

CHAPTER – IV

AGRICULTURE

4.1.0. Agriculture is the mainstay of a large majority of the population of Assam. As per Population Census 2001 about 53 per cent of the total working force are engaged in agricultural activities in the State. The share of this Sector in the Net State Domestic Product (NSDP) at constant prices is 31.19 per cent in 2003-2004. All the agricultural activities/programmes have been assigned with high priority in the successive plan periods for efficient use of available resources and to maximise production. These efforts have no doubt resulted some transformation in the pace of development under this sector, but much more still remains to be done to bring the situation compatible with other developed States of the country.

4.1.1. The soil, topography, rainfall and climatic condition of Assam are congenial for cultivation of paddy, which covers nearly 70 per cent of the gross cropped area and more than 90 per cent of the total area under food-grains. The soil of the State is acidic in reaction having Ph (phosphorous content per hydrogen ion) between 4.5 and 6.5 except the new alluvial soils, which are neutral in reaction (Ph 6-7). The soils of the foothills are also strongly acidic (Ph 4.5-5.0) whereas the remaining areas are less acidic (Ph 5-6). As regards neutral status, phosphate contents are low while nitrogen and potash contents are medium. The major soil groups are (i) new alluvial soil (ii) old alluvial soil, (iii) old mountain valley alluvial soil, (iv) non-laterised red soil, and (v) laterised red soil.

The agriculture is mainly dependent on rainfall. The State belongs to rainfall belt where rainfall varies from 80 to 1580 mm during different periods of the year. Sufficient rainfall occurs mainly during the Kharif season, which is beneficial for growing paddy, the principal crop of the State. Similarly Jute cultivation also gets sufficient rainfall in pre-monsoon period. The State experiences hot and humid climate as high as 85.90 per cent or more in the majority of the districts. Variation of temperature with a maximum of 30⁰c to 33⁰c, and minimum of 6⁰c to 12⁰c is also noticed in different parts of the State.

4.1.2 One of the most serious problems adversely affecting the State's agricultural sector is the recurrence of devastating floods almost every year. The current year is also not exception to this phenomenon as the State had to experience successive waves of floods during the year. The flood was also aggravated by down streaming of water from the neighbouring hilly states due to the incessant rainfall experienced by the region during the period, which posed a great threat to the economy of the State. The flood inundated nearly 32 percent of the total area under Kharif crops in all the districts of the State thereby affecting nearly 58.96 per cent farm families in the State. Thousands of hectares of agricultural land have been rendered infertile by the gradual accumulation and expansions of large-scale deposit of silts and sand in the flourishing paddy fields. To cope with the problem the Agriculture Department, with the cooperation Assam Agriculture University (AAU) has been formulating a contingent plan by introducing various steps / suggestions for the farming community which include growing late Sali crops, adoption of variety like 'Prافulla' having the staggering ability, growing of Green-gram, Black-gram, early vegetables and preparation of field for timely growing of Rabi crops etc. Department of Agriculture has made a noble gesture by coming forward to help the flood affected people of the State in the hour of distress so as to tide over their immediate crisis.

Considering the uncertainties in the production of Kharif rice due to flood, government has decided to wean over the farmers from the traditional cultivation of Kharif rice to Rabi rice. To ensure Rabi rice cultivation the government has assigned top priority on developing micro-irrigation in the State which led to appreciable increase in production and productivity.

4.1.3 It is observed that the area coverage under Autumn Rice has showing a declining trend over the last three years lowering down to the level of 4.41 lakh hectares from 4.96 and 4.64 lakh hectares respectively during the previous years 2001-2002, 2002-2003. The area under Summer Rice too sharply declined to 3.19 lakh hectares in 2003-2004 as compared to 3.26 and 3.27 lakh hectares in the past two years, which is attributable mainly due to people's attitude towards diversification from Rice-Rice to Rice-Wheat/Pulse/Oil Seeds and Vegetables in some of the areas. On the other hand, the area under Winter Rice, the main Kharif crop in Assam, recorded an impressive achievement to 17.69 lakh hectares in 2003-2004 over 17.15 and 17.49 lakh hectares in 2001-2002 and 2002-2003 respectively. The area of other crops under Pulses, Oilseeds for both Kharif and Rabi season 2003-2004 is more or less stagnates at the same level as compared to the areas in the last two years. So far as the position during the current year i.e. 2004-2005 is concerned indication is that both area and production is likely to be lower than that of the previous year due to extensive damages caused to standing crops by successive waves of severe floods.

