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Production and Utilization Pattern of the Major Agricultural Commodities in India: Role of Statistics in its Rationalization

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SUMMARY

Agriculture traps and converts solar energy into chemical energy in the form of harvested biomass such as grains, roots, fruits, fibre, flesh, milk, etc. and these harvested biomass are processed and transformed into various edible products to derive nutrition and sustain life. Since food is the basic form of energy needed by human beings, its production through agriculture has been and continue to be, the most important human occupation on the planet earth to sustain life and the civilization. Agriculture is a rural based occupation and provides food essential for human survival and has contributed significantly in evolving various cultures/civilizations all over the world. India is predominantly an agricultural economy and 65-70% of the population live in villages and earn their livelihood through agriculture. It has traditional wisdom, knowledge, skill and crafts to practice agriculture. As of now India produces about 750 million tones of raw food materials of plant and animal origin. Raw food and feed commodities of plant and animal origin are processed into various value added products for human and animal consumptions to derive nutrients needed for growth, development and maintenance. During processing, there are positive as well as negative changes in nutritional value and quality of the end products. These need to be documented and nutritional profile of the end products should be known to consumers for an effective diet planning to keep better health and happiness. Each agricultural commodity, after harvesting, moves towards consumption and in the process get subjected to a number of operations, such as cleaning and grading; drying and storage; processing and value addition; packaging and transportation; stocking and marketing; preparation and utilization; metabolism and activity. There is a need to have data on as to what happens to the commodity from production to consumption value chain. Data such collected are to be analyzed and recommendations made as to what is the best value-chain for a particular commodity in terms of delivery and absorption of nutrients/ comfort to the consumer and at what cost, energy and environmental safety. The statistics about production and utilization pattern of the major agricultural commodities such as cereals, pulses, oilseeds, F&V and dairy products may help in planning as to how these commodities could be best utilized in respect of nutritious delivery and economic gains.

Key words : Biomass production, Value addition, Physical route.

1. INTRODUCTION

Agriculture traps and converts solar energy into chemical energy in the form of harvested biomass such as grains, roots, fruits, fibre, flesh, milk, etc. and these harvested biomass are processed and transformed into various edible products to derive nutrition and sustain life. Since food is the basic form of energy needed by human beings, its production through agriculture has been and continue to be, the most important human occupation on the planet earth to sustain life and the civilization.

Life on earth has evolved many centuries ago in the form of microbes and later on as plants, animals and finally as human being, the highest form of life. Hunting and gathering of foods from the natural resources like forests and water bodies were the major occupation of the people as food was the first and foremost requirement

for their survival and living. As of now, the earth is carrying more than 06 billion people and their accompanying livestocks. Out of three major inhabitants (plant, animals and humans) on the planet earth, only green plants can synthesize their food through the process of photosynthesis. Human being and animals are heterotrophs and need ready-made organic nutrients like carbohydrates, proteins, fats, minerals and vitamins for growth and development. Humans obtain their food from plant and animals through agriculture.

Agriculture is practiced in two phases. One is the production agriculture in which commodities of plant and animal origin are produced using natural resources like soil, water and bio materials along with other inputs like seeds, feeds, fertilizers, chemicals, machine and management. The goal is to get maximum productivity per unit land/animal and inputs. The 2nd phase is post-production agriculture where the major targets are loss prevention and value addition. Agriculture is practiced for self and/or trade.

Agriculture is a rural based occupation and provides food essential for human survival and has contributed significantly in evolving various cultures/civilizations all over the world. India is predominantly an agricultural economy and 65-70% of the population live in villages and earn their livelihood through agriculture. It has traditional wisdom, knowledge, skill and crafts to practice agriculture.

Rural population of India was 91% in 1901 and now it is projected that by 2006, it would be about 65% and may reach as low as 50%, by the year 2020. There is a need to check rural migration to urban areas and it could be done by providing urban facilities in rural areas (PURA).

2. BIOMASS PRODUCTION AND VALUE ADDITION

As of now India produces about 750 million tones of raw food materials of plant and animal origin (Table 1). All these commodities are processed and transformed into value added products. There are three routes to value addition - Physical, Chemical and Biological.

