AGRIBUSINESS MANAGEMENT

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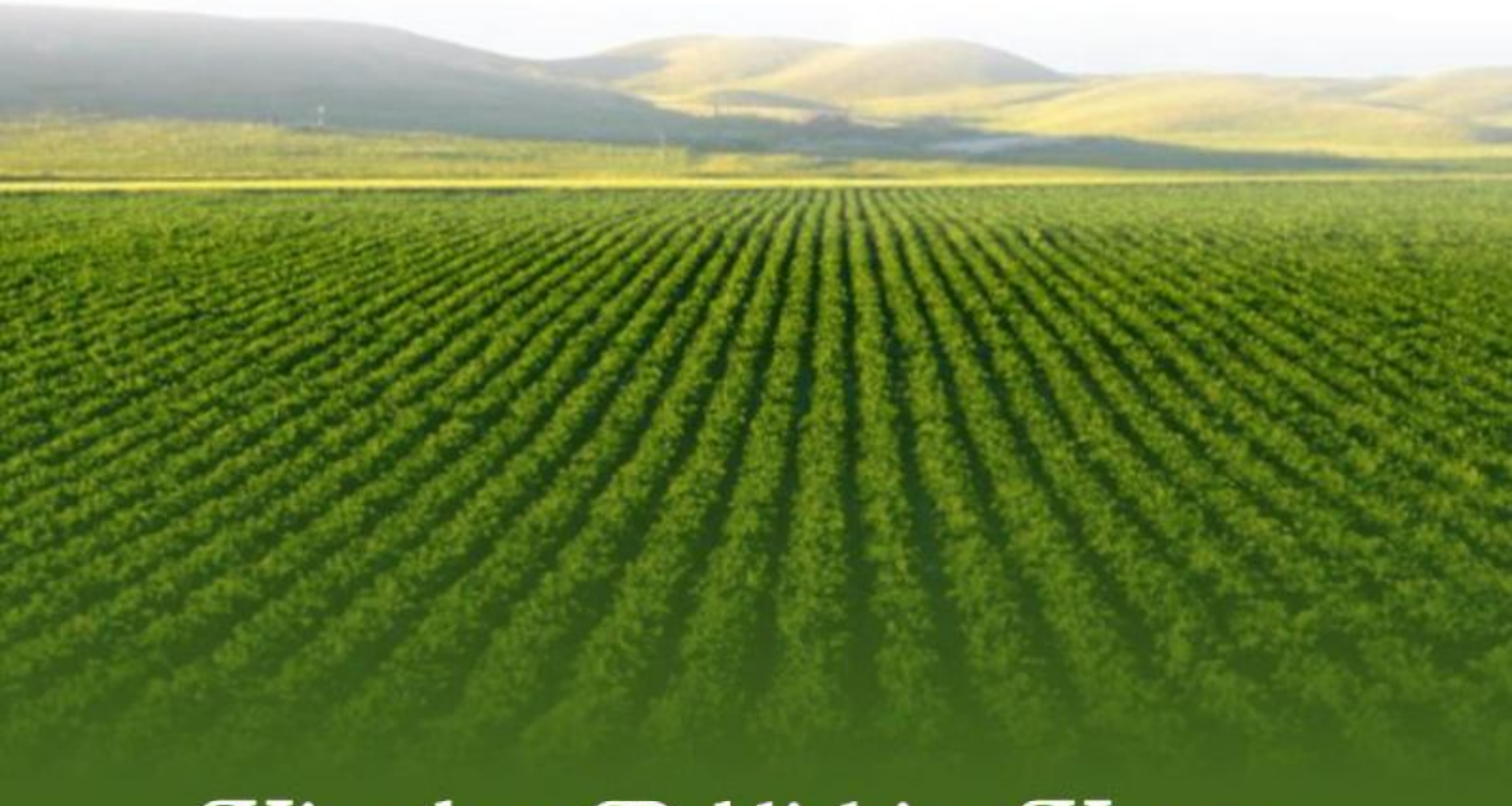

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Dedication

This book is dedicated to
our beloved students
with love.

Preface

Our sincere and deliberate efforts have been devoted to give the book a comprehensive form. All chapters have been discussed in a very simple and lucid language so as to make the subject easily understandable to our beloved students.

We feel great pleasure in placing the first edition of this book before our esteemed readers. It is the outcome of a great deal of encouragement from our colleagues and request from students.

This book is appropriate for students of MBA/B.Tech (Bio-technology and Food Technology), different technical and management institutions and universities and colleges where agriculture related streams are available.

We welcome suggestions from esteemed teachers and our students for enrichment and improvement of the book in the future.

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The responsibility for errors remains with us alone.

Authors

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Chapter

1

Introduction to Agribusiness Management

Chapter Outline

Learning Objectives

After studying this chapter, you should be able to:

1. Understand the concepts and features of agribusiness management.
2. Comprehend the present status of agricultural activities in India.
3. Understand the role of agriculture in Indian economy.
4. Learn about different agricultural production, food consumption and food safety schemes in India.
5. Know about "Challenges in Indian Agriculture" and "Research Activities" of this sector.

