

CHAPTER 7

AGRICULTURE

[In order to ensure long-term food security for people, a profitable, sustainable and environment-friendly agricultural system is crucial. Broad agriculture sector and rural development sector have been given the highest priority in order to make Bangladesh self-sufficient in food. The Government determined to develop the overall agriculture sector keeping in view of the goals set out in the Seventh Five Year Plan (SFYP) and National Agriculture Policy (NAP). Over the last few years, there has been an increasing trend in food production. According to BBS, in FY2015-16, food grains production stood at around 386.93 lakh metric tons (MT). In the same fiscal year, the total internal procurement of food grains was 12.30 lakh MT, total import of food grains through public and private sectors was 46.23 lakh MT (rice 2.57 lakh MT and wheat 43.66 lakh MT). In addition, an amount of Tk.16,400.00 crore was targeted to be disbursed as agricultural credit against which Tk. 17,646.39 crore was disbursed till June 2016, which was 107 percent of the target. In order to scale up productivity, subsidy in agricultural inputs was increased, as well as enhanced coverage and increased availability of agricultural credit were ensured. Programmes have been launched to popularise the use of organic and balanced fertiliser to maintain soil fertility and productivity. Considering the importance of increased productivity of agricultural products, an amount of Tk.7,000.00 crore was allocated in the revised budget of FY2015-16 to provide subsidy on fertilizer and other agricultural inputs].

The role of agriculture is impeccable to create opportunity of jobs for large population by increasing productivity and growth. The agricultural sector (crops, fisheries, livestock and forests) also contributes a lot to the country's GDP, provides employment for nearly half of the labour force and supplies raw materials to the agro based industries. Agriculture is a special field of social activity which is closely related to the important issues like ensuring food and nutrition of peoples, creating scope of income and poverty alleviation. In addition, agriculture is the source of wide variety of consumer demanded agricultural commodity markets, especially in rural areas. Therefore, development of agriculture and growth is essential to reduce rural poverty.

Management of Agriculture

The avowed goals of the present Government is to fulfill the food demand of the vast population of the country through achieving the target self-sufficiency in food. The Government has placed highest importance to the overall development of agriculture sector. With a view to developing the agriculture sector, the Government has taken a number of steps. These includes, expansion of small irrigation facilities, reduction of water logging, production of improved quality and high yielding varieties of seeds and their preservation and distribution. Agricultural research has been given special priority for the development and expansion of the draught and saline tolerant varieties, short duration crops and varieties of crops adaptable to the weather and environment of a particular region and producing crops suitable for a particular kind of soil as well as proper use of fertiliser and Integrated Pest Management (IPM) for pest control. Saline tolerant and short duration crop variety and

technology have been invented using nuclear technology and bio-technology and extended to the field. Saline tolerant crop varieties have extended the coverage of rice cultivation in the vast coastal areas of southern region.

Steps have been taken to scale up subsidy on agricultural inputs, ensure fair price and supply of agricultural inputs. Moreover, expansion of irrigation facilities and increased availability of irrigation instrument, agriculture extension as per target, quality control of agricultural products and ensuring sufficient storage facility of food grains have been scaled up. Implementation of various programmes are underway to increase food production by expanding the coverage of agricultural land and by creating the opportunities of multiple cropping line of expansion of irrigation by using ground water in various regions of the country, reduction of water logging and planned drainage of water in *haor* areas. In addition, an *Endowment Fund* has been established to provide support to increase productivity through diversification of crops.

Food Grains Production

According to the final estimate of BBS, the volume of food grains production in FY2014-15 stood at 384.20 lakh MT of which *Aus* accounted for 23.28 lakh MT, *Aman* 131.90 lakh MT, *Boro* 191.92 lakh MT, wheat 13.48 lakh MT and maize 23.61 lakh MT. In FY2015-16 food grains production stood at 386.93 lakh MT of which *Aus* accounted for 22.89 lakh MT, *Aman* 134.83 lakh MT, *Boro* 189.37 lakh MT and wheat 13.48 lakh MT and maize 26.36 lakh MT. Table 7.1 shows the food grains production status during the period from FY2007-08 to FY2015-16.

Table 7.1: Food Grains Production

(In lakh MT.)									
Food Grains	2007-08*	2008-09*	2009-10*	2010-11**	2011-12**	2012-13**	2013-14**	2014-15**	2015-16**
<i>Aus</i>	22.93	21.00	22.18	21.33	23.33	21.58	23.26	23.28	22.89
<i>Aman</i>	110.06	122.25	126.60	127.91	127.98	128.97	130.23	131.90	134.83
<i>Boro</i>	186.77	182.87	185.25	186.17	187.59	187.78	190.07	191.92	189.37
Total Rice	319.76	326.12	334.03	335.41	338.90	338.33	343.56	347.10	347.10
Wheat	9.56	9.58	10.39	9.72	9.95	12.55	13.02	13.48	13.48
Maize*	23.61	11.37	13.70	15.52	19.54	21.78	25.16	23.61	*26.36
Total	352.93	347.07	358.12	360.65	368.39	372.66	381.74	384.20	386.93

Source: Bangladesh Bureau of Statistics (BBS), *DAE, **DAE & BBS.