4.1.4. The total production of food-grain crops in the State has been estimated at 40.34 lakh tonnes during 2003-2004 as against 38.94 lakh tonnes during 2002-2003 showing an increase of 3.60 per cent over the previous year.

The production of Autumn Rice as well as Summer Rice has depicted downward trend during the last three years. However, in case of Winter Rice, it has even broken the recorded production of 27.13 lakh tonnes and 26.71 lakh tonnes of 2001-2002 and 2002-2003 and peaked at the level of 28.77 lakh tonnes in 2003-2004. The production of total Rice during 2003-2004 stands at 38.80 lakh tonnes as against 37.38 lakh tonnes and 38.94 lakh tonnes during 2002-2003 and 2001-2002 respectively. This reveals that the State is able to generate an additional rice production to the tune of 1.42 lakh tonnes in 2003-2004 over the last year production. This is about 3.8 per cent increase over 2002-2003. No remarkable changes in increase in production for other crops have been observed during 2003-2004 as compared to the production in 2001-2002 and 2002-2003. However, the production of Rape and Mustard has increased to 1.38 lakh tonnes over 1.37 lakh tonnes and 1.30 lakh tonnes respectively in 2001-2002 and 2002-2003. The crop-wise area and production for the years 2001-2002, 2002-2003 and 2003-2004 are furnished in Table 4.1.

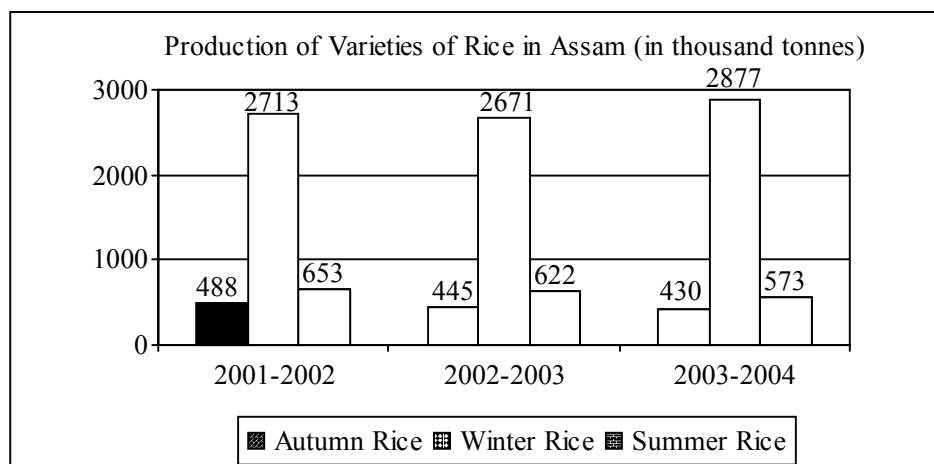


TABLE 4.1
CROP-WISE AREA AND PRODUCTION IN ASSAM

(Area in thousand hectares)

(Production in thousand tonnes unless otherwise stated)

