



DIPLOMA IN RURAL DEVELOPMENT

DRD-04

Rural Development Institutions & Entrepreneurship

Block

6

DIVERSIFICATION OF RURAL ECONOMIC ACTIVITIES

Unit – 1

Livestock Economies - Livestock resources and their productivity, White Revolution, Poultry and Fishery development

Unit – 2

Forestry, Horticulture and Floriculture

Unit – 3

Development of Rural Industries and Agro-based Industries



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DIPLOMA IN RURAL DEVELOPMENT

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UNIT- 1

Livestock Economies



Learning Objectives:

After completion of this unit, you should be able to:

- *explain the importance of livestock in rural development*
- *enlist the different phases of white revolution*
- *describe the importance of poultry in rural livelihood*
- *explain the importance of fishery in rural development*

Structure:

- 1.1 Introduction
- 1.2 Meaning of Livestock
- 1.3 Contribution of livestock
- 1.4 Importance of livestock to Farmers' Economy
- 1.5 Contribution of Livestock Sector to National Economy
- 1.6 Livestock Resources in India
- 1.7 Livestock in Odisha
 - 1.7.1 Contribution of Livestock Sector to State Economy
 - 1.7.2 Livestock Population of Odisha
 - 1.7.3 Milk Production in Odisha
 - 1.7.4 Meat Production
- 1.8 Egg Production
- 1.9 Operation Flood
- 1.10 Anand Milk Union Limited (AMUL)
- 1.11 Important Animal Husbandry Programmes
- 1.12 Fishery Development in India
 - 1.12.1 Blue Revolution
 - 1.12.2 Fishery Schemes
 - 1.12.3 Fishery Development in Odisha
 - 1.12.4 Ongoing Government of India Schemes and Programmes In Odisha
 - 1.12.5 The Orissa Pisciculture Development Corporation Ltd (OPDC)

1.12.6 Odisha State Fishermen's Cooperative Federation limited
(FISHFED)

1.13 Let Us Sum Up

1.14 Key Words

1.15 References



1.1 Introduction:

Through rural development activities, we are enabling the people in rural areas to have access to and control over the resources that support their livelihood so that they are able to improve their social and economic status. Some of the important resources necessary for supporting the livelihood of people in rural areas are land, water, forests, animal, etc. The association of human being with animals is from the beginning of civilisation. Animal genetic resources represent an important component of global biodiversity in terms of food security and sustainability. In developing countries, they play an important role in the subsistence of many communities and sustainability of crop livestock system. It is estimated that domestic animal genetic resources contribute 30% of total human requirements for food and agriculture, either directly or indirectly. They meet various requirements of human being like meat, milk, egg, fibre, fertiliser for crops, draught power, etc. Besides, it also reduces farmers' exposure to risk and generates employment. Livestock are closely linked to social and cultural lives of several million resource-poor farmers for whom animal ownership ensures varying degree of sustainable farming and economic stability.

1.2 Meaning of Livestock:

As per the Merriam Webster, livestock are the animals kept or raised for use or pleasure especially farm animals kept for use and profit animals (as cows, horses, and pigs) kept or raised especially on a farm and for profit.

Cambridge Dictionary states that the livestock are animals and birds that are kept on a farm, such as cows, sheep, or chickens.

Food and Agriculture Organisation (FAO) defines livestock means any domestic or domesticated animal including bovine (including buffalo and bison), ovine, porcine, caprine, equine, poultry and bees raised for food or in the production of food. The products of hunting or fishing of wild animals shall not be considered part of this definition.



As per the Government India notification -Livestock shall include all equines (all live equine irrespective of purpose including donkey, horses, mule, assess, hinnies), bovines (all bovine animals including cattle, buffaloes, bullocks or any animals falling in the category of bovidae), caprines, ovines, swines, canines, felines, avian (all avian species except the birds prohibited for import by any law of India and international including poultry), laboratory animals (all laboratory animals such as rats, mice, rabbit, guinea-pig, hamsters and any other animals used in laboratory) and aquatic animals (live fishes, live crustaceans and molluscs).

1.3 Contribution of Livestock to People:

1. **Food:** Livestock provides milk, meat and eggs for human consumption.
2. **Dung and other animal waste materials:** Dung and other animal wastes are used as manure and fuel.
3. **Fibre and skins:** The livestock produces wool, hair, hides, and pelts.
4. **Draft:** Bullocks are used for agricultural operations.
5. **Weed control:** Livestock are also used as Biological control of brush, plants and weeds.
6. **Cultural:** Livestock offer security to the owners and also add to their self esteem especially when they own prized animals such as pedigreed bulls, dogs and high yielding cows/ buffaloes etc.
7. **Sports / recreation:** People also use the animals like cocks, rams, bulls, etc for competition and sports.
8. **Companion animals:** Animal like dog, cat, rabbit, etc are used as companion animals
9. **Storage:** Livestock are considered as “moving banks” because of their potentiality to dispose off during emergencies.

1.4 Importance of Livestock to Farmer's Economy:

Most of the farmers in India maintain mixed farming system i.e. a combination of crop and livestock where the output of one enterprise becomes the input of another enterprise thereby realize the resource efficiency. The livestock serve the farmers in different ways.

- a) It provides income
- b) It gives employment to rural people
- c) It gives milk, meat and egg which are important source of protein to people
- d) The social and cultural value of livestock
- e) It provides draft power to agricultural operation
- f) Dung of livestock are used as fertiliser and fuel.

1.5 Contribution of Livestock Sector to National Economy:

Livestock plays an important role in Indian economy. The contribution of Agriculture and allied sector to national GDP is 15.6 % in 2014-15. Contribution of Livestock sector to national GDP is 4.11% and 25.6 % to agriculture GDP. If we divide the outputs from livestock sector into various sub sectors then we find that the total output is 65 % from milk, 20 % from meat, 3.75 % from eggs, 6.9 % from dung and less than 1% from hide and skin. About 20.5 million people depend upon livestock for their livelihood. Livestock contributed 16% to the income of small farm households as against an average of 14% for all rural households. Livestock provides livelihood to two-third of rural community. It also provides employment to about 8.8 % of the population in India. India has vast livestock resources.

1.6 Livestock Resources in India:

a) Livestock Population and Production:

India has vast resource of livestock and poultry, which plays a vital role in improving the socio-economic conditions of rural masses. The country is the leading in the world in terms of livestock population and production. The figures in the table justify the position.

Livestock Population (19th Livestock Census)



Sl. No	Species	Number (in millions)	Ranking in the world population
01	Cattle	190.9	First
02	Buffaloes	108.7	First
	Total (including Mithun and Yak)	300	First
03	Sheep	65.07	Third
04	Goats	135.2	Second
05	Pigs	10.3	-
06	Others	1.48	-
	Total livestock	512.05	
	Total poultry	729.2	Seventh
07	Duck	-	Fifth
08	Chicken	-	
09	Camel	-	Tenth

Source: Annual Report 2015-16, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India.

Livestock Products in India 2014-15

Sl. No.	Product	Quantity	Ranking in the world production
01	MILK in million tonnes	146.3	First
02	EGGS in billions (nos)	78.48	Third
03	MEAT million tonnes	6.7	-
04	WOOL in million kgs.	48.1	-
05	FISH in lakh tonnes	101.6	Second

Source: Annual Report 2015-16, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture and Farmers Welfare, Govt. of India.

b) Milk Production in India



The milk and milk products is the major contributor of livestock sector. Since last 15 years, India has retained its leadership position in world's milk production. It is heartening to note that India's milk production may reach to 150 million tonnes in the year end of 2015-16 and may surpass all agricultural commodities' production. India is the probably only country in the world which has had a steady increase in milk production, and today we reached to the position of largest milk producing country in the world due to the contribution of millions of small and marginal dairy farmers who keep 2-4 dairy animals per household. Indian dairying is the classical example of production of masses rather than mass production.

The milk production which was 17 million tonnes in the year 1950-51 has risen to 146.3 million tonnes in the year 2014-15. The number of initiatives taken by the government has helped in increasing the productivity of the

dairy animals. The Indian dairy sector has acquired substantial growth momentum from 9th plan onwards. The annual average growth rate in milk production in India stood at 4.3 percent during 2001-02 to 2014-15 which is higher than any other protein foods like egg, meat and fish. A large credit of India's strong position of the present level of milk production goes to the White Revolution (also known as Operation Flood) launched by NDDB in 1970. Over the last five years, India's milk production has increased by about 25 million tonnes compared to an increase of about 6.5 million tonnes in the USA, 5.5 million tonnes in China and 1.6 million tonnes in European Union.

Increased milk production boosted the per capita availability of milk to the population of the country. In 1950-51, the per capita availability was merely 130 grams per day. There has been steady increase in per capita availability of milk since 1973 with the marginal fluctuation in the intermittent periods, however the production has sharply increased from 225 grams per day in 2003-04 to 322 grams per day (Annual Report,2015-16, Department of Animal Husbandry, Dairying and Fishery, Govt. of India) which is the above ICMR recommended

**Milk Production in India
(1950-51 to 2014-15 in Million tonnes)**

Year	Milk Production
1950-51	17.0
1955-56	19.0
1960-61	20.0
1968-69	21.2
1973-74	23.2
1979-80	30.4
1980-81	31.6
1985-86	44.0
1990-91	53.9
1995-96	66.2
2000-01	80.6
2005-06	97.1
2010-11	121.8
2011-12	127.9
2012-13	132.43

level of 280 grams per day (Table). The India's per capita availability is also higher than the world's average of 294 grams. More than 95 per cent of the milk is contributed by cattle and buffalo of the country.



Per Capita Availability of Milk in India (1950-51 to 2014-15)		
Year	Human Population (Million Nos.)	Per capita Availability (Grams/day)
1950-51	359	130
1955-56	393	132
1960-61	434	126
1968-69	518	112
1973-74	580	110
1979-80	664	125
1980-81	679	128
1985-86	755	160
1990-91	839	176
1995-96	928	195
2000-01	1019	217
2005-06	1106	241
2010-11	1186	281
2011-12	1210	290
2012-13	-	299
2013-14		307
2014-15		322

Source : Basic Animal Husbandry Statistics, 2015

Check Your Progress I

Note: a) Use the space provided for your answers.

b) Check your answers with the possible answers provided at the end of this unit.

1) What is the Meaning of Livestock as per the Cambridge dictionary?

Ans.

2) What are the important contributions of livestock to the farmer?

Ans.

1.7 Livestock in Odisha:

The predominant farming system in Odisha is the mixed crop-livestock farming system and over 90 per cent of farms of all categories conform to this farming system. Livestock Production had always been an integral part of the rural livelihood systems in Odisha.

The livestock wealth of Odisha is impressive in numbers across all species, constituting a natural resource base with immense livelihood implications, even though productivity levels are very low. This sector has the potential of providing the much needed insurance against the crop loss frequently occurring due to natural calamities in Odisha, and also the highest potential for rural self-employment generation at the lowest possible investment per

The sector is providing subsidiary to major sources of income to the large numbers of cultivators, small farmers, marginal farmers, BPL families and agricultural labourers. Livestock holding in Orissa is equitable as about 85 per cent of all livestock are owned by the marginal or small holders and the land less. Some 80 per cent of all rural households own livestock of one species or the other. The sector has ample scope to substantially enhance the production to meet the domestic market demands, create employment and income generating opportunities for the rural poor and enhance their food and livelihood security.

1.7.1 Contribution of Livestock Sector to State Economy:

The livestock production system has been an integral part of the rural livelihood system contributing significantly for poverty reduction in the state. In the last two to three decades, it has been observed that the contribution of agriculture sector to gross domestic product (GDP) has been in declining trend whereas the contribution from livestock sector has been increasing. In 2014-15 the contribution of Agriculture and allied sectors to Net State Domestic Product (NSDP) at current prices was 53,995 crores which was 20.75 % of NSDP and per capita income from these sectors in 2014-2015 was Rs. 59,229/-. The contribution of Animal Husbandry sector to the Agriculture and allied sector is about 25 %.

1.7.2 Livestock Population of Odisha:

According to livestock census 2012, the livestock population of Odisha was 207.33 lakh. Out of these, 59.56 % were cattle and buffaloes, 38.39 % were small ruminants and 1.35 % was pigs. Besides, the state has also 198.91 lakh poultry as compared to 7292 lakh at all India level. Out of total poultry in the state, 70 percent were local backyard breeds. Livestock census 2012 reveals that livestock population in the state declined by 10 % over the previous livestock census, 2007



while it decreased by 3.33 % at all India level. Uttar Pradesh had the highest livestock population in 2012. Odisha contributed about 4.5 % population of the livestock in the country compared to 13.42 % in Uttar Pradesh, 11.27% in Rajasthan and 10.96 % in Andhra Pradesh. Odisha constitutes 4.5 per cent of the total bovine population in the country. Odisha contributed about 6.09 percent of cattle population in the country being 7th in India.

Livestock Population in Odisha (in lakhs)

Species/Type	2007	2012
Bovine	134	123
Indigenous Cattle	106	103
Crossbred Cattle	17	13
Buffaloes	11	7
Small Ruminants	89.4	81
Poultry	205	199

Source: Livestock Census 2012

Cattle Population according to 2012 Livestock Census

Rank	State	Numbers in Thousand
1 st	Madhya Pradesh	19602
2 nd	Uttar Pradesh	19557
3 rd	West Bengal	16514
4 th	Maharashtra	15484
5 th	Rajasthan	13324
7 th	Odisha	11621

Buffalo Population according to 2012 Livestock Census

Rank	State	Numbers in Thousand
1 st	Rajasthan	12976
2 nd	Andhra Pradesh	10623
3 rd	Gujarat	10386
4 th	Madhya Pradesh	8188
5 th	Bihar	7567
16 th	Odisha	726

Sheep Population according to 2012 Livestock Census



Rank	State	Numbers in Thousand
1 st	Karnataka	9584
2 nd	Rajasthan	9080
3 rd	Tamil Nadu	4787
4 th	Jammu & Kashmir	3389
5 th	Maharashtra	2580
7 th	Odisha	1581

Goat Population according to 2012 Livestock Census

Rank	State	Numbers in Thousand
1 st	Rajasthan	21666
2 nd	Uttar Pradesh	15586
3 rd	Bihar	12154
4 th	West Bengal	11506
5 th	Andhra Pradesh	9071
10 th	Odisha	6513

Pig Population according to 2012 Livestock Census

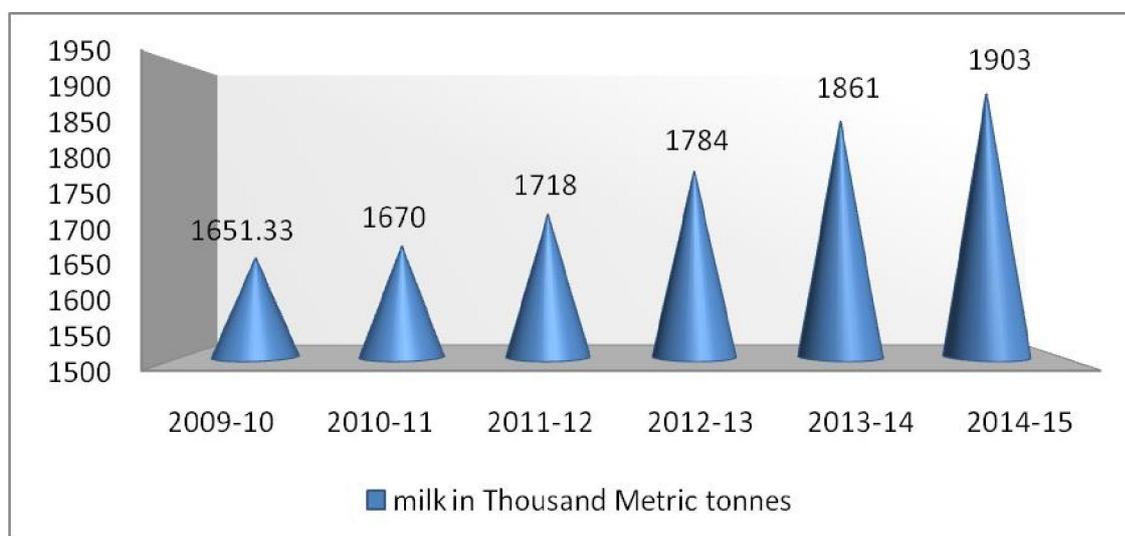
Rank	State	Numbers in Thousand
1 st	Assam	1636
2 nd	Uttar Pradesh	1334
3 rd	Jharkhand	962
4 th	Bihar	650
5 th	West Bengal	648
13 th	Odisha	280

Poultry Population according to 2012 Livestock Census

Rank	State	Numbers in Thousand
1 st	Andhra Pradesh	161334
2 nd	Tamil Nadu	117349
3 rd	Maharashtra	77795
4 th	Karnataka	53442
5 th	West Bengal	52838
10 th	Odisha	19891

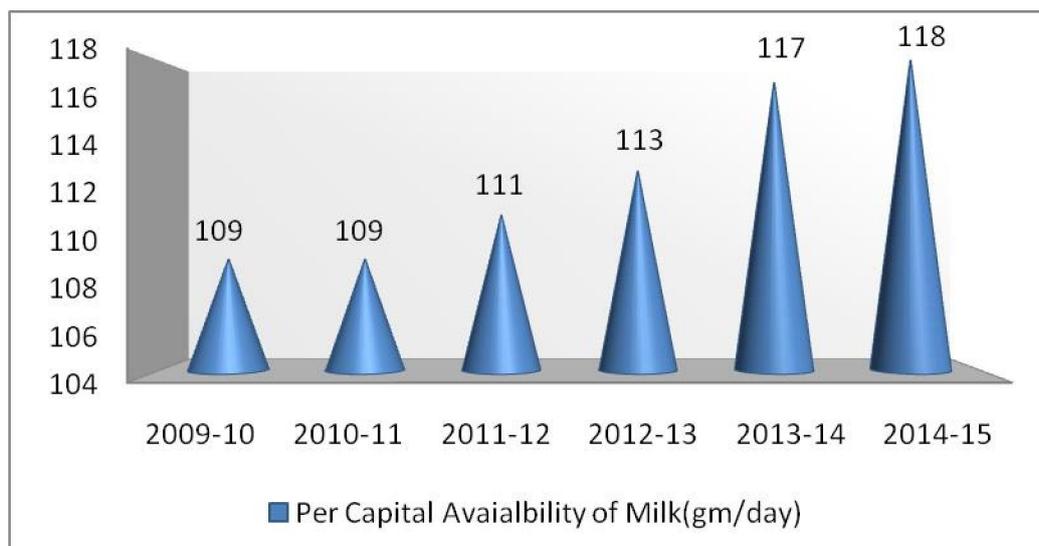
Source: livestock census, Dept. Of Animal Husbandry, M/O Agriculture

1.7.3 Milk Production in Odisha:



Odisha stands 14th position in the country in milk production with less than 2 % of the total production, while Uttar Pradesh stands first. Over the two decades, ending in 2014-15, milk production in Odisha has increased from 5.8 lakh metric tonnes (LMT) in 1994-95 to 19.0 LMT. Seven districts of Odisha- Cuttack, Puri, Ganjam, Jagatsinghapur, Baleshwar , Keonjhar and Jajapur remain major milk sheds accounting for 60 per cent of State's milk production. The milk production in Odisha is cattle based and the share of buffalo milk is merely 15 per cent in total production. Regarding utilisation, the dairy farmers in the State retain only 25 per cent of the milk at household level, sell about 60 per cent as fluid milk and convert only 15 per cent of the milk into value added dairy products. Per capital availability of milk in the state has increased from 94 gms/day in 2004-05 to 118 gms/day in 2014-15 while ICMR recommends intake of 280 gms of milk/day. So we have to cover a fair distance in terms of increasing the per capital milk availability.

