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TABLES WITH NOTES ON USE OF IRRIGATION IN
HOUSEHOLD HOLDINGS

आंध्रप्रदेश, मध्यप्रदेश,
महाराष्ट्र, उड़ीसा तथा पश्चिम बंगाल
ANDHRA PRADESH, MADHYA PRADESH,
MAHARASHTRA, ORISSA AND WEST BENGAL

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NATIONAL SAMPLE SURVEY ORGANISATION
TABLES WITH NOTES
ON
USE OF IRRIGATION IN HOUSEHOLD HOLDINGS
NSS 31ST ROUND : JULY 1976 - JUNE 1977
ANDHRA PRADESH, MADHYA PRADESH, MAHARASHTRA, ORISSA AND WEST BENGAL

CONTENTS

	<u>Page</u>
Section 1 : Introduction & Summary	1 - 3
Appendix I : List of Tables and the Tables	4 - 96
Appendix II : Concepts and Definitions	97 - 98
Appendix III : Sample Design and Estimation Procedure	99 - 101

NATIONAL SAMPLE SURVEY
TABLES WITH NOTES
ON
USE OF IRRIGATION IN HOUSEHOLD HOLDINGS
NSS 31ST ROUND : JULY 1976 - JUNE 1977
ANDHRA PRADESH, MADHYA PRADESH, MAHARASHTRA, ORISSA AND WEST BENGAL
INTRODUCTION & SUMMARY

1.1 A survey on the use of irrigation in rural areas was carried out by the National Sample Survey Organisation (NSSO) in the thirtyfirst round of the NSS from July 1976 to June 1977. In this survey particulars of irrigation in household holdings were collected by household enquiry from a sample of household holdings. Information on crops grown and use of fertilisers, manures and pesticides in the household holdings was also collected. The reference period for the survey was the agricultural year July 1975 - June 1976.

1.2 The survey covered the whole rural India except the States of Sikkim, Nagaland and Meghalaya and Union Territories of Chandigarh, Arunachal pradesh, Andaman & Nicober Islands, Mizoram, Lakshadweep and Dadra & Nagar Haveli ^{1/}.

1.3 All the States and Union Territories included in the geographical coverage of the survey participated in the survey at least on a full matching basis by canvassing a sample of equal size following identical concepts and definitions.

1.4 For the purpose of the survey there was a general sample of villages distributed all over the country. Also, there was an additional special sample of villages from the command areas of (i) major irrigation projects commissioned after 1947 and (ii) medium irrigation projects commissioned after 1964. In the central sample, the number of villages planned to be surveyed was 8304 for ^{the} general sample and 2054 for the special sample from the command areas of major and medium projects.

1/ Two tehsils of district Surguja & four tehsils of district Bastar of Madhya Pradesh; three tehsils of district Chandrapur & one tehsil of district Amravati of Maharashtra and Ladakh district of Jammu & Kashmir were also not covered.

1.5 For the general sample the design was stratified two stage with district (or portion of district) as stratum, village as first stage unit and household as second stage unit of sampling. The list of 1971 census villages was used as sampling frame for the general sample. In each sample village a fixed number of households was initially selected circular systematically after arranging all the households in the village in a specified order^{2/}.

1.6 The sample households selected in each sample village were divided into three mutually exclusive categories : category 1 consisted of households which cultivated at least some plot of land during 1975-76 with irrigation, category 2 consisted of the households which cultivated land during 1975-76, wholly without irrigation and category 3 consisted of residual households which did not cultivate any land during the period. Such households which cultivated usually using irrigation were however included in category 1 and not in category 2 even if they cultivated land during 1975-76 wholly without irrigation. For the sample households of category 1, that is the households which cultivated land during 1975-76 with (or usually using) irrigation, particulars of irrigation, crops grown, use of fertiliser, manure and pesticides etc. were collected in schedule 22.1. For the sample households of category 2, that is the sample households which cultivated land without irrigation during 1975-76, particulars of unirrigated household holdingS were collected in schedule 22.2. For the households of category 3, no schedule was canvassed.

1.7 This report is based on data collected in schedule 22.1 in the general sample of villages in the central sample in five States, namely, Andhra Pradesh, Madhya Pradesh, Maharashtra, Orissa and West Bengal. It presents information on area possessed, net area sown, net area irrigated, gross area irrigated, area irrigated by different types of irrigation, area under various irrigated & unirrigated crops, use of fertiliser, manure and pesticides, expenditure on irrigation etc. relating to households usually using irrigation. Estimates of total area possessed, area possessed with irrigation facility, net area sown, net area irrigated by type of irrigation, gross crop area, gross area irrigated by type of irrigation etc. for such households for the five States are presented below in a summarised form^{3/}.

^{2/} For details, see the note on sample design and estimation procedure given in Appendix-III.

^{3/} Information on a few select items was presented earlier in NSS Draft Report No. 269 as well as in Sarvskshana, Vol. 3, No. 2, October 1979.

Table (1) : Estimates of number of households usually using irrigation, area possessed, net area sown, net area irrigated and area under crop by states

Figures in columns 2-22 are in (00) hectares]

state	number of households usually using irri- gation (00)	area possessed		net area sown	net area irrigated		
		total irrigable	irrigated		total	by flow	by lift
(6)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Andhra Pradesh	33966	75948	30155	61435	27422	19710	7712
Madhya Pradesh	16896	62523	18931	56689	14336	7177	7159
Maharashtra	16411	69584	23001	58936	14588	4182	10406
Orissa	12363	19934	7466	18702	7135	5383	1752
West Bengal	23319	28691	10941	26439	10131	5526	4805

Table (1) : contd.

state	net area irrigated			net area irrigated			net area irrigated by		
	by flow from	by lift from	others	well	river	others	lift using	electricity	others
(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)		
Andhra Pradesh	9846	7864	2000	6368	164	1180	4670		3042
Madhya Pradesh	5941	912	324	6087	778	294	3847		3312
Maharashtra	3047	672	463	9299	997	110	8120		2286
Orissa	3565	530	1288	525	579	648	380		1372
West Bengal	4826	377	123	1645	757	2403	2326		2479

Table (1) : contd.

state	net area irrigated by lift			gross area under crop	gross area irrigated		
	by ownership of lifting equipment	private	private - joint - single		total	by flow	by lift
(16)	(17)	(18)	(19)	(20)	(21)	(22)	
Andhra Pradesh	2278	5133	301	74783	34302	25947	10355
Madhya Pradesh	1617	5468	74	71013	15723	8195	7528
Maharashtra	2302	7665	439	68600	17904	5430	12474
Orissa	68	1567	117	23675	9064	7099	1965
West Bengal	231	3938	636	36069	12902	6257	6645

Detailed statistical tables are given in Appendix I. Appendix II gives concepts and definitions used in the survey. A note on sample design & estimation procedure is given in Appendix III. Comparison of some selected NSS estimates with corresponding estimates of the Ministry of Agriculture & Irrigation is presented in Appendix IV.

Appendix - I
List of Tables and the Tables

table no.	description of table	page number				
		Andhra Pradesh	Madhya Pradesh	Maha- rash- sh tra	Orissa	West Bengal
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0	Number of sample villages allotted and number surveyed, number of households surveyed for schedule 22-1, estimated numbers of total households and estimated number of cultivator households (i) usually using irrigation and (ii) usually not using irrigation.	6	24	42	59	77
1	Estimates of number of households usually using irrigation, area possessed, net area sown, area cropped more than once and gross cropped area separately for irrigable land and land without irrigation facility by size class of holding	7	25	43	60	78
2	Estimates of number of households reporting area irrigated in 1975-76 and net area irrigated by size class of holding and type of irrigation	8	26	44	61	79
3	Estimates of number of households reporting lift irrigation and net area irrigated by lift by size class of holding and by source of power	9	27	45	62	80
4	Estimates of net area irrigated by type of irrigation and ownership of the source of water for irrigation	10	28	46	63	81
5	Estimates of net area irrigated by ownership ship of lifting equipment and by source of power	11	29	47	64	82
6	Estimates of area having irrigation facility not irrigated by size class of holding and reason for not irrigating	12	30	48	65	83
7	Estimates of number of parcels of irrigable land possessed, total area of the plots, net area irrigated, net area not irrigated and net area sown by size class of parcels	12	30	48	65	84
8	Estimates of area (i) under crop, (ii) applied with fertiliser, (iii) applied with manure, (iv) affected by pests & diseases, (v) sprayed with pesticides, (vi) of crops finally damaged and value of (i) fertiliser used, (ii) manure used and (iii) pesticides sprayed separately for irrigated and unirrigated crops	13	31	49	66	85
9	Estimates of area under crop, area applied with fertiliser and manure and area affected by pests and diseases for irrigated and unirrigated crops by crop/crop group separately for ordinary and improved variety of seed	14	32	50	67	86

table no.	description of table	page number					
		Andhra Pradesh	Madhya Pradesh	Maha- rashtra	Orissa	West Bengal	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
10	Estimates of area under crop applied with fertiliser having nutrients N only, NP only, NPK only and others separately for irrigated and unirrigated crops by crop/crop group	15	33	51	68	87	
11	Estimates of area under irrigated crops by crop/crop group and type of irrigation	16	34	52	69	88	
12	Estimates of area under irrigated crops by crop/crop group and number of times irrigated	17	35	53	70	89	
13	Estimates of area under irrigated crop with subsidiary irrigation and without subsidiary irrigation by crop/crop group	17	35	53	70	90	
14	Estimates of value of agricultural implements, irrigation equipments and draught animals (adult cattle and buffaloes - 3 years or more) owned by households by size class of holding	18	36	54	71	91	
15	Estimates of number of households reporting pump sets and number of pump sets possessed by size class of holding	19	37	55	72	92	
16	Estimates of number of pump sets possessed by source of power and by horse-power	20	38	55	73	93	
17	Estimates of number of pump sets and household share of value of owned equipments by type of possession and source of power	21	39	56	74	94	
18	Estimates of number of pump sets reporting area irrigated by source of power and source of water separately by possession type	22	40	57	75	95	
19	Estimates of expenses for irrigation on other than capital account by items of expenditure	23	41	58	76	96	

Tables 1 to 19 relate to households usually using irrigation

Table (O) : Number of sample villages allotted and number surveyed, number of households surveyed for Schedule 22.1, estimated number of total households and estimated number of cultivator households usually using irrigation and number usually not using irrigation

General Sample	State : Andhra Pradesh
item	number
1. number of sample villages allocated for survey	672
2. number of sample villages actually surveyed	672
3. number of sample households surveyed for schedule 22.1	8697
4. estimated number of total households (000) ^{a/}	8100
5. estimated number of cultivating households (000)	4742
(i) usually using irrigation	3397
(ii) usually not using irrigation ^{b/}	1345

^{a/} from listing schedule - Draft Report No.291, Part-I

^{b/} from manual tabulation on schedule 22.2 - Draft Report No.289

NATIONAL SAMPLE SURVEY, 31ST ROUND - JULY 1976 - JUNE 1977

Table (1) : Estimates of number of households usually using irrigation and area possessed, net area sown, area cropped more than once and gross cropped area separately for irrigable land and land without irrigation facility by size class of holding

General Sample

Andhra Pradesh

size class of holding (hectare)	no. of house- holds (⁰⁰)	irrigable area (hectares '00)			area of land without irrigation faci- lity (hectares '00)									
		area possessed	area area sown	crop- ped	gross cropped	area possessed	area area sown	crop- ped	gross -ped area					
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
less than 0.5	9745	1816	505	2321	2260	852	3260	1149	75	1224	904	95	1003	
0.5 - 1.0	6462	2831	459	3290	3206	1210	4509	1858	98	1956	1635	176	1821	
1.0 - 2.0	7525	5092	999	6091	5694	1976	7945	5082	215	5297	4455	246	4743	
2.0 - 4.0	5821	5785	1112	6897	6584	2465	9606	8152	439	8591	7015	241	7447	
4.0 - 10.0	3381	6298	539	6837	6544	2307	8962	12630	564	13194	9739	224	10012	
10.0 & above	1074	4461	258	4719	4511	1562	6190	13183	348	13531	8888	165	9185	
all classes	33966	26283	3872	30155	28799	10372	40572	42054	1739	43793	32636	1147	34211	

tkb/

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (2) : Estimates of number of households reporting area irrigated and net area irrigated by size class of holding and type of irrigation

General Sample

Andhra Pradesh

size class of holding (hectare)	flow			lift			flow & lift					
	diver-	canal	sion	all	tube	lift	all	lift	combined			
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
number of households (00) reporting area irrigated												
less than 0.5	2334	176	4437	480	7592	1598	237	100	349	299	2554	9615
0.5 - 1.0	1776	120	2875	386	4926	1542	120	60	241	234	2157	6384
1.0 - 2.0	1827	151	3428	407	5534	2307	180	60	196	245	2912	7281
2.0 - 4.0	1284	125	2540	334	4042	2216	115	55	137	199	2635	5590
4.0 - 10.0	753	87	1348	169	2200	1638	72	40	32	39	1798	3295
10.0 & above	256	83	306	33	632	537	32	8	4	32	601	980
a l l	8523	740	14934	1809	24926	9838	754	323	959	1048	12657	33146
net area irrigated (hectres 00)												
less than 0.5	677	45	873	97	1692	333	49	14	71	60	527	2219
0.5 - 1.0	1123	56	1067	129	2375	498	65	26	89	105	783	3158
1.0 - 2.0	1787	120	1816	160	3823	1072	141	23	145	136	1517	5340
2.0 - 4.0	2354	97	1812	215	4458	1420	119	57	171	135	1882	6370
4.0 - 10.0	2423	146	1586	192	4350	1473	145	41	77	42	1778	6126
10.0 & above	1529	719	710	24	2982	894	159	23	3	146	1225	4207
a l l	9846	1183	7864	817	19710	5690	678	164	556	624	7712	27422

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NATIONAL SAM LE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (3) : Estimates of number of households reporting lift irrigation and net area irrigated by lift by size class of household holding and by source of power

General Sample

Andhra Pradesh

size class of holding(hectare)	no. of household (00) of reporting lift irrigation using						net area irrigated (hectares 00) by lift using									
	electrified			diesel	wind	animal	human	all	electri-			diesel	wind	animal	human	all
	city	mill							city	mill						
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)					
less than 0.5	578	317	8	935	806	2554	135	70	1	190	131	527				
0.5 - 1.0	617	231	-	906	517	2157	258	93	-	259	173	783				
1.0 - 2.0	798	507	3	1262	471	2912	498	277	1	500	241	1517				
2.0 - 4.0	727	509	-	1086	372	2635	641	413	-	556	272	1882				
4.0 - 10.0	533	578	4	718	86	1798	686	544	1	428	119	1778				
10.0 & above	270	266	-	143	8	601	515	540	-	165	5	1225				
all	3323	2508	15	5050	2260	12657	2733	1937	3	2098	941	7712				

