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## SPATIO-TEMPORAL DYNAMICS OF LAND USE PATTERN IN WEST BENGAL: A COMPARATIVE STUDY IN 1980-81 TO 2007-08

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**Abstract:** *Distribution of land for various purposes and land use changes helps to meet the needs of agricultural planning and all round development of society. West Bengal with a geographical area of 88752 km<sup>2</sup> has to feed 80,176,197 populations, thus detection of proper landuse and its planning can pave a way out to cope with pressure of 903 persons per sq km density. The paper aims to elucidate the spatial pattern of landuse along with the inter-district disparity in the time period of 1980-81, 1990-91 and 2007-08. For an effective study the Growth Rate (GR) technique has been used to compute spatio-temporal disparity in district level landuse and growth with the data achieved from the Statistical Abstract, 2008. The computed results show inter district disparity and temporal change in the given time period.*

**Keywords:** *Agricultural planning, Growth Rate, Spatio-temporal disparity, West Bengal.*

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## **INTRODUCTION**

According to System of National Accounts (SNA) land is the system as the ground itself, including: (i) the soil covering; and (ii) associated surface water (over which ownership can be exercised); but excluding: (a) building or other structures constructed on the land or through it - roads, office buildings, tunnels, etc.; (b) vineyards, orchards or other plantations of trees and any growing crops etc.; (c) subsoil assets; (d) non-cultivated biological resources; (e) water resources below the ground. SNA treats land as a non-produced asset which provides economic benefits to its owner. Land on which either no economic activity is being undertaken or is not owned by any institutional unit is generally not evaluated under the national accounting concept. Land use statistics was developed as a source of information for planning in agricultural production.

On the basis of the above nine-fold classification we can know the concepts of area like 'arable land' comprising the 'net area sown' plus the 'current fallows' and 'other fallow land' or 'potential land' i.e. land under 'culturable waste', 'permanent pastures/grazing land', 'miscellaneous tree crops available for crop husbandry. The main purpose is to show detail of the existing land according to its actual use and not what could be the potential utilisation. The area under culturable waste does not represent the area cultivated.

Till 1949-50, the land area in India was classified into five-fold land utilisation classification which was not adequate enough to meet the needs of agricultural planning but very broad outline of land-use in the country. To remove the dissimilarity the Technical Committee on Co-ordination of Agricultural Statistics, set up in 1948 by the Ministry of Food & Agriculture, recommended a nine-fold land-use classification replacing, recommended standard concepts and definitions. The revised classification was accepted and adopted since 1950-51 by all the states, except by West Bengal, in respect of which many the data are still presented based on the old classification.

## **STUDY AREA**

The present study is conducted on the state of West Bengal, located between 21°25' North and 26°50' North latitudes and 86°30' East and 89°58' East longitudes. With a geographical area of 88,752 sq. km., the land extends from Himalayas in the north to Bay of Bengal in the south, and part of Rajmahal hills in the west to Bagri in the east, the state is surrounded by Assam and Bangladesh in east, Bay of Bengal in south, Nepal, Bihar,



Jharkhand and Orissa in west and Sikkim and Bhutan in north. According to 2001 Census, the total population of West Bengal is 80,176,197 whilst the density is of 903 persons per sq. km. In 1990-91, the state consisted of seventeen districts, which increased to nineteen in 2004-05. While in 1992 West Dinajpur district was subdivided into Uttar Dinajpur and Dakshin Dinajpur districts, in 2002, Midnapore district was divided into East Midnapore and West Midnapore Districts. Kolkata- the state capital has been excluded for its complete urbanized nature and rest 18 districts of West Bengal have been considered.

## DATABASE AND METHODOLOGY

Descriptive statistical techniques have been used for analyzing the data. Secondary data has been used for the entire study which has been procured from Statistical Abstract 2008, published by Bureau of Applied Economics and Statistics, Government of West Bengal and reports published by Principal Agricultural Offices at different Districts. In addition, journals, reports of various governmental organizations are considered for analysis.