Physical route includes milling of cereals, pulses and oilseeds, minimal processing of fruits and vegetables, refrigerated storage of perishables for enhancing shelf-life, puffing, roasting, baking and frying of food items, membrane separation of desired constituents/compounds and so on.

Table 1. Production of some of the major, plant and animal based foods, feed, fibre & fuel commodities in India

Agricultural commodity	Production in million tones	Remarks
Cereals	195	Out of total biomass production, the desirable constituents are 10-40% and rest are crop/animal residue and byproducts.
Pulses	15	
Oilseeds	25	
Fruits	50	
Vegetables	100	
Sugarcane	250	
Milk	91	
Fish	8	
Egg	3	
Meat	6	
Spices	4	
Tea & Coffee	1	
Cotton	4	
Jute	2	

Chemical routes are, solvent extraction of oils, separation of oleoresins, medicinal and aromatic compounds, oil refining and so on.

Biological routes are, enzymes (fermentation), animals (cow, buffaloes, goats, sheep, etc.), honey-bees, poultry, fishes, silk-worm, lac insects and so on. Through this route, low value plant based materials are transformed into high value food, feed, fibre and other products of human and animal use.

3. PROCESSING AND UTILIZATION

Raw food and feed commodities of plant and animal origin are processed into various value added products for human and animal consumptions to derive nutrients needed for growth, development and maintenance. During processing, there are positive as well as negative changes in nutritional value and quality of the end products. These need to be documented and nutritional profile of the end products should be known to consumers for an effective diet planning to keep better health and happiness. The approximate conversion ratio of raw materials into desirable products is given in Table 2 and a list of some of the post-harvest equipment and food processing units are given in Table 3.

Table 2. Conversion ratios between agricultural raw material and desirable processed product

Raw material	Commodity/Desired Products	Conversion Ratio
Rice	Rice (cleaned) production	2/3 of paddy production
Cotton	Cotton production	1/3 of kapas production
	Cotton seed production	2/3 of kapas production
		2 times of cotton lint production
Jute	100 yards of hessian	54 lb. of raw jute
	4,148 yards of hessian	1 ton of raw jute
		5.55 bales of raw jute (of 180 kg each)
	1 tonne of sacking	1.11 tonnes of raw jute
		6.17 bales of raw jute (of 180 kg each)
	1 tonne of hessain, sacking, etc	1.05 tonnes of raw jute
		5.85 bales of raw jute (of 180 kg each)
Groundnut	Kernel to nuts in shell	70 percent
	Oil to nuts in shell	28 percent
	Oil to kernels crushed	40 percent
	Cake to kernels crushed	60 percent
Sesamum	Oil to seeds crushed	40 percent
	Cake to seeds crushed	60 percent
Rapeseed & mustard	Oil to seeds crushed	33 percent
	Cake to seeds crushed	67 percent
Linseed	Oil to seeds crushed	33 percent
	Cake to seeds crushed	67 percent
Castor seed	Oil to seeds crushed	37 percent
	Cake to seeds crushed	63 percent
Cotton seed	Oil to seeds crushed	14 to 18 percent
	Cake to seeds crushed	82 to 86 percent
Coconut	Copra to nut	One tonne of copra= 6,773 nuts(Approx.)
	Oil to copra crushed	62 percent
	Cake to copra crushed	38 percent
Niger seed	Oil to seeds crushed	28 percent
	Cake to seeds crushed	72 percent
Kardi seed	Oil to seeds crushed	40 percent
	Cake to seeds crushed	60 percent
Mahua seed	Oil to seeds crushed	36 percent
	Cake to seeds crushed	64 percent
Neem seed	Oil to kernels crushed	45 to 50 percent
	Cake to kernels crushed	50 to 55 percent
Soybean seed	Oil to soybean seed crushed	18 percent
	Meal to soyabean seed crushed	73 percent
	Hull from soyabean seed crushed	8 percent
	Wastage from soyabean seed crushed	1 percent
Sugar	Gur from cane crushed	10 percent
	Crystal sugar from gur refined (gur refineries)	62.4 percent
	Crystal sugar from cane crushed (cane factories)	9.97 percent
	Khandsari sugar from gur refined	37.5 percent
	Molasses from cane crushed	3.5 percent
	Cane thrash*from cane harvested	10.0 percent
Lac	Seed lac	66.0 percent of stick lac
	Shell lac	57.4 percent of stick lac or 87 percent of seed lac
Cashew nuts	Cashew kernels	25 percent of cashew nuts
Butter and ghee	Butter from mixed milk	6.9 percent
	Ghee from mixed milk	5.5 percent

