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R.E. Huke and E.H. Huke

INTERNATIONAL RICE RESEARCH INSTITUTE

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Contents

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Foreword

The human geography of rice production on the Indian subcontinent is characterized by high population density and very rapid population growth, with 20% of the world's people located on barely 3% of its land surface. Rice is by far the leading crop, and its production will have to increase by over 3.5 million t/yr just to maintain current levels of food intake. Farms are small, averaging slightly more than 1 ha, and over much of the area, milled rice yields are less than 1 t/ha.

In 1982 the International Rice Research Institute published a data set and three maps to illustrate the extent and the spatial distribution of six major physical environments in which rice is grown in Asia. The tables and maps presented in this publication are designed to supplement the 1982 series and to illustrate some of the human and economic parameters of the rice situation.

Dr. Robert E. Huke, visiting scientist from the Department of Geography, Dartmouth College, Hanover, New Hampshire, USA, together with Ms. Eleanor H. Huke, cartographic technician, Cold Regions Research and Engineering Laboratory, Hanover, collected and standardized the data, supervised the computerization, and designed and executed the maps. The text and the tables were edited by Dr. Stephen-J. Banta and Ms. Gloria Argosino.

K. LAMPE
Director General

Human Geography of Rice in South Asia

Enormous strides have been made over the past three decades in the productivity of many crops, including rice. In some areas, yield gains have temporarily outstripped population gains. Increasingly, science has the luxury of giving attention to the human geography of rice-producing areas. It is not merely directing research toward the maintenance of advances already made but is developing a new focus on providing opportunities for those who have yet to benefit from those advances: How many farmers - and which areas - have not yet shared in the fruits of modern technologies? How many have worked hardest with the least return? Where are they and in which physical environments do they work?

In considering the potential impact of new rice-farming methods on society, it is essential to have information on both the physical and the human environments concerned. The agricultural sciences, such as plant breeding, agronomy, entomology, and soil microbiology, often find their research efforts delineated by particular environments most often described by physical parameters that may cut across several human environments. At the International Rice Research Institute (IRRI), analysis of rice environments has been limited largely to this physical base. The database presented here and the maps developed from it represent the same farms that have been studied

previously, and the same crop, but with a focus on the human or social elements of the system - elements that also need consideration.

Agricultural population densities on Asia's rice-producing lands are among the highest in the world. Rice is grown mainly on small farms without mechanization, and many residents of rice areas own no land, depending on farm labor for their meager incomes. Labor demands are often highly seasonal, and underemployment - a common economic problem - contributes to the poverty that characterizes many locations. Statements like these are difficult to quantify or document for a given area, and over broad regions the data are frequently difficult to equate. It is toward providing a more uniform relationship, area to area, that the present database and the accompanying maps are directed. The patterns of human occupation of the land are obvious in no other way.

In 1982, IRRI published *Rice area by type of culture: South, Southeast, and East Asia*. The database and the maps in that publication represented an early attempt to classify, quantify, and map the physical conditions under which rice is raised. In that work, water control was taken as the most important aspect of the environment for rice production in the tropical and subtropical regions of Asia and was thus used as the chief determinant of the

classification scheme. The present database and the accompanying maps of South Asia supplement the 1982 materials.

The scale for the present maps is the same as that used previously, and the same political units have been used for plotting the data. For India, the basic unit is the district, of which there are over 360. Since the publication of the 1982 maps, political boundaries have had some minor changes. Changes within India were reported in detail in the *Census of India 1981, Series-1 India, General population tables* (1985). These changes have been incorporated in the present maps to show the most recent conditions, and the tables have been adjusted accordingly.

As with the earlier work, the accompanying maps attempt to place rice farmers as close as possible to their real world locations. Forest reserves, inland waters, rugged uplands, urban centers, and other areas not used for rice farming have been avoided.

Economic and social data are neither gathered nor reported uniformly across national borders. For example, the partitioning and reporting of farmholdings in Bangladesh utilize three size categories in acres, while the Indian data describe five categories in hectares. For Bangladesh, the largest size includes everything equal to or larger than 75 acres, while for India the top class is 10 ha or larger. So, too, the definitions of cultivators, holdings, agricultural laborers, and most other terms show at least minor differences among countries. An explanation of the terms used and of differences across boundaries follows.

India

Employment data were derived chiefly from the *Census of India 1981* (1985). The census, which was conducted in February and March 1981, was the twelfth such operation in India since 1872 and the fourth since Independence.

Provisional results were released in 1982, and the first volume of the general population tables was released in 1983. General population tables for some individual states had been released by February 1987, but others were still in process.

The columns under “total agricultural labor” show the distribution of cultivators, agricultural laborers, and rural marginal workers by state and by district (Tables 1-18). These figures are provided by the census, but they refer to *all* cultivators, agricultural laborers, and rural marginal workers, not just those engaged in rice farming. Some assumptions had to be made to arrive at the numbers in rice cultivation.

First, the number of persons counted as rice cultivators and rice laborers for each district was taken to be in the same ratio as the area planted to rice was to the total area planted during the *main* crop. The common belief is that rice farms are smaller than farms devoted to other crops; no adjustment was made for this possibility, but it is hoped that possible errors were minimized by using an area as small as the district rather than generalizing at the state level.

In the case of marginal workers, the census figures were not limited to those in agriculture but included all such workers in a district. The census, however, did separate the figure into urban and rural components. Thus, prior to partitioning according to the ratio of rice area to total area planted during the main crop, all urban based marginal workers were excluded. This may have resulted in undercounting, as some part-time rice workers may reside in urban areas.

The census defined cultivators, agricultural laborers, and marginal workers as follows:

Cultivator. A person was considered a cultivator if he or she was engaged as an employer, single worker, or family worker in cultivation of land either owned or leased from the government or from private persons or institutions for payment in money, kind, or share of the

crop. Cultivation included supervision or direction of cultivation.

A person who had leased his or her land to another person or persons for cultivation for money, kind, or share of the crop and who did not supervise or direct cultivation was not treated as a cultivator. Similarly, a person working another person's land for wages in cash or kind or a combination of both was not treated as a cultivator.

Cultivation involved plowing, sowing, production, and harvesting of cereals and millet crops such as wheat, rice, jowar, bajra, and ragi, and of pulses, raw jute and kindred fiber crops, cotton, etc., but did not include growing fruits or vegetables, keeping orchards, or working on plantations that produce tea, coffee, rubber, cinchona, or other medicinal crops.

Agricultural laborer. A person who worked another person's land for wages in cash, kind, or share of the crop was regarded as an agricultural laborer. Such a person had no right of lease on land which he or she worked, and no risk in cultivation.

Marginal worker. A marginal worker was one who worked any time at all in the year preceding the enumeration but did not work for a major part of the year, i.e., one who worked for less than 183 d.

A special problem and a possible source of serious undercounting exists in regard to the category of marginal workers. In the rice-producing areas of Asia, women and young children play extraordinarily important roles in agricultural operations, although those roles are most often in addition to other roles as housewives or students. The census apparently discounted this important source of part-time labor. It says, "A man or woman who was engaged primarily in one's own household duties or a boy or a girl who was primarily a student, even if such a person helped in the family economic activity but not as a full-time worker, was not treated as a worker"

In determining the ratio of rice to total main crop area,

figures were needed for both the net cultivated area and the area planted to the main rice crop. Net cultivated area was derived from the agricultural census of 1976-77. The total area of agricultural holdings was taken for the 11 major land record states (states for which full land records have been maintained) and compared with the net cultivated area for the same states. The area of holdings exceeded the net cultivated area by 10%. Thus, in all subsequent calculations 10% was removed from all area-of-holdings figures to provide an analogue for net cultivated area —for which figures were not otherwise available on smaller than a statewide basis. In calculating the figure, the area planted to the main rice crop (excluding any second crop of rice) was divided by the net area planted (as opposed to the total or gross area planted). This calculation resulted in 1 district each in Uttar Pradesh and Bihar, 6 districts in West Bengal, and 3 districts in Orissa reporting slightly over 100% of the net sown area to be planted to rice. Clearly, such a situation cannot represent real life. In such cases, and for subsequent calculations, the figure was taken as 100%.

