SPATIAL VARIATIONS IN LEVELS OF DEVELOPMENT AND VARIATIONS IN AGRICULTURAL PRODUCTION IN ANDHRA PRADESH

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF PHILOSOPHY

BY

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I certify that the dissertation entitled "Spatial Variations in Levels of Development and Variations in Agricultural Production in Andhra Pradesh" submitted by Rajababu Kondaveeti, in fulfilment of six credits out of the total requirements of twentyfour credits for the degree of Master of Philosophy(M.Phil) of the University, is to the best of my knowledge, a bonafide work and may be placed before the examiners for evaluation.

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P R E F A C E

This dissertation is the part of my Ph.D. topic entitled, "Regional Development in Andhra Pradesh". As a primary step in achieving the above goal, I was advised to findout the areas, where the intensive planning is nece necessary. In this work I have identified the backward areas and existing levels of development in Andhra Pradesh. This is a taluk wise study and will be helpful in formulating the Regional and sub-regional plans.

The first chapter deals with the general description of the state and its economy.

The second chapter contains the need for the present study and methodology alongwith data base.

The third chapter gives the results of the levels of development in the state.

The fourth chapter explains the variations in agricultural production.

The fifth chapter contains summary and conclusion of the dissertation.

In the Appendix, the composite index of each taluk is given.

A C K N O W L E D G E M E N T S

I owe a deep debt of gratitude to our well learned Professor G.S. Bhalla, Chairman, Centre for the Study of Regional Development, who has suggested this particular topic for my M.Phil. dissertation. I am extremly thankful to him who despite his heavy responsibilities and work, has kindly given his valuable guidance and suggestions. He was always eager to help me and was patient althrough in going through this work. I cannot adequately thank him for all that he has done.

I am deeply indebted to Shri A. Kundu and Dr. H.S. Sidhu, who gave their valuable suggestions to complete this dissertation.

I express my gratitude to Dr. L.S. Bhat, Consultant [redacted] Professor, in our department, who helped me with suggestions in bringing out the third chapter of this Dissertation.

My thanks are also due to my colleagues, Mr. C.S. Prasad, Mr. Jayanath Rao, Mr. G.K. Naidu, and to Mrs. Suvarchala, who helped me in this work.

Finally, I am thankful to one and all, who helped me in bringing out this endeavour.

(K. RAJABABU)

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CHAPTER -I

I N T R O D U C T I O N

I.1 Location and Physical Features of the State:

The State of Andhra Pradesh comprising 11 districts of former Andhra State and 9 Telugu speaking districts of former Hyderabad State was formed on the 1st Nov, 1956 as a result of the States' reorganisation. In 1970, the 21st district of Prakasam was carved out from the existing districts with parts of Guntur, Nellore and Kurnool. The district was named in memory of Andhra Kesari Sri T. Prakasam Pantulu. The state of Andhra Pradesh is located between latitudes 12° 38' and 19° 55' north and longitudes 16° 45' and 84° 45' east. It actually lies at the meeting point of north and south India. The state is bounded on the north by the states of Orissa and Madhya Pradesh. On the west by Maharashtra and Karnataka, on the south by the Tamilnadu and on the east by the Bay of Bengal. It's coastline extends over 600 miles from Srikukulam in the north and to Nellore in the south.[1]

The state extends over an area of 2.77 lakh square kilometres. The population of the state according to 1971 census is 435 lakhs and it is the fifth largest state in the

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1. "World Agricultural Census". Andhra Pradesh.

country. The state's population is more than two times that of Canada and Yugoslavia and four times that of Belgium, Australia and Srilanka. Andhra Pradesh is bigger than Sri-Lanka, Australia, Belgium, Czechoslavekia and Switzerland, both in the area and population.

Geographically the state can be demarcated into 3 natural regions, viz; (1) Coastal Plains (2) Eastern Ghats and (3) The Western Peneplains.

The coastal plains extended from the northern most point in Srikakulam district to the southern most point in Nellore district. The northern tip of this plain is narrow being hardly 12 feet wide lying between the Meghadrigiri hill situated in this area and the sea.

To the south of Visakhapatnam district, this coastal plain area gets greatly distributed by several out liers of the Eastern ghats, some of which almost reach the sea. The area is dotted several isolated hills. To the south of Visakhapatnam, the Yesoda Ridge jets out in the sea to form a bold and imposing cliff called the "Dolphin's Nose". The broad central plain is made up of East and west godavari, Krishna and Guntur districts.

The Eastern ghats are a chain of broken hills, bordering the peneplained plateau in the interior. To the north of Godavari, the Eastern Ghats widen and reach an elevation of 2000 to 4000 feet above the sea level. The Godavari river pierces through the southern edge of this hill region through the papi hills forming a very picturesque gorge.

The rampart of the Eastern hills is completely breached for hundred miles between Godavari and Krishna rivers. South of the Krishna again a few hill ranges appear. They form the southern section of the eastern hills and cover the Nallamalai, Erramalai, Seshchalam and Palkonda range of hills. This southern region forms an interesting geographical formation, i.e., a great cresent, the heart of it being the wide Nandyal valley drained by Kunderu river. The west of this trough is marked off from the Deccan Pleteau by the out facing scraps of the Erramalais, Seshchalam and Palakonda hills. The Eastern lim of the Kunderu basin is formed by the parallel Nallamalais and Velikondas having an attitude of 750 to 900 meters.

The rest of the state forming a large wide belt that covers the western part consists of the Deccan aneplains developed on the Archaean gneisses. All the Telangana districts Kurnool (except Nallamalai portion) and Anantpur districts of Rayalaseema fall under this region. The paneplain area generally attains a attitude of 1600 to 2000 feet above mean see level.

Geology: Andhra Pradesh contains some of the oldest geological formations. The Arcnaean gneisses are the oldest types of rock formations which dominate the entire state. Almost the whole of Telangana, Western and Southern Rayalaseema, portions of Kurnool and Anantpur districts and almost the entire Chittoor district are covered by this type which also occurs in parts of Srikakulam and Visakhapatnam districts and the interior taluks of Nellore district. These formations yield unlimited quantities of very high grade building stones in many parts of Hyderabad, Mahbubnagar, Karimnagar, Khammam, Nalgonda, Warangal, Nellore, Guntur and Kurnool districts.

Charnockites and Khondalities formations lie in Salur Taluk of Srikakulam district leaving the portion occupied by gneisses and northern half of the west godavari district. These extend to parts of polavoram Taluk in west Godavari district and Bhadrachalam in Khammam district. The Khondalites in the northern parts of Krishna district contain chromite deposites. Deposites of bauxite and iron ores workable on a commercial are also found in these rocks.

The Dharwar formations which are supposed to be more than 2000 million years old occur particularly in

the interior taluks of Nellore district, Uravakonda and Dharmavaram taluks in Anantpur district in minor patches of Nakirtnal, Atmakur and Gadwal taluks of Mahbubnagar district. These formations can be described as the store house of the useful minerals. The mica deposites in Nellore district and the copper deposits in Anantpur district are associated with these formations. Theyattain in Anantpur district due to occurence of cold veins in them.

Dharwars are followed by flat depping beds of the Cuddaph and Kurnool groups known as the puranas. These are found in a large cresent shaped basin in Cuddaph, Kurnool and Anantpur districts, and extending to portions of Achampet taluk in Mahbubnagar district, Palnad taluk in Guntur district and Huzurnagar taluk in Nalgonda district. The Cuddapn formations in the Telangana comprises parts of Narasampet taluk in Warangal district, Yellandu, Bhoorgnampadu and Kothagudem taluks in Khammam district and the northern most parts of Adilabad and Asifabad taluks in Adilabad district. These formations are associated with deposites of limestones, baryets, asbestos, steatite and otners. Large deposites of iron ore are also found in the sand stones of this group in Khammam and Kurnool districts. The Cuddaph slabs and the slate stones of Markapur taluk in Kurnool district also belong to this group.

Overlying these rocks in part there is a long strip of Gondwana formations in the Pranahita Godavari valley. These sand stones and mud stones are considered to be formed in long river valley and contain invaluable coal deposits in the state, which are mined at Kothagudem, Singareni and Yellandu in Khammam district and Tandur in Hyderabad district.

The Deccan trap comes next in the geological succession and is found in the north western and western parts of Telangana region and mostly in the areas adjoining Maharashtra and Karnataka states. The rock of this type yields material used in making grinding and crushing stones.

Tertiary formations are found in the east and west Godavari district and in a very small area in Nuzvidu taluk of Krishna district and parts of Rajamundry and Peddapuram taluks in East Godavari district and parts of Eluru, Tadepalligudem and Kovvur in West Godavari district contain tertiary formation clays useful for ceramic industry.

Laterite formations occur in parts of Narayan Khed and Zahirabad taluks in Medak district. Kandukur, Kavali, Kovvur, Gundur and Sullurpet taluks in Nellore district.

These extend to a small portion towards the south Kalahasti taluk in Chittoor district. Adilabad taluk in north and Srungavarapukota taluk in Visakhapatnam district, in the north east also contain small patches of laterite formations. Laterite is commonly used for minor construction and as a road metal.

Soils: The following tables shows the soils which are found in the State.

TABLE - I

S.No.	Name of the District	Predominant soil type	Soil rating index[1]
1	2	3	4
1.	Srikakulam	Sandy loams	68.4
2.	Visakhapatnam	Red Loamy	68.4
3.	East Godavari	"	77.0
4.	West Godavari	Sandy Loamy	77.0
5.	Krishna	Black Cotton	68.4
6.	Guntur	"	54.0
7.	Prakasam	Red Loamy	64.4 [2]
8.	Nellore	"	68.4
9.	Kurnool	Black Clay	77.0
10.	Anantpur	Red Loamy	77.0

1. K.B. Shome and S.P. Rayachaudari, F.N.I. "Rating of Soils in India", National Institute of Sciences of India vol.26,A (Supple.I)1960.

2. Provisional: Computed with the help of soil rating Index formula.

Contd.. Table 1

(1)	(2)	(3)	(4)
11.	Cuddaph	Red Loamy	77.0
12.	Chittor	"	51.0
13.	Hyderabad	Sandy Loams	68.9
14.	Mahbubnagar	"	68.6
15.	Nizamabad	Black Soil	65.0
16.	Medak	"	65.0
17.	Karimnagar	Sandy loams	68.6
18.	Warangal	"	77.0
19.	Khammam	"	68.6
20.	Nalgonda	"	60.8
21.	Adilabad	Black soil	65.0

In the above table, Chittoor district is showing very low soil rating index (51.0) as against, east and west Godavari, Kurnool, Anantpur, Cuddaph and Warangal districts are showing a high rate (77). The dry districts Kurnool, Anantpur, Cuddaph and Warangal are showing high soil rating index than the irrigated districts in the state.

Agriculture Climate: Broadly speaking, agriculture in the state is spread over three homogeneous regions, viz; coastal Andhra, Rayalaseema and Telangana.

The cropping pattern of coastal region has adjusted itself to the irrigation facilities, soils and rainfall. A long duration single paddy crop is raised in the alluvial soils of the delta where canal water is made available for about 8 months in a year. Pulses, green grass, sunnemp and groundnut are raised in most of the areas after the paddy crop has been harvested.

Well irrigation is prevalent in the non deltatic areas where intensive cultivation is widely practised. Cash crops like Chillies, Turmeric, Banana, etc., which require less water, are also grown in these areas. Paddy is grown mostly in rotation with other crops. Dry farming is practised in the remaining areas. The cropping pattern varies widely in this tract depending on the rainfall, conditions of soil and irrigation.

The Rayalaseema region lies almost at an attitude of 1000 to 2000 feet above the sea level. This typical dry tract of Andhra Pradesh is situated in an unfavourable

natural zone, and is susceptible to chronic drought conditions. Not only is the rainfall meagre but it fluctuates widely from one year to the other. The major irrigation source in this area is the Kurnool, Cuddaph canal. The cropping pattern of this region varies with the soils, climate and facilities available for irrigation. In almost all the wet area, only one long duration crop is grown by the cultivators. Except a few tracts, the entire Rayalaseema is a dry tract. Jowar, Korra, Cotton, and Chillies are the principle crops.

Consistant with the rough topography of Telangana, there are innumerable streamlets and nalas which are used for storing rain water for irrigational purposes by er. cting eartnern dams. Nizamsagar is the only major irrigation project and many medium projects were taken up during first and second plans to augment the irrigation potential in the area. The construction of the Nagarjunasagar Dam has helped in bringing some more ayacut under irrigation in the district of Nalgonda. More areas in the districts of Nizamabad, Adilabad, and Karimnagar will be brought under irrigation with the completion of the Pochampad project. Jowar, Cotton, Groundnut are the principle crops in this region .

I.2. Territorial Areas and Administrative Boundaries in the State and Distribution Settlements.

Andhra Pradesh is divided into 21 districts and has subdivided into 195 taluks (tehsils).

The following table shows the districts and taluks in the state at the 1971 census, with area in Square Kilometres and population density per square kilometer:

TABLE NO.2.

Administrative divisions of Andhra Pradesh, Population per square Kilometer and Population growth rate during 1961-71.

S.No.	State/District/ Taluk	Area in Sq. Kms	Population per sq. km.	Population growth rate	Code No. of Taluk
1	2	3	4	5	6
	ANDHRA PRADESH	276,754.0	157		
	Srikakulam District	9,743.0	266		
1.	Srikakulam	588.7	437	1.80	1
2.	Cheepuruppale	1,195.8	302	1.35	2
3.	Bobbili	898.4	314	-0.16	3
4.	Salur	985.9	162	-0.27	4

1	3	4	5	6
5. Parvatipuram	1528.1	164	1.46	4
6. Palakonda	1270.0	287	1.24	6
7. Pathapatnam	1199.2	218	1.54	7
8. Narasannapeta	518.0	349	0.89	8
9. Tekkuli	704.5	301	1.16	9
10. Sompeta	549.1	293	1.41	10
11. Lchchapuram	225.3	440	37.90	11
. Vishakhapatnam	13739.0	204		
1. Vishakhapatnam	508.6	927	5.33	12
2. Yellamanchili	896.7	315	1.40	13
3. Anakapalle	787.4	354	8.85	14
4. Narasapatnam	1336.4	201	1.15	15
5. Chantapalle	2361.8	29	-7.05	16
6. Paderu	3105.4	59	31.67	17
7. Chodavaram	1538.5	213	14.92	18
8. Srungavarapukota	1054.1	226	-2.02	19
9. Gajapathinagaram	664.1	216	-3.12	20
10. Vijayanagaram	675.4	405	-1.22	21
11. Bheemunipatnam	872.8	310	1.09	22
East Godavarinam District.	10940 .0	282		
1. Kakindda	994.6	486	2.00	23

1	3	4	5	6
2. Amalapuram	558.1	472	-2.62	24
3. Mummidivaram	356.2	430	0.00	25
4. Razole	455.8	474	1.87	26
5. Kothapeta	297.9	669	2.03	27
6. Alamur	311.4	557	0.00	28
7. Ramachandrapuram	437.1	611	-2.93	29
8. Rajamundry	979.0	475	2.16	30
9. Rampachodavaram	1838.9	30	1.15	31
10. Yellavaram	2201.5	38	3.17	32
11. Peddapuram	978.2	231	1.67	33
12. Prathipadu	582.7	273	1.59	34
13. Tuni	474.0	324	1.85	35
14. Pithapuram	355.6	531	1.29	36
West Godavari District:	7780.0	305		
1. Eluru	1320.6	281	1.88	37
2. Chinatalapudi	1083.4	138	2.24	38
3. Polavaram	1417.3	96	1.49	39
4. Kovvur	1015.6	299	2.29	40
5. Tadepalligudem	929.8	330	2.28	41
6. Tanuku	555.0	674	1.84	42
7. Narsapur	722.4	547	1.73	43

1	2	3	4	5	6
8.	Bheemavaram	751.3	451	2.26	44
	Krishna District	8734.0	286		
1.	Bandar	887.9	350	1.64	45
2.	Diwi	1204.1	233	1.67	46
3.	Gannavaram	705.5	331	0.64	47
4.	Vijayawada	1187.5	509	3.12	48
5.	Nandigama	1018.9	200	2.14	49
6.	Jaggayyapet	385.9	206	2.22	50
7.	Tiruvur	1135.7	164	2.39	51
8.	Nuzvid	868.2	177	2.05	52
9.	Gudivada	594.9	426	1.27	53
10.	Kaikalur	730.6	257	2.26	54
	Guntur District	11377.0	250		
1.	Guntur	1509.8	487	2.70	55
2.	Tenali	845.6	529	1.13	56
3.	Repalle	790.7	336	1.30	57
4.	Bapatla	917.3	326	-3.85	58
5.	Narasaraopet	1211.1	257	-0.32	59
6.	Vinukonda	1668 .0	92	2.29	60
7.	Palnad	2696.2	111	3.19	61
8.	Sattenapalle	1786.8	186	3.58	62

1	2	3	4	5	6
	Prakasam District	17620.0	109		
1.	Ongole	1341.3	232	-1.99	63
2.	Kandukur	2022.8	136	1.80	64
3.	Kanigiri	2590.0	70	0.64	65
4.	Giddalur	2713.5	74	1.12	66
5.	Markapur	3537.2	49	1.16	67
6.	Podili	1460.8	78	0.91	68
7.	Darsi	1530.2	93	1.29	69
8.	Addanki	1426.3	179	0.00	70
9.	Chirala	782.2	339	0.00	71
	Nellore District	13058.0	123		
1.	Nellore	1305.4	278	1.96	72
2.	Gudur	1199.1	145	2.29	73
3.	Sullurpet	1476.9	91	1.91	74
4.	Venkatagiri	1105.9	102	1.94	75
5.	Rapur	1538.5	73	0.67	76
6.	Atmakur	1655.0	96	0.95	77
7.	Udayagiri	2255.9	61	0.90	78
8.	Kavali	1471.1	122	1.43	79
9.	Kovur	997.2	238	1.10	80