1.1 Concepts and Features of Agribusiness Management

Agribusiness management not only concerns about maintaining productivity of agriculture related products but also sustainable utilisation of resources. It focuses on proper application of inputs (i.e., seed, fertilisers, pesticides, credit, etc.), processing of output (i.e., crop grain, milk, meat, etc.), food products manufacturing (i.e., bread, cereals, breakfast, etc.), and transporting, promoting and selling the food products to the customers and intermediate customers (i.e., whole seller, retailer, etc.). On the other hand, the initiatives regarding changing form of different commodities (i.e., rice, wheat, milk, livestock, etc.) must be effective to provide more convenience to the customers. *For example*, consumers would rather buy puffed rice or flour than process the rice or wheat themselves and customers are willing to pay more money for getting convenience from processed food instead of the raw agricultural products. In this scenario, the contribution of technological advancement is remarkable from the beginning stage (giving input to the field) to the end stage of the agribusiness management process (conservation of food products and supply to the customers). Farmers are always dependent on input industries, commodity processors, food manufacturers, distributors and retailers. For smooth operation to serve the customer, coordination among the players must be strong. In 1957, Davis and Goldberg introduced the term "Agri-business". Different sectors (i.e., agriculture input sector, production sector, processing manufacturing sector, transport and marketing sector, etc.) are involved in agribusiness management system. So, we can say that agri-business is related with industry, commerce and trade where industry is associated with the production of materials and commodities while commerce and trade are associated with their promotion and distribution. In the current scenario, business has become extremely competitive because of changing customer needs and wants as well as the availability of competitive substitute and cheaper goods in the market. The major objectives of agribusiness are:

1. Creating competitive and sustainable private sector which can support the rural development and employment generation activities.
2. Enhancing productivity of agricultural produce.
3. Promoting agricultural foods and products as well as agriculture related activities.
4. Emphasising more on high potential sectors (such as horticulture, fisheries, livestock, etc.).

1.2 Role of Agriculture in Indian Economy

Agriculture is the foundation of our Indian economy where it has a huge contribution towards employment generation and livelihood creation for the rural people. The demand of the food is day by day increasing with the drastically increasing population. Still agriculture has less contribution towards Gross Domestic Product (GDP) of India. 36.4 per cent share of agriculture in GDP was observed in 1982 and it decreased to 17.7 per cent in 2010. But, interesting fact is that this sector in India covered about half a billion employment (47.9 per cent of total workforce) in 2010. Agriculture supports Indian economy through different activities such as:

1. Fulfilling food demand for present market
2. Supplying raw materials and extending the market for industrial produce
3. Controlling price sustainability in the market
4. Exploring secondary and tertiary sector

5. Increasing revenue by foreign trade etc. In case of BRIC countries, it has been revealed that 1 per cent agricultural growth is three times more efficient in decreasing poverty than 1 per cent non-agricultural growth.

As India is the residence of huge number of underprivileged and malnourished people, agriculture should be emphasised more for eradicating poverty and smooth economic growth. The impact of agriculture on Indian economy can be properly explained under the following contributions:

- Product Contribution
- Factor Contribution
- Market Contribution

Product Contribution

It emphasises on fulfilling the food requirement for increasing population, national income, the growth of global trade and price stability in the market. In developing countries, it has been observed that a small rise in per capita income results in high increase in food demand. In case of less national agricultural production in comparison with increasing population, several issues can be created regarding import of foodgrains, capital goods and machineries. So, agricultural growth is very necessary for economic development as well as the progress of industrialisation. On the other hand, agriculture contributes approximately two-third of India's national income. But, the percentage share of agriculture towards national income is gradually decreasing because of the growth in secondary and tertiary sectors. In India, the average annual growth rate of total GDP during 2000-2010 was 7.7 per cent and average annual growth rate of agricultural GDP during 2000-2010 was 3.1 per cent. Still the growth of Indian agriculture is practically stable in spite of bad weather conditions like lacking of south-west monsoon during 2009; lack of rainfall and drought during 2010 and 2011; insufficient and delayed monsoon during 2012 and 2013. This stability comes from step up in Gross Capital Formation which was steadily growing from 16.1 per cent in 2007-2008 to 19.8 per cent in 2011-2012 (as per Central Statistics Office, Directorate of Economics & Statistics, Department of Agriculture and Cooperation). Gross Capital Formation (GCF) in agriculture and allied sector was recorded as double in last ten years with compound average annual growth of 8.1 per cent. Rapid growth of productivity and technology transmission across regions which maintain macroeconomic stability can fulfil the huge demand of food for 1.2 billion people in India. In India, enormous revenue is generated through exporting agricultural products such as tea, tobacco, oilseeds, spices, etc. Increasing export activities have a great importance on India's economic development where import activities (purchasing raw materials and machinery) can get financial support. In India, statistics regarding agricultural trade reveals that average annual growth rate for import during 2000-2010 was 14.6 per cent and average annual growth rate for export during 2000-2010 was 16.9 per cent (As per FAO, Regional Office for Asia and the Pacific, Bangkok, 2012). The objectives of Indian agricultural trade policy are as follows:

- Assurance of food security
- Establishing strong export market

These objectives help to increase farmers' income and fulfil domestic requirement. India which is one of the first top 15 global exporters exports non basmati rice, cotton and wheat under open general licence. According to International Trade Statistics, 2011 (revealed by World Trade Organization) the worth of agricultural exports in India was US $23.2 billion in 2010 which is 1.7 per cent share of global agricultural trade. On the other side, the worth of agricultural imports in India was US $17.5

billion in 2010 which is 1.2 per cent share of global agricultural trade. India was placed on the tenth position in agricultural and food exports in the world. In spite of economic liberalisation and relaxation of export policies, few occasional government interventions like stocking limitation of grains, banning export of rice and wheat, etc. discourages private players to invest money in agribusiness. Inflation which is created by downward trend of food supply influences the business of industrial sector and enhances the cost of living of common people.