Food Budget

Internal Procurement of Food Grains

In FY2015-16, the revised internal food grain procurement target was 16.32 lakh MT (rice: 14.32 lakh MT and wheat: 2.00 lakh MT). Against this target, as much as 12.30 lakh MT was procured (rice: 10.32 lakh MT and wheat: 1.98 lakh MT).

Food Grains Import

In FY2015-16 the total import of food grains stood at 46.23 lakh MT (rice: 2.57 lakh MT, wheat: 43.66 lakh MT) of which the public sector import was 4.17 lakh MT (rice: 0.01 lakh

MT, wheat:4.16 lakh MT) and the private sector import was 42.06 lakh MT (rice: 2.15 lakh MT, wheat: 39.50 lakh MT). Rest 0.87 lakh MT of food grain was imported in the form of aid.

Food Grains Export

In rice production, Bangladesh has become a country of rice surplus by improving its previous condition of rice shortage. Being encouraged by bumper production and satisfactory stock, the Government of Bangladesh has exported 25 thousand MT coarse rice to Sri Lanka in the FY2014-15. Although fine rice has been exported occasionally by the private sector in Bangladesh, the export of coarse rice in FY2014-15 is the first ever step by the Government.

Public Food Distribution

The Government provides support for food to the fixed-income government employees and low-income people through different channels of Public Food Distribution System (PFDS). Under this programme, food grains are distributed through monetised channel (OMS, Fair Price Card for small income groups, class IV employees and garment workers). On the other hand, food grains are also distributed through non-monetised channels or social safety net programmes like Food for Work (FFW), Test Relief (TR), Vulnerable Group Feeding (VGF), Vulnerable Group Development (VGD), Gratuitous Relief (GR) and others.

In FY2015-16, the total distribution of food grains through different channels stood at 20.64 lakh MT(monetised channel 8.49 lakh MT and non-monitised channel 12.15 lakh MT) against the target of 22.32 lakh MT. Low distribution is attributable to the low and stable price throughout the year.

Food Storage Capacity

In the FY2015-16, public food storage capacity stood at around 20.40 lakh MT up to June 2016, whereas the food storage capacity was 20.09 lakh MT in previous year.

Food Safety

In order to ensure contaminant free and food safety for the people, the Government has started implementing the 'Food Safety Act, 2013' from the 1 of February, 2015. Eventually, 'Bangladesh Food Safety Authority' was activated on the 2 February, 2015. Along with the inception of the implementation of the 'Food Safety Act, 2013', the Government has also taken steps to raise people's awareness of food safety and about the fundamental concepts of the law. The Government has also taken efforts to increase the capabilities of the key organisations and concerned people so that the law is implemented properly. 'Bangladesh Food Safety Authority' will ensure a smooth collaboration among all the organisations that are concerned with food safety management. The authority will be responsible for the overall monitoring of safe food following farm to fork approach, viz. production, processing, storage and marketing of food and food stuffs. It will also be responsible for establishing good practices and updating methodologies for risk analysis in the food chain.

Seed Production and Distribution

Quality seed is the prime input to increased agricultural production. Crop production can be increased by ensuring supply of quality seeds to the farmers extensively. Bangladesh Agricultural Development Corporation (BADC) produces foundation seeds from breeder seed of cereal crops on its 24 farms, jute seeds on 2 farms, vegetable seeds on 2 farms, potato seeds on 2 farms and pulse and oil seeds on 3 farms. Besides, certified seeds of rice, wheat, maize, jute, vegetables, spices, potato and pulse and oil seeds are also being multiplied at 75 contract growers' zones. In addition, 9 horticulture development centers and 13 agro service centres of BADC are producing and distributing the seedlings and other planting materials throughout the country. The number of farmers has been increased to 74,327 at 75 contract-growers zone in the whole country and the total surveyed land for this purpose stands at 89,214.36 hectares.

Taking into account the demand for quality seeds in Bangladesh, in FY2015-16, BADC has produced 80,874 MT paddy seeds, 16,533 MT wheat seeds, 5 MT maize seeds, 26,315 MT potato seeds, 880 MT jute seeds, 2,358 MT pulse seeds, 1,792 MT oil seeds, 107 MT vegetable seeds and 105 MT spices with a total of 1,28,969 MT seeds. In the same fiscal year, the target of seeds distribution to the farmers was 1,24,440 MT. Achievement in terms of production and distribution of seeds through BADC's own farms and contract growers for the last three years are shown in Table 7.2 :

Table 7.2: Seed Production and Distribution through Seed Multiplication Farms and Contract Growers' Zones

(In metric ton)