Aiming to furnish the study with a geographical identity, Growth Rate (GR) technique for studying the growth between data of two given years for both 1980-81 to 1995-96 and 1995-96 to 2007-08 has been used. Growth Rate (GR) is mathematically expressed by the following way.

$$GR = \frac{P_rV - P_aV}{P_aV} \times 100$$

Where,

GR= Growth Rate

P<sub>r</sub>V= present value

P<sub>a</sub>V= past value

## RESULTS AND DISCUSSION

### **Forest Area:**

Forested lands are those under cultivated or non-cultivated stands of trees irrespective of its ownership. The concept of forests differs from country to country. Some places includes all land classified as forest under any legal enactment dealing with forest or administered as forest whereas in other places it depends on its use by society. Recorded forest area largely consists of reserved forests and protected forests as per the Indian Forest Act, 1927. In India this includes all forest lands under any legal enactment or administered as forests, either state-owned or private, and whether wooded or maintained as potential forest land. Even



the area of crops raised in the forest, grazing lands or areas open for grazing within the forests remain included under the forest area.

According to the land-utilisation statistics, the area under forests during 1980-81 in West Bengal is estimated at 1078.12 thousand hectares, which grew to 1195.52 thousand hectares in the year 1980-81 and shrank to 1173.67 thousand hectares in 2007-08. The difference in the first two sets of figures is due mainly to the variations in the definitions of the term 'area under forests', in geographical coverage and in the reference period. With the advent of new uniform definition for reporting the data by both the sources and it is hoped that the gap between the two sets of figures would be narrowed down considerably, if not altogether eliminated. Though initially due to deforestation, latter the forest cover has changed over the years due to the reforestation policies of the government from time to time also many hectares of forest area have been diverted for non-forest use.

The growth rate of Burdwan district fell from -7.011 [GR (81-96)] to -26.477% [GR (96-08)]. In Darjeeling a tremendous fall from 451.195 to 0.008 in forest area has been seen. Same is the case of Hooghly i.e. from 124.138 to -18.462 and in Cooch Behar 54.035 to -51.595 falls in area under forest has been observed. In Birbhum there has been a positive growth rate from -4.084 to 5.4558.

**Table 1. Change of Forest areas ('000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	30.95	28.78	21.16	-7.011	-26.477
Birbhum	15.67	15.03	15.85	-4.084	5.4558
Bankura	139.55	148.35	148.93	6.306	0.391
Midnapore (E)	172.14	170.83	9	-0.761	-94.732
Midnapore (W)			171.94		0.65
Howrah	-	-	-	-	-
Hooghly	0.29	0.65	0.53	124.138	-18.462
24 Parganas (N)	426.26	426.3	426.3	0.009384	0
24 Parganas (S)					
Nadia	1.25	1.22	1.22	-2.4	0
Murshidabad	0.78	0.77	0.77	-1.282	0
Uttar Dinajpur	1.3	1.96	0.58	50.769	-70.408
Dakshin Dinajpur			93		
Maldah	1.37	1.68	1.68	22.628	0
Jalpaiguri	172.56	179	179	3.732	0
Darjeeling	22.6	124.57	124.58	451.195	0.008
Cooch Behar	5.7	8.78	4.25	54.035	-51.595
Purulia	87.61	87.6	75.05	-0.011	-14.326
West Bengal	1078.12	1195.52	1173.67	10.889	-1.828

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.



***Land put to non-agricultural uses:***

It includes all lands occupied for and by houses, residential & non-residential buildings, parks, factory sheds, roads and railways, canals and other lands put to uses other than agriculture. Land underlying buildings, structures and recreational land are not considered separately as it is considered not necessary to form a separate part. To meet the ever rising demand of land for construction of buildings houses more and more land is taken under the respective criteria. The rise in the growth of this category indicates 3 things- either i) rise in population, or ii) development or iii) both the preceding. Land Acquisition for roads and railways, canals etc. which once was more often, though have lessened, are sometimes activated. According to the Registrar General of India, significant increase in number of household and total floor area has increased. This have to a large extent helped in falling the state rate from 22.927 to 10.02. In districts like Murshidabad, Purulia, Nadia, Hooghly, Bankura and Burdwan the horizontal expansion of land for residential buildings are increasing the growth rates have little differences from the preceding years. Malda noted a positive rise in growth of almost 5 times from the year 1981-96 (7.155) to 1996-2008 (38.162). Interestingly in Darjeeling the growth rate has fallen from 23.053 to 18.047 of same time period. This is because of the present restriction of building commercial buildings and hotels and also sudden building of roads.



