



## **Inter District Developmental Disparities on Agriculture in Assam**

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### **SUMMARY**

It is an attempt to draw a clear picture of development disparities among the districts of Assam in agriculture with the help of composite index. Eighty-three indicators are considered here which are directly related to the agriculture. On the basis of these indicators Nagaon, Borpheta, Dhubri and Kamrup are developed districts but Karbi Anglong, Hailakandi, Dhemaji and N.C. Hills are low developed districts. The developed districts cover 18.31 percent areas and 30.47 percent population of the state whereas low developed area covers 25.35 percent areas and 7.94 percent population of the state. The entire agriculture sector is divided into seven sub sectors namely Production of miscellaneous crops, Production of pulse, cereals and oil seeds, Fertilizer used, and Percentage of livestock population, Rice production, Fish production and Infrastructure facilities. In each sector developed and low developed districts have been identified. In crop production Kokrajar, Dhubri and Sonitpur are high-developed, Jorhat, N.C. Hills and Nagaon are low developed. In production of pulse, cereal and oilseeds Goalpara, Sonitpur, Bongaigaon and Karbi Anglong are developed districts and Nagaon, Tinsukia, Karimganj, Jorhat and Morigaon are low developed districts. In case of livestock population Jorhat is the developed district and Dhemaji, Hailakandi and N.C. Hills are low developed district. In fish production Nagaon, Borpheta, Cachar and Karimganj are developed districts and Karbi Anglong and N.C. Hills are low developed districts. In case of rice production Golaghat, Karimganj, Hailakandi, Sibsagar, Dibrugarh and Cachar are high developed and Bongaigaon, Borpheta, Nalbari, Dhemaji and Lakhimpur are low developed. In case of infrastructure facilities e.g. irrigation, use of electricity in agriculture etc. are availed by the districts Nagaon, Nalbari, Borpheta and Kamrup are high developed and Hailakandi, Dhemaji, N.C. Hills are low developed. From the study it also reveals that the districts, which are low developed in overall agriculture sector they are also low developed in using infrastructure facilities essential for agriculture except Karbi Anglong.

For bringing the uniform development in the state, model districts and potential target for low developed districts have been identified.

*Keywords:* Composite Index, Potential targets, Development disparities, Model districts.

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### **1. INTRODUCTION**

While most other states in India are gradually moving away from their traditional agriculture based economy toward industry or service oriented economy. Assam is still heavily dependent on the agriculture sector. Assam's economy is fundamentally based on agriculture. Over 70 percent of the state population relies on agriculture as farmers, as agriculture labors

or both for their livelihood. A majority of the state's population, almost 90 percent of an estimated 22.4 million in 1991 and 23.22 million in 2001, lives in rural areas where mainstay of business is agriculture and its allied activities. In terms of SDP the agriculture sector contributed over 38 percent of the state income in 1990-91. It contributes 26.4 percent to out Net State Domestic Product (NSDP) at current prices during 2007-08 (advanced estimates).

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According to Agriculture census, 2000-01, there were 27.1 lakh operational holding in the state covering an area of about 31.1 lakh hectares of land. The marginal holding less than one hectare of land accounted for 62.6 percent of the total holdings and 21.3 percent of the total operated area of the state in 2000-01. The smallholding with size between 1-2 hectares shared 20.7 percent of the total holdings and 23.5 percent of the total operated area. The average size of the individual holding was only 1.15 hectare during 2000-01 compared to an average size of 1.47 hectare in 1970-71. Such fragmentation occurred due to two principal factors 1) inheritance related 2) Government land reform measures, which set ceiling for land holding per family (50 bighas at present) thereby promoting and facilitating land fragmentation. Numerous study shows that small and fragmented land holding are one of the principal causes of low productivity because such land holding do not facilitate economic and efficient use of modern technology. Assam is far behind in the use of modern agricultural technology to improve its agricultural productivity index. The agricultural productivity index for Assam was 156 in 1989-90 compared to 183 for India.

