of social equity. Small and marginal farming has been the cornerstone of rural production systems.

To establish desired supply levels of essential food commodities, the government introduced minimum support price (MSP) for food grains. This was expected to work as an incentive to farming activities - enhance acreage under grain crops and improve productivity of food crops. The Green Revolution accelerated adoption of High Yielding Variety seeds and the use of inputs like fertilizer and pesticide in the farm sector. In a planned economy environment, the linkage between prices (MSP), output levels, adoption of technology and income growth moved in a linear way. Food procurement and distribution were coordinated through institutional interventions. Though this policy framework enabled a significant improvement in the production levels of essential food grains, brought in a sort of inertia in the Indian farm front—supports led and supply driven farming for subsistence food. Self-sufficiency outlook in food grains resulted in an inward looking approach in Indian agriculture. Breaking the nexus therefore remains the core of farm sector growth.

1.1. Post Green Revolution Indian Agriculture

The post Green Revolution Indian agriculture was characterized by stagnation/deceleration in the sector. The sector had registered a growth rate of 3.5 percent in the green Revolution years and declined to 2 percent in the late 1990s and further to less than 2 percent by 2004. The declining trend in Indian agriculture is still continuing. **This deceleration phase in Indian Agriculture is characterized by a decline in the growth rate of agriculture, emergence of Horticulture as one of the major source of agriculture growth and decline in the growth of output value of non-horticulture crops** (Table.1, page16). This facilitated the **first phase** of agriculture reforms in India (NAP, 2000) – a policy initiative towards demand led agriculture. This phase of reforms was very slow

and cautious. The major reform made in the sector was the abolition of 'zones' and declaring the country as a single market for 54 agriculture commodities. But 16 items still remain on the statute book.

Supply-driven Agriculture

Post Green Revolution Indian Agriculture registered declining growth rates

Period	Agriculture GDP Growth	Total GDP Growth	Growth in Vale of output			
			Crops	F&V	Livestock	Crops other than F&V
1950-51 to 1959-60	2.93	3.68	3.06	0.56	1.42	3.44
1960-61 to 1969-70	1.27	3.29	1.70	5.82	0.41	1.09
1970-71 to 1979-80	1.94	3.45	1079	2.88	3.92	1.55
1980-81 to 1989-90	3.13	5.38	2.47	2.36	4.99	2.26
1990-91 to 1995-96	3.16	5.56	2.65	4.93	4.25	2.13
1996-97 to 2001-02	1.75	5.53	1.28	4.55	3.47	0.34

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Despite market-oriented reforms, India's domestic agriculture policies continue to pursue subsidies and support mechanism in different forms. Basic staples continue to get MSP guarantees. For high value commodities however, there has been no MSP guarantees. On the contrary these crops are covered by *ad hoc* measures like **Market Intervention Schemes (MIS)**. Under the MIS if the price of a commodity falls below a specific economic level, Government of India (GOI) can intervene, at the request of state Governments and purchase the products at intervention prices that do not exceed the cost of production. If any loss is made in the MIS operation, it has to be equally shared between the centre and state governments. Input subsidies in Fertilizers, Electricity and Irrigation continue to woe traditional grain crops, which are now at points, potentially unsustainable fiscally and environmentally. Despite these the growth of high value agriculture in India during the 90s is impressive.

Growth of High value crops

India's Agri-input subsidies					
Year	Fertilizer	Electricity	Irrigation	Total	at 2000-01 prices
1981-82	2.33	4.47	4.58	11.40	43.90
1985-86	14.22	13.04	7.44	34.70	131.70
1990-91	45.58	46.21	25.71	117.50	253.00
1995-96	96.94	138.38	44.12	279.40	371.80
2000-01	72.61	288.14	54.95	415.70	415.70
2002-03	69.97	356.75	60.56	487.30	453.40

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Hence the policies on subsidies, prices, support systems and market reforms however have not been able to ensure the desired transition in Indian agriculture. Major reasons identified for this is (a) Land markets are not amenable to scale operations; (b) subsidies continue to distort efficiency enhancement options and (c) declining public investment in agriculture. Subsidies targeted the promotion of small and marginal farming. Commercial farming facilitated by crop diversification could not find a place in the agriculture priority list.

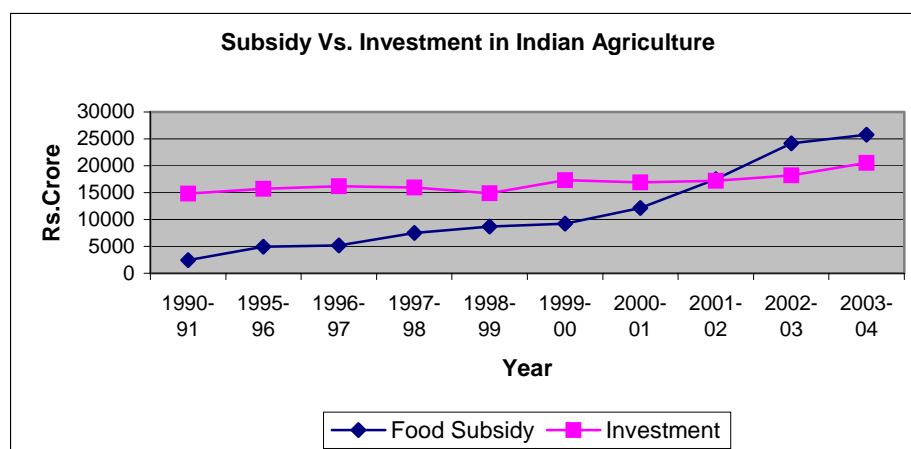
Subsidy and Investment Trends

Year	Food Subsidy (Rs. Crore)	% of GDP	Investment (Rs. Crore)	% of GDP
1990-91	2450	0.43	14836	1.92
1995-96	4960	0.44	15690	1.57
1996-97	5166	0.52	16176	1.51
1997-98	7500	0.52	15942	1.43
1998-99	8700	0.49	14895	1.26
1999-00	9200	0.58	17304	1.37
2000-01	12125	0.77	16906	1.28
2001-02	17499	0.98	17219	1.24
2002-03	24176	0.93	18240	1.27
2003-04	25800	-	20510	1.31

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Source: Planning Commission, Government of India, 2005

Graph.1: Investment Vs. Subsidy in Indian Agriculture



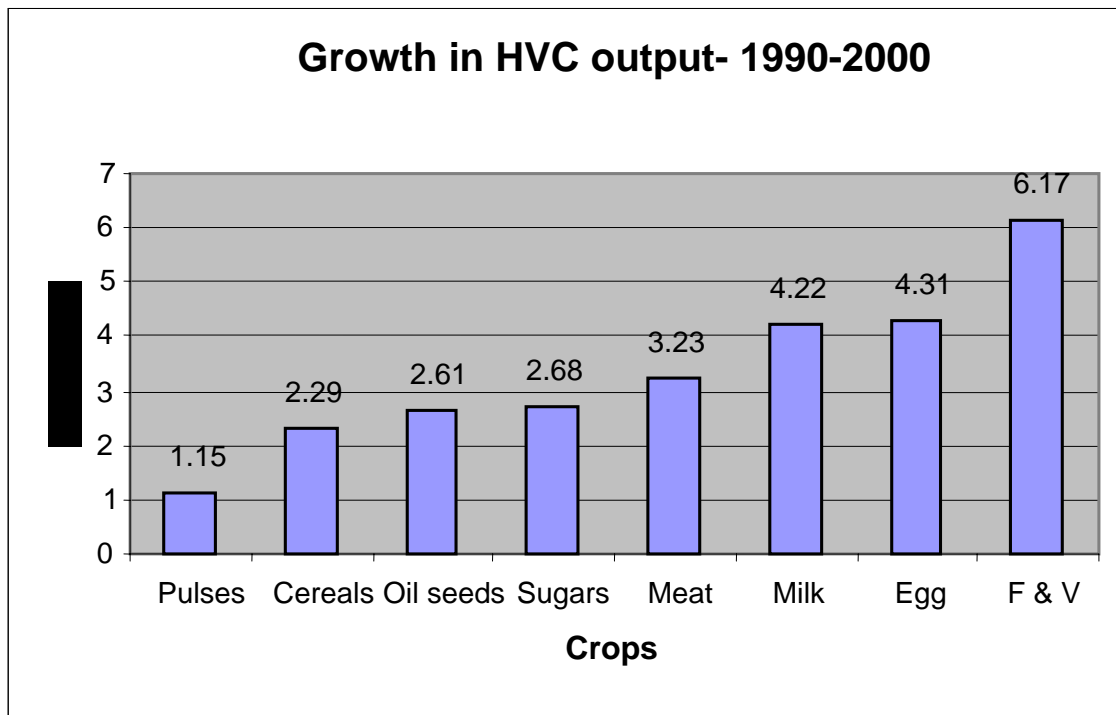
1.2. Current policy Challenges

One of the major challenges to India's growth process today therefore, is to reverse the deceleration in agricultural growth, which is currently averaging around less than 2 percent. This is despite the major accomplishments the sector made in the area of food grains. Given the large dependence of the population (around 60%) on the sector, the decelerated growth is not only hindering the faster economic growth of the country but also contributes to large-scale rural distress and crises. Given the large number of factors responsible for this and the inherent characteristics of the agriculture sector, the fragmented land holding is the key source to large-scale underemployment and disguised unemployment in the farm front. A formidable vicious cycle has been created of low productivity – low farm incomes – low investments leading to low production/productivity. An unlocking of the value chains is expected to create more job opportunities and enhance farm incomes.

