

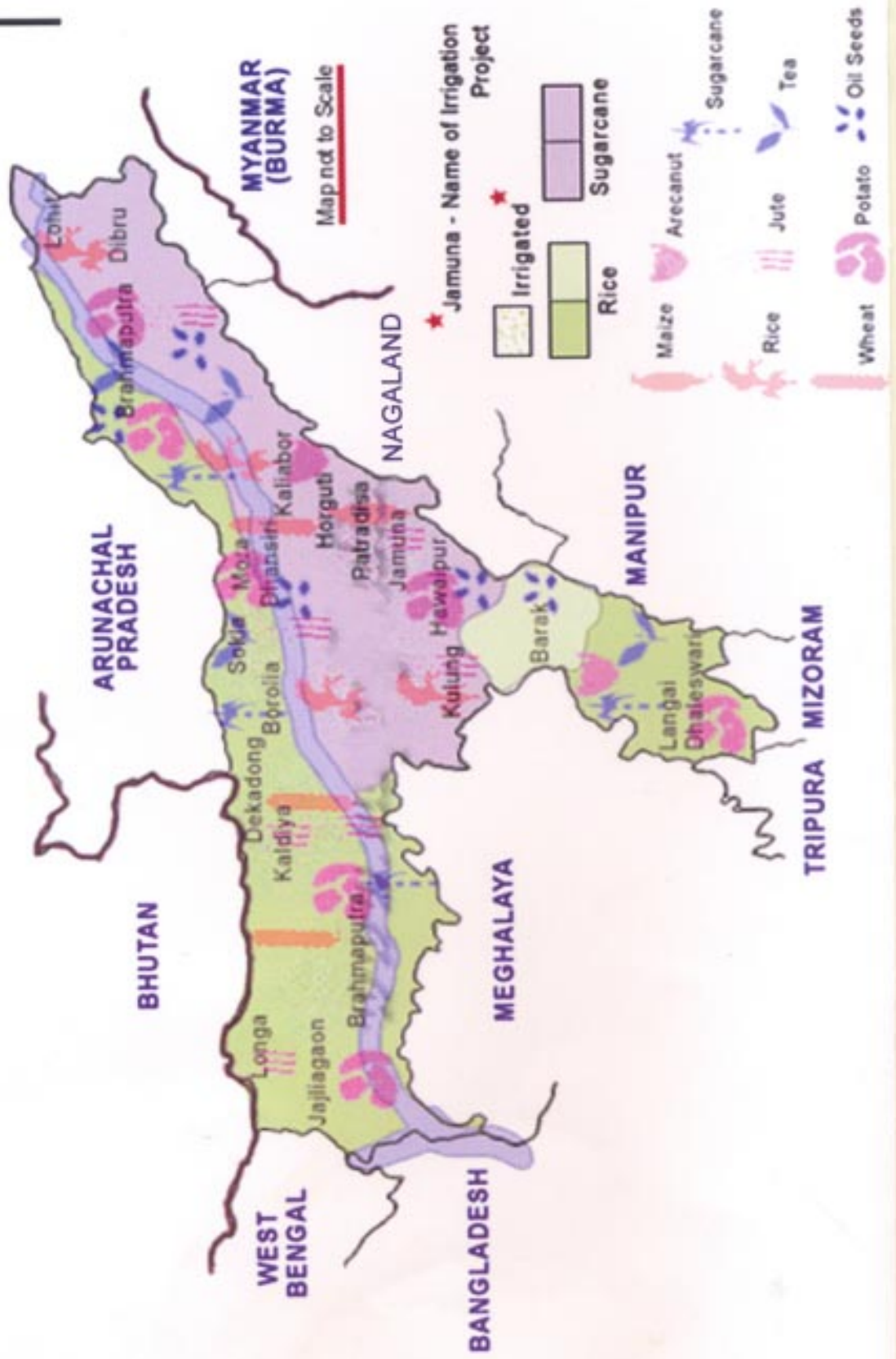
Glimpses of Assam Agriculture



**DEPARTMENT OF AGRICULTURE
ASSAM**

MARCH 2006

Agriculture Map of Assam



GLIMPSES OF ASSAM AGRICULTURE



DEPARTMENT OF AGRICULTURE
ASSAM
MARCH, 2006

GLIMPSES OF ASSAM AGRICULTURE

Assam one of the states of eastern India, is situated between 24° and $28^{\circ} 18'$ N latitudes and $89^{\circ} 4'$ and $96.0'$ E longitudes. The state is endowed with abundant fertile land and water resources, with a total geographical area of 78438 square km. The mighty Brahmaputra and the Barak with their 121 small and tiny tributaries and branches flow through the two valleys keeping the state fertile and cool all along.

Physiography

The state has three distinct physiographic units the plain, the plateau and the hills. The Brahmaputra and Barak valleys accounting for 80.8% of total geographic area, are the two priority zones for agricultural development in the plain. The Brahmaputra valley is an alluvial plain surrounded by hills and interspersed with small hillocks, uplands, lowlands and swampy lowlands subject to annual flooding. The Barak valley has an undulating topography with small hillocks and swamps.

Soil

The soil texture of the state varies considerably depending on the agro-climatic conditions and physiography. The most typical characteristics of the soil of Assam is its acidity having pH range from 4.2 to 5.8. The soil of flood plains has slightly high pH ranging from 6.0-6.5. The Hill zone has higher pH ranging from 6.0-7.1 due to presence of free liming materials.



Climate

The climate of Assam is of humid subtropical nature with warm humid summer and cool dry winter. Due to unique geographical location coupled varied physiography, the state has wide array of climatic conditions. The rainfall in Assam is high but its distribution over time and space is not uniform. The maximum rainfall of 1430mm on an average (65%), occurs during the months of June to September. The pre-monsoon months, i.e. March to May, receive 549.5mm(25%) of rainfall, which is erratic and unpredictable. The mean annual maximum temperature varies from 23.6°C to 31.7°C and minimum temperature varies from 10° to 25.2°C .

Water availability

The per capita water availability is the highest in Brahmaputra Valley amounting to 18147 cu.m/year. The state has the potential of 24.72 billion cubic metre (bcm) of restockable ground water of which 21.01 bcm is not available for irrigation due to geographical restrictions.

Agro-climatic Zones

The state has 6 agro-climatic zones viz. Upper Brahmaputra Valley, Central Brahmaputra Valley, Lower Brahmaputra Valley, Hill Zones, Barak Valley and North Bank Zones based on rainfall, terrain, soil and crop characteristics.

Brief History

The Agriculture Department, Assam was created in April, 1882. The department was then engaged in conducting crop cutting experiments termed as agricultural experiments on winter rice, mustard and sugarcane to

assess productiveness of land. In accordance with the recommendations of Simla Agricultural Conference (1893), Government of India deputed sir E. Buck to Assam in 1895 and he advocated to appoint an Agriculture Expert to ascertain (1) agricultural defects and (2) introduce agricultural improvements in the province. In the year 1897, Mr. B.C. Basu then Deputy Collector of Bengal was appointed as Assistant Director.