Table 3. Some of the equipment and machinery for processing and value addition to agri produces in India

Processing equipment and plants	Appropriate Number
Rice mills (small & big)	97,000
Rice puffing units	2000
Flour mills	2,66,000
Spice mills	15000
Roller flour mills	830
Dal mills	20,000
Sugarcane processing units	500
Oil expellers	1,50,000
Solvent extraction plants	650
Oil refineries	1000
Hydrogenation units	240
Fruits and Veg. Processing units	6000
Cold stores	1000
Fish freezing units	370
Fish processing and storage units	500
Meat processing units	200
Bakery plants	50,000
Dairy product processing	530
Package potable water units	215
Aerated cold beverage units	100
Alcoholic beverage units	12
Beer production units	55

Each agricultural commodity, after harvesting, moves towards consumption and in the process get subjected to a number of operations, such as cleaning and grading; drying and storage; processing and value addition; packaging and transportation; stocking and marketing; preparation and utilization; metabolism and activity. There is a need to have data on as to what happens to the commodity from production to consumption value chain. Data such collected are to be analysed and recommendations made as to what is the best value-chain for a particular commodity in terms of delivery and absorption of nutrients/comfort to the consumer and at what cost, energy and environmental safety.

It is estimated that total size of food processing industry is Rs. 35,00,000 million including Rs. 9,90,000 million worth of value added products. The DFI in food industry in India till 2005 has been about Rs. 26,000 million.

India produces over 125 million tones of paddy and over 250 million tones of rice biomass. In order to make an effective use of every part of the rice plant-grains, straw, husk and bran, identification and use of appropriate post-harvest processing technology of paddy are necessary. A wide range of rice enterprises - both micro and macro can be established and operated economically. These units can be classified as:

- Tiny, upto Rs. 5 lakh investment
- Small, Rs. 5-25 lakh investment
- Medium, Rs. 25-300 lakh investment
- Large, Rs. 300 lakh or more investment

There has been spectacular agricultural progress in India but still nearly 250 million children, women and men go to bed partially hungry everyday. This is due to the inadequate purchasing power and not due to physical shortage of food in the market. India's rich human resource will remain unutilized, unless every individual has economic access to balance diet and clean drinking water. 65-70% of Indian population live in rural areas, where the principal source of livelihood are crops, horticulture, animal husbandry, fisheries, agro-forestry and agro-processing. There is currently a mismatch between production and post-harvest technologies with the result that value-addition to primary products is poor.

4. FRUITS & VEGETABLES

India is the 2nd largest producer of fruits and vegetables (F&V), accounting for about 10% of global F&V production. India produces about 100 Mt of vegetables & 50 Mt of fruits. The major fruit producing states are Maharashtra (21%), Andhra Pradesh (14%), Tamil Nadu (10%) and Karnataka (9%). The leading vegetable producing states are West Bengal (20%), Uttar Pradesh (17%), Bihar (9%) and Orissa (8%). Major F&V producing states are listed in Table 4.

Table 4. Major F&V producing states of India

Fruits	Vegetables
Maharashtra, 21% Andhra Pradesh, 14% Tamil Nadu, 10% Karnataka, 09%	West Bengal, 20% Uttar Pradesh, 17% Bihar, 9% Orissa, 08%
Rest of India, 46%	Rest of India, 46%

About 2% of total F&V produced in India is processed (Table 5) into jam, pickles, sauce/ketchup, pulp/ concentrate, juice, squashes, chips, cooking paste, fruit based drinks, ready-to-eat vegetables, etc. Fresh packed F&V are primarily exported for the Indian ethnic population. Fresh and organics F&V are in good demand.