Supply side constraints continue to hamper Indian agriculture. Constraints related to production, lack of effective linkages between agriculture research, crop development/diversification, extension programs, effective markets, infrastructure in the value chains, sustainable model for agriculture credit and finance and the complex regulatory regimes are few examples in this context. Given the above structural lag and the system complexities, commercialized agriculture with adequate levels of technological, credit and marketing interventions can be brought about only if value added agri-business come forward to invest in the farm sector and link it up to the markets. **It has therefore, been widely believed and acknowledged within policy circles that only a demand driven agriculture development strategy can make the requisite impact on the supply chain in its entirety and thus unlock the potential value chains, leading to high farm incomes.**

The liberalization of trade and the provision of market access provided greater opportunities for crop diversification and demand led agriculture in India. This enabled Indian agriculture to look at the crop mix and market opportunities on the basis of competitive advantage, making agriculture as a farmer's enterprise harnessing to optimize returns from land and investments. A number of strategic agri-policies have been launched towards this objective. These policies aims to encourage large scale crop diversification and development of new crops suitable for commercial value chains with the explicit objectives of encouraging farmers to shift from traditionally grown and less remunerative crops to high return crops and hence, increase their incomes. This is expected to generate additional employment opportunities and stabilize farm incomes over the seasons. A policy of crop diversification has also been used for conserving the natural resources by dispersing the concentrated commercialization of a few crops leading to adverse effect on natural resources like water and soil. The launch of National horticulture Mission (NHM), national Horticulture Board (NHB), National Oil seeds and Vegetable oils Development Board, Technology Mission on Oil seeds and Pulses are few such strategies. **Several value chains in agriculture have emerged out of this. Fruits and Vegetable, Floriculture, Medicinal and aromatic plants, bio-Fuel, Oil seeds etc. are a few in such list.**

Growth of High Value Crops

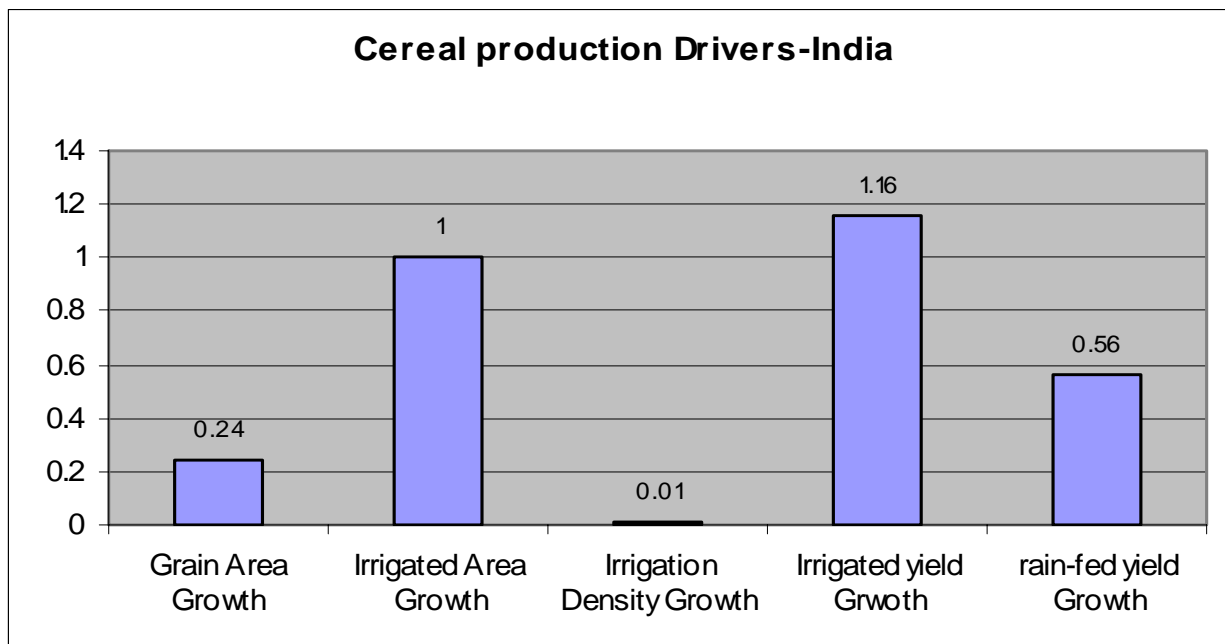


Commercial agriculture driven by these value chains however **will succeed only if** the business models for each of these value chains allow them to go ahead. These value chains, while having a high potential for making a significant positive impact on the rural economy, faces constraints of **scalability and sustainability**. While the specific requisite for ensuring the sustainability of these value chains is the **creation of markets** for the final products, the critical determinant of their success is dependent on the consistent **availability of marketable surplus** of different agri-commodities, which meet the specific requirements of different markets being serviced for domestic consumption, agro processing or exports.

1.3. Food security concerns and policy blocks

Food security concerns however, continues to constrain the scope and opportunities of demand led agriculture in India. The fluctuating food grain stock levels and the stagnating or declining land coverage under major food grain crops remains the source of such concerns. For example, the total area under food grains has declined from 127 million hectares in 1990-91 to 113 million hectares in 2002-03. Further, the food concerns were accelerated by low growth in area coupled with a stagnating irrigation density and low rain fed yield growth in grains. At the same time the area under vegetables and fruits increased from 0.66 million hectares 0.83 million hectares. Somewhat similar trend is observed in other commercial crops like sugar cane, cotton and oilseed crops.

Cereal Production Drivers



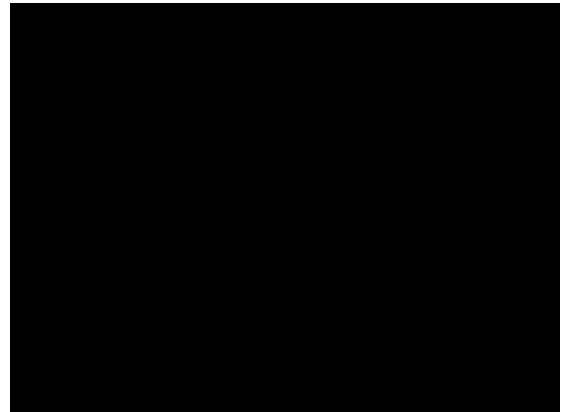
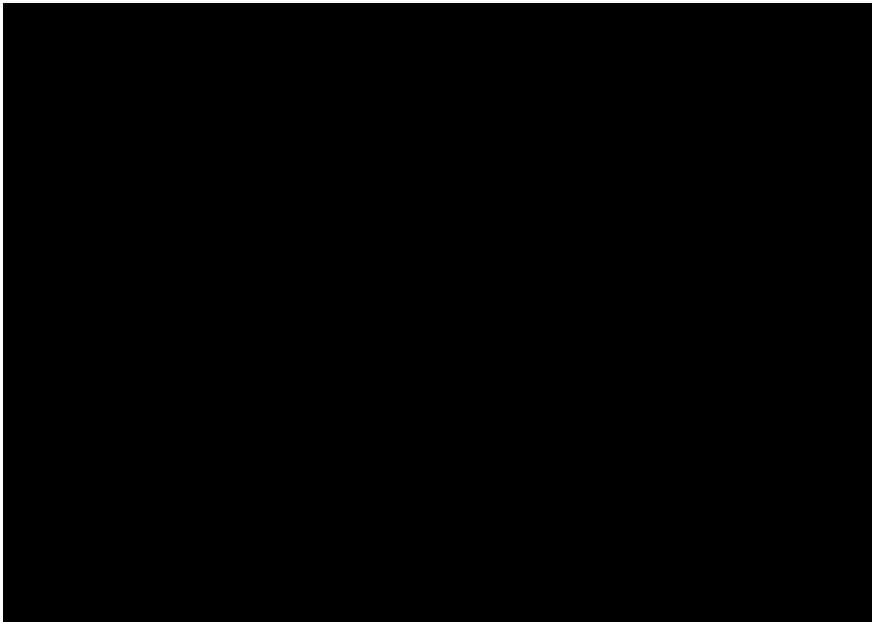
The short procurement of wheat by government in 2006 accelerated the concerns of a sustainable food security from a market framework. The 2006 food grain crisis however can be seen just as an imbalance in wheat procurement, out of the interplay between government and private players in an environment of competitive prices and markets and not of significant production shortages. The ruling market price of wheat was more than the MSP. But the Government had the option to procure the desired volumes at the market price. The high ruling market price for wheat was facilitated by a host factors like increased demand from private sector, higher international price levels associated with the anticipation of higher future prices (indicated by futures market) and thereby the decision of farmers to hold stocks.

From a supply driven food security front, the above instance accelerates concerns for a policy block. In other words, policy distortions continue to hamper the transition of Indian agriculture from the supply side to the demand led growth path.

- The continuance of MSP averts farmers from seeking alternate crops (diversification) and enhancing land coverage under commercial crops to maximize returns.
- Continued preference for grain crops retards the scope of farming in an environment of competitive advantage.

For instance the **case of Punjab**, which had a higher competitive advantage in horticulture crops, has end up in cultivating grains. The composition of cropped area in Punjab constitutes 33% rice, 29.6 % wheat, 19.8 % pulses, 10.52 % coarse grains and 9.4 % cotton. Only, (in March) 2002 the initiatives were made to diversify its farm structure in a minor way. Under this initiative for high value crops, an area of 182600 hectares has been brought under horticulture crops. An additional area of 3500 hectares under fruits and 5000 hectares under vegetables has been allotted since then. What it conveys is that the farm policy in India lacks the desired force to push for commercial farming activities and the transition accordingly. In other words national policies on agriculture still see farming as a mere tool to provide food to the growing population and not as a business.

Area under rice in Punjab



- The diminishing marginal productivity of land and capital under grain based cropping reduce the incentives for improving private farm investments.
- The excessive weightage of grain in the farm policy and the MSP based grain procurement by the state results in excess grain procurements causing huge carrying cost of grains. The buffer stocks levels with the FCI had been much higher than the stipulated minimum requirement for the previous years. For example, the minimum requirement of cereals for April being 15.80 million the actual stock holding for the month in 20043-04 was 32.80 million tons (more than double) and 20 million tons in 2004-05. Similar excess stock holding can be observed in subsequent months also (Table 3, page 17). The carrying cost of a Kilogram of grains with FCI is worked out to be Rs.2/kg. The total carrying cost of grains was Rs. 14,000 crore in 2003.
- The continuous and unchanging crop mix creates strain on ground water levels and soil fertility.