Although Assam was a separate province, it was amalgamated with Eastern Bengal in 1905. In the new province of Eastern Bengal and Assam, the agriculture department was separated from the combined department of Land Records and Agriculture in 1907. After the creation of a separate department, expansion of the department took place very quickly. Assam became a separate province again in 1912 when the agriculture department was again combined with that of Land Records and continued up to 1922. In 1923 three allied department of agriculture, cooperation, and industries were combined.

In a memorandum prepared by Rai Bahadur K.L. Barua, B.L., the then Director of Assam in 1927 for submission to Royal Commission on Agriculture, a vivid picture of growth of Agriculture Department is found.

The department saw considerable expansion in its first half century's existence although it was combined either with Land Records or with Industries and Co-operation departments except for the period from 1906-07 to 1911-12 when Assam was amalgamated with Eastern Bengal. In 1930, Industries and Cooperation department were separated and Agriculture became an independent department in November 1930. Mr. A. G. Bird joined as the first technically qualified Director of Agriculture, Assam on 01-04-1931. However, his predecessors being generalists were none the worse in their understanding of Agricultural situation of the state as may be seen from increase in strength of officers and staff and establishment of research stations on major crops during the first fifty years.



Assam Agriculture

Agriculture in Assam is a combination of peasant and tenant farming with the bulk of the cultivable land belonging to small and marginal farmers. The average size of the operational holding is 1.37 ha. Rice is the single most important food crop. To reduce the gap between requirement and production of Pulses and Oilseeds, thrust has been given to increase both area and productivity of these crops. Cash crops like Sugarcane and Jute are also important crops of the State. The state has immense potential for growing wide array of horticultural crops. Spices and fruits have also gaining importance as high valued crops and the State is marginally surplus in these two sectors. In fruits, banana, pineapple, citrus, jackfruit, guava and litchi occupy important places. Spice crops like Black pepper, Ginger, Turmeric, Garlic, Onion, Chillies etc. are grown extensively in the State. Coconut and arecanut are predominant plantation crops. The State produces about 10 lakh MT of surplus vegetables per year. Amongst vegetables, tomato, brinjal,

chilli, cole crops, peas, beans, cucurbits and okra are predominant.

State Agriculture Policy

The majority of land in the state is owned by small and marginal farmers, practicing subsistence agriculture and at present they have very little connection with the market. The farmers are also hampered by a low level of capital formation, coupled with very low availability of credit. The level of mechanization, fertilizer uses and irrigation in the

state is also very low, which is preventing the farmers from increasing their average yield and cropping intensity. The state is still a significant shortfall in the production of wheat as well as oil seeds and pulses. Further, as rice is the main crop of the state, in the present scenario of depressed prices of rice coupled with low average yield, low cropping intensity and a lack of diversification as well as the possible adverse impact of the new WTO agreement on agriculture, the future of the state does not look positive.

Keeping in mind the above mentioned constraints of the agriculture sector in Assam and in consonance with the National Agriculture Policy the Government of Assam wishes to lay down the following policy objectives in the agriculture sector.

1. The agriculture and allied sector grows at the rate of 4p.c. per annum for the next decade to provide food security and to improve nutritional intake of the people of the state as well as significantly decrease the population below the poverty line.
2. To increase the average yield of all major crops, particularly rice, wheat, pulses and oil seeds.
3. To increase the cropping intensity in the sector through increase in irrigation facilities as well as giving a boost to mechanization in the state, to make it at par with the rest of the country.
4. To diversify into other crops, specifically wheat, oilseeds and partly pulses as well as improve our production of horticultural crops.
5. As the bulk of the population in the state lives in the rural area and most of the people are dependant on agriculture and allied sectors for their livelihood, the Government sees this sector as the engine for growth of the economy in the long run and wishes to treat the agriculture sector as an area of maximum employment generation in the state.
6. It will be the endeavour of the state to develop marketing and processing infrastructure by focusing on development of rural roads, apni mandis, terminal markets, and district level markets for agricultural produce as well as to focus on value addition of agricultural produce in the state essentially through facilitating private enterprise in the food processing sector. The development of a marketing infrastructure and value addition has tremendous potential for developing economy of the state, considering the strategic location of the state and the potential markets, which exist for our produce in neighbouring countries like Bangladesh and in parts of South East Asia.
7. Since the resources at the disposal of the state are limited, the endeavour will be to converge the resources available under various government schemes like JGSY and PMGSY etc. to ensure that funds are spent keeping in view long term growth of the agriculture and allied sector in the state.
8. The state has a remarkable human resource in Pathar Parichalana Sammittee, which have been functioning as an extension wing of the agriculture department. They shall be further strengthened and developed to function as a SHGs to further strengthen the extension activities in agriculture. They shall also function as focal points for disbursement of agricultural credit and as entry points for extension activities of other allied sectors like livestock and fisheries to ensure that the growth in agriculture is sustainable economically, environmentally and socially.

Strategy for Agriculture Sector

Short Term :

The State intends to raise the Average Yield of all crops in Assam primarily by ensuring increase in irrigated area

through the use of Shallow Tube Wells and increase in mechanization through power tillers and tractors, availability of good quality seeds and fertilizers and other inputs in the market by encouraging private enterprise as an better co-ordination in research and extension activities. This would increase the cropping intensity in the State and will also result in high yields, as has been witnessed through the interventions made through STWs in the State. In those areas where



STWs are not feasible, the State would focus on appropriate strategies of better utilization of surface water, to ensure that agricultural growth is not limited on this account. Further it is also recognized that modern day agricultural practices have become increasingly reliant on more and more use of pesticides, which not only increase the cost of production but also are also extremely harmful and have an adverse impact on the environment. Keeping this fact in mind the State shall propagate Integrated Pest Management practices to ensure that this growth in agriculture is environmentally friendly.



Medium Term :

Assam today is predominantly a rice producing state and it is recognized that even in the future the bulk of the agricultural land will continue to be under rice. However, in the past few years, it has been seen that there is a surplus of rice production and the price of rice has become quite depressed, leading to distress selling and hardship to the farmers. In such a scenario it is now imperative that agriculture in the State is diversified and this over dependence on one crop be reduced. While continuing with Rice production, the aim is to give special emphasis to

production of wheat, oilseed and pulses, where the State is deficient and also lay stress on the growth of the horticulture sector especially through value addition as it would lead to an increase in area under horticulture crops, where Assam has a comparative advantage over the rest of the country.

Long Term :

Our aim is to be at par with the rest of the country in all key indicators of agricultural growth, especially Average Yield, cropping intensity, levels of irrigation and levels of mechanization and a market leader in the production and value addition of those horticulture crops where we have a comparative advantage. The State intends to promote value addition by encouraging private players to set-up food processing industries in the State through development of our infrastructure and marketing network for our horticulture produce and having a industrial policy, which is particularly

attractive to entrepreneurs. This would encourage industries from outside the State to invest here, thereby ensuring that agriculture and allied activities as well as related industries become the main source of employment generation for the State.