Table 5. Processing levels in fruits & vegetables sector in some of the countries of the world

Country	Level of Processing
USA	80%
Malaysia	80%
Philippines	78%
Brazil	70%
Thailand	30%
China	23%
India	2.2%

The average Indian yields are low in comparison with the world best. However, yields of banana and grapes are at par. Apart from yields, F&V varieties are lacking in amenability to processing such as for oranges, potatoes and tomatoes. Shelf-life is low. Alphonso the prized mango of India, has a low shelf-life of not more than 20 days in an appropriate cold store conditions due to its thin skin. This renders it unfit for long distance transport. There is a need to focus on a few fruits and vegetables varieties and develop to make them fit for processing. It may be done in conjunction with a select private sectors who can support marketing tie-ups with farmers for new varieties. This will ensure that farmers have an access to assured market for their produce and get adequate support in cultivation and post-harvest practices.

There is a wide fluctuation in the prices of Indian F&V based processed products. One of the reasons is manipulative practices of middlemen involved in trade. Diversity in production cycles of F&V provides the key competitive advantage in international markets. It is possible to find regions in India with different harvest seasons depending upon the climate and conditions under which the crops are grown. This makes it possible to produce F&V throughout the year for both domestic and export markets.

Some of the problems in F&V sector are high freight rate in India as compared to other countries; low quality standards; lack of backward linkages; inability to invest in market development; limited understanding of alternative uses of processing facility; lack of information on supply/demand trends; less prevention of food adulteration; taxes; less knowledge about Government incentive & schemes.

5. MILK & MILK PRODUCTS

India ranks first in the world in terms of milk production which as of now stands at 91 million tones and growing at CAG rate of 4% and the world milk production is about 615 million tones growing at a CAG rate of 1.1%. Despite higher growth rate, the per capita availability of milk in India is about 230 g/day which is lower than the world average of 285 g/day. Buffalo milk is now estimated to account for 57% of the total milk production in India.

India has a unique pattern of producing, processing and consuming of milk, which is not comparable with any large milk producing country. Approximately 70 million rural household (primarily, small and marginal farmers and landless labourers) in the country are engaged in milk production. Over 11 million farmers are organized into about 0.1 million village dairy cooperative societies (DCS), 110 farmers per DCS. The cumulative milk handled by DCS across the country is about 18 million kg of milk per day. These cooperatives form part of a national milk grid which link the milk producers throughout India with consumers in more than 700 towns and cities bridging the gaps on account of seasonal and regional variations in the availability of milk. The Anand Model which is owned and operated by the farmers has progressively eliminated middlemen, enabling direct interface of producers with processors.

The key issues in milk production includes low productivity (Table 6) of milch animals and lack of quality control and monitoring mechanism across the supply chain. India has largest population of cattle (186 millions) and buffalo (97 millions) in the world. While the average productivity of Indian cows is among the lowest 800 kg/year in the world, the productivity of Indian buffaloes is among the highest in the world.

Table 6. Average milk yield of cows in India and in some other countries of the world

Country	Average milk yield kg/year
India	800
Australia	4800
European Union	5700
USA	8400
Israel	11000
World Average	3100

There is a strong correlation between the quality of raw milk and that of the processed products (Tables 7 & 8). The bacteriological quality of raw milk in India at the time of milking is comparable with that in leading milk exporting countries namely, Australia, New Zealand, EU. However, there is a significant deterioration in milk quality from farm to factory. The deterioration takes place on two accounts.

- Lack of all-weather roads, electrical supply for chilling centres, potable water supply and sewage disposal
- Contamination through equipment, loss of time and lack of temperature controlled storage and transportation.