1. Food security Driven Agriculture policy

Food Security – Concept and Debate

Concept

From different strategic angles, food security is often perceived and interpreted differently. This makes it essential to understand the elements of the concept that enable a nation to decide on its food security strategy. Food security envisages the availability of quality food at affordable prices to the citizens of a country at any time and place. Hence, it has three major elements to fulfill. First, the nation's ability to produce/**supply** the required quantity of food. Secondly, to ensure the **quality** of the food supplied and thirdly making the food **affordable** (accessible) to the people through pricing and/or distribution mechanisms. It implies that even if a sufficient quantity of quality food is available with a country, it will not ensure a food security situation, unless people are made accessible to such food. This means that it is essential to ensure the accessibility to available food either through a suitable distribution network or by raising their income levels to buy the food from market. The access to food is determined by food entitlements. The food entitlement is the sum of human, physical and financial assets that an individual or a household owns and can be used to acquire food materials. The rate at which these assets can be converted to food is either through production (value) or exchange (value) (Sen 1981, Jha 2000). It means that regional or national food production levels and food stocks cannot be treated as a sufficient condition for the food security.

2.2. Indian Food Security Debate

Against the conceptual framework mentioned above, the debates on food security in India remains confined to the supply-demand management of two major -food commodities-Wheat and rice. Moreover, the debates are mainly between the two antagonistic thought schools. The first school believes in the domestic self-sufficiency approach to feed the population from a subsidized and supply driven agriculture. This school of thought does not find the need to view the sustainability of subsidized food distribution and the scope of markets in meeting out internal food shortages. Accordingly it envisages for high levels of controls in the farm and market front (Tables 4 & 5, page 18) to maximize the welfare of the people.

The pro-market school of thought however, sees that **sustainable food security** can be achieved **only through a demand side approach**. It sees the agriculture transition as a tool to enhance the income of the people and thereby improving the accessibility to the food entitlements from the market. Towards this, it envisages the transition in the agriculture from traditional grain crops and a diversification to high value crops. This argument further sees the prospect of

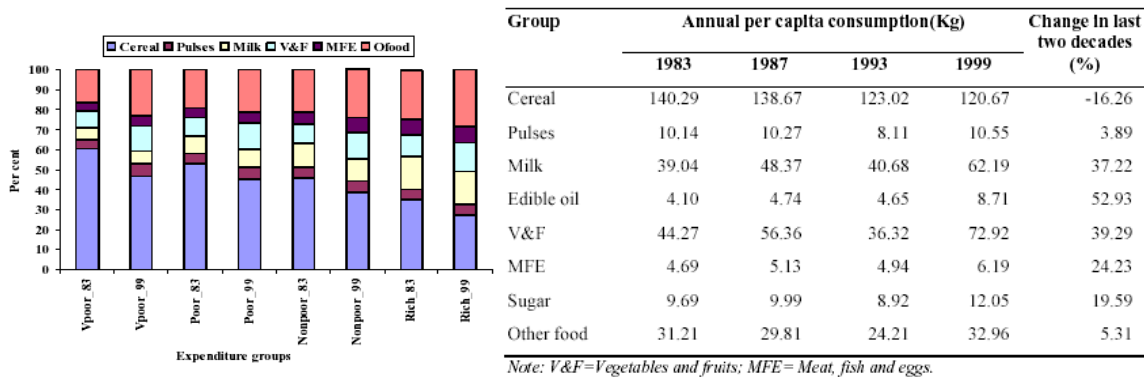
people substituting high value food items against food grains in the long run resulting from the enhanced income levels. This thought school therefore views India's food insecurity is arising out of the difficulties to introduce a paradigm shift in the farm front- a transition from the supply driven agriculture to a demand-led food security. Such a transformation is seen potential enough to accelerate the growth in Indian agriculture. Enabling the desired transition in Indian agriculture therefore is the solution to India's food security concerns.

3. Sustainable Food security: Opportunities for Demand-led Agriculture

An analysis of the **opportunities** for India to leverage from a transition of its agriculture from supply side to demand side shows the larger picture. The present and emerging structure of the population, income levels and consumption patterns enhances the scope of this transition further. For example, the consumption basket of India is changing towards high value crops from grains. There has been a significant increase in the consumption of fruits, vegetables, milk, milk products and other value added food material across all income categories. This changing consumption basket is attributed mainly to the income effect (food accessibility) and the changing life styles resulted from a demand led economic growth.

Changing Food Consumption Patterns

Cereal consumption declines in both Rural and Urban Food basket



It becomes essential in such situations to transform agriculture to a demand led growth. Markets can arbitrate demand - supply management. High degree of food-security concerns is not called for.

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The changing consumption pattern of the population increases the opportunities for a demand-led agriculture from enhanced domestic consumption levels. For instance,

- Indians consume an average of 40 grams per day of **horticulture products** compared to a normal nutritional demand of 90 grams.
- As incomes rise, the domestic market for horticulture products is projected to increase by 60% over the next six years.
- Overall, there is scope for placing an additional 1 million acres under horticulture crops. This will generate demand for 100 new commercial hybrid seed production units in the country.
- **Sugar consumption** in India has tripled over the last three decades and now exceeds 13 kg. Per person per year.
- Yet even current levels of consumption remain very low compared with those of other developing countries: 21 kg. In Kenya, 31 kg. In Argentina, 33 kg. In Egypt, 44 kg. In Brazil and 45 kg. In Mexico.
- Over the next decade, rising incomes are projected to increase India's domestic sugar consumption to 25 kg. Per capita.
- 370 million **middle class population** of India (growing at 1.6% per annum) is a significant source of demand for value added agriculture produce.
- 70 million of the Indian population now has a yearly income of \$18000 per year.
- It is estimated that by 2010 this segment would increase to 140 million.
- India's individual purchasing power is expected to climb from \$2149 in 1999 to \$16500 in 2040.

In commodity segments for example, fruits and vegetable is the largest retail market segment in India with the changing demand pattern of the population

- The retail industry is estimated currently at \$ 300 billion
- This is forecasted to grow to \$427 billion in 2011.
- Domestic demand for milk is estimated to be around 80 million tones

{Sources include Hindu survey of Indian Agriculture, Times of India, National Centre for Agriculture Economics and Policy Research, FAO, IFPRI, FASONLINE, APO}.

Coupled with the growing domestic markets for high value food commodities, global markets offer scope for India to leverage its global competitive advantage. For instance,

- Global trade in agriculture commodities is projected at \$640 million by 2012.
- India is currently a marginal player in this with a meager 1.2 percent.

Indian commodities like fruits and vegetables, horticulture products, silk, cotton etc. are competitive in the global markets. India is among the world's top three producers of tea, cotton, sugar, food grains, groundnut, coffee, eggs and milk. Given the regional diversity, India holds the competitive edge for crops, which requires climatic conditions, and mostly grown in other parts of the world – ranging from temperate orchard crops to almonds, apples and tropical one like mangoes and pineapple.

- Floriculture is a \$40 billion global industry that is projected to reach \$70 billion by year 2000, of which international trade in cut flowers accounts for \$6 billion.
- India's exports of cut flower have risen from \$2 million to \$10 million annually over the past five years
- The potential is 100 fold greater. New floriculture projects are already springing up around the country.
- Exports of processed fruits and vegetable, cotton textiles, sugar, and fish have vast potential.
- Processing can multiply the export value of farm produce by 50 to 500 times and open up vast international markets.
- India currently processes less than 2% of its agricultural produce compared to 30% in Brazil, 70% in USA and 82% in Malaysia.
- India's mushroom exports have been impressive. Over the past three years not less than nine export-oriented mushroom projects with an investment of more than Rs.130 crores have been established in joint venture with foreign companies.
- Despite being the second largest producer of silk in the world, India's share of world silk trade is less than 5%.

(Source: National Horticulture Board, 2006, FAO, IFPRI, FASONLINE, APO)

The likely **phasing out of export subsidies**, reduction in domestic market supports and tariff rate quota expansion in the developed countries in the near future, would further enhance the competitiveness of Indian agri commodities globally.

3.1. Demand-led Agriculture: Benefiting the farmer and rural businesses

While viewing the market competitiveness as a source to leverage for demand led growth in Indian agriculture and agri-business it offers wide opportunities for farmers to gain from a vertically integrated farms and markets. For example, a demand driven agriculture with proper market systems can enhance the returns on land and capital. The rapid development of **South Korea, Taiwan, and Malaysia provides ample evidence** that an agriculture-driven strategy can act as a powerful engine for raising rural incomes, industrialization and employment generation. More recently, commercial agriculture has been a powerful engine for economic development in Thailand, where 70% of the population is still employed in the farm sector.

Hence, Indian farmers have little future if they stick to growing food grains on plots that grow ever smaller as the population rises. India's countryside has 600 million people dependent on 250 m. hectares of farmland, an average of less than half a hectare per person. This limited land cannot yield prosperity if sown with cereals. But it could bring prosperity if sown with high-value crops such as fruits, vegetables, flowers and medicinal herbs and the **rural markets are vertically integrated.**

Food Demand Growth trend-Annual %

Sl. No.	Food Commodity	Demand Growth % (Annual)
1.	Pulses	3.33
2.	Oil & Fats	3.60
3.	Milk	4.09
4.	Vegetables	3.64
5.	Fruits	3.97
6.	Meat, Fish and Egg	5.80
7.	Sugar	2.49
8.	Edible oil	2.91

Approach to the 11th Five-year sees great significance of the demand led agriculture growth and especially the integration of rural markets. The improved rural connectivity envisaged through Bharat Nirman is expected to trigger the growth of an integrated national market where rural people are able to meet each other's demand. It intends to establish a rural-rural trade and integrate it vertically with the urban and global markets. Demand led agriculture with diversified crop structure is likely to accelerate the creation of such structures in Indian farm and market spheres.