1	2	3	4	5	6
	Chittoor District	15763.0	145		
1.	Chittoor	1011.1	268	1.83	81
2.	Bangarupalem	812.2	163	1.88	82
3.	Palmaner	1060.9	128	2.25	83
4.	Kuppam	756.3	150	1.73	84
5.	Punganur	1723.9	117	1.93	85
6.	Madanapalle	2171.5	131	2.49	86
7.	Vayalpad	2051.3	124	1.87	87
8..	Chandragiri	1409.2	192	3.52	88
9.	Srikalahasti	1585.9	129	2.32	89
10.	Satyavedu	1002.9	152	7.34	90
11.	Puttur	1557.9	169	0.70	91
	Cuddapah District	15356.0	103		
1.	Cuddapah	1320.9	169	2.46	92
2.	Rayachoti	2856.8	92	1.96	93
3.	Pulivendla	1473.7	101	2.06	94
4.	Kamalapuram	784.8	121	1.36	95
5.	Jammalamadugu	1587.7	99	1.08	96
6.	Proddutur	1130.5	196	2.48	97
7.	Badvel	1960.6	72	1.41	98
8.	Sidhout	1569.5	61	1.29	99
9.	Rajampet	2688.4	86	1.13	100

1	2	3	4	5	6
	Anantapur District	19125.0	111		
1.	Anantapur	2398.3	120	2.99	101
2.	Kalyandrug	2126.4	76	1.49	102
3.	Rayadrug	1766.4	96	1.83	103
4.	Uravakonda	1070.0	103	1.14	104
5.	Gooty	1250.7	156	2.23	105
6.	Tadpatri	1660.2	110	1.83	106
7.	Dharmavaram	1906.2	91	2.47	107
8.	Kadiri	2996.6	102	2.14	108
9.	Penukonda	1766.4	94	1.75	109
10.	Hindupur	1113.7	195	1.89	110
11.	Madakasira	1080.0	137	0.91	111
	Kurnool District	18799.0	105		
1.	Kurnool	1659.4	202	2.81	112
2.	Nandikotkur	957.0	124	3.16	113
3.	Atmakur	1872.1	67	4.90	114
4.	Nandyal	1720.8	116	3.27	115
5.	Allagadda	1571.4	101	3.11	116
6.	Koilkuntla	1461.3	90	2.54	117
7.	Banganapalle	685.8	101	0.25	118
8.	Dhone	2166.5	91	2.59	119

1	2	3	4	5	6
9.	Pattikonda	1935.7	95	2.24	120
10.	Alur	1588.7	88	0.46	121
11.	Adoni	1981.6	163	2.29	122
	Mahbubnagar District	18419.0	105		
1.	Mahbubnagar	1191.9	187	2.36	123
2.	Shadnagar	1262.6	131	1.52	124
3.	Kalvakurthi	2349.2	85	1.42	125
4.	Achampet	2917.4	38	3.20	126
5.	Kollapur	1712.3	87	2.35	127
6.	Nagarkurnool	1453.8	122	1.73	128
7.	Wanaparthi	1387.4	119	1.99	129
8.	Alampur	1127.2	109	2.66	130
9.	Gadwal	1341.1	121	3.67	131
10.	Atmakur	1156.9	107	2.13	132
11.	Makthal	1379.1	115	1.65	133
12.	Kodangal	1193.5	146	2.07	134
	Hyderabad District	7707.0	362		
1.	Hyderabad	302.5	5874	4.42	135
2.	Medchal	771.7	133	1.74	136
3.	Hyderabad East	675.6	172	3.94	137
4.	Ibrahimpatnam	1359.2	108	2.08	138
5.	Hyderabad West	486.0	238	4.88	139

1	2	3	4	5	6
6.	Chevella	961.9	122	1. 65	140
7.	Pargi	1009.6	131	2.31	141
8.	Tandur	961.4	125	2.15	142
9.	Vicarabad	1224.8	134	2.16	143
	Medak District	9685.0	152		
1.	Sangareddy	1195.9	171	3.18	144
2.	Zahirabad	1251.5	151	2.42	145
3.	Narayankhad	1006.6	121	2.67	146
4.	Andole	1255.1	156	1.63	147
5.	Narsapur	1077.7	129	1.96	148
6.	Medak	1200.7	167	1.92	149
7.	Gajwel	1171.7	139	1.87	150
8.	Siddipet	1416.7	178	1.28	151
	Nizamabad District	7969.0	165		
1.	Nizamabad	1409.0	216	3.44	152
2.	Armur	1963.2	152	3.46	153
3.	Kamareddy	1162.9	173	2.89	154
4.	Yellareddy	943.3	109	2.49	155
5.	Banswada	1140.2	109	2.03	156
6.	Mudnur	600.9	146	1.91	157
7.	Bodhan	795.6	243	2.27	158

1	2	3	4	5	6
	Adilabad District	16133.0	80		
1.	Adilabad	1503.5	100	2.77	159
2.	Utnur	1881.4	50	7.03	160
3.	Arifabad	2159.8	65	1.66	161
4.	Sirpur	2216.3	79	3.05	162
5.	Chinnur	1783.4	63	1.73	163
6.	Lakshettipet	1901.3	92	4.17	164
7.	Khanapur	810.7	82	1.89	165
8.	Boath	1437.2	62	2.77	166
9.	Nirmal	1467.0	117	2.53	167
10.	Mudhol	1043.2	110	1.43	168
	Karimnagar District	11824.0	166		
1.	Karimnagar	1864.8	209	1.63	169
2.	Sirsilla	1869.7	162	1.69	170
3.	Metapalli	953.1	207	3.74	171
4.	Jagitial	1755.5	145	1.87	172
5.	Peddapalle	1830.1	194	2.79	173

1	2	3	4	5	6
6.	Manthani	2161.4	55	2.12	174
7.	Huzurabad	1450.4	218	1.76	175
	Warangal District	12875.0	145		
1.	Warangal	2099.2	310	2.06	176
2.	Parkal	1360.0	157	2.39	177
3.	Mulug	3201.7	41	4.05	178
4.	Narasampatnam	2024.9	101	3.91	179
5.	Mahbubabad	1754.5	183	1.74	180
6.	Janagaon	2395.2	146	0.96	181
	Khammam District	15866.0	86		
1.	Khammam	1757.1	4201	2.82	182
2.	Yellandu	3315.2	69	2.99	183
3.	Bhoorgampadu	2056.3	56	3.62	184
4.	Nugur	1616.2	33	2.82	185
5.	Bhadrachalam	2407.7	48	2.80	186
6.	Kothagudem	2779.7	83	3.05	187
7.	Madhira	1877.2	146	2.85	188

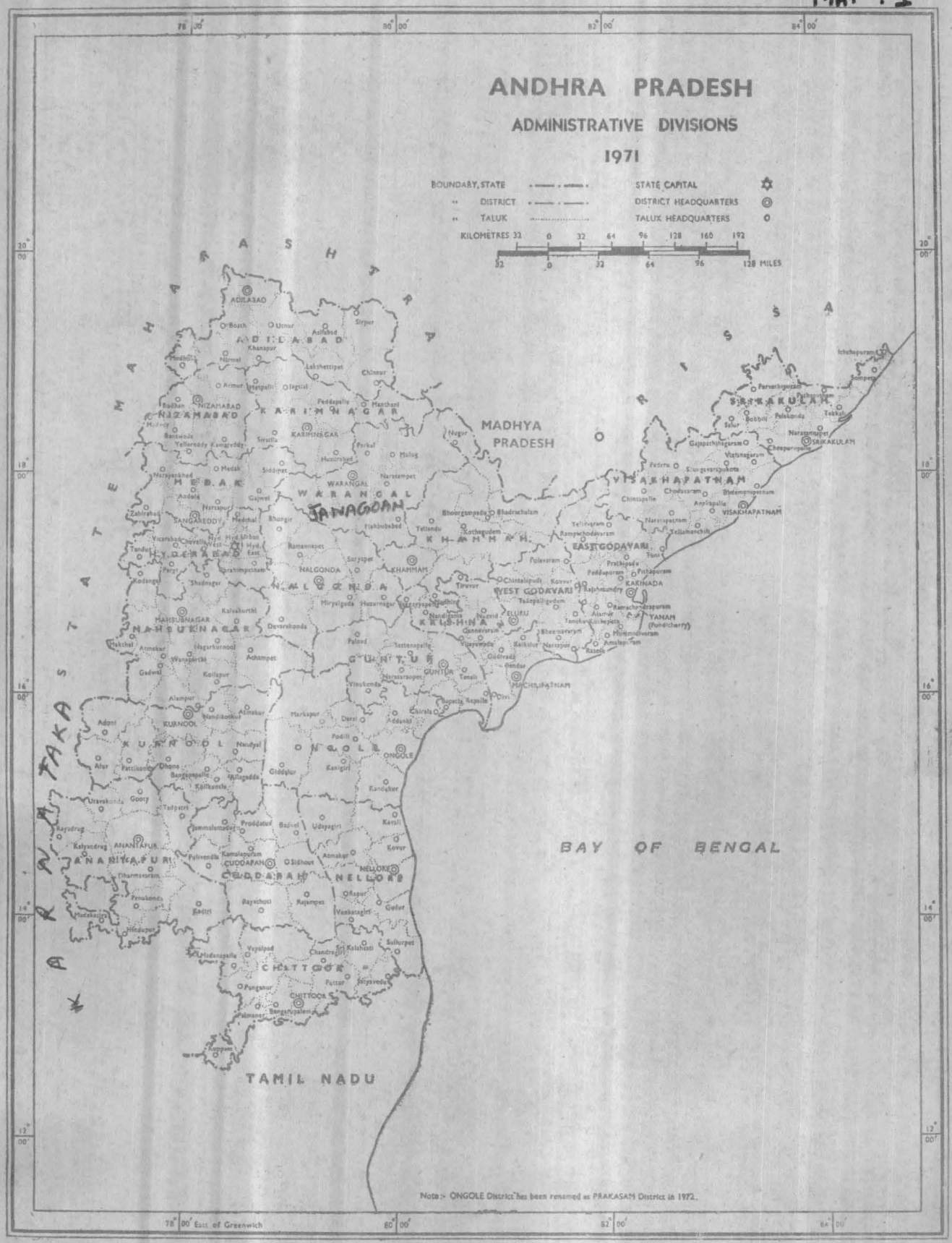
1	2	3	4	5	6
	Nalgonda District	14242.0	128		
1.	Nalgonda	2469.9	138	1.52	189
2.	Suryapet	2028.0	142	1.52	190
3.	Huzur Nagar	1710.4	153	3.16	191
4.	Miryalaguda	1944.3	120	0.45	192
5.	Devarakonda	2702.1	85	1.41	193
6.	Bhongir	1591.3	153	1.41	194
7.	Ramampet	1772.1	127	1.58	196

The following map shows the administrative boundaries of districts and Taluks, at the 1971 Census.

Out of all the districts Warangal is having six taluks as against fourteen taluks in East Godavari district. Anantpur district is having largest area (19125 square kilo-metres) and Hyderabad district is having comparatively small area (7707 square kilometres).

Markapur taluk in prakasam district is the largest in area among all the taluks in the state (35372 sq. kms.). Kothapeta taluk in East Godavari district is having smallest area (297.9 sq. km.) among all the districts.

MAP : 1



Source :- General population Tables. Part II-A
Census of India - 1971.

There are , 27,428 settlement throughout the state. They can be subdivided in a number of categories on the basis of their population size and their functions. The following table shows the settlement pattern in Andhra Pradesh as per 1971 census.

TABLE- 3.

Distribution of Settlements and Population in Andhra Pradesh as per 1971 Census.

Sl.No.	Type of Settlements	No. of Settlements	% to total	Population in (million persons)	% to total
1.	Metropolitin	1	0.004	1.8	3.93
2.	Supra Urban	12	0.04	2.23	5.145
3.	Urban	76	0.28	2.85	6.58
4.	Semi-Urban	198	0.72	2.43	5.61
5.	Rural	11903	43.40	28.02	64.69
6.	Sub rural	10949	39.92	5.37	12.40
7.	Tribal	4289	15.64	0.86	1.64
	Total	27428	100	43.47	100

Note: (1) The figures are compiled on the aribitrary basis according to the size of population, villages, towns and cities furnished in the 1971 census of Andhra Pradesh.

(2) The Class-I cities with population between one lakh and one million are designated as 'Supra-Urban' in order to distinguish from urban and metropolitan areas.

(3) The small, medium and large towns in the population range of 20,000 and 1,00,000 are designated as urban settlements.

(4) The very small towns with less than 20,000 persons and the very large and special size villages with more than 10,000 persons are classified as semi-urban as they represent settlements in the promotional stages of urbanisation.

(5) Villages with more than 10,000 persons are classified as rural.

(6) Villages with less than 10,000 persons are classified as sub-rural, as their minute size is uneconomic to provide essential rural amenities and services.

(7) The villages with agency areas are specifically classified as tribal settlements irrespective of their size.

Source: General population tables, part II-A, Census of India 1971, Andhra Pradesh.

From the table No. 3, we observe that nearly 98 per cent of the total settlements are rural settlements. This shows the predominant rural situation in Andhra Pradesh.

Nearly 78% of the total population are rural. The table shows the uneven distribution of settlements in the state. Almost the urban population is concentrated in a few settlements (1.04 percent). This shows the weak strength of existing nodal centres in the state.

Tribal population constitutes only 0.84% in the total population living, 4,289 rural settlements. These settlements are more in, Srikakulam, Viskapatnam and Khammam districts.

I.3 Regionalisation: The state of Andhra Pradesh can safely be divided into at least three natural and homogeneous regions. As we have already discussed about the physical feactures of the state in (ibid I.1), the regions may be safely called as

1. Coastal Andhra region
2. Rayalaseema region
3. Telangana region

Coastal Andhra region consists of eight districts. Most of this region is irrigated with Krishna and Godauari rivers system. This also a fertile land for the growth of foodgrains and sugarcane. The agricultural economy of each region will be discussed later on.

Rayalaseema region consists of four districts. These are dry areas with high soilrating index. Even though the land is potentially suited to grow foodgrains due to lack of water, the area is often prone to serious drought. Rainfall is comparatively lower than in other districts. Most of the parts

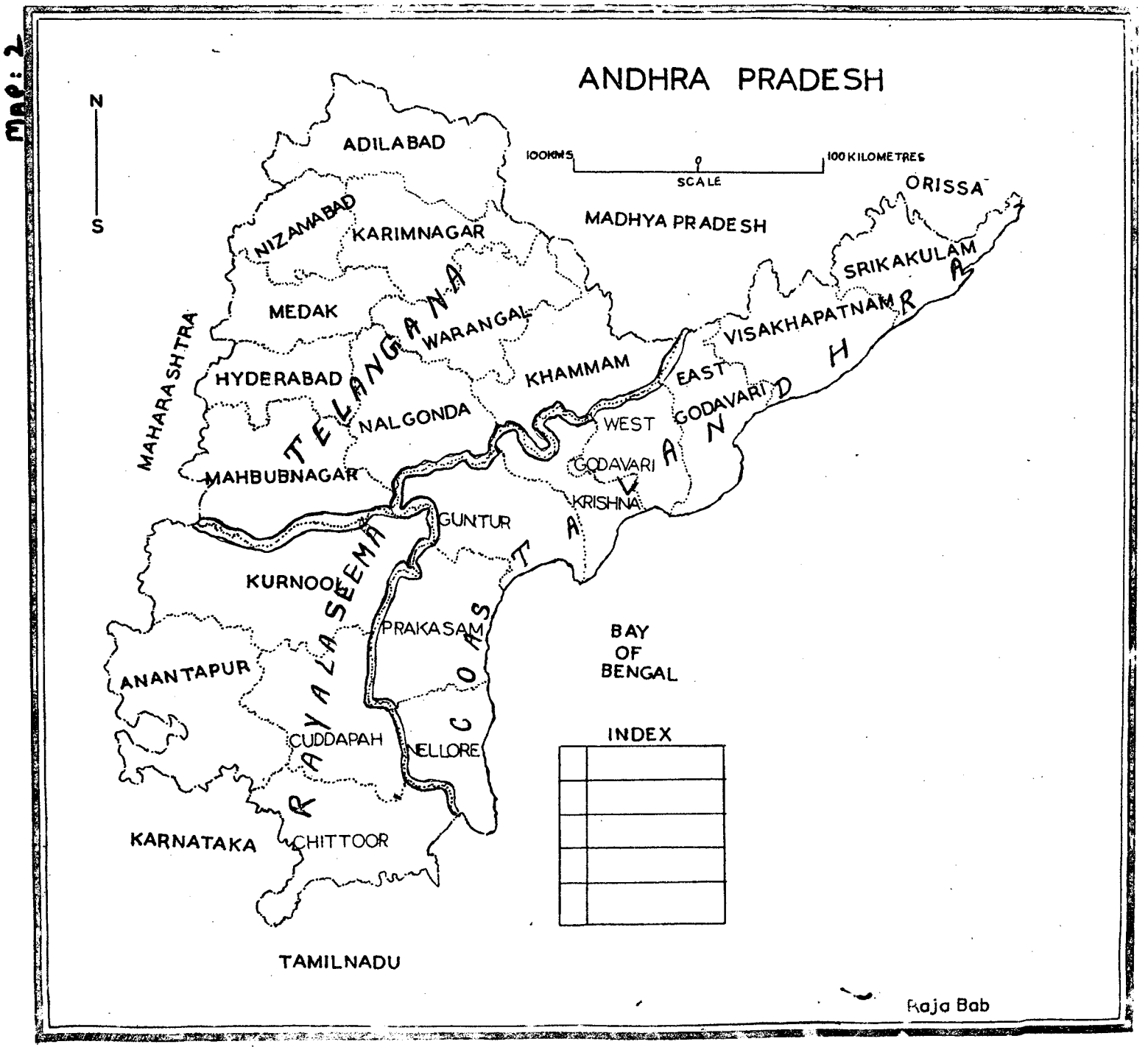
are rocky and not useful for any purpose. Annual temperature us usually high in these areas.