Assam produces both food and cash crops. The principal food crops produced in the state rice, maize, pulse, potato, wheat etc. while the principal cash crops are tea, jute, oilseeds, sugarcane, cotton and tobacco. Assam is the second largest producer of jute; the production of jute during 2000-01 was 6.68 lakh bales with productivity at 1730 kg/hect. The production of sugarcane in the state during this period 9.88 lakh metric tons with productivity of 369 quint/hect. Rice is the most important staple crop of Assam and its production per hectare is 1475 kilograms in 2004-05 and 1369 kilograms in 2006-07. Assam is traditionally horticultural state due to its unique agro climatic condition. The horticulture crops occupy 5.46 lakh hectare out of Gross Cropped Area of 39.58 lakh hectare. If one were consider the fertility of the land and the abundance of water in the state, the two most important component of agriculture growth, Assam should have been one of the better-developed states in the country. The consumption of chemical fertilizer is in decreasing trend. The consumption of bio-fertilizer in 2006-07 is 180.00 metric ton as against 131.90 metric ton in 2005-06. Seed is an important input of cultivation, 1,74,353 quintals seeds were sold during

2006-07 of which 80,906 quintals were own production and 93,447 quintals were imported. Due to infrastructural inadequacy accompanied with humid sub-tropical climate except the seeds of paddy and mustard the state could not achieve self-sufficiency in production of seeds. As per Land Utilization Statistics of the state for the year 2002-03 Assam has estimated 39.58 lakh hectare of Gross Cropped Area of which Net Area sown about 27.53 lakh hectare and the area sown more than once stand 12.5 lakh hectare of the total 78.44 lakh hectare geographical area of the state. The ultimate irrigation potential 27.00 lakh hectare, which constitutes 66.06 percent of the gross cropped area. The potential created by the department up to March 2004 is 6.75 lakh hectares and out of this approximate 2.05 lakh hectare created by Major/Medium irrigation scheme, 3.13 lakh hectare by minor irrigation scheme and 1.49 lakh hectare by Shallow Tube Well and other scheme. The overall irrigation development in the state 25 percent of the ultimate irrigation potential of the state against 50 percent to 90 percent in case of other states of India. Livestock is an essential and important contributor to the NSDP. Dairy and poultry farming can augment incomes and increasing purchasing power. Assam has a substantial livestock population, but average size of cattle in Assam is small and not have good quality. Fishery is the vital part of rural economy. The demand for fish is high, with over 90 percent of the population being fish consumer. The demand is estimated to be 280 metric tones per annum. Approximately 3 lakh hectares of crop area is subjected to annual flood, 82 percent of the farmers of the state belongs to small and marginal farmer.

At present, Assam is the biggest producer of tea in India whose share ranges between 50-60 percent of India's total tea production. Assam alone produces approximately 29 percent of world tea production.

Assam has been divided into six agro climatic zones. These are

- North bank plains: Dhemaji [13], Lakhimpur [12], Sonitpur [11] and Darrang [8]
- Upper Brahmaputra Valley: Golaghat [18], Jorhat [17], Sibsagar [16], Dibrugarh [15], Tinsukia [14]
- Central Brahmaputra Valley: Nagaon [10], Morigaon [9]

- Lower Brahmaputra Valley: Dhubri [2], Bongaigaon [4], Kokrajar [1], Goalpara [3], Barpeta [5], Nalbari [7] and Kamrup [6]
- Barak valley: Karimganj [22], Cachar [21], Hailakandi [23]
- Hill district: Karbi Anglong [19] and N.C. Hills [20]

For focusing the attention of scientist, planners, policy makers and administrators on the regional disparities and socio-economic development in the country, a seminar was organized jointly by the Planning Commission, Government of India and State Planning Institute, Government of Uttar Pradesh during 1982. Realizing the importance and seriousness of the problem of estimation of level of development, the Indian Society of Agricultural Statistics conducted a series of research studies in this direction. Analyzing the data at state level for the year 1971-72 and 1981-82, it was found that there were disparities in the level of development between different states. There after a deeper analysis using the district level data on socio-economic indicators was made for the States Orissa (1992-93), Andhra Pradesh (1994), Kerala (1994), Uttar Pradesh (1995), Maharastra (1996), Karnataka (1997), Tamilnadu (2000), Madhya Pradesh (2002) and Assam (2004).