Name of the Seed	Achievement in FY 2013-14		Achievement in FY 2014-15		Achievement in FY 2015-16	
	Production	Distribution	Production	Distribution	Production	Distribution
Paddy	83,608	78,371	82,423	84,901	80,874	74,558
Wheat	27,208	24,997	28,177	27,208	16,533	20,667
Maize	238	256	213	238	5	571
Potato	22,568	21,084	25,179	22,568	26,315	25,134
Pulses	2,353	2,036	1,726	2,353	2,358	1,323
Oil seed	1,782	1,579	1,421	1,782	1,792	1,300
Jute	790	1,013	1,044	1,044	880	724
Vegetables	125	121	123	115	107	83
Spices	108	92	109	108	105	80
Total	1,38,780	1,29,549	1,40,414	1,40,317	1,28,969	1,24,440

Source: Ministry of Agriculture.

Fertiliser

The expansion of modern agricultural farming practices like use of High Yielding Variety (HYV) together with intensified cultivation is needed to ensure food for all, which led to an increasing demand for fertilisers. Therefore, necessary to ensure timely supply of both organic and chemical fertilisers to meet the nutritional demand of these varieties. The use of chemical fertiliser is on the increase with the increasing demand for food production in the country. The use of urea fertiliser alone was the highest. In FY2015-16, the total quantity of

fertiliser used was 47.38 lakh MT. The year wise use of fertilisers during the period from FY2007-08 to FY2015-16 is shown in Table 7.3.

Table 7.3: Use of Chemical Fertiliser

(In '000' metric ton)

FY	Name of Fertilisers										Total
	Urea	TSP	DAP	SSP	NPKS	MOP	AS	Gypsum	Zinc	Others	
2007-08	2762.00	392.00	129.00	118.000	120.00	262.00	7.00	75.00	20.00	0	3886.00
2008-09	2532.96	156.00	18.23	20.00	40.00	75.00	3.00	15.00	5.00	0	2865.19
2009-10	2409.00	420.00	136.00	0	50.00	263.00	5.00	20.00	10.00	0	3310.00
2010-11	2652.00	564.00	305.00	0	40.00	482.00	6.00	25.00	7.00	0	4117.00
2011-12	2296.00	678.00	409.00	0	20.00	613.00	6.00	15.00	12.00	0	4049.00
2012-13	2247.00	654.00	434.00	0	25.00	571.00	8.50	40.00	24.00	19.0	4022.50
2013-14	2462.00	685.00	543.00	0	27.00	577.00	0.10	126.00	42.00	40.00	4502.10
2014-15	2638.00	722.00	597.00	0	27.00	640.00	6.22	122.00	39.00	39.00	4791.22
2015-16	2291.00	730.00	658.00	0	39.59	727.00	9.96	229.42	53.43	0.00	4738.40

Source: FFMB/ Ministry of Agriculture.

Irrigation

Irrigation is considered to be very essential input for increasing crop production. A vast area of the country does not get irrigation in dry season because of climate change and unplanned lifting up of underground water. So, a well-planned irrigation system is necessary for increasing cropping intensity, yield as well as production. Government has attached more importance on reducing irrigation cost and retains balance of environment by increasing use of surface water and reducing use of underground water. Although the major part of minor irrigation is under private ownership, it is the duty of the Government to establish efficient irrigation system such as sustainable irrigation facilities at low cost. Government implements different activities through efficient minor irrigation system. Technology of Alternate Wetting and Drying (AWD) is being encouraged among farmers with a view to saving irrigation water. Rubber dam project has been taken in small and medium rivers of prospective areas for using surface water. Removal of water logged, re-excavation of canal, construction of surface irrigation channel and underground irrigation channel, embankment, irrigation structure, installation of power pump, Deep Tube Well (DTW), construction of *Jhiribadh* in hilly areas and installation of artisan well are being implemented.

In the FY2014-15, a total of 201 auto water level recorders have been installed by BADC through survey and monitoring project of minor irrigation development. Data of every moment is being collected by such auto water level recorders automatically. Data monitoring and analysis of underground water is being made possible by preparing digital data bank. By this time, Groundwater Zoning Map has been prepared using those data and updating it from time to time. Where and which type of irrigation equipment's are required throughout the country can easily be determined by this Groundwater Zoning Map.

Furthermore, irrigation charge can easily be collected by setting and using smart card prepaid meter. Thus, farmers are able to use optimum irrigation timely. Renewal energy such as solar operated pump has been installed in the FY2012-13 first times by a programme of BADC. So

far 11 solar pumps have been installed in different districts of the country. Other districts are being considered to install solar operated irrigation pump.

In the FY2015-16, 14 irrigation projects and 7 irrigation programmes were implemented by BADC. By those irrigation projects and programmes re-excavation of 580.00 km canal, construction of 756 irrigation structures, 756 km irrigation channel, installation of 118 Deep Tube Wells, 610 power pumps, renovation of 149 Deep Tube Wells, electrification of 358 irrigation equipment and setting of 245 smart card prepaid meters were completed in June 2016. The irrigated land area during the period from FY2007-08 to FY2015-16 is shown in Table 7.4.