Per capital availability of milk in Odisha

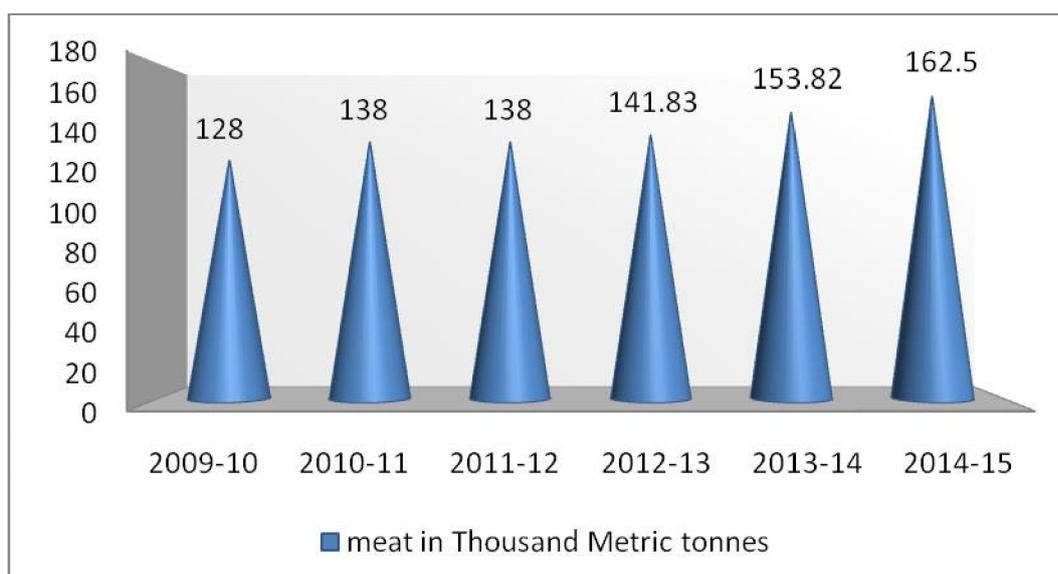


Source: Odisha Economic Survey: 2015-16, Govt. of Odisha

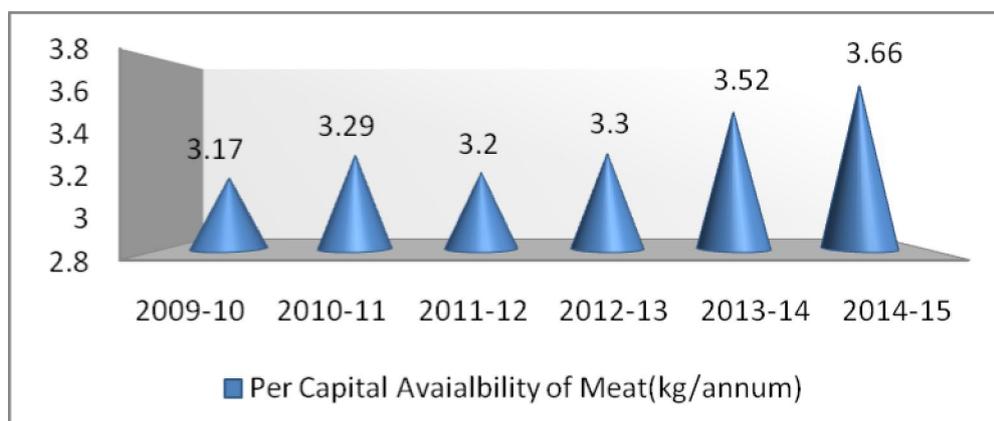
1.7.4 Meat Production:

India stands fifth in meat production in the world with production of 6.3 million tonnes in 2014-15 while the per capital availability is 5 kg/annum in 2014-15. Odisha stands 12th position in the country in meat production with production of 162.5 TMT in 2014-15 with per capital availability of 3.66 kg/annum, while Uttar Pradesh stands first. ICMR recommends intake of 11 kg of meat/annum.

Meat production in Odisha



Per capital availability of Meat in Odisha

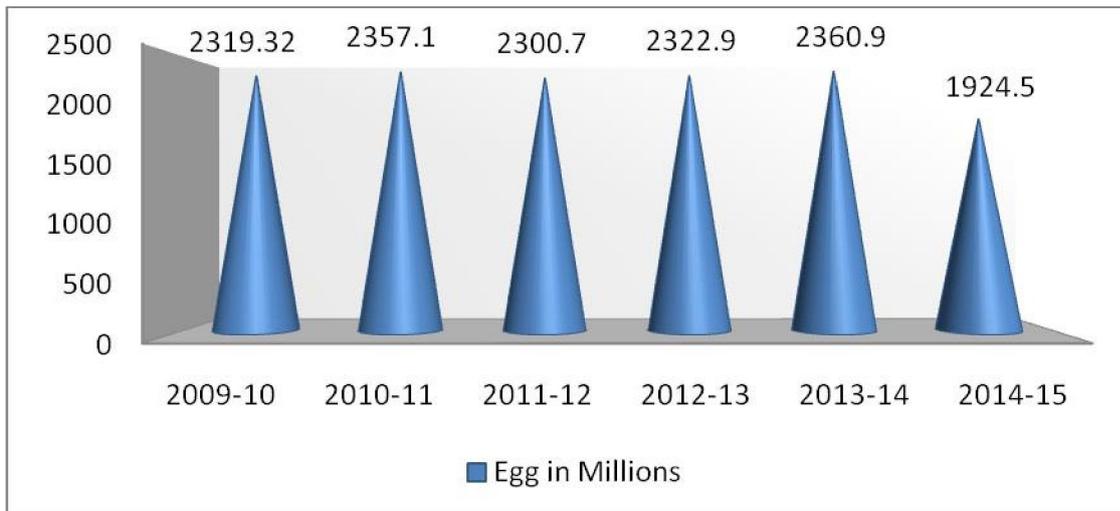


Source: Odisha economic survey 2015-16 (Govt. of Odisha)

1.8 Egg Production:

Poultry production in India has emerged as one of the fastest growing sectors among various livestock based enterprise increasing population, changing life-style, shifting of food habits, rapid urbanization, increased per capita income and awareness about health care etc. are contributing towards rising demand of poultry products. This sector comprises of low, medium and high input and output systems of rearing and also providing employment to over 7 million people, apart from household income and nutritional security to numerous small poultry keepers in rural and tribal areas of the country. It contributes about 0.7 % to the national GDP and about 10% to the livestock GDP. In Odisha, among the various animal husbandry practices, livestock sector “Poultry” occupies a very significant position due to their tolerance to climatic stress, low input cost and resistance to drought etc. Particularly in layer segment there is a tremendous opportunities of self employment. Though it is highly capital intensive yet it is highly remunerative.

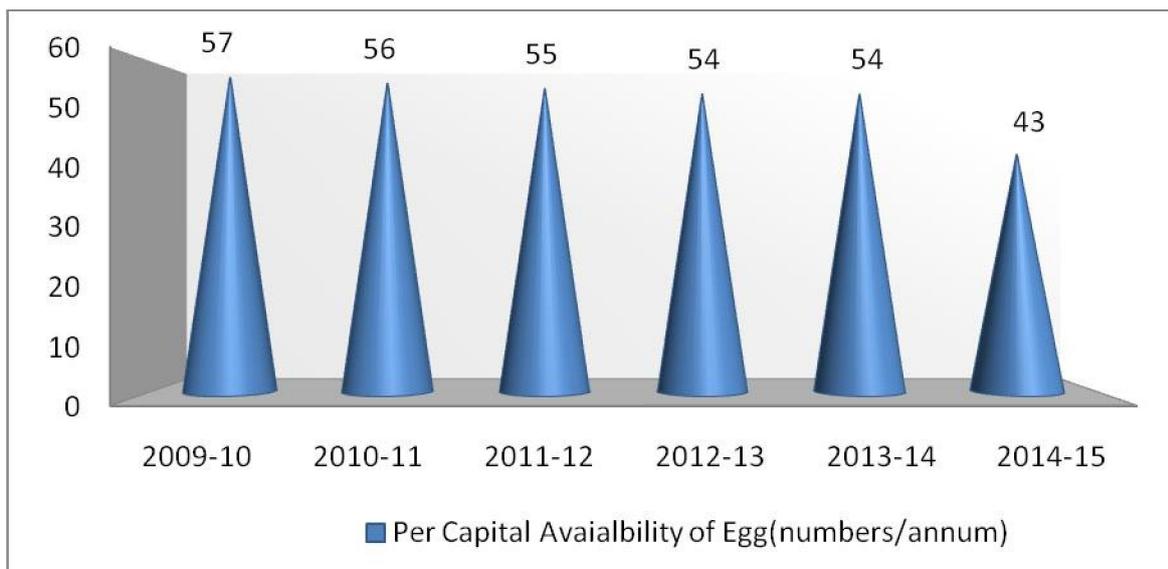
a) Egg production in Odisha



Source: Odisha economic survey 2015-16 (GoO)

India stands fourth in egg production in the world with production of 78.48 billions in 2014-15 while the per capital availability is 58 eggs/annum in 2014-15. Odisha stands 8th position in the country in egg production with production of 1924.5 millions in 2014-15 with per capital availability of 43 eggs/annum, while Andhra Pradesh stands first. ICMR recommends intake of 180 eggs/annum.

b) Per capital availability of Egg in Odisha



1.9 Operation Flood (OF):



Operation Flood programme launched by National Dairy Development Board (NDDB) in 1970 made India self sufficient in milk production. The programme transformed India from a milk-deficient nation to the world's largest milk producer surpassing USA in 1998. The operation flood programme is popularly known as White Revolution in India. The main architect of this successful project was Dr. Verghese Kurien, also called as the father of White Revolution. In 1949 Mr. Kurien joined Kaira District Co-operative Milk Producers' Union (KDCMPUL), now famous as Amul (Anand Milk Union Limited) voluntarily leaving a government job of dairy engineer. Kurien has since then built this organization into one of the largest and most successful institutions in India. The Amul pattern of cooperatives had been so successful, in 1965, then Prime Minister of India, Shri Lal Bahadur Shastri, created the National Dairy Development Board (NDDB) to replicate the program on a nationwide basis citing Kurien's "extraordinary and dynamic leadership" upon naming him chairman.

Operation Flood

- Launched in 1970
- Flood of Milk
- Augment Rural Income
- Ensuring Fair Prices
- Three Phases



Operation Flood programme created a national milk grid linking producers throughout India with consumers in over 700 towns and cities, reducing seasonal and regional price variations while ensuring that the producer gets a major share of the price consumers pay, by cutting out middlemen. The bedrock of Operation Flood has been village milk producers' co-operatives, which procure milk and provide inputs and services, making modern management and technology available to members. Operation Flood's objectives included:

- Increase milk production
- Augment rural incomes
- Fair prices for consumers

Operation Flood was implemented in three phases.

Phase I

Phase I (1970–1980) was financed by the sale of skimmed milk powder and butter oil donated by the European Union (then the European Economic Community) through the World Food Program. NDDB planned the program and negotiated the details of EEC assistance. During this phase, Operation Flood linked 18 of India's premier milksheds with consumers in India's major metropolitan cities: Delhi, Mumbai, Kolkata and Chennai, establishing mother dairies in four metros. Operation Flood – I was originally meant to be completed in 1975, actually spanned the period of about nine years from 1970–79. The total cost of this phase was Rs.116crores. The main objectives were, commanding share of milk market and speed up development of dairy animals respectively hinter lands of rural areas.

Phase II

Operation Flood Phase II (1981–1985) increased the milk-sheds from 18 to 136; urban markets expanded the outlets for milk to 290. By the end of 1985, a self-sustaining system of 43,000 village cooperatives with 4,250,000 milk producers were covered. Domestic milk powder production increased from 22,000 tons in the pre-project year to 140,000 tons by 1989, all of the increase coming from dairies set up under Operation Flood.

Phase III

Phase III (1985–1996) enabled dairy cooperatives to expand and strengthen the infrastructure required to procure and market increasing volumes of milk. Veterinary first-aid health care services, feed and artificial insemination services for cooperative members were extended, along with intensified member education. Operation Flood's Phase III consolidated India's dairy cooperative movement, adding 30,000 new dairy cooperatives to the 43,000 existing societies organized during Phase II. Milk-sheds peaked at 173 in 1988-89 with the numbers of women members and Women's Dairy Cooperative Societies increasing significantly. Phase III increased emphasis on research and development in animal health and animal nutrition.



1.10 Anand Milk Union Limited (AMUL):

The brand name “Amul,” which comes from the Sanskrit word “Amoolya,”- means priceless, was formed in 1946, as a dairy cooperative in India. It is a brand name managed by an apex cooperative organization, Gujarat Co-operative Milk Marketing Federation Ltd. (GCMMF), which today is jointly owned by some more than three million milk producers in Gujarat, India. The White Revolution’s model dairy board was that of Amul.

The whole program of NDDDB was largely based the working of this dairy board. The three-tier ‘Amul Model’ has been instrumental in bringing about the White Revolution in the country. The Operation Flood programme, even today, stands to be the largest dairy development programme ever drawn in the world. This saw Amul as model and this model is often referred in the history of White Revolution as “Anand Pattern”. Replication of “Anand Pattern” has helped India to emerge as the largest milk producing nation in the world.

Salient Features of Operation Flood



Features	OF-I	OF-II	OF-III
Period	July 1, 1970 to March 31, 1981	October 2, 1979 to March 31, 1985	April 1, 1985 to April 30, 1996
Number of Milksheds covered	39	136	170
Number of Anand Pattern DCSs set up ('000)	13.3	34.5	72.7
Number of Members (in millions)	1.8	3.6	9.3
Average Milk Procurement (Million Kg Per Day)	2.6	5.8	10.9
Processing Capacity in Rural Dairies (Million Litres Per Day)	3.8	8.8	18.1
Drying Capacity (Metric Tons Per Day)	261.0	508.0	842.0
Liquid Milk Marketing (Million Litres Per Day)	2.8	5.0	9.9

Operation Flood has made the country self sufficient in milk and milk products through modernization of our dairy industry. More important, being a small-producer oriented programme, it has impacted positively on income, employment and nutrition status of milk producing households. The rural families targeted under this programme were ones with small resource base – both animal and land holdings. Over 70 per cent of the families possessed only two milch animals or less; 21 per cent families were landless and 66 percent were small and marginal farmers owning less than four ha of land.

1.11 Important Animal Husbandry Programmes



1) National Programme for Bovine Breeding and Dairy Development (NPBBDD)

The National Programme for Bovine Breeding and Dairy Development (NPBBDD) has been initiated in February 2014 by merging four ongoing schemes of the Department of Animal Husbandry, Dairying and Fisheries in the dairy sector, viz., National Project for Cattle and Buffalo Breeding (NPCBB), Intensive Dairy Development Programme (IDDP), Strengthening Infrastructure for Quality & Clean Milk Production (SIQ & CMP) and Assistance to Cooperatives (A-C). This has been done with a view to integrate milk production and dairying activities in a scientific and holistic manner, so as to attain higher levels of milk production and productivity, to meet the increasing demand for milk in the country. The Scheme has two components (a) National Programme for Bovine Breeding (NPBB) and (b) National Programme for Dairy Development (NPDD). An allocation of Rs 1200.00 crore has been made available for implementation of the scheme during 12th Plan period.

Objectives:

The mandate of the scheme is to:

- a) arrange quality Artificial Insemination services at farmers' doorstep;
- b) bring all breedable females under organised breeding through Artificial Insemination or natural service using germ plasm of high genetic merits;
- c) conserve, develop and proliferate selected indigenous bovine breeds of high socio- economic importance;
- d) provide quality breeding inputs in breeding tracts of important indigenous breeds so as to prevent the breeds from deterioration and extinction;

2) Rastriya Gokul Mission:

Rastriya Gokul Mission was started in December 2014 with the aim to conserve and develop indigenous breeds.