The Telangana region consists of nine districts. These are all of more or less than same type with exception of Hyderabad town hinterland. Most of the districts, viz: Adilabad Nizamabad, Medak and Karim Nagar are dry and are having small hill ranges, which act as an impedement to agricultural growth. Recently with the advent of Nagarjunasagar left canal irrigation scheme, some adjoining portions of Krishna district in Telangana are yielding high rates of agricultural production. To maintain the homogenity of the region this part of district should be added to the coastal Andhra region.

The following map shows the Regions with respect to its component districts:

The people of different regions in Andhra Pradesh posses a good number of characteristics in their livlihood. The spoken languages also differs from region to region. For example in Telangana region Telugu has undergone many changes due to a long association with urdu. Like wise the spoken language in Rayalaseema has some characteristics similar to Tamil and in northern coastal Andhra has similarity with Oriya language.

Map: 2



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So one also can observe different customs and traditions in different regions. Customs and traditions are mostly influenced by the customs and traditions of other adjoining states.

In economic ranking coastal Andhra comes first, Telangana second and Rayalaseema last. Rayalaseema and Telangana regions are still characterised by same remanant of fuedal economy.

I.4 Population:

The present population of Andhra Pradesh is estimated to be 49,202,000 persons. It is estimated that for the year 1980 population rise to about 54,280,000 persons. The following table shows the percentage growth of population from 1941 to 1971, district-wise:

TABLE - 4

Percentage growth of population in Andhra Pradesh

Sl. No.	State/ District	1901-71	1961-71	1951-61	1941-51
(1)	(2)	(3)	(4)	(5)	(6)
1.	Andhra Pradesh	128-17	20.90	15.65	14.02
2.	Srikakulam	66.69	13.82	10.47	5.43

(1)	(2)	(3)	(4)	(5)	(6)
2.	Visakhapatnam	96.26	19.07	10.30	12.88
3.	East Godavari	130.56	18.36	13.32	16.45
4.	West Godavari	158.29	20.02	16.52	15.88
5.	Krishna	189.59	20.06	19.61	22.84
6.	Guntur	150.84	22.23	17.81	12.49
7.	Prakasam	96.92	14.85	14.21	8.92
8.	Nellore	83.21	15.06	14.95	11.66
9.	Chittoor	103.18	19.33	14.91	11.24
10.	Cuddapah	79.05	17.53	15.40	9.96
11.	Anantpur	106.31	19.68	19.13	16.54
12.	Kurnool	108.50	26.17	19.42	7.56
13.	Mahbubnagar	125.53	21.46	9.92	10.56
14.	Hyderabad	232.95	35.40	13.24	33.65
15.	Medak	162.27	19.10	10.59	10.75
16.	Nizamabad	90.05	29.01	22.43	14.13
17.	Adilabad	183.09	27.65	21.37	9.95
18.	Karimnagar	157.93	21.12	13.54	15.45
19.	Warangal	186.20	21.06	16.21	18.14
20.	Khammam	260.37	29.54	30.88	19.53
21.	Nalgonda	134.48	16.82	21.02	12.40

Source: General Population Tables part II-A Census of India, Andhra Pradesh 1971.

Note: Figures calculated on the basis of previous census records keeping the changes taken place in the areas.

From the above table No. 4, we can observe that the population of Andhra Pradesh has more than doubled (128%) in the last seventy years. Visakhapatnam, East Godavari, Krishna, Mahbubnagar, Hyderabad, Medak and Karimnagar districts, showed a declining trend in growth during 1951-61. All other districts generally showing increasing growth of population during 1941-1971.

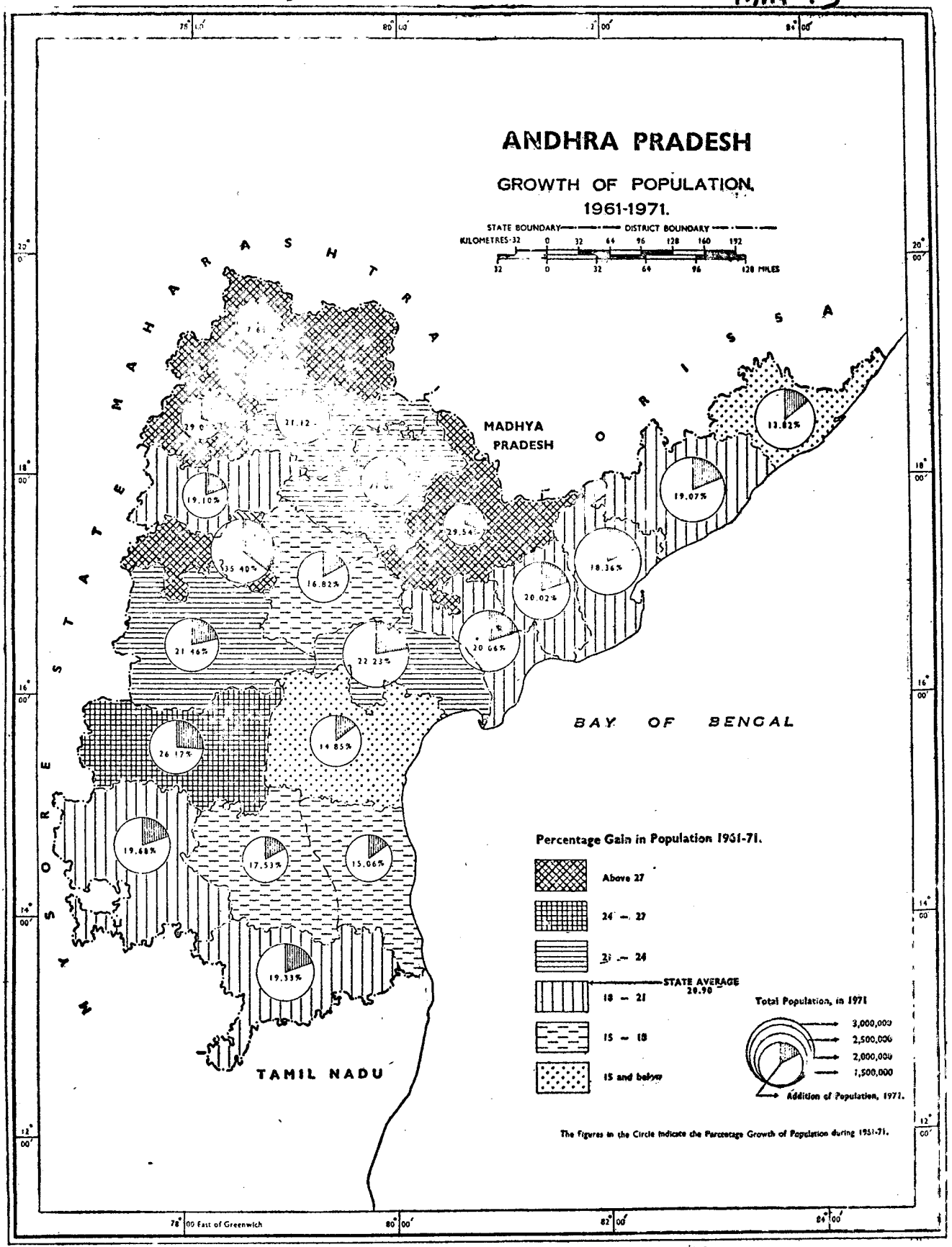
The decline in the growth of population in the above said districts may be entrusted to the teritorial transfers in 1956, or rapid establishment of new industries.

Hyderabad district has recorded the highest growth (35.4%) during the decade of 1961-71. It was mainly due to industrialisation of the Hyderabad metropolitan. The Srikakulam district recorded the lowest growth of population (13.8%) during 1961-71. The decinial growth of population in all other districts have been recorded in between 16 % and 30% during the 1961-71.

Population density for each district has been shown in the table No. 5 alongwith population, scheduled caste population and schedule tribe population at the 1971 census.

The following map shows the growth of population during 1961-71 :

MAP : 3



Source :- General population Tables. Part II-A
Census of India - 1971.

TABLE - 5

Statement showing the population per square kilometre population and scheduled population in each district at the 1971 Census in Andhra Pradesh

Sl. No.	State/ District	Population per Sq.Km.	Population in No.s	Scheduled Caste Population	Scheduled Tribe Population
(1)	(2)	(3)	(4)	(5)	(6)
1.	Srikakulam	266	2589991	238489	212459
2.	Visakhapatnam	204	2805366	221967	299970
3.	East Godauri	282	3087262	517791	119027
4.	West Godavri	305	2374306	340301	51723
5.	Krishna	286	2493574	250653	50742
6.	Guntur	250	2844488	136524	105478
7.	Prakasam	109	1919995	177855	55111
8.	Nellore	123	1609617	317591	130277
9.	Chittor	145	2285536	399139	66801
10.	Cuddapah	103	1577267	171653	26611
11.	Anantpur	111	2115321	278275	64878
12.	Kurnool	105	1982090	222838	32407
13.	Mahbubnagar	105	1932082	325311	5600
14.	Hyderabad	362	2791762	392781	4667

(1)	(2)	(3)	(4)	(5)	(6)
15.	Medak	152	1467944	232653	120
16.	Nizamabad	165	1313268	200024	578
17.	Adilabad	80	1288348	226989	169299
18.	Karimnagar	166	1963928	369626	16433
19.	Warangal	145	1870933	296945	43287
20.	Khammam	86	1369892	167896	201670
21.	Nalgonda	128	1819738	289247	519
	Andhra Pradesh	157	4,35,02,708	57,74,548	16,57,657

Source: General Population Tables Part II-A, pp. 11-13, Census of India 1971, Andhra Pradesh.

The average density of persons per square kilometre for the state as a whole is 157 persons, the urban density is 2360 and the rural density is 128 persons per square kilometre. In, Prakasam, Nellore, Chittoor, Cuddapah Anantapur, Kurnool, Mahbubnagar, Medak, Adilabad, Warangal, Khammam, Nalgonda, the density is below the state average of 157 persons per square kilometre. The highest density of 362 persons per square kilometre is recorded in the Hyderabad district while the lowest density of 80 persons per square kilometre is recorded in Adilabad district and the next lowest density in Khammam district (86 persons).

Among the scheduled population, Guntur district is having lowest percent of scheduled castes population while the Mahbubnagar is recorded highest scheduled caste population. The next highest is in East Godavari district. The schedule tribe population has been recorded highest in Khammam district and the lowest in Hyderabad district. There is very insignificant scheduled tribe population in Nizamabad and Medak districts.

3.5 Agriculture and Industry in the State:

Andhra Pradesh is predominently an agricultural state with over 50 percent of the state's income derived from agriculture.

The state is not only self sufficient in foodgrains production, but also exports large quantities to other states in the country. The state is a leading producer of FCV Tobaccoo, groundnut, castor, turmeric, chillies, and Mesta all of which find prominent place in the Indian Union. Agricultural products like Tobacco, Chillies, Castor are also exported to other countries.

Being an agricultural state with more than 80% population engaged in agriculture, development of agriculture has a direct impact on the economic progress and prosperity of the state. Planned development in agriculture is sought to be achieved by a multipronged approach, consisting of developing irrigational resources, rapid ayacut development, introduction

of new farming techniques and cropping patterns, use of high yielding varieties of crops, increased and balanced use of fertilisers, plant protection, training of farmers, credit etc.,

The state has doubled its foodgrains production in last two decades. Foodgrains production stood at 59.16 lakh tonnes in 1956, while a record production of 94.27 lakh tonnes was toughed in 1976. Rice being the staple crop in the state, the major contribution towards increased food production has come from rice. The state contributes substantially to central pool every year and during 1975-76, over 13 lakh tonnes were procured for the central pool. In 1966-67, the HYV coverage under rice was only 2.25 lakh hectares. By 1976 an area of 24.17 lakh hectares was covered with HYVs and production under crops like Jowar, Bajra and Maize.

With the implimentation of twenty point programme, so far 3,36,962 acres of surplus land has been acquired by the state out of which, 19,541 acres of dry and 1,331 acres of wet land have been distributed to the landless poor under the provisions of land distribution scheme.[1]

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1. '20 Years of Andhra Pradesh' - Land reforms' - Department of Information & Public Relations, Govt. of Andhra Pradesh.

Industry: The state has rich deposites of minerals like coal, iron ore, barytes, manganese, asbestos, limestone, quartz, mica, and dolomite, to name only a few. These constitute the raw material for a variety of large and medium scale industries like Iron and Steel, Cement, Glass, Ceramics and fertilisers. The state is also endowed with abundant forest resources like bamboo and many varieties of timber which offer extensive scope for launching profitable forest based industries. Fisheries, both marine and inland also have rich potentialities of development. Similarly the extensive linestock resources of the state can be converted to use in industrial production.

There were 45 large and medium scale industries inclusive of two in the public sector with an investment of Rs. 63 crores in the begining of 1956. There are now as many as 16 central sector projects either already setup or in the process of being set up in the state involving an aggregate out lay of Rs. 230 crores, providing employment to 32, 000 persons, All these projects except Hindustan Shipyard at Visakhapatnam came into existence after the second five year plan.

There were 1229 small scale industries scattered throughout the state in 1956. Today we have 16,000 small scale industrial units in the state with an aggregate investment of Rs. 48 crores providing direct employment to 2 lakh persons.

I.6 Occupational Structure of the Population:

The following table shows the workers and non-workers, engaged in different categories of work according to 1971 Census:

TABLE : 6

DISTRIBUTION OF 1,000 PERSONS, OF EACH DISTRICT AMONG WORKERS AND NON-WORKERS AND FOR EACH CATEGORY OF WORKERS

Sl. No.	State/District	Total Workers per 1000 persons.	Category of Workers. I	II	III	IV	V	VI	VII	VIII	IX	X
1	2	3	4	5	6	7	8	9	10	11	12	13
	Andhra Pradesh	414	264	314	27	4	75	13	45	18	64	586
1.	Srikakulam	427	332	323	31	2	55	3	44	10	58	573
2.	Visakhapatnam	407	349	227	20	1	64	8	41	32	70	593
3.	East Godavari	383	161	446	32	2	74	9	55	20	67	617
4.	West Godavari	406	181	406	24	1	61	8	48	16	66	594
5.	Krishna	383	164	335	19	2	68	18	54	30	70	617
6.	Guntur	402	196	349	15	2	85	15	51	20	66	598
7.	Prakasam	405	235	338	38	2	74	14	32	11	59	595
8.	Nellore	412	204	387	32	4	62	9	42	18	62	588
9.	Chittoor	411	353	278	23	2	50	9	36	13	50	589
10.	Cuddapah	401	253	166	20	4	74	11	40	12	56	599

contd...37

contd.....