4. Relevant questions

The above discussion logically and physically supports that Indian agriculture awaits a new set of policy instruments that enable the transition to demand led growth and the establishment of a sustainable demand-supply management.

Answering the following questions would facilitate for the evolution of such a policy framework.

- 4.1. What should be the ideal policy that will help in accelerating the transformation to demand led agriculture and a sustainable food security situation?
- 4.2. While doing this, how to ensure adequate supply of cereals and staples (Wheat, rice, pulses, edible oils, sugar etc.) to the marginalized population in the short and medium term?
- 4.3. What are the instruments that can be used to deploy such policy initiatives and how should they be deployed?

5. Sustainable Agriculture and Food Policy – Options for India

Given the growth potential and the current status of Indian agriculture, it is imperative to evolve an enabling policy framework for its transition from the present supply side approach to a demand led growth path. Such a policy potentially should

- **Eliminate the long-term distortions arising out of food security concerns in a supply driven agriculture.**
- **Facilitate the transition in the farm sector by encouraging crop diversification in the medium term.**
- **Establish suitable mechanisms to maintain the supply-demand balance in food commodities with the mediation of market forces.**

Given the above specific requirements to be sufficed by the policy framework, the suggestions for specific policy areas are:

5.1. Policy on Grain Management

Grain management continue to be the source of food security concerns and thereby the main policy impediment to demand led growth in Indian agriculture. Hence, major reforms envisaged for effective grain management are,

5.1.1. Buffer Strategies

Arriving at realistic food stock levels is one of the main tasks towards effective grain management. Buffer policy can be based on the food entitlements of targeted population (BPL). The food entitlement can be used as benchmark for defining the BPL and accordingly for PDS coverage. As the food entitlement of the individual or family increases above the bench mark with income (employment) they can be brought out of the PDS coverage and left to the market. This helps in reducing the reliance on PDS for food grains and the resultant reduction of buffer levels. This means that the requirement of food stocks for targeted population will reduce over time. Once the requirements are estimated realistically, the problem of **excess stocks** can be eliminated. It helps to minimize the stock holding time as well to reduce the cost of stock maintenance. It will therefore be reasonable

Manifestations of policy Distortion

Buffer Stocks of Cereals with the Central Pool (Wheat & Rice) (Million tones)				
Year	April	July	October	January
Stipulated minimum	15.80	24.30	18.10	16.80
2003-04	32.80	35.17	23.67	24.41
2004-05	20.00	29.92	20.32	21.69

- **To maintain approved buffer levels of specific commodities on a quarterly basis.**
- **Dispose off buffer left over in the open market immediately on completion of the quarter or after crop harvest.**

5.1.2. Grain Pricing and Procurement Policy

Given the preoccupation of food security concerns in the farm policy framework, dilemma exists in the price administration of food commodities. This is essentially in balancing between the farmers and the consumers to sustain the output and consumption levels. The ruling market prices of popular grains above the Minimum Support Price (MSP) makes it redundant as a tool for grain pricing and procurement. On the other hand, crops, which are having higher risks than cereals, are left out to market and other sources of risks. This is a dilemma as how to balance the interests of farmers as well as the consumers.

Supply-Demand Projections-Cereals

Year	Particulars	Rice	Wheat	Coarse Grains	Total Cereals
1. At constant growth in TFP					
2010	Supply	109.3	96	44.1	248.4
	Demand	103.6	85.8	34.9	224.3
	Gap	5.7	10.2	9.2	24.1
2020	Supply	134	127.3	48	309.3
	Demand	122.1	102.8	40.9	265.8
	Gap	11.9	24.5	7.1	43.5
2. At decelerated growth in TFP					
2010	Supply	102.5	86.7	40	229.2
	Demand	103.6	85.8	34.9	224.3
	Gap	-1.1	0.9	5.4	4.9
2020	Supply	120.5	107.6	42.3	270.4
	Demand	122.1	102.8	40.9	265.8
	Gap	-1.6	4.8	1.4	4.6

Cereals availability projections for the future is comfortable.

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Supply-Demand Projections-Oil seeds

Particulars	2004	2010	2015
Total Demand (mmt)	10.9	15.6	21.3
Domestic Supply (mmt)	7.0	10.0	13.4
Deficit (mmt)	3.9	5.6	7.9
Imports (mmt)	4.3	5.9	8.3
Domestic sector details			
Total area under oil seeds (m.hectr)	23.4	28.0	32.0
Yield (T/hect)	1.07	2.0	1.4
Production of oil seeds (mmt)	25.1	33.6	44.8
Imports as share of demand %	39.4	38.1	39.5

Oil seeds will be in short supply

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Supply-Deficit-Pulses (000 tons)

Items/Year	2010	2015
Total Pulses	7458	10415
Gram	3699	5016
Tur	726	1164
Mng	530	770
Urad	593	866
Peas	306	430
Masur	379	545

Pulses are deficit

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In a demand led food market, it should happen like the market forces determine production of grains and its consumption through the mediation of prices. The prices determined by the market forces are to be remunerative to farmers as well as affordable to consumers. This enables the farmers to opt for suitable crop mixes to enhance his returns and thereby the desired transition to a demand led farming. The MSP therefore holds the potential to facilitate and accelerate the transition from the present supply side to demand led agriculture in India by reorienting its use. For example introducing MSP to high value crops reduce the risk farmers shouldering currently and go ahead with desired crop diversification in Indian farm front. It would be beneficial to identify thrust crops for establishing the transition of agriculture to a demand led growth and higher MSPs can be applied to such crops. Rationalizing the prices policies therefore is vital for the growth and substance of Indian agriculture

- **De-link the minimum support price as a policy instrument for food procurement and food security thereof. Buy the Buffer stock requirements at market rates.**
- **Outsource grain procurement to private operators on the basis of least cost tender. Free them to procure the grains locally or globally leveraging the markets and competitive advantage. Continue subsidizing the PDS for BPL.**

- Use MSP for inducing/reinforcing Competitive Advantage in agriculture. Use it as a buyer of last resort for thrust crops, (like Fruits, Vegetables, Pulses, oilseeds, Sugarcane, Cotton etc) which are to be pushed for enabling the structural transition and thereby competitiveness in agriculture.

5.1.3. Restructure Public Distribution System (PDS):

PDS currently is prone to high levels of diversions and high distribution costs. The cost of transferring one rupee to the beneficiary under different food schemes varies from varies from Rs.1.44 to Rs. 6.68. The cost of transferring one rupee to the poor by PDS has been Rs.6.68, Andhra Pradesh Rice Scheme was Rs.6.46, Maharashtra employment guarantee scheme was Rs.1.85 and the integrated child development services was Rs.1.44 (Gulati 2005). Given the high distribution cost of food supplied through PDS and food diversion at various stages, grain distribution can be limited to public, welfare or relief programs only. Public distribution can be restricted to the poorest of poor section (BPL) of the population. The measures for restructuring PDS are

PDS: reliance Vs. Efficiency

	1993	1999
Rural		
Rice	9.4	12.1
Wheat	5.6	4.9
Urban		
Rice	14.2	12.9
Whet	9.2	7.0

PDS share in the total consumption is reducing

Distribution efficiency of grain under different government schemes

* Cost of transferring one rupee to the beneficiary

Scheme	Cost *
Public Distribution System	6.68
Andhra Pradesh Rice Scheme	6.64
Maharashtra Empl.Guarantee scheme	1.85
Integrated Child Dev.Programe	1.44

AARDI

Food Distribution Efficiency

Distribution efficiency of food India		
Scheme	Total cost (Rs)	Transfer Cost*
Public Distribution System	73.16	6.68
AP Rice Scheme	10.63	6.46
Jawahar Gram Samichi Yojana	1.18	2.28
Maharashtra Employment Guarantee Scheme		1.85
Integrated Child development Services	8.8	1.44
*cost of transferring one rupee to the beneficiaries		
<i>Source: Rasheed et. al, 2005, IFFRI</i>		

AARDI

- **Introduce Food stamps / Coupons**
- **Distribute food coupons/stamps through networks like Postal department.**
- **Issue Food stamps / coupons in the name of housewives.**

5.2. Marketing Policy

Movement hurdles in the form of regulations and taxes at various stages across the states has been one of the constraints for the agri-marketing system in India. Tax and fee structures vary across the states. On an average the levies and taxes imposed by state on movement of agricultural commodities range from 12 to 15 %.

Agriculture commodity markets in India are fragmented and the farmers are not able to gain from a common market. An electronic market or Exchange based on short duration compulsory delivery contracts, similar to cash markets of stock exchanges can revolutionize the marketing of agricultural produce. It can reduce the cost of intermediation, increase farmers' realization without increasing the consumer price and bring large number of sellers and buyers on a centralized electronic platform. Currently spot market for agriculture produce exists in varied forms in different states, under the regulation of the respective APMC Act.

- **Establish a common (national) tariff regime or establish a free inter-state trade regime.**
- **Establish an electronic commodity exchange and spot market.**

5.2.1. Establish Special competitive crop zones.

Towards accelerating the marketing of agriculture produce through a common market it is desirable to establish specific crops zones. Around 95 percent of the wheat and 90 percent of rice production in the country is obtained from 5 major producing states. Crop-wise major 5 states in the category of Wheat, Rice, oil seeds and other pulses shall be categorized as special crop zones for specific crop promotion (annexure.1).

- Competitive states in Wheat Rice and Pulses
- Wheat - Punjab, Haryana, UP, Rajasthan, Bihar, Gujarat, MP
- Rice- Punjab, Bihar, UP, Orissa, Assam, West Bengal, Andhra Pradesh
- Pulses- Andhra Pradesh, West Bengal, Gujarat, Assam, Punjab

High MSP levels depending on demand-supply situations in individual states/zones can be used to improve crops yields and scalability of grain procurement.