Objectives of the Scheme:

- a) To undertake breed improvement programme for indigenous cattle breeds so as to improve the genetic makeup and increase the stock.
- b) To enhance milk production and productivity of indigenous bovines.



c) To upgrade nondescript cattle using elite indigenous breeds like Gir, Sahiwal, Rathi, Deoni, Tharparkar, Red Sindhi.

d) To distribute disease free high genetic merit bulls of indigenous breeds for natural service.

Scheme was proposed to be implemented on 100% grant-in-aid basis with an amount of Rs 500 crore during the 12th Five Year Plan.

3) National Livestock Mission (NLM)

The National Livestock Mission (NLM) has commenced from 2014-15. The Mission is designed to cover all the activities required to ensure quantitative and qualitative improvement in livestock production systems and capacity building of all stakeholders. The Mission covers everything related to improvement of livestock productivity and support projects and initiatives required for that purpose subject. This Mission is formulated with the objective of sustainable development of livestock sector, focusing on improving availability of quality feed and fodder.

NLM has 4 submissions as follows:

- i. Sub-Mission on Fodder and Feed Development
- ii. Sub-Mission on Livestock Development,
- iii. Sub-Mission on Pig Development in North-Eastern Region:
- iv. Sub-Mission on Skill Development, Technology Transfer and Extension:

4) Dairy Entrepreneurship Development Scheme (DEDS)

Dairy Entrepreneurship Development Scheme (DEDS) was started in September 2010 with the objective to generate self employment opportunities in the dairy sector in the country. This scheme is being implemented through NABARD which provides financial assistance to commercially bankable projects.

Objectives of the scheme:

- i. to generate Self-employment and provide infrastructure for dairy sector;
- ii. to set up modern dairy farms and infrastructure for production of clean milk;
- iii. to encourage heifer calf rearing for conservation and development of good breeding stock;
- iv. to bring structural changes in the unorganized sector, so that initial processing of milk can be taken up at the village level;

- v. to upgrade traditional technology to handle milk on a commercial scale and
- vi. to provide value addition to milk through processing and production of milk products

Activities covered under DEDS

- i. Establishment of small dairy units with crossbred cows/ indigenous descript milch cows like Sahiwal, Red Sindhi, Gir, Rathi etc / graded buffaloes upto 10 animal
- ii. Rearing of heifer calves – cross bred, indigenous descript milch breeds of cattle and of graded buffaloes – upto 20 calves
- iii. Vermicompost (with milch animal unit .To be considered with milch animals and not separately)
- iv. Purchase of milking machines /milkotesters/bulk milk cooling units (upto 2000 lit capacity)
- v. Purchase of dairy processing equipment for manufacture of indigenous milk products
- vi. Establishment of dairy product transportation facilities and cold chain
- vii. Cold storage facilities for milk and milk products
- viii. Establishment of private veterinary clinics
- ix. Dairy marketing outlet / Dairy parlour

5) National Dairy Plan (NDP)

National Dairy Plan Phase I (NDP I), a Central Sector Scheme of Government of India, is a scientifically planned multi-state initiative being implemented by NDDDB with the network of End Implementing Agencies (EIAs) for the period 2011-2018-19. NDP I is an externally aided project with total outlay of ₹ 2242 crore comprising ₹ 1584 crore as International Development Association (IDA) credit, ₹ 176 crore as Government of India share, ₹ 282 crore as share of End Implementing Agencies (EIAs) that will carry out the projects in participating states and ₹ 200 crore by National Dairy Development Board and its subsidiaries for providing technical and implementation support to the project. The important objectives of NDP are:

- i. To increase productivity of milch animals and thereby increase milk production to meet the rapidly growing demand for milk.
- ii. To provide rural milk producers with greater access to the organised milk-processing sector.



NDP I is being implemented in 18 major milk producing states namely Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal, Telangana, Uttarakhand, Jharkhand and Chhattisgarh which together account for over 90% of the country's milk production. Coverage of NDP I will however be across the country in terms of benefits accruing from the scheme.

Check Your Progress II

Note: a) Use the space provided for your answers.

b) Check your answers with the possible answers provided at the end of this unit.

1) What is the contribution of livestock sector to Odisha's economy?

Ans.

2) Expand the following abbreviations.

- a) OF
- b) NDDDB
- c) AMUL
- d) NPCBB
- e) NDP
- f) DEEDS
- g) NPBBDD

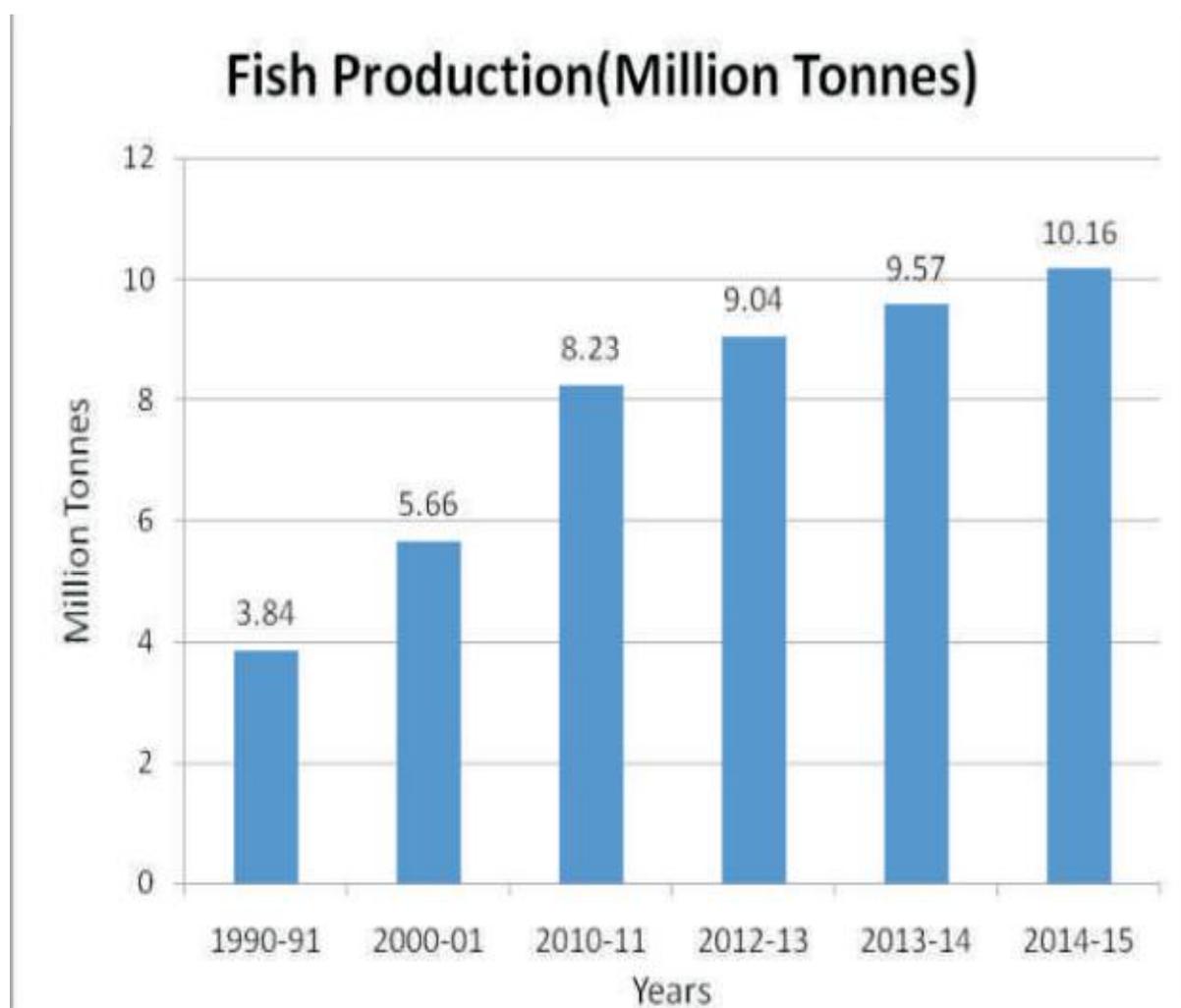
3) What is the per capita availability of following livestock products in Odisha?

- a) Egg
- b) Milk
- c) Meat

1.12 Fishery Development in India

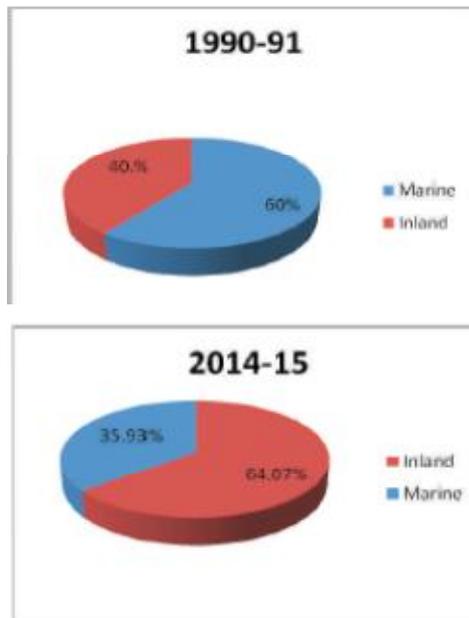


Presently India is the second largest fish producing nation in the world. India is also a major producer of fish through aquaculture and ranks second in the world after china. The total fish production during 2014-15 is at 10.16 million tonnes (MT) with contribution of 6.51 MT from inland sector and 3.65 from marine sector. Fishery is a sunrise sector with varied resources and potential, engaging over 14.50 million people at the primary level and many more along the value chain. This sector contributes about 0.9 % to the National Gross Domestic Product (GDP) and 5.17 % to the agriculture GDP (2014-15).



The historical scenario of Indian fisheries reveals a paradigm shift from marine dominated fisheries to a scenario where inland fisheries has emerged as a major

contributor to the overall fish production in the country. The inland fishery presently has a share of 64.07% in total fish production of the country.



Within inland fisheries there is a shift from capture fisheries to aquaculture during the last two and a half decade. Fresh water aquaculture with a share of 34 percent in inland fisheries in mid-1980s has increased to about 80 per cent in recent years. It has emerged as a major fish producing system in India as a result of various initiatives taken by the Government. Fish Farmers Development Agencies (FFDA) were set up in various districts for delivering advanced technologies, practices, training and financial assistance to the beneficiaries.

1.12.1 Blue Revolution:

The ministry has restructured the fishery sector schemes by merging all the ongoing schemes under one umbrella of Blue Revolution. The restructured schemes provides for an integrated development and management of fisheries, covering inland fisheries, aquaculture, marine fisheries, deep sea fishing, marine culture and all activities undertaken by the National Fisheries Development Board (NFDB) . The restructured Central Scheme on Blue Revolution:

What is the Blue Revolution

- It is the rapid expansion of intensive, commercial aquaculture
- Came in a decade after the Green Revolution (1970s; chemical-based agriculture)
- Increase global food production and reduce widespread hunger

Integrated Development and Management of Fisheries has been with the following components:

- a) National Fisheries Development Board (NFDB) and its activities,
- b) Development Inland Fisheries and Aquaculture
- c) Development of Marine Fisheries, Infrastructure and Post-Harvest Operations,
- d) Strengthening of data base and Geographical Information System of the Fisheries Sector,
- e) Institutional arrangement for Fisheries Sector
- f) Monitoring, Control and Surveillance (MCS) and other need-based Interventions and
- g) National Scheme of Welfare of Fishers

1.12.2 Fishery Schemes:

1) Development Inland Fisheries and Aquaculture:

Development of Inland Fisheries and Aquaculture being implemented through the State Government/UTs covers all the inland fishery resource available in the country in the form of fresh water, brackish water, cold water, water logged areas, saline/ alkaline soils for aquaculture and capture fisheries including reservoirs.

The scheme has the following seven different components:

- a) Development of Freshwater Aquaculture



- b) Development of Brackish water Aquaculture
- c) Cold water fisheries and Aquaculture
- d) Development of Waterlogged areas
- e) Productive Utilisation of Inland Saline/Alkaline soils for Aquaculture
- f) Integrated Development of Inland Capture Resources (reservoirs/rivers etc.)
- g) Innovative Projects

2) Development of Marine Fisheries, Infrastructure and Post-Harvest Operations

Under this scheme, financial assistance is given for the development of marine sector and for improving the socio-economic conditions of the traditional fisherman. The scheme has three major components:

- a) Development of marine fisheries
- b) Development of infrastructure and post harvest Operations
- c) Innovative schemes

3) National Scheme for Welfare of Fisherman:

Under this scheme, basic amenities such as housing, drinking water facilities, community halls are provided for fisherman in their fishing villages. Insurance coverage for fisherman engaged actively in fishing and financial assistance to fishers during lean fishing season is also provided.

4) Strengthening of data base and Geographical Information System

The scheme consists of the following components: a) Sample survey for Estimation of Inland Fishery Resource and their Potential b) Census on Marine Fisheries, c) Catch Assessment Survey for Inland and Marine Fisheries, d) Development of GIS, e) Development of data base of fishery cooperatives of India, f) Evaluation studies, etc.

5) National Fisheries Development Board (NFDB)

National Fisheries Development Board (NFDB) was set up in September, 2006 at Hyderabad to realise the untapped potential of fishery sector. The activities of the Board are focussed towards increasing the fish production and productivity in the country to enhance the exports of fish and fishery products and to provide employment to 3.5 million persons in the country. Some of the important objectives of NFDB are:

- i) Sustainable management and conservation of aquatic resources
- ii) Creation of Employment opportunity

iii) Improve production, processing, storage, transport and marketing of fish products.

iv) Application modern tools of research and development including biotechnology for optimising production and productivity

v) Capacity building of manpower

1.12.3 Fishery Development in Odisha:

Odisha is one of the important maritime states of India having excellent scope of fisheries development. The State's 480 km long coastline with 24,000 sq. km area within the continental shelf has ample potential for marine fisheries development. Freshwater resources of the State are estimated to be 6.76 lakh ha comprising 1.25 lakh ha of tanks/ponds, 2 lakh ha of reservoirs, 1.80 lakh ha of lakes, swamps & jheels and 1.71 lakh hectares of rivers and canals. The State's brackish water resources are of the order of 4.18 lakh ha with a breakup of 0.79 lakh ha of Chilika Lake, 2.98 lakh ha of estuaries, 32,587 ha of brackish water area and 8,100 ha of backwaters. The total fish production of the State in 2013-14 was 4,13,000 tonnes. The overall increase in fish production during the past five years from 2007-08 to 2012-13 was in the order of 63,660 tonnes, with an annual growth rate of about 3 percent.

The annual per capita fish consumption presently is 9.13 kg in Odisha as against the national per capita fish consumption of 9.8 kg. The annual export of marine products from Odisha during the last five years ranged between 14,135 tonnes in 2008-09 and 30,980 tonnes (2013-14) valued approximately at Rs. 357.88 crore to Rs. 1800 crore. Contribution of Odisha to the present level of marine products exported from the country is about 2.5 percent in terms of quantity and 4.8 percent in terms of value.

The average productivity of the reservoirs in the State was around 9.3 kg per ha as compared to the national average of 15 kg/ha. Freshwater aquaculture in the State is being promoted through district level Fish Farmers Development Agencies (FFDAs). The total fishermen population in Odisha is 14,80,704 comprising 6,05,514 (CMFRI census 2010) are marine fishermen and the remaining 8,75,190 are inland fishermen. There are about 1,69,000 active marine and about 1,89,000 inland fishermen. The Plan outlay for development of

fisheries in Odisha increased from Rs. 27.00 crore in the 5th Five Year Plan to Rs. 459.108 crore in the 12th Five Year Plan.



Resources & Potentiality of Freshwater aquaculture			
Resources	Water area (in lakh ha.)	Total production potentiality (in lakh MT)	Present production level (2013-14) (in lakh MT)
Culture Fisheries (Tanks & Ponds)	1.21	3.63	2.31
Culture based capture fisheries (Reservoirs)	2.00	0.20	0.19
Capture fisheries (Lakes/ swamps/ bheels)	1.80	0.36	0.03
Rivers & canals	1.71	0.14	0.11
Total	6.72	4.33	2.64

BRACKISHWATER FISHERIES SECTOR

Resources	Water Area (Lakh ha)	Total Production Potentiality (Lakh MT)	Present production level (2013-14) (in lakh MT)
Area suitable for brackishwater tanks	0.330	0.33	0.13
Back Waters	0.081	0.02	-
Lakes (Chilika)	0.790	0.08	0.12
Estuaries	2.980	0.24	0.05
TOTAL	4.181	0.67	0.30

MARINE SECTOR

Coast Line	480 Kms.
Continental Shelf Area	24,000 Sq. Km. (approx)
District-wise Coastal Length (in Kms.)	
Balasore	80
Bhadrak	50
Kendrapada	68
Jagatsinghpur	67
Puri	155
Ganjam	60
Total Coastal length	480



1.12.4 Ongoing Government of India Schemes and Programmes in Odisha

1) Centrally Sponsored Plan Schemes:

- a) Development of Inland Fisheries & Aquaculture (FFDA)
- b) Motorization of Traditional Crafts
- c) Welfare Schemes for Fishermen:
- d) Construction of low cost house
- e) Saving-cum-relief Scheme
- f) Accident Insurance for fishermen
- g) Development of Fishing Harbours & Jetties
- h) Fishermen Rebate on HSD Oil
- i) Fisheries Training & Extension
- j) Safety of fishermen at sea

2) State Plan:

Under Rural Infrastructure Development Fund (RIDF) and National Fisheries Development Board (NFDB), some of the activities undertaken for fishery development are :

1. Intensive Aquaculture of Ponds and Tanks
2. Reservoir Fisheries
3. Coastal Aquaculture



4. Infrastructure: Fishing Harbors and Fish Landing Centers
5. Fish Dressing Centers & Solar Drying of Fish
6. Technology Up- gradation
7. Human Resource Development Programmes
8. Deep Sea Fishing and Tuna Processing
9. Other Activities

3) Others Programmes:

1. MGNREGS – Mahatma Gandhi National Rural Employment Generation Scheme

2. RKVY- Rastryia Krishi Vikas Yojana

- i) NMPS – National Mission for Protein Supplement
 - Intensive Aquaculture in tanks and ponds
 - Reservoir Development through Cage culture
- ii) MCC – Matstya Credit Card

4. MUY – Matshyajibi Unnayan Yojana

The MUY was launched by Hon.ble Chief Minister, Odisha on 9.12.2011 to provide social security and livelihood support to the fishermen community of Odisha. The Yojana has 14 sub-components and they are:

- a) Special PDS for fishermen affected by the olive ridley sea turtle conservation for marine fishermen
- b) Replacement of wooden country craft with FRP boat for marine fishermen
- c) Motorisation of country craft for marine fishermen
- d) Assistance for fish marketing infrastructure for fishermen:
- e) Assistance for net and boat for inland fishermen
- f) Promotion of cage culture in reservoirs
- g) Group Accident Insurance scheme for fishermen(GAIS)
- h) BASUNDHARA for Fishermen
- i) MO KUDIA scheme for Fishermen
- j) NETRAJYOTI scheme for Fishermen
- k) Financial assistance for fatal disease for fishermen
- l) Award to meritorious children of fishermen community
- m) Financial assistance to women SHGs of marine fishermen community
- n) Sea weed culture as an alternative livelihood for marine fishermen

1.12.5 The Orissa Pisciculture Development Corporation Ltd (OPDC):

The Orissa Pisciculture Development Corporation Ltd (OPDC) was incorporated during the year 1998 by taking over the activities of the erstwhile Orissa Fish Seed Development Corporation Ltd. and Orissa Maritime & Chilika Area Development Corporation Ltd.