In all, the study for evaluating the level of socio-economic development was conducted in two hundred twenty eight districts belonging to the states of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharastra, Orissa, Tamil Nadu and Uttar Pradesh and it was found that 73 districts were low developed which require special attention for undertaking future developmental programmes.

## 2. INDICATORS

### (A) Yield in kg per hectare (indicators 1-40)

- |                   |                  |
|-------------------|------------------|
| 1. Potatoes       | 9. Banana        |
| 2. Sweet Potatoes | 10. Papaya       |
| 3. Tapioca        | 11. Orange       |
| 4. Sugarcane      | 12. Pineapple    |
| 5. Tobacco        | 13. Ginger       |
| 6. Chillies       | 14. Coriander    |
| 7. Onion          | 15. Garlic       |
| 8. Turmeric       | 16. Black Pepper |

- |                       |                            |
|-----------------------|----------------------------|
| 17. Kharif Vegetables | 34. Total Cereals          |
| 18. Ravi Vegetables   | 35. Jute                   |
| 19. Assam Lemon       | 36. Cotton                 |
| 20. Guava             | 37. Sesamum                |
| 21. Litchi            | 38. Rapeseed & Mustard     |
| 22. Jack Fruit        | 39. Total Pulse            |
| 23. Mango             | 40. Total Oilseeds         |
| 24. Other Fruits      | 41. Indigenous Cattle %    |
| 25. Tur               | 42. Crossbred Cattle %     |
| 26. Gram              | 43. Indigenous Buffaloes % |
| 27. Black Gram        | 44. Sheep %                |
| 28. Green Gram        | 45. Goats %                |
| 29. Pees              | 46. Pigs %                 |
| 30. Rice              | 47. Horse & Ponies %       |
| 31. Maize             | 48. Fowls %                |
| 32. Wheat             | 49. Ducks %                |
| 33. Other Cereals     |                            |

### (B) Consumption of fertilizer in kg per hectare sown area

50. Nitrogen in Kharif Crops
51. Potash in Kharif Crops
52. Sulphur in Kharif Crops
53. Total Fertilizer in Kharif Crops
54. Nitrogen in Ravi Crops
55. Potash in Ravi Crops
56. Phosphorous in Ravi Crops
57. Total Fertilizer in Ravi Crops
58. Total Nitrogen in Kharif & Ravi Crops
59. Total Potash in Kharif Crops
60. Total Phosphorous in Kharif Crops
61. Total Fertilizer in both Ravi & Kharif Crops
62. Registered Beel Fisheries
63. Registered River Fisheries
64. Production in Fish % 2003-04
65. Production in Fish % 2004-05
66. Production in Fish Seed % 2003-04
67. Production in Fish Seed % 2004-05
68. Agriculture Labor to Main Workers %

69. Small Tea Growers %
70. Registered Area of Small Tea Growers %
71. Cropping Intensity
72. Forest Land %
73. Average Size of Holding
74. Village used Electricity in Agriculture %
75. Net Area Irrigated to Net Area Sown %
76. Net Area Sown per Cultivator %
77. Area HYV used to Net Sown Area %
78. Area Sown more than once to Net Sown Area %
79. Number of Veterinary Dispensary
80. Number of AI Center
81. Number of Agriculture Subdivision
82. Number of Agriculture Development Officer Circle
83. Number of Village Level Extension Worker

### 3. ESTIMATION OF LEVEL OF DEVELOPMENT AND FIXATION OF POTENTIAL TARGETS

Variables in respect of various indicators have been standardized and values are used to construct the composite index of development. The best district of each indicator (with maximum/minimum standardized value depending upon the direction of the indicator) is identified and the deviations of the standardized values from the best value of the indicator are obtained for each district. The statistical techniques presented by Narain *et al.* (1991) are used to build up the composite index of various sectors of agriculture for each district.