1	2	3	4	5	6	7	8	9	10	11	12	13
11.	Anantpur	421	304	328	25	1	59	14	39	14	49	579
12.	Kurnool	424	225	405	11	4	66	18	45	12	57	576
13.	Mahbubnagar	470	374	364	36	1	71	9	34	6	43	530
14.	Hyderabad	350	130	122	20	6	103	21	89	52	144	650
15.	Medak	456	403	303	40	4	67	6	34	6	47	544
16.	Nizamabad	456	365	233	38	7	132	13	47	15	56	544
17.	Adilabad	419	326	274	30	23	73	11	31	8	57	581
18.	Karim Nagar	461	323	304	38	10	124	23	29	9	60	539
19.	Warangal	426	292	318	29	3	88	9	33	19	54	574
20.	Khammam	411	261	339	27	20	45	22	33	10	56	589
21.	Nalgonda	447	325	332	34	4	78	20	36	6	48	583

Source : General population Tables part II-A Census of India, Andhra Pradesh 197

from the preceding table we can observe that the proportion of workers to total population in the State works out to 41.4%. The distribution of workers per 1000 persons in the state is as follows:

S.No.	Category of Workers	Workers per 1000 persons.
I.	Cultivators	264
II.	Agricultural Labourers	314
III.	Livestock forestry, fishing etc.	27
IV.	Mining and quarrying	4
V.	Manufacturing, processing, servising and repairs.	
	(a) Household Industry	40
	(b) Other than household Industry.	35
VI.	Construction	13
VII.	Trade and Commerce.	45
VIII.	Transport, storage and communications	18
IX.	Other Services.	64
X.	Non Workers.	586

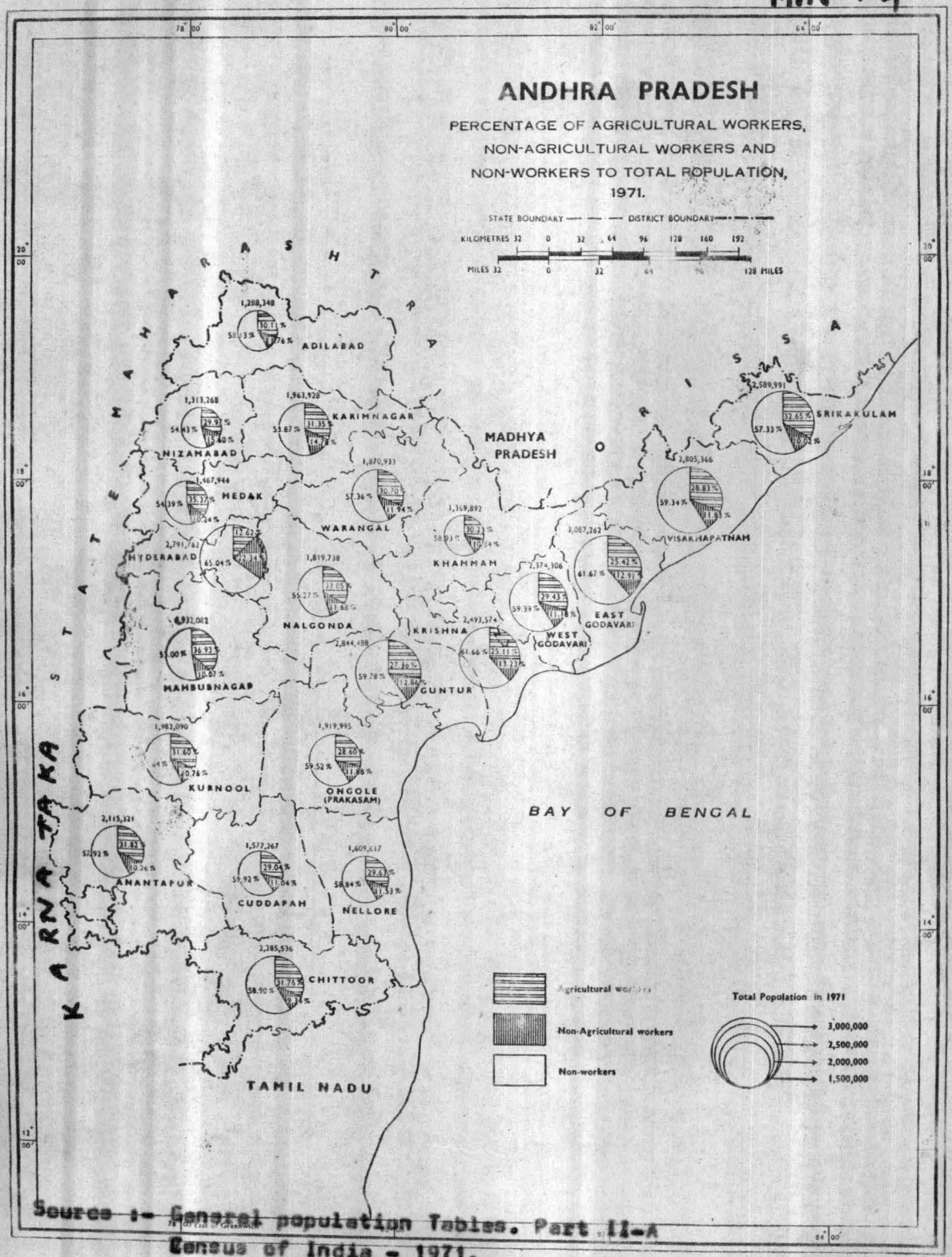
We also observe that the total workers per 1000 persons highest has been recorded in Mahbubnagar district. The lowest was recorded in Hyderabad district. Cultivators per 1000 persons are more than agricultural laboures in the following districts, Srikakulam,

Visakhapatnam, Chittoor, Cuddapah, Mahbubnagar, Madak,Nizamabad, Aditabad, and Karim Nagar. These are the districts with little source of irrigation and moreover, the soil is rocky and not possible for cultivation in a large scale. It may be due to uneconomic land holdings.

Where as in coastal districts cultivators are less than agricultural labourer, which show, a quite opposite land relations to the other dry districts. Hyderabad district is having 103 workers per 1000 persons engaged in manufacturing sector, Nizamabad district has been recorded the highest number (134) followed by Karimnagar district (124). The lowest number has been recorded in Chittoor district (50) in the manufacturing sector. This shows the weak industrialisation in the Chittoor district.

The following map shows the percentage of Agricultural Workers, Non-Agricultural Workers and Non-Workers to total populations per 1971 census.

MAP : 4



Source :- General population Tables. Part II-A
Census of India - 1971.

CHAPTER II

OBJECTIVES AND METHODOLOGY

CHAPTER - II

OBJECTIVES AND METHODOLOGY

II.1 Need for the Present Study:

'Regional Development (or growth) has different cannotations; one is economic in which the difference in growth is measured between two points of time of different sectors in the Economy'. The Regional Development concept which states that the regional economy is organised around a system of settlements called nodes and the latter exhibits a hierarchy. The tributary areas of the nodal centres constitute the hierarchic framework of regions.

The process of regional development is a two fold concept, one is regional economic planning and the other one is regional physical planning. The regional physical plan portrays the manner in which economic development is organised in space. Therefore, in order to understand and evaluate the regional development process and the regional economy the frame work of a regional physical plan becomes an important tool. Regional Development is a continuous process whether planned or unplanned and takes place in the space. The spatial dimension comprises the agricultural land, natural resources and associated features; and the locational dimensions include human

settlements and their function at rural, urban and other intermediary levels and their attributes. The attributes would include population and salient demographic characterstics, secondary and tertiary activities, social services and facilities such as education, health, water supply and sanitation, power supply, retail and wholesale prices, communication, market and credit facilities would fall under the tertiary group while the secondary activities would include mainly industries.

The differences in factor endowments and differences in the physical land scape, would cause the differences in levels of development. Before attempting any exercise on the regional planning, it is necessary to keep these factors in view.

An attempt is made in this dissertation to study the spatial variations in levels of development of Andhra Pradesh at the taluk level. The understanding of the spatial variations at the taluk level is essential for preparing a sub-regional, regional and state plan. Taluk is taken as the lowest unit in the spatial order.

II.2. Statement of the Objectives of the Study and Hypothesis.

Keeping in view of the existing spatial order, the study would have the following objectives:

a) To find out the spatial variations in the levels of development at the taluk level.

b) To findout the variations in agricultural production.

c) To explain the nature of spatial variations in agricultural production and overall development.

More specifically, we would be testing the following hypothesis:

a) Agricultural production is influenced by land relations.

b) Differences in agricultural production are a major cause of differences in the levels of development.

c) Urban areas have a higher level of development than rural areas.

d) All the less developed areas tend to get clustered in space.

II.3. Data Base and Description of the Variables

The study of variations in levels of development has been conducted by choosing certain demographic, occupational and social indicators. Whereas taluk is the lowest unit of data collection for the study of levels of overall development. District has been chosen as the unit for the study of agricultural production. This is primarily because agricultural output data is available only at his district level.

The following variables have been selected to study the levels of development. All the variables were transformed and standardized. The following table shows the original and transformed variables. The data is based on the 1971 census.

TABLE - 6a.

Variables and their Transformation

S.No.	Original Variables	S.No.	Transformed Variables.
1	2	3	4
1.	Population growth rate	1.	Population growth rate
2.	Total population	2.	Total population
3.	No. of literates	3.	Percentage of literates to total population
4.	Total labour force	4.	Percentage of labour force to total population.
5.	Workers in primary sector	5.	Percentage of workers in primary sector to total labour force.
6.	Workers in cultivation live-stockand forestry, etc.	6.	Percentage of workers in cultivation, live-stock, forestry etc. to workers in primary sector.
7.	Agricultural labourers	7.	Percentage of agricultural labours to workers in primary sector.
8.	Workers in construction	8.	Percentage of workers in construction to workers in secondary sector.

Table contd....

1	2	3	4
9.	Workers in other industries	9.	Percentage of workers in other industries to workers in secondary sector.
10.	Workers in Household industry	10.	Percentage of workers in household industry to workers in secondary sector.
11.	Workers in Trade and Commerce	11.	Percentage of workers in trade and commerce to workers in tertiary sector.
12.	Workers in Transport	12.	Percentage of workers in transport to workers in tertiary sector.
13.	Workers in other services	13.	Percentage of workers in other services to workers in tertiary sector.
14.	Workers in secondary sector	14.	Percentage of workers in secondary sector to total labour force.
15.	Workers in tertiary sector	15.	Percentage of workers in tertiary sector to total force.
16.	Educational facilities	16.	Education facilities.
17.	Medical facilities	17.	Medical facilities
18.	Postal facilities	18.	Postal facilities
19.	Bank facilities	19.	Bank facilities

To measure the extent of relation between different functions it was necessary to begin with the elimination of the effect of absolute numbers of population from each of the variables. Hence we transformed the variables by dividing these by appropriate denominators. Without this transformation the composite ranking of the taluks would almost be similar to the ranking according to population size.

Variables from 16 to 19 refer to social amenities. These have been standardised by giving due weightages on the basis of the following procedure. Because social amenities include a number of sub-groups like primary schools, colleges, dispensaries, health centres & family planning centres, post office, telegraphic office, postal&telegraphic office, banks, credits societies etc., we can not add the different sub-groups into a single unit because they are qualititatively different.

First each sub-group is divided by the respective number of the population (million figure). These results are recorded and all the recorded data was vertically added for all the 195 taluks. The addition was divided by the number of observations (195) to get the mean for every sub-group. The inverse of the arithemetic mean is taken as the weight, of that sub-group. After getting the weight, the

number of that sub-group was multiplied by it and added together for each category of facilities under four headings ; namely, Educational, Medical, Postal and Bank facilities. The procedure can be written as follows:

$$\therefore \quad O_{ij} = \frac{Mij}{P\,ij}$$

$$\therefore \quad \frac{\sum_{i=1}^{N}}{N} = \overline{X}_{ij}$$

and $$\frac{1}{\overline{X}_{ij}} = W\,ij$$

$\therefore$ Wj x Oi = Value of the jth sub-function of the ith observation.

Where: O_{ij} = Weighted value of the jth sub-group functions of ith observation.

Mi = Number of jth group sub-group function units of ith observation.

Pi = Population (in millions) of the ith observation.

N = Total number of observations.

X_j = Arithemetic mean of the jth sub-group.

W_j = Weignted scores of the Jth sub-group[1]

---

1. Sub-function is one which is the Unit of sub-group (Social aminity)

Agriculture: To find out the variations in agricultural production in each district the following variables have been selected on the basis of three years average. (1972-'73, 1973-'74, 1974-'75). The main source of the data is 'Season and crop Report' of Andhra Pradesh, for the above said years:

1) Agricultural output/Hectare.
2) Agricultural workers/Hectare.
3) Index of Capital availability/Hectare.
4) Soil rating Index.
5) Percentage of irrigated area to the area under food and non-food crops.
6) Fertilizers/Hectare.

The above said variables have been fitted to Cobb-Douglas production function to work out the regression coefficients or production elasticities.

II.4 Methodology:

a) Statistical Methods: The following statistical techniques have been used in the processing of the data for the measurement levels of development, first all the nineteen transformed variables have been tested by deriving their correlation Matrix to find out the degree of association between various variables. This way we eliminated nine variables and left with ten variables.

The ten variables were converted into a composite index through the Modified factor Analysis technique[1]. They were ranked and grouped into five categories. The details of the groups and their frequencies will be discussed in the next chapter.

To measure the variations in agricultural production in Andhra Pradesh, the multiple regression technique has been used in the form of log-linear formate.

The variable, Agricultural output/Hectare is treated as dependent variable and Agricultural workers/Hectare, Index of capital availability/Hectare, Soil rating Index, percentage of area irrigated and fertilizers/Hectare are treated as independent variables.

The following Cobb-Douglas production function has been used and production elasticities for various independent variables have been worked out:

$$\text{Log } Y = \log x + B_1 \log x_1 + B_2 \log x_2 + \ldots + B_n \log x_n.$$

Where Y = dependent variable.

x = intercept

B_1, B_2, B_n = are regression co-efficients

X_1, X_2, X_n = are the independent variables.

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1. This technique was designed by Shri A. Kundu, C.S.R.D./SSS, Jawaharlal Nehru University, to over come the difficulty of negative signs in the traditional factor analysis:

We have worked out for three sets of observations: viz., (1) Andhra Pradesh (21 districts), (2) Coastal Andhra Region (8 districts); and (3) Rayalaseema and Telangana regions (13 districts).

(b) Cartographic Methods: To show the variations in levels of development and variations in agricultural production, chloroplethic technique have been used.

The taluk boundaries in the state map are taken from the district census hand-book of each district: They are not exact boundaries but vary close to the real boundaries.

CHAPTER III

LEVELS OF DEVELOPMENT IN THE STATE

CHAPTER III

The measurement of levels of development of the Taluks, necessitates the construction of composite Index on the basis of chosen indicators. The selection of indicators is based on purely subjective basis. The data on occupational pattern of the population can be used for inferring about the activities of that area (Taluka). Like wise population engeged in secondary and tertiary activities canbbe used as indicators of central functions for they create spatial interdependence with the neighbouring areas[1]. Hence, all the variables relating to occupational classification of population were included in the first analysis to test if they could be included for the determination of rank of that area in the state. In addition, the services and facilities such as education, health, post-office and Banks were also included in the analysis. The total number of variables included in the first tehalysis are 19[2]. These variables are independent and the composite index is dependent. The measurement of association of these variables was also attempted by constructing a correlation Matrix of 19 variables. As we have already stated in Chapter II, that in the

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1. Dr. L.S. Bhat, and others "Micro-Level Planning" p. 46
2. for details, please refer to Chapter II. table No. 6.

aggregation of functions, we have applied a statistical method to give appropriate weightages to the sub-functions of a central function. The method is as follows.

VII. 1 Determination of the weightages of the indicators:

A central function is not very homogeneous in nature and hence a study of these functions should take account of the differences in the levels of different areas. Medical facilities for examples Primary Health Centres are provided by Hospitals, Dispensaries, T.B. Clinics and Meternity and Child welfare Clinics. It would be wrong to give equal weightages to these, as they often differe qualitatively. To minimise the arbitrariness or subjectivity, they have been given different weightages, as per the formula given in the Chapter II. The following table shows the central functions, sub-functions and their weightage. The weightages of the sub-functions were added under the central function and entered in the analysis of composite index.

TABLE NO. 7

Weighted scores of the variables

Sl. No. (1)	Services and facilities (2)	Weightage (3)
1. Educational		
	a) Primary school	1.37
	b) Middle school	6.02
	c) High school	

(1)	(2)	(3)
	d) College	4.76
	e) Technical Institutions and others	
2. Medical		
	a) Dispensary	2.63
	b) Hospital	7.69
	c) Primary Health Centre	2.38
	d) Family Planning	
	e) Meternity and Child welfare centres	
3.Postal		
	a) Post Office	0.35
	b) Telegraph Office	0.10
	c) Post and Telegraph Office	
4. Banks		
	a) Banks	3.70
	b) Agricultural credit societies	
	c) Non-Agricultural credit societies	

Similar category of functions have been alloted equal weightages. For example, Middle school and high school are more or less similar in their function and have been treated alike. Like-wise. Colleges and other institutions were combined

because any institution other than, school, is meant for only those who have passed the high school examination. In Medical facilities we combined primary Health centres and Meternity and Child Welfare Centres, because they perform more or less similar functions in rural areas.

Post office is given a reasonable weightage due to its importance in the rural areas. Telegraph and post telggraph officers are mostly used by the urban people, hence they were combined in giving weightage. Banks are important to the urban people and Agricultural and non-agricultural credit societies are important to the rural population. Hence the function of these two are more or less similar. Hence they were combined in the process of giving weightages.

The weightages of sub-functions under educational factors were multiplied by 10. This is because, their original weights were very small and combersome for doing further calculations. This procedure does not change their relative value.

The first step in the analysis of the data was to construct a correlation matrix for the nineteen variables. The following table shows the correlation Matrix for the nineteen variables:

TABLE: CORRELATION MATRIX FOR THE 19 VARIABLES

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1.	1.000																		
2.	0.006	1.000																	
3.	-0.035	0.503	1.000																
4.	0.017	-0.362	-0.615	1.000															
5.	-0.007	-0.649	-0.620	0.628	1.000														
6.	0.101	-0.139	-0.584	0.336	0.203	1.000													
7.	-0.102	0.137	0.586	-0.333	-0.203	-0.998	1.000												
8.	0.001	-0.057	0.105	-0.085	-0.034	-0.075	0.071	1.000											
9.	-0.103	0.400	0.537	-0.505	-0.509	-0.284	-0.257	0.003	1.000										
10.	0.092	-0.294	-0.460	0.495	0.496	-0.219	-0.238	-0.434	-0.729	1.000									
11.	-0.044	0.018	-0.021	0.150	0.046	-0.010	0.015	-0.185	-0.115	0.237	1.000								
12.	0.117	0.400	0.563	-0.520	-0.627	-0.137	0.136	0.043	0.152	-0.425	-0.103	1.000							
13.	-0.039	-0.289	-0.334	0.247	0.342	0.104	-0.107	0.112	-0.156	0.057	-0.576	-0.581	1.000						
14.	0.075	0.305	0.188	-0.203	-0.614	-0.043	0.043	-0.076	-0.209	-0.235	-0.015	0.272	-0.168	1.000					
15.	0.012	0.702	0.723	-0.628	-0.890	-0.291	0.242	0.089	0.598	-0.489	-0.075	-0.679	-0.367	0.359	1.000				
16.	-0.170	-0.055	0.128	-0.147	0.033	0.083	0.079	0.031	0.087	-0.101	0.010	0.013	-0.006	-0.074	-0.012	1.000			
17.	-0.095	-0.020	0.205	-0.094	-0.032	-0.168	0.169	0.117	0.194	-0.241	0.002	0.117	-0.149	-0.045	0.042	0.241	1.000		
18.	-0.142	-0.164	0.223	-0.068	-0.131	-0.307	0.310	0.039	-0.000	-0.020	-0.133	-0.050	0.026	-0.137	-0.092	0.148	0.267	1.000	
19.	-0.006	0.448	0.525	-0.411	-0.587	-0.185	0.186	0.089	0.360	-0.366	-0.025	0.465	-0.338	0.239	0.660	0.049	0.047	-0.118	1.000

NOTE: Please see the II Chapter for the details of the Variables.