Table 7.4: Area Under Irrigation

(Area in lakh hectare)									
Irrigation method	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16 (Approx.)
LLP& others	10.67	10.92	11.77	10.39	11.45	11.96	12.46	12.51	12.86
Deep tube well	7.86	7.90	7.73	7.19	7.59	9.34	8.78	9.62	9.08
Shallow tube well (surface/deep/very deep)	31.97	32.45	33.37	35.05	34.18	32.42	32.78	32.35	33.18
Total	50.49	51.26	52.17	52.63	53.22	53.72	54.02	54.48	55.12

Source: BBS, Ministry of Agriculture, Department of Agricultural Extension (DAE).

Barind Multipurpose Development Authority (BMDA) has expanded irrigation in all the districts of *Rajshahi* and *Rangpur* divisions. During FY2015-16, BMDA has irrigated about - 7.00 lakh hector of land in *Aus*, *Aman* and *Boro* season through 14,642 deep tube wells. To use the surface water for irrigation, the authority has re-excavated 3,037 *khas* ponds, 6 *deghees* and restoration of 1,658.77 km. *khas* canal/*khari* and 698 no. of water conservation structures (cross dams) have been constructed over the canal to preserve the water in the cannel. As a result, more than 94 thousand ha. of land has brought under supplementary irrigation and about 1.10 lakh farmers are benefited.

To increase the use of surface water for irrigation the authority has introduced a system by which water is lifted from the river *Padma* at *Godagari*, *Charghat* and *Puthia upazila* and transported to the canals through buried pipe line. A total of 144 Low Lift Pumps (LLP) are placed on the bank of those canals and also on the bank of the river *Mahananda*, *Punarbhaba* and *Atrai* at *Gomostapur*, *Mahadebpur*, *Patnitala*, *Dhamurhat*, *Shapahar*, *Porsha* and *Manda upazila* adjacent 12,000 hectores of land have been provided irrigation.

BMDA has re-excavated a reservoir of 17 acres in *Kusumkunda of Chaor Union of Porsha upazila* of *Naogaon* district, where no irrigation system is effective. The reservoir provides irrigation at about 100 ha. of land round the year. To remove water logging 6.5 km canal has been re-excavated from *Roktodoho Beel* at *Raninagar upazila*. As a result, water logging of 1,400 hectares land has been removed and supplementary irrigation has been done by the preserved water of the canal. Besides these, in those areas of *Barind* region where irrigation devices are not functioning, people drunk contaminated water of river, pond/canal and where

there is no irrigation system, digging about 100 *Patkuya*, public demand for pure drinking water including cropping system that require less water is being met.

Agricultural Credit

Agriculture of Bangladesh is vital at the subsistence level which makes agricultural and rural credit is significant in ensuring food security. Extended Agricultural and Rural Credit Policy and Programme have been formulated by Bangladesh Bank to ensure agricultural and rural credit disbursement easier and hassle free. The Agricultural and Rural Credit Programme is being formulated with a view to speed up the agricultural credit in the marginal level.

In FY2015-16, Tk.17,646.39 crore (107.60% percent of target) has been disbursed as agriculture and rural credit against target of Tk.16,400.00 crore through state-owned commercial banks, specialised banks, the private and foreign commercial banks. Table7.5 shows a summary of agricultural credit disbursement and recovery during the period from FY2005-06 to FY2015-16.

Table7.5: Year-wise Disbursement and Recovery of Agricultural Credit

(In crore Tk.)				
Fiscal Year	Target	Disbursement	Recovery	Balance
2005-06	5892.21	5496.21	4164.35	15376.79
2006-07	6351.30	5292.51	4676.00	14582.56
2007-08	8308.55	8580.66	6003.70	17822.50
2008-09	9379.23	9284.46	8377.62	19598.15
2009-10	11512.30	11116.88	10112.75	22588.58
2010-11	12617.40	12184.32	12148.61	25492.13
2011-12	13800.00	13132.15	12359.00	25974.97
2012-13	14130.00	14667.49	14362.29	31057.69
2013-14	14595.00	16036.81	17046.02	34632.82
2014-15	15550.00	15978.46	15406.96	32936.80
2015-16	16,400.00	17646.39	17056.43	34477.37

Source: Bangladesh Bank.