Main Objectives:

- a) To carry on the business of development of Pisciculture in brackish water areas and freshwater ponds, rivers, streams, lakes, rivulets or such other hydrological sources, of different species of Prawns, fishes, crabs and other aquatic organisms and sea foods.
- b) To undertake preservation, processing, storing, freezing, canning, packing, selling and export of prawns, fishes and other aquatic products.
- c) To produce, buy, sell, export, import or otherwise of fish seeds, fish meal, fishery products and by-products.
- d) To manufacture, buy, sell, export, import or otherwise deal in all types of fishing nets/gears/tackles, fishing boats, trawlers, deep sea vessels and other accessories and machinery used for capture and culture fisheries, manage and maintain diesel and other fuel outlets for trawlers, ships and other forms of aquatic transport as well as surface transport.
- e) To manufacture, buy, sell, export, import or otherwise deal in salt and for this purpose own and manage salt pans, brine containers and to develop, maintain and let out the same, etc.

1.12.6 Odisha State Fishermen’s Cooperative Federation limited (FISHFED):



The FISHFED is an apex body of all Primary Fishermen Cooperative Societies (PFCS) in the State, which looks for the socio-economic interest, as well as welfare of the poor fishermen of the State. There are 333 nos. of PFCSs comprising of 70,000 fishermen and women members under affiliation with FISHFED. The Federation is involved in a variety of businesses like marketing of fish products, fishery inputs, lease of fishery sairats in Chilika for the greater interest of the fisheries, production of fish and fish seed, development of infrastructure for fish marketing, maintenance and management of fishing harbours, landing centres and jetties, etc.

Check Your Progress III

Note: a) Use the space provided for your answers.

b) Check your answers with the possible answers provided at the end of this unit.

1) What are the components of Integrated Development and Management of Fisheries under restructured scheme on Blue Revolution?

Ans.

2) What is Matshyajibi Unnayan Yojana?

Ans.

3) Expand the following abbreviations.

- a) FISHFED
- b) OPDC
- c) MUY
- d) MGNREGS
- e) RKVY
- f) NFDB
- g) FFDA

1.13 Let Us Sum Up

Livestock meet various requirements of human being like meat, milk, egg, fibre, fertiliser for crops, draught power, etc. Besides, it also reduces farmers'



exposure to risk and generates employment. Livestock are closely linked to social and cultural lives of several million resource-poor farmers for whom animal ownership ensures varying degree of sustainable farming and economic stability. The Central and State Governments through various programmes of livestock and fishery development are attempting to improve the socio-economic condition of the people.

1.14 Key Words

- **Livestock** : Livestock are animals and birds that are kept on a farm, such as cows, sheep, or chickens
- **Operation Flood** : Operation Flood was a programme launched by National Dairy Development Board (NDDB) to make India self sufficient in milk production
- **Pisciculture** : The rearing and breeding of fish under controlled condition is known as pisciculture.

1.15 References

- Banerjee ,G. C. (2008)A Textbook Of Animal Husbandry, Oxford Publication
- Biswas, A.K. and Mandal, P.K. (2014) Textbook of Poultry, Egg and Fish Processing Technology , Stadium Press India Pvt Ltd
- FAO, (2006). The state of world fisheries and aquaculture. Database available at <http://www.fao.org>
- ICAR (2015), Handbook of Animal Husbandry, New Delhi
- Mathialgan, P (2007). Textbook of Animal Husbandry and Livestock Extension, International Book Distributing Co., Lucknow
- MPEDA, (2006). Action plan for the development of export oriented aquaculture in Maritime States of India, India.
- Patel, Amrita (1997) Perspectives and policy initiatives for the cooperative sector, Indian Dairyman, 49(5) : 119-123.
- Pillai,N.G.K. and P.K.Katiha, (2004). Evolution of Fisheries and Aquaculture in India. Central Marine Fisheries Research Institute, Kochi.
- Singh, H (2011) Dairy Farming Jain book Agency C-9, Connaught Place New Delhi - 110001

World Bank (1996) India livestock sector review: Enhancing growth and development. Report No: 14522- IN. World Bank, Washington, DC, USA.

World Bank (1999) India: Livestock Sector review: Enhancing growth and development. The World Bank and Allied Publishers: New Delhi.

www.dahd.nic.in

www.nabard.org

www.thepoultrysite.com

www.nddb.org

www.farmer.gov.in

www.fardodisha.gov.in

www.olrds.com

www.odishaahvs.com

www.apeda.gov.in



UNIT- 2

Forestry, Horticulture and Floriculture



Learning Objectives:

After completion of this unit, you should be able to:

- *differentiate between basic forestry and applied forestry*
- *enlist benefits of agro forestry*
- *define horticulture and explain the importance of horticulture crops on human nutrition*
- *enlist programmes and schemes of horticulture*

Structure:

- 2.1 Forestry in India
- 2.2 Silviculture
- 2.3 Agro forestry
 - 2.3.1 Benefits of Agro forestry
 - 2.3.2 Social Forestry
- 2.4 Joint Forest Management (JFM)
- 2.5 Forest based Livelihood Project of Odisha
- 2.6 Horticulture
 - 2.6.1 Definition of horticulture
 - 2.6.2 Importance of horticulture
 - 2.6.3 Horticulture crops and human nutrition
 - 2.6.4 Functions of fruits and vegetables in human body
 - 2.6.5 Branches of horticulture
 - 2.6.6 Programme and schemes of horticulture
- 2.7 Floriculture
- 2.8 Let Us Sum Up
- 2.9 Key Words
- 2.10 References

2.1 Forestry in India:



a) Forest

Forests are natural renewable resources of the earth. It helps life on earth by performing various productive, protective and developmental functions. Forests provide renewable raw material and energy, maintain biological diversity, mitigate climate change, protect land and water resources, provide recreation facilities, improve air quality and help alleviate poverty. The word forest is derived from the Latin word “Eairs” means “outside’. Therefore, forests are areas covering practically all uncultivated or untended lands covered with rather tall and dense tree growth.

Function of Forests:

Sr. No.	Particulars	Functions
1	Productive	They provide timber, fuel, charcoal, beedi, leaves, wax and resins, fruits, tanning, materials, manure, leaves, grass, bamboo, gums, lac etc.
2.	Protective	Forests protect water sheds, catchments of rivers and streams against erosion.
3.	Aesthetic	Forests add good appearance, landscaping and a thrilling atmosphere to the locality.
4	Recreational	Forest provides picnic resorts and opportunities for sport like hiking, trekking, wild life watching, bird watching.
5	Scientific	Study of ecological process can be made
6	Ameliorative	Forests improve climate and reduce pollution
7	Hygienic	Forests improve the environment and help in reduction of noise, purify the air and give out oxygen to the atmosphere.
8	Industrial developments	Forest meet the need for raw material for industrial development such as Paper pulp, rayon grade pulp, saw mill ply wood, hard board etc.

Out of the total geographical area of 328.8 million hectare in India, approximately 75.18 million hectare land is classified as forests. About 95 per cent of the forests of the country are owned by the Government. The remaining 4.0 per cent are owned by corporate bodies and 1 per cent by private individuals. Government forests are classified into reserved, protected and un-classed forests.

Odisha is also rich in forest cover and as per the report of the Forest Survey of India using remote sensing techniques, the forest cover in the State is 48,855 sq. kms of which 7,073 sq. kms is very dense forest. The moderately dense forest extends over 21,394 sq. kms while open forest is over 20,388 sq. kms. The forest cover in the State constitutes 31.38% of the geographical area. Besides this, there exists tree cover outside the forest over 2.85% of the geographical area of the State. Thus the forest and tree cover in the State is 34.23% of the geographical area (www.orissa.gov.in).

b) Forestry

Forestry is defined as the theory and practice of all that constitutes the creation, conservation and scientific management of forests and the utilization of their resources (Anon, 1966). It includes all thinking and all actions pertaining to creation and management of forests, including harvesting, marketing and utilization of all forest products and services. It includes not only management of existing forests but also the creation of new forests. The forestry may be:

1. **Protection of Environmental forestry:** Protection of land, regulation of water cycle, Wild life conservation Modernization of climate conditions, combination of above. Ex. Buddha Jayanti Park at New Delhi.
2. **Commercial or Production forestry:** Timber and other raw materials.
3. **Social Forestry:** Raising forests outside the traditional forest with the involvement of society.
4. **Farms Forestry:** Raising forest trees on farms lands. It is further classified as:
 - **Non commercial farm forestry:** raising of trees by individuals for domestic needs (usually by the farmers)



- **Commercial farms forestry:** Farmers grow trees on commercial basis on farmlands.
5. **Community forestry:** Raising of forests of public or community land
 6. **Urban forestry:** Management of public and private owned lands in and adjacent to urban centres. They have more aesthetic value.
 7. **Agro Forestry:** Cultivating forest trees along with agricultural crops.

Mainly, the forestry has been grouped as follows:

1. Basic Forestry
2. Applied Forestry

1. Basic Forestry: Basic Forestry deals with the theory and practice of constitution and management of forests and utilization of their products.

Basic Forestry has the following Branches:

A) Silviculture: This refers to certain aspects to theory and practise of raising forest, crops, methods of raising tree, their growth and after-cares up to the time of final harvesting. However, in simple words, it is the cultivation of forest trees.

B) Forest Mensuration: In simple language, it is the measurement of forest produce. However, it is defined as the determination of dimensions (e.g. height, diameter, volume, etc.) from, volume, age and increment of single trees, stands or whole woods, either standing or after felling. It concerns with linear area, volume and weight measurements.

C) Silvicultural Systems: A Silvicultural system can be defined as a method of Silvicultural procedure worked out in accordance with accepted sets of Silvicultural principles by which crops constituting forests are tended, harvested and replaced by new crops of distinctive forms.

D) Forest Management: It is the practical application of science, technique, and the economics to a forest estate for the production of some wanted results. In actual sense, it is the application of business methods to the operation of a forest estate.



E) Forest Utilization: It is a branch of forestry concerned with the harvesting, conversion, disposal and use of forest produce. It is a branch of forestry concerned with the harvesting, any necessary processing, and delivery to the consumer of forest produce.

F) Forest Law: Law includes any rule of action. The rules and law imposed by the State up on the actions of its citizens for the breach of which they are punishable.

G) Forest Policy: Branch of forestry concerned essentially, with social and economic aims underlying forest management and forestry development (SAF - 1983)

2. Applied Forestry: This includes those subjects which have the references to other subject but make the essence of, forestry

Applied Forestry:

- a) Dendrology
- b) Forest Ecology
- c) Forest Economy
- d) Forest Entomology
- e) Forest Fire
- f) Forest Genetics
- g) Forest Pathology
- h) Forest Seed technology
- i) Forest soils
- j) Forest statistics
- k) Forests surveying
- l) Remote sensing
- m) Social Forestry-Social Resent
- i. Agro forestry
- ii. Forestry Extension
- iii. Afforestation

Some Other Forestry Branches:

- 1. Aesthetic forestry
- 2. Commercial Forestry
- 3. Community Forestry
- 4. Extensive Forestry
- 5. Farm Forestry
- 6. Extensive Forestry
- 7. Multiple use Forestry.

2.2 Silviculture:



Silviculture is an important subject of forestry. It has been defined in a number of ways. Following are some of the accepted definitions of silviculture.

1. Silviculture is that branch of forestry which deals with the establishment, development, care and reproduction of stands of timber.
2. Silviculture is the art and science of cultivating forest crops. By Indian Forest and forest products Terminology (1957)
3. Silviculture refers to certain aspects of theory and practice of raising forest crops, methods of raising tree crops, their growth and after care up to the time of final harvesting (by Rao,1987)

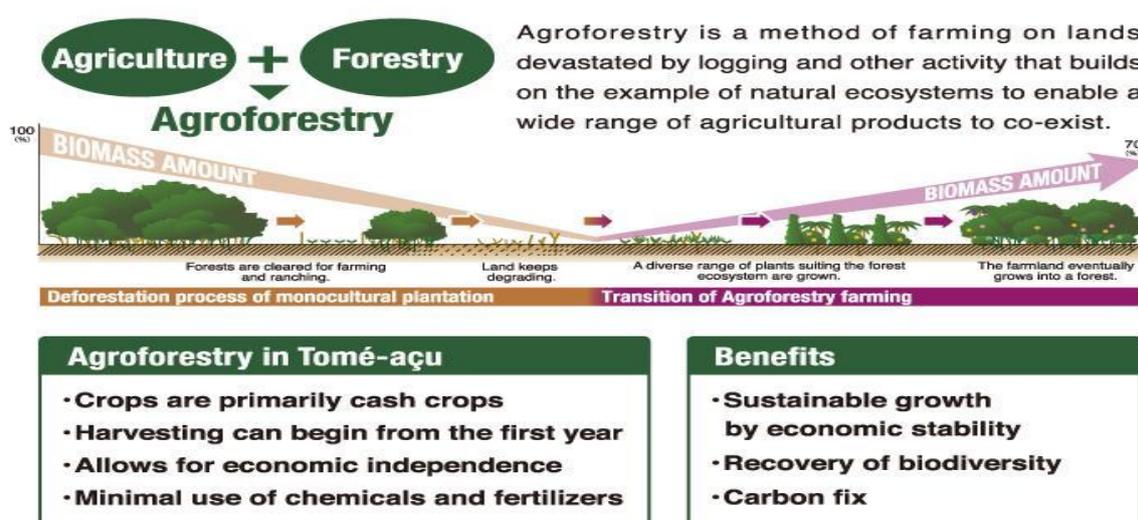
Silviculture is the practice of controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values. The name comes from the Latin silvi- (forest) + culture (as in growing). The study of forests and woods is termed silvology. Silviculture also focuses on making sure that the treatment(s) of forest stands are used to preserve and to better their productivity

2.3 Agro forestry:

Agro forestry is a collective name for land-use systems involving trees combined with arable crops and/or animals on the same unit of land. In agro forestry systems there are both ecological and economical interactions between the different components. Agro forestry can also be defined as a dynamic, ecologically based, natural resource management system that, through the integration of trees on farms and in the agricultural landscape, diversifies and sustains production for increased social, economic and environmental benefits for land users at all levels. In particular, agro forestry is crucial to smallholder farmers and other rural people because it can enhance their food supply, income and health. Agro forestry systems are multifunctional systems that can provide a wide range of economic, sociocultural, and environmental benefits. Agro-forestry is an old concept. Trees, crops and animals have traditionally been raised together on small farms

throughout the World. This concept first derived in the temperate zone due to the small family farms, as a result trees, crops and animals become separately managed on a large scale in modern agriculture and forestry. Modern Agroforestry establishes a symbiosis among agricultural crops tree species and livestock rising. In other words, these are complementary and beneficial to each other. Agro-forestry is collective name for land used systems involving trees combined with crops and / or animals on the same unit of land.

- It combines production of multiple outputs with protection of resources.
- It places emphasis on the use of multiple indigenous trees and shrubs.
- It is particularly suitable for low input conditions and fragile environment.
- It is structurally and functionally more complex than mono culture (single crop culture) the cycle of Agro forestry system is always more than one year.



2.3.1 Benefits of agro forestry:

- Agro forestry reduces the pressure on forest and enhance better protection of ecological system
- It improves microclimate of the area by lowering of soil temperature, reduction of evaporation and maintenance of soil moisture.
- It reduces run-off, nutrient leaching and soil erosion.

- iv. It improves soil structure by the addition of organic matter to soils.
- v. Agro forestry system reduces the total crop failure
- vi. Agro forestry improved the rural living standards by increasing their income in a sustained manner.