CROP	2001-2002		2002-2003		2003-2004	
	Area	Production	Area	Production	Area	Production
1	2	3	4	5	6	7
(A) KHARIF FOOD-GRAINS						
Autumn Rice	496	488	464	445	441	430
Winter Rice	1715	2713	1749	2671	1769	2877
Maize	20	14	20	14	20	14
PULSES						
Arahar	7	5	7	5	7	5
TOTAL	2238	3220	2240	3135	2237	3326
(B) RABI FOODGRAINS						
Summer Rice	326	653	327	622	319	573
Other Cereals	8	4	8	4	8	4
Wheat	72	85	69	78	70	73
PULSES						
Gram	2	1	2	1	2	1
Blackgram	42	23	40	20	40	21
Greengram	8	4	7	3	8	4
Peas	24	14	23	14	25	15
Lentil	21	11	20	11	22	12
Other Pulses	13	7	11	6	10	5
TOTAL	516	802	507	759	504	708
TOTAL (A) + (B)	2755	4023	2747	3894	2741	4034
(C) KHARIF OIL-SEEDS						
Sesamum	15	8	14	8	14	8
Castor	2	1	2	1	1.4	0.6
Soyabean	4	4	3	3	0.5*	0.5
Groundnut	4	5	3	3	0.5**	0.5
TOTAL	25	18	22	15	16.4	9.6
(D) RABI OIL-SEEDS						
Rape and Mustard	272	137	261	130	264	138
Linseed	10	5	10	5	10	5
Nizer	9	5	10	5	10	5
Soyabean	5	6	8	17	0.5*	0.6
Groundnut	13	13	16	7	2.5**	2.5
Sunflower	5	5	12	12	0.4*	0.4
TOTAL	314	171	317	176	287.4	153.5
TOTAL (C) + (D)	339	189	339	191	303.8	163.1
Cotton	2	1	2	1	2	1
Jute	68	675	68	691	64	665
Mesta	5	24	5	25	5	27
Sugarcane	27	1011	25	916	25	981

N.B. : * Area falls due to the problems of marketing of the commodity, non-availability of processing units and occurrence of pre-monsoon showering.

** Area falls due to non-availability of quality seeds etc.

(i) Production of Cotton in thousand bales each of 170Kg.

(ii) Production of Jute and Mesta in thousand bales each of 180Kg. (iii) Production of sugarcane in terms of Cane.

Source: (a) Directorate of Economics and Statistics, Assam.

(b) Directorate of Agriculture, Assam.

YIELD RATE:

4.2.0. The State experienced an unusual flood in 2003 which inundated vast area of Sali seedlings and transplantation plants, the main Kharif crops in the State. However due to proper initiative and effective effort persuaded by the Department through the relief of distributing seed to the poor affected farmers, the State could explore the possibility of maintaining the yield rate of Sali Rice (Winter Rice) to a desirable extent. The average yield of the crop has been accelerated to the tune of 1651 Kg per hectare as against 1550 Kg per hectare in the previous year. The table 4.2 shows the trend of yield rate of main Agricultural Crops in the State from the year 2001-2002 to 2003-2004.

Year / Crop	2001-2002	2002-2003	2003-2004
1	2	3	4
Autumn Rice	1000	973	991
Winter Rice	1607	1550	1651
Summer Rice	2003	1901	1794
Wheat	1181	1129	1046
Rape and Mustard	503	497	524
Sugarcane (in terms of Cane)	37230	36422	38589
Potato	7752	7815	6972

AREA UNDER HIGH YIELDING VARIETY (HYV):

4.3.0. A large number of high yielding varieties like Lakhmi, Salivahana, Bah Kushal, Ranjit, Monohar Sali, Masuri, Maniram, Keteki Joha, IR-36, IR-54, Luit etc. possessing high yield potential/quality and resistance to Biotic stresses have developed and recommended for different rice eco system in the State. The state Agriculture Department has been evolving steps for popularising the above varieties among the farmers which resulted in an increasing trend in the area under high yielding variety of crops over the years. The area under high yielding varieties of total Rice increased to 14.35 lakh hectares in 2002-03 from the level of 12.74 lakh hectares. The table-4.3 shows the areas under different HYV Rice from 1998-99 to 2002-2003.

Period	Autumn	Winter	Summer	Total
1	2	3	4	5
1998-1999	2.18	8.81	1.75	12.74
1999-2000	2.08	9.75	2.18	14.01
2000-2001	2.52	9.72	2.59	14.83
2001-2002	2.50	9.20	2.59	14.29
2002-2003	2.53	9.37	2.45	14.35

Source : Directorate of Agriculture, Assam.