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (4) : Estimates of net area irrigated by type of irrigation and ownership of the source of water for irrigation

General Sample

Andhra Pradesh

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (5) : Estimates of net area irrigated by ownership of lifting equipment and by source of power

General Sample		Andhra Pradesh					
ownership of lifting equipment		net area irrigated (hectares 00) by source of power					
		electri- city	diesel	windmill	animal drawn	human drawn	a l l
(0)	(1)	(2)	(3)	(4)	(5)	(6)	
Government	202	15	-	21	3	241	
Co-operative	29	31	-	-	-	60	
Private joint	1019	553	1	627	78	2278	
Private-single	1483	1338	2	1450	860	5133	
A l l	2733	1937	3	2098	941	7712	

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Sown but not irrigated

Table (6) : Estimates of area having irrigation facility, by size class of holding and reason for not irrigating

General Sample

Andhra Pradesh

size class of holding (hectares)	area (hectares 00) by reason for not irrigating				(4)
	adequate rainfall	non-availabi- lity of water	other reasons	all reasons	
(1)	(2)	(3)	(4)	(5)	
below 0.5	7	26	51	84	
0.5 - 1.0	16	39	11	66	
1.0 - 2.0	56	118	35	209	
2.0 - 4.0	51	139	114	304	
4.0 - 10.0	84	236	104	424	
10.0 & above	75	121	94	290	
all	289	679	409	1377	

Table (7) : Estimates of number of parcels of irrigable land possessed, total area of the plots, net area irrigated, net area not irrigated and net area sown by size class of parcels

General Sample

Andhra Pradesh

size class of parcels (hectare)	number of parcels (00)	area (hectares 00)				(5)
		total irriga- ble land	net area irrigated	net area not irri- gated	net area sown	
(1)	(2)	(3)	(4)	(5)		
less than						
0.05	5518	152	147	1	148	
0.05 - 0.1	6110	431	409	5	414	
0.1 - 0.2	11034	1435	1380	50	1430	
0.2 - 0.3	11359	2480	2399	52	2451	
0.3 - 0.4	4194	1358	1350	22	1372	
0.4 - 0.5	9511	3889	3730	101	3831	
0.5 - 1.0	9961	5967	6424	236	6660	
1.0 - 2.0	4985	6479	5867	335	6202	
2.0 & above	2125	6964	5716	575	5291	
all classes	64797	30155	27422	1377	28799	

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Parcel : A plot or contiguously located plots having a common source of irrigation facility possessed by the household was treated as a parcel.

NATIONAL SAMPLE SURVEY, 31st ROUND : JULY 1976 - JUNE 1977 -

Table (8) : Estimates of area (i) under crop, (ii) applied with fertiliser (iii) applied with manure, (iv) affected by pests and diseases, (v) sprayed with pesticides (vi) of crops finally damaged and value of (i) fertiliser used, (ii) manure used and (iii) pesticides sprayed separately for irrigated and unirrigated crops by crop/crop group.

General Sample		area (hectare '00)					Andhra Pradesh value (Rs.000) of		
crop/ crop group	under crop	applied with fertiliser	applied with manure	affected by pests & diseases	sprayed with pesticides	of crops finally damaged	fertiliser used	manure used	pesticides sprayed
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Paddy	26908	23413	19691	11563	9549	1438	817004	164258	77646
Sowar	423	231	220	75	75	11	7523	5359	760
Bajra	439	225	331	120	79	17	7075	10685	1011
Maize	547	429	372	58	54	8	14396	10279	263
Ragi	759	427	535	192	101	21	9790	16285	935
all cereals	29366	24884	21317	12054	9892	1514	859645	211244	80921
all Pulses	114	11	33	11	10	5	221	558	26
all Oilseeds	2138	1598	985	1189	903	86	42334	18671	10078
Sugarcane	852	801	654	162	135	28	60152	20354	1444
all other crops	1832	1276	1192	642	594	121	73749	46288	18513
all crops	34302	28570	24180	14058	11534	1754	1036101	297115	110982
<u>Irrigated crops</u>									
Paddy	990	541	649	174	746	7	9972	8699	338
Sowar	11362	639	4234	1464	148	102	9346	37770	599
Bajra	2331	106	1023	406	16	8	1859	14264	77
Maize	1000	651	631	51	35	21	11841	9590	190
Ragi	1095	131	643	36	4	-	2313	7355	16
all cereals	20599	2144	8643	2355	264	146	37949	95466	1400
all Pulses	6040	320	991	891	527	179	3632	11718	4824
all Oilseeds	8789	1403	4991	3234	678	327	23055	68834	3839
Sugarcane	27	22	21	5	1	-	635	1194	11
all other crops	5026	1489	1630	1167	873	162	50256	25547	13927
all crops	40481	5378	16276	7652	2343	814	115527	202759	24001

NATIONAL SAMPLE SURVEY, 31ST ROUND : -JULY 1976 - JUNE 1977

Table (9) : Estimates of area under crop, ~~area~~ applied with fertiliser and manure and area affected by pests and diseases for irrigated and unirrigated crops by crop/crop group separately for ordinary and improved variety of seeds improved

General Sample

Andhra Pradesh

crop/crop group	irrigated crop area (hectres 00)					unirrigated crop area (hectres 00)		
	under crop	applied	applied	affected by	under crop	applied	applied	area affected
		with fertiliser	with manure	pests & diseases		with fertiliser	with manure	by pests & diseases
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
paddy	16793	13988	13182	6659	784	360	512	137
jowar	285	118	155	25	11299	617	4213	1448
bajra	336	142	252	69	2275	299	993	395
maize	474	361	311	41	981	633	621	51
ragi	749	423	533	191	1094	131	643	35
all cereals	18927	15188	14600	7031	20227	1911	8443	2288
all pulses	112	11	31	11	5898	178	991	749
all oilseeds	2133	1597	980	1189	8711	1379	4954	3220
sugarcane	794	750	603	145	27	22	21	5
all other crops	1727	1190	1128	600	4740	1263	1474	944
all crops	23693	18736	17342	8976	39603	4753	15883	7206
<u>Improved variety</u>								
paddy	10115	9428	6509	4904	206	181	137	37
jowar	138	113	65	50	63	22	21	16
bajra	103	83	80	51	56	12	30	11
maize	73	68	61	17	19	18	10	-
ragi	10	4	2	1	1	-	-	1
all cereals	10439	9696	6717	5023	372	233	200	67
all pulses	2	-	2	-	142	142	-	142
all oilseeds	5	1	4	-	78	24	37	14
sugarcane	58	51	51	17	-	-	-	-
all other crops	105	86	64	42	286	226	156	223
all crops	10609	9834	6838	5082	878	625	393	446

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (10) : Estimates of area under crop applied with fertiliser having nutrients
 N only, NP only, NPK only and others separately for irrigated and
 unirrigated crops by crop/crop group

General Sample

Andhra Pradesh

crop/crop group	irrigated area (hectares 00) applied with fertilisers having nutrients				total	unirrigated area (hectares 00) applied with fertilisers having nutrients				total				
	N only	NP only	NPK only	others		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
dy	10330	4996	7484	606	23416	336	97	77	31	541				
er	46	31	154		231	316	196	106	21	639				
ra	100	60	65		225	27	34	34	11	106				
za	270	14	144	1	429	580	17	54	-	651				
1	299	50	65	13	427	95	19	17	-	131				
cereals	11122	5179	7961	622	24884	1385	381	302	76	2144				
pulses	9	-	2	-	11	68	203	49	-	320				
oil seeds	226	778	567	27	1598	160	969	251	23	1403				
ar cane	567	75	131	28	801	12	10	-	-	22				
other crops	513	293	390	80	1276	412	579	339	159	1489				
crops	12437	6325	9051	757	28570	2037	2142	941	258	5378				

'N' only means nitrogenous fertilisers like ammonium sulphate, ammonium sulphate nitrate, calcium ammonium nitrate, ammonium chloride and urea.

'NP' only means nitrogenous phosphate fertilisers like ammonium phosphate, ammonium phosphate sulphate, diammonium phosphate, urea ammonium phosphate and ammonium nitrate phosphate. It also includes phosphate fertilisers like single super phosphate, triple super phosphate and ~~pallets~~ in combination with nitrogenous fertilisers containing 'N' only.

'NPK' means nitrogenous phosphatic potash fertilisers like nitrophosphate and NPK complex fertilisers. It also includes potash fertiliser like sulphate of potash in combination with 'NP' fertilisers noted under 'NP' above.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (11) : Estimates of area under irrigated crops by crop/crop group and type of irrigation

General Sample

Andhra Pradesh

crop/crop group	area (hectars 00) under irrigated crop by type of irrigation											flow and lift com- bined	
	flow					lift							
	canal	diversion	tank	others	total	well	tubewell	river	tank	others	total		
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(42)	
paddy	10255	459	9555	775	21054	4353	225	136	546	594	5854	26908	
jowar	65	104	41	2	212	202	7	1	-	1	211	423	
bazra	40	20	22	1	83	336	7	2	-	11	356	439	
maize	25	-	8	-	33	497	12	1	2	2	514	547	
ragi	-	-	70	12	82	651	3	3	13	7	677	759	
all cereal	10438	599	9709	809	21555	6218	254	143	565	631	7811	29366	
all pulses	28	-	40	1	69	37	3	-	3	2	45	114	
all oil seeds	999	462	64	15	1540	498	43	5	-	52	598	2138	
sugar cane	179	40	86	22	327	356	129	2	12	26	525	852	
all other crops	217	84	117	38	456	877	402	24	1	72	1376	1832	
all crops	11861	1185	10016	885	23947	7986	831	174	581	783	10355	34302	

h/d

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (12) : Estimates of area under irrigated crops by crop/crop group and number of times irrigated

crop/crop group	crop area(hectares '00)by number of times irrigated					Andhra Pradesh
	once	twice	thrice	more than thrice	total	
	(0)	(1)	(2)	(3)	(4)	(5)
paddy	.65	34	166	26643	26908	
jowar	5	16	52	350	423	
bajra	11	10	26	392	439	
maize	5	12	8	522	547	
ragi	6	10	23	720	759	
all cereals	97	103	282	28884	29366	
all pulses	12	27	8	67	114	
all oil seeds	42	152	114	1830	2138	
sugar cane	8	1	6	837	852	
all other crops	68	130	55	1579	1832	
all crops	227	413	465	33197	34302	

Table (13) : Estimates of area under irrigated crop with subsidiary irrigation and without subsidiary irrigation by crop/crop group

crop/crop group	area(hectares '00)under irrigated crop			Andhra Pradesh
	with subsidiary irrigation	without subsidiary irrigation	total	
	(0)	(1)	(2)	(3)
paddy	2554	24354	26908	
Jawar	10	413	423	
bajra	5	434	439	
maize	12	535	547	
ragi	58	701	759	
all cereals	2653	26713	29366	
all pulses	8	106	114	
all oil seeds	23	2115	2138	
sugar cane	182	670	852	
all other crops	68	1764	1832	
all crops	2934	31368	34302	

h/d

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (14) : Estimates of value of agricultural implements, irrigation equipments and draught animals (adult cattle and buffaloes aged 3 years or more) owned by households by size class of household holding

General Sample

Andhra Pradesh

items of assets	value (Rs.000) of agricultural implements, irrigation equipments and cattle and buffaloes by size class of holding (hectare)						
	less than 0.5	0.5-1.0	1.0-2.0	2.0-4.0	4.0-10.0	10.0-100	all above classes
(0)	(1)	(2)	(3)	(4)	(5)	(6)	
<u>agricultural implements</u>							
1. tractor		16237		16080	59503	178253	3270073
2. power tiller				5558	360	939	6857
3. sprayer	10		774	743	5673	7167	14367
4. duster	109		60		1351	1211	2731
5. thresher							
6. cane casher		7135	1439	1545	5767	857	16743
7. oil casher crusher	232		1396		1396		3024
8. total	351	23372	3669	23926	74050	188427	313795
<u>irrigation equipments</u>							
1. electric pumps	18483	60615	102905	148432	166247	98365	595048
2. diesel pumps	13504	29704	71857	111527	159345	110761	496698
3. windmill			402				402
4. moat	8570	10360	18101	24085	13240	2768	77124
5. persian wheel	5608	9354	17407	10268	5857	1588	50082
6. others (animal driven)	140	1118	323	566	670	167	2984
7. counterpoise	1111	740	697	1058	480	77	4163
8. manual pumps	219	708	885	1154	373	201	3540
9. others	929	808	1337	1933	1259	747	70123
10. total	48564	113407	213914	299023	347471	214674	1237053
<u>adult cattle and buffaloes</u>							
1. cattle	102078	196824	450656	584970	595108	406033	2336469
2. buffaloes	33850	40113	53680	47200	40947	22192	237982
3. total	135928	236937	504336	632170	636055	429025	2574451
grand' total	184843	373716	721919	955119	1057576	832126	4125299

h/d

NATIONAL SAMPLE SURVEY, 31ST ROUND JULY 1976 - JUNE 1977

Table (15) : Estimates of number of households reporting pumpsets and number of pumpsets possessed by size class of household holding

General Sample		Andhra Pradesh	
size class of household holding (0.0 hectares)		number of households reporting pumpsets (00)	number of pumpsets * (00)
(0)		(1)	(2)
below	- 0.5	388	412
0.5	- 1.0	611	674
1.0	- 2.0	1123	1243
2.0	- 4.0	1242	1491
4.0	- 10.0	1147	1445
10.0 & above		565	759
all sizes		5076	6024

* In this and subsequent tables on number of pumpsets, the number includes those possessed jointly as well as on rent. In the case of jointly possessed, instead of the household share of the number possessed, the total number possessed jointly has been counted as possessed by the sample household.