Renovation in Agriculture Sector

Ensuring the long term food security for population of the country the Ministry of Agriculture has been implementing different development projects/programmes in the field of agricultural research and education, agricultural extension and training, marketing of agricultural products, agricultural support and rehabilitation, innovation, procurement and management of agricultural input and equipment, seed production, storage and distribution, extension of irrigation facilities, fertiliser management activities, farm mechanisation and crop storage etc. Some important activities are mentioned below:

- Implementing projects in *Haor* areas to increase crop intensity;
- Establishment of Bangladesh Institute of Research and Training on Applied Nutrition (BIRTAN) to reduce of nutritional problems, develop of skilled human resources and create employment;
- Ensuring nutrition security through year round fruits production;
- Implementing projects to reduce pressure on ground water and enhancing ground water level through recharge wells;

- Implementing projects on irrigation and conservation of rain water in the *Barind* Region in order to increase crop production;
- Raising awareness among farmers and personnel involved with agricultural activities on the proper utilization of arable land, fertiliser and other agricultural inputs;
- Invention of flood, drought, salinity and high temperature tolerant crop varieties to cope with climate change effect;
- Introduction of crop zoning technology;
- Creation of employment opportunities through agricultural production;
- Enhancement of extension activities to promote modern cultivation method at the farmer's level;
- Enhancement of irrigation facilities to increase crop production through the construction of rubber dams in small and medium rivers;
- Implementing projects on the marketing of agricultural products and development of rural communication to ensure fair price of agricultural products;
- Implementing projects on farm mechanisation technology to increase crop production and minimise the seasonal labor crisis;
- Establishment of sub-station of Bangladesh Institute of Nuclear Agriculture (BINA)
- Providing subsidy to farmers in purchasing agriculture equipment's to promote farm mechanisation;
- Ensuring supply of quality seed to farmers through establishment of seed cold storage at proper time;
- Establishment of seed multiplication farm on 1,044 acres land in the south west region of the country to ensure quality seed supply;
- Establishment of pulse and oil seed multiplication farm and seed processing center in *Subarnachar, Noakhali*;
- Implementing projects to transform the barren land into arable land through the expansion of irrigation facilities;
- Establishment of Community Rural Radio to share information on modern agricultural practices among rural farmers community;
- Establishment of Agriculture Information and Communication Centre (AICC) at union level;
- Promotion of agriculture and agriculture based services through the development of several online based activities such as Online Fertiliser Recommendation Software, Bangladesh Rice Knowledge Bank etc.
- Establishment of a call center at the head office of Agriculture Information Service (AIS);
- Introduction of internet facilities to all marketing offices at district level and publication of market prices and other information at the website www.dam.gov.bd;
- Promotion of agriculture and agriculture based services through mobile operators;
- Implementing projects to reduce the import dependency of sugar and molasses;
- Ensuring proper use of surface water through modern irrigation technologies;
- Implementing projects on research and extension activities to increase cotton production;
- Implementing project for the establishment of Post-Entry Quarantine Centre;
- Promotion of organic pest control method and organic agriculture activities;
- Implementing a project on Genome Sequencing of Jute for selection of jute cultivation area and extension of Ribbon Rating Technology;

- Promoting participation of women in agricultural sector to alleviate poverty and create employment opportunities;
- Introduction of Buried Pipe, Pre-Paid Meter and Energy Measuring Technology to improve irrigation activities;
- Expansion of Post-Harvest Management ;
- Human Resource Development through scholarships (PhD, MS, Short Course, etc.)

Fisheries Sector

Fish Production

In FY2015-16 fishing sector contributes 3.65 percent to the GDP and 23.78 percent to the country's total agricultural products. A considerable part of the country's export earning comes from this sector. Fish alone supplements about 60 percent of animal protein in our daily diet. The main target of fisheries sector is to increase supply of animal protein through boosting of fish production. To achieve this target the Government has been initiating and implementing different programmes. Major activities are expansion and strengthening of community based fish culture programmes, ensure the entry of fishermen in the public water bodies, implementing *beel* nursery programmes and fry releasing programmes in the open water, establishment of fish sanctuary, expansion of *gher* and cage culture programmes, restoration of fish habitat by excavating filled rivers, innovation of new technology by research and expansion of these technology in the field etc. For the human resource development Department of Fisheries (DoF) arranges different training programmes for fish and shrimp farmers and also for the fishermen regularly. Besides, DoF has been implementing open water fisheries resources management programmes for the economic and social development of the poorest fish farmers and fishermen. It is noted that Bangladesh is ranked fourth in inland capture fisheries and fifth in aquaculture production in the world.

The total fish production in FY2014-15 stood at 36.85 lakh MT, which increased to 38.55 lakh MT in FY2015-16. Table-7.6 shows the trend of fish production during the period from FY2008-09 to FY2015-16.

Table 7.6: Fish Production Trends in Different Resources

(In lakh metric ton)									
Sector	Area (Lakh ha)	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16 (Target)
1. Inland									
(a) Open Water									
(i) River & Estuaries	8.54	1.69	1.82	1.45	1.46	1.47	1.67	1.75	1.78
(ii) Sundarban	1.78	0.20	0.18	0.22	0.22	0.22	0.18	0.18	0.18
(iii) Beel	1.14	0.93	0.64	0.82	0.85	0.89	0.89	0.93	0.96
(iv) Kaptai lake	0.69	0.09	0.07	0.09	0.08	0.09	0.08	0.09	0.09
(v) Flood plain	27.11	6.17	7.51	7.97	6.96	6.86	7.13	7.30	7.49
Sub-Total (Open Water)	39.25	9.08	9.75	10.55	9.57	9.61	9.96	10.25	10.50
(b) Culture									
(i) Pond	3.71	10.27	11.39	12.20	13.92	14.79	15.26	16.13	17.39
(ii) Baors	0.054	0.06	0.09	0.512	0.052	0.06	0.07	0.07	0.08
(iii) Semi closed water	1.304	-	0.46	0.049	1.32	1.39	1.93	2.01	2.08