Table 7. Bacterial counts in milk at various temperatures and time interval

Tempe-rature, OC	Time interval, hours			
	Bacterial count, SPC/ml, in 1000			
	0	24	48	72
4.4	4	4	5	8
10	4	15	125	6000
15	4	1600	33000	326000

Table 8. Bacterial counts in different milking conditions

SPC/ml, in 1000

Milking conditions	Time interval, hours			
	Fresh, 0	24	48	72
Clean cows, environment and utensils	4	4	5	8
Dirty cows, environment and utensils	136	281	538	749

The time lag coupled with transportation at ambient temperature results in deterioration of quality in terms of sensory properties (odour, taste, colour), composition (fat, SNF, protein, etc.), hygiene (bacteriological-pathogenic, somatic cells) and also leads to adulteration (water, foreign substances). The impact of the time lag and temperature during storage/transportation, on bacterial count in milk highlights that an incremental increase in temperature prior to pasteurization can lead to an exponential increase in bacterial count (EU standard allow a maximum of 100,000 spc/ml). Hence, transportation and storage under controlled temperature conditions is critical to preserve the quality of milk. However, cooling does not replace the need for hygienic milking conditions.

The solution to the above issues lies in identifying and addressing handling, storage and transportation practices from the producers to the dairy plant and onward to the consumers, and facilitating improvement of hygiene, sanitation, food safety and operating efficiency in dairy plants.

About 35% of milk produced in India is processed. The organized sector (large scale dairy plants) processed about 13 million tones (14%) annually while the un-organized sector (halwaies and vends) processed about 22 million tones (24%) per annum (Table 9). In organized sector, there are 676 dairy plants in the cooperative sector, private and government sectors, registered with GOI and states. The estimated market is about Rs. 1000 billion.

India should increase the level of processing in the dairy sector, standardize and commercialized ethnic milk products and improve the quality and hygiene of

Table 9. Processing of milk in India in organized and unorganized sectors

Degree of processing	Type of products	Volume handled	
		Quantity, Mt	% Share
Unprocessed	Retained by rural consumers and sold to non-producers	39	44
	Sold as loose milk in urban areas	17	17
Processed in organized sector	Packed liquid milk	8	9
Processed in unorganized sector	Value added products*	22	24
Processed in organized sector	Value added products*	5	6
	Total	91	100

* Various value added products are ghee (clarified butter), sweets (khoa & chenna based), butter, milk powder, paneer (cheese), and ice cream.

production of milk and milk products. It would enhance its global market share in the sector.

6. OILSEEDS & EDIBLE OIL

India is the world's 4th largest vegetable oil economy. It has 15000 oil mills, 600 solvent extraction plants, 230 hydrogenated oil plants, and over 500 refineries employing about one million people.

India is also the 2nd largest importer of edible oil, next to China, and the 3rd largest consumer after China and EU. Each year India consumers about 11 million tones of edible oils and the per capita consumption of edible oil in India is about 11 kg/year, considerably lower than in most of the developed countries. Palm oil (mainly imported) and soybean oil account for almost 50% of total edible oil consumption in India, followed by mustard and groundnut oils. However, their productivity as compared to world average is very low (Table 10).

There are regional preference of edible oils. For example mustard/rapeseed in north and east; groundnut in west; soybean in north & central India; and coconut in south.

The price of edible oil is the key driver of demand. In India, a large proportion of edible oil is sold as loose oil or Vanaspati. Only a small percentage of edible oils are sold in branded form.

Groundnut, soybean and mustard, all together account for over 80% of the output of cultivated oilseeds in India. India imports 45-50% of its edible oil requirements. With the steady growth in population and personal income, edible oil consumption volumes experienced a growth of 4% in the period from 1998-99 to 2001-02 while rise in population is 1.9%. Edible oil utilization pattern is

- Branded edible oil 10%
- Un-branded edible oil 90%

Among branded oils, refined oils account for 55-60% of consumption and the filtered oils account for the balance. Mustard, sunflower & groundnut oils together account for about 80% of branded edible oil consumption. Soybean is rapidly gaining share from these oils on account of more favourable price. Edible oil demand is expected to grow by 5-6% per annum, which translates into consumption of 15 and 20 million tones of edible oil in India by 2010 and 2015 respectively.