There are four main types of agro forestry systems:

1. **Agri silvicultural systems:** In this system, arable crops are suitable mixed with tree crops.
2. **Silvo pastoral systems :** This system refers to the production of woody plants in pasture lands. It combines forestry and grazing of domesticated animals on pastures, rangelands or on-farm.
3. **Agro silvopastoral system :** The three elements, namely trees, animals and crops, can be integrated in what are called agro silvopastoral systems and are illustrated by home gardens involving animals as well as scattered trees on croplands used for grazing after harvests.
4. **Other Agro forestry System :**
 - i. **Horti-pastoral System:** Cultivation of Horticultural crops plus pastures.
 - ii. **Agri-Horti-Pastoral System:** In this system, in the marginal lands the fruit crops like Mango, Ber, Anona, Jamun, Tamrind, Wood apple etc. are taken along with forest trees and the food grains like, Peas, Gram, Wheat, Rice, Vegetables are taken.
 - iii. **Apiculture with Trees:** In this system, the flowering trees like Kanchan Jacaranda Spathodia, Erythrina, Krate sawar, Palas are planted for producing the honey in addition to Jamun, Mahuha, Eucalyptus like trees are also planted for honey collection.
 - iv. **Aqua Forestry:** Plants grown on the boundary around fish ponds like Casuriana, Coconut, Arecanut, Kokum, Babhul, Bamboo, etc.
 - v. **Multipurpose Wood Lots:** The specific multipurpose trees are grown mixed or separately on the farm like Australin babhul, Euclayputs, Subabhul, Bakan, Bamboo etc.

2.3.2 Social Forestry:



The National Commission on Agriculture, Government of India, first used the term 'Social Forestry' in 1976. It was then that India embarked upon a social forestry project with the aim of taking the pressure off the forests and making use of all unused and fallow land. Social Forestry is the practice of forestry which aims at meeting the requirement of rural and urban population. It is the practice of forestry outside the conventional forests with the aim to provide goods and services to the local people. Simply, it is the practice of forestry of the people, forestry by the people and forestry for the people. The object of social forestry is to meet the basic needs of community aiming at bettering the conditions of living through:

- (i) Meeting the fuel wood, fodder and small timber requirements
- (ii) Protection of agricultural fields against wind
- (iii) Meeting recreational needs and
- (iv) Maximizing production and increasing farm returns
- (v) Providing gainful employment to the local people



Difference between agro forestry and social forestry



Object	Agro forestry	Social Forestry
Definition	It is an land use system by which agricultural crops are grown along with trees and or animals on the same land management unit with some spatial or temporal manner	Social forestry is the practices of forestry of the people, forestry by the people and forestry for the people.
Important consideration	Crops inter-relationship, rooting behaviour	Species suitability for that site, local people need and demand
Economic consideration	Combined yield of trees and agricultural crops	Positive economy
Crop composition	Agricultural crops, trees, animals	Purely trees
Plantation site	Dry lands and farm lands	Waste land, community land, panchayat land
Cooperation of the people	Difficult	Willing is more to cover unproductive barren lands
Management	Complicated	Simpler than agro forestry

(Source: Manikanandan and Prabhu, 2013)

Various forms of Social forestry are:

a) Community Forestry: The practice of forestry on lands outside the conventional forest area for the benefit of local population has been called Community forestry. Community forestry seeks the involvement of community in the creation and management of such forests.

b) Farm Forestry: Farm Forestry is defined as the practice of forestry in all its aspect on farms of village lands generally integrated with other farm operations.



c) Extension Forestry: Extension forestry which includes the activity of raising trees on farm lands, villages wastelands and community forest areas and on lands along the sides of roads, canal banks and railway lines.

d): Recreational Forestry: More recently, there has been considerable demand for Recreational forestry, which is defined as the practice of forestry with the object of developing and maintaining forests of high scenic value. Recreational forests are being developed near towns and cities. The areas are being planted with flowering trees, shrubs and creepers to provide forest atmosphere near towns and cities.

2.4 Joint Forest Management (JFM):

The Indian Forest Policy of 1988 (MoEF, 1988) and the subsequent government resolution on participatory forest management (MoEF, 1990) emphasize the need for people's involvement, particularly of women, in natural forest management. The policy document emphasises that local communities should be motivated to identify themselves with the development and protection of the forests from which they derive benefits. Thus, the policy envisages a process of joint management of forests by the state governments and the local people, which would share both the responsibility for managing the resource and the benefits that accrue from this management.

Under joint forest management (JFM), village communities are entrusted with the protection and management of nearby forests. The areas concerned are usually degraded or even deforested areas. The communities are required to organize forest protection committees, village forest committees, village forest conservation and development societies, etc. Each of these bodies has an executive committee that manages its day-to-day affairs.

2.5 Forest based Livelihood Project of Odisha

a) Ama Jangala Yojna



Ama Jangala Yojana is an endeavor of the Government of Odisha, Forest & Environment Department, being implemented through Odisha Forestry Sector Development Society to promote sustainable forest management in the state with emphasis on livelihood support for the communities living in the forest fringe villages.



Objectives

- To conserve and restore degraded forests through forest restoration with active participation of local communities.
- To strengthen the community level institutions involved in protection of forest.
- To empower forest dependent communities by capacity building for sustainable management of forest.
- To improve the livelihood opportunities of the forest dependent communities, through skill development and promotion of income generation activities to reduce pressure on forest.

Check Your Progress I

Note: a) Use the space provided for your answers.

b) Check your answers with the possible answers provided at the end of this unit.

1) What is the Meaning of silviculture?

Ans.

2) What are the benefits of agro forestry?

Ans.

3) List various forms of social forestry?

1. _____

2.6 Horticulture:

India's diverse climate is favourably suitable for cultivation of all varieties of fruits and vegetables. Horticulture crops constitute a significant component of total agricultural production in the country. Today country ranks second in fruits and vegetables production in the world, after China. As per National Horticulture Database published by National Horticulture Board, during 2014-15 India produced 86.602 million metric tonnes of fruits and 169.478 million metric tonnes of vegetables. The area under cultivation of fruits stood at 6.110 million hectares while vegetables were cultivated at 9.542 million hectares. India is the largest producer of Ginger and Okra amongst vegetables and ranks second in production of potatoes, onions, cauliflowers, brinjal, Cabbages, etc. Amongst fruits, the country ranks first in production of Bananas (22.94%), Papayas (44.03%) and Mangoes (37.57%). The vast production base offers India tremendous opportunities for export. During 2015-16, India exported fruits and vegetables worth Rs. 8,391.41 crores which comprised of fruits worth Rs. 3,524.50 crores and vegetables worth Rs. 4,866.91 crores. Mangoes, Walnuts, Grapes, Bananas, Pomegranates account for larger portion of fruits exported from the country while Onions, Okra, Bitter Gourd, Green Chilles, Mushrooms and Potatoes contribute largely to the vegetable export basket. The major destinations for Indian fruits and vegetables are UAE, Bangladesh, Malaysia, Netherland, Sri Lanka, Nepal, UK, Saudi Arabia, Pakistan and Qatar. However, India's share in the global market is nearly 1% only.

2.6.1 Definition of Horticulture:

Horticulture may be broadly defined as the science and art of growing fruits, vegetables and flowers and crops like spices condiments and other plantation crops.

As per definition given by the International Society for Horticulture Science horticultural crops include the following: -

- i. Tree, bush and perennial vine fruits;
- ii. Perennial bush and tree nuts;

- iii. Vegetables (roots, tubers, shoots, stems, leaves, fruits and flowers of edible and mainly annual plants);
- iv. Aromatic and medicinal foliage, seeds and roots (from annual or perennial plants);
- v. Cut flowers, potted ornamental plants, and bedding plants (involving both annual or perennial plants); and
- vi. Trees, shrubs, turf and ornamental grasses propagated and produced in nurseries for use in landscaping or for establishing fruit orchards or other crop production units,
- vii. Honey and Cultivated or gathered mushrooms (edible fungi).

On the other hand, the Planning Commission Working Group for the XIth Five Year Plan had defined 'Horticulture' as "the science of growing and management of fruits, vegetables including tubers, ornamental, aromatic & medicinal crops, spices, plantation crops and their processing, value addition and marketing".

However, it is popularly known as a science of cultivation of Garden plants.

The word Horticulture is derived from the Latin word *Hortus* meaning enclosure (garden) and culture - meaning, cultivation. Thus, Horticulture means culture or cultivation of garden plants within protected enclosures. Present days, the horticulture may be defined as the science and technique of production, processing and merchandizing of fruits, vegetables, flowers, spices, plantations and medicinal and aromatic plants.

2.6.2 Importance of Horticulture:

1. Source of nutrients, vitamins, minerals, flavour, aroma, alkaloids, oleoresins, fibre, medicine, etc.
2. Economic benefits as they give higher returns per unit area in terms of energy, money, job, etc.
3. Per unit area yield is high in comparison to agriculture
4. Creates employment opportunities as it requires 860 man days/annum for fruit crops as against 143 man days/annum for cereal crops and the crops like grapes, banana and pineapple need 1000- 2500 man days per annum.

5. Provides supplementary income to the household through home garden.
6. Earn higher foreign exchange in comparison to agriculture crops.
7. Effective utilization of waste land through hardy fruits and medicinal plants.
8. Provides raw materials to process industry.
9. Aesthetic consideration and protection of environment.
10. Religious significance.

Horticulture provides quality food for health, and yields higher returns per unit area. It also enhances land value and creates better purchasing power for those who are engaged in this industry. It is important for health, wealth, hygiene and happiness.

2.6.3 Horticultural Crops and Human Nutrition :

- Fruits and vegetables play an important role in balanced diet.
- These provide not only energy rich food but also provide vital protective nutrients/elements and vitamins.
- Comparatively fruits and vegetables are the cheapest source of natural nutritive foods.
- Since most of Indians are vegetarians, the incorporation of horticulture produce in daily diet is essential for good health.
- With the growing awareness and inclination towards vegetarianism worldwide the horticulture crops are gaining tremendous importance.

2.6.4 Functions of fruits and vegetables in human body:

1. Fruits and vegetables provide palatability, taste, improves appetite and provides fibre thereby the constipation can be overcome.
2. They neutralize the acids produced during digestion of proteins and fatty acids.
3. They improve the general immunity of human body against diseases, deficiencies etc.

4. They are the important source of vitamins and minerals for used in several bio-chemical reactions occur in body



2.6.5 Branches of Horticulture:

Horticulture is a wide field and includes a great variety and diversity of crops. It is divided in to the following branches for convenience based upon the crops dealt and also their purpose and utilization

1. Pomology:

It refers to the cultivation of fruit crops. It is derived from two words i.e. Pomum meaning fruit and Logos meaning discourse or study. Therefore, pomology is study or cultivation of fruit crops such as Mango, Litchi, Citrus, Sapota, Guava, Grape, Banana, Pineapple, Apple, Pear, Peach, Plum and Cherry etc.

2. Olericulture:

It refers to the cultivation of vegetables. It is derived from two words i.e. Oleris meaning Pot herb and Cultra meaning cultivation. Therefore, olericulture means cultivation of Brinjal, Okra, Tomato, Capsicum, Peas, Beans, Cucurbits etc.

3. Floriculture:

It is derived from two words i.e. Florus meaning flower and Cultra meaning cultivation. Therefore, floriculture means cultivation and study of flower crops such as Rose, Jasmine, Carnation, Aster, Marigold, Dahlia, Zinnia, Cosmos, Hibiscus, Balsam, Poinsettia, Hollyhock, Gerbera, and Gaillardia etc.

4. Plantation crops:

These crops are cultivated in an extensive scale in large contiguous areas, owned and managed by an individual or a company and whose produce is utilized

only after processing. Coffee, Tea, Rubber, Coconut, Cocoa etc. are some of the important plantation crops.



5. Spices and condiments:

This branch deals with the cultivation of crops whose produce is used mainly for seasoning and flavouring dishes.

Spices: These are those plants the products of which are made use of as food adjuncts to add aroma and flavour. For example, Pepper, Cardamom, Clove, Cinnamon, etc. **Condiments:** These are those plants the products of which are made use of as food adjuncts to add taste only. For example, Turmeric, Ginger, Red chillies, Onion, Garlic etc.

6. Medicinal and aromatic plants:

It deals with the cultivation of medicinal plants, which provide drugs and aromatic crops which yields aromatic (essential) oils.

i) **Medicinal plants:** These plants are rich in secondary metabolites and are potential sources of drugs. The secondary metabolites include alkaloids, glycosides, coumarins, flavonoides and steroids etc. Important medicinal plants are Periwinkle, Opium, Menthi, Cinchona, Dioscorea Yam, Belladonna, Senna, Sarpagandha, Aswagandha, Tulasi etc. ii) **Aromatic plants:** These plants possess essential oils in them. The essential oils are the odoriferous steam volatile constituents of aromatic plants. Lemon grass, Citronella, Palmrosa, Vetiver, Geranium, Davanam, Lavendor etc. are some of the aromatic plants

7. Landscape gardening:

It deals with the planning and execution of ornamental gardens, parks, landscape gardens etc.

8. Post harvest technology:

It deals with the processing and preservation of produce of horticulture crops.

9. Plant Propagation:

It deals with propagation of plants.



2.6.6 Programme and Schemes of Horticulture:

a) Mission for Integrated Development of Horticulture (MIDH)

A Centrally Sponsored Scheme of Mission for Integrated Development of Horticulture MIDH was launched during XII plan for the holistic development of horticulture in the country. The scheme which was started from 2014-15, integrates the ongoing schemes of i) National Horticulture Mission, ii) Horticulture Mission for North East & Himalayan States, iii) National Bamboo Mission, iv) National Horticulture Board, v) Coconut Development Board and v) Central Institute for Horticulture, Nagaland.

i) **National Horticulture Mission (NHM)** was launched under the 10th five-year plan in the year 2005-06 as a Centrally Sponsored Scheme to promote holistic growth of the horticulture sector through an area based regionally differentiated strategies.

Objectives

The NHM's key objective is to develop horticulture to the maximum potential available in the state and to augment production of all horticultural products (fruits, vegetables, flowers, coco, cashew nut, plantation crops, spices, medicinal aromatic plants) in the state. Other objectives include:

1. To provide holistic growth of the horticulture sector through an area based regionally differentiated strategies
2. To enhance horticulture production, improve nutritional security and income support to farm households
3. To establish convergence and synergy among multiple on-going and planned programmes for horticulture development
4. To promote, develop and disseminate technologies, through a seamless blend of traditional wisdom and modern scientific knowledge
5. To create opportunities for employment generation for skilled and unskilled persons, especially unemployed youth

The scheme has been subsumed as a part of Mission for Integration Development of Horticulture (MIDH) during 2014-15.



ii) Horticulture Mission for North East & Himalayan States (HMNEH):

HMNEH is a part of Mission for Integrated Development of Horticulture (MIDH) scheme, being implemented for overall development of Horticulture in NE and Himalayan states. The mission covers all NE States including Sikkim and three Himalayan states of Jammu & Kashmir, Himachal Pradesh and Uttarakhand. The mission addresses entire spectrum of horticulture from production to consumption through backward and forward linkages.

iii) National Bamboo Mission

With a view to harness the potential of bamboo crop, Department of Agriculture & Cooperation (DAC), Ministry of Agriculture is implementing a 100% Centrally Sponsored Scheme called Mission for Integrated Development of Horticulture (MIDH) in which National Bamboo Mission (NBM) is being implemented as a sub scheme. The Mission envisages promoting holistic growth of bamboo sector by adopting area-based, regionally differentiated strategy and to increase the area under bamboo cultivation and marketing. Under the Mission, steps have been taken to increase the availability of quality planting material by supporting the setting up of new nurseries and strengthening of existing ones. To address forward integration, the Mission is taking steps to strengthen marketing of bamboo products, especially those of handicraft items.

Objectives

- i. To promote the growth of the bamboo sector through as an area based regionally differentiated strategy;
- ii. To increase the coverage of area under bamboo in potential areas, with improved varieties to enhance yields;
- iii. To promote marketing of bamboo and bamboo based handicrafts;
- iv. To establish convergence and synergy among stake-holders for the development of bamboo;



- v. To promote, develop and disseminate technologies through a seamless blend of traditional wisdom and modern scientific knowledge.
- vi. To generate employment opportunities for skilled and unskilled persons, especially unemployed youths.

iv) National Horticulture Board (NHB)

National Horticulture Board (NHB) was set up by Government of India in April 1984 on the basis of recommendations of the "Group on Perishable Agricultural Commodities", headed by Dr M. S. Swaminathan, the then Member (Agriculture), Planning Commission, Government of India. The NHB is registered as a Society under the Societies Registration Act 1860, with its headquarters at Gurgaon.

Aims & Objectives of NHB Schemes:

The main objectives of the NHB are to improve integrated development of Horticulture industry and to help in coordinating, sustaining the production and processing of fruits and vegetables. Detailed objectives of the Board are as under:-

1. Development of hi-tech commercial horticulture in identified belts and make such areas vibrant with horticultural activity, which in turn will act as hubs for development of horticulture.
2. Development of modern post-harvest management infrastructure as an integral part of area expansion projects or as common facility for cluster of projects.
3. Development of integrated, energy efficient cold chain infrastructure for fresh horticulture produce.
4. Popularization of identified new technologies / tools / techniques for commercialization / adoption, after carrying out technology and need assessment.
5. Assistance in securing availability of quality planting material by promoting setting up of scion and root stock banks / mother plant

- nurseries and carrying out accreditation / rating of horticulture nurseries and need based imports of planting material.
6. Promotion and market development of fresh horticulture produce.
 7. Promotion of field trials of newly developed/imported planting materials and other farm inputs; production technology; PHM protocols, INM and IPM protocols and promotion of applied R&D programmes for commercialization of proven technology.
 8. Promotion of Farm Mechanization in Horticulture through demonstration and its uses at farmers field level to reduce labour cost and increase the productivity of Horticulture crops.
 9. Promotion of applied R & D for standardizing PHM protocols, prescribing critical storage conditions for fresh horticulture produce, bench marking of technical standards for cold chain infrastructure etc.
 10. Transfer of technology to producers/farmers and service providers such as gardeners, nurserymen, farm level skilled workers, operators in cold storages, work force carrying out post harvest management including processing of fresh horticulture produce and to the master trainers.
 11. Promotion of consumption of horticulture produce and products.
 12. Promoting long distance transport solution for bulk movement of horticulture produce through rail etc.
 13. Carrying out studies and surveys to identify constraints and develop short and long term strategies for systematic development of horticulture and providing technical services including advisory and consultancy services.

v) Coconut Development Board

It is a statutory body established by the Government of India for the integrated development of coconut production and utilization in the country with focus on productivity increase and product diversification. The Board which came into existence on 12th January 1981, functions under the administrative control of the Ministry of Agriculture, Government of India, with its Headquarters at Kochi in Kerala

and Regional Offices at Bangalore in Karnataka, Chennai in Tamil Nadu and Guwahati in Assam. There are six State Centres situated at Bhubaneswar in Orissa, Calcutta in West Bengal, Patna in Bihar, Thane in Maharashtra, Hyderabad in Andhra Pradesh and Port Blair in the Union Territory of Andaman & Nicobar Islands.