NOTE: Please see the II Chapter for the details of the Variables.

The correlation co-efficients were found to be highly significent for many variables and quite insignificent for others. The final selection of indicators was done on the basis of this correlation matrix.

It may be noticed that population growth rate has a negative or very weak correlation with population size and also with other functions. The reason for this may be that Taluks with low population base have grown faster than where population was high to start with.

The aggregate variables like percentage of workers engaged in secondary and tertiary activities were included in the final analysis for measuring centrality. The third variable-percentage of workers in primary activity cannot be included in the analysis since three variables together add upto hundred and if the first two are indicators of development or centrality, the third one must be indicating, lack of development. This is clearly brought out in the correlation matrix, as the primary activity shows negative correlation with most of the central functions.

After looking through the correlation matrix, we selected the following ten indicators for use in the final analysis Viz:

1. Total population;
2. Percentage of literates to total population

3. Percentage of agricultural labourers to workers in primary sector;

4. Percentage of workers in other than household industry to workers in secondary sector;

5. Percentage of workers in secondary sector to total labour force;

6. Percentage of workers in tertiary sector to total labour force;

7. Educational facilities;

8. Medical facilities;

9. Postal facilities; and

10. Bank facilities.

The salient features of the correlation Matrix (Table No. 8) are as follows:

(a) Education, Medical, Postal and Bank facilities show a high degree of association among themselves. It is also seen that some of these variables have high correlation with population size. This indicates certain initial level of population is required sustain in demand for defferent services and facilities.

(b) Variables such as population, literacy, agricultural workers, workers in other industries, workers in secondary and workers in tertiary activities show low correlation amongest themselves. This may be due to the low levels of services and facilities and economic activities in most of the rural areas where primary sector is dominant.

(c) The secondary and tertiary activities and social amenities show a positive correlation indicating that a certain clusturing occurs in these activities

III.2 Construction of Composite Index:

The weightages of the final ten variables have been obtained through the technique of "Modified factor Analysis". The weightages are given below:

Table No. 9

Variable	Weightage or
1	0.330
2	0.314
3	0.295
4	0.320
5	0.314
6	0.331
7	0.290
8	0.301
9	0.294
10	0.365

The following table shows the A Matrix for 10 variables and the latent roots.

T A B L E - 10 (A Matric for ten variables)

	1	2	3	4	5	6	7	8	9	10
1-	1.4779	1.1303	1.0202	1.1510	1.1379	1.2751	0.9905	0.9927	0.9344	1.3358
2.	1.1303	1.1402	1.0470	1.1097	1.0461	1.1538	1.0120	1.0415	1.0484	1.2134
3.	1.0202	1.0470	1.0457	1.0299	1.0060	1.0293	1.0042	1.0195	1.0385	1.0432
4.	1.1510	1.1097	1.0299	1.2976	1.0746	1.1695	1.0214	1.0571	1.000	1.2133
5.	1.1379	1.0461	1.0060	1.0746	1.4280	1.1331	0.9880	0.9842	0.9479	1.1702
6.	1.2751	1.1538	1.0293	1.1695	1.1331	1.3212	0.9983	1.0127	0.9698	1.4061
7.	0.9905	1.0120	1.0042	1.0214	0.9880	0.9983	1.0625	1.0325	1.0215	1.0132
8.	0.9927	1.0415	1.0195	1.0571	0.9842	1.0127	1.0325	1.2909	1.0826	1.0274
9.	0.9344	1.0484	1.0385	1.0000	0.9479	0.9698	1.0215	1.0826	1.3372	0.9254
10.	1.3358	1.2134	1.0432	1.2133	11.1702	1.4061	1.0132	1.0274	0.9254	2.1775
Latent roots										
	11.017	1.055	0.477	0.325	0.236	0.187	0.119	0.089	0.051	0.024

...

Combined factor scores have been obtained for each Taluka[1]. Hyderabad urban taluk is having the highest composite index (9.999), where as Achampeta in Mahbubnagar district is having the lowest composite index (1.465) in the state. All the taluks have been classified and given ranks on the basis of their composite index.

III.3 Ranking of the Taluks on the basis of composite index:

All the 195 taluks in the state have been classified as five groups on the basis of composite index and ranked accordingly. The following table shows the classification and frequency of taluks and their ranking:

Table No. 11

Ranking of the Taluks on the basis of composite index

Sl. No.	Composite Index range	Frequency of Taluks	Classification	Rank
1.	5.5 and above	5	Highly developed	I
2.	4.5 - 5.5	11	Developed	II
3.	3.5 - 4.5	38	Developing	III
4.	2.5 - 3.5	93	Semi-backward	IV
5.	below-2.5	48	Backward	V
	Total:	195		

1. For details please see the Appendix.

There are five highly developed taluks in the state. These are: Hyderabad urban taluka (9.999) in Hyderabad district, Visakhapatnam taluka (6.596) in Visakhapatnam district, Guntur taluka (6.419) in Guntur district, Rajamundry taluk (5.838) in East Godavari district, and Vijawada taluk (5.636)[1] in Krishna district. This means that there are only five first rank central places throughout the state. In addition there are eleven developed and thirty eight developing taluks. On the other hand as many as hundred fortyone taluks are either semi-backward or backword.

Thus the state is dominated by the backward taluks. This in turn means that the central places are unable to develop hinter-land in the state. The following table shows the Rank and Code Number of each taluk in the state:

TABLE - 12

Rank and Code number of taluks in the classification range :

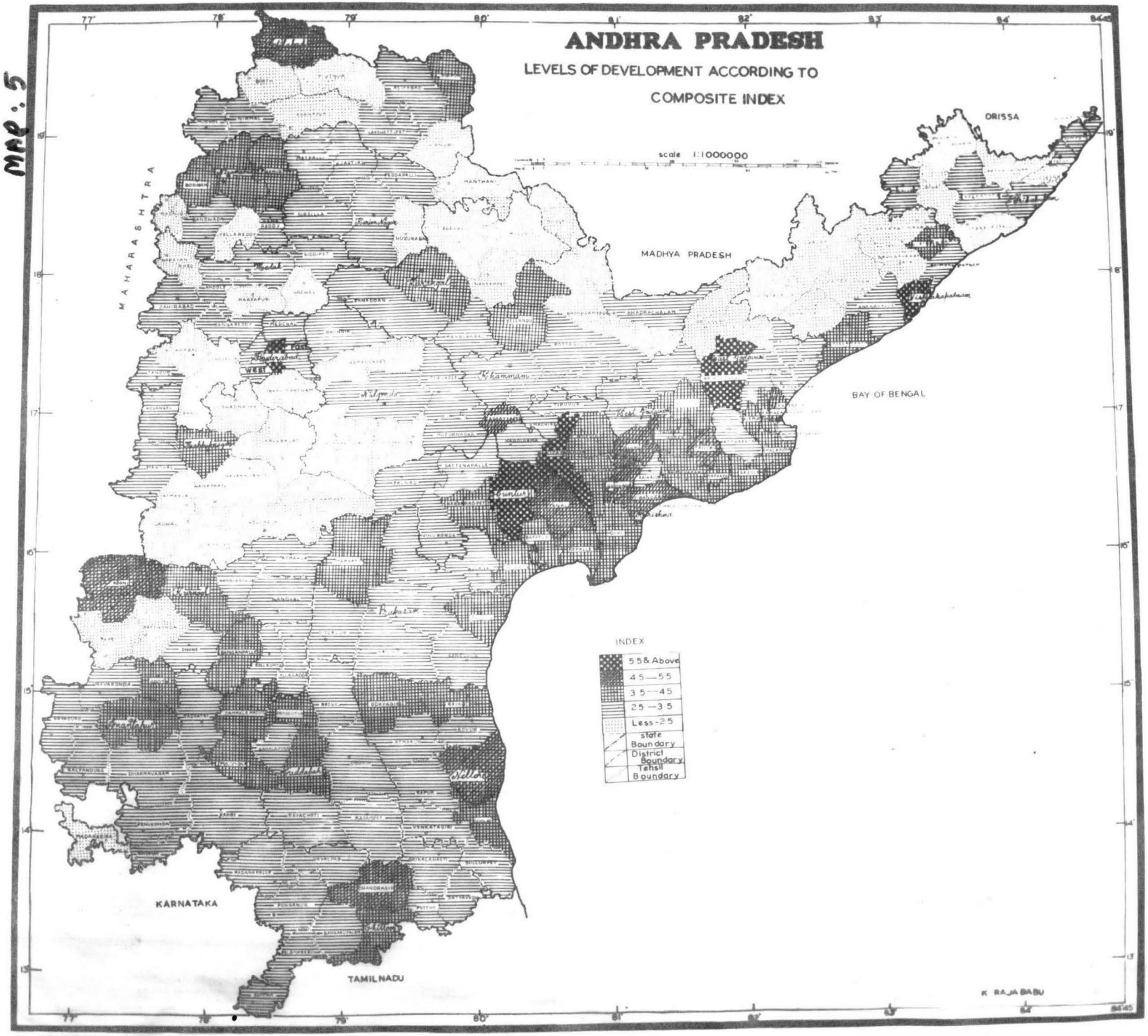
Rank	Frequency	Code number[1] of taluk
1	2	3
I	5	12,30.48.55,135
II.	11	23,37,42,45,50,53,56,72,88,122,159

1. Please refer to the table number 2 in Chapter I for names of the taluks.

1	2	3
III	38	14,21,24,26,28,29,40,41,43,44,46,47,52,57,58,59, 63,67,71,73,78,79,81,92,94,96,97,101,105,112,118,123, 152,153,158,162,176,183.
IV	93	1,4,[illegible],5,6,9,10,13,22,25,27,33,34,35,36,38,39,49,51 54,60,61,62,64,65,66,68,69,70,74,75,76,77,80,82,83 84,85,86,87,89,90.91,93,95,98,99,100,102,103,104, 106,107,108,109,110,113,114,115,116,117,119,133,134,136 137,139,142,144,145,147,149,151,154,156,161,164,167, 168,169,170,171,172,173,180,181,182,186,187,188,189, 190,191,194.
V	48	2,3,7,8,11,15,16,17,18,19,20,32,31,111,120,121,124, 125,126,127,128,129,130,131,132,138,140,141,143,146, 148,150,155,157,160,163,165,166,174,175,177,178,179, 184,185,192,193,195.

The classified taluks have been shown on the map by using chlorpleth technique. The map keeps us to identify the areas where development is taking place, and those continue to remain the backward. The details of the results have been discussed in the following few paragraphs.

MAP : 5


ANDHRA PRADESH
LEVELS OF DEVELOPMENT ACCORDING TO
COMPOSITE INDEX
scale 1:1000000
ORISSA
MADHYA PRADESH
MAHARASHTRA
BAY OF BENGAL
KARNATAKA
TAMILNADU
INDEX
55& Above
45—55
35—45
25—35
Less-25
State Boundary
District Boundary
Tehsil Boundary
K RAJA BABU

III.4 Results of the data and identification of Backward areas:

From the previous map, we can see the clustering of backward areas. These are two types (1) Dry areas (2) Hill and forest tracts. Entire taluks of Mahbubnagar district, except, Mahbubnagar, Maktal and Kondangal taluks, Devarakonda. Miryalaguda and Ramamapet in Nalgonda district, and Vikarabad Chevella, pargi and Ibrahimpatnam taluks in Hyderabad district, form a cluster in the dry areas. Three taluks viz; Boath, utnur, and Khanapur taluks in Adilabad district form a separat clusters.

Yellareddy, and Madnur taluks in Nizamabad district and Narayankhed in Medak form another cluster.

Naraspur and Gajwel taluks in Medak district form still another cluster.

The backward taluk of Madakasira in Anantpur district stands alone and does not have any neighbouring backward areas.

Several clusters get formed in the Hill and Forest tracts. The entire Dhanda Karanya and Eastern ghats tract, from Chinnur taluk in Adilabad district to Narasamapeta taluk in Srikakulaw district forms a cluster.

Dry areas are generally characterised by scanty rainfall, rugged terrain, and mostly semi-arid conditions and are often subjected to Chronicdroughts.

Hill and forest areas are generally characterised by hill ranges and large forests. These areas are unable to develop quickly. Because of these underdeveloped areas, Telangana and Rayalaseema regions are comparatively poorer than coastal Andhra region.

Almost all taluks along the Coastal line are more developed than the other areas. But for a few pockets of backward areas, the districts of Krishna, Guntur and West Godavari are the most developed among all the districts. This is due to the availability of irrigation from Krishna and Godavari rivers.

The analysis also shows the concentration of central functions in the Hyderabad urban taluk.

The taluks Kowur in Nettore district, Kandukur in Prakasam district, Mumidinaram, Pithapuram, and Tuni in East Godavari district, Anakapalli and Bheemunipatnam in Visakhapatnam district, Cheepurupalli and Narasannapeta in Srikakulam district, are backward even though they are on the coastal line. This is mainly because of lack of irrigation facilities in Nellore and prakasam districts. The backward areas in East Gadavari Visakhapatnam, and Srikakulam districts are mostly covered by small hill ranges, (extension of Eastern ghats towards south). These backward taluks on the coast are mostly dominated by Red soil with black base, a soil that is unfavourable for the growth of foodcrops.

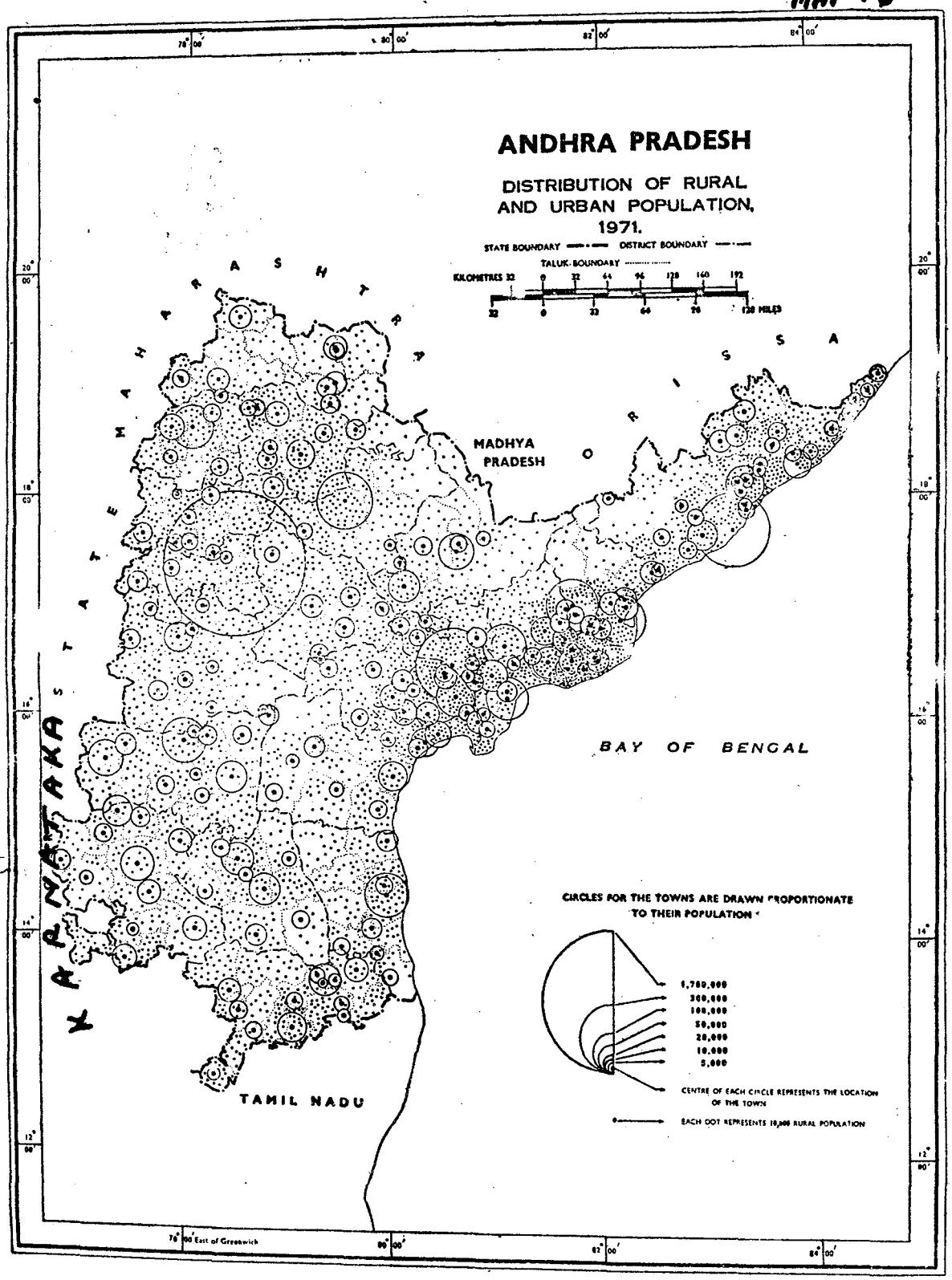
The taluks of chandragiri in Chittoor district, Adoni in Kurnool district and Adilabad in Adilabad district are more developed than the adjoining taluks. This is mainly due to existance and exploitation of vast mineral resources. But chandragiri taluk has developed because of Tirupati, one of the largest piligirim centre in Andhra Pradesh. It has over the years received attention from the Government of Andhra Pradesh.