LAND UTILISATION STATISTICS:

4.4.0 The provisional estimates of land utilisation statistics of the State for the year 1999-2000 indicates that Assam has an estimated 40.87 lakh hectares Gross Cropped Area, of which, Net Area Sown is about 27.34 lakh hectares and the Area Sown More Than Once stands at 13.53 lakh hectares during the year. Thus, the ratio of Area Sown More Than Once to the Net Area Sown is 49.5 per cent in 1999-2000 as against 45.9 per cent in 1998-99 and 45.2 per cent in 1997-98.

INDEX OF AGRICULTURAL PRODUCTION :

4.5.0. The Index of Agricultural Production (base Triennium ending 1981-82=100) for the State stands at 166 (Provisional Estimate) in 2003-2004 as against 165 in 2002-2003. The all India Agricultural Production Index (based Triennium ending 1981-82=100) stands at 180 (Provisional Estimate) in 2003-2004 as against 151 in 2002-2003. The table 4.4 shows the trend in agricultural production in the State as well as in the country as a whole, based on the Index of agricultural products for the last few years.

Year	Assam			India		
	Food	Non-food	All commodities	Food	Non-food	All commodities
1	2	3	4	5	6	7
1995-96	150	157	153	146	185	161
2000-2001	174	162	168	161	178	166
2001-2002	169	160	164	172	189	178
2002-2003	164	166	165	140	168	151
2003-2004 (P)	170	162	166	N.A.	N.A.	180

N.B. : The Agricultural Indices for Assam are constructed only on the crops covered by the Crop Forecast.

(P) - Provisional.

Source : (1) Directorate of Economics and Statistics, Assam.
(2) Economic Survey, 2003-2004, Government of India.

AGRICULTURAL HOLDING:

4.6.0. As per Agricultural Census, 1995-96, there were 26.8 lakh operational holdings in the State covering an area of about 31.4 lakh hectares of land. Compared with the figures of the earlier Census, 1990-91, the number of operational holdings during 1995-96 were higher by 6.33 per cent and operated area were declined by 2.07 per cent. The marginal holdings with less than 1(one) hectare of land accounted for 62.22 per cent of the total holdings and 19.80 per cent of the total operated area of the State in 1995-96. In case of small holdings with size class between 1-2 hectares, the share turned out to be 20.91 per cent of the total holdings and 24.52 per cent of the total operational area. On the other hand, the large holdings (20 hectares and above) constituted only 0.19 per cent of the total number of operational holdings, with 10.47 per cent of the total operated area in the State. An important feature revealed by the Agricultural Census is that the average size of operational holdings in the State recorded a declining trend over the successive censuses. The average size of operational holdings, which was 1.37 hectares in 1976 -77, recorded marginal decline to 1.36 hectares in 1980-81. In 1985-86, the same registered declined to 1.31 hectares and in 1995-96 it further declined to 1.17 hectares. At all-India level too, the average size of holding was found to have gradually declined from 1.69 hectares to 1.57 hectares over the period 1985-86 to 1990-91. The Table - 4.5 shows the position of agricultural holding and operated area from 1970-71 to 1995-96 :

TABLE - 4.5
NUMBER OF AGRICULTURAL HOLDING AND OPERATED
AREA AS PER AGRICULTURAL CENSUS IN ASSAM

ITEM	1970-71	1976-77	1980-81	1985-86	1990-91	1995-96 (R)
1	2	3	4	5	6	7
1. No. of holdings	1964376	2253654	2297588	2419156	2523379	2682997
2. Total operated area (in thousand hectares)	2882	3079	3121	3161	3205	3138
3. Average size of holdings (in hectares)	1.47	1.37	1.36	1.31	1.27	1.17

(R) : Revised

Source : (1) Directorate of Economics and Statistics, Assam.