The totals for cultivators, agricultural laborers, and rural marginal workers by district as recorded in or derived from the 1981 census were multiplied by the percentage of net area planted to rice to obtain the figures plotted on the map and recorded in the database. These numbers assume that the persons concerned represented labor on farms where the *main* crop is rice, grown as a monocrop —thus the caption "Full-time equivalents." This method perhaps resulted in an underenumeration of the actual number of people involved in rice farming, because adjoining farms may divide the area of the main planting between two crops such as sugarcane and rice. On the map and in the database, such a situation would result in the counting of *one* full-time equivalent rather than two half-time persons.

Figures for area planted to rice by culture type were taken from the earlier publication (Huke 1982) for India because the data for rice by culture type and the *Agri-*

cultural census 1976-77, from which the present data on farm size and the figures for total cultivated area by district were derived, date from approximately the same time. For most states, the change in rice area between 1982 and the most recent published figures was relatively minor, except for the Punjab, where a very rapid growth in both area planted to rice and yield took place starting about 1965. For the Punjab, the area planted to rice by district was taken from *Agricultural situation in India*, December 1985, and concerns the 1983-84 crop year.

Data for the India portion of the maps - mean farm size and number of rice holdings - were derived chiefly from the *All India report on agricultural census 1976-77* (1983). The first agricultural census in India was conducted during agricultural year 1970-71. It proved to be so valuable a tool for planning that it was decided to undertake agricultural census operations at more frequent intervals. Accordingly, a census was completed on a sample survey basis in 1976-77, and another agricultural survey was undertaken in 1980-81. Data from the latter had yet to be released in February 1987, and even the 1976-77 census had published only a single volume. This volume and a series of 22 articles appearing monthly in *Agricultural situation in India*, with the first appearing in January 1980, provided the data reported here for all states except the Punjab. The security situation in the Punjab during 1976-77 was such that the agricultural census could not be completed there; Statewide totals for number and area of holdings were reported, but no district breakdown was available. For purposes of the accompanying database, a dummy variable representing net area planted by district was constructed by totaling the area planted to the 10 leading crops of the state as reported, district by district, in *Agricultural situation in India*, Vol. 35, nos. 1-12 and Vol. 36, nos. 1-12. The "area of holdings operated" for the state as reported in the census was apportioned to the districts according to the ratio of the dummy variable to the state total for the 10 major crops. The same ratio was

used to apportion the number of holdings by district.

Data for the number of holdings and the area of holdings by district were based on complete enumeration in all villages in the states having comprehensive land records. In the remaining states, including Kerala, Orissa, and West Bengal, the data were based on a sample survey. For purposes of the census the operational holding was defined as "all land that is used wholly or partly for agricultural production and is operated as one technical unit by one person alone or with others without regard to the title, legal form, size, or location." The operational holding was the unit around which the census was built and the unit used in the construction of the accompanying map.

Bangladesh

All the data shown in the Bangladesh table and plotted on that portion of the maps were derived from figures in the *Statistical yearbook of Bangladesh*, published annually by the Bureau of Statistics, Ministry of Planning, Dhaka. The 1984-85 and 1985-86 issues were used as footnoted in Table 19.

Data for rice area planted and for total cropped area are dated 1981-82. The number of holdings and mean size of holdings were from the 1983-84 agricultural census as shown on Table 4.31 of the 1986 yearbook and also on Table 4.28 of the 1985 yearbook.

Figures for rice cultivators, rice laborers, and rice marginal workers were reached by multiplying the larger figures of the three preceding columns by the percentage that rice occupies of the total cropped area. This number is somewhat different from the figure for India, where the ratio was that of the main rice crop (excluding second and third crops) to net sown area (a figure that excludes all second crops and refers to surface area only). For Bangladesh, the problem of the ratio of rice to total agriculture

exceeding 1.00 did not occur. Fully comparable data were not available for the two counties; however, the differences appear to be minimal.

Pakistan

All data reported for Pakistan (Table 20) have been developed from the *1980 Census of agriculture* (1984), which was the third decennial census conducted in that country. Like the preceding census operations, it was conducted on a sample basis, designed to provide timely and accurate results at the district level. It reports on agricultural year 1979-80, i.e., 1979 kharif and 1979-80 rabi, except for figures concerning number and size of farms, which relate to the census day, 1980.

The census uses the following definitions to cover the various categories of farm work:

Agricultural work means farm work and planning. It includes work on the farm, feeding and care of livestock and poultry, supervision of agricultural workers, hauling farm produce to market, and any other work related to farm operation.

Casual labor means labor employed occasionally on a daily wage basis for specific agricultural work.

Family workers include household members of 10 yr and above who do any kind of agricultural work on their holding, either permanently or part-time. Persons working on a permanent basis include members of the household who do agricultural work exclusively, plus older household members who may not do any physical work but take part in the planning and operation of the farm. Household members doing part-time work include those who, in addition to the agricultural work of the holding, also do some other work such as service or business.

Permanent hired labor means persons who work on the farm on a full-time basis and are employed for longer periods. They receive wages in cash or kind on a fixed-period basis, e.g., monthly, quarterly, or yearly.

As was done for India and Bangladesh, the numbers of rice cultivators, rice laborers, and rice marginal workers were taken in terms of "full-time equivalents." These numbers were arrived at by multiplying the figures for total cultivators, agricultural laborers, and marginal workers by the percentage *devoted to rice* of the net sown area of each district.

N e p a l a n d S r i L a n k a

Data for Nepal are reported in Table 21, and those for Sri Lanka in Table 22. In neither case could labor data comparable to those identified for India, Bangladesh, and Pakistan be located. In both Nepal and Sri Lanka, the area planted to each of the six rice environments is as reported in Huke (1982). For Nepal, the figures listed for number of holdings and area of holdings are as reported in the *Statistical pocket book—Nepal* (1974) and repeated in a more condensed form in the Asian Development Bank (1982) agricultural sector study. Mean size of holding is derived from these. The figure for percentage in rice would normally be developed by comparing the area planted to rice with the total area of holdings for each region. In the case of Nepal, it is clear - that the regional partitioning reported in the *Statistical pocket book—Nepal* (1974) is not the same as the partitioning used by Huke (1982). Because of this difference in the delimitation of regions bearing the same names, it was not reasonable to present figures for the percentage of farmed land in rice by district; however, a national figure was derived—68% , which is somewhat higher than the 60% that results from dividing the figure

for rice area by the figure for arable land reported in the *FAO production yearbook – 1985* (1986).

For Sri Lanka, the figures for both number of holdings and area of holdings came directly from Table 1, page 13, of the *Sri Lanka census of agriculture, 1982* (1985). Numbers for percentage in rice were developed by dividing the net area planted to rice by the area of holdings. The net area planted to rice was estimated, as in the tables for the other nations, by totaling all categories of rice except irrigated dry season, on the premise that rice identified in that category represents a second rice crop on land that has already been counted. Thus, the figures for percentage in rice represent the situation during the main cropping season, with no consideration of double or triple cropping.

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Tables

Table 2. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Andhra Pradesh, India.

District	Rice area by culture type (000 ha)						Farmholding data				Employment data					
	Dryland	Deep-water	Irrigated		Rained		Number of holdings (000)	Area of holdings (000ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
			Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborer ^b	Rural marginal workers ^c
Srikakulam	42		146	4	21		426	522	1.22	45	353	290	107	157	129	48
Vishakhapatnam	26		78	2	13		313	468	1.49	26	418	212	107	116	59	30
visianagaram ^d										37	345	240	86	126	89	32
East Godavari		50	136	91	39	19	322	512	1.59	53	604	86	161	320	137	65
West Godavari			186	113	53	27	276	508	1.84	58	256	588	55	149	342	32
Khrisna		50	169	80	48	24	347	584	1.58	55	250	535	85	138	296	47
Guntur		50	157	709	45	23	451	672	1.39	45	384	674	114	175	306	52
Prakasam	14		49	20	7		311	767	2.47	10	324	452	93	33	46	9
Nellnore			109	76	6		245	457	1.87	28	233	377	70	65	105	20
Kurnool	14		49	21	7		256	1035	4.04	8	279	400	56	21	30	4
Anantapur	12		43	37	6		281	1146	4.08	6	438	388	74	26	23	4
Cuddapah	12		41	18	6		213	510	2.40	13	256	303	67	33	39	9
Chittoor	16		59	54	6		356	632	1.78	15	504	368	96	74	54	14
Rangareddi	3		20	17	3		159	539	3.39	5	226	199	48	12	11	3
Nizamabad	11		9													
1	27	11		231	434	1.88	29	313	228	43	91	66	12			
Medak	8		61	39	8		253	636	2.59	13	367	259	82	49	35	11
Mahbubnagar	8		56	38	8		318	1263	3.97	7	512	397	115	37	29	8
Nalgonda	13		122	101	13		309	955	3.09	17	384	361	109	66	52	19
Warangal	16		54	29	8		310	707	2.28	12	354	361	109	43	44	13
Kahmmam	16		55	7	8		181	511	2.63	17	240	309	53	41	53	9
Karimnagar	17		58	54	8		354	719	2.03	13	403	406	65	52	52	8
Adilabad	5		37	12	5		238	785	3.30	7	263	251	54	17	17	4
Total or av	233	150	1786	949	331	93	6150	14362	2.34	20	7706	7686	1848	1843	2024	473

^aTotal cultivators X percentage of sown area in rice
100

^bTotal agricultural laborers X percentage of sown area in rice
100

^cTotal rural marginal workers X percentage of sown area in rice
100

^dvisianagaram newly formed from portions of Vishakhapatnam and Srikakulam Districts prior to the 1981 Census.