Hence the estimated number of pumpsets is inflated to some extent.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (16) : Estimates of number of pumpsets possessed by source of power and by horse power

horse power	number of pumpsets (00) having source of power*				Andhra Pradesh
	electricity		diesel	both electricity and diesel	
	(1)	(2)	(3)	(4)	
'below	1.0	124	126	-	250
1.0	- 2.0	4	-	-	4
2.0	- 3.0	36	22	-	58
3.0	- 4.0	1267	270	-	1537
4.0	- 5.0	-	7	-	7
5.0	& above	2085	2083	-	4168
TOTAL		3516	2508	-	6024

see footnote on Table (15)

h/d

NATIONAL SAMPLE SURVEY, 31st ROUND : JULY 1976 - JUNE 1977.

Table (17) : Estimates of number of pumpsets and households share of value of owned equipments by type of possession and source of power.

General Sample

Andhra Pradesh

source of power	possession type							
	owned singly		owned jointly		rented		total	
	no. of pumpsets (00)	hh's share of value of equipments Rs. (000)	no. of pumpsets* (00)	h'h share of value of equipments Rs. (000)	no. of pumpsets (00)	hh's share of value of equipments Rs. (000)	no. of pumpsets (00)	hh's share of value of equipments Rs. (000)
(a)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
electricity	1205	347279	2132	196593	179	1333	3516	545205
diesel	1114	342390	1149	129120	245	-	2508	471510
both electricity & diesel	-	-	-	-	-	-	-	-
total	2319	689669	3281	325713	424	1333	6024	1016715

see footnote on Table (15)

h/d

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (18) : Estimates of number of pumpsets reporting area irrigated by source of power and source of water separately by possession type.

General Sample

Andhra Pradesh

source of power		no. of pumpsets*(00) reporting area irrigated by source of water				
		open well	tube well	rivers	and others	total streams
(6)	(6)	(2)	(3)	(4)	(5)	
<u>owned singly</u>						
1. electricity	1050	109	12	20	1191	
2. diesel	848	113	64	74	1099	
3. both electric city & diesel	-	-	-	-	-	
4. total	1898	222	76	94	2290	
<u>owned jointly</u>						
1. electricity	1893	143	56	40	2132	
2. diesel	1055	48	12	27	1142	
3. both electric city diesel	-	-	-	-	-	
4. total	2948	191	68	67	3274	
<u>rented</u>						
1. electricity	97	55	12	12	176	
2. diesel	159	24	4	44	231	
3. both electric city diesel	-	-	-	-	-	
4. total	256	79	16	56	407	
<u>all</u>						
1. electricity	3040	307	80	72	3499	
2. diesel	2062	185	80	145	2472	
3. both electric city diesel	-	-	-	-	-	
4. total	5102	492	160	217	5971	

see footnote on Table (15)

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (19) : Estimates of expenses for irrigation on other than capital account by items of expenditure.

General Sample

Andhra Pradesh

items of expenditure	ammount (Rs.000)
(o)	(t) <i>field</i>
repair and maintenance expenses of bounds and final channels	1300
water charges	1420
other expenses/independently owned lift irrigation	2524
share of expenses on joint arrangements	938
receipt from sale of water	(-) 42
t o t a l	6140

h/d

Table (O) : Number of sample villages allotted and number surveyed, number of households surveyed for schedule 22.1, estimated number of total households and estimated number of cultivator households usually using irrigation and number usually not using irrigation

State : Madhya Pradesh

General Sample

item	Number
1. number of sample villages allocated for survey	672 640
2. number of sample villages actually surveyed	672 640
3. number of sample households surveyed for schedule 22.1	8697 4691
4. estimated number of total households (000) ^{a/}	10 6957
5. estimated number of cultivating households (000)	12 5439
(i) usually using irrigation	7 1690
(ii) usually not using irrigation ^{b/}	5 3749

a/ from listing schedule - Draft Report No.291, Part-I

b/ from manual tabulation on schedule 22.2 - Draft Report No.289

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table 1 : Estimated of number of households usually using irrigation and area possessed, net area sown, area cropped more than once and gross cropped area separately for irrigable land and land without irrigation facility by size class of holding.

size class holding hectare)	General Sample			Madhya Pradesh										
	no. of house- holds (00)	irrigable land					land without irrigation facility							
		with irri- gable land	area possessed (hectares 00)	owned	leased	total	net area sown (hec- tares 00)	area cropped more than once (hec- tares 00)	gross cropped area (hec- tares 00)	area possessed (hectares 00)	owned	leased	total	net area sown (hec- tares 00)
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
less than 0.5	1294	329	9	338	330	226	577	70	7	77	58	16	76	52
0.5 -1.0	2179	1059	35	1094	1079	671	1755	507	14	521	465	110	576	1
1.0 -2.0	3830	2785	105	2890	2838	1587	4425	2626	60	2686	2478	512	2991	
2.0 -4.0	4590	4849	139	4988	4858	2391	7251	8028	147	8175	7492	1141	8633	
4.0 -10.0	3869	5910	206	6116	5908	2730	8601	17009	277	13286	15344	2047	17392	
10.0 & above	1134	3477	28	3505	3410	1418	4815	14622	225	14847	12429	1492	13921	
all classes	16896	13409	522	18931	18423	9023	27424	42862	730	43592	38266	5318	43589	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (2) Estimates of number of households reporting area irrigated and net area irrigated by size class of holding and type of irrigation

General Sample

Madhya Pradesh

size class of holding (hectare)	f l o w						l i f t					
	canal	diver-sion scheme	tank	others	all flow	well	tube-well	river	tank	others	all lift	flow & lift combined
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
number of households (00) reporting area irrigated												
less than 0.5	599	57	157	7	818	311	18	45	7	4	386	1181
0.5 - 1.0	899	58	145	32	1128	755	15	83	7	47	895	1973
1.0 - 2.0	1135	93	284	81	1553	1864	43	195	22	68	2160	3563
2.0 - 4.0	1052	64	302	72	1461	2590	65	304	28	120	3064	4352
4.0 - 10.0	607	52	207	54	900	2464	61	368	30	140	2989	3714
10.0 & above	127	7	94	18	238	721	12	136	15	53	900	1102
all	4419	331	1189	264	6098	8705	214	1131	109	432	10394	15885
net area irrigated(hectares 00)												
less than 0.5	165	12	33	1	211	60	4	8	1	-	73	284
0.5 - 1.0	493	22	65	12	592	292	5	27	2	7	333	925
1.0 - 2.0	1065	54	181	37	1337	853	31	42	3	16	945	2282
2.0 - 4.0	1708	36	215	36	1995	1522	65	141	7	50	1785	3780
4.0 - 10.0	1677	31	214	48	1970	2027	88	336	4	93	2548	4518
10.0 & above	833	4	204	31	1072	1100	40	224	20	91	1475	2547
all	5941	159	912	165	7177	5854	233	778	37	257	7159	14336

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 JUNE 1977

Table (3) : Estimates of number of households reporting lift irrigation and net area irrigated by lift by size class of household holding and by source of power

General Sample

Madhya Pradesh

size class of holding (hectare)	no. of households (00) reporting lift irrigation way						net area irrigated(hectares 00) by lift using					
	electri-city	diesel	wind mill	ani-mal	human	all	electri-city	diesel	wind mill	ani-mal	human	all
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
less than 0.5	41	301	3	198	114	386	11	6	1	49	6	73
0.5 - 1.0	87	127	4	526	156	895	34	48	1	241	9	333
1.0 - 2.0	242	258	3	1253	427	2160	150	140	1	628	26	945
2.0 - 4.0	448	413	-	1760	522	3064	357	272	-	1111	45	1785
4.0 -10.0	623	693	-	1350	452	2989	803	742	-	954	49	2548
10.0 & above	269	390	-	206	65	900	637	647	-	179	12	1475
all	1710	1911	10	5293	1736	10394	1992	1855	3	3162	147	7159

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (4) : Estimates of net area irrigated by type of irrigation and ownership of the source of water for irrigation

General Sample

Madhya Pradesh

Ownership of source of water for irrigation	net area irrigated (hectares 00) by type of irrigation												lift & flow com- bined	
	flow						lift							
	canal	diver- sion scheme	tank	others	all flow	well	tube well	river	tank	others	all lift			
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		(12)	
government	5915	121	556	121	6713	59	54	751	12	207	1083		776	
co-operative	-	-	6	-	6	-	-	-	-	-	-		6	
private joint	-	14	192	7	213	1909	61	5	12	20	2007		2220	
private single	- 1	24	158	37	220	3875	118	22	13	30	4058		4278	
not recorded	25	-	-	-	25	11	-	-	-	-	-	11	36	
all	5941	159	912	165	7177	5854	233	773	37	257	7159		14336	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (5) : Estimates of net area irrigated by ownership of lifting equipment and by source of power

ownership of lifting equipment	net area irrigated (hectares 00) by source of power						Madhya Pradesh
	elec- tricity	diesel	windmill	animal drawn	human drawn	all	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	
government	54	15	-	-	-	69	
cooperative	-	-	-	-	-	-	
private joint	567	327	3	704	16	1617	
private single	1371	1510	-	2456	131	5468	
not recorded	-	3	-	2	-	5	
all	1992	1855	3	3162	147	7159	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (6) : Estimates of area having irrigation facility, ^{Some b/w} not irrigated by size class of holding and reason for not irrigating

General Sample

Madhya Pradesh

size class of holding	area (hectares 00) by reason for not irrigating			
	adequate rainfall	non-availability of water	other reasons	all reasons
(0)	(1)	(2)	(3)	(4)
less than 0.5	20	11	17	48
0.5 - 1.0	86	34	39	159
1.0 - 2.0	197	201	156	554
2.0 - 4.0	354	368	372	1094
4.0 - 10.0	331	581	465	1377
10.0 & above	252	331	272	855
all	1240	1526	1321	487

Table (7) : Estimates of number of parcels of irrigable land possessed, total area of the plots, net area irrigated, net area not irrigated and net area sown by size class of parcels

General Sample

Madhya Pradesh

size class of parcels (hectare)	area (hectares 00)				
	number of parcels (00)	total irrigable land	net area irrigated	net area not irrigated	net area sown
(0)	(1)	(2)	(3)	(4)	(5)
less than 0.05	2124	53	47	5	52
0.05 - 0.10	1948	138	115	20	135
0.10 - 0.20	4591	619	519	94	613
0.20 - 0.30	5511	1220	1025	180	1205
0.30 - 0.40	2667	871	727	129	566
0.40 - 0.50	4855	2014	1728	268	1996
0.50 - 1.00	7100	4902	3932	887	4819
1.00 - 2.00	3407	4478	3401	944	4345
2.00 & above	1409	4636	2842	1560	4402
all classes	33612	18931	14336	4087	18423

Parcel : A plot or contiguously located plots having a common source of irrigation facility possessed by the household was treated as a parcel.

Table (8) : Estimates of area (i) under crop (ii) applied with fertiliser, (iii) applied with manure, (iv) affected by pests & diseases, (v) sprayed with pesticides, (vi) of crops finally damaged and value of (i) fertiliser used, (ii) manure used and (iii) pesticides sprayed separately for irrigated and unirrigated crops by crop/crop groups

General Sample							Madhya Pradesh			
crop/ crop group	area (hectares 00)						value (Rs.000) of			
	under crop	applied with ferti- liser	applied with manure	affec- ted by pests & de- seases	sprayed with pesti- cides	of crop finally damaged	ferti- liser used	manure used	pesti- cides spray- ed	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
<u>irrigated crops</u>										
paddy	5511	2465	3680	3025	887	612	34340	27317	7167	
jowar	16	5	2	-	-	-	109	7	1	
wheat	6940	4020	1295	3380	176	84	129099	25625	1281	
all cereals	12842	6547	5105	3370	1063	6%	166028	55522	8464	
all pulses	1050	204	176	59	22	15	3656	2648	115	
all oilseeds	279	171	84	15	8	-	3350	1006	148	
sugarcane	421	196	181	26	14	6	6654	7869	136	
cotton	222	105	94	40	41	10	2622	2720	1890	
all other crops	909	381	385	79	31	2	12282	20093	626	
all crops	15723	7604	6025	3589	1179	729	194592	89858	11379	
<u>unirrigated crops</u>										
paddy	10743	2429	5999	3860	1563	961	29748	49462	9134	
jowar	9580	241	956	625	40	3	3167	10294	512	
wheat	7222	447	897	114	20	3	4625	5025	121	
all cereals	33657	3414	9245	4922	1642	967	43135	94467	9893	
all pulses	12275	443	1294	642	91	55	4533	13031	349	
all oilseeds	5342	531	594	125	14	6	7845	6959	94	
sugarcane	23	4	-	-	-	-	55	2	-	
cotton	2529	347	648	133	71	3	4288	8503	1071	
all other crops	1464	35	91	9	4	3	741	1650	44	
all crops	55290	4774	11872	5831	1822	1034	60597	124612	11451	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (9) : Estimates of area under crop, area applied with fertiliser and manure and area affected by pests and diseases for irrigated and unirrigated crops by crop/crop group separately for ordinary and improved variety of seed

General Sample

Madhya Pradesh

crop/crop group	irrigated crop area (hectare '00)				unirrigated crop area (hectare '00)			
	under crop	applied with fertiliser	applied with manure	affected by pests & diseases	under crop	applied with fertiliser	applied with manure	area affected by pests & diseases
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<u>ordinary variety</u>								
paddy	4867	2276	3534	2881	10645	2360	5910	3785
jowar	13	2	2	-	9451	193	943	605
wheat	3445	1365	617	226	6765	417	886	104
all cereals	8647	3682	4265	3114	32909	3229	9110	4797
all pulses	1034	200	168	58	12141	438	1294	638
all oilseeds	225	119	80	3	5094	415	590	90
sugarcane	416	195	177	26	23	4	-	-
cotton	158	58	65	26	2382	328	558	126
all other crops	901	375	379	79	1463	35	91	9
all crops	11381	4629	5134	3306	54012	4449	11643	5660
<u>improved variety</u>								
paddy	644	189	146	144	98	69	89	75
jowar	3	3	-	-	129	48	13	20
wheat	3495	2655	678	112	457	30	11	10
all cereals	4195	2863	840	256	748	185	135	125
all pulses	16	4	8	1	134	5	-	4
all oil seeds	54	52	4	12	248	116	4	35
sugarcane	5	1	4	-	-	-	-	-
cotton	64	47	29	14	147	19	90	7
all other crops	8	6	6	-	1	-	-	-
all crops	4342	2973	891	283	1278	325	229	171

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (10) : Estimates of area under crop applied with fertiliser having nutrients N only, NP only, NPK only and others separately for irrigated and unirrigated crops by crop/crop group

General Sample

Madhya Pradesh

crop/crop group	Irrigated area (hectares 00) applied with fertilisers having nutrients					unirrigated area (hectares 00) applied with fertiliser having nutrients				
	N only	NP only	NPK only	others	total	N only	NP only	NPK only	others	total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rice	1930	382	2	151	2465	1542	565	3	319	2429
Maize	3	2	-	-	5	131	38	11	61	241
Wheat	2326	1102	118	474	4020	69	82	21	275	447
All cereals	4235	1509	120	633	6547	1954	721	42	697	3414
All pulses	105	31	6	62	204	146	60	6	231	443
All oilseeds	119	51	-	1	171	102	81	34	314	531
Sugar cane	139	33	13	11	196	4	-	-	-	4
Cotton	72	13	6	14	105	240	100	1	6	347
All other crops	270	65	5	41	381	16	10	-	9	35
All crops	4990	1702	150	762	7604	2462	972	83	1257	4774

'N' only means nitrogenous fertilisers like ammonium sulphate, ammonium sulphate nitrate, calcium ammonium nitrate, ammonium chloride and urea.