Critical distances between different pairs of districts have been worked out from the matrix of developmental distances based on all the indicators. Model districts have been identified on the basis of composite index of development and critical distances between different districts. Between the two districts A and B, if A is having better level of development compared to B as exhibited by composite index and its distance from B is within the limit of critical distance, then A will be identified as model district for B. The best values of different indicators among the model districts will be fixed as potential for poorly developed districts.

## 4. RESULTS AND DISCUSSION

Stages of development have been worked out and ranked of different districts for seven sub sectors of agriculture sector on the basis of composite index. Next, taking eighty-three indicators composite index are computed for the districts of whole agriculture sector of Assam and ranking have been done. The composite indices of development along with the district ranks are presented in Table 1.

### 4.1 Relative Share of Area and Population under Different Level of Development

A simple ranking of district on the basis of composite indices is sufficient but a suitable classification of districts formed on the basis of mean and standard deviation of the composite indices will provide a more meaningful characterization of various stages of development. For relative comparison it appears appropriate to assume the districts having composite index less than or equal to (Mean - SD) as highly developed districts. And the districts having composite index greater than or equal to (Mean + SD) be low developed districts. Similarly districts with composite index lying between (Mean and Mean - SD) are classified as middle level developed and district with composite index lying between (Mean and Mean + SD) are classified as developing districts.

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in socio-economic field in the state. The details are given in Table 2.

### 4.2 Model Districts and Potential Target for Low Developed District

Model districts for the low developed districts, based on eighty-three indicators of agriculture sector on the basis of composite index of development and the developmental distances between different districts are obtained. An important aspect of the study is to suggest potential target for different indicators in respect to poor developed districts for bringing improvement in the level of development. The best values of different indicators among the model districts will be taken as potential target of the low developed districts. The list of model districts identified for various low developed districts is given in the Table 3. Here at best three model districts are selected for low developed districts on priority basis.