Sector	Area (Lakh ha)	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16 (Target)
bodies									
(iv) Shrimp/Prawn farms	2.75	1.49	1.56	1.85	1.96	2.04	2.16	2.23	2.31
(iv) Pen culture	0.067	-	-	-	-	-	0.13	0.13	0.13
(iv) Cage culture	-	-	-	-	-	-	0.01	0.02	0.02
Sub-Total (Culture)	7.89	11.82	14.26	14.60	17.26	18.60	19.57	20.60	22.00
Total (Inland)	46.99	20.90	24.02	25.15	26.83	28.81	29.53	30.85	32.50
2. Marine Fisheries	0.48 sq. nautical mile								
(a) Industrial	0.48	0.34	0.41	0.73	0.73	0.77	0.85	0.86	
(b) Artisanal	5.63	4.83	5.05	5.05	5.16	5.18	5.15	5.19	
Total (Marine)	-	6.11	5.17	5.46	5.78	5.89	5.95	6.00	6.05
Country Total	-	27.01	28.99	30.62	32.62	34.10	35.48	36.85	38.55

Source: Department of Fisheries, Ministry of Fisheries and Livestock.

Production of Fish Spawn and Fingerlings

In boosting fish production, availability of quality fish seed is pre-requisite. The production and collection of fry/fingerling from natural sources is decreasing due to environmental changes and man-made obstacles such as construction of unplanned flood dams, irresponsible use of insecticides in the crop fields, pollution of water etc. Several steps were taken by the Government for the restoration of the natural breeding habitats. Inbreeding is the major problem for fish seed production in the hatchery. To overcome this problem, DoF developed infrastructure facilities in 32 government farms and raised brood stock there by collecting fries from the natural sources and rearing these fries properly to make as a quality broods. These brood fishes are distributed to private hatchery owners in a concession price. This is one of the remarkable steps by DoF to resolve the inbreed problem. To ensure the supply of quality fish seed 136 Fish Seed Multiplication Farms (FSMF) in the government level, 908 fish seed farms in the private level were operated throughout the country. The production statistics of carp spawn and fingerlings both from public and private sectors are shown in Table 7.7.

Table 7.7: Production Statistics of Carp Spawn/Fingerlings from Hatcheries

Year	No. of Hatcheries		Spawn (MT.)			No. of Fry/Fingerlings (Crore)		
	Public	Private	Public	Private	Total	Public	Private	Total
2007	113	860	6.24	457.29	463.53	2.03	622.13	624.16
2008	113	873	6.40	416.95	424.35	2.76	549.04	551.80
2009	115	880	4.52	458.18	462.70	1.66	960.01	961.67
2010	120	862	5.59	460.20	465.79	2.11	983.87	985.98
2011	125	845	6.84	617.64	624.48	2.12	818.21	820.33
2012	125	902	9.07	626.52	635.59	2.14	822.62	824.76
2013	134	887	9.04	450.07	459.11	1.45	900.15	901.50
2014	136	893	9.87	492.47	502.34	4.28	1028.33	1032.61
2015	138	907	10.39	531.05	541.45	2.49	797.31	799.80
2016 (Up to June)	137	857	7.93	387.85	395.78	2.49	797.31	799.80

Source: Department of Fisheries, Ministry of Fisheries and Livestock

Protection and Conservation Programme for *Jatka*

The present Government is committed to develop the *Hilsa* fisheries resources. For this reason the Government is taking several timely and realistic programmes to ensure the sustainable increasing trend of *Hilsa* production. As a result of combined implementation of these programs *Hilsa* production is in increasing trend for the last seven years, which is recognized at national and international level. Following programmes has been implemented by the Government to conserve and to develop the *Hilsa* fisheries resources:

- a. Implementation of Vulnerable Group Feeding (VGF) programme to prevent fishermen from starvation during *jatka* conservation period of November to June.
- b. Distribution of alternative income generating resources to the extreme poor fishermen who are abstained from *jatka* fishing.
- c. Arranging awareness raising programs to prevent indiscriminate *jatka* fishing as well as implementation of fish conservation act.
- d. Arranging awareness building and fish act implementation programme to stop *Hilsa* fishing, marketing and carrying for 15 days during the peak spawning season to protect *Hilsa* brood.
- e. Observing *Jatka* Conservation Week every year to create social movement for the protection *jatka* fish.