Table 2. Rice area by culture type and farmholding data, Assam, India.

District	Rice area by culture type (000 ha)						Farmholding data			
	Dryland	Deepwater	Irrigated		Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice
			Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)				
Cachar	50	10			92	70	177.9	299.1	1.26	82
Goalpara		30	58	7	146	146	335.3	422.8	1.20	100
Kamrup		30	76	6	204	204	465.3	547.2	1.12	100
Darrang		10	55	1	122	122	383.2	427.4	1.21	80
Nowgong	60	10			83	70	283.9	344.0	1.53	72
Sibsagar	33	10			102	102	290.4	445.5	2.01	62
Lakhimpur	23				47	47	115.9	169.3	1.46	77
Dibrugarh	22				56	56	161.7	324.3	1.68	46
K. Anglong	19				37	37	39.7	81.1	2.04	100
Narh Cachar Hills	8				3	3	10.3	18.9	1.83	82
Total	215	100	189	14	892	857	2253.6	3079.6	1.37	81

*No district data for employment in agriculture.

Table 3. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Bihar, India.

District	Rice area by culture type (000 ha)						Farmholding data				Employment data					
	Dryland	Deep-water	Irrigated		Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
			Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Patna		10	121	3			314.1	251.7	0.80	58	238	259	24	138	150	14
Nalanda			122	4	7	4	240.8	187.1	0.80	79	197	207	18	156	163	14
Gaya	1		128	4	5	3	476.3	429.8	0.90	35	416	375	55	147	133	19
Aurangabad			150	1	3	1	178.3	154.7	1.20	100	159	123	29	159	123	29
Nawadah	1		142	2	3	2	292.1	326.6	0.90	100	168	123	19	168	123	19
Bhojpur	2	18	163	1	8	4	295.1	428.5	1.10	51	254	226	40	128	114	20
Rohtas	2		223	5	30	15	308.7	219.8	1.40	100	290	245	34	290	245	34
Saran	8	26	1	1	27	14	211.7	184.1	0.70	46	261	135	22	120	62	10
Siwan	14	37	3		46	20	213.9	177.1	0.90	75	254	92	23	191	69	17
Gopalganj	29	18	2		17	9	331.7	330.5	0.80	25	224	92	10	56	23	3
Champ-East	51	51	31	5	55	27	196.5	238.2	0.90	100	314	337	24	315	338	24
Champ-West	50	55	25	12	47	23	309.0	334.8	1.10	66	236	334	33	157	222	22
Muzaffarpur	9	40	2	2	46	23	514.5	283.9	0.60	47	265	273	38	124	128	18
Vaishali		22	1	1	21	10	290.3	163.4	0.50	37	207	144	16	76	53	6
Sitamarhi	15	48	1	1	53	27	401.6	240.8	0.60	66	221	274	12	147	182	8
Darbhanga	6	26	4		28	14	314.5	194.4	0.60	45	205	245	30	91	109	13
Samastipur	3	18	1	2	19	9	279.8	223.0	0.80	25	236	248	28	59	62	7
Madhubani	7	66	10	1	SB	34	465.5	288.0	0.60	71	277	303	37	198	216	26
Bagusaral		4			4	2	183.5	146.5	0.80	8	135	195	16	10	15	1
Monghyr	3	14	79	3	48	24	526.0	551.0	1.00	34	407	398	70	138	135	24
Bhagalpur	1	14	133	1	14	7	327.3	334.1	1.00	56	300	322	60	169	181	34
Santhal Pargana	9	41	29	1	215	108	449.6	899.8	2.00	50	732	256	283	353	127	140
Saharsa	25	59	11	12	57	29	385.9	523.3	1.40	38	415	492	111	159	189	43
Purnes	81	100	8	4	160	80	538.7	676.7	1.30	70	447	633	47	315	446	33
KaUhar	40	5	15	4	36	18	220.1	227.5	1.00	56	160	232	21	89	129	12
Hazaribagh	7		6		78	39	232.7	402.2	1.70	36	313	108	118	112	39	42
Giridih	2		5		62	31	194.4	307.7	1.60	36	270	70	107	97	25	39
Ranchai	129		6	1	228	114	442.2	1127.0	2.50	47	652	151	216	307	71	102
Palamau	15		1		56	28	234.5	450.2	1.90	25	300	228	59	74	56	15
Dhanbed			1		45	22	114.1	157.6	1.40	48	109	45	35	52	22	17
Singhbhum	21		16	1	212	106	403.0	618.7	1.50	64	384	202	180	245	129	115
Total or av	531	672	1440	72	1698	847	9886.4	11078.7	1.12	52	9046	7367	1815	4851	4079	919

^aTotal cultivators x percentage of sown in rice ^bTotal agriculture laborers X percentage of sown area in rice ^cTotal rural marginal workers X percentage of sown area in rice

Table 4. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Gujarat, India.

District	Rice area by culture type (000 ha)			Farmholding data				Employment data					
	Irrigated, Wet season	Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
		Shallow (0-30 cm)	Intermediate (30-100cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborer ^b	Rural marginal workers ^c
Ahmedabad	38			135.7	625.1	4.61	7	134	160	65	9	11	4
Banaskantha				153.5	868.7	5.66	0	294	94	92	0	0	0
Vadodara(Badora)	10	38		195.9	539.1	2.75	10	241	265	99	24	26	10
Broach	5	12		124.6	428.8	3.44	4	144	200	61	6	9	3
Valsad(Bulsar)	4	80	3	171.3	299.6	1.75	32	234	161	114	76	52	37
Dangs		4		11.4	58.7	5.16	8	29	8	12	2	1	1
Gandhi Nagar		1		24.0	51.2	2.14	2	19	22	5	0	0	0
Kheda(Kaira)	53	30		284.1	513.7	1.81	18	374	249	137	67	45	25
Mahsana	7			254.4	705.1	2.77	1	285	191	174	3	2	2
Panchmahlas	20	84		205.7	505.6	2.46	23	569	84	271	128	19	62
Sabarkantha	16			164.3	439.7	2.68	4	239	99	133	10	4	5
Surat	10	44		142.0	395.0	2.78	15	232	280	68	35	43	10
Amreli	1			98.7	507.1	5.14	0	164	77	64	0	0	0
Jamnagar				114.2	638.3	5.59	0	183	57	52	0	0	0
Junagadh	3			155.7	649.8	4.17	1	271	129	92	3	1	1
Kachchh (Kutch)				114.0	707.1	6.20	0	1-4	77	41	0	0	0
Rajkot	1			144.7	772.1	5.34	0	253	102	59	0	0	0
Surendranagar.				101.7	731.4	7.19	0	119	87	50	0	0	0
Total or av	168	293	3	2595.9	9436.1	3.64	5	3888	2342	1589	364	213	160

^aTotal cultivators X percentage of sown area in rice ^bTotal agricultural laborers X percentage of sown area in rice ^cTotal rural marginal workers X percentage of sown area in rice
100 100 100

Table 5. Irrigated wet season rice area, farmholding data, and employment in agriculture and rice farming, Haryana, India.