Factor Contribution

It emphasises on capital formation and employment generation towards the economy. The contribution of "capital formation rate" is huge towards economic improvement of any country. Increasing agricultural productivity creates the intention of more capital investment in agricultural sector and increases farmers' income which supports capital formation mechanism. On the other side, capital formation through public and private sectors helps in enhancing agricultural productivity. Capital formation in agricultural sector is less in comparison with total national capital formation. GCF in proportion with GDP concerned with agriculture and related sectors (GCF/GDP) increased from 13.5 per cent in 2004-05 to 20.1 per cent in 2010-11 (as per Central Statistics Office). In terms of employment generation, statistics reveal that 70 per cent of Indian population was involved in agricultural sector in 1951. After this, percentage has been decreasing drastically over the years. But, there is a massive opportunity of generating employment in this sector. However, half of the population in India and Asia Pacific are dependent on agriculture. On the other hand, only 24.2 per cent of population in rest of the world are dependent on this sector.

Market Contribution

Agriculture helps in industrial production process by giving facilities to other sectors. It is called as market contribution. Increasing demand for consumer goods and industrial imports affects industrial development. Agriculture provides raw materials to different industries such as edible and non-edible oils, sugar, cotton textiles, tobacco, leather, etc. Also, it has an important role in the total range of food processing industries. Processing of fruits, preservation of vegetables, rice husking, dal milling, handloom weaving, oil making, etc. need the help of agricultural sector for getting raw materials. This sector also creates a market of agricultural inputs such as fertilisers, pesticides, seeds, pumps, machineries, equipment, etc. It helps to sustain the growth of agricultural input market.

1.3 Agricultural Production (Foodgrains and Commercial Crops) in India

Agricultural sector not only fulfils the demand of foodgrains to the increasing population but also supplies raw materials for different industries such as textile, jute, food processing, edible oil, sugar, etc. It acts as a source of revenue from foreign exchange and enables import activities which enhance productivity as well as industrial and economic development. Disparity of seasonal changes for tropical climate with different temperatures helps in various crops cultivation during the year. Also, availability of huge resources and large number of agricultural skilled workers provide India a competitive advantage of agricultural sector in global context. In the world, India has placed a leading position in the production of spices, milk, pulses, livestock, jute, poultry and fisheries. Also, production of rice, wheat, vegetables, cotton, fruits, groundnuts in India have created a well-

established place in the global competitive scenario. Agricultural production depends on different factors such as supply of fertilisers, pesticides, certified seeds; proper irrigation system; credit support to the farmers; price stability in the market, etc.

Table 1.1: Cereals Production in India (2010)

Crop	Production (1000 MT)	Average Annual Growth Rate	Yield (Kg/ha)	Average Annual Growth Rate	Harvested Area (1000 ha)	Average Annual Growth Rate
Rice	143963	1.5	3383	1.6	42560	-0.1
Wheat	80800	1.2	2839	0.4	28460	0.8
Maize	14060	3.7	1958	1.6	7180	2.1
Millet	13290	1.6	1192	2.9	11150	1.2

*Average annual growth rate in percent (2000-2010)

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

Table 1.2: Pulses and Edible Oils Production in India (2010)

Crop	Production (1000 MT)	Average Annual Growth Rate	Yield (Kg/ha)	Average Annual Growth Rate	Harvested Area (1000 ha)	Average Annual Growth Rate
Pulses	17110	2.1	654	-0.1	26165.7	2.2
Coconut	10840	3	-	-	-	-
Groundnut	5640	-0.1	1144	1.7	4930	-1.7
Soya beans	12736	9.2	1334	3.6	9550	5.3

*Average annual growth rate in percent (2000-2010)

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

Table 1.3: Roots, Tubers and Fibre Crops Production in India (2010)

Crop	Production (1000 MT)	Average Annual Growth Rate	Yield (Kg/ha)	Average Annual Growth Rate	Harvested Area (1000 ha)	Average Annual Growth Rate
Potatoes	36577.3	4.8	19930	0.3	1835.3	4.5
Cassava	8059.8	4.6	34755	3.2	231.9	1.4
Sweet Potatoes	1094.7	0	9207	-0.1	118.9	0.1
Jute	1849.4	-0.3	2102	1.4	880	-1.7
Seed Cotton	17797	13.7	1618	10.8	11000	2.6

*Average annual growth rate in percent (2000-2010)

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

Table 1.4: Vegetables Production in India (2010)

Crop	Production (1000 MT)	Average Annual Growth Rate	Yield (Kg/ha)	Average Annual Growth Rate	Harvested Area (1000 ha)	Average Annual Growth Rate
Onions	15118	14.2	14209	5.2	1064	8.6
Tomatoes	12433.2	5.6	19598	2	634.4	3.5
Cabbages, Brassicas	7281.4	2	24231	0.2	300.5	1.7
Chillies, Green Peppers	62.1	2.5	8507	0.2	7.3	2.3

*Average annual growth rate in percent (2000-2010)

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

Table 1.5: Commercial Crops Production in India (2010)

Crop	Production (1000 MT)	Average Annual Growth Rate	Yield (Kg/ha)	Average Annual Growth Rate	Harvested Area (1000 ha)	Average Annual Growth Rate
Tea	991.2	2.1	17000.2	0.2	583	1.8
Coffee	289.6	-0.8	826	-2.1	350.5	1.4
Sugar Cane	292300	0.7	70096	0	4170	0.7
Cocoa Beans	12.9	7.3	279	-3.1	46.3	10.7

*Average annual growth rate in percent (2000-2010)

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

In case of commercial crops production such as tea, coffee, sugar cane, etc., India has placed a remarkable position among the top global producers. Among 16 states in India as tea producers, 4 states (Assam, West Bengal, Kerala and Tamil Nadu) grab 95 per cent of total Indian tea production. On the other hand, Indian coffee production has placed sixth position in the world after Brazil, Vietnam, Colombia, Indonesia and Ethiopia. Basically, southern states in India (Karnataka, Tamil Nadu and Kerala) are the producers of coffee. Recently, tribal zones of Orissa, Andhra Pradesh and north-eastern states have taken initiatives to promote coffee cultivation for their development. 70 per cent of Indian coffee is exported outside India. In case of sugar cane production, extensive efforts are needed to enhance crop yield to reduce the fluctuations in crop production and sugar price.