'NP' only means nitrogenous phosphate fertilisers like ammonium phosphate, ammonium phosphate sulphate, diammonium phosphate, urea ammonium phosphate and ammonium nitrate phosphate. It also includes phosphate fertilisers like single super phosphate and palfor in combination with nitrogenous fertilisers containing 'N' only.

'NPK' means nitrogenous phosphatic potash fertilisers like nitrophosphate and NPK complex fertilisers. It also includes potash fertiliser like sulphate of potash in combination with 'NP' fertilisers noted under 'NP' above.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (11) : Estimates of area under irrigated crops by crop and crop group and type of irrigation

General Sample

Madhya Pradesh

Crop/Crop Group	area (hectares 00) under irrigated crop by type of irrigation												flow and lift combined.	
	flow				lift									
	canal	diver- sion scheme	tank	others	total	well	tube well	river	tank	others	total			
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(12)	
paddy	4390	105	648	103	5246	130	16	86	5	28	265	5511		
jowar	-	-	-1	-	1	11	-	4	-	-	15	16		
wheat	1933	80	195	52	2260	3743	178	535	31	193	4680	6940		
all cereals	6363	187	850	160	7560	4177	200	633	36	236	5282	12842		
all pulses	136	5	68	2	361	569	8	98	-	14	689	1050		
all oilseeds	184	1	8	-	193	55	22	8	-	1	86	279		
sugar cane	21	-	3	1	25	339	13	39	4	1	396	421		
cotton	23	8	-	-	31	167	-	24	-	-	191	222		
all other crops	11	3	8	3	25	840	4	30	5	5	884	909		
all crops	6888	204	937	166	8195	6147	247	832	45	257	7528	15723		

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (12) : Estimates of area under irrigated crop by crop/crop group and number of times irrigated

General Sample

Madhya Pradesh

crop/crop group (0)	crop area (hectares 00) by number of times irrigated					total (5)
	once (1)	twice (2)	thrice (3)	more than thrice (4)		
paddy	3219	766	454	1072	5511	
jowar	9	-	-	7	16	
wheat	757	1418	1451	3314	6940	
all cereals	4054	2256	1972	4560	12842	
all pulses	491	237	128	194	1050	
all oilseeds	151	64	9	55	279	
sugar cane	2	5	32	382	421	
cotton	37	101	26	58	222	
all other crops	16	27	64	802	909	
all crops	4751	2690	2231	6051	15723	

Table (13) : Estimates of area under irrigated crop with subsidiary irrigation and without subsidiary irrigation by crop/crop group

General Sample

Madhya Pradesh

crop/crop group (0)	area (hectares 00) under irrigated crop			total (3)
	with subsidiary irrigation (1)	without subsidiary irrigation (2)		
paddy	29	5482		5511
jowar	-	16		16
wheat	53	6887		6940
all cereals	83	12759		12842
all pulses	1	1049		1050
all oilseeds	-	279		279
sugar cane	-	421		421
cotton	13	209		222
all other crops	-	909		909
all crops	97	15626		15723

NATIONAL SAMPLE SURVEY, 31ST ROUND

JULY 1976 - JUNE 1977

Table(14): Estimates of value* of agricultural implements irrigation equipments draught and adult cattle and buffaloes (3 years or more) owned by households animals by size class of household holding.

General Sample

Madhya Pradesh

items of assets	value (Rs. 000) of agricultural implements irrigation equipments and adult cattle and buffaloes by size class of holding (hectare)						
	less than 0.5	0.5- 1.0	1.0- 2.0	2.0- 4.0	4.0- 10.0	10.0- & above	all classes
	(0)	(1)	(2)	(3)	(4)	(5)	(6)
<u>agricultural implements</u>							
1. tractor					33381	181442	214823
2. power tiller					414	3226	3640
3. sprayer		2570	733	1176	3886	6052	
4. duster				206	309	515	
5. thresher				396	2891	8738	13025
6. cane crusher	178	87	296	1336	1529	3426	
7. oil crusher				143		143	
8. total	178	344	1568	39404	199130	240624	
<u>irrigation equipments</u>							
1. electric pumps	711	7709	29611	77543	175037	125512	416123
2. diesel pumps	989	3930	23872	59777	159523	160615	408706
3. wind - mill					54	54	
4. moat	1374	3882	9984	16145	19203	3863	56451
5. persian wheel	2373	11188	23453	32184	24473	4298	97968
6. others (animal driven)	185	372	953	1157	1439	235	4341
7. counter poise	104	86	514	891	771	140	2506
8. manual pumps		18			1052		1070
9. others	35	159	720	666	793	1281	3654
10. total	5771	27344	89107	190363	382290	295998	990873
<u>adult cattle and buffaloes</u>							
1. cattle	23574	89403	250507	476375	644587	367144	1851590
2. buffaloes	540	6679	27044	50727	63133	61178	209301
3. total	24114	96082	277551	527102	707720	428322	2060891
grand total	29885	123604	367002	719033	1129414	923450	3292388

NATIONAL SAMPLE SURVEY : 31ST ROUND : JULY 1976-JUNE 1977

Table (15) : Estimates of number of households reporting pumpsets and number of pumpsets possessed by size class of household holding

General Sample	Madhya Pradesh	
size class of household holding (hectare)	number of household reporting pumpsets (oo)	number of pumpsets* (oo)
(1)	(2)	(3)
below 0.5	49	49
0.5 to 1.0	165	172
1.0 to 2.0	386	390
2.0 to 4.0	723	731
4.0 to 10.0	1248	1335
10.0 & above	662	757
all sizes	3233	3434

*In this and subsequent tables on number of pumpsets, the number includes those possessed jointly as well as on rent. In the case of jointly possessed, instead of the household share of the number possessed, the total number possessed jointly has been counted as possessed by the sample household. Hence the estimated number of pumpsets is inflated to some extent.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (16) : Estimates of number of pumpsets possessed by source of power and by horse-power

General Sample

Madhya Pradesh

horse power	number of pumpsets (00) having source of power				total of cols. 2 to 4
	electricity	diesel	both electricity and diesel		
(1)	(2)	(3)	(4)	(5)	
below 1.0	11	16	-	27	
1.0 - 2.0	3	3	-	6	
2.0 - 3.0	32	-	-	32	
3.0 - 4.0	846	72	-	918	
4.0 - 5.0		3	-	3	
5.0 and above	601	1421	-	2022	
not recorded	34	392	-	426	
total	1527	1907	-	3434	

*See footnote on Table (15)

NATIONAL SAMPLE SURVEY ~~EXECUTIVE~~ 31ST ROUND, JULY 1976 - JUNE 1977

Table (17) : Estimates of number of pumpsets* and households share of value of owned equipments by type of possession and source of power

General Sample

Madhya Pradesh

source of power	owned singly		owned jointly		rented		total	
	no. of pumpsets (00)	hh's share of value of equipments (Rs. 000)	no. of pumpsets (00)	hh's share of value of equipments Rs. (000)	no. of pump- sets (00)	hh's share of value of pump- sets Rs. (000)	no. of sets (00)	hh's share of value of equip- ments Rs.(000)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
electricity	795	2895950	673	935291	59	-	1527	3831241
diesel	805	3275770	328	585157	774	-	1907	3860927
both electricity & diesel	-	-	-	-	-	-	-	-
total	1600	6171720	1001	1520448	833	-	3434	7692168

* see footnote on table 15

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NATIONAL SAMPLE SURVEY, 31ST ROUND.

JULY 1976 - JUNE 1977

Table (18) : Estimates of number of pumpsets reporting area irrigated by source of power and source of water separately by possession type

General Sample

Madhya Pradesh

source of power	no. of pumpsets* (00) reporting area irrigated by source of water				total
	well	tube- well	rivers & streams	others	
(1)	(2)	(3)	(4)	(5)	(6)
1.					
	owned singly				
1. electricity	661	36	67	27	791
2. diesel	574	3	141	82	800
3. both electricity & diesel					
4. total	1235	39	208	109	1591
 2.					
	owned jointly				
1. electricity	603	18	39	11	671
2. diesel	229		64	35	328
3. both electricity & diesel					
4. total	832	18	103	46	999
 3.					
	rented				
1. electricity	36		19	4	59
2. diesel	243	3	357	171	774
3. both electricity & diesel					
4. total	279	3	376	175	833
 4.					
	total				
1. electricity	1300	54	125	42	1521
2. diesel	1046	6	562	288	1902
3. both electricity & diesel					
4. total	2346	60	687	330	3423

* see footnote on table 15

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (19) : Estimates of expenses for irrigation on other than capital account by items of expenditure

General Sample	Madhya Pradesh
Items of expenditure	amount (Rs.000)
(1)	(2)
repair and maintenance expenses of bunds and field channels	23110
water charges	39402
other expenses on independently owned lift irrigation	136829
share of expenses on joint arrangements	12748
receipt from sale of water	(-) 4138
total	207951

Table (O) : Number of sample villages allotted and number surveyed, number of households surveyed for schedule 22.1, estimated number of total households and estimated number of cultivating households usually using irrigation and number usually not using irrigation

State : Maharashtra

General Sample

item	number
1. number of sample villages allocated for survey	528
2. number of sample villages actually surveyed	528
3. number of sample households surveyed for schedule 22.1	547
4. estimated number of total households (000) ^{a/}	6970
5. estimated number of cultivating households (000)	4409
(i) usually using irrigation	1641
(ii) usually not using irrigation ^{b/}	2768

a/ from listing schedule - Draft Report No.291, Part-I

b/ from manual tabulation on schedule 22.2 - Draft Report No. 289

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (1) : Estimates of number of households usually using irrigation and area possessed, net area sown, area cropped more than once and gross cropped area separately for irrigable land and land without irrigation facility by size class of holding

General Sample

Maharashtra

class holding ctare)	no. of house- holds usually using irriga- tion (00)	irrigable land (hectares '00)						land without irrigation facility(hectares '00)					
		area possessed owned leased in	net area sown (hec- tares '00)	area cropp- ed more than once (hec- tares '00)	gross cropp- ed area (hec- tares '00)	area possessed owned leased in	net area sown (hec- tares '00)	area cropp- ed more than once (hec- tares '00)	gross cropp- ed area (hec- tares '00)	area possessed owned leased in	net area sown (hec- tares '00)	area cropp- ed more than once (hec- tares '00)	gross cropp- ed area (hec- tares '00)
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
than 0.5	1906	354	18	372	360	131	493	166	2	168	115	4	120
0.5 - 1.0	1835	861	20	881	845	361	1241	432	15	447	358	14	377
1.0 - 2.0	2914	2090	54	2144	2044	825	2956	1935	66	2001	1602	90	1710
2.0 - 4.0	3881	4808	118	4926	4550	1645	6386	6091	148	6239	5156	188	5396
4.0 - 10.0	4238	8691	86	8777	7773	2522	10603	17109	397	17506	14206	495	14839
10.0 & above	1637	5806	95	5901	5535	1779	7576	19617	605	20222	16392	346	16903
all classes	16411	22610	391	23001	21107	7263	29255	45350	1233	46583	37829	1137	39345

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (2) : Estimates of number of households reporting area irrigated and net area irrigated by size class of holding and type of irrigation

General Sample

Maharashtra

size class of holding (hectare)		type of irrigation										flow & lift combined
		f l o w				l f f t l c f t						
		canal	diver-sion scheme	tank	others	all flow	well	tube well	river	tank	others	all lift
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
number of households (00) reporting area irrigated												
less than 0.5	173	87	103	68	431	890	-	493	-	16	1394	1798
0.5 - 1.0	290	110	129	41	570	900	-	365	-	4	1254	1762
1.0 - 2.0	400	154	175	60	789	1688	-	387	-	15	2035	2748
2.0 - 4.0	656	200	162	64	1077	2560	-	246	-	20	2770	3646
4.0 - 10.0	613	135	148	89	980	3239	-	143	8	43	3374	4099
10.0 & above	190	45	54	35	324	1329	-	42	-	18	1383	1598
all	2322	731	771	357	4171	10606	-	1676	128	116	12210	15651
net area irrigated (hectares 00)												
less than 0.5	43	6	22	15	86	117	-	89	-	4	210	296
0.5 - 1.0	154	21	68	14	257	303	-	154	-	1	458	715
1.0 - 2.0	301	21	138	51	511	872	-	235	-	10	1117	1628
2.0 - 4.0	721	61	126	51	959	1907	-	252	-	15	2174	3133
4.0 - 10.0	1068	43	227	97	1435	3520	-	182	7	56	3765	5200
10.0 & above	760	37	91	46	934	2580	-	85	-	17	2682	3616
all	3047	189	672	274	4182	9299	-	997	7	103	10406	14588

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (3) : Estimates of number of households reporting lift irrigation and net area irrigated by lift by size class of household holding and by source of power

General Sample

Maharashtra

size class of holding (hectare)	no. of households(00) reporting lift irrigation/ electri- city diesel wind mill animal human all	using												net area irrigated(hectares 00)by lift using electri- city diesel wind animal human all mill
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
less than 0.5	605	262	-	207	361	1394	121	38	-	34	17	210		
0.5 - 1.0	566	291	-	279	130	1254	257	95	-	93	13	458		
1.0 - 2.0	832	553	-	667	63	2035	545	265	-	302	5	1117		
2.0 - 4.0	1071	751	-	1025	47	2770	1032	550	-	569	23	2174		
4.0 - 10.0	1192	983	-	1329	16	3374	1733	1074	-	946	12	3765		
10.0 & above	614	567	-	314	7	1383	1433	977	-	271	1	2682		
all classes	4880	3407	-	3821	624	12210	5121	2999	-	2215	71	10406		