Functions of the Board

- Adopting measures for the development of coconut industry, inter alia.
- Imparting technical advice to those engaged in coconut cultivation and industry.
- Providing financial and other assistance for the expansion of area under coconut.
- Encouraging adoption of modern technologies for processing of coconut and its products.
- Adopting measures to get incentive prices for coconut and its products.
- Recommending measures for improving marketing of coconut and its products.
- Recommending measures for regulating imports and exports of coconut and its products.
- Fixing grades, specifications and standards for coconut and its products.
- Financing suitable schemes to increase the production of coconut and to improve the quality and yield of coconut.
- Assisting, encouraging, promoting and financing agricultural, technological, industrial or economic research on coconut and its products.
- Collecting statistics on coconut and its products and publishing them.
- Undertaking publicity activities and publishing books and periodicals on coconut and its products.

vi) Central Institute of Horticulture (CIH), Dimapur, Nagaland

Central Institute of Horticulture was inaugurated in the year 2006 with its headquarter in Medziphema, Nagaland, the institute was set up with an ambitious objective of holistic development of Horticulture sector in the North East Region.



Focus Area

- i. Capacity building by training of trainers & farmers/beneficiaries
- ii. Demonstration of improved technologies
- iii. Accreditation and certification of nurseries in NER
- iv. Follow-on extension support in the field of horticulture
- v. Promotion of organic cultivation of horticultural crops
- vi. Establishing convergence and synergy among programmes in the field of horticulture
- vii. Monitoring of Centrally sponsored programmes in the area of horticulture

vii) Directorate of Cashew nut and Cocoa Development

The Directorate of Cashewnut Development established in 1966 under the Union Ministry of Agriculture for the development of cashew in scientific manner. The Directorate of Cashew nut Development which was handling only cashew got the mandate for development of cocoa in 1997. Though cashew and cocoa enjoys different parameters, both are cash crops of high economic importance and in 1997-98 the Directorate of Cashew nut and Cocoa Development started driving both the crops on similar tracks.

Mandate

- I. Formulation and implementation of development program for Cashew and Cocoa.
- II. Promote new planting and replanting of Cashew and Cocoa in potential areas.

- III. Co-ordinate the activities for the promotion of Cashew and Cocoa between central and state institutes with the Ministry of Agriculture.
- IV. Monitoring Cashew and Cocoa development programmes under NHM.
- V. Advisory body to recommend, watch and monitor the various aspects of crops development, marketing and by product utilization.
- VI. Function as data bank on crop area, production, price trends, marketing and trade performance.
- VII. Take up intensive publicity measures for dissemination of technologies among farmers.
- VIII. Impart technical advice to farmers, entrepreneurs on all aspects of cultivation and processing.

2.7 Floriculture:

India is bestowed with several agro-climatic zones conducive for production of sensitive and delicate floriculture products. After liberalisation of economy, floriculture industries took giant steps in the export arena. As per National Horticulture Database published by National Horticulture Board, during 2014-15 the area under floriculture production in India was 248.51 thousand hectares with a production of 1,685 thousand tonnes loose flowers and 472 thousand tonnes cut flowers. Floriculture is now commercially cultivated in several states with Tamil Nadu (17%), Karnataka (14%) West Bengal (10%), having gone ahead of other producing states like Madhya Pradesh, Mizoram, Gujarat, Andhra Pradesh, Orissa, Jharkhand, Haryana, Assam and Chhattisgarh.

Indian floriculture industry comprises of flowers such as Rose, Tuberose, Glads, Anthurium, Carnations, Marigold etc. Cultivation is undertaken in both open farm conditions as well as state-of-the-art poly and greenhouses.

Government of India has identified floriculture as a sunrise industry and accorded it 100% export oriented status. Owing to steady increase in demand of

flower floriculture has become one of the important Commercial trades in Agriculture. Hence commercial floriculture has emerged as hi-tech activity-taking place under controlled climatic conditions inside greenhouse. Floriculture in India, is being viewed as a high growth Industry. Commercial floriculture is becoming important from the export angle. The liberalization of industrial and trade policies paved the way for development of export-oriented production of cut flowers. The new seed policy had already made it feasible to import planting material of international varieties. It has been found that commercial floriculture has higher potential per unit area than most of the field crops and is therefore a lucrative business. Indian floriculture industry has been shifting from traditional flowers to cut flowers for export purposes. The liberalized economy has given an impetus to the Indian entrepreneurs for establishing export oriented floriculture units under controlled climatic conditions. Agricultural and Processed Food Products Export Development Authority (APEDA), is responsible for export promotion and development of floriculture in India.

Varieties:

Floriculture products mainly consist of cut flowers, pot plants, cut foliage, seeds bulbs, tubers, rooted cuttings and dried flowers or leaves. The important floricultural crops in the international cut flower trade are rose, carnation, chrysanthemum, gagera, gladiolus, gypsophila, liastris, nerine, orchids, archilea, anthuriu, tulip, and lilies. Floriculture crops like gerberas, carnation, etc. are grown in green houses. The open field crops are chrysanthemum, roses, gaillardia, lily marygold, aster, tuberose etc.

Major states of India in Floriculture:

Maharashtra, Karnataka, Andhra Pradesh, Haryana, Tamil Nadu, Rajasthan, West Bengal have emerged as major floriculture centers.

India Facts and Figures:

About 248.51 thousand hectares area was under Cultivation in floriculture in 2014-15. Production of flowers is estimated to be 1,685 thousand tonnes loose flowers and 472 thousand tonnes cut flowers in 2014-15.

Exports:

India's total export of floriculture was Rs. 479.42 crores in 2015-16.

Major Export Destinations (2015-16):

United States, Germany, United Kingdom, Netherlands and United Arab Emirates were major importing countries of Indian floriculture during the same period.



Check Your Progress II

Note: a) Use the space provided for your answers.

b) Check your answers with the possible answers provided at the end of this unit.

1) Mention important benefits of horticultural crops on human nutrition.

Ans.

2) What is pomology?

Ans.

3) Expand the following abbreviations:

a) MIDH _____

b) NHM _____

c) NHB _____

d) APEDA _____

2.8 Let Us Sum Up:

Forests are natural renewable resources of the earth which helps life on earth by performing various productive, protective and developmental functions. Agro forestry, a branch of forestry, is a collective name for land-use systems involving trees combined with arable crops and/or animals on the same unit of land. In agro

forestry systems there are both ecological and economical interactions between the different components. The practice of forestry on lands outside the conventional forest area for the benefit of local population has been called Community forestry. Community forestry seeks the involvement of community in the creation and management of such forests. Participatory forest management emphasizes the need for people's involvement, particularly of women, in natural forest management. The policy document emphasises that local communities should be motivated to identify themselves with the development and protection of the forests from which they derive benefits. There are various schemes under horticulture like National Horticulture Mission (NHM), Horticulture Mission for North East & Himalayan States (HMNEH) and National Bamboo Mission for the horticulture development in the country

2.9 Key Words:

- **Silviculture** : Silviculture is the art and science of cultivating forest crops
- **Agro Forestry** : Cultivating forest trees along with agricultural crops.
- **Aqua Forestry** : Plants grown on the boundary around fish ponds
- **Social Forestry**: It is the practice of forestry outside the conventional forests with the aim to provide goods and services to the local people.
- **Horticulture** : It is the science and art of growing fruits, vegetables and flowers and crops like spices condiments and other plantation crops.
- **Pomology** : It is the cultivation of fruit crops
- **Olericulture** : It is the cultivation of vegetables

2.10 References:

Central Board of Secondary Education (2014): Basic Horticulture-I, Student Hand Book,

Dutt, S. (2014) : A Handbook of Agriculture

Jerram, M.R.K.(2006): A Text-Book on Forest Management : In Agriculture, Horticulture and Forestry

Jha, L. K., Sen, P. K. and Sarma, A.P.H (2008) A Manual of Forestry Extension Education

Manikandan,K and Prabhu, S.(2013). Indian Forestry, Jain Brothers, New Delhi

Prasad ,S. and Kumar, U. (2010) : A Handbook of Floriculture

Singh, Benu (2010): A Modern Book on Forestry and Horticulture

www.agricoop.nic.in

www.orihort.in

www.nhb.gov.in

www.envfor.nic.in

www.agriinfo.in

www.agrialt.com

www.agriculture.com

www.agrisurf.com

www.farmprogress.com



UNIT- 3

Development of Rural Industries and Agro-based Industries



Learning Objectives:

After completion of this unit, you should be able to:

- *explain importance of Khadi and Village Industries commission's role in promoting rural industries*
- *list different units of Ministry of Micro Small and Medium Enterprises*
- *explain the function of Small Farmers Business Consortium*
- *describe the different industries under Make in India*

Structure:

- 3.1 Introduction
- 3.2 Definition of Rural Industries
- 3.3 Types of Rural Industries
- 3.4 Ministry of Micro Small and Medium Enterprises
 - 3.4.1 Definitions of Micro, Small & Medium Enterprises in India
 - 3.4.2 Rural Area and Village Industries
 - 3.4.3 Development Commissioner (Micro, Small and Medium Enterprises)
 - 3.4.4 Khadi & Village Industries Commission
 - 3.4.5 Coir Board:
 - 3.4.6 National Small Industries Corporation Limited (NSIC)
 - 3.4.7 MGIRI - Mahatma Gandhi Institute for Rural Industrialization
 - 3.4.8 National Institute for Micro, Small and Medium Enterprises (NIMSME)
 - 3.4.9 National Board for Micro, Small and Medium Enterprises (NBMSME)
- 3.5 Prime Minister's Employment Generation Programme (PMEGP)
- 3.6 Scheme of Fund for Regeneration of Traditional Industries (SFURTI)
- 3.7 Rural Non-Farm Sector
- 3.8 Issues of and Problems of Rural Industries

- 3.9 Rural Industries under Make in India
- 3.10 Agro-based Industries
 - 3.10.1 Types of Agro-based Industries
 - 3.10.2 Orissa Agro-Industries Corporation Limited
 - 3.10.3 Agricultural Promotion & Investment Corporation of Odisha Limited (APICOL)
 - 3.10.4 Small Farmers Agribusiness Consortium (SFAC)
- 3.11 Let Us Sum Up
- 3.12 Key Words
- 3.13 References
- 3.14 Check Your Progress – Possible Answers



3.1 Introduction:

The Indian agriculture and land based activities are unable to provide gainful employment to the rural people because it has reached to a level of saturation. The percentage share of agriculture to gross domestic production and the percentage of population engaged in this sector have been declining over the years in India. Because of saturation in the agricultural sector, the scope of accommodating rural work force therein is becoming less which has accentuated the problem of unemployment. Wage employment in agriculture is highly seasonal and requires supplementation of income and as employment during lean periods. Most of the agriculture workers in villages remain idle for 4 to 6 months in a year and migrate to other places for search of work. Therefore, diversion of manpower becomes imperative from agricultural sector to industry and service sectors. The rural industry can provide much needed year round employment and income for the poor. As most rural non-farm activities require little capital and generate more employment per unit of capital, they provide a good source of raising employment and income opportunities for the poor. The non-farm sector is an important source of income for women, small farmers, landless workers and the poor living in rural areas and more so in droughts.

3.2 Definition of Rural Industries:



Rural industries are generally associated with agriculture and allied activities in rural areas. According to KVIC (Khadi and Village Industry Commission), "village industries or Rural industry means any industry located in rural areas, population of which does not exceed 10,000 or such other figure which produces any goods or renders any services with or without use of power and in which the fixed capital investment per head of an artisan or a worker does not exceed a thousand rupees".

The modified definition of rural industries has been given by Government of India in order to enlarge its scope. According to Government of India, "Any industry located in rural area, village or town with a population of 20,000 and below and an investment of Rs. 3 crores in plant and machinery is classified as a village industry."



3.3 Types of Rural Industries:



All the village industries come under the following broad categories:

- a) **Agro Based Industries:** like sugar industries, jaggery, oil processing from oil seeds, pickles, fruit juice, spices, diary products etc.
- b) **Forest Based Industries:** like wood products, bamboo products, honey, coir industry, making eating plates from leaves.
- c) **Mineral based industry:** like stone crushing, cement industries, red oxide making, wall coating powders etc.
- d) **Textile Industry:** like spinning, weaving, colouring, bleaching.
- e) **Engineering and Services:** like agriculture equipments, tractors and pump sets repairs etc.

3.4 Ministry of Micro Small and Medium Enterprises:

The Government of India on May 9, 2007 established Ministry of Micro, Small and Medium Enterprises (MSME) by merging Ministry of Small Scale Industries and the Ministry of Agro and Rural Industries. The Ministry designs policies and promotes/ facilitates programmes, projects and schemes and monitors their implementation with a view to assisting MSMEs and help them to scale up. The primary responsibility of promotion and development of MSMEs is of the State Governments. However, the Government of India, supplements the efforts of the State Governments through various initiatives. The role of the Ministry of MSME and its organizations is to assist the States in their efforts to encourage entrepreneurship, employment and livelihood opportunities and enhance the competitiveness of MSMEs in the changed economic scenario. The schemes/ programmes undertaken by the Ministry and its organizations seek to facilitate/provide:

- i) adequate flow of credit from financial institutions/banks;
- ii) support for technology upgradation and modernization;
- iii) integrated infrastructural facilities;
- iv) modern testing facilities and quality certification;



- v) access to modern management practices;
- vi) entrepreneurship development and skill upgradation through appropriate training facilities;
- vii) support for product development, design intervention and packaging;
- viii) welfare of artisans and workers;
- ix) assistance for better access to domestic and export markets and
- x) cluster-wise measures to promote capacity-building and empowerment of the units and their collectives.

The Ministry of MSME is having two Divisions:

- a) Small & Medium Enterprises (SME) Division and
- b) Agro & Rural Industry (ARI) Division.

The SME Division is allocated the work, inter- alia, of administration, vigilance and administrative supervision of the National Small Industries Corporation (NSIC) Ltd., a public sector enterprise and the three autonomous national level entrepreneurship development/training originations. The Division is also responsible for implementation of the schemes relating to Performance and Credit Rating and Assistance to Training Institution, among others.

The ARI Division looks after the administration of two statutory bodies viz. the Khadi and Village Industries Commission (KVIC), Coir Board and a newly created organization called Mahatma Gandhi Institute for Rural Industrialization (MGIRI). It also supervises the implementation of the Prime Minister's Employment Generation Programme (PMEGP).

3.4.1 Definitions of Micro, Small & Medium Enterprises in India:

The MSMEs are defined on the basis of investment in Plant & Machinery and equipments under the MSMED Act, 2006.

The present investment limit for MSMEs is as under:

Manufacturing Enterprises

- (i) Micro enterprise: investment in plant and machinery upto Rs. 25 lakh

(ii) Small enterprise: investment in plant and machinery from Rs. 25 lakh to Rs. 5 crore.

(iii) Medium enterprise: Investment in plant and machinery from Rs. 5 crore to Rs. 10 crore

Service Enterprises

(i) Micro enterprise: investment in equipments upto Rs. 10 lakh.

(ii) Small enterprise: investment in equipments from Rs. 10 lakh to Rs. 2 crore.

(iii) Medium enterprise: investment in equipments from Rs. 2 crore to Rs. 5 crore.

In accordance with the provision of Micro, Small & Medium Enterprises Development (MSMED) Act, 2006 the Micro, Small and Medium Enterprises (MSME) are classified in two Classes:

1. Manufacturing Enterprises- he enterprises engaged in the manufacture or production of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation) Act, 1951) or employing plant and machinery in the process of value addition to the final product having a distinct name or character or use. The Manufacturing Enterprise are defined in terms of investment in Plant & Machinery.
2. Service Enterprises:-The enterprises engaged in providing or rendering of services and are defined in terms of investment in equipment.

Over the last five decades, micro, small and medium enterprises have emerged as a highly vibrant and dynamic sector of the Indian economy. The sector plays an important role in providing employment opportunities in large number in low capital cost as compared to large industries. MSME sector also helps in the industrialisation of rural and backward areas, reducing regional imbalances, assuring more equitable distribution of national income and wealth. MSME contributes nearly 8 per cent of the country's GDP, 45 per cent of the manufacturing output and 40 per cent of the export. They provide the largest share of employment after agriculture.

3.4.2 Rural Area and Village Industries:

a) Definition of Rural area

Rural Area means the area comprised in any village, and includes the area comprised in any town, the population of which does not exceed twenty thousand or such other figure as the Central Government may specify from time to time.

a) Definition of Village Industries

Village industries has been redefined in amended KVIC, Act, 1956 as "any industry located in a rural area which produces any goods or renders any service with or without the use of power and in which the fixed capital investment per head of artisan or worker does not exceed one lakh (one lakh and fifty thousand in case of village industry located in a hilly area) or such other sum as may, by notification in the Official Gazette, be specified from time to time by the Central Government".