5.3. Tariff Policy

While pursuing a demand led transition in agriculture and a market driven food security in the long run, India need not overtly be sensitive about food imports in the short or medium term. It is therefore the trade-off to leverage the domestic policy instruments to manage the food contingencies in the transitional phase. This should clear the dilemma of **Make vs. Buy** for domestic consumption needs and inculcate a strategy of leveraging competitive advantage to meet out food insecurity. The major **instrument** that could be used to meet out the short and medium term food constraints is the **tariff rates** and the decisions on imports of required food commodities. Diverting land from cereals to high-value crops mean that India has to import food. Back in the 1960s this would have been viewed as a disaster. But if we import food while exporting high-value commodities, we will be replicating successful **economies like Chile, Israel and Italy**, which export farm products (fruit, wine, olives, speciality seeds), and import food.

The strategies that can be adopted to determine the use of trade instruments are (a) monitor the local and global spot and futures market and (b) the estimates of demand-supply gaps (availability) for specific commodities. This will help to arrive at import decisions. It however, calls for effective **grain management** once again. In this context the grain management involves the use of media to estimate the correct volumes and its procurement and stocking leveraging

instruments, strategies, markets and time. For example, the domestic **oil seed** output in 2006-07 is down by 24 lakh tons. This represents a short supply of around 8 lakh tons of edible oil. This widens the supply demand gap in oil compared to previous year. Hence the demand for oil needs to be met by enhanced imports in the short run. In 2005-06 import of oil was 44 lakh tons. This year it should be 52 lakh tons (minus opening stocks, if available). This is being done currently.

Similarly the futures market indicates that the prices of **wheat, Chana, Urad** etc. are likely to fall marginally with the hitting of new crop in the market by February-march. However, these commodities are likely to command a higher price by May -June. Similarly commodities like **Tur, maize, Masoor** are not likely to move upward in prices in the immediate future. It therefore makes sense to use the tariff instruments to import the identified commodities immediately and in a couple of month's time. **Annexure 2** explains the likely short-term price movement of specific grain and pulses in Indian market.

A market driven farming and food security system therefore can establish the short as well as medium and long-term food security concerns. It however, demands transparent use of instruments for its reliability and system credibility. For example futures market cannot work smoothly, if government starts intervening in specific commodities. This is because of the fact that the price at which government transacts business need not match with the supply-demand dynamics. Such a situation can drive out private investments for the much needed market modernization. **Annexure 3** highlights the projections for long run food supply-demand situations in India.

5.3. Land policies

For long run sustainability of agriculture and food security, suitable land reforms are the major source. This essentially should eliminate the scalability concerns and help in commercialization of farms. For instance, **contract farming** is one of the major engines that can bring in scalability and commercialization of farms. Currently the lease term for contract farming is 12-30 months, which does not allow corporate to deploy long-term investments on the contracted land.

Currently India has 107 million hectares of land under degraded category. Out of which 64 million hectares is under wasteland and 24 million hectares is cultivable waste. There remains, scope therefore to bring additional 24 million hectares into the fold of cropping. If the contract farm lease gets extended to 10-20 years then it can justify capital expenditure on Micro, Drip Irrigation, Pack houses and building other infrastructure to improve the quality and yield – which will be mutually beneficial. The suitable long-term land policy direction therefore should be;

- **Allot more land to private sector on a long-term lease**
- **Extend the Incentives like subsidies for electricity and irrigation to the private lease operators.**
- **Provide tax exemptions on micro irrigation and for the import of micro irrigation systems.**
- **Make micro irrigation compulsory in the command areas of irrigation projects and make it a part of the watershed management programs.**

5.5. Institutional Policy

Institutional interventions are crucial for the smooth transition of agriculture to a demand led growth path and sustain it in the longer run. The transition from the present grain dominated system to high value agriculture would require unlocking of the value chains and strengthening the marketing institutions as well as the infrastructure. Vertical integration of agri - value chains needs legislative supports. For example, in India the Agricultural Produce and Marketing Committee (APMC) requires that agricultural produce be sold only in licensed, regulated markets. Similar is the case with direct purchase by processors from the farmers.

The organized retail trade at the same time is constrained by restrictions on FDI, shop timings, employment and high rates of duties and sales tax. Currently they are liable to pay market fee, purchase tax, sales tax and other levies. Introduction of uniform VAT can benefit this segment. The vertical coordination between farm and firm or the retail chain works effectively when the processors and retail chains are big in size (scale economies) with large demands, assured supplies and homogenous products. Given the above, restrictions on investment are working against the expansion of retailing.

With the commercial orientation of farms and markets, enhancing productivity levels of crops holds the key for sustaining the momentum of growth in the agriculture sector. It therefore calls for enhanced institutional intervention in technology up gradation, R &D. To sustain the growth in agriculture and keeping it globally competitive suitable transformation shall be made in

- **Marketing institutions, that promote vertical integration, reduce market risks and make farming cost effective –**
- **Land and credit institutions, that help small farmers to move up towards high value agriculture,**
- **Institutions that regulate food safety and quality**

- **Institutions that helps in leveraging global competitive advantage**
- **Intuitions that cover crop insurance and encourage forward trade in agriculture.**

6. Policy implications

The outcomes of above policies are to impact the transition of Indian agriculture directly as well as indirectly at various stages. For example, the suggested grain management strategies can provide incentives to efficient zones to continue with staple food crops, by enhancing productivity and scalability. It enables the less efficient zones to diversify and move from the grains to high value crops.

The pricing and procurement policy can help in the price stabilization and protect producers and low-income consumers against fluctuating prices and the market risks. Reduced spending on grain procurement and storage would make more resources available for investment in agriculture. This would help to pick up the momentum of agriculture transition. A sound price policy backed by a national spot exchange for agri produce facilitates for grading, quality certification and standardization of commodities. The facility of on-line trading in the exchange reduces the costs of deliveries. At the same time it enables the farmers to realize the best possible price at the time of sales and guarantee trade and payments. Further, if the goods are delivered at the national spot exchange warehouse, and the quality is approved, a loan up to 70 % of the value can be obtained against warehouse receipt. Simultaneously the corporate/processors/exporters and importers can benefit from the bulk operations without any counter party and quality risks. Such a market offers benefits to end consumers as well as governments. The improved efficiency makes it possible for end users to access quality food commodities at competitive prices. Governments can realize the taxes and cases as all deliveries can be tracked under the sport exchanges.

The marketing policies are expected to improve the efficiency of the system and bring in the vertical integration of farms and markets faster. The coordination of futures' and spot markets can accelerate the farmer's orientation to market forces and the crop choices and the sales of agriculture produce accordingly.

The tariff policy would help in balancing the short-run supply demand imbalances. This would let the transition phase of agriculture from short-run policy dilemmas. This coupled with the market strategies would create an enabling policy framework in the medium term for the farm sector to diversify and grow. The institutional reforms would further facilitate the transition by providing necessary inputs in reducing the risks and volatilities arising out of regulations and smoothen the transition in the agriculture sector.

Data Tables & Charts

Table-1: Growth rates of economy and Agriculture sub-sectors

(At 1993-94 prices)

Period	Agriculture GDP	Total GDP	Growth in Vale of output- Crop Sub - groups			
			Crops	F&V	Livestock	Crops other than F&V
1950-51 to 1959-60	2.93	3.68	3.06	0.56	1.42	3.44
1960-61 to 1969-70	1.27	3.29	1.70	5.82	0.41	1.09
1970-71 to 1979-80	1.94	3.45	1079	2.88	3.92	1.55
1980-81 to 1989-90	3.13	5.38	2.47	2.36	4.99	2.26
1990-91 to 1995-96	3.16	5.56	2.65	4.93	4.25	2.13
1996-97 to 2001-02	1.75	5.53	1.28	4.55	3.47	0.34

Source: Ramesh Chand, 2005, Planning Commission 2005

Table-2: Government of India food Subsidy expenditure & investments in Agriculture (1993-94 prices)

Year	Food Subsidy (Rs.Crore)	% of GDP	Investment (Rs.Crore)	% of GDP
1990-91	2450	0.43	14836	1.92
1995-96	4960	0.44	15690	1.57
1996-97	5166	0.52	16176	1.51
1997-98	7500	0.52	15942	1.43
1998-99	8700	0.49	14895	1.26
1999-00	9200	0.58	17304	1.37
2000-01	12125	0.77	16906	1.28
2001-02	17499	0.98	17219	1.24
2002-03	24176	0.93	18240	1.27
2003-04	25800	-	20510	1.31

Source: Planning Commission, Government of India, 2005

Table – 3: Buffer Stocks of Cereals with the Central Pool (Wheat & Rice) (Million tones)

Year	April	July	October	January
Stipulated minimum	15.80	24.30	18.10	16.80
2003-04	32.80	35.17	23.67	24.41
2004-05	20.00	29.92	20.32	21.69

**Source: Ashok B. Sharma, 2006, Current Science, Vol. 84, No 13 Feb 2003
Economic Survey 2004-05**

Table: 4 - Government interventions in Internal and external market fronts.