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (4) : Estimates of net area irrigated by type of irrigation and ownership of the source of water for irrigation

General Sample

Maharashtra

ownership of the source of water for irrigation	net area irrigated (hectares 00) by type of irrigation											lift & flow combi- ned	
	canal	diver- sion scheme	f	l	o	w	all flow	well well	tube well	river	tank	others	
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
government	3040	715	529	58	3742	30	-	866	7	67	970	4712	
co-operative	-	9	-	-	9	7	-	87	-	1	95	104	
private joint	-	59	89	64	212	3528	-	15	-	11	3554	3766	
private single	-	6	54	152	212	5698	-	29	-	24	5751	5963	
not recorded	7	-	-	-	7	36	-	-	-	-	36	43	
all	3047	189	672	274	4182	9299	-	997	7	103	10406	14588	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (5) : Estimates of net area irrigated by ownership of lifting equipment and by source of power

General Sample	Maharashtra					
	net area irrigated (hectares 00) by source of power					
ownership of lifting equip- ments	electri- city	diesel	wind- mill	animal drawn	human drawn	
(0)	(1)	(2)	(3)	(4)	(5)	(6)
government	27	9	-	56	-	140
cooperative	381	45	-	2	-	39398
private joint	1382	721	-	197	2	2302
private single	3234	2254	-	2041	69	7665
all	5124	2999	-	2245	71	10406

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Sown but

Table (6) : Estimates of area having irrigation facility, not irrigated by size class of holding and reason for not irrigating

size class of holding (hectares)	General Sample				Maharashtra
	area (hectares 00) by reason for not irrigating				
	adequate rainfall	non-availability of water	other reasons	all reasons	
(0)	(1)	(2)	(3)	(4)	
less than 0.5	38	14	18	64	
0.5 - 1.0	65	34	31	130	
1.0 - 2.0	106	161	129	416	
2.0 - 4.0	329	655	433	1417	
4.0 - 10.0	379	1398	796	2573	
10.0 & above	434	919	565	1919	
all	1345	3207	1973	6519	

Table (7) : Estimates of number of parcels of irrigable land possessed, total area of the plots, net area irrigated, net area not irrigated and net area sown by size class of parcels

size class of parcels (hectares)	General Sample						Maharashtra
	number of parcels (00)	area (hectares 00)					
		total irrigable land	net area irrigated	net area not irrigated	net area sown		
(0)	(1)	(2)	(3)	(4)	(5)		
less than 0.05	1194	31	28	-	28		
0.05 - 0.10	1470	87	67	6	73		
0.10 - 0.20	2363	305	274	920	294		
0.20 - 0.30	2648	671	506	111	617		
0.30 - 0.40	1338	9431	9370	143	1413		
0.40 - 0.50	3075	1353	1101	138	1239		
0.50 - 1.00	5051	3581	2816	571	3387		
1.00 - 2.00	4014	5429	3810	1211	5021		
2.00 & above	3172	11113	56225616	4419	10035		
all	24025	23001	14588	6519	21107		

Parcel : A plot or contiguously located plots having a common source of irrigation facility possessed by the household was treated as a parcel.

Table (8) : Estimates of area (i) under crop, (ii) applied with fertiliser, (iii) applied with manure, (iv) affected by pests and diseases, (v) sprayed with pesticides, and (vi) of crops finally damaged and value of (i)fertiliser used (ii) manure used and (iii)pesticides sprayed separately for irrigated and unirrigated crops by crop/crop groups

		General Sample area (hectares 00)				Maharashtra value (Rs. 000) of			
crop/ crop group	under crop	applied with ferti- liser	applied with manure	affected by pests & dis- eases	sprayed with pesti- cides	of crop finally damaged	ferti- liser used	manure used	pesti- cides sprayed
		(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>irrigated crops</u>									
paddy	1844	1108	1267	404	122	19	37284	27279	1405
jowar	4060	1301	1266	1266	267	101	31129	23726	2925
bajra	718	199	357	341	64	23	4905	9981	466
wheat	5099	3795	920	604	323	77	130319	23374	3082
all ce- reals	12016	6554	3945	2655	790	231	208384	89268	7979
all pul- ses	567	78	51	52	16	7	2001	1046	119
all oil seeds	406	135	208	40	3	-	3258	8011	23
sugar- cane	2874	2638	1459	264	89	45	312707	80013	1798
cotton	394	305	178	155	185	43	12234	5592	7226
all other crops	1647	1015	735	293	248	68	67903	50092	7691
all crops	17904	10725	6576	3459	1331	394	606487	234022	24836
<u>unirrigated crops</u>									
paddy	2492	1223	1527	331	118	2	33789	27321	1288
jowar	18278	2295	3074	3824	880	239	47235	44050	6337
bajra	9095	564	1891	3497	136	50	12286	44889	533
wheat	1152	271	180	68	5	-	3850	1516	22
all ce- reals	31622	4513	6790	7741	1151	292	101108	120016	8215
all pul- ses	8460	295	960	818	137	65	4846	15564	798
all oil- seeds	5291	642	973	407	62	22	11309	21487	253
sugarcane	20	4	7	-	-	-	427	157	-
cotton	4617	1366	1604	1076	880	302	21591	15879	10262
all other crops	686	215	182	99	31	18	7074	5243	587
all crops	50696	7035	10516	10141	2261	699	14638	178346	20115

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (9) : Estimates of area under crop, area supplied with fertilizer and manure and area affected by pests and diseases for irrigated and unirrigated crops by crop/crop group separately for ordinary and improved variety of seed.

General Sample

Maharashtra

crop/crop group	irrigated crop area (hectare 00)				unirrigated crop area (hectare 00)			
	under crop	applied fertiliser	applied manure	affected by pests & diseases	under crop	applied fertiliser	applied manure	area affected by pests
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>ordinary variety</u>								
paddy	1665	947	1179	354	2252	1005	1424	261
Jawar	3460	830	1025	1087	15459	786	2148	3333
bazra	659	161	328	315	8566	374	1741	3220
wheat	2249	1340	500	333	1021	244	172	60
all cereals	8294	3406	3161	2123	22888	2557	5594	6886
all pulses	567	78	51	52	8448	295	960	818
all oil seeds	394	131	201	40	4773	446	829	352
sugar cane	1731	1526	961	188	17	4	7	-
cotton	145	106	69	44	3241	557	1066	496
all other crops	1560	938	699	266	671	210	182	94
all crops	12691	6185	5142	2713	45038	4069	8638	8646
<u>improved variety</u>								
paddy	178	161	88	50	240	218	103	70
jawar	600	471	241	179	2819	1509	926	491
bazra	59	38	29	26	529	190	150	277
wheat	2860	2455	420	271	131	27	8	8
all cereals	3722	3148	784	532	3734	1956	1196	855
all pulses	-	-	-	-	12	-	-	-
all oil seeds	12	4	7	-	518	196	144	55
sugar cane	1143	1112	498	76	3	-	-	-
cotton	249	199	109	111	1376	809	538	580
all other crops	87	77	36	27	15	5	-	5
all crops	5213	4540	1434	746	5658	2966	1878	1495

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (10) : Estimates of area under crop applied with fertiliser having nutrients N only, NP only, NPK only and others separately for irrigated and unirrigated crops by crop/crop group

General Sample

Maharashtra

(0)	irrigated area(hectares 00) applied with fertilisers having nutrients					unirrigated area(hectares 00) applied with fertilisers having nutrients				
	N only	NP only	NPK only	others	total	N only	NP only	NPK only	others	total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
paddy	558	42	483	25	1108	565	63	514	81	1223
jawar	647	63	495	96	1301	1057	139	1011	88	2295
bazra	107	2	70	20	199	344	15	111	94	564
wheat	1746	1743	267	1590	1953	1953	66	128	74	271
all cereals	5176	3173	375	2667	339	6557	2085	231	1859	338
all pulses	35	4	33	6	654	78	142	26	105	22
all oil seeds	54	2	43	36	135	159	86	157	240	642
sugar cane	669	672	136	976	854	2633	4	-	-	4
cotton	96	17	174	18	305	316	86	896	68	1366
all other crops	469	55	341	150	1055	74	40	68	33	215
all crops	4499	589	4234	1403	10725	2780	469	3085	701	7035

'N' only means nitrogenous fertilisers like ammonium sulphate, ammonium sulphate nitrate, calcium ammonium nitrate, ammonium chloride and urea.

'NP' only means nitrogenous phosphate fertilisers like ammonium phosphate, ammonium phosphate sulphate, diammonium phosphate, urea ammonium phosphate and ammonium nitrate phosphate. It also includes phosphate fertilisers like single super phosphate, triple super phosphate and palfos in combination with nitrogenous fertilisers containing 'N' only.

'NPK' means nitrogenous phosphatic potash fertilisers like nitrophosphate and NPK complex fertilisers. It also includes potash fertiliser like sulphate of potash in combination 'NP' fertilisers noted under 'NP' above.

NATIONAL SAMPLE SURVEY, 31ST ROUND . . . JULY 1976 - JUNE 1977

Table (11) : Estimates of area under irrigated crops by crop/crop group and type of irrigation

General Sample

Maharashtra

op/crop group	area (hectares '00) under irrigated crop by type of irrigation										flow & lift	
	f. l. o. w.				l i f t							
	canal	diver- sion scheme	tank	others	total	well	tube well	river	tank	others	total	com- bined
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
paddy	429	78	504	190	1201	456	-	152	-	35	643	1844
jowar	1307	48	73	25	1453	2445	-	147	1	14	2607	4060
bazra	142	15	3	-	160	526	-	20	-	12	558	718
wheat	1134	73	136	40	1383	218	-	217	2	38	3716	5099
all cereals	3043	214	722	255	4234	7104	-	560 574	25	99	7782	12016
all pulses	143	26	4	4	177	368	-	13	3	6	390	567
all oil seeds	162	3	39	2	206	195	-	5	-	-	200	406
sugar cane	603	4	39	7	653	1411	-	808	-	2	2221	2874
cotton	78	-	1	-	79	290	-	7	-	18	315	394
all other crops	40	10	10	21	81	1535	-	27	-	4	1566	1647
all crops	4069	1257	815	289	5430	10903	-	1420 1434	68	129	12474	17904

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (12) : Estimates of area under irrigated crops by crop/crop group and number of times irrigated

crop/crop group	General Sample				Maharashtra
	once	twice	thrice	more than thrice	total
(0)	(1)	(2)	(3)	(4)	(5)
paddy	612	389	237	606	1844
jowar	558	1164	1110	1228	4060
bazra	224	188	184	122	718
wheat	202	286	549	4062	5099
all cereals	1613	2053	2128	6222	12016
all pulses	135	180	140	112	567
all oil seeds	32	44	51	279	406
sugar cane	-	8	2	2864	2874
cotton	47	50	29	268	394
all other crops	32	53	55	1507	1647
all crops	1859	2388	2405	11252	17904

Table (13) : Estimates of area under irrigated crops with subsidiary irrigation and without subsidiary irrigation by crop/crop group

crop/crop group	General Sample			Maharashtra
	area (hectares 00) under irrigated crop	with subsi-	without subsi-	total
(0)	(1)	(2)	(3)	(4)
paddy	15	1829	1844	
jawar	80	3980	4060	4060
bazra	4	714	718	
wheat	89	5010	5099	
all cereals	195	11821	12016	
all pulses	5	562	567	
all oil seeds	26	380	406	
sugar cane	114	2760	2874	
cotton	13	381	394	
all other crops	20	1627	1647	
all crops	373	17531	17904	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (14) : Estimates of value of agricultural implements, irrigation equipments and draught animals (adult cattle and buffaloes aged 3 years or more) owned by households by size class of household holding

General Sample

Maharashtra

items of assets	value (Rs. 0.00) of agricultural implements irrigation equipments, adult cattle and buffaloes by size class of holding (hectare)						
	less than 0.5	0.5-1.0	1.0-2.0	2.0-4.0	4.0-10.0	10.0 & above	all ages
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>agriculture implements</u>							
1. tractor	-	-	-	8213	29167	98421	135801
2. power tiller	-	-	-	59	6195	-	6254
3. sprayer	57	158	89	1655	5836	9015	16310
4. duster	-	-	-	94	1452	591	2137
5. thresher	-	-	-	-	850	6379	7229
6. cane crusher	-	-	-	2184	6770	7368	16322
7. oil crusher	-	-	-	-	-	-	-
8. total	57	158	89	12205	50270	121774	184553
<u>irrigation equipments</u>							
1. electric pumps	16628	34962	95828	195851	318927	231078	893274
2. diesel pumps	7222	33254	46310	97361	178782	166183	509112
3. wind mill	-	-	295	-	-	-	295
4. moat	1516	2553	6952	13599	17620	5162	47402
5. persian wheel	1198	780	958	552	80	-	3568
6. others (animal driven)	384	1611	1783	5735	1803	245	11561
7. counter poise	1257	902	285	166	8	-	2618
8. manual pumps	-	-	-	-	-	-	-
9. others	186	31	49	100	127	26	519
10. total	28391	54093	152460	313364	517347	402694	1468349
<u>adult cattle and buffaloes</u>							
1. cattle	29313	70298	186314	387960	652378	495424	1821687
2. buffaloes	1931	1397	2169	7269	1915	5231	22912
3. total	31244	71695	188483	395229	657293	500655	1844599
total	59692	125946	341032	720798	1224910	1025123	3497501

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (15) : Estimates of number of households reporting pump sets and number of pump sets possessed by size class of household holding

General Sample	Maharashtra	
size of household (hectare)	number of households reporting pumpsets (00.)	number of pumpsets**
(1)	(2)	(3)
below 0.5	407	435
0.5 - 1.0	577	595
1.0 - 2.0	1156	1243
2.0 - 4.0	1643	1768
4.0 - 10.0	2057	2270
10.0 & above	1137	1416
all sizes	6977	7727

* In this and subsequent tables on number of pumpsets, the number includes those possessed jointly as well as on rent. In the case of jointly possessed, instead of the household share of the number possessed, the total number possessed jointly has been counted as possessed by the sample household. Hence the estimated number of pumpsets is inflated to some extent.