Basic Information

Total Geographical Area	78,438 Sq. Km. (78.44 lakh hectares) Urban Area 0.77 lakh hectares (0.98 p.c. of Geographical Area) Rural Area 77.67 lakh hectares (99.02 p.c. of Geographical Area)
Total Area under Forest	19.32 lakh hectares (24.63 p.c. of Geographical Area)
Gross Cropped Area (excluding plantation crops)	38.43 lakh hectares
Net Cropped Area (excluding plantation crops)	24.90 lakh hectares (31.74 p.c. of Geographical Area)
Area under Horticultural Crops	5.94 lakh hectares (15.46 p.c. of Gross Cropped Area)
Tea & Coffee cultivation area	2.34 lakh hectares (2.98 p.c. of Geographical Area)
Rubber cultivation area	0.11 lakh hectares (0.14 p.c. of Geographical Area)
Area sown more than once	13.53 lakh hectares (54.34 p.c. of Net Cropped Area)
Cropping intensity	At the end of 8th Plan Period - 145.30 p.c. At the end of 9th Plan Period - 147.00 p.c. At the end of 3 years of 10th Plan Period - 154.34 p.c.
Land put to non-agricultural uses	10.70 lakh hectares
Barren and uncultivable land	14.61 lakh hectares
Cultivable Wasteland	80,194 hectares
Wetland area (area under water bodies)	1,01,231.60 hectares

Wasteland Statistics : (Source : ARSAC)		
a. Upland	311732.44 hectare	(3.97 p.c. of Geographical Area)
b. Waterlogged / Marshy land	166435.82 hectares	(2.12 p.c. of Geographical Area)
c. Shifting (Jhoom) cultivation land	260431.27 hectares	(3.32 p.c. of Geographical Area)
d. Under utilized / degraded notified forest land	164434.90 hectares	(2.09 p.c. of Geographical Area)
e. Grass land / Grazing land	221084.67 hectares	(2.82 p.c. of Geographical Area)
f. Insand / Riversand area	286957.55 hectares	(3.65 p.c. of Geographical Area)
g. Industrial waste land	43.71 hectares	(0.0006 p.c. of Geographical Area)
h. Barren / Rocky / stony waste land	37.50 hectares	(0.0005 p.c. of Geographical Area)
i. Agricultural land under notified forest area	1.02 lakh hectares (5.28 p.c. of Forest Area)	
j. Total waste land	1513076.60 hectares	(19.29 p.c. of Geographical Area)

Pest Endemic Area	2.23 lakh hectares
Chronically flood prone area	4.75 lakh hectares (19.08 p.c. of Net Cropped Area)
Chronically drought prone area	0.94 lakh hectares (3.78 p.c. of Net Cropped Area)
Total irrigated area available in the state	5.35 lakh hectares
Average size of operational holding	1.17 Ha.
No. of Agricultural labourers (as per 1991 census)	8.45 lakh
No. of farm families	26.83 lakh
P.C. of agricultural working force	53.0 p.c. of total working force
P.C. of Small farmers	20.91 p.c.
P.C. of Marginal farmers	62.22 p.c.
P.C. of Semi Medium farmers	13.09 p.c.
P.C. of Medium farmers	3.59 p.c.
P.C. of Large farmers	0.19 p.c.

P.C. of SC farmers	4.69 p.c.
P.C. of ST farmers	12.60 p.c.
Seed Farms & Progeny Orchards of the Department	88 nos.
Seed replacement rate (Rice) during 2004-05	3.01 p.c.
No. of Seed Villages	318
No. of Agri. Farming Corporations (AFCs)	11 nos. (1 no. each in Lakhimpur, Sivasagar, Dhubri, Morigaon, Nagaon, Golaghat, Dibrugarh, Kokrajhar, Goalpara district and 2 nos. in Sonitpur district)
No. of Regulated Markets in the State	24 (13 + 10 + 1)
No. of Soil Testing Laboratories	Static 8 nos. Mobile 4 nos.
No. of Quality Control Laboratory (Fertilizer & Pesticide)	2 nos. (at Ulubari, Guwahati)
Credit deposit ratio	33 p.c.
Total Self Help Groups formed	2215 nos.
Total Women Self Help Groups formed	1625 nos.
No. of Field Trial Stations (FTSs) in the State	10 nos. - Khetri (Kamrup), Balagaon (Kokrajhar), Balijana (Goalpara), Mahakal (Karimganj), Sukliboria (Lakhimpur), Charduar (Sonitpur), (Nagaon), Gelapukhuri (Tinsukia), Patbaushi (Barpeta), Panbari (Golaghat).
Training Centres under Agriculture Department	Extension Training Centre (ETC) 1 no. (Naltoli in Nagaon district) Farmers' Training Centre 7 nos. FTS (Khetri), Kamrup; FTS Mahakal, Karimganj; FTS (Balijana), Goalpara; FTS (Sukliboria), Lakhimpur; FTS (Telia Beejia), Nagaon; Katiatoli, Nagaon; Maniarkhal, Cachar.
No. of Fruit Preservation Industries	22 nos.
No. of Pesticide Manufacturing / Formulating Units	4 nos.
Farm power	(0.35 - 0.4 HP per Hectare)
Agro-climatic Zones :	6 nos. North bank Plains Zone : Lakhimpur, Dhemaji, Sonitpur, Darrang. Upper Brahmaputra Valley Zone : Jorhat, Golaghat, Sivasagar, Dibrugarh, Tinsukia. Central Brahmaputra Valley Zone : Nagaon, Morigaon. Lower Brahmaputra Valley Zone : Kokrajhar, Bongaigaon, Barpeta, Goalpara, Dhubri, Kamrup, Nalbari. Barak Valley Zone : Cachar, Karimganj, Hailakandi. Hills Zone : Karbi Anglong, North Cachar Hills.
Normal annual rainfall :	2584.50 mm
Pattern of Rainfall :	
December, January, February	Dry period
March, April	Low and irregular pre-monsoon shower with spells of drought.
May, June, July, August, September	Heavy rainfall with apprehension of flood.



Area under different Soil Orders :	
Entiso	28.00 lakh hectare
Inceptiso	34.00 lakh hectare
Alfisols	7.50 lakh hectare
Ultisols	3.70 lakh hectare
Marshy land	0.92 lakh hectare
No. of Civil Districts	27
No. of Civil Sub-divisions	49
No. of Revenue Circles	155
No. of Development Blocks	219
No. of Gaon Panchayats	2490
No. of Villages	26,247
No. of Towns	125
No. of Agricultural Districts	23 (Brahmaputra Valley-18 nos., Barak Valley-3 nos. Hills-2nos.)
No. of Agricultural Sub-divisions	63
No. of ADO Circles	382
No. of VLEW Elekas	2948
No. of Field Management Committees formed	25,938
Total population as per 2001 Census	2,66,38,407 persons
Population density	340 per sq. km.
P.C. of SC population	7.40 p.c.
P.C. of ST population	12.82 p.c.
Sex ratio (female per 1000 male)	932
Literacy rate	64.28 p.c.