Indian oilseeds production is characterized by low-yields and decreasing production. Oilseeds are generally grown on marginal and sub-marginal lands under low inputs. Less than 25% oilseeds are gown under irrigated condition. The major edible oilseeds are soybean, mustard/rapeseed, groundnut, sesame, coconut, cotton, palm, sunflower. Corn germ and rice bran are also sourced for edible oils. Indian oilseed yields are about 50% of the world average and almost 30-35% that of the leading countries/producers in the world.

There is need to increase average yield of oilseed from 1.07 t/ha to 1.4 t/ha by 2015. Develop high yielding,

Table 10. Yields of oilseeds in India and that of the world average and leading world producers

Tonnes/ha

Oilseed	Oilseed yields (tonne/ha) , t/ha			
	India	Best State yield of India	World average	Leading countries
Soybean	1.05	1.25 (Maharashtra)	2.27	2.25 (USA) 2.80 (Brazil) 2.85 (Argentina)
Mustard/Rapeseed	0.76	1.49 (Haryana)	1.52	1.42 (Canada) 1.60 (China) 2.87 (Germany)
Groundnut	0.94	1.72 (Tamil Nadu)	1.4	2.97(Nigeria) 2.98 (China) 3.50 (USA)

early maturing and disease/pest resistant varieties of oilseeds with higher oil content suitable for different agro-climatic zones of the country. Selective mechanization for sowing & planting, digger/harvester, decorticators, scotching machine for linseed, is needed for higher oilseed productivity.

7. SOYBEAN

Soybean is an environment friendly grain legume and has now become a major source of protein, oil and health promoting phytochemicals for human nutrition and livestock feed around the globe. It is a leading source of edible oil constituting about 30 per cent of the world supply. Use of 30-50 g of processed soybean in daily diet protects human health and enhances longevity. Soybean cultivation also improves soil health because of its atmospheric nitrogen fixing ability and deep root system. It, therefore, suggests that soybean is a human, animal and soil friendly crop and its production, processing and utilization need to be encouraged and promoted for the betterment of the planet earth and its inhabitants. India has a great potential for production and domestic utilization of soybean and its derivatives for health and economic benefits of the people of the country.

Taking an average market price of soybean as Rs. 12,000/tone and total soybean production as 5 million tones, the commercial/market value of soybean is about Rs. 6000 crores (one crore=10 million). When it is processed into oil and protein (as soymeal for livestock feed/edible grade defatted soyflour), the marketable value of such products would be Rs. 7600 crores @ Rs. 40,000/tone for 0.9 million tone of soybean oil and @ Rs. 10000/tone for 4 Mt of soymeal based livestock fed and/or defatted soyflour). If all the 5 Mt of soybean is processed into fullfat soyflour (FFSF) and used to fortify wheat and/or chickpea flour for better quality proteins and higher contents, the retail market cost of processed soy product as FFSF and byproducts (consisting of hull, germ/embryo and brokens) as livestock feed would be Rs. 8500 crores @ Rs. 20,000/t for 4 Mt of FFSF and @ Rs. 5,000/t for one Mt of byproducts) 42 per cent monetary value is added to soybean through primary processing by transforming it into FFSF (Rs. 8500-Rs.6000 = Rs. 2500 crores). Similarly, if one kg soybean costing Rs. 12 is transformed into soymilk (5 litre/kg of soybean) and soypaneer (1.5 kg/kg of soybean) and assuming the retail price of these soyproducts at 50 per cent of animal milk (Rs. 12/litre) and animal milk paneer (80/kg), the monetary value addition to soybean in the form of soymilk and soypaneer would be 150 and 400 per cent respectively.