Compound Annual Growth Rate (CAGR) Indices

In the analysis of CAGRs of area, production and yield indices for principal crops, significant improvement in production, yield and crop diversification was observed during the last few decades.

Table 1.6: CAGRs of Area, Production and Yield Indices for Principal Crops

Crop	1980-81 to 1989-90			1990-91 to 1999-2000			2000-01 to 2011-12		
	Area	Production	Yield	Area	Production	Yield	Area	Production	Yield
Rice	0.41	3.62	3.19	0.68	2.02	1.34	0	1.78	1.78
Wheat	0.46	3.57	3.10	1.72	3.57	1.83	1.35	2.61	1.24
Pulses	- .09	1.52	1.61	-.60	0.59	0.93	1.60	3.69	2.06
Oilseeds	1.51	5.20	2.43	0.86	1.63	1.15	2.12	3.36	1.22
Sugar Cane	1.44	2.70	1.24	-.07	2.73	1.05	1.38	2.07	0.68
Cotton	-1.3	2.80	4.10	2.71	2.29	-.41	3.22	13.53	9.99
Coarse Cereals	-1.3	0.40	1.62	-2.1	-.02	1.82	-.81	3.01	3.85

*Base: TE 1993-4=100 (% per annum)

(Source: Department of Agriculture and Cooperation)

From the above table, it has been observed that cotton and pulses both are very good performers due to extensive use of Biotech cotton and Pulses Intensification Programmes.

1.4 Food Consumption

Demand of food is increasing day by day because of huge growth rate of population. In this context, the demand for diversified food products is influenced by different factors like increasing income level, changing preferences of people, etc. The following table (itemwise share of expenditure to total food expenditure in percentage) reveals that people have shifted their preferences to spend money for milk and related products, meat, fish, egg as well as vegetables in rural and urban areas. On the other hand, percentage consumption of cereals in the overall food items has decreased over the years.

Table 1.7: Itemwise Share of Expenditure to Total Food Expenditure in Percentage

Food Items	Rural		Urban	
	1987-88	2009-10	1987-88	2009-10
Pulses	6.3	6.9	6	6.6
Vegetables	8.1	11.6	9.4	10.6
Milk Products	13.4	16	16.8	19.2
Egg, Fish, Meat	5.2	6.5	6.4	6.6
Sugar	4.5	4.5	4.3	3.7
Cereals	41.1	29.1	26.6	22.4
Total %	100	100	100	100

(Source: National Sample Survey-NSS)

1.5 Livestock, Dairy and Fisheries Productions

Livestock, dairy and fisheries productions have important roles in income and employment generation for large number of Indian rural people. India has placed second position in the world in terms of cattle population after Brazil. In terms of goat population, India has placed second position in the world with 14.9 per cent of total population after China. Except this, India has placed first position in the world in terms of buffalo population (55.9 per cent of total population). In case of sheep population, India has placed third position in the world after China and Australia. Livestock sector has created employment for more than 20 million people in main and subsidiary industries. Maximum livestock population in India are found in Uttar Pradesh, Gujarat, Jammu Kashmir, hilly areas of east and north Himalayas and Rajasthan. However, India has placed first position in the world in terms of milk production. The production of milk has increased from 53.9 million tonnes (1990-91) to 127.9 million tonnes (2011-12). Also, per capita milk availability has gone up from 176 grams/day (1990-91) to 290 grams/day (2011-12).

Table 1.8: Livestock Production in India (2010)

Livestock	Population (1000 heads)	Average Annual Growth Rate	Total Production of meat (1000 MT)	Average Annual Growth Rate
Cattle	210200	1.1	5.1	0.6
Goats	154000	2.4	586.5	2.4
Buffalo	111300	1.7	1489.4	1.7
Sheep	73991	2.6	289.2	3
Pigs	19.7	-7.5	332.5	-3.6

*Average annual growth rate in percent (2000-2010)

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

Table 1.9: Milk Production in India (2010)

Milk	Total Milk Production (1000 MT)	Average Annual Growth Rate (2000-10) in %
Cow Milk	54903	5.6
Buffalo Milk	62350	3.7
Total Milk	121847	4.5

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

On the other hand, fish as the source of cheap and healthy food helps to create livelihood of Indian rural people and to earn huge foreign exchange. Therefore, fisheries sector is important for income generation and employment creation. India has placed sixth position in the world in terms of fish production and second position in the world in terms of inland fish production. In this context, about 7,500 km coastline and about 2.02 million sq. km economic zone in India provides huge opportunities for this sector. The production of fish from marine and inland has increased from 5.6 million tonnes (2000-01) to 8.7 million tonnes (2011-12). National Fisheries Development Board (NFDB) which was registered in 2006 under Andhra Pradesh Societies Registration Act was established to grab the opportunities of this sector with the help of research in biotechnology and updated tools and techniques.