Land Classification

Geographical Area	:7843800	hectares
Forest Area	:1931631	hectares
Land put to non-agricultural uses	:1069891	hectares
Barren and uncultivable land	:1461034	hectares
Total land not available for cultivation	:2530925	hectares
Permanent pasture and other grazing land	:162968	hectares
Land under miscellaneous trees, grooves	:234206	hectares
Cultivable waste land	:80194	hectares
Current fallow land	:110401	hectares
Fallow land other than current fallow	:85219	hectares
Net Cropped Area	:2734461	hectares
Gross Cropped Area	:4087341	hectares
Area sown more than once	:1352880	hectares



Size-Classwise distribution of Operational Holdings in Assam

Size Class (Ha.)	All Classes		Social Class					
			SC		ST		Other Communities	
	No. of holdings	P.C. of concentration	No. of holdings	P.C. of concentration	No. of holdings	P.C. of concentration	No. of holdings	P.C. of concentration
Below 0.5	1036853	38.6	43755	1.6	79153	3.0	913945	34.1
0.5 to 1.0	632399	23.6	33153	1.2	83724	3.1	515522	19.2
Marginal	1669252	62.2	76908	2.8	162877	6.1	1429467	53.3
1.0 to 2.0	561078	20.9	29520	1.1	96714	3.6	434844	16.2
Small	561078	20.9	29520	1.1	96714	3.6	434844	16.2
2.0 to 3.0	241615	9.0	11586	0.4	42915	1.6	187114	7.0
3.0 to 4.0	109630	4.1	16054	0.2	61072	0.7	87005	3.2
Semi Medium	351245	13.1	16054	0.6	61072	2.3	274119	10.2
4.0 to 5.0	50482	1.9	1690	0.1	8801	0.3	39991	1.5
5.0 to 7.5	50482	1.5	1358	0.1	6704	0.3	30852	1.2
7.5 to 10.0	7022	0.3	154	0.0	1226	0.0	5642	0.2
Medium	96418	3.6	3202	0.2	16731	0.6	76485	2.9
10.0 to 20.0	3051	0.1	55	0.0	439	0.0	2557	0.1
20.0 & above	1953	0.1	17	0.0	114	0.0	1822	0.1
Large	5004	0.2	72	0.0	553	0.0	4379	0.2
Total	2682997	100.0	125756	4.7	337947	12.6	2219294	82.7

Cropwise Area and Production of Kharif 2004-05, 2005-06 (Anticipated) and target for 2006-07 :

(Area in '000 hectare, Production in '000 tonnes) (Production of Jute & Mestain '000bales)

Crop	2004 - 05		2005 - 06		2006 - 07	
	Area	Production	Area	Production	Area	Production
Kharif food grains :						
Autumn Rice	436.2	286.3	430.0	430.0	450.0	450.0
Winter Rice	1636.1	2574.3	1677.0	2851.0	1800.0	3060.0
Maize	15.2	10.8	15.0	11.0	19.0	14.0
Kharif Pulses						
Arahar	6.7	4.8	10.0	8.0	10.0	8.0
Summer Blackgram	7.0	4.0	7.0	4.0	7.0	4.0
Summer Greengram	5.0	3.0	5.0	3.0	5.0	3.0
Total Kharif Pulses	18.7	11.8	22.0	15.0	22.0	15.0
Total Kharif Foodgrains	2106.2	2883.2	2144.0	3307.0	2291.0	3539.0
Kharif Oilseeds						
Sesamum	8.8	4.5	15.0	8.0	15.0	7.0
Castor	1.3	0.6	1.5	0.8	2.0	1.0
Soyabean	0.5	0.5	1.0	1.0	1.0	1.0
Groundnut	0.5	0.5	1.0	1.0	1.0	1.0
Total Kharif Oilseeds	11.1	6.1	18.5	10.8	19.0	10.0
Jute	58.0	410.4	58.0	520.0	70.0	700.0
Mesta	5.1	25.4	6.0	26.0	7.0	35.0
Sugarcane	23.9	883.9	27.0	1080.0	30.0	1200.0

Cropwise Area and Production of Rabi crops for 2003-04, 2004-05 and 2005-06 (Anticipated)

(Area in '000 hectares, Production in '000 tonnes)

Crops	2003-04		2004 - 05		2005 - 06(anticipated)	
	Area	Production	Area	Production	Area	Production
Summer Rice	319.5	573.2	311.4	610.1	345.0	670.0
Other cereals	8.3	4.3	8.0	4.1	9.0	5.0
Maize	4.0	3.0	5.0	4.0	5.0	4.0
Wheat	70.0	73.2	63.8	68.0	60.0	65.0
Rabi Pulses						
Gram	2.4	1.3	2.1	1.1	3.0	2.0
Blackgram	39.6	20.7	36.4	20.9	45.0	25.0
Green gram	7.6	3.5	7.3	3.4	13.0	5.0
Pea	25.1	14.9	22.2	13.3	24.0	14.0
Lentil	21.7	11.7	20.4	11.0	21.0	12.0
Other Pulses	11.4	6.4	12.5	6.7	12.0	7.0
Total Rabi Pulses	107.8	58.5	100.9	56.4	118.0	65.0
Total Rabi Food grains	509.6	712.2	489.1	742.6	537.0	809.0
Rabi Oilseeds						
Rape & Mustard	264.1	138.3	244.9	129.4	290.0	145.0
Linseed	9.6	5.0	9.3	4.8	12.0	6.0
Sesamum	4.0	3.0	4.2	4.0	6.0	2.5
Nizer	9.7	5.0	8.7	4.5	10.0	5.0
Soyabean	0.8	0.8	0.4	0.4	0.5	0.5
Groundnut	2.5	2.8	2.5	2.8	3.0	3.0
Sunflower	0.4	0.3	0.5	0.4	0.5	0.5
Total Rabi Oilseeds	291.1	155.2	270.3	145.4	322.0	162.4

Status of Crop Production - Assam Vs India : (in Lakh MT)

Plan Period	Year	Rice			Wheat			Pulses		
		Production		P.C. contribution of Assam to India	Production		P.C. contribution of Assam to India	Production		P.C. contribution of Assam to India
		Assam	India		Assam	India		Assam	India	
8th Plan Period	1992-93	33.00	728.60	4.53	0.79	572.10	0.14	0.51	128.20	0.40
	1993-94	33.61	803.00	4.19	1.01	598.40	0.17	0.57	133.00	0.43
	1994-95	33.09	818.10	4.04	1.04	657.70	0.16	0.65	140.40	0.46
	1995-96	33.90	769.80	4.40	0.95	621.00	0.15	0.63	123.10	0.51
	1996-97	33.28	817.40	4.07	1.17	693.50	0.17	0.75	142.40	0.53
9th Plan Period	1997-98	33.83	825.30	4.10	1.10	663.50	0.17	0.71	129.80	0.55
	1998-99	32.55	860.80	3.78	0.91	712.90	0.13	0.75	149.10	0.50
	1999-2000	38.61	896.80	4.31	0.97	763.70	0.13	0.71	134.20	0.53
	2000-01	39.98	849.80	4.70	0.86	696.80	0.12	0.68	110.80	0.61
	2001-02	38.54	933.40	4.13	0.85	727.70	0.12	0.72	133.70	0.54
10th Plan Period	2002-03	37.38	726.50	5.15	0.78	651.00	0.12	0.67	111.40	0.60
	2003-04	38.81	870.00	4.46	0.73	720.60	0.10	0.70	152.40	0.46