Most of the other taluks are semi-backward; and constitute a large part of Andhra Pradesh.

The following map showing distribution of rural and urban population, may help us in explaining the results of the data:

If we compare the two maps we find development have taken place where the urbanisation was spread rapidly. We can find close similarity between these two maps. The shadded areas in the maps Nos. 5 and 6 are quite similar to each other.

MAP : 6



Source :- General population Tables, Part II - A
Census of India - 1971.

CHAPTER IV

VARIATIONS IN AGRICULTURAL PRODUCTION

CHAPTER -IV

VARIATIONS IN AGRICULTURAL PRODUCTION:

The income level of a large proportion of rural population of Andhra Pradesh is low and farmers and rural workers are often faced with the grave problems of risk and uncertainty. Successive and frequent failure of the monsoons leading to severe droughts and consequent starvation and malnutrition of the large sections of small farmers and agricultural labourers, are real problems in most parts of the state. The nutritional deficiencies and lack of resistance to epidemics further lower the the agricultural efficiencies of the regions. In short, some parts of the state, over the years had adjusted itself to a quasi-equilibrium of indifferent efficiency based on low income and poverty. In such a situation the study of input, output relations is a must to know the real causes for the low incomes in agriculture.

Agricultural efficiency and production depend largely upon the inputs and investment in agriculture and the methods of production used. Progressive agriculture with demand, among other things (i.e., favourable institutional and organisational structure) improvements in inputs and methods of cultivation. Irrigation, better seeds, better manures and fertilizers, land reclamation and soil conservation, plant protection, and use of mechanisation etc., are various aspects of the agriculture inputs which have to be studied to understand the levels of

agricultural productivity.

In this chapter, we deal with the variations in agricultural production in Andhra Pradesh as a whole and its regions separately.

IV. 1. ANALYSIS OF THE DATA:

The variables included in this study are (i) farm output, (value in rupees) (ii) land(gross cropped area under food and non-food crops), (iii) labour (total agricultural workers), (iv) capital (value of agricultural machinery), (v) percentage of area irrigated to total area under food and non-food crops, (vi) fertilisers[1] (only chemical), (vii) soil rating index.

Average of three years, 1972-73, 1973-74, 1974-75 was taken. Management is not included. In fact, most studies on farm production functions have not been able to include 'management' input owing to the difficulty of the measurement. Similarly compost fertiliser is not included in the inputs because of lack of data. Even those very few studies in which elaborate techniques were employed for rating managerial input in the process of field investigation, have not yielded satisfactory results owing to the difficulties inherent in an

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1. The mitrient content was taken.

attempt to quantify an input which has essentially a qualitative character and of a necessity has to be evaluated on the basis of the subjective impressions of investigators. The error introduced by such an evaluation of management input can prove to be as troublesome as the one resulting from its non-inclusion. In some other studies capital and fertilizers are also excluded from these functions, as the estimated elasticities relating to these inputs when included have been found to be non-significant, due to certain gaps in the available data on these items. However, one can make certain plausible assumptions regarding the behaviour of these inputs vis-a-vis other included inputs and then interpret the results in the light of such assumptions. The procedure followed in the present work for standardizing and aggregating the variables is given below. The main sources of data are season and crop reports of Andhra Pradesh for the years 1972-73, 1973-74, 1974-75.

i. Output: Output consists of the value of gross output of crops for three years. Data on prices of individual crops as also of different varieties of the same crop prevailing at the time of harvest-common to all the farmers in each village were made the basis for converting these quantities into the values of gross output. The value of gross output was divided by the

area under food and non-food crops to obtain the per Hectare output in rupees, for each district and treated as depndent variable.

ii. Land : Area under food and non-food crops was taken and used as the denominator in the process standardizing the other inputs.

iii. Labour : Total agriculatural workers both cultivators and agricultural labourers were recorded for each district and divided by area under food and non-food crops and obtained labourers per hectare. This is taken as labour input.

iv. Capital :Tractorization was taken as an index of capital availability to the farmers. The number of tractors in each district was divided by area to get availability of capital per hectare.

v. Irrigation: The total irrigated area by all means of irrigation recorded and it is divided by gross cropped area and multiplied by hundred, to get the percentage of area irrigated for each district.

vi. Fertilizers: The data under this head relate to the annual consumption of the fertiliser (chemical fertiliser only) by each district. The nutrient countents of fertiliser were added together and an average of three years was taken (1972-73 + 1973-74 + 1974-75). The average consumption of fertilizer was

divided by area to obtain the per hectare consumption of fertilizer in each district.

vii. Soil Rating Index: Soil Rating Index of each district has been taken, to findout the relationship between productivity and soil rating index.

We can see some simple relationship between the dependent and independent variables.

From the help of the table (12) we observe the variations in agricultural productivity. Kurnool district is showing lowest productivity and lowest consumption of inputs also. But it is having the highest soil rating index. The reason for this low productivity may be due to lack of irrigational facilities in the district. The highest agricultural productivity is recorded in West Godavari district which also has the highest consumption of inputs. All the coastal districts are having agricultural productivity exceeding Rs.550 per hectare. Adilabad is having the least irrigated area in the state. Around 80% of the gross cropped area is irrigated in West Godavari district. Except Chittor district in Rayalaseema all are showing low level of agricultural productivity. Similarly in Telangana region. Anantpur district is recorded as the lowest consumer of fertilizer. Adilabad district is showing the least labour input, it may be due to uneconomic farming in the district.

TABLE : 12α

VARIATIONS IN AGRICULTURAL PRODUCTION IN ANDHRA PRADESH (1972-1975)

Name of the District.	VARIABLES: S.No.	Agricultural Productivity in Rs.	Labour/ Hectare	Capital/ Hectare in Rs.	Soil Rating Index.	% of irrigated land to total food and non-food cops.	Fertilizer/ Hect. in Kgs.
Srikakulam	01	1299.00	1.62	004.02	68.4	42.17	12.25
Visakhapatnam	02	1217.40	1.68	004.80	68.4	36.42	12.38
East Godavari	03	1306.22	1.36	053.48	77.0	63.33	35.47
West Godavari	04	1921.69	1.25	047.88	77.0	79.07	50.52
Krishna	05	1131.19	1.12	046.13	68.4	54.86	40.07
Guntur	06	0872.77	1.05	031.53	54.0	50.55	48.11
Prakasam	07	0669.69	0.81	013.75	64.4	26.22	05.26
Nellore	08	0861.31	1.24	067.34	68.4	64.50	32.63
Kurnool	09	0327.45	0.57	010.27	77.0	13.52	19.38
Anantapur	10	0495.94	0.69	003.64	77.0	19.59	04.64
Cuddapat	11	0663.31	1.04	015.34	77.0	33.66	22.09
Chittor	12	1502.18	1.32	027.14	51.0	37.65	15.28
Hyderabad	13	0335.12	0.95	016.82	68.9	15.28	23.82
Nizamabad	14	0909.74	1.05	022.93	65.0	49.03	33.84
Medak	15	0395.51	0.99	007.97	65.0	25.08	06.33
Mahbubnagar	16	0343.18	0.69	003.36	68.6	13.91	07.04
Nalgonda	17	0538.60	0.69	010.56	60.8	32.31	08.85
Warangal	18	0537.47	0.01	009.82	77.0	25.51	18.40
Khammam	19	0541.43	0.88	014.27	68.6	16.97	15.60
Kareemnagar	20	0553.35	1.14	007.65	68.6	33.22	16.00
Adilabad	21	0473.85	0.64	002.16	65.0	07.21	02.89

The following map shows the agricultural output/Hectare in Rupees for each district in Andhra pradesh.

T A B L E : 13

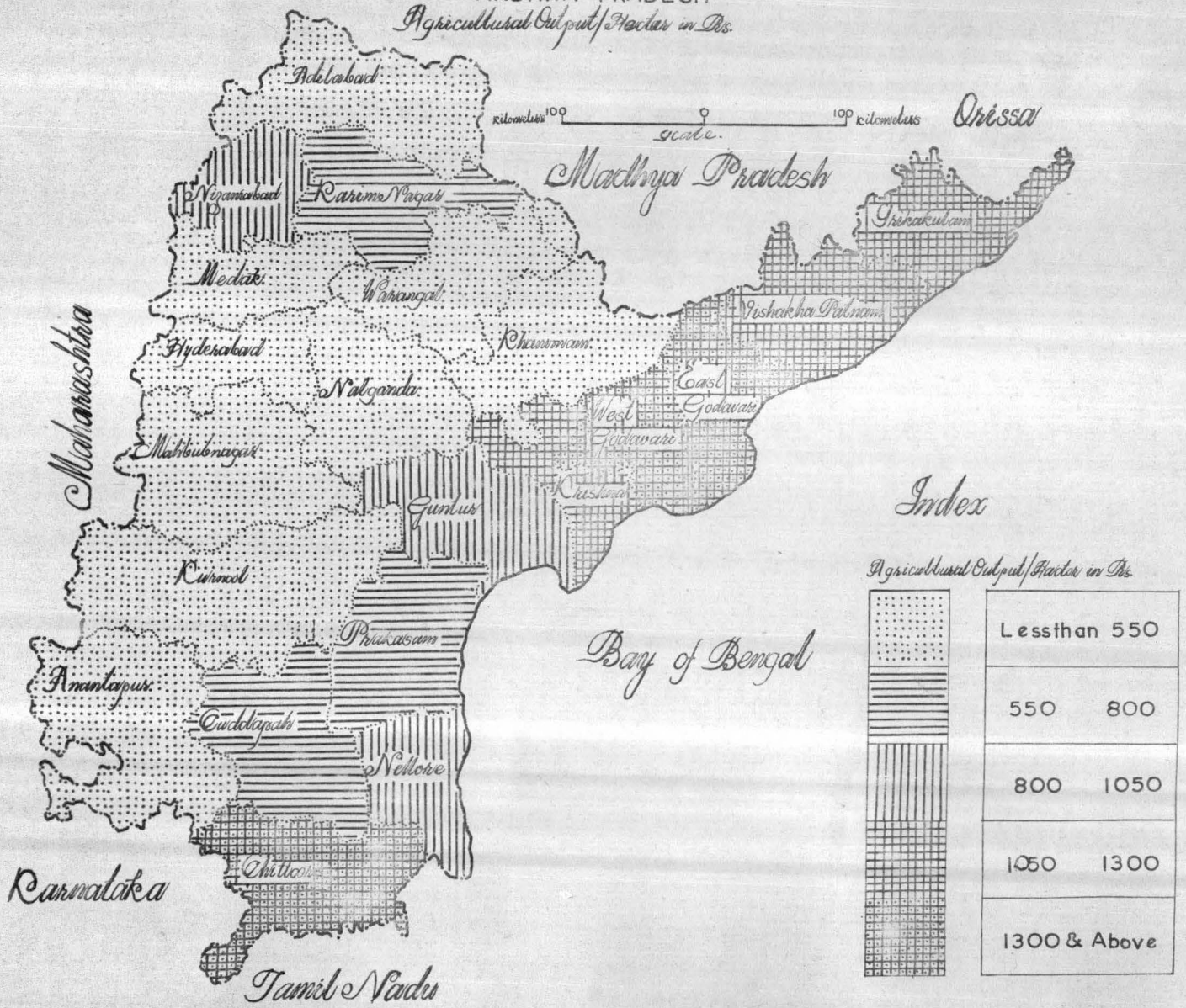
Agriculture Output/hectare (in Rs.) in Andhra Pradesh.

Range	No	Name of the district
300-550	9	1. Kurnool 2. Anantapur 3. Hyderabad 4. Medak 5. Mahbubnagar 6. Nalgonda 7. Warangal 8. Khammam 9. Adilabad.
550-800	3	1. Prakasam 2. Cuddapah 3. Kareemnagar
800-1050	3	1. Guntur 2. Nellore 3. Nizamabad
1050-1300	3	1. Srikakulam 2. Visakhapatnam 3. Krishna
1300- above	3	1. East Godavari 2. West Godavari 3. Chittore

MAP: 7

ANDHRA PRADESH

Agricultural Output / Hectar in Rs.



Index

Agricultural Output / Hectar in Rs.

Less than	550
550	800
800	1050
1050	1300
1300 & Above	

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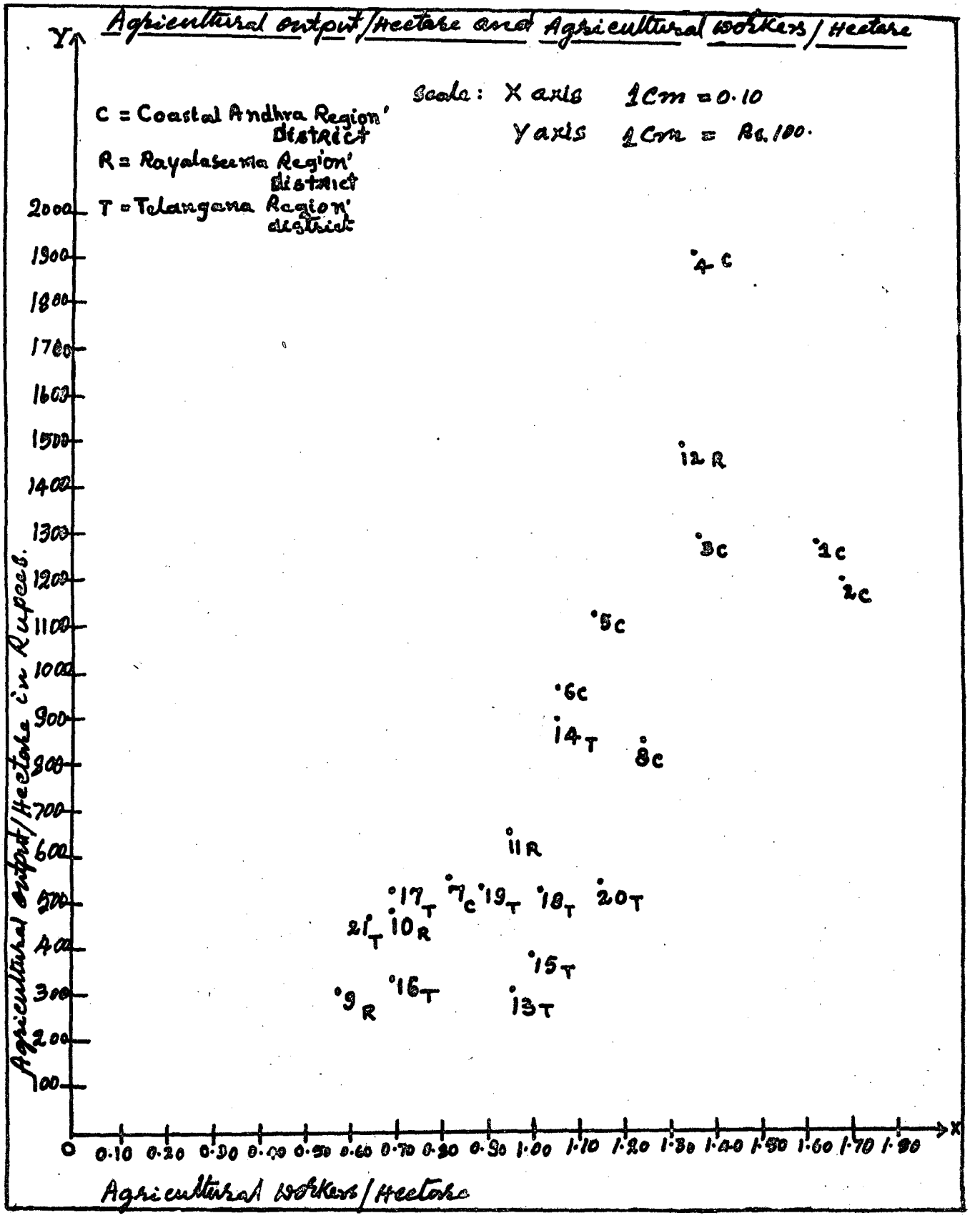
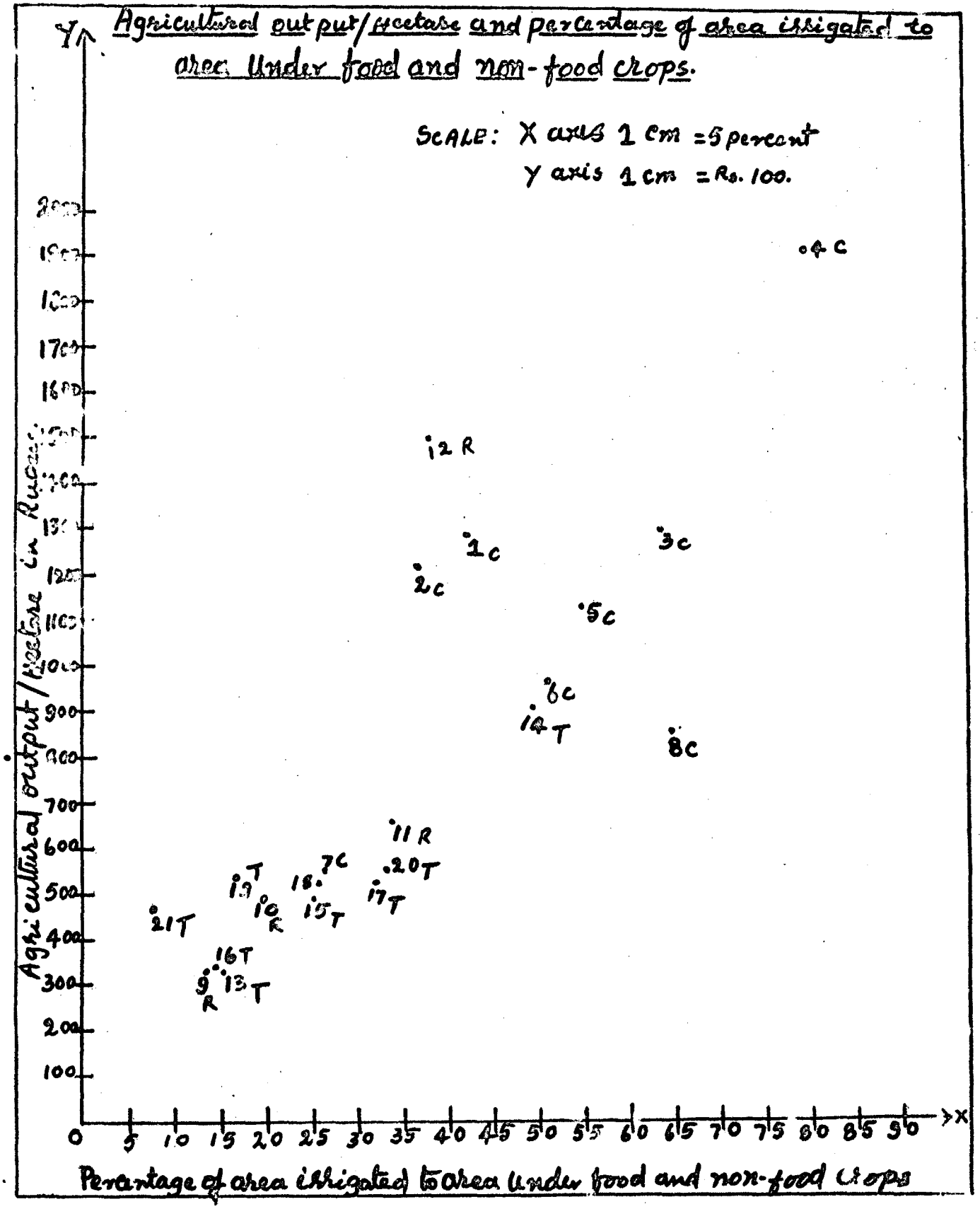