Direct food uses of soybean in the form of soyfortified cereal/legume flour, soymilk, soypaneer, soybased sattu, roasted/fried/fermented soysnacks, soymillet based extruded/baked food products, etc. are more nutritious and healthful and also economically affordable by majority of the Indian population. Soyprotein is the best among all plant proteins and at the same time, soybean is most economical source of protein in the world. Cost of one kg of soyprotein in the form of FFSF is Rs. 50 only whereas it is Rs. 100 from groundnut kernel, Rs. 130 from pulses, Rs. 180 from egg, Rs. 300 from milk, Rs. 360 from fish and Rs. 540 from goat/sheep meat (Table 11). Moreover, the absorption/

Table 11. Comparative analysis for protein content and its cost in some selected protein food sources in India

Protein source	Cost of food items (Rs/kg)	Protein content (%age)	Cost of protein (Rs/kg)
Soybean (FFSF)	20	40	50
Groundnut (kernel)	25	25	100
Pulses (splits/dal)	30	25	130
Egg	30	16	180
Milk	12	4	300
Fish	60	16	360
Meat	90	16	540

FFSF = Fullfat soyflour

assimilation of health promoting soybean phytochemicals by humans may be better when taken/eaten alongwith foods prepared from whole soybean that when these chemicals are extracted and isolated from soybean and then later used as medicine/micro-nutrients as and when required. Examples are soybased isoflavones, lecithin, dietary fibre, fatty acids, etc. It is, therefore, suggested that direct food use of soybean is in human interest on account of health and economic benefits and needs to be encouraged and promoted.

The utilization pattern of soybean is that 10% of total production is retained by farmers for seed, 20% goes for direct utilization towards food and feed and the rest 70% goes for oil extraction. The share of direct food uses of soybean is increasing in India as well as the

world over. Soybean oil is consumed domestically and about 80% of total soymeal is exported which earns about Rs. 25,000 million equivalent foreign exchange.

The statistics about production and utilization pattern of the major agricultural commodities such as cereals, pulses, oilseeds, F&V & dairy products may help in planning as to how these commodities could be best utilized in respect of nutrition delivery and economic gains to farmers. The status of overall processing of food commodities in India is given in Table 12 and comparison of some of the overall developmental parameters, modern conveniences and economy are given in Table 13, 14 and 15. It shows that India has to run fast to overtake China.

Table 12. Status of raw/processed food commodities in India

Raw/Processed Foods	% Share
Total raw and processed foods	100%
Director household consumptions	47%
Processed foods	53%
Primary processed	33%
Value added	20%

Source : Rabobank estimates/MOFPI (Vision-2015) GOI

Table 13. Comparing India and China in some of the overall development parameters

Parameters	India	China
GDP growth rate, %	8.4	10
GDP, % of world total	6.2	14
Population living on less than one dollar a day, %	44	39
Women in the workplace, %	17	39
Literacy rate, %	68	95
Manufacturing, % of GDP	16	37
Export of manufactured foods, US dollar, billions	71	713

Table 14. Modern conveniences - India Vs. China

Parameters	India	China
Highway with 4-6 lanes, km	3000	25000
Households having		
— PC, %	1	4
— TV, %	37	91
— Accessing Net, %	23	73
Mobile subscriber, million	97	375

Table 15. Comparison of economy — India Vs. China

Parameters	India	China
Agriculture	20	6
Industry	26	71
Services	54	23
Total	100	100

It is a known fact that 70% of the World Hunger live in rural areas, where agriculture either provide food to the stomachs directly or through employment in agriculture and food processing sector, earning money to buy foods. At the World Food Summit in 1996, Heads of State and Government from around the world committed themselves to promote public and private investments in agriculture as a contribution to the goal of reducing by half (50%) the number of hungry people by 2015.

Many studies have shown how agricultural growth reduces poverty and hunger, even more than urban or industrial growth. For example, the only group of countries to reduce hunger during 1990s was the group in which the agriculture sector grew. Looking back at the figures for the last 30 years, it can be shown that those countries that have invested and continue to invest most in agriculture - both public and private - now experience the lowest level of under-nourishment. This has been arrived at through the statistical data collected, collated and analysed. It is, therefore, suggested that statistics on major agricultural commodities in respect of following may be collected and analysed.

- Production and marketing
- Processing and value addition
- Nutritional profile of raw and finished products
- Crop residues, biomass and byproducts
- Rational utilization

It would help in planning and implementation of programmes related to food and nutritional security of the people of India specially those living in rural areas, at an affordable cost. for better living.