Plan Period	Year	Foodgrains			Oilseeds			Jute & Mesta		
		Production (Lakh MT)		P.C. contribution of Assam to India	Production (Lakh MT)		P.C. contribution of Assam to India	Production (Lakh bales)		P.C. contribution of Assam to India
		Assam	India		Assam	India		Assam	India	
8th Plan Period	1992-93	34.54	1794.80	1.92	1.50	201.10	0.75	10.64	85.90	12.39
	1993-94	35.41	1842.60	1.92	1.67	215.00	0.78	7.04	84.30	8.35
	1994-95	34.95	1915.00	1.83	1.89	213.40	0.89	9.51	90.80	10.47
	1995-96	35.67	1804.20	1.98	1.87	221.10	0.85	8.76	88.10	9.94
	1996-97	35.39	1994.40	1.77	1.84	243.80	0.75	8.30	111.30	7.46
9th Plan Period	1997-98	35.84	1922.60	1.86	2.04	213.20	0.96	9.33	110.20	8.47
	1998-99	34.41	2036.10	1.69	1.75	247.50	0.71	7.13	98.10	7.27
	1999-2000	40.49	2098.00	1.93	1.75	207.20	0.84	6.86	105.60	6.50
	2000-01	41.72	1968.10	2.12	1.86	184.40	1.01	6.93	105.60	6.56
	2001-02	40.29	2128.50	1.89	1.89	206.60	0.91	6.99	116.70	5.99
10th Plan Period	2002-03	38.92	1741.90	2.23	1.90	150.60	1.26	7.16	113.80	6.29
	2003-04	40.61	2120.50	1.92	1.61	251.40	0.64	6.92	112.00	6.18

Population & Requirement

Actual Population (in lakhs)

	Population in 10 - years interval					
	1951	1961	1971	1981	1991	2001
Total population	80.29	108.37	146.25	180.41	224.14	266.56
Adult equivalent	64.23	86.70	117.00	144.33	179.31	213.25

Percentage variation of population during the decade 1991-2001=18.92 p.c.

P.C. of population living below poverty line : 36.0 p.c.

Projected population of the State (in lakh)

	Yearwise projected population till 2010 (in lakh)								
	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total population	273.66	278.46	283.32	288.11	292.77	297.38	301.93	306.39	310.89
Adult equivalent	218.93	222.77	226.66	230.49	234.22	237.90	241.54	245.11	248.71



Requirement & Production Status of Crops during 1st 3 years of 10th Plan Period (2002-03 to 2004-05) :

Crop	Year	Total Production (lakh MT)	Production after estimated post harvest loss (20% for Fruits, Vegetables & Tubers, 5% for Spices) (lakh MT)	Estimated Requirement (lakh MT)	Production Status (Surplus / Deficit)	Quantity (Surplus / Deficit) (Lakh MT)
Rice	2002-03	37.38		36.59	Surplus	0.79
	2003-04	38.80		37.23	Surplus	1.57
	2004-05	34.70		37.86	Deficit	3.16
Wheat	2002-03	0.78		4.88	Deficit	4.10
	2003-04	0.73		4.96	Deficit	4.23
	2004-05	0.68		5.05	Deficit	4.37
Pulses	2002-03	0.67		2.44	Deficit	1.77
	2003-04	0.69		2.48	Deficit	1.79
	2004-05	0.69		2.52	Deficit	1.83
Oilseeds	2002-03	1.90		3.25	Deficit	1.35
	2003-04	1.61		3.31	Deficit	1.70
	2004-05	1.52		3.37	Deficit	1.85
Vegetables & Tubers	2002-03	34.77	27.82	22.77	Surplus	5.05
	2003-04	38.67	30.94	23.16	Surplus	7.78
	2004-05	42.91	34.33	23.56	Surplus	10.77
Fruits	2002-03	12.83	10.26	7.48	Surplus	2.78
	2003-04	13.51	10.81	7.61	Surplus	3.20
	2004-05	13.24	10.59	7.74	Surplus	2.85
Spices	2002-03	1.95	1.85	1.22	Surplus	0.63
	2003-04	1.95	1.85	1.24	Surplus	0.61
	2004-05	2.05	1.95	1.26	Surplus	0.69

Requirement per adult per day : Rice - 450 gm., Wheat - 60 gm., Pulses - 30 gm., Oilseeds - 40 gm.,

Vegetables & Tubers - 280gm., Spices - 15 gm., Fruits - 92 gm.

N.B. Requirement of 2002-03 onward based on projected population.

Estimated Requirement during last 2 years of 10th Plan Period (2005-06 & 2006-07)

Crop	Estimated requirement in 2005-06 (in lakh MT)	Estimated requirement in 2006-07 (in lakh MT)
Rice-	38.07	38.85
Wheat	5.09	5.18
Pulses	2.54	2.59
Oilseeds	3.39	3.44
Spices	1.27	1.29
Fruits	7.80	7.94
Vegetables	23.75	24.17



Cold Storage

In order to avoid wastage of perishable agricultural commodities, the department has mobilized opportunities for the constructions of 10 nos. of cold storages in private sector with subsidy from National Horticultural Board (NHB). These are-

District	Place	No.	Capacity
Cachar	Silchar	1	5000 MT
Cachar	Silchar	1	5000 MT
Karimganj	Badarpur	1	5000 MT
Hailakandi	Hailakandi	1	5000 MT
Kamrup	Changsari	1	5000 MT
Kamrup	Khanapara	1	2400 MT
Kamrup	Lokhara	1	5000 MT
Sonitpur	Tezpur	1	4000 MT
Tinsukia	Tinsukia	1	7000 MT
Nagaon	Koliabor	1	4500 MT
Total capacity :			47900 MT
ASAMB (under NEC assistance) :			
Kamrup	Singimari	1 (nearing completion)	2000 MT
Byrnihat		1 (under construction)	
Under Govt. of Assam :			
Barpeta	Howli	1	250 MT
Jorhat	Panbari	1	1000 MT
Kamrup	Khanapara	1	2000 MT
Total capacity :			3250 MT
Cold Storage proposed :			
Jorhat (under ASAMB)	Jorhat	1	2000 MT
Darrang (under ASAMB)	Kharupetia	1	2000 MT
Cachar (under ASAMB)		1	2000 MT
Kokrajhar (under NEC)	Gossaigaon	1	1000 MT
Nagaon (under NEC)	Hojai	1	1000 MT
Total capacity :			8000 MT



Contribution of Agriculture to Net State Domestic Product (NSDP) (at Current Prices) from 1993-94 to 2005-06 :