3.4.3 Development Commissioner (Micro, Small and Medium Enterprises):

The Micro, Small and Medium Enterprises– Development Organisation (MSME-DO) (earlier known as SIDO), headed by the Additional Secretary & Development Commissioner (MSME), is an apex body for formulating and overseeing implementation of the policies for the development of MSMEs in the country.

It renders services such as:

- Advising the Government in Policy formulation for the promotion and development of MSMEs.
- Providing techno-economic and managerial consultancy, common facilities and extension services to MSME units.
- Providing facilities for technology upgradation, modernization, quality improvement and infrastructure.
- Developing Human Resources through training and skill upgradation.
- Providing economic information services.
- Maintaining a close liaison with the Central Ministries, Planning Commission, State Governments, Financial Institutions and other Organisations concerned with development of MSMEs.

- Evolving and coordinating Policies and Programmes for development of MSMEs as ancillaries to large and medium scale industries.



3.4.4 Khadi & Village Industries Commission:

The Khadi & Village Industries Commission (KVIC), established is a statutory organization engaged in promoting and developing khadi and village industries for providing employment opportunities in rural areas, thereby strengthening the rural economy. The Commission is headed by full time Chairman and consists of 10 part-time Members. The KVIC has been identified as one of the major organizations in the decentralized sector for generating sustainable rural non-farm employment opportunities at a low per capita investment. This also helps in checking migration of rural population to urban areas in search of the employment opportunities. The main functions of the KVIC are to plan, promote, organize and assist in implementation of the programmes/projects/schemes for generation of employment opportunities through development of khadi and village industries. KVIC co-ordinates its activities through State KVI boards, registered societies and cooperatives. It has under its aegis a large number of industry-specific institutions spread in various parts of the country.

3.4.5 Coir Board:

The Coir Board is a statutory body established for promoting overall development of the coir industry and improving the living conditions of the workers engaged in this traditional industry. The Coir Board consists of a full-time Chairman and 39 part-time Members. The activities of the Board for development of coir industries, inter-alia include undertaking scientific, technological and economic research and development activities; collecting statistics relating to exports and internal consumption of coir and coir products; developing new products and designs; organizing publicity for promotion of exports and internal sales; marketing of coir and coir products in India and abroad; preventing unfair competition between producers and exporters; assisting the establishment of units for manufacture of the products; promoting co-operative organization among

producers of husks, coir fibre, coir yarn and manufactures of coir products; ensuring remunerative returns to producers and manufacturers, etc.



3.4.6 National Small Industries Corporation Limited (NSIC):

The National Small Industries Corporation (NSIC) Ltd. was established in 1955 by the Government of India with a view to promote, aid and foster the growth of small scale industries in the country. NSIC continues to remain at the forefront of industrial development throughout the country with its various programmes and projects to assist the MSMEs in the country. The main functions of the Corporation are to promote aid and foster the growth of micro and small enterprises in the country, generally on a commercial basis. It provides a variety of support services to micro and small enterprises by catering to their different requirements in the areas of raw material procurement; product marketing; credit rating; acquisition of technologies; adoption of modern management practices, etc. NSIC implements its various programmes and projects throughout the country through its 9 Zonal Offices, 39 Branch Offices, 12 Sub Offices, 5 Technical Services Centres, 3 Technical Services Extension Centres, 2 Software Technology Parks, 23 NSIC-Business Development Extension Offices and 1 Foreign Office.

3.4.7 MGIRI - Mahatma Gandhi Institute for Rural Industrialization:

The national level institute namely ‘Mahatma Gandhi Institute for Rural Industrialization (MGIRI)’ (erstwhile Jamnalal Bajaj Central Research Institute) has been established as a society under Societies (Registration) Act, 1860 at Wardha, Maharashtra, to strengthen the Research and Development(R&D) activities in Khadi and Village Industry sector. The main functions of the Institute are to improve the R&D activities under rural industrial sector through encouraging research, extension of R&D, quality control, training and dissemination of technology related information.

3.4.8 National Institute for Micro, Small and Medium Enterprises (NIMSME):

Entrepreneurship development and training is one of the key elements for the promotion of micro, small and medium enterprises (MSMEs), especially for creation of new enterprises by the first generation entrepreneurs. In order to inculcate the entrepreneurial culture amongst the first generation of entrepreneurs on a regular basis, the Ministry has set up National Institute for Micro, Small and Medium Enterprises (NI-MSME) (1960) at Hyderabad, as an autonomous society. This institute is engaged in developing training modules; undertaking research & training; and providing consultancy services for entrepreneurship development & promotion of MSMEs, including enhancement of their competitiveness.

3.4.9 National Board for Micro, Small and Medium Enterprises (NB MSME):

The range of development work in MSMEs involves several Departments/ Ministries and different organisations of Central/ State Governments. To facilitate coordination and inter institutional linkages and in pursuance of the MSME Development Act, 2006, a National Board for Micro, Small & Medium Enterprises consisting of a total of 47 members has been constituted with 20 non-official members. It is an apex advisory body constituted to render advice to the Government on all issues pertaining to the MSME sector. The Minister In-charge of MSME of the Government of India is the Chairman and the Board comprises among others, State Industry Ministers, some Members of Parliament, Secretaries of various Departments of Government of India, financial institutions, public sector undertakings, industry associations and eminent experts in the field. The board meets periodically to take stock of the issues pertaining to policy matters.

3.5 Prime Minister's Employment Generation Programme (PMEGP):

Government of India has launched a new credit linked subsidy programme called Prime Minister's Employment Generation Programme (PMEGP) by merging the two schemes that were in operation till 31.03.2008 namely Prime Minister's Rojgar Yojana (PMRY) and Rural Employment Generation Programme (REGP) for generation of employment opportunities through establishment of micro enterprises in rural as well as urban areas. PMEGP is a central sector scheme to be

administered by the Ministry of Micro, Small and Medium Enterprises. The Scheme will be implemented by Khadi and Village Industries Commission (KVIC), a statutory organization under the administrative control of the Ministry of MSME as the single nodal agency at the National level. At the State level, the Scheme will be implemented through State KVIC Directorates, State Khadi and Village Industries Boards (KVIBs) and District Industries Centres (DICs) and banks. The Government subsidy under the Scheme will be routed by KVIC through the identified Banks for eventual distribution to the beneficiaries / entrepreneurs in their Bank accounts. The Implementing Agencies, namely KVIC, KVIBs and DICs will associate reputed Non Government Organization (NGOs)/reputed autonomous institutions/Self Help Groups (SHGs)/ National Small Industries Corporation (NSIC) / Udyami Mitras empanelled under Rajiv Gandhi Udyami Mitra Yojana (RGUMY), Panchayati Raj institutions and other relevant bodies in the implementation of the Scheme, especially in the area of identification of beneficiaries, of area specific viable projects, and providing training in entrepreneurship development.

3.6 Scheme of Fund for Regeneration of Traditional Industries (SFURTI):

Government through KVIC and the Coir Board is implementing a cluster-based scheme named Scheme of Fund for Regeneration of Traditional Industries (SFURTI), under which khadi, village industries and coir clusters have been taken up for development by providing them with improved equipments, common facilities centres, business development services, training, capacity building and design and marketing support, etc. 101 clusters (29 Khadi, 47 Village Industries and 25 Coir clusters) have been assisted under this scheme during 11th Five Year Plan.

The objectives of the Scheme are as follows:

1. To organize the traditional industries and artisans into clusters to make them competitive and provide support for their long term sustainability and economy of scale;
2. To provide sustained employment for traditional industry artisans and rural entrepreneurs;

livelihood from rural farm and non-farm sector. A holistic development of India lies on a sustainable and inclusive development of rural India. Promotion of development of non-farm activities besides farm activities will ensure holistic growth of employment and income in rural areas. The village industries though their size is tiny or micro, they constitute an important segment of economy. The Khadi and Village Industries Commission is playing important role to meet the employment generation, production of saleable articles and creation of self-reliance amongst the rural poor through promotion of village industries. The Khadi and Village Industries activities are the source of livelihood for around 14 million rural and urban people who largely include spinners, weavers and other artisan spread across the country. The comparative performance of Khadi and Village Industries during the year 2013-14 and 2014-15 presented in the table shows robust growth during the period.

Comparative Performance of Khadi and Village Industries

(Rs. in crores; Employment : In lakh persons)

Sl.No	Industry	2013-15	2014-15	Percentage Increased
1.	Production			
	Khadi	811.08	879.98	8.49
	Village Industries	25298.00	26689.39	5.50
	Total	26109.08	27569.37	5.59
2	Sales			
	Khadi	1081.04	1170.38	8.26
	Village Industries	30073.16	31965.52	6.29
	Total	31154.20	33135.90	6.36
3	Employment			
	Khadi	10.98	11.06	0.73
	Village Industries	119.40	123.19	3.17
	Total	130.38	134.25	2.97
4.	Earnings			
	Khadi	469.56	483.37	2.94
	Village Industries	10767.09	11171.15	3.75
	Total	11236.65	11654.52	3.72

The primary objective of developing village industries is to create work opportunities, raise incomes and standard of living in rural areas and to bring about a more balanced growth of national economy. Traditional industries like pottery, carpentry, black-smithy, bee keeping, honey production, leather, hand-made paper, etc. are thriving in rural areas. Strengthening of the village industries in rural areas is the sure means to bring about the integral development.

Village industries has been redefined in amended KVIC, Act, 1956 as "any industry located in a rural area which produces any goods or renders any service with or without the use of power and in which the fixed capital investment per head of artisan or worker does not exceed one lakh (one lakh and fifty thousand in case of village industry located in a hilly area) or such other sum as may, by notification in the Official Gazette, be specified from time to time by the Central Government".

Village industries use local raw materials with simple technology, produce exquisite product to cater to the local and global markets.

Village industries under the purview of KVIC are broadly classified into the following seven groups:

1. Agro Based and Food Processing Industry
2. Forest Based Industry
3. Hand Made Paper and Fibre Industry
4. Mineral Based Industry
5. Polymer and Chemical Based Industry
6. Rural Engineering and Bio-Technology Industry
7. Service / Textile / Polyvastra Industry

Village industries programmes are implemented by KVIC as well as the units aided by State Khadi and Village Industries Boards (KVIBs). With the introduction of REGP/ PMEGP, there has been significant progress in establishing large number of micro units across the country, which in turn, facilitated creation of employment opportunities for unemployed youth. The performance of village industries during 2014-15 is given below.

Comparative Physical Performance of Village Industries

Year	2013-14	2014-15	% growth
Production (Rs. in crore)	25298.00	26689.39	5.50
Sale (Rs. in crore)	30073.16	31965.52	6.29
Employment(In lakh persons)	119.40	123.19	3.17

(Annual Report, KVIC-2014-15)



Prime Minister's Employment Generation Programme (PMEGP)

The Prime Minister's Employment Generation Programme (PMEGP) was launched during the year 2008-09 by merging the erstwhile Rural Employments Generation Programme (REGP) and Prime Minister's Rojgar Yojana (PMRY). This is a credit linked subsidy programme for generation of employment opportunities through establishment of micro enterprises in the rural as well as urban areas of the country. KVIC is the nodal agency at the National level to implement the scheme across the country and the KVI and State Khadi and Village Industries Boards (State KVIBs) in the rural areas.

Objectives:

1. To generate employment opportunities in rural as well as urban areas of the country through setting up of new self-employment ventures/projects/micro enterprises.
2. To bring together widely dispersed traditional artisans/ rural and urban unemployed youth and give them self-employment opportunities to the extent possible, at their place.
3. To provide continuous and sustainable employment to a large segment of traditional and prospective artisans and rural and urban unemployed youth in the country, so as to help arrest migration of rural youth to urban areas.
4. To increase the wage earning capacity of artisans and contribute to increase in the growth rate of rural and urban employment.
5. To facilitate participation of the financial institutions for higher credit flow to micro enterprise.

Maximum cost of the project under the scheme in manufacturing sector is Rs.25.00 lakh and in service sector is Rs.10.00 lakh.

Financing Institutions

1. All 27 Public Sector Banks



2. All Regional Rural Banks (RRB)
3. Small Industries Development Bank of India (SIDBI)
4. Cooperative Banks approved by State Level Task Force Committee headed by the Secretary, Industries of the State.
5. Private Sector scheduled Commercial Banks approved by State Level Task Force Committee headed by the Secretary, Industries of the State.

Contribution by the beneficiary

The contribution of the beneficiaries for the project is 10 % of the project cost in case of general category and 5% of the cost in case of reserved category (SC/ST/OBC/PH/Women/ Ex-serviceman/NER) beneficiaries.

Eligibility Criteria under the Scheme

1. Individual above 18 years of age. Only one person from one family is eligible for obtaining financial assistance for setting up the project under PMEGP. The family includes self and spouse.
2. VII standard pass educational qualification for setting up project costing above Rs.10.00 lakh in the manufacturing sector and above Rs.5.00 lakh in the service sector.
3. Self Help Groups (SHGs)
4. Institutions registered under the Societies Registration Act, 1980.
5. Production based Co-operative Societies
6. Charitable Societies
7. No income ceiling for setting up of a project
8. Assistance under the scheme is only available for new project to be established under PMEGP.
9. PMEGP is applicable to all new viable micro enterprises, including Village industries projects, except in the negative list of Village Industries.
10. Cost of the land should not be included in the Project cost.
11. Margin money (subsidy) will be 'One Time Assistance'.
12. Project financed jointly i.e. financed from two different sources are not eligible for Margin Money (subsidy) assistance.

Industry

Any industry, including coir based projects (except those are mentioned in the negative list), which produces goods or renders any service with or without the use of power and in which the fixed capital investment per head of a full time

artisan or worker i.e. Capital Expenditure on workshop/ work-shed, machinery and furniture of the project does not exceed Rs.1.00 lakh in plain area and Rs,1.50 lakh in hilly areas.



Negative List of Activities

1. Any industry/business connected with meat (slaughtered) i.e. processing, canning and / or service items of it as food, production/manufacturing or intoxicant items like Beedi/Pan/Cigar/Cigarettes, etc., any hotel or dhaba with sales outlet serving liquor, preparation/production tobacco as raw materials, tapping of toddy for sale.
2. Any industry/business connected with cultivation with cultivation of crops/plantation like tea, coffee, rubber, sericulture, floriculture, horticulture, animal husbandry like pisciculture, piggery, poultry, harvester machine, etc.
3. Manufacturing of Polythene carry bags of less than 20 microns thickness and manufacture of carry bags or containers made of recycled plastic for storing, carrying, dispensing or packaging of food stuff and any other items, which causes environmental problems.
4. Industries such as processing of Pashmina Wool and such other products like hand spinning and hand weaving, taking advantage of Khadi programme under the purview of Certification Rules and availing sales rebate.
5. Rural Transport (except auto rickshaw in Andaman and Nicobar islands, House Boat, Shikara and Tourist boats in J & K and Cycle Rickshaw)
6. Items/activities banned by Government of India or Competent Government Authorities will automatically be treated as items under negative list of PMEGP.

Areas of Operation

1. Rural areas as defined under KVIC Act., 2006.
2. Any area classified as Village as per the revenue record of the State/UT, irrespective of population.
3. It will also include any area even if classified as town, provided its population does not exceed 20,000 persons.

Selection of the beneficiaries for the Project



The beneficiaries of the projects are selected through a District Level Task Force Committee (DLTFC) headed by District Collector/Magistrates/ Dy. Commissioner of the district. The other members of the committee are:

1. Lead bank manager
2. Representative of KVIC/KVICB/DIC
3. Representative of NYKS/SC/ST/Women Development Corporation
4. Representative of MSME-DI/ITI/Polytechnic
5. Three representatives of Panchayats by rotation
6. Representative of Urban Local Bodies
7. Member Convenor from General Manager, DIC/Representative of KVIC/KVIB

The DLTFC meetings are held regularly to scrutinise and examine the applications of the beneficiaries and recommend the same to Banks.

3.8 Issues of and Problems of Rural Industries:

Rural industries play a crucial role in the overall industrial and economic development of the country. In spite of this, the rural industries continue to face several problems in their day-to-day operations, that is, in production and marketing of their products.

The issues and problems can be listed as:

1. Absence of adequate and timely banking finance. High interest rate and collateral requirement by banks
2. Limited access to equity capital and global market due to low technology, design, display, branding etc.
3. Inadequate industrial and institutional infrastructure – Non-maintenance of roads, affluent plants, adequate water supply and power distribution, common facilities for workers and security reduce the efficiency of these industries;
4. Non-availability of suitable technology
5. Procurement of raw materials and lack of market information due to lack of awareness and financial assistance

6. Rural Industries highly fragmented and no unions and organisation speaking for their interest so they often go unrepresented in many policies change.
7. Technically outdated equipments and lack of innovation in the sectors
8. Ineffective marketing strategy
9. Absence of suitable mechanism for quick revival of sick units and easier winding up sick companies
10. Non availability of skilled labour at affordable cost

3.9 Rural Industries under 'Make in India' Programme

The Government is implementing the following schemes for bringing the rural industries under the ambit of the 'Make in India' programme:

(i) Prime Minister's Employment Generation Programme (PMEGP)

(ii) Scheme of Fund for Regeneration of Traditional Industries (SFURTI)

(iii) A Scheme for Promoting Innovation, Rural Industry and Entrepreneurship (ASPIRE) was launched on 18.3.2015 to promote Innovation & Rural Entrepreneurship through rural Livelihood Business Incubator (LBI), Technology Business Incubator (TBI) and Fund of Funds for start-up creation in the agro-based industry.