**Table 2. Land put to Non-agricultural Uses (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	122.12	178.74	206.02	46.364	15.262
Birbhum	49.2	95.22	96.82	93.537	1.680
Bankura	69.39	128.22	147.97	84.782	15.403
Midnapore (E)	191.41	265.37	96.69	38.63957	-63.5641
Midnapore (W)			157.55		
Howrah	38.95	38.01	51.24	-2.413	34.807
Hooghly	63.43	76.97	89.12	21.346	15.785
24 Parganas (N)		108.27	121.92	-65.883	12.607
24 Parganas (S)	317.35	130.58	138.3	-58.853	5.912
Nadia	52.54	71.28	88.36	35.668	23.962
Murshidabad	84.55	106.45	127.85	25.902	20.103
Uttar Dinajpur	47.69	60.96	31.79	27.826	-47.851
Dakshin Dinajpur			31.62		-48.130
Maldah	59.4	63.65	87.94	7.155	38.162
Jalpaiguri	81.58	100.59	84.65	23.302	-15.847
Darjeeling	9.76	31.53	37.22	223.053	18.047
Cooch Behar	46.23	60.05	66.63	29.894	10.958
Purulia	69.23	85.27	100.23	23.169	17.544
West Bengal	1302.83	1601.46	1761.92	22.927	10.020

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

### **Barren and Un-cultivable Land:**

It includes all barren and uncultivable land like mountains, snow fields, deserts, steep sloppy area, mountains, snow covered/glacial, etc., which cannot be brought under cultivation, except at an exorbitant cost etc. is classified as uncultivable whether such land is in isolated blocks or within cultivated holdings. All such sorts are pooled to be classified under the same group.

With the rising demand of land for its various usages land under barren and un-cultivated category has lessened to a great extent. West Bengal is no exception with rate falling from -9.391 to -47.397 in the study years. Howrah had 50 hectares of land in 1980-81, which fell to 30 hectares in 1995-96 and further grew to 1000 hectares in 2007-08. This depicts that the last growth was 3233.33 from -40. Same is with Cooch Behar with growth from -87.943 to



576.471 and Nadia with -85.714 to 71.429 in the same year. Else the rest of districts show drop in area growth.

**Table 3. Barren and Uncultivated Waste (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	1.96	4.12	1.04	110.204	-74.757
Birbhum	0.65	2.59	0.28	298.462	-89.189
Bankura	5.54	2.33	1.72	-57.942	-26.180
Midnapore (E)	4.46	7.25	0.37	62.556	-94.897
Midnapore (W)			1.7		
Howrah	0.05	0.03	1	-40	3233.333
Hooghly	0.28	0.83	0.11	196.429	-86.747
24 Parganas (N)	0.31	0.84	0.44	-100	-47.619
24 Parganas (S)					
Nadia	0.49	0.07	0.12	-85.714	71.429
Murshidabad	1.11	1.5	2	35.135	33.333
Uttar Dinajpur	0.48	0.34	0.38	-29.167	11.765
Dakshin Dinajpur			0.13		-61.764
Maldah	0.28	0.01	-	-96.429	-
Jalpaiguri	1.74	8.01	3.36	360.345	-58.052
Darjeeling	-	4.69	2.38	-	-49.254
Cooch Behar	2.82	0.34	2.3	-87.943	576.471
Purulia	24.98	7.96	4.19	-68.135	-47.362
West Bengal	45.15	40.91	21.52	-9.391	-47.397

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

#### **Permanent Pastures and other Grazing Lands:**

It includes all grazing lands, permanent pastures, paddock and meadows. Village common grazing land is too included under this head. These lands are in community use.

From a growth rate of 100.285 in 1981-96 the permanent Pasture and grazing land of West Bengal fell to -13.087 in 1996-08. There has been fall in pasture land in almost all the district except in Cooch Behar had a rise of 700 (GR 96-08) from -91.667 (GR 81-96) in growth. Burdwan has a growth from -29.63 to 68.421 in the same study year. Most of the districts have less and little pastures; even in many cases there is no data to study the proper growth. In land prevailed by alluvial soil, limited pasture is nothing surprising.



**Table 4. Permanent Pasture and Other Grazing Land  
(areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	0.27	0.19	0.32	-29.630	68.421
Birbhum	0.13	0.58	0.18	346.154	-68.966
Bankura	0.21	2.59	0.7	1133.333	-72.973
Midnapore (E)	1.96	1.28	0.04	-34.694	-96.875
Midnapore (W)			1.13		
Howrah	-	0.01	-	-	-
Hooghly	-	0.03	-	-	-
24 Parganas (N)	0.3	0.05	0.05	-83.333	-
24 Parganas (S)					
Nadia	0.21	0.31	0.05	47.619	-83.871
Murshidabad	-	0.02	0.04	-	100
Uttar Dinajpur	-	0.02	0.01	-	-50
Dakshin Dinajpur			0.12		
Maldah	0.02	-	0.02	-100	-
Jalpaiguri	0.27	0.23	-	-14.815	-
Darjeeling	-	1.39	0.82	-	-41.007
Cooch Behar	0.12	0.01	0.08	-91.667	700
Purulia	-	0.32	2.55	-	696.875
West Bengal	3.51	7.03	6.11	100.285	-13.087