Agricultural output/Hectare and Agricultural Workers/Hectare
Y
C = Coastal Andhra Region' District
R = Rayalaseema Region' district
T = Telangana Region' district
Scale: X axis 1Cm = 0.10
Y axis 1Cm = Rs. 100.
Agricultural output/Hectare in Rupees.
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
4C
12R
3C
1C
2C
5C
6C
14T
8C
11R
17T
7C
19T
18T
20T
21T
10R
15T
9R
16T
13T
O
0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.90
X
Agricultural Workers/Hectare


Agricultural output/Hectare and percentage of area irrigated to area Under food and non-food crops.
SCALE: X axis 1 cm = 5 percent
Y axis 1 cm = Rs. 100.
Y
Agricultural output/Hectare in Rupees
X
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90
Percentage of area irrigated to Area Under food and non-food crops
4C
12R
1C
3C
2C
5C
6C
14T
8C
11R
20T
7C
19T
18
17T
10R
15T
21T
16T
9R
13T

From the preceeding map, we can see the cluster of similar productivity districts. There are twelve dry districts which are having less than Rs.800 agricultural productivity and the rest nine are irrigated districts by different sources.

We can see the cluster of districts, coastal Andhra and Rayalaseema and Telangana regions with the help of the following graphs, drawn on the basis of simple relation between, irrigation and productivity and availability of labour/Hectare and productivity.

We find from the graphs, that there is a wide gap between regions, coastal Andhra region, except PRAKASAM district, is showing higher levels of productivity and consumption of inputs. Similarly in Rayalaseema, Chittoor district is having higher level of productivity and consumption of inputs. Telangana region, except Nizamabad district, is having low productivity and low level of consumption of inputs.

Keeping in view the knowledge of the above graphs, we have worked out production relations for the three separate sets, viz; (1) Andhra pradesh (21 districts), (2) Coastal Andhra region(8 districts) and (3) Rayalaseema dnd Telangana regions(13 districts).

As the first step in regression analysis, we first worked-out correlation matrix for three sets of observations. They are

as follows:

TABLE : 14

CORRELATION MATRIX OF SIX VARIABLES IN ANDHRA PRADESH

Variable	Number	1	2	3	4	5	6
Agricultural Productivity	1	1.000					
Lab/hectare	2	0.790	1.000				
Capital/ hectare	3	0.519	0.339	1.000			
Soil rating index.	4	0.172	-0.089	-0.086	1.000		
% irrigated area	5	0.815	0.739	0.731	-0.065	1.000	
fertilizer/ hectare	6	0.532	0.505	0.828	0.080	0.714	1.000

From the help of the above table we observe the high correlation between productivity and availability of labour/ hectare and percentage of irrigated area. Percentage of irrigated area is showing correlation with labourers/Hectare and availability of capital/Hectare. Similarly fertilizer/Hectare is having high correlation with availability of capital/Hectare and percentage of irrigated area. Soil rating index is having a very insignificant correlation with agricultural productivity and other inputs.

Similarly, separate correlation matrices were obtained for the six variables for eight observations in coastal Andhra region and thirteen observations in Rayalaseema and Telangana regions. They are as follows:

TABLE : 15

CORRELATION MATRIX FOR SIX VARIABLES ON COASTAL ANDHRA REGION

Variable Number		1	2	3	4	5	6
Agricultural Productivity	1	1.000					
Workers/Hect.	2	0.671	1.000				
Capital/Hect.	3	0.060	-0.412	1.000			
Soil rating index.	4	0.554	0.415	0.163	1.000		
% of irrigated area	5	0.680	0.250	0.719	0.425	1.000	
fertilizer/Hect	6.	0.569	0.102	0.741	0.093	0.913	1.000

In Coastal Andhra region, Agricultural Productivity and Agriculture workers/Hectare, irrigated area and fertilizer/Hect. are showing high correlation. This is positive correlation, which indicates the increase in anyone of the above inputs,

productivity will be increased. Fertilizer/Hectare and irrigated area are highly correlated, indicating positive relationship between them. Similarly, capital/Hectare is highly correlated with irrigated area, showing the positive relationship between them.

TABLE : 16

CORRELATION MATRIX FOR SIX VARIABLES IN RAYALASEEMA AND TELANGANA REGIONS

Variable Number.	1	2	3	4	5	6
Agricultural Productivity. 1	1.000					
Workers/Hect. 2	0.657	1.000				
Capital/Hect. 3.	0.548	0.653	1.000			
Soil Rating Index. 4.	0.597	-0.370	-0.306	1.000		
% irrigated area. 5.	0.668	0.707	0.684	-0.270	1.000	
Fertilizer/ Hect. 6.	0.289	0.527	0.854	0.089	0.564	1.000

In Rayalaseema and Telangana regions, irrigated area is showing high positive correlation with Agricultural productivity and agriculture workers/Hectare. Similarly we find positive high correlation with capital/Hectare. These relations show that any increase in the inputs will cause a positive change in agriculture productivity.

The Cobb Douglas production functions were fitted on the different sets of observations for each of the following regions: (1) Andhra Pradesh (2) Coastal Andhra region and (3) Rayalaseema and Talangana regions. The procedure is as follows:

IV. Results of the data:

The estimated elasticities of output with respect to the resource inputs of land, labour, capital, fertilizer and percentage of area irrigated are analysed in this section. The elasticities are derived by fitting to the district data on regional basis Cobb-Douglas production function of the type:

$$\therefore \log y = \log + B_1 \log x_1 + B_2 \log x_2 + \ldots + B_n \log x_n$$

Where Y (dependent variable) is output/Hectare

is a constant

$x_1, x_2, x_3 \ldots\ldots x_n$ are inputs

B_1 B_2 B_3 etc., are co-efficients or the elasticities of output with respect to the inputs.

These elasticities or regression co-efficients indicate the percent change in output which would, on the average, be associated with a one percent increase in the input factor concerned while other factors remain constant. The sum of these elasticities indicates the returns to scale. The constant returns to scale are indicated when the sum of elasticities equals one, diminishing returns to scale are indicated if the

sum of elasticities is less than one, increasing returns when the sum is greater than one.

An important limitation of this function is that it allows either constant, increasing or diminishing marginal productivity and not an input-output curve embarcing all the three and assumes constant elasticity of substitution over the entire input-output curve.

The results obtained by fitting such a function need therefore, to be interpreted with a considerable degree of caution especially in cases where data cover all the three ranges of productivity (i.e.,) increasing, constant and diminishing marginal productivity. Some farm experiments have shown that there will be no bias in the estimates of returns to scale if the excluded variable varies on the average in the same proportion with proportional variations in all the included variables, But the returns to scale will be under-estimated if the proportional changes in the included inputs are associated with less than proportional changes in the excluded variable in the data and vice-versa.

While in the process of regression, we deleted some of the variables in the three sets, because they are showing negative and very insignificant elasticities in the analysis. They are as follows:

In Andhra Pradesh, we deleted availability of capital/ Hectare, Soil rating Index and fertilizer/Hectare.

In coastal Andhra region, availability of capital/hectare and soil rating index were deleted.

The following table shows the elasticities or regression coefficients for each variable in the taree sets of observations.

From the help of the following table, we observe that the input, agriculture workers/hectare, is having higher elasticity than other inputs in the three sets of observations. Its having the highest elasticity in coastal Andhra region. The least is recorded in the Rayalaseema and telangana regions. Its elasticity is significant for the whole Andhra Pradesh and insignificant for other sets. Capital input is not included in the first two sets, and in Rayalaseema and Telangana regions, it is showing a very insignificant elasticity when compared with other input elasticities, soil rating index was excluded from all three sets, because of its insignificant elasticity showed in taree sets of observations. Percentage of irrigated area is having highest elasticity in coastal Andhra followed by Andhra Pradesh and Rayalaseema and Telangana regions. It is significant in Andhra Pradesh and insignificant in other sets. The input fertilizer is having the negative elasticity in all the three sets.

TABLE - 17.

ELASTICITIES (REGRESSION COEFFICIENTS) FOR 21 DISTRICTS IN ANDHRA PRADESH

S.No.	Name of variable	ANDHRA PRADESH			COASTAL ANDHRA REGION			RAYALASEEMA	TELANGANA REGION	
		Elasticity	Computed 't' value	Significant or not	Elasticity	Computed 't' value	significant or not	Elasticity	Computed 't' value	significant or not
1	2	3	4	5	6	7	8	9	10	11
1.	Agricultural Labourers/Hect.	0.735 (0.316)	2.866	Significant	0.836 (0.430)	1.946	Insignificant	0.578 (0.573)	1.009	Insignificant
2.	Capital/Hect.	*	- -	-	*	-	-	0.033 (0.189)	0.176	Insignificant
3.	Soil Rating Index	*	- -	-	*	-	-	*	-	-
4.	% of Irrigated Area	0.443 (0.155)	2.329	Significant	0.456 (0.697)	0.654	Insignificant	0.304 (0.289)	1.051	Insignificant
5.	Fertiliser/ Hect.	*	-	-	0.045 (0.293)	0.154	Insignificant	*	-	-
6.	Sum of Elasticities	1.178	-	-	1.337	-	-	0.915	-	-
7.	R^2	0.742	-	-	0.732	-	-	0.516	-	-
8.	Intercept	2.19313	-	Significant	2.12906		Significant	2.32081		Significant

The table value of 't' at (n-k) degrees of freedom

where K = number of variables and n = number of observations.

in (a) Andhra Pradesh 18^{0} d. f at 1% significant at 5% significant limits.

(b) Coastal Andhra region 5^{0} d. f 2.861 2.093

4.032 2.571

(c) Rayalaseema and Telangana 10^{0} d. f 3.163 2.228

The figures in brackets show the standard error of the regression coefficient

(1) Significant at 5% confidence limits

(2) Significant at 1% confidence limits.

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The sum of elasticities is higher in Coastal Andhra region than other sets. The state as a whole is having sum of elasticities higher than one. But telangana is showing a sum less than one among the other sets.

The co-efficient of multiple determination (R^2), is higher in Andhra Pradesh than other sets. It is least in Rayalaseema and Telangana regions.

The term intercept or constant is higher in Rayalaseema and Telangana regions, and it is low in Coastal Andhra region. All the three values are significant at one percent probability limit.

From the preceeding table we find that, in the first set Adilabad district is having highest deviation from the estimated 'Y'. The next followed by west Godavari district. Observed and estimated 'Y' s are almost same in Nizamabad district. There are eleven districts showing negative deviation indicating, estimated 'Y' is more than observed 'Y'.

In Rayalaseema and Telangana regions, there are seven out of thirteen districts showing positive deviations.

The following table shows the observed 'Y' and estimated 'Y' percentage residual in three sets:

TABLE NO: 18.

District No.	ANDHRA PRADESH Observed 'Y'	Estimated 'Y'	% Residual	COASTAL ANDHRA AND RAYALASEEMA & TELANGANA REGIONS Estimated 'Y'	% Residual	
1.	1298.99	1192.60	- 8.92	1241.95	- 4.59	
2.	1217.39	1138.23	- 6.96	1198.14	- 1.61	Coastal
3.	1306.22	1214.67	- 7.54	1354.91	- 3.59	Andhra
4.	1921.68	1272.82	-50.98	1419.55	-35.37	Regions.
5.	1131.19	990.76	-14.17	1084.82	- 4.27	
6.	972.77	916.80	- 6.10	998.40	2.57	
7.	559.68	567.32	1.35	539.10	- 3.82	
8.	861.31	1142.01	24.57	1259.92	31.64	
9.	327.45	324.52	- 0.90	360.30	9.12	
10.	495.94	452.02	- 9.72	435.06	-13.99	
11.	663.31	761.63	12.91	681.87	2.72	Rayalas-
12.	1502.18	941.92	-59.48	825.22	-82.03	eema &
13.	335.12	490.66	31.70	510.71	34.38	Telangana
14.	909.74	909.12	- 0.07	778.94	-16.79	Regions.
15.	395.51	647.79	38.94	593.04	33.31	
16.	343.18	385.06	10.87	391.07	12.25	
17.	538.60	561.21	4.03	524.69	- 2.65	
18.	537.47	659.80	18.54	607.24	11.48	
19.	541.43	489.69	-10.56	501.67	- 7.92	
20.	553.35	818.91	32.43	699.80	20.93	
21.	473.85	269.72	-75.68	302.23	-56.79	

IV. 3. Interpretation of the results:-

From the table No.17 we can that marginal productivity of labour input is higher in the coastal Andhra region than the

other sets. which indicates the higher quality of labour in coastal region. But Rayalaseem and Telangana regions are having low marginal productivity for labour input. It may be because of uneconomic farming in the Rayalaseema and Telangana regions.

The elasticity of irrigated area is high and significant in the state as a whole. Which means agricultural productivity is highly influenced by the irrigation. Its elasticity is insignificant in Coastal Andhra and Rayalaseema and Telangana regions. A possible explanation for this is, that the districts were clustered when we draw a graph between irrigated area and agricultural productivity. This also show that a separate Regional study is not possible in the state, because there is a little difference in the districts in each region.

The fertilizer/Hectare is showing insignificant elasticity in coastal Andhra region. It is yielding negative elasticities in the other two sets. It may be due to some error in the availability of data, or it may be due to its quantitative inclusion in the production function.

The sum of elasticities which show a high degree of increasing returns to scale in coastal Andhra region. Reyalaseema and Telangana are showing diminishing returns to scale in the agriculture sectore, On the whole, the state is witnessing the increasing returns to scale.

The coefficient of multiple determination (R^2) is high in the first set of observations. This gap between explained and unexplained variation may be attributed to the qualitative variables like, management, quality of capital, and other institutional problems. In Telangana and Rayalaseema regions our variables ex lained only 50% of the variation in the agricultured productivity. which shows that there are some unknown (or unpublished) input data in those districts. we may attribute this gap to the environmental factors like, favourable monsoons, and soils.

The intercept is high in Rayalaseema and Telangana regions, which shows importance of the unincluded variables in the production function. However, the state and coastal Andhra region are having low intercept than the other set. The state as a whole the intercept is high, meaning thereby, the importance of other unincluded inputs.

The following map shows the percentage deviation of the observed 'Y' from the estimated 'Y' in Andhra Pradesh.