The MSME sector in Odisha is contributing significantly to the economic development and generating maximum employment next to agriculture in the state. But, the growth of the sector is way behind the huge potential of the State, despite being one of the leading states in the country in terms of natural resources. To rejuvenate the MSME sector, the Government of Odisha has formulated the "Odisha MSME Development Policy 2016" with the objectives to:

- a) Encourage new manufacturing capacity based on improved competitiveness.
- b) Provide a conducive eco-system for promotion and growth of MSMEs in potential sectors.
- c) Provide opportunities to local entrepreneurial talent.
- d) Maximize avenues of employment generation for the youth.

- e) Facilitate MSMEs in accessing domestic and export markets.
- f) Make concerted efforts for revival of sick enterprises.
- g) Make focussed efforts for sustainable, inclusive & balanced growth.



Check Your Progress I

- Note: a) Use the space provided for your answers.
b) Check your answers with the possible answers provided at the end of this unit.

1) What is the definition of Rural Industries as per the KVIC?

Ans.

2) Write definition of Micro, Small and Medium Enterprises?

Ans.

3) Expand the following terms.

- 1. MSME: _____
- 2. KVIC: _____
- 3. NSIC : _____
- 4. MGIRI : _____
- 5. PMEGP : _____
- 6. SFURTI : _____

3.10 Agro-based Industries

Agro based industry refers to an industry that adds values to agricultural raw materials through processing in order to produce marketable and usable products that bring forth profits and additional income to the producer. The agro industry is regarded as an extended arm of agriculture. The development of the agro industry makes agriculture more lucrative and create employment opportunities both at the production and marketing stages.

The agro Industry is broadly categorised in the following types:

- (i) Village Industries owned and run by rural households with very little capital investment and a high level of manual labour. Products include pickles, papad, etc.
- (ii) Small scale industry characterized by medium investment and semi-automation. Products include edible oil, rice mills, etc.
- (iii) Large scale industry involving large investment and a high level of automation. Products include sugar, jute, cotton mills, etc.

Importance of Agro-based Industries

1. Helps in the upliftment of rural income
2. Generates rural employment
3. Reduce congestion of industries in the urban area
4. Increase agriculture production
5. Helps in diversification of crops
6. Develops transportation facilities in the rural area
7. Prevent migration of people to urban area for search of job

3.10.1 Types of Agro-based Industries

There are four types of agro-based industries.

1. Agro-produce processing units

They only process the raw material so that it can be preserved and transported at cheaper cost. No new product is manufactured. Ex: Rice mills, flour mills, etc.



2. Agro-produce manufacturing units

Manufacture entirely new products. Finished goods will be entirely different from its original raw material. Ex: Sugar factories, bakery, solvent extraction units, textile mills, etc.

3. Agro-inputs manufacturing units

Industrial units which produce goods either for mechanization of agriculture or for increasing productivity come under this type. Ex: Agricultural implements, seed industries, pumpset, fertilizer and pesticide units, etc.

4. Agro service centres

Agro service centres are workshops and service centres which are engaged in repairing and servicing of pumpsets, diesel engines, tractors and all types of farm equipment.

Institutional Arrangements for Promotion of Agro-based Industries

Important Ministries & Departments at the Centre and State level are at present looking after development of agro based industries.

- a) Ministry of Agriculture and Farmers Welfare
- b) Ministry of Micro Small and Medium Enterprises
- c) Khadi and village industries Commission:
- d) Agro-industries Development Corporation
- e) Small Industry Development Organization

3.10.2 Orissa Agro-Industries Corporation Limited

The Orissa Agro Industries Corporation Limited was incorporated on 1968 as a Government Company with equity participation from the Central Government and Government of Orissa. This corporation is under the administrative control of Agriculture department in Govt. of Odisha and engaged

in executing different schemes/ programmes of different departments of the state like Agriculture, Water Resources, Forest and Environment, Rural Development, Industries, Scheduled Tribes and Scheduled Caste development, Panchayati Raj, Fisheries and Animal Resources Development etc. This Corporation is engaged in carrying out different activities with the following Objectives.

1. Distribution of Agricultural Machineries, Improved Implements and Tools.
2. Enabling persons engaged in agricultural and allied pursuits to own the means of modernizing their operations or alternatively making available necessary custom services for this purpose and to promote Farm Mechanisation in the state of Orissa
3. Undertaking and assisting in the efficient distribution of inputs like chemical fertiliser, bio fertiliser and organic manures etc.
4. Promotion and execution of industries having a bearing on production, preservation and supply of food.
5. Providing technical guidance to farmers and persons concerned with Agro industries with a view to enabling efficient conduct of their enterprises.
6. Providing irrigation potentiality to the farmers by exploring ground water and surface water through energisation of shallow tube well, deep bore well, dug well, pump sets, surface lift project, sprinkler and direct lift projects.
7. Manufacturing and marketing of bio fertiliser and feed for cattle, poultry, duck, deer, pig etc. (www.orissaagro.com)

3.10.3 Agricultural Promotion & Investment Corporation of Odisha Limited (APICOL):

The Agricultural Promotion & Investment Corporation of Odisha Limited (APICOL) was incorporated on 1996 with the intention of bringing enterprise into agriculture as envisaged in State Agriculture Policy 1996. It started functioning with the sole objective of promoting agro-based industries/food processing industries including commercial agriculture/horticulture/animal

husbandry/fisheries, in broad terms to promote investment in Agriculture and allied sector.



Objectives:

- To prepare suitable schemes on Agriculture, Horticulture, Animal Husbandry, Pisciculture and fields allied to Agriculture and make them available to prospective entrepreneurs within the state.
- Commission feasibility studies on different crops and crop related industries.
- Take-up special campaign for promotion of Agricultural Entrepreneurship.
- To acquire and hold equity in joint ventures with agricultural houses/enterprises in the joint sector, assisted sector and to raise and receive funds for the above purpose.
- Act as a single window clearance point for the different incentives under the Agricultural Policy Resolution.
- Counselling, customer service including escort services and guidance to entrepreneurs on agri business activities, executives on L.I. Points and public.
- Arrangement of seminars, workshops, exhibitions, Entrepreneurs Development Program and Awareness Programs.
- Acting as Virtual Office of Agricultural & Processed Food Products Export Development Authority (APEDA), Government of India.
- Acting as enlisted consultant by Small Farmers' Agri-Business Consortium (SFAC), Government of India under its Project Development Facility. (www.apicol.co.in)

3.10.4 Small Farmers Agribusiness Consortium (SFAC):

Small Farmers Agribusiness Consortium (SFAC) is an Autonomous Society promoted by Ministry of Agriculture, Cooperation and Farmers' Welfare, Government of India. It was registered under Societies Registration Act XXI of 1860 on 18th January, 1994

The Society is also registered as Non-Banking Financial Institution by Reserve Bank of India.

.SFAC is implementing the central schemes of Government of India for economic inclusion of small and marginal farmers in agribusiness activities.

Society is pioneer in organising small and marginal farmers as Farmers Interest Groups, Farmers Producers Organisation and Farmers Producers Company for endowing them with bargaining power and economies of scale. It provides a platform for increased accessibility and cheaper availability of agricultural inputs to small and marginal farmers and in establishing forward and backward linkages in supply chain management. This initiative has triggered mobilization of farmers for aggregation across the country with ultimate aim of sustainable business model and augmented incomes.

Recently the Society has been entrusted with the task of implementation of the critically important Delhi Kisan Mandi and National Agriculture Market Scheme on e-platform to progressively free agricultural trade and offer price discovery to farmers. (www.sfacindia.com)



Check Your Progress II

Note: a) Use the space provided for your answers.

b) Check your answers with the possible answers provided at the end of this unit.

1) Write importance of Agro-based Industries?

Ans.

2) List the types of Agro-based industries

Ans.

3) Expand the following terms.

a) APICOL_____

b) SFAC_____

3.11 Let Us Sum Up

The Indian agriculture and land based activities are unable to provide gainful employment to the rural people because it has reached to a level of saturation. The rural industry can provide much needed year round employment and income for the poor. As most rural non-farm activities require little capital and generate more employment per unit of capital, they provide a good source of raising employment and income opportunities for the poor. The non-farm sector is an important source of income for women, small farmers, landless workers and the poor living in rural areas and more so in droughts. The Government of India through Ministry of Micro, Small and Medium Enterprises (MSME) promoting and facilitating programmes, projects and schemes and monitoring their implementation with a view to assisting MSMEs and help them to scale up. Agro-based industries are also being promoted by various state agro-industries corporation limited to provide income and employment to the entrepreneurs.

3.12 Key Words

Rural Industries: Rural industries are generally associated with agriculture and allied activities in rural areas.

Rural Areas: Rural Area means the area comprised in any village, and includes the area comprised in any town, the population of which does not exceed twenty thousand or such other figure as the Central Government may specify from time to time.

Village Industry: Any industry located in a rural area which produces any goods or renders any service with or without the use of power and in which the fixed capital investment per head of artisan or worker does not exceed one lakh (one lakh and fifty thousand in case of village industry located in (a hilly area) or such other sum as may, by notification in the Official Gazette, be specified from time to time by the Central Government".

Agro-based Industries: Agro based industry refers to an industry that adds values to agricultural raw materials through processing in order to produce marketable and usable products that bring forth profits and additional income to the producer.



3.13 References

- Annual Report (2014): Khadi and Village Industries Commission, 2014-15
- Annual Report (2014): Micro Small and Medium Enterprises, 2014-15
- Annual Report (2014): NABARD, 2014-15
- FAO (2007) : Agro-Industries for Development, published by the Food and Agriculture Organization of the United Nations and the United Nations Industrial Development Organization by arrangement with CAB International
- Gaur, R (2008) Economics of Agro Industries, Kalyani Publication
- Mustafa , A. (2012) Indian Rural Economy, Serials Publication
- NIIR .(2012) Profitable Small, Cottage & Home Industries, Asia Pacific Business Press Inc.
- Odisha MSME Development Policy (2016) : MSME Policy-2016, Govt. of Odisha
- Pandey,M and Tewari, D. (2010). Agribusiness Book: A Marketing & Value-Chain Perspective: Analysing South Asia Textbook Student Edition. International Book Distributing Company
- Singh, K (2008) Rural Development: Principles, Policies and Management , Sage Publication
- Singh, P (2015) Horticulture at a Glance, Kalyani Publishers
- Venugopal, P (2014) Agri-input Marketing in India, Sage Publication
- www.msme.gov.in
- www.kvic.org.in
- www.nimsme.org
- www.msmeodisha.gov.in
- www.ipicolorissa.com
- www.idco.in
- www.osfcindia.com

3.14 Check Your Progress – Possible Answers

UNIT -1

Check Your Progress I

Q1) Ans:

Livestock are animals and birds that are kept on a farm, such as cows, sheep, or chickens.

Q2) Ans:

1. Provides Food
2. Gives Dung and other animal waste materials
3. Provides Fibre and skins
4. Gives Draft power
5. Helps in Weed control
6. Has Cultural value
7. Useful in Sports / recreation
8. Useful as a Companion animals
9. Storage of wealth

Q3) Ans:

- a) Cattle _____ First _____
- b) Buffalo _____ First _____
- c) Sheep _____ Third _____
- d) Goat _____ Seond _____
- e) Poultry _____ Seventh _____

Check Your Progress II

Q1) Ans:

In 2014-15 the contribution of Agriculture and allied sectors to Net State Domestic Product (NSDP) at current prices was 53,995 crores which was 20.75 % of NSDP and per capita income from these sectors in 2014-2015 was Rs. 59,229/-. The contribution of Animal Husbandry sector to the Agriculture and allied sector is about 25 %.

Q2) Ans:

- a) OF : Operation Flood
- b) NDDB : National Dairy Development Board
- c) AMUL : Anand Milk Union Limited
- d) NPCBB : National Project for Cattle and Buffalo Breeding

- e) NDP : National Dairy Plan
- f) DEEDS : Dairy Entrepreneurship Development Scheme
- g) NPBBDD : National Programme for Bovine Breeding and Dairy Development



Q3) Ans:

- a) Egg : 43 numbers/annum
- b) Milk : 118 gms/day
- c) Meat : 3.66 kg/annum

Check Your Progress III

Q1) Ans:

- a) National Fisheries Development Board (NFDB) and its activities,
- b) Development Inland Fisheries and Aquaculture
- c) Development of Marine Fisheries, Infrastructure and Post-Harvest Operations,
- d) Strengthening of data base and Geographical Information System of the Fisheries Sector,
- e) Institutional arrangement for Fisheries Sector
- f) Monitoring, Control and Surveillance (MCS) and other need-based Interventions and
- g) National Scheme of Welfare of Fishers

Q2) Ans:

The MUY was launched by Hon.ble Chief Minister, Odisha on 9.12.2011 to provide social security and livelihood support to the fishermen community of Odisha. The Yojana has 14 sub-components and they are:

- a) Special PDS for fishermen affected by the olive ridley sea turtle conservation for marine fishermen
- b) Replacement of wooden country craft with FRP boat for marine fishermen
- c) Motorisation of country craft for marine fishermen
- d) Assistance for fish marketing infrastructure for fishermen:
- e) Assistance for net and boat for inland fishermen



- f) Promotion of cage culture in reservoirs
- g) Group Accident Insurance scheme for fishermen(GAIS)
- h) BASUNDHARA for Fishermen
- i) MO KUDIA scheme for Fishermen
- j) NETRAJYOTI scheme for Fishermen
- k) Financial assistance for fatal disease for fishermen
- l) Award to meritorious children of fishermen community
- m) Financial assistance to women SHGs of marine fishermen community
- n) Sea weed culture as an alternative livelihood for marine fishermen

Q3) Ans:

- a) FISHFED : Odisha State Fishermen's Cooperative Federation limited
- b) OPDC : Orissa Pisciculture Development Corporation Ltd
- c) MUY : Matshyajibi Unnayan Yojana
- d) MGNREGS : Mahatma Gandhi National Rural Employment Generation Scheme
- e) RKVY : Rastryia Krishi Vikas Yojana
- f) NFDB : National Fishery Development Board
- g) FFDA : Development of Inland Fisheries & Aquaculture

UNIT – 2

Check Your Progress I

Q 1) Ans:

Silviculture is that branch of forestry which deals with the establishment, development, care and reproduction of stands of timber.

Q2) Ans:

- i. Agro forestry reduces the pressure on forest and enhance better protection of ecological system



- ii. It improves microclimate of the area by lowering of soil temperature, reduction of evaporation and maintenance of soil moisture.
- iii. It reduces run-off, nutrient leaching and soil erosion.
- iv. It improves soil structure by the addition of organic matter to soils.
- v. Agro forestry system reduces the total crop failure
- vi. Agro forestry improved the rural living standards by increasing their income in a sustained manner.

Q3) Ans:

1. Community Forestry
2. Farm Forestry
3. Extension Forestry
4. Recreational Forestry

Check Your Progress II

Q1) Ans:

- Fruits and vegetables play an important role in balanced diet.
- These provide not only energy rich food but also provide vital protective nutrients/elements and vitamins.
- Comparatively fruits and vegetables are the cheapest source of natural nutritive foods.
- Since most of Indians are vegetarians, the incorporation of horticulture produce in daily diet is essential for good health.

Q2) Ans:

It refers to the cultivation of fruit crops. It is derived from two words i.e. Pomum meaning fruit and Logos meaning discourse or study. Therefore, pomology is study or cultivation of fruit crops such as Mango, Litchi, Citrus, Sapota, Guava, Grape, Banana, Pineapple, Apple, Pear, Peach, Plum and Cherry etc.

Q3) Ans:

- a) MIDH : Mission for Integrated Development of Horticulture
- b) NHM : National Horticulture Mission

- c) NHB : National Horticulture Board
- d) APEDA: Agricultural and Processed Food Products Export Development Authority



UNIT – 3

Check Your Progress I

Q1) Ans:

According to KVIC (Khadi and Village Industry Commission), "village industries or Rural industry means any industry located in rural areas, population of which does not exceed 10,000 or such other figure which produces any goods or renders any services with or without use of power and in which the fixed capital investment per head of an artisan or a worker does not exceed a thousand rupees".

Q2) Ans:

The MSMEs are defined on the basis of investment in Plant & Machinery and equipments under the MSMED Act, 2006.

The present investment limit for MSMEs is as under:

Manufacturing Enterprises

- (i) Micro enterprise: investment in plant and machinery upto Rs. 25 lakh
- (ii) Small enterprise: investment in plant and machinery from Rs. 25 lakh to Rs. 5 crore.
- (iii) Medium enterprise: Investment in plant and machinery from Rs. 5 crore to Rs. 10 crore

Service Enterprises

- (i) Micro enterprise: investment in equipments upto Rs. 10 lakh.
- (ii) Small enterprise: investment in equipments from Rs. 10 lakh to Rs. 2 crore.
- (iii) Medium enterprise: investment in equipments from Rs. 2 crore to Rs. 5 crore.

Q3) Ans:

MSME : Ministry of Micro Small and Medium Enterprises

KVIC : Khadi and Village Industries Commission

- NSIC : National Small Industries Corporation Limited
- MGIRI : Mahatma Gandhi Institute for Rural Industrialization
- PMEGP : Prime Minister's Employment Generation Programme
- SFURTI : Scheme of Fund for Regeneration of Traditional Industries



Check Your Progress II

Q1) Ans:

1. Helps in the upliftment of rural income
2. Generates rural employment
3. Reduce congestion of industries in the urban area
4. Increase agriculture production
5. Helps in diversification of crops
6. Develops transportation facilities in the rural area
7. Prevent migration of people to urban area for search of job

Q2) Ans:

1. Agro-produce processing units
2. Agro-produce manufacturing units
3. Agro-inputs manufacturing units
4. Agro service centres

Q3) Ans:

- APICOL : Agricultural Promotion & Investment Corporation of Odisha
Limited
- SFAC : Small Farmers Agribusiness Consortium