**Table 1.** Ranking of the districts based on various composite indices of development

Sl. No.	District	Miscellaneous crop		Pulse, Cereal crops & Oilseeds		Infrastructure		Livestock		Fish		Rice		Fertilizer		Agriculture	
		Com Index	Rank	Com Index	Rank	Com Index	Rank	Com Index	Rank	Com Index	Rank	Com Index	Rank	Com Index	Rank	Com Index	Rank
1.	Kokrajjar	.7881	1	.8186	10	.6774	5	.8489	17	.7744	17	.7298	17	.5031	7	.8103	6
2.	Dhubri	.7904	2	.7768	5	.7199	8	.7819	11	.5873	5	.6639	14	.5574	10	.7845	3
3.	Goalpara	.8852	7	.6865	1	.8267	17	.8887	19	.8086	18	.5226	9	.2314	1	.8241	9
4.	Bongaigaon	.9111	14	.7498	3	.7210	9	.7626	7	.8425	21	.8035	19	.2382	2	.8084	5
5.	Borpeta	.8857	8	.8986	18	.6320	3	.7205	2	.4435	2	.8176	20	.4263	6	.7818	2
6.	Kamrup	.8741	6	.8141	8	.6406	4	.7335	3	.7115	8	.5948	12	.4096	4	.7881	4
7.	Nalbari	.9307	18	.8751	16	.6301	2	.8444	15	.7030	7	.8257	21	.5371	8	.8474	11
8.	Darrang	.9053	12	.7919	6	.6806	6	.7810	10	.7569	14	.6578	13	.4138	5	.8128	7
9.	Marigaon	.9140	16	1.0062	23	.8700	19	.7682	8	.6877	6	.7349	18	.5804	12	.9046	18
10.	Nagaon	.9775	23	.9243	19	.4609	1	.7400	5	.3836	1	.4525	7	.3217	3	.7781	1
11.	Sonitpur	.8188	3	.7371	2	.6973	7	.7385	4	.7416	12	.7046	16	.7336	17	.8210	8
12.	Lakhimpur	.9218	17	.8820	17	.8714	20	.8419	14	.7157	9	.9759	23	.8036	19	.9289	19
13.	Dhemaji	.9089	13	.8150	9	.9428	22	.9040	21	.8283	20	.8786	22	.8912	22	.9656	22
14.	Tinsukia	.8699	4	.9272	20	.8120	16	.8852	18	.7674	16	.5499	10	.6499	14	.8980	16
15.	Dibrugarh	.9030	11	.8352	12	.8096	14	.7751	9	.7503	13	.3868	5	.5727	11	.8597	13
16.	Sibsagarh	.8965	10	.8122	7	.8374	18	.7846	12	.7410	11	.3237	4	.8433	20	.9039	17
17.	Jorhat	.9612	21	.9632	22	.7628	11	.5293	1	.7353	10	.5889	11	.6573	15	.8766	14
18.	Golaghat	.8960	9	.8227	11	.8119	15	.7994	13	.8108	19	.2699	1	.6935	16	.8935	15
19.	Karbi Anglong	.9113	15	.7540	4	.7994	13	.9014	20	.9257	22	.6845	15	.8790	21	.9380	20
20.	N.C. Hills	.9766	22	.8546	14	.9819	23	1.0027	23	.9572	23	.4839	8	.9052	23	1.0296	23
21.	Cachar	.9398	19	.8544	13	.7294	10	.7516	6	.5006	3	.3870	6	.6469	13	.8437	10
22.	Karimganj	.8718	5	.9418	21	.7825	12	.8477	15	.5339	4	.3039	2	.5490	9	.8547	12
23.	Hailakandi	.9497	20	.8681	15	.8967	21	.9461	22	.7649	15	.3133	3	.7568	18	.9519	21

**Table 2.** Area and Population under various levels of development

Sectors	No. of indicators	Level of development	No. of districts	Area %	Population %
Miscellaneous Crop	24	High	[1],[2],[11]	14.87	14.88
		Middle	[14], [22], [16], [3], [5], [18], [16]	27.01	34.32
		Developing	[15], [8], [4], [7], [9], [19], [23], [21], [12], [13]	43.19	37.66
		Low developing	[17], [20], [10]	14.93	13.14
Pulse, Cereal Crop and Oilseeds	16	High	[3], [11], [4], [19]	25.16	15.84
		Middle	[2], [8], [16], [6], [13], [1], [18]	34.36	38.73
		Developing	[21], [5], [7], [12], [20], [23]	22.66	21.99
		Low developing	[10], [14], [22], [17], [9]	17.82	23.44
Infrastructure	13	High	[10], [5], [7], [6]	17.62	28.64
		Middle	[1], [8], [11], [2], [4], [21], [17]	30.51	34.06
		Developing	[3], [9], [12], [14], [15], [16], [18], [19], [22]	39.82	32.41
		Low developing	[23], [13], [20]	12.05	4.89
Livestock	9	High	[17]	03.63	03.74
		Middle	[6], [8], [5], [11], [10], [21][4], [2], [15], [16], [18], [9]	52.37	65.55
		Developing	[3], [7], [12], [19], [22], [14], [1]	31.95	25.82
		Low developing	[23], [13], [20]	12.05	04.89
Fish	6	High	[10], [5], [21], [22]	16.34	24.07
		Middle	[2], [9], [7], [6], [12]	16.86	26.16
		Developing	[1], [4], [3], [8], [11], [13], [14], [15], [16], [17], [18], [23]	47.27	46.01
		Low developing	[19], [20]	19.53	03.76
Rice	19	High	[18], [22], [23], [16], [15], [21]	21.00	23.18
		Middle	[10], [20], [3], [14], [17]	22.09	20.54
		Developing	[1], [6], [8], [9], [11], [2], [19]	40.12	41.22
		Low developing	[4], [5], [7], [13], [12]	16.79	15.06
Fertilizer	12	High	[3], [4], [10]	10.13	15.16
		Middle	[6], [1], [5], [8], [7], [22], [2], [15]	33.66	46.28
		Developing	[21], [23], [11], [17], [14], [18]	26.24	25.38
		Low developing	[12], [16], [19], [13], [20]	29.97	13.18
Agriculture	83	High	[10], [5], [2], [6]	18.31	30.47
		Middle	[8], [11], [21], [4], [15], [22], [1], [3], [7]	33.52	39.72
		Developing	[16], [18], [9], [17], [12], [14]	22.82	21.87
		Low developing	[19], [23], [13], [20]	25.35	07.94