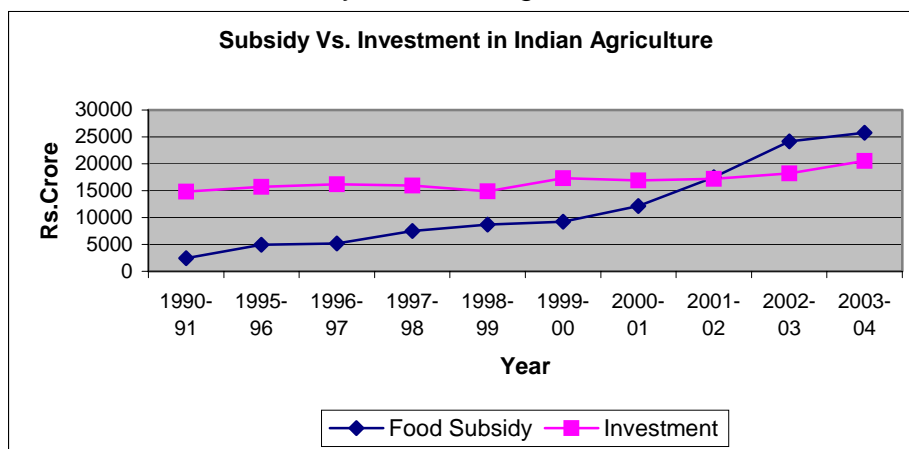
Domestic Front	External front.
<ul style="list-style-type: none"> • At the farmer level. Sets Minimum support price (MSP) and procure commodities. • At the miller front. Impose levy on Rice mills and stocking limits on wheat floor mills. • Consumer front. Fix the retail price for PDS at a lower rate than the market price. 	<ul style="list-style-type: none"> • Exports. MEPS, Quotas etc. • Imports. Canalization through STEs

Table.5 Degree of government intervention in Grain markets

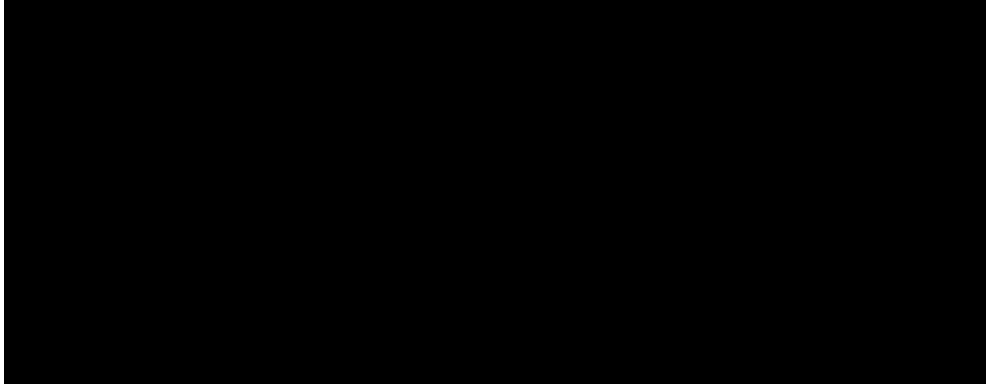
Indicators	2005-06	
	Wheat	Rice
Marketed Surplus ratio	61.4	60.1
Procurement as % to output	21.3	29.5
Procurement as % to marketed surplus	34.4	47.2
PDS off take as % to output	24.7	27.5
PDS off take as % to Marketed surplus	39.9	44.0

. Source: Kumar et.al 2006, Gulati 2000

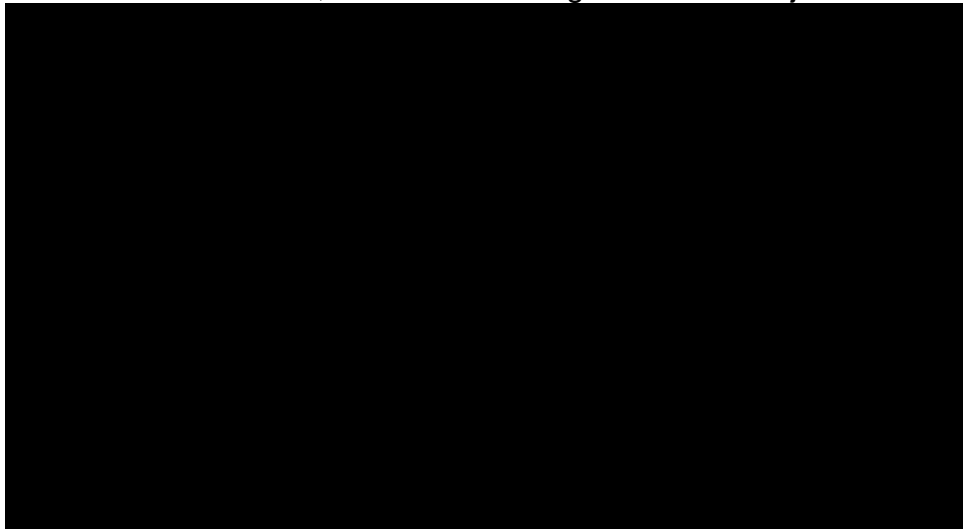
Graph.1: Investment Vs. Subsidy in Indian Agriculture



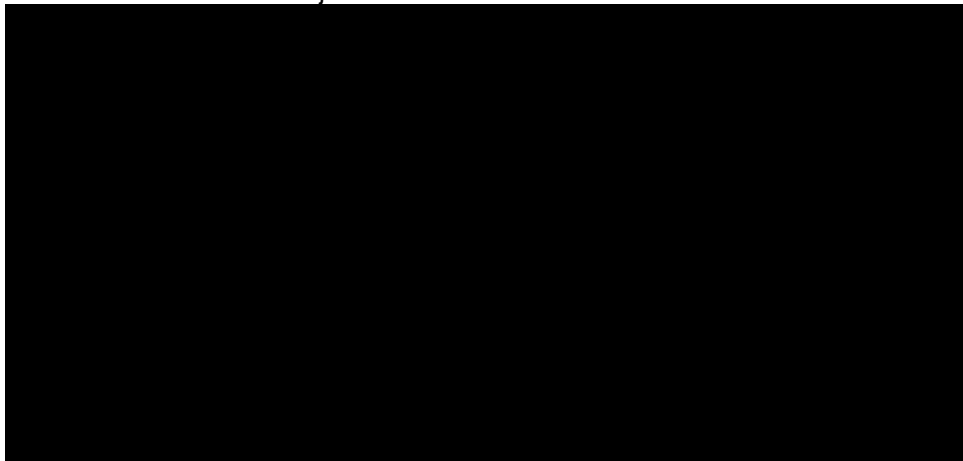
Area under rice in Punjab



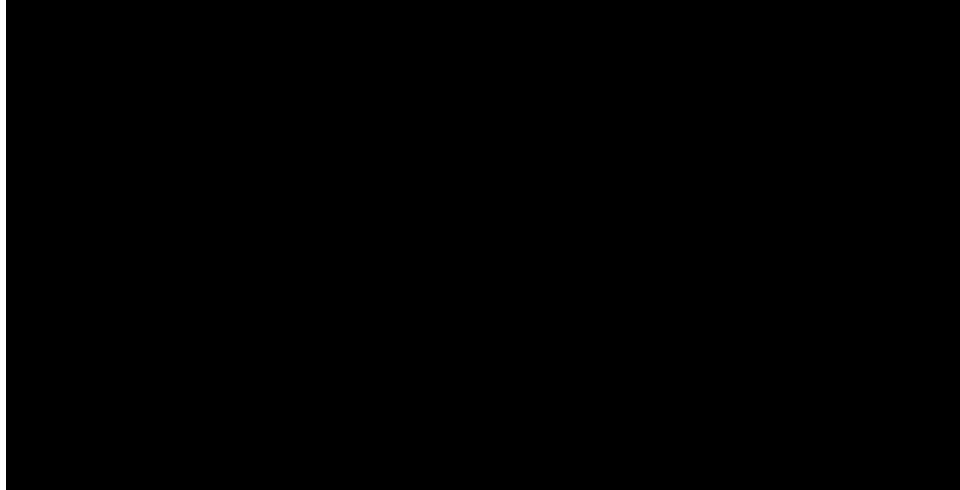
Graph-2: Area under Pulses, oil seeds and sugar cane in Punjab



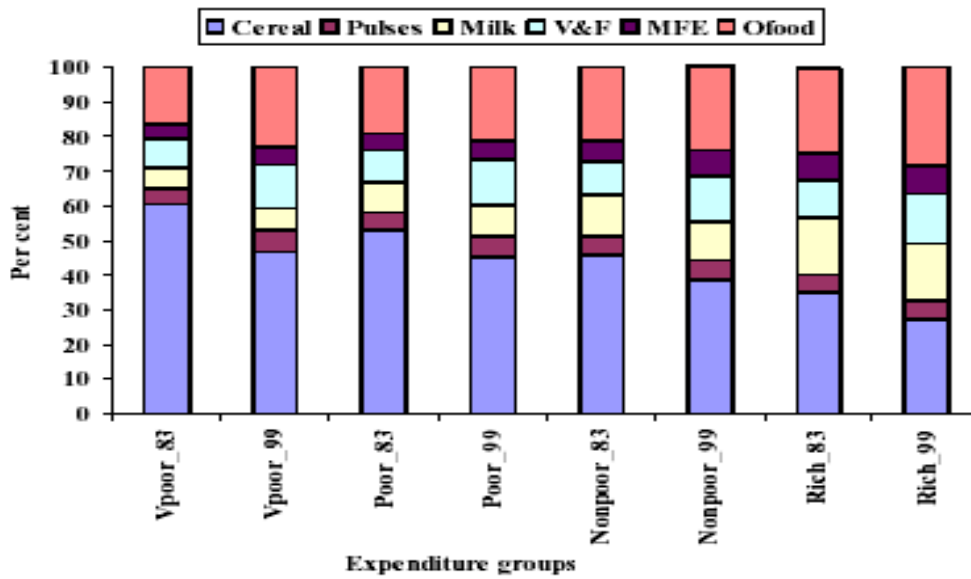
Graph-3: Area under Fruits in Punjab



Graph-4: Area under Vegetables in Punjab



Graph-5: Change in budget share for food groups between 1983 and 1999

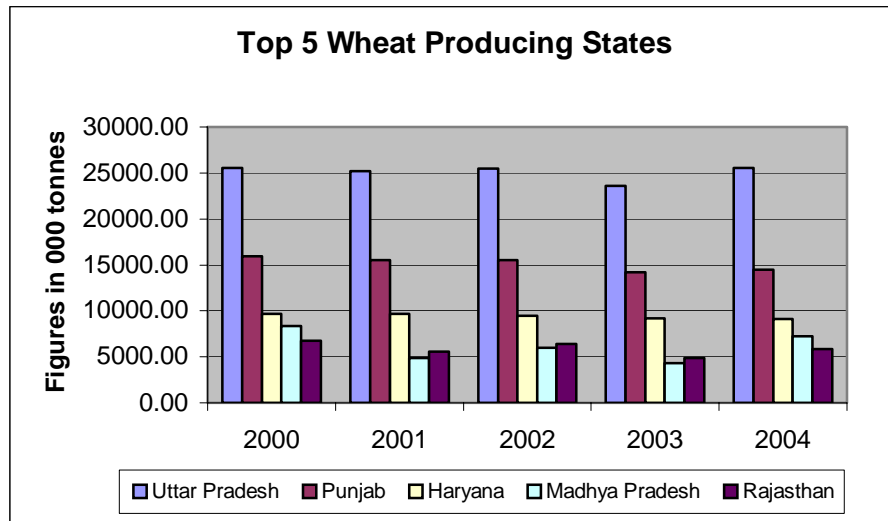


(Source: Structural Shift in Demand for Food: Projections for 2020, Surbhi Mittal, ICRIER)