District	Irrigated wet season rice area (000 he)				Farmholding data			Employment data						
	laborers	workers	laborers ^b	workers ^S	Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
									Cultivators	Agricultural	Rural marginal	Cultivator ^a	AgrFcultural	Rural marginal
Ambala		51			85.2	253.3	3	22	116	67	7	26	15	2
Kurukshetra		124			83.9	317.6	3.8	43	148	77	33	64	33	14
Karnal		96			94.9	298.1	3.1	36	140	88	18	50	31	6
Rohtak		2			100.2	308.8	3.1	1	165	46	60	1	0	0
Sonepat		10			61.2	175.6	2.9	6	102	40	34	6	3	2
Hissar		12			121	537.2	4.4	2	229	80	40	6	2	1
Sirsa		16			62.5	380.7	6.1	5	100	48	15	5	2	1
Gurgaon		3			159.5	377.3	2.4	1	112	26	32	1	0	0
Jind		17			61	280.2	4.5	7	157	46	55	11	3	4
Bhiwani Mahendragar					0	0			115	20	54	0	0	0
Other districts					0	0						0	0	0
Faridhabad					0	0			97	26	17	0	0	0
Total or av					331	829.4	2928.8	3.53	13	1481	564	365	170	90 31

^aTotal cultivators X percentage of sown area in rice ^bTotal agricultural laborers X percentage of sown area in rice ^cTotal rural marginal workers X percentage of sown area in rice
100 100 100

Table 6. Irrigated wet season rice area, farmholding data, and employment in agriculture and rice farming, Himachal Pradesh, India.

District	Irrigated wet season rice area (000 ha)	Farmholding data				Employment data					
		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
						Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Bilaspur	4	36.1	62.2	1.45	9	59	1	24	5	0	2
Chamba	4	50.3	55.6	1.11	8	75	1	42	6	0	3
Hamirpur	6	47.2	73.6	1.56	9	54	2	39	5	0	4
Kangra	24	162.8	236.1	1.45	11	149	14	76	17	2	9
Kulu	4	36.8	44.2	1.2	10	87	2	17	9	0	2
Kinnaur	0	7.5	12.8	1.71	0	20	2	2	0	0	0
Solan	4	38	93.2	2.45	5	69	2	23	3	0	1
Mandi	28	93.5	126	1.35	25	186	2	56	46	0	14
Simla	5	59.6	119.7	2.01	5	158	7	26	7	0	1
Sirmur	5	34.4	97.6	2.84	6	90	3	19	5	0	1
Una	5	51.7	93.1	1.8	6	45	5	14	3	0	1
Lahaul Spiti		2.5	5.7	1.63	0	2	0	2		0	0
Other districts						10				0	0
Total or av	89	620.4	1009.8	1.63	10	1004	41	340	106	2	38

^aTotal cultivars X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

Table 7. Irrigated wet season rice area, farmholding data, and employment in agriculture and rice farming, Jammu and Kashmir, India.

District	Irrigated wet season rice area (000 ha)	Farmholding data				Employment data					
		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
						Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Srinagar	40	140.1	93.2	0.67	48	36	6	26	17	3	22
Anantnag	71	200.4	153.8	0.77	51	137	6	68	70	3	35
Baramulla	64	198.8	156.7	0.79	38	121	8	91	46	3	35
Ladakh		20.7	29.3	1.41	0	17	2	4	0	0	0
Jammu	43	120.2	252.9	1.27	31	106	14	115	33	4	36
Udhampur	11	75.1	126.6	1.69	10	99	1	104	10	0	10
Kathua	23	64.6	100.5	1.56	25	64	6	53	16	2	13
Doda	4	63.3	84.3	1.33	6	108	4	41	6	0	2
Rajouri	6	47.2	84.2	1.78	8	61	1	52	5	0	4
Poonch	4	40.6	60.9	1.50	7	46	3	42	3	0	3
Badgam						67	3	56	0	0	0
Kupwara						73	7	59	0	0	0
Kargil						22	1	6	0	0	0
Total or av	256	970.9	1042.4	1.07	27	795	51	596	207	16	151

^aTotal cultivars X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

Table 8. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Karnataka, India.

District	Rice area by culture type (000 ha)					Farmholding data				Employment data					
	Dryland	irrigated		Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
		Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Bangalore		35				245.8	429.3	1.75	9	366	280	147	33	25	13
Belgeum	40	6		18		323.0	979.7	3.03	7	485	280	147	35	20	11
Bellary		24	4			174.5	587.4	3.37	5	211	232	22	10	11	1
Bidar	1	4				102.0	469.8	4.6	1	120	155	34	1	2	0
Chickmagalur	32	2	1	16		103.5	263.2	2.54	21	138	70	51	29	15	11
Chitradurga		42	7			190.6	694.7	3.64	7	282	215	70	19	14	5
South Kannada	12	7	1	117	40	151.5	201.4	1.33	97	238	185	38	231	180	37
Dharwar	65	8		25		276.5	1090.3	3.94	10	348	429	95	35	43	9
Gulbarga	2	11				243.3	1319.9	5.42	1	269	326	99	3	4	1
Hassan	28	18	1	12		184.1	366.9	1.99	18	290	61	70	51	11	12
Kolar		27	11			212.5	385.4	1.61	8	358	161	62	28	13	5
Mandya		64				224.0	275.9	1.23	26	285	104	38	73	27	10
Mysore	1	59	2			273.0	495.3	1.81	16	423	202	63	66	32	10
North Kannada	50	4	2	24	8	116.5	152.5	1.31	63	135	65	42	85	35	26
Raichur		55	1			234.2	1086.9	4.84	6	262	316	47	15	18	3
Shimoga	68	68	2	26		151.6	335.8	2.22	54	235	196	32	126	105	17
Timkur(Coorg)		55	3			286.2	614.3	2.15	10	419	148	97	42	15	10
Kodagu	24	1		24		40.5	146.7	3.62	37	49	33	9	18	12	3
Bijapur						277.4	1461.4	5.27	0	309	338	103	0	0	0
Total or av	323	500	35	262	48	3810.7	11356.8	2.98	11	5222	3787	1266	900	582	184

^aTotal cultivators X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

Table 9. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Kerala, India.

District	Rice area by culture type (000 ha)					Farmholding data				Employment data					
	Dryland	irrigated		Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
		Wet Season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Trivandrum	9	2	2	18	7	358.1	101.9	0.28	39	61	235	71	24	92	28
Quilon	12	2	1	29	10	424.4	153.7	0.36	38	139	176	141	53	67	54
Alleppey	22	42	41	21	7	363.9	124.2	0.32	82	67	162	118	55	133	97
Kottayam	2	18	16	8	6	248.6	157.0	0.63	24	82	116	41	20	28	10
Idikki	3			10	3	91.0	169.8	1.86	10	76	87	30	8	9	3
Ernakulam	11	12	10	44	15	376.0	143.9	0.38	63	74	130	64	47	82	41
Trichur	16	16	14	52	19	328.5	121.6	0.37	93	61	166	64	57	155	60
Palghat	44	8	2	88	29	279.8	183.8	0.65	100	96	300	52	96	300	52
Malappuram	22	12	6	32	15	302.9	159.4	0.53	56	69	195	77	39	110	43
Kozikode	15	5	4	19	8	343.7	157.7	0.46	33	27	71	103	9	24	34
Cannanore	23	4	4	34	12	364.2	245.1	0.68	33	97	206	72	32	68	24
Wannayad ^d									5	39	74	25	2	4	1
Total or av	179	120	100	355	131	3501.1	1719.1	0.49	51	888	1918	858	442	1072	447

^aTotal cultivators X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

^dCreated from Kozikode and Cannanore Districts prior to the 1981 Census.

Table 10. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Madhya Pradesh, India.