Year	Contribution of Agriculture to NSDP (at current prices)
1993-1994	502168.00 lakh (37.26%)
1994-1995	623726.00 lakh (39.94%)
1995-1996	670802.00 lakh (39.07%)
1996-1997	676048.00 lakh (36.61%)
1997-1998	785145.00 lakh (38.90%)
1998-1999	900050.00 lakh (39.63%)
1999-2000	1015674.00 lakh (38.66%)
2000-2001	973507.00 lakh (34.45%)
2001-2002	1017538.00 lakh (33.17%)
2002-2003	1054989.00 lakh (31.48%)
2003-2004 (Provisional Estimate)	1094156.00 lakh (30.65%)
2004-2005 (Quick Estimate)	1162297.00 lakh (30.09%)
2005-2006 (Advanced Estimate)	1206609.00 lakh (28.84%)

Reasons for decreasing trend of contribution of Agriculture Sector to NSDP in Assam

Although surplus production of Rice, Foodgrains and Vegetables has been observed during last few years, especially during Ninth Plan Period, there was no concomitant rise in contributions of Agriculture Sector to the NSDP. Rather decreasing trend in contribution has been observed since 2000-01. The probable reasons for such decreasing trend are (a) The prices of agricultural commodities have not shown any appreciable increase during last few years and (b) Whatever contributions made by surplus production was overshadowed by the rising contributions of Secondary & Tertiary Sector to NSDP.

Seed Replacement Rate Of Crops :

Crop	2000-01	2001-02	2002-03	2003-04	2004-05
Paddy	0.55%	0.37%	0.33%	0.35%	3.01%
Wheat	13.25%	25.48%	23.37%	43.93%	37.25%
Maize	-	-	25.00%	27.90%	18.37%
Pulse	11.50%	11.05%	9.09%	41.63%	47.05%
Oilseed (Rape & Mustard)	4.89%	4.12%	6.26%	4.69%	4.17%

The developmental initiatives

The State of Assam attaining self sufficiency in rice production:

The state of Assam has almost attained self-sufficiency in its requirement of cereals - more particularly in rice. With the installation of 231650 nos. of Shallow Tube Wells and 31120 nos. of Low Lift Pumps the production of rice in the state has increased manifold. Annual requirement of rice in the state is 37-38 LMT. The production of rice in the year 2001-02 was 38.54 LMT. In the year 2002-03 and 2003-04 the state had been able to produce 37.38 LMT and 38.81 LMT rice respectively. But in the year 2004-05, rice production in the state falls short against requirement to 34.70 LMT due to devastating flood. It is estimated that the state will be able to produce 39.5 LMT of



rice in the current year i.e. 2005-06.

Multiple cropping heightens economic condition of the farming community:

The Department of Agriculture has made a paradigm shift in switching over to diversification of crops in order to minimize distress sale of paddy mostly in the form of summer paddy. The investment for development of minor irrigation by way of STWs in the state has yielded good results and has created impetus towards scientific management of crop husbandry under assured irrigated condition. Presently, area sown more than once has been increased to 13.53 lakhs hectares from the level of 12.40 lakh hectares during 2001-02 and thus increased the cropping intensity to 154.34 p.c. from 147.00 p.c. in 2001-02.

Creation of irrigation facilities brings prosperity to farmers:

Of the total irrigated area of the state more than 5.26 lakh hectares (21.14 p.c. of Net Cropped Area) constitutes from ground water resources. The state has targeted eventually to raise the present cropping intensity level from 154.34 p.c. to 170 p.c. by the end of the 10th Five Year Plan period. The department has taken up the micro irrigation through installation of STWs and LLPs for effective Rabi crop production since last few years. Presently, the department has created 5.26 lakhs hectares under assured irrigation areas. The installation of STWs and LLPs will continue in the current World Bank Project also. It is targeted to install 60,000 STWs and 20,000 LLPs under the project period 2005-2009 which will bring the additional assured irrigated area of about 1.76 lakh hectares.

Agricultural Mechanization powering farmer's hands:

With average per capita land holding in the state being small and timely sowing of seeds in Rabi season, the use of power tillers and tractors by the farmers are gaining popularity in recent years. The



department has so far distributed 1121 tractors, 3382 power tillers and 300 power threshers among the farmers. Farm mechanization will continue in the current World Bank Project and other state/central plan projects also. Under the world bank project, it is targeted to provide 750 tractors and 1500 power tillers to the farmers during the period 2005-2009 which will further boost farm mechanization in the State.



Horticulture A way of life for the people of Assam:

Assam is traditionally a horticultural state due to its unique agro climatic condition which permits growing of wide range of horticultural crops like various fruits, flowers, vegetables, spices, medicinal, aromatics, nut crops, tuber crops and also plantation crops. These crops occupy 5.94 lakhs hectares i.e. 15.46 p.c. of gross cropped area of 38.43 lakh hectares.

During 2004-05, fruit crops occupied an area of 1.10 lakhs hectares with production of 13.24 lakh MT. It is estimated that the state is surplus by 2.85-3.27 lakh MT in fruit production every year.

The total area under spices in the state is 0.83 lakh hectare with a production of 2.05 LMT during the year 2004-05. The net available spices of the state indicating that the state is surplus by around 0.62-0.70 LMT in spice production during the period from 2002-03 to 2004-05.

Vegetables with tubers is a major group of horticultural crops cultivated in Assam. During last 7 years i.e. from 1998-99 to 2004-05, the area and production of vegetable crops increased annually at a rate of 3.82 p.c. and 7.65 p.c. respectively while the average yield increased at a rate of 3.69 p.c. The state produced 42.91 LMT of vegetables and tuber crops against its requirement of 23.34 lakhs MT during the year 2004-05. Visibly there is a considerable surplus production of vegetables, but in reality, the surplus is 10.99 LMT considering the huge post harvest losses.



Technology Mission for Integrated Development of Horticulture in Assam (TMIDH)

The prime need of in horticultural sector in Assam is transition from its traditional or subsistence status to commercial status. Every branch of horticulture viz., fruits, vegetables, spices, medicinal & aromatics, floriculture needs market oriented touch and as such in order to achieve qualitative and quantitative improvement, there was serious demand for a comprehensive approach in the horticultural sector starting from research to production, marketing and value addition with convergence amongst each sector. It is at this juncture, the scheme of technology Mission for integrated Development of Horticulture in Assam was initiated in 2001-02 under following four Mini Mission as hereto take care of specific issues.



		Agencies associated
MM-I	- Research	- Assam Agricultural University
MM-II	- Production and Productivity	- State Department of Agriculture
MM-III	- Post harvest handling and Marketing	- Assam State Agricultural Marketing Board, National Horticulture Board, Directorate of Market Inspection
MM-IV	- Processing	- Ministry of Food Processing Industries, Govt. of India.

While MM-I activities are being looked after by Assam Agricultural University, the State Department of Agriculture is directly associated with MM-II. Various activities have been taken up under this mission since 2001-02 and an interim impact analysis has been undertaken for a look back on our achievements.