**Table 3.** Model Districts and Potential Target for Low Developed District

Low developed districts	Model districts
Karbi Anglong[19]	Lakhimpur[12], Golaghat[18]
Hailakandi[23]	Kokrajar[1], Sonitpur[11], Dibrugarh[15]
Dhemaji[13]	Kokrajar[1], Tinsukia[14], Karimganj[22]
N.C. Hills[20]	Lakhimpur[12], Tinsukia[14], Karbi Anglong[19]

**Table 4.** Estimate of Potential Target and Actual Achievement (given under the bracket)

Sl. No	Development indicators	Karbi Anglong	Hailakandi	Dhemaji	N.C.Hills
1	Potatoes	7689 (10527) *	11077 (3902)	11077 (4207)	10527 (8085) *
2	Sweet Potatoes	3100 (3262) *	3804 (3179)	3804 (3100)	3299 (4900) *
3	Tapioca	3917 (5038) *	4785 (0)	4785 (2935)	5038 (5000)
4	Sugarcane	40202 (41155) *	36919 (41400) *	45538 (36919)	41155 (32556)
5	Tobacco	700 (397)	636 (480)	600 (625) *	600 (780) *
6	Chillies	650 (829) *	716 (541)	716 (762) *	829 (573)
7	Onion	3226 (2372)	3645 (1712)	3226 (2550)	2372 (2038)
8	Turmeric	650 (804) *	781 (505)	781 (655)	804 (546)
9	Banana	13827 (13784)	16414 (12410)	16414 (15260)	13784 (14500) *
10	Papaya	15050 (15284) *	158080 (19205)	15007 (15017) *	15264 (15284) *
11	Orange	10120 (9005)	13540 (9850)	16017 (9586)	16017 (10074)
12	Pineapple	13868 (15562) *	16331 (14203)	14960 (13945)	15562 (14734)
13	Assam Lemon	7340 (6268)	8245 (7735)	7740 (6335)	7095 (6889)
14	Guava	19140 (19734) *	17914 (19600) *	19800 (19179)	19734 (18760)
15	Litchi	4720 (3714)	5956 (6038) *	4950 (4440)	4779 (4210)
16	Jack Fruit	11741 (10370)	10254 (10042)	9840 (9782)	10370 (8434)
17	Mango	8940 (8422)	9885 (7520)	9885 (6980)	8422 (7125)
18	Other Fruit	3893 (1039) *	5432 (3281)	4473 (2057)	4473 (7982) *
19	Ginger	10230 (7660)	7430 (4900)	7670 (6520)	7670 (5505)
20	Coriander	930 (0)	930 (920)	930 (990) *	930 (0)
21	Garlic	4030 (0)	4650 (4740) *	4650 (1850)	2790 (0)
22	Black Pepper	1580 (1520)	1650 (1950) *	2130 (1490)	1800 (1730)
23	Kharif Vegetables	13916 (22364) *	21138 (23750) *	22539 (23930) *	22364 (15038)
24	Ravi Vegetables	16294 (20380) *	20731 (18192)	20731 (23920) *	20380 (17316)
25	Tur	700 (678)	818 (694)	691 (750) *	745 (720)
26	Gram	450 (507) *	718 (455)	509 (434)	507 (300)
27	Black Gram	734 (575)	616 (575)	575 (575)	734 (575)
28	Green Gram	450 (620) *	584 (450)	489 (533) *	620 (470)
29	Pees	869 (636)	531 (570) *	531 (638) *	636 (488)
30	Rice	600 (609) *	574 (574)	540 (543) *	609 (1733) *