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

**Land under Miscellaneous Tree Crops, etc.:**

It includes all cultivable land that is not included in 'Net area sown' but is put to some agricultural uses like lands under thatching grasses, bamboo bushes. *Casuarinas* trees, and other groves for fuel, etc. which are not included under 'Orchards'. Feedlots and miscellaneous land aside agricultural areas are also included. All cultivable land is included that is neither covered in the area under agricultural crops nor under.

The state saw an increasing trend of area under this category. Increase of such area is marked in Burdwan, Bankura, Maldah, Purulia and Nadia. With the advent of social forestry and agro-forestry land has been reclaimed under this category. A drastic fall in growth has been observed in Birbhum (181.299 to -93.982), Darjeeling (132.8571 to 22.699) and Murshidabad (8.598 to -78.85) in the given time period.





**Table 5. Misc. Tree Crops and Groves (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	6.82	0.83	1.24	-87.830	49.398
Birbhum	5.08	14.29	0.86	181.299	-93.982
Bankura	8.21	1.69	2.66	-79.415	57.397
Midnapore (E)	41.12	9.86	2.78	-76.021	-71.805
Midnapore (W)			9.28		
Howrah	4.33	1.52	1.2	-64.896	-21.053
Hooghly	6.74	2.17	1.89	-67.804	-12.903
24 Parganas (N)	11	2.94	3.39	-73.273	15.306
24 Parganas (S)		4.48	2.94		-34.375
Nadia	10.66	4.34	4.76	-59.287	9.677
Murshidabad	8.49	9.22	1.95	8.598	-78.850
Uttar Dinajpur	5.35	3.03	2.4	-43.365	-20.792
Dakshin Dinajpur			2.1		
Maldah	7.38	3.97	4.87	-46.206	22.670
Jalpaiguri	6.32	8.6	6.12	36.076	-28.837
Darjeeling	0.7	1.63	2	132.857	22.699
Cooch Behar	9.74	8.04	7.71	-17.453	-4.104
Purulia	14.32	1.91	3.18	-86.662	66.492
West Bengal	146.26	78.52	61.31	-46.315	-21.918

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

#### **Cultivable Waste Land:**

It includes all land available for cultivation, whether not taken up for cultivation or once taken but not cultivated during the current years may be last five years or more in succession due to various reasons. It also includes alkaline & saline land, gullied and ravines, undulating up land, land under shifting cultivation, strip land, land covered with sand, water logged marshy land, mining/industrial waste, dried up lakes, tanks, etc., which can be recovered for economic use. Such land may be assessed or unassessed, accessible or inaccessible and may lie in isolated blocks or within cultivated holdings. The land at present may not be put to use and left as fallow or covered with shrubs and jungles etc.

The Food Grains Policy Committee in 1947 drew the attention of the Government of India in the existence of about 3.6 million hectares of weed-infested land & jungle which could be cleared & made available for cultivation for growing additional foodgrains. In 1947-48 the



Government of India through the Central Tractor Organisation (CTO) started to reclaim about 1 million hectares of waste land within a period of 5 years.

From Table 5 it is clear that land under this category have lessened indicating a drastic reclamation of land. In districts like Purulia, Cooch Behar, Jalpaiguri, Bankura and Burdwan area under this category has lessened to a visible extent. The performance of districts like Murshidabad, Birbhum, Howrah, Hooghly, north and south 24 Parganas and Darjeeling too cannot be ignored.