Table 1.10: Fisheries Production in India (2010)

Fisheries	Production (1,000 MT)	Average Annual Growth Rate (2000-10) in %
Marine capture fish	1468.8	3.2
Inland capture fish	3226.2	1.4
Total capture fish	4695	1.8
Aquaculture	4648.9	8.6

(Source: FAO, Regional office for Asia and the Pacific, Bangkok, 2012)

1.6 Agro-industrial Complexes

Organisations which are engaged in Indian agro-industrial complexes such as co-operative dairies, sugar factories, etc. work for integrated rural development. They create different prospects of capital investment along with fulfilling the purpose of rural area improvement. Agro-industrial complexes help to add values in farmers' produces and accelerate their revenue generation activities. They also generate employment opportunities for rural people. In India, some remarkable agro-industrial complexes are dairies, fisheries, paddy, sugar, cotton, poultry, horticultural products, etc. Agriculture industry related products can be classified into different categories like processed foods; milk and dairy products; aromatics; edible oil and related products; bakery products; meat and poultry food; beverages; cattle feeding supplements; flower related products; preserved and fresh vegetables, fruits and nuts; tea and coffee; soya meals; natural honey; textiles; rubber related products; sugar; flour; tobacco and tobacco products; spices; starch; glucose; pickles; ketchups, etc. Few agro-industrial complexes are highlighted below.

Paddy Based Industry

Paddy creates many industries which generate income for rural people with less investment through proper utilisation of agricultural raw materials and export facilities. Paddy industrial products basically are the outcome of (1) Paddy and (2) Straw. We can get (1) Rice, (2) Husk, and (3) Bran from Paddy. Puffed rice, wine, flour, etc. are produced from rice. Cattle feed, oil, shop, wax, tar, etc. are produced from bran. Husk board, silicon, cement, bricks, etc. are produced from husk. On the other hand, straw based products create different industries like bag, handicraft, straw board, paper, etc.

Cotton Industry

Textile industry is mainly the result of cotton industry which is one of the important industries in India. It has a very good export potential and can create huge future export opportunities in this context of liberalised trade policies. It provides employment and income generation facilities to the rural as well as urban people. Cotton related industrial products basically are the outcome of (1) Cotton, (2) Straw, (3) Seed. We can get textiles from cotton. Paper, fuel, packaging materials, etc. are produced from straw. Manure, seed oil, cattle feed, lubricants, soaps, etc. are produced from seed.

Fish Industry

India has a huge potential for fish related industries. Different fish by-products support many industries mentioned below. Fish related industrial products basically are the outcome of (1) Fresh fish,

(2) Fish oil, (3) Fish glue, (4) Fish skin leather, (5) Prawn shell waste, etc. Paint, shops, lubricants, pharmaceuticals, fungicides, heat resistant films, cosmetics, poultry and animal feeds, printing inks, etc. are produced from fish oil.

Dairy Industry

Dairy industry can create more opportunities in Indian as well as international market. It is considered as one of the main industries in agricultural sector. The core competency of this sector which provides millage towards export activities is "less cost of production" in India. Co-operatives, *for example* AMUL (Anand Milk Producers Union) in Gujarat are successfully working in organising this sector. National Dairy Development Board, established in 1965 has facilitated to get success in the journey of AMUL. The objective of this board focuses on "making a chain of Anand model all over India" which was named as "Operation Flood". Sweets, pharmaceuticals, cheese, powder milk, curds, cream, whey, ghee, etc. are produced from dairy industry. In present scenario, this industry is facing several critical issues like unorganised processing and marketing facilities, scattered production of milk, absence of transport services, perishability nature of milk, etc.

Poultry Industry

Poultry industry facilitates to produce foodstuff with animal protein and generate employment in the economy. Several by-products related with poultry industry have huge demand in global market. Poultry related industrial products basically are the outcome of (1) Meat, (2) Egg, (3) Manure, and (4) Feathers. Egg powder, dressed meat, badminton shuttle cocks, etc. are produced from egg, meat, feather respectively.

1.7 Food Processing Sector

This sector has the objectives of making food nutritious, tasty, digestible and ready to use. Proper preservation and storage facilities are required to fulfil the food demand of the people and avoiding seasonal variation. In case of fruits and vegetables sector, cleaning, grading and packing are required before arriving to the consumers. But, preparation of value added and ready to use foods like health drinks, beverages, juices, bakery products, chocolates, biscuits, glucose, pasta foods, cornflakes, potato chips, ice cream, beer and grain based alcohol, etc. need several intermediate processes. Processed foods can be customised depending on diverse nutritional requirements with balanced composition of proteins, fats, carbohydrates, vitamins and minerals for different categories like infants, children, women, pregnant women, athletes, aged people, etc. This sector provides huge opportunities for generating sustainable livelihoods for rural people which can accelerate the economic growth. Dynamic changes in food production are observed in this sector due to frequent alteration of food habits, tastes and lifestyles. Therefore, the players of this sector such as producers, retailers, suppliers, etc. are continuously restructuring their business plan with new innovative and creative ideas to fulfil the new increasing demand of consumers. This sector facilitates not only to the farmers and consumers but also to the overall economy. However, more public and private investments are required in the areas of cold storages, retailing, supply chain management, promoting and exports. This sector, also, needs more infrastructural facilities and credit accessibility.