Sl. No	Development indicators	Karbi Anglong		Hailakandi		Dhemaji		N.C. Hills	
31	Maize	1539	(1274)	1575	(1274)	1533	(1274)	1274	(750)
32	Wheat	73	(84) *	74	(65)	73	(73)	84	(60)
33	Other Cereals	400	(738) *	636	(400)	592	(518)	738	(452)
34	Total Cereals	509	(454)	699	(418)	567	(937) *	509	(1635) *
35	Jute	505	(489)	696	(417)	512	(342)	505	(1274) *
36	Cotton	2036	(1444)	1817	(2121) *	1872	(1074)	1502	(80)
37	Sesamum	598	(785) *	590	(410)	600	(923) *	785	(730)
38	Rapeseed & Mustard	1017	(1460) *	1168	(1066)	1168	(985)	1460	(381)
39	Total Pulse	565	(336)	572	(555)	572	(677) *	565	(547)
40	Total Oilseeds	2013	(1392)	1806	(2120) *	1871	(1072)	1486	(446)
41	Indigenous Cattle %	5.36	(2.36)	6.13	(1.73)	5.87	(2.83)	5.87	(0.71)
42	Crossbred Cattle %	4.05	(4.36) *	5.51	(3.29)	3.15	(0.08)	4.36	(1.41)
43	Indigenous Buffaloes %	4.20	(6.57) *	6.11	(4.10)	9.00	(4.74)	6.57	(6.69) *
44	Sheep %	.919	(0.91)	8.17	(6.97)	8.17	(0.09)	.919	(0.09)
45	Goats %	7.33	(0.97)	6.44	(2.07)	3.83	(1.41)	4.01	(1.27)
46	Pigs %	6.15	(7.28) *	7.61	(0.29)	6.60	(7.40) *	7.28	(3.43)
47	Horse%	7.89	(0)	12.33	(0.24)	1.72	(14.45) *	7.89	(1.37)
48	Fowls%	2.90	(4.52) *	5.76	(3.10)	3.68	(1.59)	4.52	(1.88)
49	Ducks	4.16	(.513)	4.11	(2.36)	5.41	(0.94)	4.16	(0.12)
50	Total Fertilizer	27.45	(3.45)	41.58	(16.72)	40.15	(.944)	12.21	(0.78)
51	Kharif Crops Total Fertilizer	7.98	(2.86)	31.86	(10.42)	33.29	(3.199)	33.29	(0.82)
52	Ravi Crops Total Fertilizer both	35.43	(6.01)	72.01	(27.15)	72.01	(4.14)	45.35	(1.59)
53	Ravi & Kharif Crops Registered Beel								
54	Fisheries	3.26	(0)	1.83	(6) *	18.26	(8)	3.26	(0)
55	Registered River Fisheries	1.40	(0)	.981	(9) *	24.04	(8)	1.40	(0)
56	Production of Fish % 2003-04	5.04	(0.65)	4.479	(3.17)	6.30	(1.95)	5.04	(0.30)
57	Production of Fish Seed % 2003-04	15	(0)	20	(6)	27	(8)	11	(0)
58	Agriculture Labor to Main Worker %	12.05	(19.63)	32.13	(18.59) *	8.18	(11.71)	8.23	(6.29) *
59	Small Tea Growers %	24.74	(10.99)	16.02	(.325)	4.91	(.081)	10.98	(.081)
	Registered Area %	21.99	(25.38) *	11.09	(.531)	7.24	(.199)	25.38	(.104)