District	Rice area by culture type (000 ha)			Farmholding data				Employment data					
	Dryland	Irrigated wet season	Rainfed shallow (0-30 cm)	Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
								Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Sagar	5		10	160.0	551.0	3.40	3	165	84	56	5	3	2
Damoh	15	4	30	95.0	320.8	3.40	17	98	58	35	17	10	6
Jabalpur	37	9	73	216.5	546.4	2.50	24	216	176	59	53	43	14
Mandla	40	1	80	145.1	565.4	2.50	23	344	117	42	79	27	10
Hoshangabad	3		7	92.9	528.9	5.70	2	119	113	27	2	2	1
Narsimphur	5		10	86.4	311.3	3.60	5	93	94	15	5	5	1
East Nimar	10		20	94.9	501.6	5.30	7	183	158	39	12	10	3
Balaghat	46	88	92	162.3	330.0	2.00	76	279	129	77	212	98	59
Betul	10		20	109.6	505.5	4.60	7	205	112	48	14	7	3
Chindwara	8		14	141.2	564.8	4.00	4	232	143	44	10	6	2
Seoni	23	17	45	107.0	448.5	4.20	21	183	114	52	39	24	11
Durg	85	90	169	220.0	603.6	2.70	63	369	212	32	234	134	20
Rajnandgaon	76	20	151	163.9	555.7	3.40	49	379	127	30	187	63	15
Raipur	199	173	397	400.8	1001.2	2.50	85	699	423	105	597	361	90
Bilaspur	214	119	429	487.3	892.9	1.80	95	672	354	96	637	336	91
Surguja	94	16	189	218.6	662.1	3.00	50	417	109	158	209	56	79
Raigarh	114	12	228	168.3	608.4	3.20	65	345	160	115	223	103	74
Bastar	149	6	298	184.4	888.0	4.80	57	582	139	140	330	79	79
Bhind		18		127.0	352.2	2.80	6	189	25	8	11	1	0
Morena	1		2	159.4	409.0	2.60	1	286	26	27	2	0	0
Gwalior		16		69.5	278.0	4.00	6	119	32	20	8	2	1
Shivpuri	4		6	120.1	441.0	3.70	3	206	38	43	5	1	1
Guna	1		2	131.3	594.5	4.50	203	63	34	1	0	0	0
Vidisha	1		1	76.3	535.4	7.00	0	120	70	27	0	0	0
Rajgarh	3		7	101.9	458.9	4.50	2	178	63	51	4	2	1
Shajapur	2		5	99.0	479.2	4.80	2	155	90	57	3	1	1
Ujjain				89.5	524.1	5.90	0	163	92	36	0	0	0
Ratlam	2		3	84.4	338.6	4.00	2	153	51	46	3	1	1
Mandsaur			1	150.1	548.6	3.70	0	312	86	69	1	0	0
Dewas	1		3	66.5	420.4	6.30	1	137	88	45	1	1	0
Indore			1	46.0	281.1	6.10	0	82	70	20	0	0	0
West Nimar	6		11	122.7	677.2	5.50	3	334	188	89	9	5	2
Dhar	4		7	95.7	527.0	5.50	2	274	106	46	6	3	1
Jhabua	8		17	91.2	364.5	4.00	8	277	23	69	21	2	7
Rewa	34	3	68	134.7	458.1	3.40	25	184	166	45	47	42	11
Satna	26	1	52	152.3	421.0	2.80	21	179	141	42	37	29	9
Sidhi	24	6	48	122.9	403.9	3.30	21	234	110	45	50	24	10
Shahdol	64	9	127	200.5	598.8	3.00	37	259	146	62	96	54	23
Datia			1	36.6	137.8	3.80	1	61	12	6	0	0	0
Tikamgarh	9		17	124.2	265.6	2.10	11	184	35	52	20	4	6
Chhatarpur	5		11	140.0	492.5	3.50	4	179	63	44	6	2	2
Panna	15		34	82.2	277.2	3.40	20	105	54	26	21	11	
Sehore	2		4	60.4	399.0	6.60	2	113	71	32	2	1	1
Bhopal	1		1	27.0	171.8	6.40	1	67	29	11	0	0	0
Raisen	2		4	68.1	429.7	6.30	2	98	91	25	2	1	0
Total or av	1347	608	2695	6053.9	21691.2	3.58	24	10433	4853	2259	3222	1555	642

^aTotal cultivators X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

Table 11. Rice area by culture type, farmholding data, and employment in agriculture, and rice farming, Maharashtra, India.

District	Rice area by culture type (000 ha)				Farmholding data						Employment data				
'Greeter Bombay	30	9	1	1	30	2.4	3	1.27	37	3	2	a	1	'2	0
Thana	28	10	5	80	29	161.2	414.1	2.57	40	358	164	71	143	66	2B
Kolaba	28	10	6	73	29	195.4	369.6	1.89	42	289	79	62	122	33	26
Ratnagiri	10	6	73	3	398.4	1057.3	2.65	15	471	59	134	69	9	20	
Nasik	7	10	20	2	251.2	1032.7	4.11	4	515	324	88	22	14	4	
Dhulia	6	6	8	14	164.4	729.3	4.44	5	286	322	110	14	16	6	
Jalgaon	5	5	7	3	248.2	847.6	3.41	2	352	434	65	7	9	1	
Ahmednagar	15	7	3	5	322.2	1307.8	4.06	1	534	319	109	6	4	1	
Pune	10	5	22	3	323.4	1149.9	3.56	5	496	198	131	23	9	6	
Satara	5	7	15	2	320.4	764.7	2.39	a	362	126	156	17	6	0.7	
Sangli	3	3	3	242.7	725.1	2.99	3	299	140	83	a	4	2		
Sholapur	27	13	2	9	243.9	1305.1	5.35	1	339	290	1814	2	2	12	
Kolhapur	4	4	41	302.5	537.2	1.78	19	485	138	113	90	26	21		
Aurangabad	11	11	2	278.5	1294.1	4.64	1	459	315	96	4	3	1		
Parbhani	5	5	6	222.5	1050.5	4.72	3	321	325	87	10	10	3		
Bhir	15	15	3	211.7	958.4	4.52	2	288	18?	82	4	3	1		
Nanded	16	16	7	199.3	797.7	4	5	285	262	148	15	14	B		
Osrnanabad	2	2	a	237	1 281.9	5.41	3	366	331	131	13	11	S		
Buldhana	4	4	1	179.8	751.2	4.17	1	283	311	50	2	2	0		
Akola	6	S	2	201.7	846.8	4.19	1	224	396	37	3	5	0		
Amrayat	7	7	3	203.5	726	3.58	2	184	396	40	4	9	1		
Yeotmal	4	4	4	166.8	922	5.52	2	242	428	47	5	9	1		
Wardha	16	16	2	100	459	4.58	2	115	191	19	3	5	0		
Nagpur	112	102	8	161.3	622.4	4.11	7	192	242	50	14	17	4		
Bhandara	94	87	60	218.9	423.9	1.95	72	380	227	85	273	163	61		
Chandrapur		47	216.4	725.3	3.36	35	411	266	145	144	93	51			
Toter or av	470	370	27	503	112	5763.7	21102.6	3.66	8	8537	6472	3952	1018	641	270

Table 12. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Orissa, India.

District	Rice area by culture type (000 ha)					Farmholding data				Employment data						
	Dryand	Deep-water	Irrigated		Rainfed	Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)			
			Wet season	Dry season						Shallow (0-30 cm)	Intermediate (30-100 cm)	Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b
Balasore	3	15	9	10	239	120	298.1	435.3	1.46	99	328	157	39	323	155	38
Bolangir	62		35	16	100	68	216.8	448.7	2.07	66	260	157	89	171	103	58
Cutteck	54	100	169	52	243	128	594.9	748.7	1.26	100	572	303	69	572	303	69
Dhenkanal	37		3	2	200	102	257.1	358.1	1.39	100	230	135	79	230	135	79
Ganjam	7		176	1	119	60	356.3	300.2	1.07	100	391	301	187	391	301	187
Kalahandi	100		4	1	100	50	164.3	420.4	2.57	67	244	171	78	164	115	52
ICeonihar	35		2	1	119	59	152.8	248.5	1.63	96	182	82	71	175	79	68
ICoraput	60		211	3	97	48	358.5	850.5	2.37	54	521	275	226	283	149	123
Mayurbhanj	98		20	2	121	70	203.5	349.8	1.72	98	284	203	149	279	199	146
Phulbani	16		4	1	35	20	99.5	150.8	1.52	55	148	82	65	82	46	36
Pun	7	35	118	19	126	63	363.2	402.2	1.11	96	377	198	51	363	191	49
Sambalpur	153		140	60	146	48	370.3	688.9	1.86	79	354	253	161	278	199	126
Sundargarh	59		2	1	98	50	154.8	269.0	1.74	86	163	79	85	141	73	73
Total or av	691	150	893	169	1743	886	3590.1	5751.1	1.60	84	4054	2396	1349	3451	1340	1106

^aTotal cultivators X percentage sown area in rice
100

^bTotal agricultural laborers X percentage of sown area in rice
100

^cTotal rural marginal workers X percentage of sown area in rice
100

Table 13. Irrigated wet season rice are, farmholding data, and employment in agriculture and rice farming, Punjab, India.