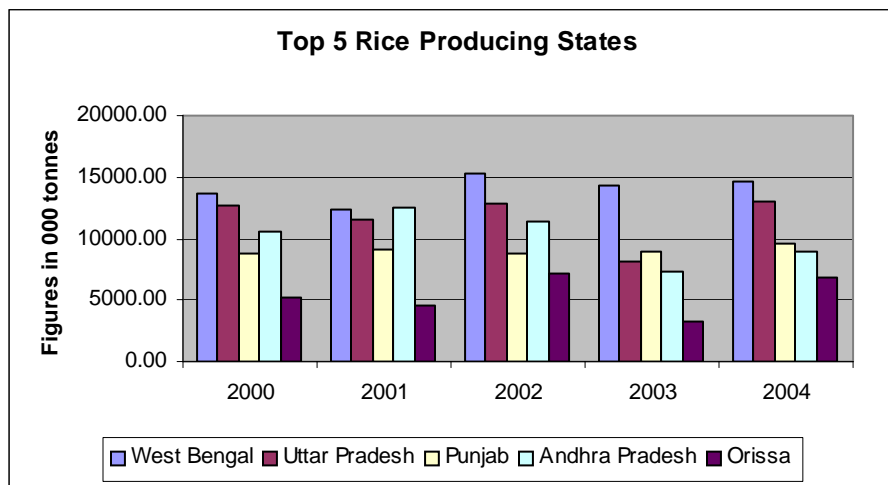
Annexure 1:

Crop-wise major 5 states in the category of Wheat, Rice, oil seeds and other pulses shall be categorized as special zones for specific crop promotion through technical and market interventions.

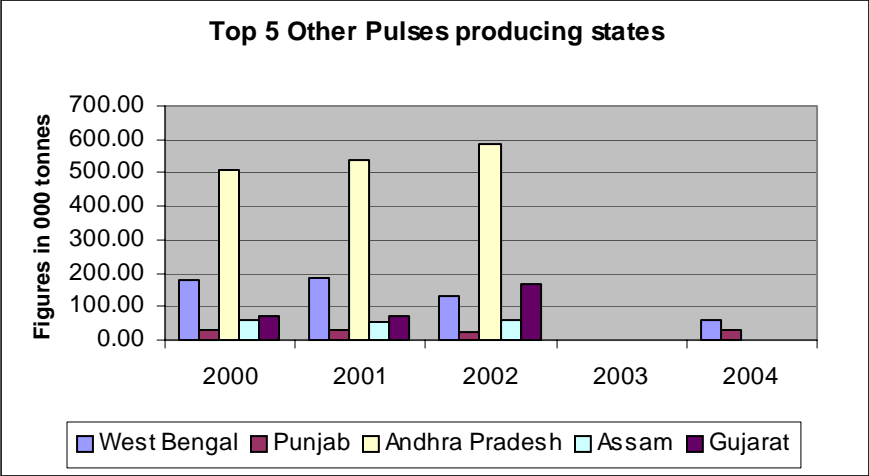
1. Wheat



2. Rice



3. Other pulses



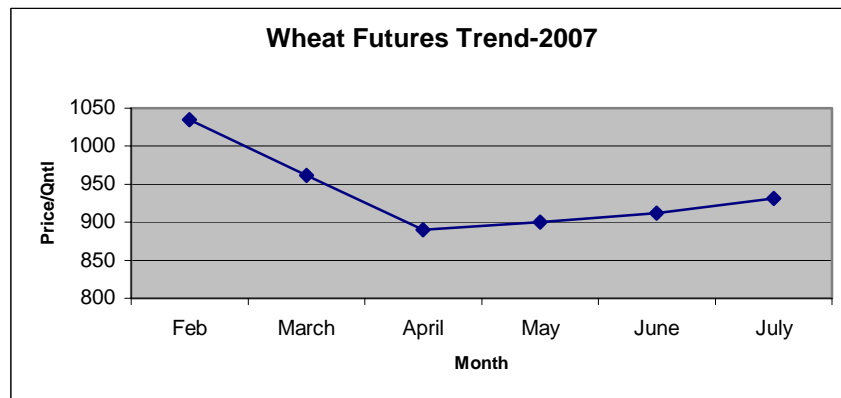
Annexure 2:

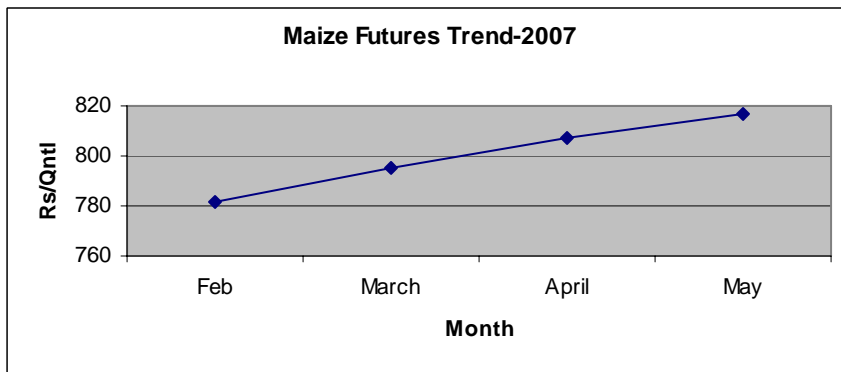
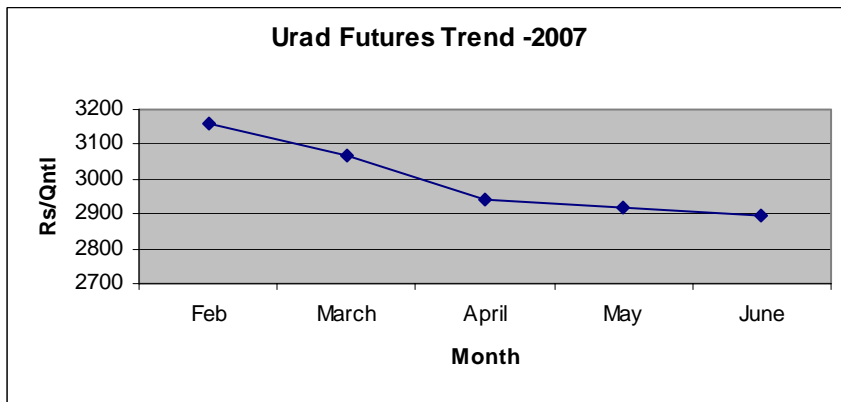
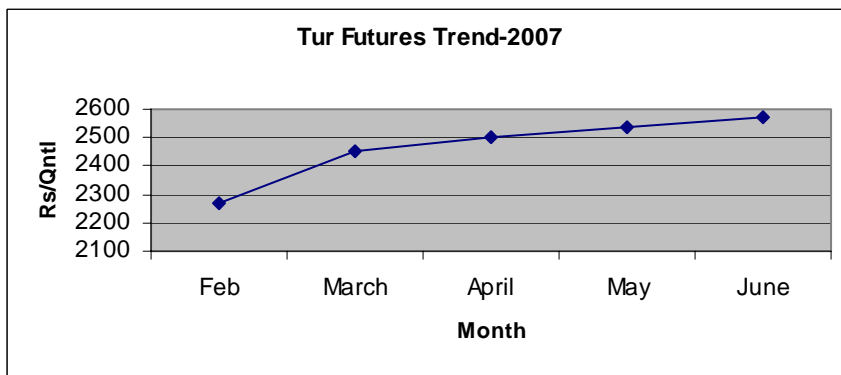
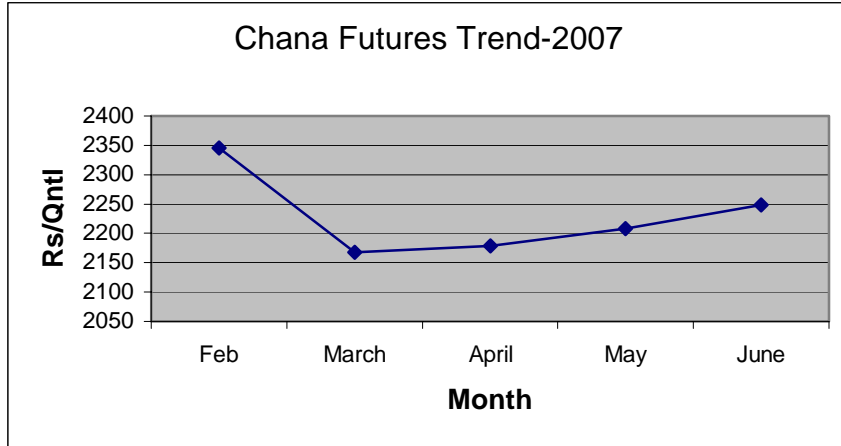
Domestic food market indications for the short-term (2008-09)