Performance of Horticultural Crops at the end of 4 years of Mission Period

Crop		Pre Mission (2000-01)	After 4 years of Mission period (2004-05)	Performance after 4 years of Mission Period
Fruit Crops	Area (Ha.)	108993	110185	Increased by 1192 ha. (1.09 p.c.)
	Production (MT)	1293802	1323659	Increased by 29857 MT (2.31 p.c.)
	Average Yield (Kg. / Ha.)	11870	12013	Increased by 143 Kg. (1.20 p.c.)
Spice Crops	Area (Ha.)	80855	83487	Increased by 2632 ha. (3.26 p.c.)
	Production (MT)	186714	205661	Increased by 18947 MT (10.15 p.c.)
	Average Yield (Kg. / Ha.)	2309	2463	Increased by 154 Kg. (6.67 p.c.)
Vegetable Crops	Area (Ha.)	195181	222238	Increased by 27057 ha. (13.86 p.c.)
	Production (MT)	2471077	3660620	Increased by 1189543 MT (48.14 p.c.)
	Average Yield (Kg. / Ha.)	12660	16472	Increased by 3812 Kg. (30.11 p.c.)
Tuber Crops	Area (Ha.)	92120	83854	Decreased by 8266 ha. (8.97 p.c.)
	Production (MT)	720477	630155	Decreased by 90322 MT (12.54 p.c.)
	Average Yield (Kg. / Ha.)	7753	7515	Decreased by 238 Kg. (3.07 p.c.)

Projection of assessment in Fruit, Spice & Vegetable Sector

Fruit sector is limping through the gestation period except Banana. Other crops will start bearing by 2007-08 and economic bearing may take another 2-3 years.



So, the trend of growth as reflected in the figures above is quite promising and expected to scale new height in the days to come.

Spices sector is now being shifted from backyard to commercial plantations in Assam, particularly in case of Black Pepper and Ginger. The growth curve in area, production and average yield projects farmers





participation with a commercial outlook.

It is a giant leap forward in case of vegetable sector. This sector has attained a spectacular achievement and the whole sector has been revolutionized under mission support. It is a real achievement under any scale of assessment even in simple terms of growth rate keeping aside the fact that this sector has accommodated avenues for massive employment generation. The focus has to be shifted now towards off-season production to avoid market glut and price fall.

Floriculture, Medicinal & Aromatic Plants

Flowers are traditionally grown in Assam but commercial cultivation has started since last few years only and that too confined in few districts. The market for cut flowers, garlands, decoration etc. is fast expanding with parallel demand for pot plants, foliage, seasonal, coleus etc. Mushroom growth of nurseries is an usual sight. There is significant decline in flow of flowers from outside the state due to local production. The present markets are primarily dominated by Marigold followed by Tube Rose, Gladioli, Roses, Lotus, local Jasmynes and to some extent Gerbera. This indicates the potentiality of this sector for commercial exploitation.

The indigenous flora of Assam is endowed with an extremely rich spectrum of medicinal & aromatic plants and many of them are rare as reported by experts. They are used in culinary, medicinal and cosmetic enterprises. Out of the two components, aromatic plants have taken some root in Assam. Agri Lemon Grass, Citronella are such crops. Recently farmers on contractual basis supported by NEDFI have taken up Patchouli crop.



Achievement under Integrated Nutrient Management (INM)



Consumption of fertilizers in the State has been increasing with the advent of time with a view to innovate step for augmenting production and much emphasis have been laid to make it readily available in the peak period of cultivation. The total consumption of fertilizers during Kharif season 2005 was 89.00 thousand MT of which 42.28 of Nitrogen (N), 25.47 thousand MT of Phosphorus (P) and 21.25 thousand MT of Potassium (K). The consumption in 2005 increased by 15.2 p.c. over consumption during Kharif 2004. During Rabi, 2005-06, total consumption of 133.8 thousand MT has been targeted against total consumption of 88.65 thousand MT during Rabi, 2004-05.

Consumption Status

a. At the end of 8th Plan Period over 7 th Plan Period-	Increase in Total consumption-	20290 MT
	Increase in Per hectare consumption-	3.80 Kg.
b. At the end of 9th Plan Period over 8 th Plan Period-	Increase in Total consumption-	97135 MT
	Increase in Per hectare consumption-	26.50 Kg.
c. At the end of 3 years of 10th Plan Period over 9 th Plan Period-	Increase in Total consumption-	12957 MT
	Increase in Per hectare consumption-	2.90 Kg.

Bio Fertilizers

Bio fertilizer has given tremendous result in crop production, increase in crop average yield and maintenance of soil health by narrowing the gap between nutrient removal and supply for which, special emphasis has been laid on its wider application. Depletion of soil nutrient poses a major threat to sustainable crop production, which needs tapping of other plant nutrient sources. Of late the trend in use of Bio-fertilizer has increased significantly due to its motivation through extension machinery and initiation of demonstration.

Biofertilizer	Rhizobium		Azotobacter		Azospirillum		PSB		Total	
	2003-04	2004-05	2003-04	2004-05	2003-04	2004-05	2003-04	2004-05	2003-04	2004-05
Quantity (MT)	9.44	42.40	15.72	31.02	12.89	14.47	23.94	44.01	61.99	131.90

419 nos. of Phosphocomposting Units & 46 nos. of Vermicompost Production Units have been set up.

Micro Nutrient

During the year 2004-05 there was a requirement of 300 MT of Bio-Fertilizers against which only 131.90 MT of the same was available. Apart from this Micro Nutrient fertilizers have been applied on visual diagnosis of deficiency system in case of horticulture crops like Cabbage, Cauliflower and Coconut Plants.

Integrated Pest Management (IPM)

In accordance with the plant protection policy of Govt. of India, Department of Agriculture, Assam is popularizing IPM under Macro Management Mode. The primary aim of the scheme is to make systematic effort to invade the farmer's misconception of chemical control of pest by eco-friendly system of IPM. The task ahead is to bring IPM technology to the farmers as simple as possible making them to understand the very basic concept of IPM through intensive training and demonstrations. The Department of Agriculture, Assam is popularizing Integrated Pest Management (IPM) by organizing massive training and demonstration programme during 2002-03, 2003-04 and 2004-05 both Kharif & Rabi season under Macro Management mode of Agriculture. So far, the following quantity of bio pesticides have been distributed to the farmer -

Beauveria bassiana	-	340 kg.
NPV (Heli)	-	340 bottles (100 LE Bottle)
NPV (spodo)	-	340 bottles (100 LE Bottle)
Neem based Pesticides	-	340 litres
Trichoderma viridae	-	390 kg.

National Watershed Development Project for Rainfed Areas (NWDPR)

NWDPR, a Centrally Sponsored Scheme, is being implemented in the state by the State Agriculture Department as Nodal Department. During the current 10th plan period, a total of 203 nos. of projects in 203 watershed were initially identified in the state for implementation of the programme.

In the process of implementation the NGOs are also engaged to act as Project Implementation Agency (PIA) and entrusted with capacity building which includes orientation, training and organization of the watershed community at project level. The entire development activities under the scheme are executed by the Watershed Association (WA) formed by the community. The Department of Agriculture as the SNA is entrusted with the followings :

Brief Status of NWDPR

No. of Projects	:	25 nos. (revised)
State Level Watershed Committee (SLWC)	:	1
No. of District Level Agency	:	25 (in 15 districts)
No. of District Watershed Committee	:	25 nos.
No. of Project Implementation Agencies (PIAs) for 25 projects	:	17 nos.
No. of SHGs formed under the project	:	2215 nos.