District	Irrigated wet season rice area (000 ha)	Farmholding data				Employment data					
		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
						Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Hoshiarpur	42	82.6	226.9	2.74	21	118	70	36	24	14	7
Jullundur	103	103.6	284.6	2.74	40	126	101	22	51	41	9
Ludhiana	162	132.2	363.0	2.74	50	145	97	23	72	48	11
Ferozepur	191	165.2	453.8	2.74	47	180	98	38	84	46	18
Amritsar	207	142.7	391.9	2.74	59	204	144	28	120	85	16
Gurdaspur	138	97.6	268.1	2.74	57	132	93	15	75	53	9
Kapurthala	73	48.1	132.0	2.74	61	55	28	5	34	17	3
Rhatinda	25	175.7	482.6	2.74	6	186	91	58	11	5	3
Patiala	232	156.2	429.0	2.74	60	165	105	18	99	63	11
Sangrur	168	174.2	478.5	2.74	39	206	109	45	80	43	18
Rupnager	23	48.0	132.0	2.74	19	73	34	11	14	7	2
Faridkot	117	175.7	482.6	2.74	27	179	120	47	48	32	13
total or av	1481	1501.8	4125.0	2.74	36	1769	1090	346	713	454	120

^aTotal cultivars X percentage of sown area in rice
100

^bTotal agricultural laborers X percentage of sown area in rice
100

^cTotal rural marginal workers X percentage of sown area in rice
100

Table 14. Irrigated wet season rice area, farmholding data, and employment in agriculture and rice farming, Rajasthan, India.

District	Irrigated wet season rice area (000 he)	Farmholding data				Employment data					
		Number of holdings (000)	Area of holdings (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
						Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborers ^b	Rural marginal workers ^c
Ajmer	0	181.6	472.7	2.6	0	242	37	38	0	0	0
Alwar	1	259.0	506.0	2.0	0	316	25	166	1	0	0
Banswara	40	110.8	240.4	2.2	18	187	16	125	35	3	23
Bharatpur	6	288.8	547.2	1.9	1	352	31	97	4	0	1
Bhilwara	0	237.3	605.0	2.6	0	345	29	81	0	0	0
Bikaner	0	86.9	1498.8	17.3	0	132	6	31	0	0	0
Bundi	16	79.1	242.6	3.1	7	118	20	22	9	1	2
Chittorgarh	3	203.2	530.0	2.6	1	326	33	122	2	0	1
Dungarpur	37	108.9	178.5	1.6	23	133	15	117	31	3	27
Ganganagar	20	214.6	1649.3	2.1	1	345	88	71	5	1	1
Jaipur	0	298.8	1007.2	3.4	0	492	39	111	0	0	0
Jalore	0	106.2	794.9	7.5	0	164	30	38	0	0	0
Jhalawar	2	117.5	370.1	3.2	1	184	42	28	1	0	0
Kotah	10	170.4	606.1	3.6	2	194	70	54	4	1	1
Nagaur	0	195.6	1474.1	7.5	0	368	30	75	0	0	0
Pali	0	175.2	793.6	4.5	0	211	65	63	0	0	0
Sawai Madhopur	8	245.2	560.2	2.3	2	309	23	80	5	0	1
Sikar	0	152.3	564.4	4.1	0	210	15	81	0	0	0
Sirohi	0	71.5	213.9	3.0	0	68	26	30	0	0	0
Tonk	0	136.0	501.6	3.7	0	165	20	54	0	0	0
Udaipur	16	409.8	870.5	2.1	2	463	40	219	9	1	4
Barmer						279	10	105	0	0	0
Churu						255	11	60	0	0	0
Jaisalmer						46	3	10	0	0	0
Jhunjhunu						185	14	110	0	0	0
Jodhpur						301	25	52	0	0	0
Total or av	158	3648.7	14249.1	3.7	1	6430	763	2040	106	10	61

^aTotal cultivars X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

Table 15. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Tamil Nadu, India.

District	Rice area by culture type (000 ha)						Farmholding data				Employment data					
	Dry-land	Deep water	-Irrigated		Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean area (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
			Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivator ^a	Agricultural laborers ^b	Rural marginal workers ^c
Chingleput			209	114	25	12	400.3	398.4	1.00	69	288	417	81	198	286	56
South Arcot		30	178	92	14	7	605.5	686.3	1.13	37	621	630	136	230	234	50
North Arcot	18		150	99	9	4	535.2	602.4	1.13	33	604	557	134	202	186	45
Salem	3		23	14			373.2	505.1	1.35	6	487	472	76	28	27	4
Dharampuri	5		18	9	6	2	281.8	458.5	1.63	8	459	233	56	34	18	4
Coimbatore	8		33	19			200.0	400.0	2.00	11	212	427	25	23	47	3
Tiruchchirapp		10	72	32	4	2	569	742.3	1.30	13	577	465	95	76	61	13
Pudukottai			60	10	17	8	94.6	99.6	1.05	95	234	88	55	222	83	52
Thanjavur		30	340	124	12	6	511.5	525.7	1.03	82	368	682	99	302	559	81
Madurai	9		81	30			517.5	695.9	1.34	14	497	754	67	71	108	10
Ramanathapuram		20	165	10	37	18	643	798.3	1.24	33	614	336	113	172	112	38
Tirunelveli	6		47	45	2		530.7	616	1.16	10	354	430	66	35	43	7
The Nilgiris	1				2		31.1	60.4	1.94	6	7	15	2	0	1	0
Kanya Kumari			26		16	8	301.3	86.5	0.29	64	46	145	29	30	93	12
Madras											1	1	0			
Periyar	8	33	19				261.1	689.4	2.64	7	289	389	40	20	27	3
Total or av	50	90	1402	598	144	67	5594.7	6675.4	1.19	29	5558	6041	1064	1643	1885	377

^aTotal cultivators X percentage of sown area in rice
100

^bTotal agricultural laborers X percentage of sown area in rice
100

^cTotal rural marginal workers X percentage of sown area in rice
100

Table 16. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Uttar Pradesh, India.

District	Rice area by culture type (000 ha)				Farmholding data				Employment data						
	Dry-land	Deep-water	Irrigated wet season	Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size, (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
				Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural	Cultivators ^a marginal workers	Agricultural Laborer ^b	Rural marginal workers ^c
Oehradun	2		6	6	55.8	62.0	1.11	25	69	20	11	17	5	3	
Saharanpur	12		36	37	332.7	355.6	1.07	27	272	224	9	74	61	2	
Muzzaffarnag	5		16	15	222.5	336.4	1.51	12	273	182	7	32	22	1	
Meerut	3		10	10	220.5	308.2	1.40	8	282	145	15	23	12	1	
Bulandshahr	1		4	4	223.4	336.5	1.51	3	315	111	9	9	3	0	
Allgarh	2		6	6	233.2	384.2	1.65	4	329	129	5	13	5	0	
Mathura			1	1	159.7	317.6	1.99	1	223	65	8	2	0	0	
Agra			1		230.8	365.9	1.58	0	306	75	5	1	0	0	
Mainpuri	7		21	21	313.6	304.6	0.97	18	331	50	2	59	9	0	
Etah	3		9	9	307.3	313.3	1.02	7	366	64	2	27	5	0	
Bareilly	17		51	52	308.3	338.5	1.10	39	385	78	3	152	31	1	
Bilnor	11		34	34	206.9	329.5	1.60	27	229	127	9	61	34	2	
Badaun	5		15	15	361.2	414.7	1.09	5	483	50	6	45	5	1	
Moradabad	12		38	37	381.8	490.1	1.28	20	532	92	9	105	18	2	
Sahjahanpur	16		49	49	332.7	355.6	1.07	36	356	58	3	127	21	1	
Pilibhit	16		50	49	167.1	208.5	1.25	61	203	41	1	124	25	1	
Rampur	10		31	31	164.8	192.2	1.17	42	222	37	3	92	15	1	
Ferrukhabad	4		10	11	350.7	315.8	0.90	9	263	57	3	25	5	0	
Etawah	8		26	25	285.3	308.3	1.08	21	301	58	3	64	12	1	
Icanpur	10		29	29	406.1	432.4	1.06	17	397	131	14	69	23	2	
Fatehpur	11		34	33	259.0	308.6	1.19	28	292	107	45	82	30	13	
Allahabad	18		54	54	506.9	489.7	0.96	29	520	257	23	149	73	7	
Jahnsi	1		2	2	152.0	336.8	2.37	2	153	39	23	3	1	0	
Lalitpur	2		5	5	99.0	259.1	2.62	5	127	18	46	7	1	2	
Jalaun	1		3	4	165.5	368.7	2.23	2	164	56	23	4	1	1	
Hamirpur	1		2	2	215.8	556.0	2.58	1	197	104	41	2	1	0	
Benda	13		40	39	251.1	534.5	2.13	19	304	131	64	58	25	12	
Jaunpur	12		38	24	577.9	308.5	0.53	31	421	84	52	130	26	16	
Veranasi	19		59	39	487.1	297.3	0.61	51	364	174	38	185	88	19	
Nilniapur	19		56	58	291.8	470.3	1.61	32	303	215	22	97	69	7	
Ohazipur	13		40	26	285.2	257.5	0.90	40	285	105	35	113	42	14	
Ballia	10	19		30	259.6	237.9	0.92	35	242	159	22	84	55	8	
Gorakhpur	39	70		114	649.7	529.6	0.81	59	586	284	79	344	167	46	
Deoria	30	53		87	532.8	406.5	0.75	58	637	202	213	371	118	124	
Basti	49	87		142	708.4	525.1	0.74	74	777	179	116	574	132	86	
Azamgarh	28	49		80	711.0	438.8	0.62	50	575	165	195	287	82	97	
Neinital	13		39	39	102.4	209.9	2.05	48	161	69	23	78	33	11	
Lucknow	6		19	19	167.2	165.2	0.99	30	219	43	13	65	13	4	
Ras-Bareilly	15		46	30	372.6	305.8	0.82	39	395	102	67	152	39	26	
Sitapur	18	31		51	440.9	436.9	0.99	32	569	54	4	181	17	1	
Hardoi	9		27	27	430.2	447.8	1.02	16	549	54	3	86	8	0	
Kheri	18	33		53	387.2	449.5	1.16	32	489	57	0	158	18	0	
Faizabad	21	37	34	60	460.5	297.0	0.65	68	432	122	16	294	83	11	
Unnao	11			33	324.3	315.4	0.97	16	401	51	30	62	8	5	
Gonde	36	63		103	580.4	500.3	0.86	56	705	107	21	398	60	12	