4.7.0. Major thrust is given to a number of programmes to boost up the Agriculture production in the State. This includes Agriculture Mechanization, Diversification of Agriculture, Development of Marketing, Production of certified seeds and increased use of Kishan Credit Card (KCC) and extensive training of farming communities.

AGRICULTURE EXTENSION:

Agriculture extension facility is being implemented in the State through the re-organized agriculture extension system so as to improve the skills and proficiency of the officers of all status through intensive training and in turn providing training to the extension personal and field functionaries. Media support and interface are also taken up as a part of the programme.

INTEGRATED NUTRIENT MANAGEMENT:

Fertiliser plays a vital role in boosting agricultural production. Stress have been given to ensure availability of fertilizer in the peak period of cultivation of agricultural crops in the different seasons throughout the State. Organizations like, AAIDC, STATFED, NAFED, GPSS and the private traders are responsible for procuring the fertilisers from the manufacturers as per allotment made by the Agriculture Department and disposing the same through the respective branches or outlets at various localities of the State, who have been advised to keep the facilities available at the buffer points.

The gross requirement, consumption and availability of fertiliser in 2003-2004 in Rabi as well as in Kharif season is detailed below in Table-4.6.

TABLE - 4.6 FERTILIZER (In Lakh M.T.)					
Year	Season	Product	Requirement	Consumption	Availability
1	2	3	4	5	6
2003-2004	Rabi	Urea	1.080	0.857	0.718
		SSP	0.452	0.556	0.143
		MOP	0.452	0.409	0.231
		DAP	0.452	0.350	0.069
		NPK	-	-	0.007
		Total	2.437	2.172	1.168
2004-2005	Kharif as on July 2004	Urea	1.380	0.442	0.511
		SSP	0.565	0.518	0.073
		MOP	0.579	0.126	0.129
		DAP	0.589	0.060	0.145
		NPK	-	0.005	0.007
		Total	3.112	1.151	0.865

Source : Directorate of Agriculture, Assam.

INTEGRATED PEST MANAGEMENT :

Steps have been taken up for launching massive Integrated Pest Management Programme (IPM) by organizing intensive training and demonstration programme during 2003-2004 under the Macro Management Mode of Agriculture. During 2003-2004, a total of 900 farmers, 150 numbers of field functionaries and 66 numbers of officers have been trained on IPM. Concerted efforts have also been made for popularising the use of bio-pesticides and bio-control agent by arranging through AAIDC Ltd. and ASC Ltd.

OILSEEDS, PULSE DEVELOPMENT PROGRAMME :

The State is experiencing a deficit of oilseeds and pulses regularly. To overcome the problem, the Department is implementing Oil Seeds Production Programme (OPP) and National Pulse Development Programme (NPDP). The centrally sponsored scheme, Oilseeds production programme is implemented in 19 districts under Technology Mission. Encouraging achievement has been made through cultivation of Toria, TS-36 and T-S varieties with higher yield potentiality.

Under the National Pulse Development Programme, the Department is continuing its efforts to substantiate Pulse deficit in the State through the application of production technologies of higher production and increasing the area under summer Moong, Green Gram, Black Gram, Lentil, through introduction of improved varieties.

AGRICULTURE IMPLEMENTS AND MACHINERIES :

Under the scheme Agriculture Engineering the State is able to cover 4.4 lakh hectares of land under assured irrigation through installation of 2.20 lakh numbers of Shallow Tube Wells (STW). On Farm Water Management Scheme the State is also planning to distribute 15,800 numbers of 5 HP Low Lift Pump (LLP) among the farmers. Moreover during 2003-2004, 449 numbers of tractors and 1500 numbers of Power Tiller under ARIASP, with 50% subsidy, 240 numbers of Power Tillers under MMMA were distributed among the eligible and needy farmers. Apart from this, 300 numbers of Wheat threshers under ARIASP 160 numbers of zero tillage planters and 150 numbers of self-propelled reaper under MMMA-1, were distributed among the Wheat growing farmers. The percentage of total cultivated area irrigated through STW increased from 1.2% in 1997-98 to 18.5% in 2001-02 after installation of STW through ARIASP and NABARD which is revealed from a study conducted by the Agriculture Department.