Along with these activities to prevent poor fishermen from *jatka* fishing a seven year project named “*Jatka* Conservation, Alternative Income Generation for the *Jatka* Fishers and Research” has been implemented from the revenue fund of the Government of Bangladesh. For the socio-economic development and for the alternative income generation for the fishermen abstained from *jatka* fishing, from 2010 to 2015 a total of 32,509 *Jatka* fishers family were provided materials like rickshaw, van, cow, goat, poultry, sewing machine, cage culture equipment, fishing net and small business support etc. amounting to Tk. 27.00 crore. Moreover, 32,509 *jatka* fishermen were trained to improve their skill and to make them aware. Besides these activities, Vulnerable Group Feeding (VGF) programme has been implemented to prevent fishermen from starvation during *jatka* conservation period. In the FY2015-16 37,788.16 MT rice grain were distributed for four months, 40 kg. per months for each families among 2,36,176 fishermen families of 80 *upazilas* of 15 districts. In addition to awareness building programme, implementation of fish conservation act has been strengthened to conserve brood *Hilsa* during the peak spawning period and to ensure smooth spawning and to prevent *jatka* fishing at growing stage. With the participation of district administration, Bangladesh Police, Bangladesh Navy, Bangladesh Coast Guard, Rapid Action Battalion and Border Guard Bangladesh combined joint operation and mobile court has been implemented to conserve this national resource. Due to implementation of *jatka* conservation programme, management of fish sanctuary and implementation of *Hilsa* spawning protection activities, in the FY2014-15 the total production of *Hilsa* was 3.87 lakh MT, which was 2.99 lakh MT in FY2008-09. It is increased upto 4.00 lakh MT in FY2015-16.

Management of Marine Fisheries Resources

Bangladesh has its vast marine water resources. Despite the abundance of marine waters, about 16 percent of country's total fish production is contributed from the marine sector. For the survey and management of marine and coastal resources, a project titled 'Bangladesh Marine Fisheries

Capacity Building Project' with the financial assistance of Islamic Development Bank (IDB) is ongoing. Under this project Government has already bought a survey vessel. The Government also has declared a marine reserve in the Bay of Bengal to protect and preserve the breeding grounds of marine flora and fauna. The area of the marine reserve is 698 sq. km. surrounded by the two fishing grounds namely middle ground and south patches. Through the verdict of International Court of justice Bangladesh earned legal right to fishing in 1.19 lakh sq. km. area. It opened up a new horizon. For the sustainable management of fisheries resources in this area, initiatives have been taken to determine the maximum sustainable yield through survey. Moreover, present Government has distributed 118 Fiber Re-inforced Plastic (FRP) boats with lifesaving equipment's to the fishermen as a test basis. For tuna fish harvesting in deep sea Government has taken initiative to introduce 4 long-liner fishing trawler.

Export of Fish and Fisheries Products

Fisheries sector has a great success in earning foreign exchange. Bangladesh exports quality frozen shrimp and other fishes and fish products to EU, USA, UK, Japan, France, Hong Kong, Singapore, Saudi Arabia, Sudan and other countries. In FY2015-16, Bangladesh earned Tk. 4,282.82 crore by exporting 0.75 lakh MT of fish and fish products. On the other hand, in order to ensure the quality of fish and fishery products, strong initiatives have been taken to implement Good Aquaculture Practice (GAP), Hazard Analysis and Critical Control Point (HACCP), National Residue Control Plan (NRCP) and Traceability System. Satisfactory success has been achieved in exporting quality shrimp through proper implementation of HACCP.

Livestock

The contribution of the animal farming sub-sector to GDP at constant price is 1.66 percent in FY2015-16. Though the share of the animal farming sub-sector in GDP is small, it makes immense contribution towards meeting the requirements of daily essential animal protein. A number of initiatives have been taken for livestock development. The most important ones include: production and distribution of vaccine for poultry and livestock, supply of duckling and chicks at a cheaper price, artificial insemination extension programme by using both diluted and frozen semen for improved variety, increased production of semen, artificial fetus transfer technology, prevention and control of anthrax, foot and mouth diseases and avian influenza. According to the estimate of the Department of Livestock Services (DLS), the population of livestock and poultry rose to 543.57 lakh and 3,206.33 lakh respectively in FY2015-16. Table-7.8 shows the growth of the livestock and poultry population of the country over the past few years.

Table 7.8: Growth of Livestock and Poultry in Bangladesh.

(Number in Lakh)								
Livestock/ Poultry	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Cattle	229.76	230.51	231.21	231.95	233.41	234.88	236.36	237.85
Buffalo	13.04	13.49	13.94	14.43	14.50	14.57	14.64	14.71
Goat	224.01	232.75	241.49	251.16	252.76	254.39	256.02	257.66
Sheep	28.77	29.77	30.02	30.82	31.43	32.06	32.70	33.35
Total livestock	495.58	506.52	516.66	528.36	532.11	535.90	539.72	543.57
Chicken	2,213.94	2,280.35	2,346.86	2,428.66	2,490.10	2,553.11	2,617.70	2,683.93
Duck	412.34	426.77	441.20	457.00	472.53	488.61	505.22	522.40
Total Poultry	2,626.28	2,707.12	2,788.06	2,885.66	2,962.64	3,041.72	3,122.93	3,206.33

Source: DLS and MoFL

The production of animal protein like milk, meat (beef, mutton, chicken) and eggs have been increasing over the past several years. As a result, per capita availability of animal protein is rising. The production statistics of milk, meat and eggs during the period from FY2007-08 to FY2015-16 are summarised in the Table 7.9.