Table (16) : Estimate of number of pumpsets possessed by source of power and by horse - power

General Sample	Maharashtra					
horse power (0.0)	number of pumpsets (00) having source of power**	electri- city	diesel	both elec- tricity	not and diesel recorded	total e- cels 2 to 4
(1)	(2)	(3)	(4)	(5)	(6)	(7)
below 1.0	-	6	-	-	4	12
1.0 - 2.0	4	4	-	-	-	8
2.0 - 3.0	76	19	-	-	-	95
3.0 - 4.0	2397	100	8	4	2589	
4.0 - 5.0	4	8	-	-	-	12
5.0 & above	1775	2254	7	37	4071	
not recorded	276	569	-	95	940	
all classes	4530	3042	15	140	7727	

** see footnote in Table (15)

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (17) : Estimates of number of pumpsets and households share of value of owned equipments by type of possession and source of power

General Sample

Maharashtra

source of power	possession type										total 000	
	owned singly		owned jointly		rented		not recorded					
	no.of pump-sets (00)	hh's share of value (Rs. 000)	no.of pump-sets (00)	hh's share of value of equipments (Rs. 000)	no.of pump-sets (00)	hh's share of value of equipments (Rs. 000)	no.of pump-sets (00)	hh's share of value of equipments (Rs. 000)	no.of pump-sets (00)	hh's share of value of equipments (Rs. 000)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)		
electricity	2113	660925	2034	237257	341	1224	14	-	4530	889400		
diesel	1350	416901	967	109151	721	-	4	-	3042	526052		
electricity and diesel	8	2783	7	938	-	-	-	-	15	3721		
not recorded	27	4446	22	1351	80	-	11	461	140	6256		
total	3496	1085055	3070	338691	1142	1224	19	461	7727	1425431		

* see footnote in Table (15)

NATIONAL SAMPLE SURVEY, 3RD ROUND : JULY 1976 - JUNE 1977

Table (18) : Estimates of number of pumpsets* reporting are irrigated by source of power and source of water separately by possession type

General Sample

Maharashtra

source of power	Number of pumpsets (00) reporting area irrigated by source of water					total
	tube- well	well	rivers & streams	others	not recorded	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>owned singly</u>						
electricity	1978	4	57	4	24	2067
diesel	1155	-	110	21	8	1294
electricity & diesel	8	-	-	-	-	8
not recorded	23	-	4	-	-	27
total	3164	4	171	25	32	3396
<u>owned jointly</u>						
electricity	1806	4	206	-	4	2020
diesel	802	-	122	-	-	924
electricity & diesel	7	-	-	-	-	7
not recorded	15	-	-	-	-	15
total	2630	4	328	-	4	2966
<u>rented</u>						
electricity	158	-	163	3	4	328
diesel	558	-	142	5	4	707
electricity & diesel	-	-	-	-	-	-
not recorded	7	-	4	4	-	15
total	723	-	309	10	8	1050
<u>not recorded</u>						
electricity	4					4
diesel	4					4
electricity & diesel	-					-
not recorded	-					4
total	8					12
<u>total</u>						
electricity	3946	8	426	7	32	4419
diesel	2519	-	374	24	12	2929
electricity & diesel	15	-	-	-	-	15
not recorded	45	-	3	4	4	61
total	6525	8	808	35	48	7424

* see foot note in Table (15)

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (19) : Estimates of expenses for irrigation on other than capital account by item, by expenditure

General Sample

Tahare's area

items of expenditure (0)	amount (Rs.000) (1)
1. repair and maintenance expenses on bunds and field channels	45839
2. water charges	66557
3. other expenses on independently owned ^{lift} irrigation	429795
4. share of expenses on joint arrangements	37769
5. receipt from sale of water	(-) 2689
6. total	623271

Table (O) : Number of sample villages allotted and number surveyed, number of households surveyed for schedule 22.1, estimated number of total households and estimated number of cultivator households usually using irrigation and number usually not using irrigation

State : Orissa

General Sample

item	number
1. number of sample villages allocated for survey	304
2. number of sample villages actually surveyed	304
3. number of sample households surveyed for schedule 22.1	3116
4. estimated number of total households (000) ^{a/}	4332
5. estimated number of cultivating households (000)	" 3215
(i) usually using irrigation	1236
(ii) usually not using irrigation ^{b/}	1979

a/ from listing schedule - Draft Report No.291, Part-I

b/ from manual tabulation on schedule 22.2 - Draft Report No.289

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

- (1) Estimates of number of households usually using irrigation and area possessed, net area sown, area cropped more than once and gross cropped area separately for irrigable land and land without irrigation facility by size class of holding

Sample

Orissa

clas ding. tar.)	no. of house holds(00)	irrigable land			Land without irrigation facility									
		area possessed(hec.00) owned leased total	area in	gross area cropped sown more than once (hecta res00)	area owned leased total	area cropped sown more th an once (hecta res00)	gross area cropped area more than once (hecta res00)							
of		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
an 0.5	3066	500	83	583	583	313	902	294	15	309	236	45	301	
- 1.0	2904	1024	149	1173	1161	599	1775	882	99	981	884	169	1114	
- 2.0	3461	1965	266	2231	2215	971	3239	2382	263	2645	2453	279	2923	
- 4.0	1981	1734	189	1923	1896	698	2634	3183	302	3485	3267	282	3793	
-10.0	816	1015	88	1103	1094	427	1524	3365	103	3468	3232	157	3615	
& above	135	153	-	453	452	77	532	1580	-	1580	1229	5	1321	
lasses	12363	6691	775	7466	7401	3085	10606	11686	782	12468	11301	937	13069	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (2) : Estimates of number of households reporting area irrigated and net area irrigated by size class of holding and type of irrigation

General Sample

Orissa

size class of holding (hectare)	type of irrigation											flow and lift combined	
	flow				lift								
	camal	diversion scheme	tank	others	all flow	well	tube-well	river	tank	others	all lift		
(e)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	
<u>number of households (00) reporting area irrigated</u>													
less than 0.5	1550	315	142	135	2111	443	41	245	259	155	1111	3063	
0.5 - 1.0	1319	349	216	107	1966	564	34	226	266	172	1234	2995	
1.0 - 2.0	1323	350	259	233	2115	871	45	410	344	196	1752	3457	
2.0 - 4.0	505	175	173	121	969	696	37	221	198	128	1223	1969	
4.0 - 10.0	158	65	57	42	318	298	15	136	91	39	554	817	
10.0 & above	13	18	13	-	44	71	-	5	38	-	113	136	
all	4868	1272	860	638	7523	2943	172	1243	1196	690	5981	12337	
<u>net area irrigated (hectares 00)</u>													
less than 0.5	350	68	27	20	465	36	4	34	16	22	112	577	
0.5 - 1.0	663	163	69	38	933	52	7	55	35	56	205	1138	
1.0 - 2.0	1206	302	150	180	1778	136	21	102	66	88	413	2191	
2.0 - 4.0	864	254	178	113	1409	150	10	102	105	77	444	1853	
4.0 - 10.0	404	130	78	32	644	92	9	158	57	25	341	985	
10.0 & above	78	48	28	-	154	8	-	128	101	-	237	391	
all	3565	965	530	323	5383	474	51	579	380	268	1752	7135	

PHASED SAMPLE SURVEY, 31st NOVEMBER 1976-JULY 1977

Table 10) Estimates of number of households reporting lift irrigation and net area irrigated by lift by size class of household holding and by source of power.

General Sample

Orissa

size class of holding (hectare)	no. of households (00) reporting lift irrigation using						net area irrigated (hectares 00) by lift using					
	elec- tri- city	die- sel	wind mill	ani- mal	hy- dro man	all	elec- tri- city	die- sel	wind mill	ani- mal	hy- dro man	all
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
less than 0.5	103	-	-	4	1019	1111	18	-	-	-	94	112
0.5 - 1.0	90	7	-		1148	1231	27	4	-	-	17	205
1.0 - 2.0	125	52	4	4	1621	1752	43	19	-	-	351	413
2.0 - 4.0	89	69	-	13	714	1223	27	39	-	1	377	444
4.0 - 10.0	26	53	-	-	503	551	9	47	-	-	285	341
10.0 & above	-	18	-	-	96	113	-	17	-	-	90	237
all	433	199		25	5101	5981	124	250	-	1	1371	1752

NATIONAL SAMPLE SURVEY X, 51301 ROAD : JULY 1976-JJ 1977

Table (4) : Estimates of net area irrigated by type of irrigation and ownership of the source of water for irrigation

General Sample

Orissa

ownership of source of water for irrigation	net area irrigated (hectares 00) by type of irrigation											
	flow				lift				lift			
	canal	diver-	tank	others	all	well	tube	river	tank	others	all	com-
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
government	3468	745	433	158	4804	4	42	399	104	112	861	5465
co-operative	-	-	-	-	-	1	-	4	7	-	12	12
private-joint	-	25	23	160	206	34	5	7	50	2	96	302
private-single	44	195	74	1	314	435	6	165	216	154	976	1290
not record-	ded	55	2	-	4	59	-	-	4	3	-	7
	all	3565	965	530	525	5383	474	51	579	580	268	1752
												7135

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (5) : Estimates of net area irrigated by ownership of lifting equipment and by source of power

ownership of lifting equipment	net area irrigated (hectares 00) by source of power					Orissa
	electricity	diesel	windmill	animal drawn	human drawn	
(0)	(1)	(2)	(3)	(4)	(5)	(6)
government	103	-	-	-	5	108
co-operative	8	1	-	-	-	9
private-joint	4	16	-	-	48	68
private-single	9	239	-	1	1318	1567
	-	-	-	-	-	-
all	124	256	-	1	1371	1752

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table 6 : Estimates of area having irrigation facility by size class of holding and reason for not irrigating

Sown but not Irrigated

size class of holding (hectre)	area (hectares 00) by reason for not irrigating				Orissa
	adequate rainfall	non-availability of water	other reason	all reasons	
(0)	(1)	(2)	(3)	(4)	
less than 0.5	3	1	2	6	
0.5 - 1.0	6	4	13	23	
1.0 - 2.0	7	7	10	24	
2.0 - 4.0	12	5	26	43	
4.0 - 10.0	44	19	46	109	
10.0 & above		52	9	61	
all	72	88	106	266	

Table 7 : Estimates of number of parcels of irrigable land possessed, total area of the plots, net area irrigated, net area not irrigated and net area sown by size of parcels.

size class of parcels (hectre)	number of parcels (00)	area (hectares 00)				Orissa
		total irrigable land	net area irrigated	net area not irrigated	net area sown	
(0)	(1)	(2)	(3)	(4)	(5)	
less than 0.05	4466	115	113	1	114	
0.05 - 0.10	4992	357	347	9	356	
0.10 - 0.20	5381	738	712	25	737	
0.20 - 0.30	4175	956	938	20	958	
0.30 - 0.40	1298	424	410	13	423	
0.40 - 0.50	2654	1101	1077	17	1094	
0.50 - 1.00	2735	1879	1817	53	1870	
1.00 - 2.00	941	1219	1152	50	1202	
2.00 - & above	195	671	569	78	647	
all classes	26837	7466	7135	266	7401	

Parcel : A plot or contiguously located plots having a common source of irrigation facility possessed by the sample household was treated as a parcel.

NB/

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (8) : Estimates of area (i) under crop, (ii) applied with fertiliser, (iii) applied with manure, (iv) affected by pests & diseases, (v) sprayed with pesticides and (vi) of crops finally damaged and value of (i) fertiliser used, (ii) manure used and (iii) pesticides sprayed separately for irrigated and unirrigated crops by crop/crop groups

General Sample

Orissa

crop/crop group	area (hectares 00)						value (Rs.000) of		
	under applied crop	applied with ferti- liser	affected by pests & diseases	sprayed with pesti- cides	of crop	fertiliser used	manure used	pesti- cides sprayed	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>irrigated crops</u>									
paddy	7951	3417	6082	2873	1551	62	87253	55444	11820
maize	5	-	4	-	-	-	76	76	-
ragi	65	30	49	3	1	-	407	391	9
wheat	120	108	66	24	30	2	3574	1210	280
all cereals	8166	3578	6207	2905	1584	64	92019	57182	12124
all pulses	322	10	126	36	5	-	354	594	67
all oil seeds	40	9	22	13	6	-	152	192	44
sugarcane	119	55	94	21	11	2	2555	2373	97
all other crops	417	212	321	54	53	3	8968	12823	868
all crops	9064	3864	5770	3029	1659	69	104048	73164	13200
<u>unirrigated crops</u>									
paddy	10257	976	7422	2390	465	54	10266	51754	807
maize	122	-	16	2	1	-	129	-	-
ragi	248	30	115	-	-	-	262	991	-
wheat	3	-	3	-	-	-	49	-	-
all cereals	11100	006	7617	2434	467	57	10583	53189	808
all pulses	2925	74	448	269	51	-	487	1700	72
all oil seeds	362	38	145	10	1	-	573	949	8
sugarcane	2	-	-	-	-	-	23	4	-
all other crops	222	7	53	9	2	-	517	891	12
all crops	14611	1125	8263	2722	521	57	12183	56733	900

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (9) : Estimates of area under crop, area applied with fertiliser and manure and area affected by pests and diseases for irrigated and unirrigated crops by crop/crop group separately for ordinary and improved variety of seed

General Sample

Orissa

crop/crop group	irrigated crop area (hectares 00)				unirrigated crop area (hectares 00)			
	under crop	applied with fertiliser	manure	affected by pests & diseases	under crop	applied with fertiliser	manure	affected by pests & diseases
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
<u>ordinary variety</u>								
paddy	6291	1994	5272	1537	10157	931	7373	
maize	5	-	4	-	122	-	16	
ragi	65	30	49	3	248	30	115	
wheat	102	91	49	20	3	-	-	
all cereals	6477	2117	5378	1561	11034	961	7568	
all pulses	320	8	124	34	2925	74	448	
all oil seeds	36	6	21	9	359	38	144	
sugar cane	113	51	88	15	2	-	-	
all other crops	393	188	298	41	222	7	53	
all crop	7339	2370	5909	1660	14542	1080	8213	
<u>improved variety</u>								
paddy	1560	1423	810	1336	66	45	49	
maize	-	-	-	-	-	-	-	
ragi	-	-	-	-	-	-	-	
wheat	18	17	17	4	-	-	-	
all cereals	1589	1461	829	1344	66	45	49	
all pulses	2	2	2	2	-	-	-	
all oil seeds	4	3	1	4	3	-	1	
sugar cane	6	4	6	6	-	-	-	
all other crops	24	24	23	13	-	-	-	
all crops	1725	1494	861	1369	69	45	50	

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976-JUNE 1977

Table(10): Estimates of area under crop applied with fertiliser having nutrients N only, NP only, NPK only and others separately for irrigated and unirrigated crops/crop group.

crop/crop group	General Sample					Orissa				
	irrigated area (hectares 00) applied with fertilisers having nutrients					unirrigated area (hectares 00) applied with fertiliser having nutrients				
	N only (0)	NP only (1)	NPK only (2)	others (3)	total (4)	N only (6)	NP only (7)	NPK only (8)	others (9)	total (10)
paddy	1876	84	373	1084	3417	535	101	15	325	976
maize	-	-	-	-	-	-	-	-	-	-
ragi	30	-	-	-	30	29	-	-	1	30
wheat	19	23	1	65	108	-	-	-	-	-
all cereals	1927	108	374	1169	3578	564	101	15	326	1006
all pulses	8	-	-	2	10	3	-	-	71	74
all oil seeds	5	-	1	3	9	20	3	1	14	38
sugar cane	30	4	3	18	55	-	-	-	-	-
all other crops	154	3	10	45	212	5	-	2	-	7
all crops	2124	115	388	1237	3864	592	104	18	411	1125

'N' only means nitrogenous fertilisers like ammonium sulphate, ammonium sulphate nitrate, calcium ammonium nitrate, ammonium chloride and urea.