MACRO MANAGEMENT MODE OF AGRICULTURE:

The Scheme of Macro Management Mode of Agriculture, which is a centrally sponsored scheme on sharing basis, is implemented in the State since 2001-02. This comprises Central Government grant to the tune of 80% and the loan component to the extent of 20%. New programmes like Certified Seed Production, Crop diversification, Information Technology, Farmer's training and study tour, Crop acreage and Production Estimation Survey, Improvement of Field Trial Stations, schemes under SC &ST etc. included under MMMA have added new dimension in the field of Agriculture.

During 2003-2004, an amount of Rs.490 lakh has been utilized for implementation of different schemes under MMMA.

TECHNOLOGY MISSION ON HORTICULTURE:

Assam is traditionally horticultural State due to unique agro-climatic condition, which permits growing of wide range of horticultural crops like various Fruits, Vegetables, Flowers, Spices, Medicinal Aromatics, Nut Crops, Tuber crops and also Plantation crops. These crops occupy nearly 5.46 lakh hectares out of gross cropped area of 36.37 lakh hectares. This is only 15% of total gross cropped area but has become a focused area to make it an integral part of horticulture activities with soul objective of commercialisation with modern technologies. Total fruit crops occupy an area of 109196 hectares with a production of 1282554 M.T. Spice crops occupy 83822 hectares with a production of 194520 M.T. Vegetable crops both summer and Rabi vegetables occupy 209935 hectares with a production 2845347 M.T. The area, production and average yield of some major horticultural crops in Assam during the year 2002-2003 are shown in Table 4.7

TABLE - 4.7

AREA, PRODUCTION AND AVERAGE YIELD OF SOME MAJOR
HORTICULTURAL CROPS IN ASSAM DURING THE YEAR 2002-2003.

	Name of Crop	Area in Hectare	Production (In MT)	Average Yield in Kg/Hect.
A. FRUITS				
1.	Banana	42631	589595	13830
2.	Pineapple	13893	212561	15300
3.	Orange	5960	66866	11220
4.	Papaya	6942	101528	14625
5.	Assam Lemon	8805	51413	5839
6.	Guava	3786	49781	13148
7.	Litchi	4123	18846	4571
8.	Jackfruit	17408	156091	8966
9.	Mango	3698	28881	7810
10.	Other Fruits	1950	6992	3586
	Total Fruits	109196	1282554	11745
B. SPICES				
1.	Chilli	14885	9784	657
2.	Turmeric	12066	8315	689
3.	Onion	7500	17467	2329
4.	Ginger	17970	115229	6412
5.	Coriander	19900	16600	834
6.	Garlic	6690	21970	3284
7.	Black Pepper	2695	3625	1345
8.	Other Spices	2116	1530	723
	Total Spices	83822	194520	2321
C. TUBER CROPS				
1.	Potato	75486	589916	7815
2.	Sweet Potato	8243	28460	3452
3.	Topeaca	2835	13501	4762
	Total Tuber Crops	86564	631877	7299
D. VEGETABLES				
1.	Kharif Vegetables	67310	703120	10445
2.	Rabi Vegetables	142625	2142227	15019
	Total Vegetables	209935	2845347	13553
E. NUT CROPS				
1.	Arecanut	73664	51631	142
2.	Coconut *	20919	160277	67

* Production of Coconut in '000 nuts and Average Yield in nuts per bearing tree.

Source : (i) Directorate of Economics and Statistics, Assam.

(ii) Directorate of Agriculture, Assam.

Keeping in view the importance of commercialisation of Horticulture Sector to augment farmers income and productivity avenues for massive employment generation, the scheme of Technology Mission for Integrated Development of Horticulture in Assam has been taken up with comprehensive outlook to address to all issues starting from technology generation (MM-I), production and productivity (MM-II), quality control and marketing (MM_III), and processing (MM-IV).