1.8 Food Safety Schemes

There are various initiatives that allow a new scheme to be recognised and be part of a global initiative. The most important of such initiatives is the Global Food Safety Initiative (GFSI). Such initiatives have an inherent component of benchmarking that allows the new scheme to be a part of their initiative through a structured process. The GFSI is a business driven initiative for the continuous improvement of food safety management systems to ensure confidence in the delivery of safe food to consumers worldwide. GFSI provides a platform for collaboration between some of the world's leading food safety experts from retailer, manufacturer and food service companies, and service providers associated with the food supply chain, international organisations, academia and government. Currently, GFSI has various schemes that they have benchmarked that includes the Food Safety Management System (FSSC) 22000, Global Red Meat Standard (GRMS), CanadaGAP (Canadian Horticultural Council On-Farm Food Safety Program), SQF CODE 7th Edition Level 2, GlobalGAP, Primus GFS, Global Aquaculture Alliance Seafood BRC Global Standard For Food Safety Issue 6, BRC/IOP Global Standard For Packaging And Packaging Materials Issue 4, IFS Food Version 6, Dutch HACCP and Synergy 22000. GFSI was established to ensure confidence in the delivery of safer food to consumers, while continuing to improve food safety throughout the supply chain. These global standards address food, packaging, storage and distribution for producers, manufactures and lastly distributers. The NSW Food Authority has prepared the NSW Food Safety Schemes Manual to specify certain requirements for the following food safety schemes under the food regulation 2015:

- Plant products food safety scheme
- Dairy food safety scheme
- Seafood safety scheme
- Meat food safety scheme
- Vulnerable persons food safety scheme
- Egg food safety scheme

The manual applies to all food business licensed under these schemes. Regular auditing has been extensively used worldwide to ensure food safety systems and programmes are compliant which is a very important tool for the majority of food safety standards, but in recent years there has been a significant increase in the requirements of both second party and third party auditing within the global food industry for quality assurance.

1.9 Challenges in Indian Agriculture

India is the largest agricultural powerhouse and the leading producer of spices, pulses and milk production. Not only that, India has the largest area that is used to cultivate cotton, wheat and rice. Like any other sector, agriculture too has its own challenges. According to AKST (Agricultural Knowledge Science and Technology), the main challenges is to increase the productivity of agriculture in a sustainable manner and to improve social welfare and personal livelihoods in the rural sector and enhance multiplier effects of agriculture, empower marginalised stakeholders to sustain the diversity of agriculture and food system, maintain and enhance environmental services while increasing sustainable productivity of food, fiber and biofuel production and link the outputs from marginalised rain fed lands into local, national and global market, etc. In developing countries like India, the

agribusiness sector encompasses four distinct sub sectors, i.e., agricultural inputs, agricultural production, agro-processing and marketing. All these add value to the goods. The main challenges that India faces in relation to agriculture are as follows:

Fragmented Land Holding

Agricultural instrument cannot be used effectively due to division of land by the virtue of inheritance consolidation of fragmented farmlands at the grassroots level under the supervision of the government. The net area under cultivation is close to 141 million hectares. However, its immensity diminishes with the fact that the rest of the number of landholding are fragmented to an extent of being rendered economically unviable. The use of sophisticated farm machinery and equipment will help the marginal farmers to increase the agricultural productivity.

Lack of Irrigation Facility

India is the second largest cultivated area after China that has irrigation facility. However, it covers only a third of the total cultivated area. A major portion of farming activity still depends on the monsoon. The irregularities of monsoon can destroy the crops.

Dependence on Traditional Crops

Farmers are resistant or hesitant to grow new crops that can yield a higher quantity of produce. The seed banks are playing an important role in helping farmers switch over to other varieties of crops.

Lack of Storage Facilities

The lack of storage facilities results in degradation of the quality of the produce. Approximate 9.3 per cent of the produce gets wasted because of improper storage and maintenance. This, in turn, affects the volume of exports causing loss of potential income.

Inadequate Use of Efficient Farm Equipment

The methods of cultivation in most areas of India are still primitive. In most of the agricultural areas, marginal farmers continue to use local plough and other equipment as the units of cultivation are too small to permit the usage of modern machinery.

Inadequate use of Manures and Fertilisers

Inadequate use of manures like cowdung, vegetable refuse, etc. and excessive use of fertilisers (N, P & K) makes Indian agriculture much less productive in comparison to Japanese or Chinese agriculture. It has been felt that organic manures are essential for keeping the soil in good health. The country has a potential of 650 million tonnes of rural and 160 lakh tonnes of urban compost which is not fully utilised at present. The utilisation of this potential will solve the twin problem of disposal of waste and providing manure to the soil which will improve the fertility of the soil. In the developing India, poverty remains a predominantly rural challenge. To meet these challenges, improvement of the productivity and profitability of millions upon millions of small farmers and promotion of employment as well as rural growth are necessary. For this purpose, farmers will need new appropriate technology. Here, the roles of biotechnology and seed technology are very important. Profitability will come from increased market orientation as farmers produce food and fiber for domestic and

international markets. Therefore, the issue of challenges and improving the welfare of rural communities by improving the profitability of agriculture is a triplewin situation. It contributes to poverty reduction; it contributes to improved natural resource management, and it contributes to food security of the nation.