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Table 16 continued.

District	Rica area by culture type (000 ha)					Farmholding data				Employment data					
	Dry-land	Deep-water	Irrigated wet season	Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size, (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
				Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural	Cultivators ^a	Agricultural Laborer ^b	Rural marginal workers ^c
Baliraich	28	49		80	40	454.5	448.7	0.99	49	578	69	10	282	34	-5
Sultanpur	19	34		55	28	421.8	298.9	0.71	51	376	136	26	190	69	13
Pratapgarh	12		37	24	12	387.4	245.3	0.63	39	332	96	8	128	37	3
Bara-Banki	17	30		49	25	375.3	307.9	0.82	44	496	72	11	217	31	-5
Shazlabad	25			25		150.4	187.3	1.26	30	166	63	3	49	19	1
Almoral~	13			13		174.2	101.6	0.52	28	175	4	62	50	1	18
Pithoragar	10			10		134.4	72.7	0.64	31	146	1	39	45	0	12
Tehri Garh	10			10		82.9	75.5	0.91	29	189	1	31	56	0	9
Utter Kash	4			4		37.2	33.2	0.89	27	78	1	6	21	0	2
Garhwal	14			14		83.9	109.0	1.30	29	165	2	46	47	1	13
Chamoli	5			5		47.2	44.4	0.94	25	132	1	19	33	0	5
Total or av	714	555	982	1884	524	17052.1	17847.1	1.05	29	18857	5178	1597	6202	1695	627

^aTotal cultivators X percentage of sown area in rice $\frac{\text{Cultivators}}{100}$ ^bTotal agricultural laborers X percentage of sown area in rice $\frac{\text{Agricultural laborers}}{100}$ ^cTotal rural marginal workers X percentage of sown area in rice $\frac{\text{Rural marginal workers}}{100}$

Table 17. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, West Bengal, India.

District	Rica area by culture type (000 ha)					Farmholding data				Employment data						
	Dry-land	Deep-water	Irrigated wet season	Rainfed		Number of holdings (000)	Area of holdings (000 ha)	Mean size, (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)			
				Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural	Cultivators ^a	Agricultural Laborer ^b	Rural marginal workers ^c	
24Parganas (South)	4	128	17	6	148	74	814.5	626.2	0.71	100	609	619	99	609	\$19	99
24Parganas (North)	15	81	40	18	73	47					(not separated in census)					
Nad~a	106	34	20	11	46	23	275.0	282.8	1.03	90	248	227	17	223	-204	15
Murshidabad	128	68	41	18	58	29	412.9	376.6	0.91	96	354	336	59	338	321	56
Burdwan	44		172	82	168	84	366.3	439.8	1.20	100	317	417	38	317	417	38
Birbhum	58		181	14	65	33	237.5	295.3	1.24	100	223	227	49	223	227	49
Bankura	51		124	5	132	66	335.1	357.2	1.07	100	284	240	88	284	240	88
Midnapore (East)	8		29	61	220	110	1017.2	822.1	0.81	100	761	559	194	781	559	194
Midnapore (West)	64		94	16	231	116					(not separated in census)					
Hooghly	26	61	27	59	56	28	264.3	203.4	0.77	100	244	284	35	244	284	35
Howrah	5		34	8	34	17	197.3	90.1	0.46	100	81	114	16	81	114	16
Jelpaiguri	85	74	67		42	21	163.4	232.1	1.14	100	234	115	40	234	115	40
Derieeing	8		1		24	12	58.5	155.4	2.66	32	95	32	12	31	10	4
Malda	46	41	50	32	52	26	316.8	283.1	0.89	84	222	190	61	187	160	51
West Dinajpur	123	122	12	8	137	68	329.5	424.4	1.29	100	338	248	51	338	248	51
Coochaehar	107	68		1	81	40	204.2	232.1	1.14	100	267	140	14	267	140	14
PuruJia	5		75	1	118	59	276.3	306.3	1.11	93	291	143	131	271	133	122
Calcutta											3	2	0	0	0	0
Total or av	883	677	984	340	1685	853	5257.7	5126.6	0.97	100	4591	3891	904	4429	3792	873

^aTotal cultivators X percentage of sown area in rice $\frac{\text{Cultivators}}{100}$ ^bTotal agricultural laborers X percentage of sown area in rice $\frac{\text{Agricultural laborers}}{100}$ ^cTotal rural marginal workers X percentage of sown area in rice $\frac{\text{Rural marginal workers}}{100}$

Table 18. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, various small districts, India.

District	Rice area by culture type (000 ha)						Farmholding data				Employment data					
	Dryland	Deep-water	Irrigated		Rained		Number of holdings (000)	Area of holdings (000ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
			Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators	Agricultural laborers	Rural marginal workers	Cultivators ^a	Agricultural laborer ^b	Rural marginal workers ^c
Manipur	43	20	71		43		141.8	158.2	1.12	100	365	29	27	365	29	27
Meghalaya	31		25	2	43		170.2	295.6	1.50	37	363	58	32	135	22	12
Nagaland	36		10		19		103.3	785.6	7.61	9	266	3	5	24	0	0
Tripura	130	20	40	34	40	36	246.6	309.2	1.25	96	263	146	52	251	140	50
Arunachal Pradesh	65						66.5	395.5	6.95	18	223	8	19	41	1	3
Dadra and Nagar Haveli					9		11.8	23.8	2.08	42	26	5	8	11	2	3
Delhi			2				32.3	77.1	2.38	3	35	16	7	1	0	0
Goa, Daman, and Diu	15		15		22		75.4	85.9	1.14	67	63	32	43	42	22	29
Mizoram	15		5		25	13	11.1	16.5	1.49	100	146	5	15	145	5	15
Pondicherry			14	13			32.3	35.3	1.09	44	16	55	7	7	24	3
Lakshadweep																
Sikkim							31.1	79.5	2.66	0	89	5	5	0	0	0
Total or av	335	40	182	49	201	49	922.4	2262.2	2.45	40	1855	362	220	1024	245	143

^aTotal cultivators X percentage of sown area in rice / 100 ^bTotal agricultural laborers X percentage of sown area in rice / 100 ^cTotal rural marginal workers X percentage of sown area in rice / 100

Table 19. Rice area by culture type, farmholding data, and employment in agriculture and rice farming, Bangladesh.