'NP' only means nitrogenous phosphate fertilisers like ammonium phosphate, ammonium phosphate sulphate, diammonium phosphate, urea ammonium phosphate and ammonium nitrate phosphate. It also includes phosphate fertilisers like single super phosphate, triple super phosphate and galfos in combination with nitrogenous fertilisers containing 'N' only.

'NPK' means nitrogenous phosphatic potash fertilisers like nitrophosphate and NPK complex fertilisers. It also includes potash fertiliser like sulphate of potash in combination with 'NP' fertilisers noted under 'NP' above.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (11) : Estimates of area under irrigated crops by crop and crop group and type of irrigation.

General Sample

Oriss

crop/crop group	area (hectares 00) under irrigated crop by type of irrigation											
	flow				lift				flow and lift			
	canal	diversion scheme	tank	others	total	wel	tube well	rivers	tank	others	total	combined
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
paddy	4751	1025	537	348	6661	209	32	492	321	236	1290	7951
maize	-	1	-	-	1	4	-	-	-	-	4	5
ragi	10	-	4	4	18	23	3	15	2	4	47	65
wheat	4	4	1	8	13	23	3	44	22	11	103	120
all cereals	4786	1030	544	360	6720	259	38	553	345	251	1446	8166
all pulses	270	6	8	4	288	11	-	4	11	8	34	322
all oil seeds	24	1	2	-	27	-	-	6	4	3	13	40
sugar cane	15	-	-	-	15	83	1	10	6	4	104	119
all other crop	44	4	①	49	179	17	61	68	43	368	417	
all crops	5.39	1041	555	364	7099	532	56	634	434	309	1965	9064

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table(12): Estimates of area under irrigated crops by crop/crop group and number of times irrigated.

crop/crop group	General Sample					Orissa
	crop area (hectares 00) by number of times irrigated					
	once	twice	thrice	more than thrice	total	
(0)	(1)	(2)	(3)	(4)	(5)	
paddy	250	455	596	6650	7951	
maize	-	-	-	5	5	
ragi	4	11	14	36	65	
wheat	2	2	31	85	120	
all cereals	256	468	643	6799	8166	
all pulses	164	15	3	140	322	
all oil seeds	10	7	3	20	40	
sugar cane	2	3	-	114	119	
all other crops	21	13	14	369	417	
all crops	453	506	663	7442	9064	

Table(13): Estimates of area under irrigated crops with subsidiary irrigation and without subsidiary irrigation by crop/crop group

crop/crop group	General Sample			Orissa
	area (hectares 00) under irrigated crops			
	with subsidiary irrigation	without subsidiary irrigation	total	
(0)	(1)	(2)	(3)	
paddy	73	7878	7951	
maize	-	5	5	
ragi	1	64	65	
wheat	3	117	120	
all cereals	77	8089	8166	
all pulses	-	322	322	
all oil seeds	-	40	40	
sugar cane	-	119	119	
all other crops	2	415	417	
all crops	79	8985	9064	

NB/

NATIONAL SAMPLE SURVEY, 31ST ROUND, JULY 1976 - JUNE 1977

Table (14) : Estimates of value of agricultural implements, irrigation equipments and draught animals (adult cattle and buffaloes - 3 years or more) owned by households by size class of household holding

General Sample

Orissa

items of asset	value (Rs. 000) of agricultural implements, irrigation equipments, cattle and buffaloes by size class of holding (hectare)						all classes
	less than 0.5	0.5 1.0	1.0 2.0	2.0 4.0	4.0 10.0	10.0 & above	
	(0)	(1)	(2)	(3)	(4)	(5)	(6)
<u>agricultural implements</u>							
1. tractor	-	-	-	-	-	25713	25713
2. power tiller	-	14	-	-	71	627	712
3. sprayer	41	49	181	863	775	-	1909
4. duster	2	-	-	-	141	-	143
5. thresher	-	-	174	64	76	51	365
6. cane crusher	-	-	253	316	876	438	1883
7. oil crusher	-	-	13	57	57	-	127
8. total	43	63	621	1300	1996	26829	30852
<u>irrigation equipments</u>							
1. electric pumps	-	-	2238	3046	1132	-	6416
2. diesel pumps	-	-	373	7823	15431	5083	28710
3. wind-mill	-	-	-	-	-	-	-
4. moat	-	-	-	-	-	-	-
5. persian wheel	-	-	-	-	-	-	-
6. others(animal driven)	25	11	-	9	-	-	45
7. counter poise	1639	2546	4379	3815	1655	549	14583
8. manual pumps	45	6	2	3	39	-	95
9. others	591	622	1589	1417	860	48	5127
10. all	2300	3185	8581	16113	19117	5680	54976
<u>adult cattle and buffaloes</u>							
1. cattle	42437	107292	204278	176242	103134	30038	663471
2. buffaloes	2615	10955	15367	30287	30543	14083	103850
3. total	45102	118247	219645	206529	133677	44121	767321
total	47445	121495	228847	223942	154790	76630	873149

tkb/

NATIONAL SAMPLE SURVEY, 31ST ROUND, JULY 1976-JUNE 1977

Table (15) : Estimates of number of households reporting pumpsets and number of pumpsets possessed by size class of household holding

General Sample

Orissa

size of household holding (hectare) (0)	number of households reporting pumpsets (00) (1)	number of pumpsets* (00) (2)
below 0.5	4	4
0.5 - 1.0	4	4
1.0 - 2.0	49	52
2.0 - 4.0	56	60
4.0 - 10.0	41	42
10.0 & above	18	18
all	172	180

* In this and subsequent tables on number of pumpsets, the number includes those possessed jointly as well as on rent. In the case of jointly possessed, instead of the household share of the number possessed, the total number possessed jointly has been counted as possessed by the sample household. Hence the estimated number of pumpsets is inflated to some extent.

NATIONAL SAMPLE SURVEY, 31ST ROUND, JULY 1976 - JUNE 1977

Table (16) : Estimates of number of pumpsets possessed by source of power and by horse-power

General Sample

Orissa

horse power	number of pumpsets (00)* having source of power				total
	electricity	diesel	both electricity / and diesel	(4)	
(0)	(1)	(2)	(3)		
below 1.0	-	-	-	-	-
1.0 - 2.0	-	-	-	-	-
2.0 - 3.0	4	-	-	-	4
3.0 - 4.0	8	8	-	-	16
4.0 - 5.0	-	4	-	-	4
5.0 & above	7	107	-	-	114
not recorded	8	34	-	-	42
total	27	153	-	-	180

* see footnote on table 15

NATIONAL SAMPLE SURVEY ORGANISATION, 31ST ROUND, JULY 1976 - JUNE 1977

Table 17 : Estimates of number of pumpsets and households share of value of owned equipments by type of possession and source of power

General Sample

Orissa

source of power	owned singly		owned jointly		rented		total	
	no. of pump- sets. (0)	hh's share of value of equipm- ents Rs.(000)	no. of pump- sets. (00)	hh's share of value of equipm- ents Rs.(000)	no. of pump- sets. (00)	hh's share of value of equipm- ents Rs.(000)	no. of pump- sets. (00)	hh's share of value of equipm- ents Rs.(000)
(0)*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
electricity	11	48737	8	23710	8		27	73
diesel	47	231043	37	77831	69		153	13943
both electricity & diesel								
total	58	280280	45	106541	77		180	14016

* see footnote on table 15

NATIONAL SAMPLE SURVEY ORGANISATION, 31ST ROUND, JULY 1976-JUNE 1977

Table 18 : Estimates of number of pumpsets* reporting area irrigated by source of power and source of water separately by possession type

General Sample

Orissa

Source of power	no. of pumpsets(00) reporting area irrigated by source of water						N. R.	total
	well	tube well	rivers and streams	others	(4)	(5)		
(0)	(1)	(2)	(3)				(6)	
owned singly								
1.electricity	-	4	4	-	4	4	12	
2.diesel	4	-	29	4	8	8	45	
3.both electricity & diesel	-	-	-	-	-	-	-	
4.total	4	4	33	4	12	12	57	
owned jointly								
1.electricity	8	-	-	-	-	-	8	
2.diesel	20	-	8	9	-	-	37	
3.both electricity & diesel	-	-	-	-	-	-	-	
4.total	28	-	8	9	-	-	45	
rented								
1.electricity	-	-	4	-	-	-	4	
2.diesel	4	-	15	39	7	7	65	
3.both electricity & diesel	-	-	-	-	-	-	-	
4.total	4	-	19	39	7	7	69	
total								
1.electricity	8	4	8	-	4	4	24	
2.diesel	28	-	52	52	15	15	147	
3.both electricity & diesel	-	-	-	-	-	-	-	
4.total	36	4	60	52	19	19	171	

* see footnote on table 15

NATIONAL SAMPLE SURVEY ORGANISATION, 31ST ROUND, JULY 1976-JUNE 1977.

Table(19): Estimates of expenses for irrigation on other than capital account by items of expenditure.

General Sample

Orissa

items of expenditure (0)	amount (Rs. 000) (1)
repair and maintenance expences of bonds and field channels	28787
water charges	17414
other expenses on independently owned lift irrigation	15179
share of expenses on joint arrangements	21
receipts from sale of water	(-) 1554
total	59847

NB/

Table (O) : Number of sample villages allotted and number surveyed, number of households surveyed for schedule 22.1, estimated number of total households and estimated number of cultivator households usually using irrigation and number usually not using irrigation

State : West Bengal

General Sample

item	number
1. number of sample villages allocated for survey	488
2. number of sample villages actually surveyed	488
3. number of sample households surveyed for schedule 22.1	5549
4. estimated number of total households (000) ^{a/}	6943
5. estimated number of cultivating households (000)	4611
(i) usually using irrigation	2332
(ii) usually not using irrigation ^{b/}	2279

^{a/} from listing schedule - Draft Report No.291, Part-I

^{b/} from manual tabulation on schedule 22.2 - Draft Report No.289

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Tablet(1): Estimates of number of households usually using irrigation and area possessed, net area sown, area cropped more than once and gross cropped area separately for irrigable land and land without irrigation facility by size class of holding

General Sample

West Bengal

size class of holding (hectare)	no. of house- holds usually using irriga- tion (00)	irrigable land			land without irrigation facility								
		area possessed (hectares 00)	net area sown (hectare) 00)	area cropped more than once (hecta- res 00)	gross cropped area (hecta- res 00)	area possessed (hectares 00)	net area sown (hec- tares 00)	area cro- pped more than once (hec- tares 00)	gross cropped area (hec- tares 00)	area cro- pped more than once (hec- tares 00)	gross cropped area (hec- tares 00)	area cro- pped more than once (hec- tares 00)	gross cropped area (hec- tares 00)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
less than 0.5	6657	802	93	895	893	454	1428	759	73	832	609	115	749
0.5 - 1.0	5600	1524	230	1754	1726	798	2665	2043	339	2382	2082	474	2630
1.0 - 2.0	6786	3174	335	3509	3506	1438	5240	5170	770	5940	5275	1323	6795
2.0 - 4.0	3546	3198	270	3468	3452	1262	5039	5423	500	5923	5264	1311	6762
4.0 - 10.0	738	1170	113	1283	1267	504	1855	2394	160	2554	2256	455	2783
10.0 & above	12	32	-	32	31	-	31	119	-	119	78	12	92
all classes	23319	9900	1041	10941	10875	4456	16258	15908	1842	17750	15564	3690	19811

Ashim/

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table(2): Estimates of number of households reporting area irrigated and net area irrigated by size class of holding and type of irrigation

General Sample

West Bengal

size class of holding (hectare)	(0)	flow					lift					flow and lift combined	
		canal Scheme	diversion	tank	others	total	well	tubewell	river	tank	others	total	
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
number of households (00) reporting area irrigated													
Less than 0.5	1314		29	90	61	1482	256	766	517	3601	604	5453	6564
0.5 - 1.0	1242		45	181	57	1493	413	968	428	2651	506	4609	5510
1.0 - 2.0	1692		8	255	49	1960	641	1163	648	3006	575	5534	6724
2.0 - 4.0	891		4	161	32	1071	310	752	502	1595	263	3040	3513
4.0 - 10.0	155		12	33	16	200	87	193	97	357	58	660	730
10.0 & above	4		-	-	-	4	-	-	-	4	-	4	8
all	5298		98	720	215	6210	1707	3842	2192	11214	2006	19300	23049
net area irrigated (hectares 00)													
Less than 0.5	299		3	17	10	329	21	103	69	258	69	520	849
0.5 - 1.0	644		8	53	23	728	47	234	106	368	99	854	1582
1.0 - 2.0	1704		3	130	16	1853	105	416	214	577	195	1507	3360
2.0 - 4.0	1617		2	124	29	1772	72	468	303	517	109	1469	3241
4.0 - 10.0	536		13	53	16	618	18	161	65	166	45	455	1073
10.0 & above	26		-	-	-	26	-	-	-	-	-	-	26
all	4826		29	377	94	5326	263	1382	757	1886	517	4805	10131

ashim/

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (3) : Estimates of number of households reporting lift irrigation and net area irrigated by lift by size class of household holding and by source of power