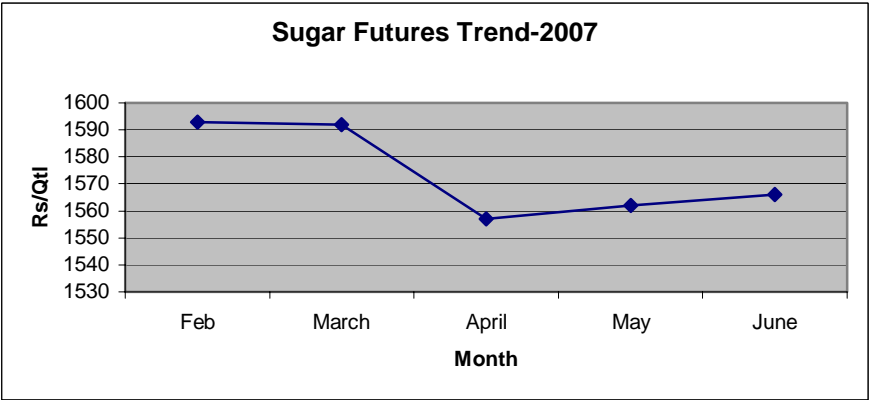
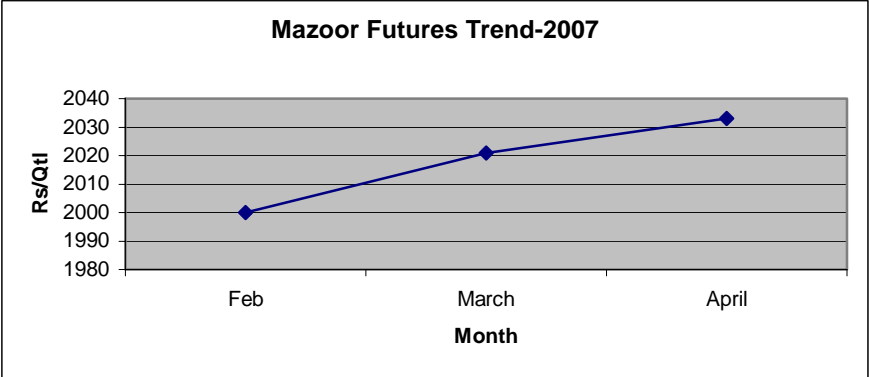
The inflation level of 6.2 percent witnessed by the Indian economy for the week ending January 6, 2007 has been viewed as a short-term phenomenon attributing to the supply side constraint in an end of the crop season hypothesis. It therefore expects that the price levels will sustain at lower levels once the new crops hit the market that may happen by end February or March. What would be the magnitude of the inflation levels mitigated by the new crop arrivals and how sustainable it would be are questions yet to address.

Domestic oil seed output in 2006-7 is down by 24 lakh tons. This represents a short supply of around 8 lakh tons of edible oil. This widens the supply demand gap in oil compared to previous year. Hence the demand for oil needs to be mitigated by enhanced imports in the short run. In 2005-06 import of oil was 44 lakh tons. This year it should be 52 lakh tons (minus opening stocks, if available).

Future's market being an indicator of the short run market behavior and price movements of major food commodities, it indicates that the inflationary pressures fuelled by the food grain prices are likely to persist unless suitable preemptive measures are taken in advance. The prices of cereals though show a tendency to fall in the first quarter; it may hit back in the second quarter with the same supply side constraints. See for example the futures trend in the price movements of major cereals and pulses in the short run.







Annexure 3:

Food Supply and Demand: Future Projections:

a. Cereals

UN projections: Under a scenario of 5 percent growth in GDP one estimate suggests that domestic demand for food grains in India by 2020 would be 201 million metric tons (Rosaiah, 2000). The UN estimate, rather than projecting a particular food requirement figure, proposes the probable means and approaches to reach a near accurate projection of food requirement. It relates the growth in population and productivity levels to reach such a figure. Accordingly, it projects India's population to be at 1301.1 million by 2020 and suggests that supply projections of food under assumptions of input output prices and the total factor productivity would be more authentic. This would be capable of projecting the probable level of food supplies in the country under (a) sustained growth in productivity at the levels prevailing in the 1980s, through a recovery in public investment and (b) continued reduction in the productivity levels owing to further slow down in public investment. With the level of population expected and the productivity levels as suggested in the above alternatives, the cereals register a comfortable supply-demand situation for 2020.

Table 5: Long Run Demand –Supply Gap of Food Grains (Cereals) in India

Year	Particulars	Rice	Wheat	Coarse Grains	Total Cereals
1. At constant growth in TFP					
2010	Supply	109.3	96	44.1	248.4
	Demand	103.6	85.8	34.9	224.3
	Gap	5.7	10.2	9.2	24.1
2020	Supply	134	127.3	48	309.3
	Demand	122.1	102.8	40.9	265.8
	Gap	11.9	24.5	7.1	43.5
2. At decelerated growth in TFP					
2010	Supply	102.5	86.7	40	229.2
	Demand	103.6	85.8	34.9	224.3
	Gap	-1.1	0.9	5.4	4.9
2020	Supply	120.5	107.6	42.3	270.4
	Demand	122.1	102.8	40.9	265.8
	Gap	-1.6	4.8	1.4	4.6

Source: Rosaiah, (APO), 2000

Current Science, Vol. 84, No 13 Feb 2003: Estimation for demand and supply shows that till 2020, India will not be a food deficit economy. Demand for total cereals by 2020 will be 265 million tons and supply will be between 270.4 and 309.3 million tons (table 5).

Table 6 -: Demand projection for cereals towards 2020 (million ton)

Source	Year	Food	Feed	Subtotal	All uses	Growth Rate
Bhalla et al. (IFPRI)	1993	147.12	3.71	150.83	-	-
	2020	246.08	50.11	296.19	-	2.53
Kumar (IARI)	1995	150.6	6.54	156.6	166.67	-
	2020	237.6	15.19	252.25	265.8	1.88

b. Edible oil & Oil Seeds

Edible oil and pulses are projected to be short supply in the medium and longer runs. Hence imports of these commodities are seen as the short run solution, while interventions shall be thought of for enhancing domestic production (through better acreage and productivity levels) in the medium and longer runs. The forecast of demand, supply and other indicators in the edible oil and seed sector of India by 2015 shows a negative supply situation (table.6).

Given the prospects of India's imports of edible oils, it is expected that India may adopt the Chinese approach of importing oil seeds (despite having huge domestic production levels), instead of oil. This favors the vegetable crushing industries. This will indirectly boost the output of locally produced oil seeds. In addition it will provide to meet the increasing demand for animal feed internally.

Table 7: Forecast of oil seed demand supply situation

Particulars	2004	2010	2015
Total Demand (mmt)	10.9	15.6	21.3
Domestic Supply (mmt)	7.0	10.0	13.4
Deficit (mmt)	3.9	5.6	7.9
Imports (mmt)	4.3	5.9	8.3
Domestic sector details			
Total area under oil seeds (m.hectr)	23.4	28.0	32.0
Yield (T/hect)	1.07	2.0	1.4
Production of oil seeds (mmt)	25.1	33.6	44.8
Imports as share of demand %	39.4	38.1	39.5

Source: Robo Bank, 2005

c. Pulses

India's pulses production during the last few years varied between 12-15 million tons. The area under pulses is 12.85 million hectares and yield range between 600 –1200 kgs per hectare. **The demand for pulses by 2020 is expected to be in the range of 34 million tons. This would be a dependence of around**

50% on import sources, if domestic supply levels don't improve substantially. Major pulses constituting the import basket of India are chickpeas, greenpeas, moong, tur, urad and chana. The demand supply gap of pulses in India in the medium and longer term has the scope of widening (table 7)

Table 8: Demand – supply gap (deficit) of pulses in India (000 tons)

Items/Year	2010	2015
Total Pulses	7458	10415
Gram	3699	5016
Tur	726	1164
Mng	530	770
Urad	593	866
Peas	306	430
Masur	379	545

Source: Government of India 1999. NPC, 2000

d. Demand growth in High value commodities

Current Science, Vol. 84, No 13 Feb 2003: The demand for non-cereal commodities are likely to be fast growing. It is expected to grow by 50% more than the growth in cereal demand. Demand for pulses, edible oils and vegetables would increase in the range of 2.9 and 3.0% and that of fruits and livestock products by more than 3.2 %. The growth rates achieved in supply in the recent past are higher than the growth rate in demand for all commodities except pulses and oilseeds. In case the growth in supply of deficit commodities fails to keep pace with the trend in demand, the gap has to be filled either through import or it would increase in relative prices of the concerned commodities (table.8).

Table 9: Demand growth forecast for major commodities

Sl.No	Food Commodity	Demand Growth % (Annual)
1	Pulses	3.33
2	Oil & Fats	3.60
3	Milk	4.09
4	Vegetables	3.64
5	Fruits	3.97
6	Meat, Fish, Egg	5.8
7	Sugar	2.49
8	Edible oil	2.91

Source: FAO, 2000

Observations on food stocks Vs. security:

Ashok B.Sharma, 2006: It is not certain that by keeping the stipulated minimum buffer levels would ensure a scenario of food security. For example in 2003-04 and 2004-05 more than the stipulated minimum quantity of food grains were in

store (table 9). Moreover, an analysis of the recent trend in wheat and rice availability in Government godawans show that it was always above the stipulated level till April 2006 (Ministry of Consumer Affairs and Public Distribution). Hence, the food insecurity syndrome arises often is not out of availability constraints, rather it may be an accessibility problem (see table 3 page 17).