T A B L E - 19

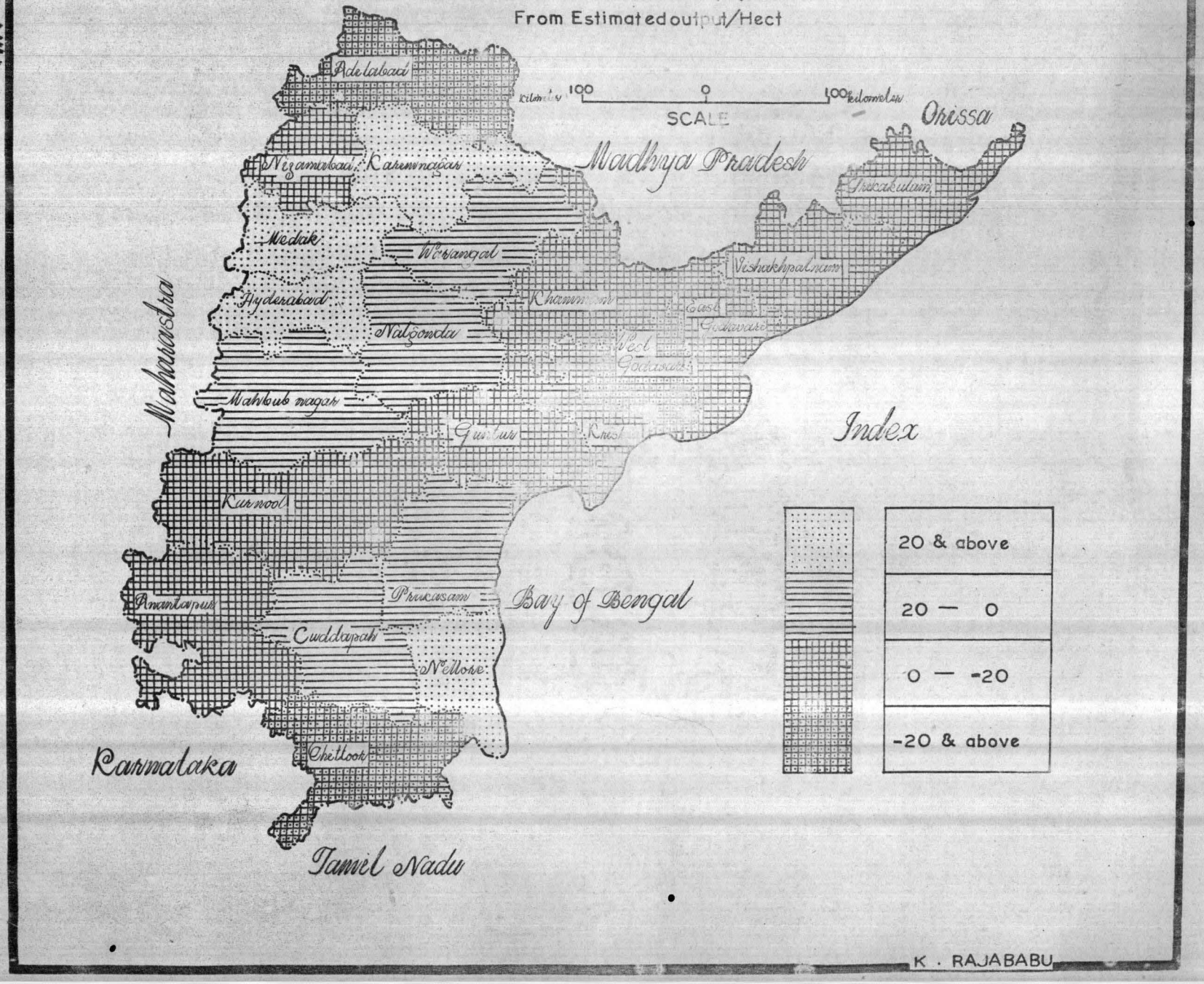
PERCENTAGE DEVIATION OF OBSERVED OUTPUT/HECTARE FROM THE ESTIMATED OUTPUT/HECTER IN ANDHRA PRADESH.

Range	No.	Name of the district.
-20 and above	3	1. West Godavari
		2. Chittoor
		3. Adilabad
-20 - 0	9	1. Srikakulam
		2. Visakhapatnam
		3. East Godavari
		4. Krishna
		5. Guntur
		6. Kurnool
		7. Anantpur
		8. Nizamabad
		9. Khammam
0 - 20	5	1. Prakasam
		2. Cuddapah
		3. Mahbub Nagar
		4. Nalgonda
		5. Warangal
20 and above	4.	1. Nellore
		2. Hyderabad
		3. Medak
		4. Kareemnagar.

MAP : 8

ANDHRA PRADESH

Percentage Deviation of Observed output/Hect From Estimated output/Hect



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From the preceding map, we observe that there are three districts which are highly advantageous in agriculture production viz: (1) West Godavari, (2) Chittoor and (3) Adilabad. In chittoor and Adilabad districts the output per hectare is low, but the use of inputs is considerably below normal, and hence we got the result like this. One possible cause may also be there, that in these two districts, the environmental factors might have been favourable for the last three years. Here we can see the cluster of advantageous districts and disadvantageous districts over the space. This agriculture land scape will provide a basic knowledge for micro-level planning in the state.

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CHAPTER V

SUMMARY AND CONCLUSION

CHAPTER - V.

SUMMARY OF FOUNDINGS

The summary of the preceding four chapters will enable us to understand the present state of Andhra Pradesh.

In the first chapter, we delt with general features of the state's economy by giving brief account on, social, demographic and economic characteristics of the population.

In the second chapter, we explained the need for the study, the objectives and hypotheses followed by methodology.

Third chapter entirely dealt with the variations in levels of overall development by means of some selected, social, demographic and economic indicators.

Fourth chapter attempts to study the variations in agricultural production in the state. The salient features of the findings can be summarised as follows:

1) There are at least one hundred and forty one backward/ semi-backward taluks in the state.

2) All the less developed areas got clustered.

3) Development is followed by higher degree of urbanisation in the state.

4) Among the developed and less developed areas, we find, hierarchical pattern in the space.

5) Among the developed and highly developed taluks, the factor scores are widely varying, for example, Hyderabad urban taluk is having 9.999, while the next taluks in that range are having around 6. This shows that the level of development is uneven among the highly developed areas. We find the paragite nature of the highly advanced taluks, because all the advanced taluks are surrounded by backward taluks.

6) Agricultural Productivity is more in coastal districts than in the other districts. The highest production is recorded in the west godavari district.

7) The areas where agricultural productivity is low, are backward in overall development and vice-versa. Differences in agricultural production are a major cause of differences in the levels of development.

8) The physical land scape acts as a bottle neck in the process of development. The forest areas, hill areas, dry areas are relatively underdeveloped in the state.

9) The state has made notable improvement in agricultural production. Because, we find, that the agricultural ~~pro~~ sector is witnessing increasing returns to scale.

10) The differences in availability of labour in agriculture is causing differences in agricultural production. This is proved by the regression coefficients of the state, coastal Andhra and Rayalaseema and Telangana regions.

A study of input-output relations in Andhra Pradesh reveals that inputs have an important part to play in the level of agricultural development.

Taking Andhra Pradesh as a whole we discover interesting analysis that irrigation input is very important. But when we come to coastal Andhra region, we find insignificant elasticity, meaning thereby that there are no variations in the agricultural productivity in respect of irrigation. Similarly, we find insignificant elasticity for irrigation in Rayalaseema and Telangana region, meaning thereby, that there are no variations in agricultural productivity in respect of irrigation. This is because of lack of irrigation facilities in that region.

Similarly, the availability of labour is playing a very important part in the agricultural production. Its elasticity

is highly significant at the state level and becomes insignificant in the regions. The interpretation is same as irrigation input.

Fertilizer is showing negative elasticity at the state level and insignificant in the coastal and Telangana and Rayalaseema regions.

There are two clusters among the districts in the state, viz; (1) Coastal Andhra, and (2) Rayalaseema and Telangana regions. The gap between these two clusters are wide and significant. This was broughtout by the graphs drawn on the basis of simple relations between productivity and irrigation and availability of agricultural workers/Hectare and productivity.

A region-wise study is not possible in the state, because all the districts in a region clustered in space. This is brought out in the graphs drawn on the basis of simple relationships between agricultural productivity and agricultured workers/ Hectare and irrigated area. Because of this clustering output input elasticities are showing insignificance in the sets, viz; Coastal Andhra and Telangana and Rayalaseema regions.

The study reveals the need for the following areas to be developed rapidly:

Entire districts Mahbubnagar, Visakhapatnam Srikakulam, Prakasam Warangal, Khammam Nalgonda and Adilabad should be declared as backward districts and priority should be given in developing them in the state and central plans.

Prakasam district in coastal Andhra region is backward, it would be better to add this district in Rayalaseema region in view of developing the region with single strategy.

Irrigation facilities should be increased in Telangana and Rayalaseema regions. Prakasam district also need for the development of irrigation facilities.

Special attention should be given to the Rayalaseema and Telangana regions in preparing development plan for agriculture. It would be better to cultivate the crops which need less irrigation in these regions.

As a stategy for area development certain number of services and facilities should be provided by the government for each settlement in a taluk. The choice of settlements would depend upon the situation and existing levels of facilities and services available in the settlements. For this purpose, the planning authorities should have an inventory and analytical unit that would translate the area development strategy into a spatial development framework and also evaluate the progress from time to time. The hierachie pattern of would bring about greater efficiency and result in greater economics of scale and avoid wastage due to the choice of wrong locations which are often

motivated by narrow political considerations. Also, from the point of agricultural development strategy the approach to the location of centres equipped with various agricultural inputs and infrastructure as well as facilities for marketing and processing requires a regional approach which would take into consideration the differential demand for these facilities for arising out of the differences in the levels of consumption by different sections of the people.

This study has also revealed some of the problems relating to the preparation of base maps appropriate to the objectives of the study and difficulties in the availability of unpublished data. Making of base maps itself becomes a time consuming exercise and the maps had to be prepared after reference to several sources. Like-wise, the data on broad land utilization and cropping pattern are not available at the taluk level. The secondary data provided by the census regarding various services and facilities should be supplemented by the commercial establishment which by their number, size and spatial arrangement portray the functional level of settlements. Talukas should undertake data collection, survins and analysis of different elements in plans, in order to formulate an integrated area development plans in the regional and sub-regional level. The purpose of this study would have been justified if it has provided certain guidelines for the understanding of the present state of economy in Andhra Pradesh, for formulating future integrated area development plans.

APPENDIX

COMPOSITE INDEX OF EACH TALUK

Sl. No.	State/District/Taluk	Composite Index	Code No. of Taluk.
1	2	3	4
	ANDHRA PRADESH		
	Srikakulam District		
1.	Srikakulam	3.273	1
2.	Cheepurupalle	2.280	2
3.	Bobbili	2.442	3
4.	Salur	2.863	4
5.	Parvatipuram	2.523	5
6.	Palakonda	2.747	6
7.	Pathapatnam	2.104	7
8.	Narasannapeta	2.487	8
9.	Tekkali	2.817	9
10.	Sompeta	2.562	10
11.	Ichchapuram	2.397	11
	Vishakhaptnam		
1.	Vishakhapatnam	6.596	12
2.	Yellamanchili	3.481	13
3.	Anakapalle	4.466	14
4.	Narasapatnam	2.227	15

1	2	3	4
5.	Chintapalle	2.076	16
6.	Paderu	1.501	17
7.	Chodavaram	2.376	18
8.	Srungavarapukota	2.331	19
9.	Gajapathinagaram	1.795	20
10.	Vijayanagaram	4.447	21
11.	Bheemunipatham	2.722	22
	East Godavarinam District		
1.	Kakinada	4.726	23
2.	Amalapuram	3.607	24
3.	Mummidivaram	2.592	25
4.	Razole	3.526	26
5.	Kothapeta	3.001	27
6.	Alamur	3.838	28
7.	Ramachandrapuram	4.314	29
8.	Rajamundry	5.833	30
9.	Rampachodavaram	1.706	31
10.	Yellavaram	1.898	32
11.	Peddapuram	2.848	33
12.	Prathipadu	2.688	34
13.	Tuni	3.073	35
14.	Pithapuram	3.318	36

1	2	3	4
	West Godavari District		
1.	Eluru	5.297	37
2.	Chinatalapudi	2.855	38
3.	Polavaram	3.024	39
4.	Kovvur	3.821	40
5.	Tadepalligudem	4.484	41
6.	Tanuku	6.692	42
7.	Narasapur	4.322	43
8.	Bheemavaram	4.050	44
	Krishna District		
1.	Bandar	4.587	45
2.	Diwi	4.171	46
3.	Gannavaram	4.310	47
4.	Vijayawada	5.636	48
5.	Nandigama	3.276	49
6.	Jaggayyapet	5.331	50
7.	Tiruvur	3.056	51
8.	Nuzvid	3.708	52
9.	Gudivada	4.670	53
10.	Kaikalur	2.961	54

1	2	3	4
	Guntur District		
1.	Guntur	6.419	55
2.	Tenali	4.374	56
3.	Repalle	3.673	57
4.	Bapatla	4.215	58
5.	Narasaraopet	4.284	59
6.	Vinukonda	2.986	60
7.	Palnad	2.804	61
8.	Sattenapalle	2.999	62
	Prakasam District		
1.	Ongole	3.819	63
2.	Kandukur	2.854	64
3.	Kanigiri	3.299	65
4.	Giddalur	3.448	66
5.	Markapur	3.585	67
6.	Podili	3.409	68
7.	Darsi	2.682	69
8.	Addanki	2.959	70
9.	Chirala	4.190	71

1	2	3	4
	Nellore District		
1.	Nellore	5.283	72
2.	Gudur	3.957	73
3.	Sullurpet	3.295	74
4.	Venkatagiri	3.162	75
5.	Rapur	3.251	76
6.	Atmakur	2.812	77
7.	Udayagiri	3.575	78
8.	Kavali	3.563	79
9.	Kovur	3.497	80
	Chittoor District		
1.	Chittoor	3.679	81
2.	Bangarupalem	2.759	82
3.	Palamner	2.779	83
4.	Kuppam	2.863	84
5.	Punganur	2.823	85
6.	Madanapalle	3.165	86
7.	Vayalpad	3.233	87
8.	Chandragiri	5.039	88
9.	Sri Kalahasti	3.241	89
10.	Satyavedu	2.562	90
11.	Puttur	2.744	91

1	2	3	4
	Cuddapah District		
1.	Cuddapah	4.009	92
2.	Rayachoti	2.877	93
3.	Pulivendla	3.897	94
4.	Kamlapuram	3.485	95
5.	Jammalamadugu	3.982	96
6.	Proddatur	3.908	97
7.	Badwel	3.132	98
8.	Sidhout	2.541	99
9.	Rajmpet	3.485	100
	Anantapur District		
1.	Anantapur	3.664	101
2.	Kalyandrug	2.698	102
3.	Rayadrug	2.776	103
4.	Uravakonda	3.058	104
5.	Gooty	3.963	105
6.	Tadpatri	3.347	106
7.	Dharmavaram	3.326	107
8.	Kadiri	2.983	108
9.	Penukonda	2.721	109
10.	Hindupur	3.183	110
11.	Madakasira	I.711	111

1	2	3	4
	Kurnool District		
1.	Kurnool	4.322	112
2.	Nandikotkur	2.735	113
3.	Atmakur	3.340	114
4.	Nandyâl	3.478	115
5.	Allagadda	2.782	116
6.	Koikuntla	2.787	117
7.	Banganapalle	4.050	118
8.	Dhone	2.763	119
9.	Pattikonda	1.893	120
10.	Alur	2.117	121
11.	Adoni	4.569	122
	Mahbubnagar District		
1.	Mahbubnagar	3.763	123
2.	Shadnagar	2.214	124
3.	Kalvakurthi	2.290	125
4.	Achampet	1.469	126
5.	Kollapur	2.022	127
6.	Nagarkurnool	2.260	128
7.	Wanaparthi	2.305	129
8.	Alampur	2.136	130
9.	Gadwal	1,941	131
10.	Atmakur	2.310	132
11.	Makthal	2.540	133
12.	Kodangal	2.593	134

1	2	3	4
	Hyderabad District		
1.	Hyderabad	9.999	135
2.	Medchal	2,939	136
3.	Hyderabad East	2.981	137
4.	Ibrahimpatnam	2.274	138
5.	Hyderabad West	3.037	139
6.	Chevella	2.017	140
7.	Pargi	1.888	141
8.	Tandur	3.392	142
9.	Vicarabad	2.429	143
	Medak District		
1.	Sangareddy	3.348	144
2.	Zahirabad	2.913	145
3.	Naranyankhed	1.674	146
4.	Andole	2.583	147
5.	Narsapur	2.065	148
6.	Medak	2.605	149
7.	Gajwel	2.179	150
8.	Siddipet	2.824	151

1	2	3	4
	Nizamabad District		
1.	Nizamabad	3.994	152
2.	Armur	3.508	153
3.	Kamareddy	2.696	154
4.	Yellareddy	2.249	155
5.	Banswada	3.074	156
6.	Mudnur	2.373	157
7.	Bodhan	3.778	158
	Adilabad District		
1.	Adilabad	4.634	159
2.	Utnur	1.553	160
3.	Arifabad	2.889	161
4.	Sirpur	3.570	162
5.	Chinnur	2.228	163
6.	Lakshettipet	2.800	164
7.	Khanapur	1.969	165
8.	Boath	1.916	166
9.	Nirmal	3.356	167
10.	Mudhol	2.632	168

1	2	3	4
	Karimnagar District		
1.	Karimnagar	3.168	169
2.	Sirsilla	3.071	170
3.	Metapalli	2.952	171
4.	Jagitial	2.921	172
5.	Peddepalle	2.810	173
6.	Manthani	2.273	174
7.	Huzurabad	2.292	175
	Warangal District		
1.	Warangal	4.002	176
2.	Parkal	2.413	177
3.	Mulug	2.156	178
4.	Narasampatnam	2.001	179
5.	Mahbubabad	2.577	180
6.	Janagaon	2.671	181

1	2	3	4
	Khammam District		
1.	Khammam	3.499	182
2.	Yellandu	3.562	183
3.	Bhoorgampadu	2.356	184
4.	Nugur (Indopendent)	1.915	185
5.	Bhadrachalam	3.413	186
6.	Kothagudem	3.284	187
7.	Madhira	2.648	188
	Nalgonda District		
1.	Nalgonda	2.874	189
2.	Saryapet	2.876	190
3.	Huzur Nagar	2.708	191
4.	Miryalaguda	2.421	192
5.	Devarakonda	1.969	193
6.	Bhongir	2.853	194
7.	Ramapet	2.417	195

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