**Table 6. Cultivable Waste (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	51.92	8.11	7.58	-84.3798	-6.53514
Birbhum	31.93	5.98	3.88	-81.2715	-35.1171
Bankura	63.91	14.06	2.12	-78.0003	-84.9218
Midnapore (E)	55.54	4.47	0.14	-91.9517	-96.868
Midnapore (W)			5.46		
Howrah	3.37	0.24	0.21	-92.8783	-12.5
Hooghly	7.53	3.15	1.33	-58.1673	-57.7778
24 Parganas (N)	7.97	0.01	0.17	-99.8745	1600
24 Parganas (S)		1.07	0.04		-96.2617
Nadia	2.64	3.07	0.81	16.28788	-73.6156
Murshidabad	7.88	2.88	0.82	-63.4518	-71.5278
Uttar Dinajpur	8.38	0.59	0.06	-92.9594	-89.8305
Dakshin Dinajpur					
Maldah	7.12	0.2	0.09	-97.191	-55
Jalpaiguri	32.45	0.31	0.06	-99.0447	-80.6452
Darjeeling	3.95	1.83	1.8	-53.6709	-1.63934
Cooch Behar	11.82	2.07	0.96	-82.4873	-53.6232
Purulia	81.69	10.11	7.32	-87.6239	-27.5964
West Bengal	378.1	58.15	32.85	-84.6205	-43.5082

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

#### **Current Fallows:**

It includes cropped area, which are kept fallow for the current year i.e. land not been under cultivation temporarily for a period of not less than one year and not more than five years or land under seedlings or land prepared for sugar cane. If a seeding area is not cropped in the same year again, then it may be included as current fallow land.

With the rising pressure on agricultural land, horizontal expansion has become necessary as even multi-cropping does not stand enough. Hence current fallow lands are pooled for agricultural purposes. But land for seedling, nursery are left, that is why a decreasing tend of



reclamation has been noticed. Hooghly, Jalpaiguri and Birbhum has shown a drastic rise in growth from -9.4395 (GR 81-96) to 301.954 (GR 96-08), 83.486 (GR 81-96) to 270.25 (GR 96-08) and -97.345 (GR 81-96) to 1033.333 (GR 96-08) respectively. Nadia, Murshidabad, Howrah, Bankura, Cooch Behar and Purulia had a fall in the growth rate of land during the study period.

**Table 7. Current Fallow land (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	12.72	8.48	7.4	-33.333	-12.736
Birbhum	3.39	3.07	12.34	-9.440	301.954
Bankura	9.8	20.93	37.48	113.571	79.073
Midnapore (E)	17.37	13.17	2.75	-24.180	-79.119
Midnapore (W)			18.74		
Howrah	0.71	10.21	4.06	1338.028	-60.235
Hooghly	1.13	0.03	0.34	-97.345	1033.333
24 Parganas (N)	1.01	10.67	1.82	956.436	-82.943
24 Parganas (S)		4.68	8.17		74.5727
Nadia	1.22	11.78	5.83	865.574	-50.509
Murshidabad	2.69	3.06	0.33	13.7545	-89.216
Uttar Dinajpur	1.98	11.25	0.3	468.182	-97.333
Dakshin Dinajpur			2.22		
Maldah	0.93	17.63	65.63	1795.699	272.263
Jalpaiguri	2.18	4	14.81	83.486	270.25
Darjeeling	0.37	9.77	12.15	2540.541	24.360
Cooch Behar	0.19	2.88	1.45	1415.789	-49.653
Purulia	26.83	87.9	114.96	227.618	30.785
West Bengal	82.52	219.78	310.78	166.335	41.405

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

#### **Fallow Lands other than Current Fallows:**

It includes all lands, which were taken up for cultivation but are temporarily out of cultivation for a period of not less than one year and not more than five years. This comprises cropped areas which are kept fallow during the current year only. If the land normally cultivated is made temporarily fallow, the fallow season land is included at that point of time.

The trend of fallow land other than current fallow land has decreased to some extent between the two study years. The state growth is constantly decreasing from -48.165 to -



35.341. Noteworthy growth has only been seen in 24 Parganas (combined) (-96.443 to 100) and Purulia (-74.199 to 20.23) in the given years.

**Table 8. Fallow Land other than Current Fallow Land (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	2.67	3.52	1.96	31.835	-44.318
Birbhum	3.45	3.5	2.37	1.449	-32.286
Bankura	9.46	4.27	1.03	-54.863	-75.878
Midnapore (E)	14.67	7.01	0.19	-52.215	-97.290
Midnapore (W)			4.1		
Howrah	0.92	0.4	0.24	-56.522	-40
Hooghly	0.69	0.27	0.1	-60.870	-62.963
24 Parganas (N)	2.53	0.09	0.18	-96.443	100
24 Parganas (S)					
Nadia	1.55	0.79	0.27	-49.032	-65.823
Murshidabad	4.4	1.29	0.01	-70.6818	-99.225
Uttar Dinajpur	0.45	0.23	0.04	-48.8889	-82.6087
Dakshin Dinajpur			0.22		
Maldah	0.12	0.4	0.33	233.3333	-17.5
Jalpaiguri	1.35	0.45	0.05	-66.667	-88.889
Darjeeling	0.08	4.2	3.82	5150	-9.0477
Cooch Behar	0.29	0.32	0.04	10.345	-87.5
Purulia	16.86	4.35	5.23	-74.199	20.230
West Bengal	60.21	31.21	20.18	-48.165	-35.341

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

**Net area Sown:**

It includes the total area sown with crops and orchards cultivated more than once in the same year is counted only once. It is the land used for growing crops on a regular and cyclic basis which is permanent in the sense.