Development of Marketing Infrastructure - strengthening rural economy

Rural Godown :

Assam State Agricultural marketing Board (ASAMB) has taken up construction of 35 nos. of Rural Godowns having total capacity of

about 27,000 MT capacity under Rashtriya Gramin Bhandaran Yojana since 2002-03. In addition to that 27 nos. of Rural Godowns with total capacity of about 37,000 MT. have also been constructed in private sector with NABARD assistance.

Rural Market :

Two Big / Wholesale Markets at Gauripur in Dhubri District & Uparhali in Kamrup District and 25 nos. of Small / Rural markets / *Apa Mandi* in 19 districts of the State have already been developed under Technology Mission on Horticulture. Development of a Wholesale Market with a cold storage at *Singimari* in Kamrup District under NEC sponsored scheme is nearing completion. Under the World Bank Project AACP, process has been started to develop 25 nos. of Rural Hats and 15 nos. of Rural Wholesale Markets in the State.

Kishan Credit Cards (KCC) the power of aspiration:

The implementation of KCC scheme of late, has gathered momentum. Since till December, 2005, 2.36 lakhs KCC have been issued worth of Rs.235.20 crores. In order to popularize the KCC more, the department has undertaken special publicity drive through mass media and other means of publicity.



Crop Insurance Programme:

The Government has laid maximum emphasis on crop insurance. So far 1.86 lakh farmers have been covered under the scheme out of which 32472 nos. of farmers have been benefitted.

Assam Agricultural Competitiveness Project (AACP):

The basic objective of the project is to ensure better participation of farmers in bottom up planning along with resource allocation and for better coordination among the allied agricultural sectors. Major components of Agriculture in AACP are :

1. Irrigation Component
2. Mechanization Component
3. Agriculture Extension Service Component
4. Marketing Extension
5. Market Development



Component	Total (Base Cost) (In Lakh)
Irrigation	17726.65
Mechanization	4800.00
Agriculture Extension Services	5839.19
Market Development	2257.00
Marketing Extension	252.85
TOTAL	30875.69



Organic Farming a new horizon for the farming community of the state



Scented or aromatic rice (Joha rice) an unique class of rice grown in Assam is very popular and highly valued due to its quality, palatability and is popularly. Komal Chaul is an another indigenous rice of Assam which is famous for its zero energy cooking characteristics.

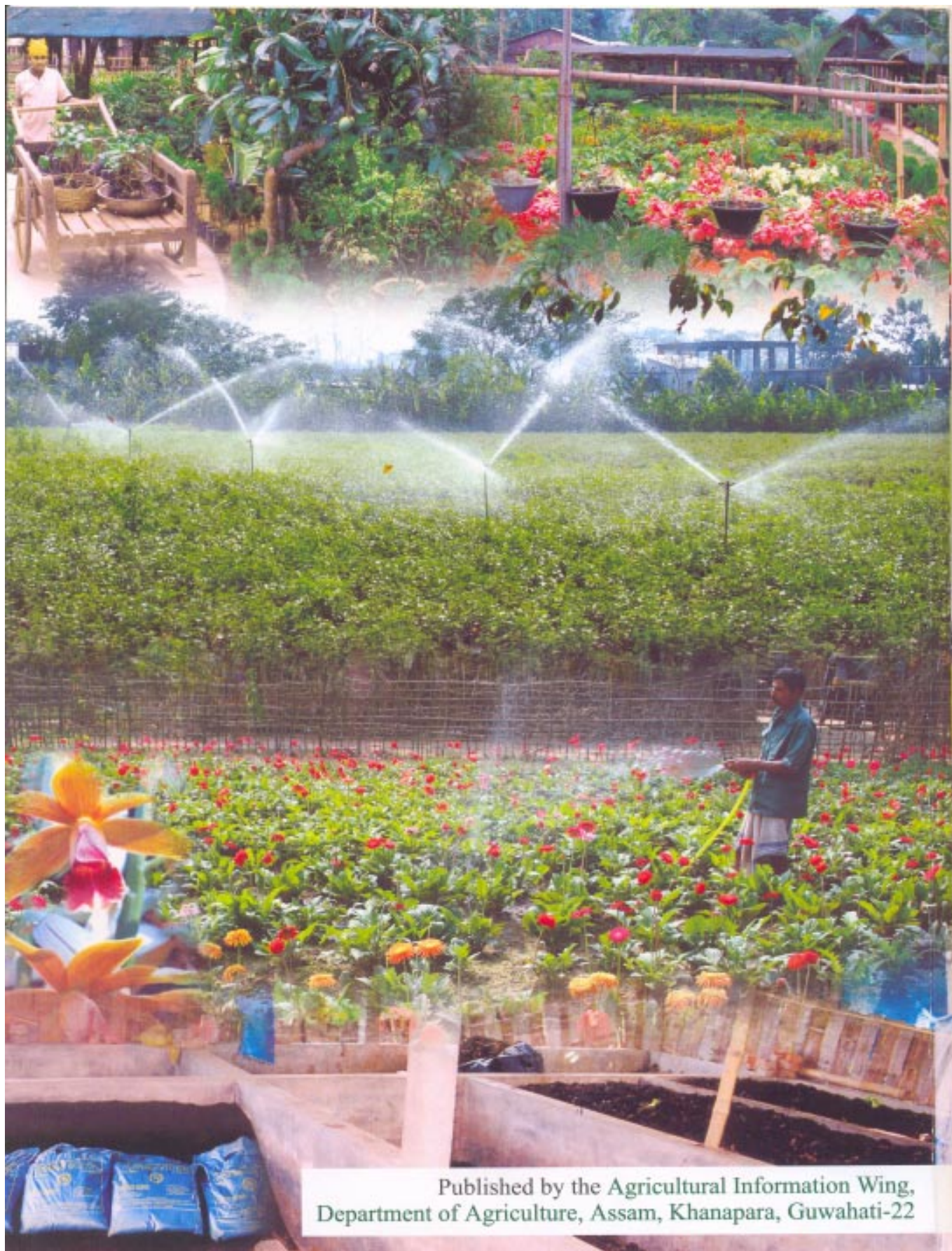
Initiative for Organic Joha Rice is a pilot scheme on organic farming run by the Department. Under this scheme, Joha Chaul and Komol Chaul are being grown with an aim to produce organic rice duly certified in order to export the produce to foreign countries. The scheme covers 92.0 hectares of land covering three districts of the state involving 162 Nos. of farmers. Some foreign countries have shown their keen interest for these organic rice varieties of Assam. Moreover, Agriculture & Processed Food Export Development Agency (APEDA) presented some Joha rice samples

in Manila, Philippines last year where it received a good response.

Moreover, under horticultural crops viz. Orange & Lemon, organic farming has so far extended to an area of 438 hectares.



ASSAM AGRICULTURE *Untiring effort for vertical increase in productivity to feed additional population of 178 lakes by 2025 AD.*



Published by the Agricultural Information Wing,
Department of Agriculture, Assam, Khanapara, Guwahati-22