1.10 Quality Assurance and Research Activities

Nowadays, the increased interest of consumers on food safety and quality matters, triggered mainly by recent food scandals, has enabled the public and private food sectors to develop a variety of food safety and quality standards. These standards have both advantages and disadvantages and their effectiveness depends on several factors such as the competency and skills of auditors and the standard used in each case. Although the industry continuously invests in developing and improving these systems, the number of food-borne outbreaks per year appears to be quite stable. This may be an indication that additional measures and techniques or a different approach would be required to further improve the effectiveness of the food safety and quality assessment systems in the agriculture and food industry. For the promotion of agribusiness, several initiatives have been taken during the last five years, which have created a favourable environment for the growth of agribusiness. Several marketing related restrictions have been withdrawn or replaced. Amendments in State Agricultural Produce Markets Regulation Acts are being made to facilitate setting up of private markets, direct purchases of farmers' produce and contract farming arrangements. Several monetary concessions have been announced by the Central and State Governments. These include 100 per cent excise exemption for 10 years, 100 per cent income tax exemption for five years (later withdrawal in phases), and capital investment subsidy of 15 per cent (up to ` 30 lakh). Keeping in view the growing importance of agri exports in improving farmers' incomes, the government has set up several agri export zones (AEZs). Further, to help exporters in meeting phytosanitary requirements, several initiatives have been put in place. Regulatory authorities at the state level have been notified. The quality standards have been harmonised and publicised and requirements of necessary documents have been specified. Every exporter is required to obtain an IEC (Import-Export Code) from the Director General of Foreign Trade and then get registered with APEDA. Those who plan to export some products can either register themselves or contact registered export houses, whose names and details are available on websites of APEDA and Indian Trade Promotion Organisation. While Indian companies are increasingly entering the retail business, foreign direct investment (FDI) in retail is not allowed. It is allowed in franchising and commission agent services. It is, also, allowed in wholesale business with case by case approval from the Reserve Bank of India. However, foreign retailers can operate in India through joint ventures (where Indian partner is an export house), franchising/local manufacturing/ sourcing from smallscale sector and through cash and carry operations. Considering that traditional supply chain is fragmented, there is presence of a large number of intermediaries, and the existing market yards are dominated by the association of a few traders, the growth of organised retail (through India's corporate sector or FDI) provides several advantages. It brings technical advantages in marketing scenario and reduces inefficiency in the supply chain. It improves quality of services to the consumers and creates employment for the youth. It, also, helps in achieving international quality standards, and thus boosts exports, leading to increase in farmers' incomes. Increase in productivity will eradicate poverty of farmers. Our production is only half in comparison to worldwide production per hectare. Productivity and production cannot be improved till the quality of land improves. Therefore, it is decided to provide Soil Health Card to 14 crore farmers of the country and this

programme has been started. 5 crore farmers were provided Soil Heath Card in 2015-16 and to remaining farmers in 2016-17. The Soil Health Card Scheme was inaugurated by the Honorable Prime Minister in February 2015. For this, ` 109 crores has been released till December 2015. ` 568 crores has been sanctioned for providing Soil Health Cards to all the farmers. In the years 2014-15 and 2015-16, government has sanctioned 79 and 101 soil health laboratories as against only 43 such labs in the past four years. Similarly, ` 77 mobile soil testing labs have been sanctioned in the present regime as against only 17 in the past regime. Under soil health management, ` 288 crores have been sanctioned as against only ` 72 crores in the past. There was no scheme to promote organic farming. New scheme called Parampragat Krishi Vikas Yojana was started in 2015-16 with an allocation of ` 300 crores. So far 8,000 clusters have been formed. Joint liability groups for landless labourers were only 6.72 lakh during 2005-14. There have been 7.2 lakh group formations in 2014-15. New scheme called Prime Minister Krishi Sinchai Yojana (PMKSY) was launched with an allocation of ` 5,300 crores for the present year with an objective to provide water to every farm. Officers have been trained to prepare district irrigation plan. 100 districts' irrigation plan should be ready immediately and remaining districts by the next year. Prime Minister has launched the scheme to provide permanent solution to the problem of drought. Under water management, there is 40 per cent increase in investment in just one year in comparison to last year. Micro-irrigation and water conservation are the thrust areas under this scheme. National Agriculture Market Scheme (NAM) was launched to connect Mandis across the entire country. More than 20 states have expressed interest in linking their Mandis with this project. Electrical portal has been already launched. Government has changed the norms for compensation to the disaster affected farmers from minimum affected area from 50 per cent to now 30 per cent. Further, the compensation has been increased by 1.5 times. Four crops have been added in National Food Security Mission (NFSM). District increases from 486 to 627 in the last two years. Sanctioned post of extension workers has increased from 18,000 to 26,000. Pesticides registration has increased by 5 times to 51,594 registrations in 2014-15. ` 10 crores has been sanctioned for honeybee development. This is in contrast to 4 crores sanction in the last four years. Increase in honey production from 72,000 metric tonnes in preceding five year to 81,000 metric tonnes in the present year. ` 8,50,000 crores will be provided to the farmers through the bank so that the farmer should not go to doors of moneylenders. ` 5,34,151 crores agriculture credit was advanced to the farmers in 2014-15 and ` 6,03,186 crores in 2015-16 (till December) was achieving an increase of 23 per cent and 30 per cent respectively. Neem coated urea is being distributed and steps have been initiated against black marketing of urea. Due to this effort, black marketing of urea stopped and production improved despite using less urea. Two National Kamdhenu Breeding Centres opened in the country, one in the north and one in the south. National Gokul Mission was started for development and conservation of indigenous cattle breeds. ` 550 crores was sanctioned in 2014-15 as against only ` 45 crores in 2013-14. Blue Revolution was initiated to increase fisheries production. Production increased to 150 lakh tonnes this year as against 95.72 lakh tonnes in the last year. Coverage under National Livestock Mission (NLM) was extended to entire country. 19 lakh animals were insured in present region as against 10.88 lakh in 2013-14. Similarly, only 300 districts were covered in 2013-14 and this has been taken up to 676 districts in 2014-15. Increase in an average price paid to the dairy farmers from ` 28.96 per litre to ` 32.72 per litre. Significant increase in milk production was seen in 2014-15 and 2015-16 as against 2013-14. More than 1.5 times increase in animal vaccination has been achieved in 2014-15. Drastic reduction of foot and mouth disease (FMD) has been observed in 377 cases in 2013-14 to 238 in 2014-15 and only 46 in 2015-16 (till December). There has been 5 times increase in number of veterinary graduates. There was increase in seats in veterinary colleges by 1.5 times from 914 prior to September 2014 to