Pulling more and more land under agriculture is quite impossible where population is unlimited and land is limited. The amount of net area is shrinking due to population pressure, but the number of times net area has been used is increasing. In Purulia land under net area sown has increased from 11.958 (GR 81-96) to 850.599 (GR 96-08). This is really an exception where the other three districts i.e. Jalpaiguri (from 1.209 4.087),



Birbhum (from -8.872 to 2.253) and 24 Parganas (N) (from -42.594[combined] to 1.226) have only a limited growth rate. A drastic downfall has been notice in Maldah from -0.13 to -25.818. The rest districts have slight variations with all negative growths. Even the state average data states that there has been retarding growth from -0.839 to -3.042.

**Table 9. Net Area Shown (areas in 1000 hectares) in West Bengal**

District	1980-81	1995-96	2007-08	GR(81-96)	GR(96-08)
Burdwan	471.12	465.69	452.04	-1.153	-2.931
Birbhum	341.85	311.52	318.54	-8.872	2.253
Bankura	379.51	365.66	345.39	-3.649	-5.543
Midnapore (E)	861.96	844.65	292.73	-2.008	-65.343
Midnapore (W)			558.7		
Howrah	96.74	85.6	80.73	-11.515	-5.689
Hooghly	234.74	227.84	219.91	-2.939	-3.481
24 Parganas (N)	693.43	256.08	259.22	-42.594	1.226
24 Parganas (S)		398.07	379.29		-4.718
Nadia	320.34	297.8	289.25	-7.03627	-2.87105
Murshidabad	426.8	407.19	398.76	-4.59466	-2.07029
Uttar Dinajpur	468.39	453.96	276.8	-3.081	-39.026
Dakshin Dinajpur			184.67		
Maldah	283.89	283.52	210.32	-0.130	-25.818
Jalpaiguri	317.67	321.51	334.65	1.209	4.087
Darjeeling	45.76	145.83	140.7	218.684	-3.518
Cooch Behar	264.44	259.01	248.14	-2.053	-4.197
Purulia	301.89	337.99	3212.93	11.958	850.599
West Bengal	5508.15	5461.92	5295.77	-0.839	-3.042

Source: Computed by the author from Statistical Abstract 2008, Bureau of Applied Economics and Statistics, Government of West Bengal.

## CONCLUSION

Agricultural planning according to the needs and area available can be to some extent aided by Land use classification. Though the nine-fold classification could not get universal acceptance because of problem in collecting data, it gives a rough view of land used in varying aspects. Varying land use in different time periods shows the various aspects of spatial distribution and term changes in due course. West Bengal is no such exception. Increasing population and rise pressure of density are inversely proportionate to the limited land resource. Definition, terminology, or nomenclature has changed with the changing time; hence, the change in area is also clear. Such is the case with forest various definitions



of it had direct impact on actual available land. Rural sites and urban sites are changing separately. In urban areas where land is more included to land put to non-agricultural uses category, due to continuous growth of area for buildings, rails and roads purposes. In rural sites land under fallow and current fallows are to some extent converted to net area shown and land under miscellaneous tree crops and groves. Districts like Purulia, Birbhum, Hooghly, Howrah, and Jalpaiguri had undergone sequential changes during the study time. Districts like 24 Parganas, Coochbehar, Maldah, has also undergone selective changes. Barren and uncultivated land that cannot be brought under cultivation too is lessened in the state except Howrah Nadia and Cooch Behar which had a noticeable growth. In modern day pastureland is lessened and substituted by fallow or cultivated land. As the land lacks ownership or is for community use almost all the districts except Burdwan and Cooch Behar had negative growth, which directly implied on the state average. The net area under cultivation may have decreased but the area under crops has increased. This due to the present trend of multi cropping system. Also due to the use of an area for seedling and nursery purposes a potential area remains unproductive, thus sometimes included in fallow or current fallow land.

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