Table 7.9: Production of Milk, Meat and Eggs

Product	Production									
	Unit	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Milk	Lakh tones	26.50	22.86	23.65	29.47	34.63	50.67	60.90	69.69	72.75
Meat	Lakh tones	10.40	10.84	12.64	19.86	23.32	36.20	45.20	58.62	61.25
Eggs	Lakh	56,532	46,920	57,424	60,785	73,038.9	76,173	1,01,680	1,09,952.0	1,19,124.0

Source: Department of Livestock Services, MoFL

Artificial Insemination of Cattle

Artificial Insemination is an important programme. Semen is collected from the bulls reared in the Central Cattle Breeding Station at *Savar, Dhaka* and other 22 District Artificial Insemination (AI) Centres and processed as liquid and frozen semen to run the Artificial Insemination Extension Programme. A total of 3,725 sub-Centre's and points are in operation to run the programme. The number of semen production and inseminated cows are 41.50 lakh doses and 34.54 lakh respectively in the FY2015-16.

Legal Reforms and Infrastructural Development

To assure quality feed supply to livestock and poultry and to make relentless efforts towards food safety, the present Government has approved the Fisheries and Livestock Feed Act, 2010. Similarly, to assure *halal* method and to prevent unscientific slaughter of animal, the present Government has approved the Animal Slaughter Act, 2011 and Animal Feed Rules, 2013.

In existing veterinary hospitals at all district headquarters facilities have been providing for modern veterinary services and disease diagnostic services for poultry and livestock. To ensure balanced diet for poultry and livestock by analysing the animal and poultry feeds, technical supports are being provided to the Central Animal Nutrition Research Centre and the Animal Nutrition Research Centres in selected districts. Training and consulting services on poultry and dairy farming are also given with disease diagnostic and treatment facilities to the small poultry and dairy farmers at the *upazila* veterinary dispensary.

Most of the trained people establish poultry and dairy farms for self-employment. For this purpose, the total number of registered poultry farm increased to 77,935. At the end of June 2016, 18,638 layer farms, 53,894 broiler farms, 7,682 duck farms, 207 hatchery, 15 grandparent stock farm, 58,236 dairy farms, 3,915 goat farms and 3,629 sheep farms has been registered. Both *upazila* Livestock Development Centre (ULDC)(3rd phase) and Regional Duck Breeding Farms Establishment (Hatchery) projects are repairing and establishing different infrastructures at *upazila* and government farms level respectively.

Vaccination and Treatment

The Government has been producing 17 different types of livestock and poultry vaccines to immune livestock and poultry population to prevent diseases. In FY2015-16, the number of vaccines produced total 2363.89 lakh doses (123.11 lakh doses and 2,240.78 doses for livestock and poultry respectively). The number of doses of vaccine administered for livestock and poultry was 137.40 lakh and 2,279.41 lakh respectively. To strengthening vaccine production activities 'Vaccine production technology modernisation and expansion of research work' project is going on. Besides this, to prevent trans-boundary diseases 24 animal quarantine station is working at different river port, land port and airport. Table 7.10 shows the year wise major activities of the Department of Livestock Services (DLS).

Table 7.10: Major Activities of DLS

(Number in lakh)									
Activities	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Semen production	18.10	20.00	22.70	24.42	34.29	34.52	38.23	37.19	41.50
Treatment	296.30	275.25	374.68	496.60	457.16	564.44	626.87	775.00	909.20
Vaccine production	2447	2065	2391	2410	1400.0	1774	2055	1914	2363.89
Training	7.28	8.00	8.78	9.81	9.52	10.34	10.15	11.04	12.65

Source: Department of Livestock Services, MoFL

Budget Allocation for Agriculture Sector

In FY 2015-16, the total revised budget allocation for agricultural sector that is total of Ministry of Agricultural, Ministry of Livestock and Fisheries and Ministry of Food stood at Tk.14,185.00 crore (Tk.11,361.00 crore for non-development and Tk.2,824.00 crore for development).

Considering the increase of agriculture production and to provide subsidy to the farmers for fertilizer and other agriculture inputs an amount of Tk. 7,000.00 crore was allocated in revised budget. Besides, an amount of Tk.67.31 crore was allocated for agricultural rehabilitation assistance programmes. Moreover, the Government has declared a policy to provide 30 percent cash incentives on exporting agriculture products. The Government has also been allowing 20 percent rebate on electricity bills for agro-based industries.