1332 in 2014-15. The Ministry of Agriculture, Government of India, in association with NABARD and MANAGE has launched a unique scheme to take better methods of farming to each and every farmer across the country. This programme aims to tap the expertise available in the large pool of agriculture graduates. Irrespective of whether a fresh graduate or not, or whether currently employed or not, it offers professional extension services to innumerable farmers. Committed to this programme, the government is now also providing start-up training to graduates in agriculture, or any subject allied to agriculture like horticulture, sericulture, veterinary sciences, forestry, dairy, poultry farming, and fisheries, etc. Those completing the training can apply for special start-up loans for ventures. The main objectives of the schemes are to maintain the quality and to support agricultural development.

Various projects and research activities have been taken such as:

- Soil and water quality cum inputs testing laboratories (with Atomic Absorption Spectrophotometers)
- Pest surveillance, diagnostic and control services
- Maintenance, repairs and custom hiring of agricultural implements and machinery including micro irrigation systems (sprinkler and drip)
- Agri Service Centres including the three activities mentioned above (Group Activity).
- Seed Processing Units
- Micropropagation through Plant Tissue Culture Labs and Hardening Units
- Setting up of vermiculture units, production of bio-fertilisers, biopesticides, biocontrol agents.
- Setting up of Apiaries (beekeeping) and honeybee products' processing units
- Provision of Extension Consultancy Services
- Hatcheries and production of fish fingerlings for aquaculture
- Provision of livestock health cover, setting up veterinary dispensaries and services including frozen semen banks and liquid nitrogen supply
- Setting up of Information Technology kiosks in rural areas for access to various agriculture related portals
- Feed processing and testing units
- Value Addition Centres
- Setting up of Cool Chain for the farm level onwards (Group Activity)
- Retail marketing outlets for processed agriproducts
- Rural marketing dealerships of farm inputs and outputs

For research purpose, there was more than 40 times increase in fund allocation to agriculture education Central Agriculture University, Imphal to have 13 colleges instead of existing 7 in north-eastern region. Four new colleges were established in Bundelkhand under Rani Laxmi Bai Central Agriculture University. ` 3,099 crores was sanctioned for remodelling of KVKs and agriculture extension. 60,000 hectare area was covered under demonstration to bring focus on increasing production of pulses and oil seeds. Further, there was more than 60 per cent increase in the development of crops species in comparison to 2013 and more than twice increase in agriculture machinery in comparison to 2013. This would help labour, cost and time in agriculture. Contingency plans were made to fight against drought, flood, hailstorm, cyclone, etc. for all districts in 2015 and it was a new scheme started in 600 districts. New research centres were opened in Jharkhand and

Motihari on the lines of Pusa, New Delhi. Eight new agricultural universities were opened in several states to give thresh to the agriculture education. There was recorded 41 per cent increase in admissions in state agriculture university in comparison to 2013 and 50 per cent increase in learning units in agriculture universities along with new research proposal.

1.11 Summary

Agribusiness management not only concerns about maintaining productivity of agriculture related products but also about sustainable utilisation of resources. It focuses on proper application of inputs (i.e., seed, fertilisers, pesticides, credit, etc.), processing of output (i.e., crop grain, milk, meat, etc.), food products manufacturing (i.e., bread, cereals, breakfast, etc.), and transporting, promoting and selling the food products to the customers and intermediate customers (i.e., wholesaler, retailer, etc.). Agriculture is the foundation of our Indian economy where it has a huge contribution towards employment generation and livelihood creation for the rural people. The impact of agriculture on Indian economy can be properly explained under:

1. Product Contribution
2. Factor Contribution
3. Market Contribution.

Agricultural sector not only fulfils the demand of food grains to the increasing population but also supplies raw materials for different industries such as textile, jute, food processing, edible oil, sugar, etc. It acts as a source of revenue from foreign exchange and enables import activities which enhance productivity as well as industrial development. Food Processing Sector has the objectives of making food nutritious, tasty, digestible and ready to use. Proper preservation and storage facilities are required to fulfil the food demand of the people and avoiding seasonal variation. The main challenges that India faces in relation to agriculture are:

1. Fragmented Landholding
2. Inadequate use of manures and fertilisers
3. Dependence on traditional crops
4. Lack of storage facilities
5. Inadequate use of efficient farm equipment
6. Lack of irrigation facility, etc.

1.12 Key Terms

Commercial Crops (5)
Product Contribution (3)
Market Contribution (5)
Dairy (8)
Agro-industrial Complexes (10)
Food Safety Schemes (12)
Quality Assurance (15)
Compound Annual Growth Rate (CAGR) Indices (7)
Food Consumption (8)
Factor Contribution (4)
Livestock (8)
Fisheries (8)
Food Processing Sector (12)
Challenges in Indian Agriculture (13)
Research Activities (15)

1.13 Exercises

1. Describe the concept and features of agribusiness management.
2. Discuss briefly about food processing sector in India.
3. Elaborate the role of agriculture in Indian economy.
4. Discuss the status of foodgrain and commercial crops production in India.
5. Mention different types of food safety schemes.
6. Discuss the status of dairy and fisheries productions in India.
7. Write a note on "Food Consumption Status" in India.
8. Discuss about the product, factor and market contributions of agriculture on Indian economy.
9. What do you mean by "Agro-Industrial Complexes"?
10. Discuss about "Agricultural Research Activities" in India.
11. What are the major challenges in Indian agriculture?

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