District	Rice area ^a by culture type (000 ha)						Farmholding data				Employment data					
	Dryland	Deep-water	Irrigated		Rained		Number of holdings (000)	Area ^b of holdings (000ha)	Mean size ^c (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
			Wet season	Dry season	Shallow (0-30 cm)	Intermediate (30-100 cm)					Cultivators ^d	Agricultural laborers ^e	Rural marginal workers ^f	Cultivators ^g	Agricultural laborer ^h	Rural marginal workers ⁱ
Bandarban	10				2		26	21.5	1.62	94	26	23	0	25	22	0
Chittagong Hill	33		7	89	184	93	430	450.6	0.65	90	430	154	576	387	139	518
Chittagong Tracts	34		1		30	11	92	70.4	1.42	94	92	33	7	87	31	7
Comilla	47	132	11	85	206	194	904	892.7	0.57	76	904	254	518	683	192	391
Noakhali	31	45	3	4	208	113	513	521.5	0.61	89	513	24	314	457	311	280
Silhet	60	128	10	222	386	213	26	1015.0	1.01	91	26	453	343	608	21	311
Ohaka	40	158	9	107	149	84	154	742.1	0.69	74	154	340	805	574	261	594
Faridpur	67	169	70	51	118	59	92	770.4	0.85	68	92	314	253	427	214	172
Jamalpur	12	30	4	45	220	82	904	459.9	0.89	83	904	218	85	250	182	71
Mymensingh	72	42	7	50	239	90	513	1221.9	0.89	85	513	592	229	711	506	195
Kiehoreanj	24	46		172	176	119										
Tangail	29	29	91	59	139	59	672	483.8	0.81	79	672	160	145	243	142	115
Barisal	41	26	11	48	260	179	777	651.0	0.73	87	777	168	357	530	146	310
Jessore	50	50	13	10	213	175	627	722.7	1.13	71	627	315	188	333	223	133
Kulna	22	16	10	28	250	141	300	544.9	1.09	86	300	225	293	405	193	251
Kushtia	30	15	4	2	90	65	832	357.9	1.09	58	832	178	100	140	102	58
Patuakaha	14		6	11	226	95	307	377.3	1.01	93	307	65	153	219	61	143
Bogra	29	36	7	32	220	104	611	490.3	0.89	81	611	217	126	293	175	102
Dinajpur	46		10	6	310	163	470	714.6	1.34	75	470	296	109	308	222	82
Pabna	37	119	7	1	123	87	473	576.3	1.05	58	473	273	191	233	185	129
Raishahi	49	61	13	43	275	230	244	862.8	1.17	78	244	369	343	478	287	167
Rengpur	99	30	19	24	531	257	234	1258.7	0.93	76	234	665	113	610	507	86
Total	866	1132	313	1089	4565	2613	9201	13206.3			9201	5356	5248	8001	4112	4115

^aTotal rice area from Table 4.7B, *Statistical yearbook of Bangladesh 1985* (81-82 crop year - all rice). Area apportioned to rice environments according to Huke(1962). ^bFrom Table 4.27, *Statistical yearbook of Bangladesh 1985* (81-82 crop year total cropped area). ^cMean holding size by region from Table 4.31, p. 282, *Statistical yearbook of Bangladesh 1986*. ^dNumber of farmholdings taken to represent number of cultivators. Numbers from Table 4.312, p. 282, *Statistical yearbook of Bangladesh 1986*. ^eHired labor taken as agricultural labor less cultivators (number of holdings). ^fMarginal labor computed from data given in *Statistical yearbook of Bangladesh 1986*. Female contribution to marginal labor taken to be in same proportion as female contribution to agricultural labor force. This figure of 2% from Table 3.5, p. 194, *Statistical yearbook of Bangladesh 1986*.

^gTotal cultivators X percentage of sown area in rice. ^hTotal agricultural laborers X percentage of sown area in rice ⁱTotal rural marginal workers X percentage of sown area in rice

100

100

100

Table 20. Irrigated wet season rice area, farmholding data, and employment in agriculture and rice farming, Pakistan.

Province	Irrigated wet season rice area (000 ha)	Farmholding data				Employment data					
		Number of holdings ^b (000)	Area of holdings ^c (000 ha)	Mean size (ha)	Percentage of sown area in rice	Total agricultural labor (000)			Rice-related labor (000)		
						Cultivators ^d	Agricultural laborers ^e	Rural marginal workers ^f	Cultivators ^g	Agricultural laborer ^h	Rural marginal workers ⁱ
Punjab	1262	2644	10271	4.8	12	2544	6985	4416	305	838	530
Sind	907	795	3048	4.7	30	795	2509	616	239	752	185
North-West Frontier Province	20	528	975	3.1	2	528	1205	523	11	24	10
Baluchistan	SB	202	723	7.8	8	202	464	120	16	37	10
Total or av	2237	4069	15017	3.7		4069	11162	5675	571	1652	736

^aArea of rice from 7980 Census of agriculture (1984), Table 6.12. Any paddy- area- all farms. ^bFrom 1980 Census of agriculture, Table 1.2. ^cTaken as net sown area - all farms, 1980 Census of agriculture, Table 3.3. ^dTaken to be the same as the number of holdings (see footnote b). ^eTaken as number of permanent hired agricultural workers plus family workers working full-time, 7980 Census of agriculture, Table &2. ^fTaken as agricultural workers working part-time, 7980 Census of agriculture, Table 8.2.

^gTotal cultivators X percentage of sown area in rice / 100 ^hTotal agricultural laborers X percentage of sown areas in rice / 100 ⁱTotal rural marginal workers X percentage of sown area in rice / 100

Table 21. Rice area by culture type and farmholding data, Nepal.^a

Region	Rice area by culture type (000 ha)					Farmholding data		
	Dryland	Deepwater	Irrigated wet season	Rainfed		Number of holdings ^b (000)	Area of holdings ^b (000 ha)	Mean size (ha)
				Shallow (0-30 cm)	Intermediate (30-100 cm)			
Eastern Mountain	2			8				
Eastern Hill	5			39		336	242	0.72
Eastern Tarai		36	90	154	79	359	784	2.18
Central Mountain	2			4		58	29	
Central Hill	21			42				0.50
Central Tarai		17	86	158	82	34	56	1.65
Western Mountain						342	263	
Western Hill	5			47				0.77
Western Tarai			44	88	44	72	179	2.49
Far Western Mountain	1			8		261	109	0.42
Far Western Hill	4		41	32				
Far Western Tarai				98	25	32	180	5.63
Total or av	40	53	261	678	230	1494	1842	1.23

^aNo regional data for percentage of sown area in rice or employment in agriculture. ^bData for number of holdings and for area of holdings relate to 1961 and are from *Statistical packet book - Nepal - 1974*, National Planning Commission, Kathmandu, p. 25.

Table 21. Rice area by culture type and farmholding data. Nepal.

Region	Rice area by culture type (000 ha)					Farmholding data			
	Dryland	Deepwater	Irrigated wet season	Rainfed		Number of holdings ^b (000)	Area of holdings ^b (000 ha)	Mean size (ha)	
				Shallow (0-30 cm)	Intermediate (30-100 cm)				
Colombo		3	3		7	62.7	26.7	0.42	37
Kalutara		3		30	5	102.3	63.6	0.62	59
Galle				27	7	116.4	70.2	0.60	48
Metara		5	5	32	3	96.8	62.4	0.64	61
Puttalam		7	3	17		67.9	63.3	0.93	37
Kurunegala		32	20	2		219.0	215.3	0.98	15
Kegalle		3	3	39		100.3	66.8	0.67	62
Ratnapura		9	8	14		107.6	82.5	0.77	28
Kandy		11	9	9		104.8	64.5	0.62	31
Matale		9	5	12		51.2	46.0	0.90	46
Nuwara Eliya		4	2	4		38.5	23.9	0.62	33
Badulla		12	6			69.9	48.5	0.69	25
Monegarala		6	2	2		46.8	55.5	1.19	14
Jaffna		9	4	3		96.6	42.4	0.44	28
Vavuniya	6	13	1	17		14.9	26.9	1.81	100
Mannar		13	2			11.7	16.9	1.36	82
Anuradnapura	3	53	26	2		90.4	111.8	0.93	62
Polonnaruwe	3	26	23			32.2	43.9	1.36	66
Trincomalse	10	14	11			22.6	34.4	1.52	70
Batticalom	21	12	8			47.2	46.3	1.02	68
Ampara	7	28	21			56.9	52.4	0.89	66
Hambantote	2	15	12			68.4	66.7	0.98	25
Walawe		7	6						
Gampaha						170.2	80.1	0.60	
Total or av	52	294	182	210	22	1797.3	1411.9	0.79	41

^aNo district data for employment in rice farming. ^bNumber of holdings and area of holdings from *Sri Lanka census of agriculture 1982 (1985)*. Table. 1, p. 13.