Sl. No	Development indicators	Karbi Anglong		Hailakandi		Dhemaji		N.C. Hills	
60	Cropping Intensity	178	(142)	159	(128)	159	(160) *	178	(136)
61	Percentage of Forest Land	0.11	(0.41) *	0.17	(0.12)	.17	(.11)	0.41	(0.38)
62	Average Size of Holding	1.72	(1.35)	1.78	(1.30)	1.22	(1.14)	1.72	(1.08)
63	Village used Electricity in Agriculture %	0.99	(1.90) *	4.15	(4.28) *	1.47	(0)	1.90	(.17)
64	Net Area Irrigated to Net Area Sown %	82	(12.6) *	7.19	(.033)	4.50	(.013)	12.6	(13.3) *
65	Net Area Sown per Cultivator %	68.52	(65.19)	77.06	(72.80)	90.24	(34.29)	68.52	(82.12) *
66	Area HYV used to Net Sown Area %	51.37	(67.17) *	66.20	(56.93)	54.17	(30.40)	67.17	(29.48)
67	Area Sown more than once to Net Sown Area %	75.82	(57.25)	63.02	(47.68)	63.02	(68.67) *	75.82	(37.37)
68	Number of Veterinary Dispensary	11	(9)	16	(5)	15	(13)	11	(6)
69	Number of AI Center	35	(10)	79	(18)	50	(23)	35	(1)
70	Number of Agriculture Subdivision	3	(2)	3	(1)	3	(2)	3	(1)
71	Number of Agriculture Development Officer Circle	13	(14) *	24	(7)	14	(11)	14	(5)
72	Number of Village Level Extension Worker	101	(102) *	173	(63)	109	(57)	102	(36)

NB \* Indicates actual values better than its potential target.

## 5. CONCLUSION

Assam lags behind the rest of the countries in all the key indicators of agricultural development be it irrigation, level of mechanization, cropping intensity, market access or connectivity of the rural areas.

Importance of irrigation in agriculture is supreme, because it enables multiple cropping in the sown area. At present crop intensity in Assam happen to be around 130 percent but Punjab has achieved a crop intensity of 164 percent only through intensive irrigation. There

are surplus production of fruits and vegetables but forty percent of the crop is lost because of poor harvest losses. The future of rice production too, is not assured in the state, largely because of poor price realization. The farmer is finding it difficult to increase in productivity, where input cost is steadily going up and price of producing steadily falling. The institutional credit structure is weak in the state.

From the study it reveals that highest production of different agricultural crops produced by different districts, e.g the highest producer of miscellaneous

crops, pulse, cereal crops and oilseeds, rice and fish are Kokrajar, Goalpara, Golaghat and Nagaon respectively. So each and every district should get the facilities equally which are provided by the Government, so that no district remain as backward in case of modern development in agriculture.

Once the district Lakhimpur took its position forefront in production of rice but from the study it reveals that it had already lost its position due to less production of rice. It is due to flood only. Flood and soil erosion are two great physical obstacles facing the development of agriculture in Assam. A cropping pattern should be evolved suitable for chronically flood-affected areas.

Assam has vast water resources. Beel and river fisheries provide opportunities for fishery development in large scale. A large section of people can earn their livelihood from them. The agriculture department should be reorganized to establish a close and friendly relationship with farmers. Higher production per acre can easily be achieved through the use of improved seeds, manures, irrigation, flood control, through double and triple cropping etc. Sometimes Government department had supplied inferior seeds to the farmers; such type of detrimental work should be stopped completely by the Government with iron hand.

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