General Sample

West Bengal

size class of holding(hectare)	city	no. of households(00) reporting lift irrigation						net area irrigated(hectares 00) by lift						
		electri-	diesel	wind-mill	animal	human	all	electri-	diesel	wind-mill	animal	human	all	
		(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
below 0.5 ~	331	927		8	4	4420	5453	46	124		-	-	350	520
0.5 ~ 1.0	330	1260		8	4	3301	5554	88	295		-	-	471	854
1.0 ~ 2.0	420	1437		4	4	4053	4608	161	508		-	-	838	1507
2.0 ~ 4.0	327	1024		4	8	1966	3040	181	634		5	9	640	1469
4.0 ~ 10.0	65	281		-	-	396	660	40	249		-	-	166	455
10.0 & above	-	-		-	-	4	4	-	-		-	-	-	-
all classes	1473	4929		16	20	14140	19300	516	1810		5	9	2465	4805

Ashim

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (4) : Estimates of net area irrigated by type of irrigation and ownership of the source of water for irrigation

General Sample

West Bengal

ownership of source water for irrigation	net area irrigated (hectares 00) by type of irrigation												
	flow			lift									
	canal	diver-	tanks	others	all-	well	tube-	river	tank	others	all-	flow and lift	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. government	4779	27	48	72	4926	7	457	593	109	251	1417	6343	1
2. co-operative	-	-	-	1	1	-	2	-	2	-	4	5	0
3. private joint	27	2	295	3	327	43	39	9	778	27	896	1223	1
4. private single	20	-	34	18	72	213	884	155	997	239	2488	2550	1
5. all	4826	29	377	94	5526	263	1382	757	1886	517	4805	10131	

ckb/

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (5) : Estimates of net area irrigated by lift irrigation by ownership of lifting equipment and by source of power

ownership of lifting equipment	General Sample						West Bengal	
	net area irrigated (hectares) by source of power							
(0)	(1)	(2)	(3)	(4)	(5)	(6)		
1. government	464	140			26	630		
2. co-operative	-	4			2	6		
3. private joint	-	98			133	231		
4. private single	52	1568	5	9	2304	3938		
all	516	1810	5	9	2465	4805		

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976-JUNE 1977

Table (6) : Estimates of area having irrigation facility by size class of household holding and reason for not irrigating
Sown but not irrigated

General Sample

West Bengal

size class of holding (hectare)	(0)	area(hectares 00) by reason for not irrigating				(4)
		adequate rainfall	non-availability of water	other reasons	all reasons	
below 0.5	21	7	16	44		
0.5 - 1.0	61	23	60	144		
1.0 - 2.0	59	35	52	146		
2.0 - 4.0	54	68	89	211		
4.0 - 10.0	68	75	51	194		
10.0 & above			5	5		
all classes	263	208	273	744		

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (7) : Estimates of number of parcels of irrigable land possessed, total area of plots, net area irrigated, net area not irrigated and net area sown by size class of parcels

General Sample

West Bengal

size class of parcels (hectare)	number (00) of parcels of irrigable land	area (hectares 00)			
		total irri- gable land	net area irrigated	net area not irri- gated	net area sown
(0)	(1)	(2)	(3)	(4)	(5)
less than 0.05	10591	269	261	7	268
0.05 - 0.10	12020	851	815	32	847
0.10 - 0.20	12489	1728	1641	79	1720
0.20 - 0.30	7764	1833	1709	115	1824
0.30 - 0.40	2427	816	761	51	812
0.40 - 0.50	3418	1447	1337	102	1439
0.50 - 1.00	3387	2325	2092	221	2313
1.00 - 2.00	974	1280	1180	91	1271
2.00 & above	127	392	335	46	381
all classes	53197	10941	10131	744	10875

Parcel : A plot or contiguously located plots having a common source of irrigation facility possessed by the household was treated as a parcel.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (c) : Estimates of area (1) under crop (ii) applied with fertilizer, (iii) applied with manure, (iv) affected by pests and diseases, (v) sprayed with pesticides and (vi) of crops/fertiliser damaged and value of (i) fertiliser used, (ii) manure used and (iii) pesticides sprayed separately for irrigated and unirrigated crops by crop/crop group

General Sample

crop/crop group	area (hectares)	Value (Rs. 000) of			West Bengal
		under paddy and pulses	under paddy and cereals	under manure and pesticides	
1. Paddy	9320	6116	3206	1909	12920
2. wheat	1576	1400	829	171	4892
3. all cereals	10927	7536	6078	1990	177045
4. all pulses	97	41	23	17	261
5. all oil seeds	95	25	21	3	574
6. jute	277	211	219	65	3619
7. all other crops	1510	1025	1197	266	14500
8. all crops	12902	8841	10518	2360	246389
<u>irrigated crops</u>					
1. Paddy	17645	1079	11158	1677	1000
2. wheat	43	20	13	1	127
3. all cereals	17935	4110	11278	1595	1005
4. all pulses	2562	31	133	43	13
5. all oil seeds	387	10	40	7	3
6. jute	1642	550	1093	262	509
7. all other crops	631	111	220	34	13
8. all crops	28167	112	12754	2031	1565
<u>unirrigated crops</u>					
1. Paddy	17645	1079	11158	1677	1000
2. wheat	43	20	13	1	127
3. all cereals	17935	4110	11278	1595	1005
4. all pulses	2562	31	133	43	13
5. all oil seeds	387	10	40	7	3
6. jute	1642	550	1093	262	509
7. all other crops	631	111	220	34	13
8. all crops	28167	112	12754	2031	1565

1. Paddy	17645	1079	11158	1677	1000	82	52701	133060	6133
2. wheat	43	20	13	1	-	-	127	204	12
3. all cereals	17935	4110	11278	1595	1005	69	54032	134337	6199
4. all pulses	2562	31	133	43	13	2	332	1282	69
5. all oil seeds	387	10	40	7	3	-	131	1117	1117
6. jute	1642	550	1093	262	509	13	10023	5880	5880
7. all other crops	631	111	220	34	35	-	7353	673	673
8. all crops	28167	112	12754	2031	1565	103	70408	150203	11283

NATIONAL SAMPLE SURVEY 31ST ROUND : JULY 1976 - JUNE 1977

Table(3) : Estimates of area under crop, area applied with fertiliser and manure and area affected by pests and diseases for irrigated and unirrigated crop by crop/crop group separately for ordinary and improved variety of seed.

General Sample

West Bengal

crop/crop group	irrigated crop area (hectares(00)				unirrigated crop area (hectares (00)			
	under crop	applied with fertiliser	affected by pests & diseases	under crop	applied with fertiliser	affected by pests & diseases		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
<u>ordinary variety</u>								
1. paddy	7491	4287	6331	831	17457	3935	11053	1584
2. wheat	528	430	273	46	34	14	11	1
3. all cereals	8032	4236	7113	379	17793	3960	11156	1592
4. all pulses	95	39	133	17	2560	31	131	43
5. all oil- seeds	95	25	21	2	537	10	4	7
6. jute	187	134	131	46	1214	309	756	173
7. all other crops	1509	103	1196	66	651	111	220	34
8. all crops	1236	779	963	144	629	110	218	
<u>improved variety</u>								
1. paddy	1829	1719	1377	978	188	144	120	93
2. wheat	1043	770	551	125	9	6	2	-
3. all cereals	2890	2702	1936	1111	197	120	122	93
4. all pulses	2	2	-	-	2	-	2	-
5. all oil- seeds	1	1	-	-	-	-	-	-
6. jute	90	77	68	39	428	241	337	84
7. all other crops	174	246	234	122	12	9	12	-
8. all crops	3257	3028	2237	1272	629	392	463	177

NATIONAL SAMPLE SURVEY : 31ST ROUND : JULY 1976 - JUNE 1977

Table (10) : Estimates of area under crop applied with fertilisers having nutrient N only, NP only, NPK only and others separately for irrigated and unirrigated crops by crop/crop group

West Bengal

General Sample :

crop/crop group	irrigated area (hectares OO) applied with fertilisers having nutrients				unirrigated area (hectaresOO) applied with fertilisers having nutrients					
	N only	NP only	MPK only	others	total	N only	MP only	MPK only	others	total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. paddy	3769	398	291	1638	6116	2821	179	134	945	4079
2. wheat	428	53	99	820	140	7	-	-	13	20
3. all cereals	4229	453	390	2466	7538	2833	179	135	963	4110
4. all pulses	37	-	-	-	4	41	17	3	4	7
5. all oil seeds	17	3	2	4	4	26	1	1	2	31

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (10) : Estimates of area under crop applied with fertilisers having nutrient N only, NP only, NPK only, and others separately for irrigated and unirrigated crops by crop/crop group

General Sample :

crop/crop group (0)	irrigated area (hectares 00) applied with fertilisers having nutrients					unirrigated area (hectares 00) applied with fertilisers having nutrients					West Bengal
	N only (1)	NP only (2)	NPK only (3)	others (4)	total (5)	N only (6)	NP only (7)	NPK only (8)	others (9)	total (10)	
1. paddy	3789	398	291	1638	6116	2821	179	134	945	4079	
2. wheat	428	53	99	820	1400	7	-	-	13	20	
3. all cereals	4229	453	390	2466	7538	2833	179	135	963	4110	
4. all pulses	37	-	-	4	41	17	3	4	7	31	
5. all oil seeds	17	3	2	4	26	4	1	2	3	10	
6. jute	89	6	3	113	211	355	7	26	162	550	
7. all other crops	438	62	112	413	1025	37	11	44	19	111	
8. all crops	4810	524	507	3000	8841	3246	201	211	1154	4812	

'N' only means nitrogenous fertilisers like ammonium sulphate, ammonium sulphate nitrate, calcium ammonium nitrate, ammonium chloride and urea.

'NP' only means nitrogenous phosphate fertilisers like ammonium phosphate, ammonium phosphate sulphate, diammonium phosphate, urea ammonium phosphate and ammonium nitrate phosphate. It also includes phosphate fertilisers like single super phosphate, triple super phosphate and palfos in combination with nitrogenous fertilisers containing 'N' only.

'NPK' means nitrogenous phosphatic potash fertilisers like nitrophosphate and NPK complex fertilisers. It also includes potash fertiliser like sulphate of potash in combination with 'NP' fertilisers noted under 'NP' above.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table(11) : Estimates of area under irrigated crop by crop/crop group and type of irrigation

General Sample

West Bengal

crop/crop group	area under irrigated crop (hectares 00) by type of irrigation											
	flow						lift					
	canal	diver- sion scheme	tank	others	total	well	tube well.	rivers	tank	others	total	flow and lift combined
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. paddy	5523	35	420	106	6084	88	916	559	1274	399	3236	9320 9220
2. wheat	59	2	9	-	70	79	639	190	482	116	1506	1576
3. all cereals	5587	37	430	106	6160	168	1565	750	1764	515	4762	10922
4. all pulses	5	-	-	-	5	1	10	3	37	39	92	97
5. all oil seeds	-	-	-	-	-	-	14	6	62	14	96	96
6. jute	10	-	-	-	10	-1	93	90	63	20	267	277
7. all other crops	63	3	16	-	82	168	214	236	705	105	1428	1510
8. all crops	5665	40	446	106	6257	338	1996	1085	2633	693	6645	12902

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (12) : Estimates of area under irrigated crops by crop/crop group and number of times irrigated

General Sample

West Bengal

crop/crop group	(1)	crop area (hectares 00) by no. of times irrigated				total thrice
		once	twice	thrice	more than thrice	
(2)	(3)	(4)	(5)	(6)		
1. paddy	1366	1036	1493	5425	9320	
2. wheat	18	168	514	876	1576	
3. all cereals	1387	1208	2014	6313	10922	
4. all pulses	27	48	11	11	97	
5. all oil seeds	36	38	7	15	96	
6. jute	169	57	23	28	277	
7. all other crops	82	182	183	1063	1510	
8. all crops	1701	1533	2238	7430	12902	

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (130) : Estimates of area under irrigated crop with subsidiary irrigation and without subsidiary irrigation by crop/crop group

General Sample

West Bengal

crop/crop group	area under irrigated crops (hectares '00)		
	with subsidiary irrigation	without subsidiary irrigation	total
			(3)
(0)	(1)	(2)	(3)
1. paddy	465	8855	9320
2. wheat	52	1524	1576
3. all cereals	517	10405	10922
4. all pulses	-	97	97
5. all oil seeds	-	96	96
6. jute	6	271	277
7. all other crops	59	1451	1510
8. all crops	582	12320	12902

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Table (14) : Estimates of value of agricultural implements, irrigation equipments and draught animals (adult cattle and buffaloes 1-5 years or more) owned by households by size class of household holding

General Sample

State : West Bengal

items of asset	value (Rs.000) of agricultural implements irrigation equipments, cattle and buffaloes by size class of holding						
	less than 0.5	0.5- 1.0	1.0- 2.0	2.0- 4.0	4.0- 10.0	10.0 & above	all classes
	(0)	(1)	(2)	(3)	(4)	(5)	(6)
<u>agricultural implements</u>							
1. tractor	-	-	742980	742980	1733620	-	3219580
2. power tiller	-	2842	-	758736	48720	-	810298
3. sprayer	18839	39846	242246	315082	113383	-	729396
4. duster	-	-	8323	-	17458	-	25781
5. thresher	-	-	22056	45320	-	-	67376
6. cane crusher	-	-	-	3090	-	-	3090
7. oil crusher	-	-	-	-	-	-	-
8. total	18839	42688	1015605	1865208	1913181	-	4855521
<u>irrigation equipments</u>							
1. electric pump	-	354720	665740	997960	-	-	2018420
2. diesel pump	865170	3948343	8623657	14663584	7119994	139060	35359808
3. wind mill	-	-	-	-	-	-	-
4. moat	-	-	-	11774	-	-	11774
5. persian wheel	-	1104	-	-	-	-	1104
6. others (animal drawn)	6176	-	16360	94070	-	-	116606
7. counter poise	405765	980478	1530099	1138127	395792	-	4450261
8. manual pump	172837	91829	386225	164560	52040	-	867491
9. others	300746	336573	618557	405972	117722	-	1779550
10. total	1750694	5713047	11840618	17476047	7685548	139060	44605014
<u>cattle and buffaloes</u>							
1. cattle	403405	248230	463009	346160	109331	1353	1271488
2. buffalo	4266	12450	36257	99439	37277	491	190180
3. total	107671	260680	499266	445599	146608	1844	1461668
4. grand total	1877204	6016415	13355489	19786854	9745337	140904	50922293

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (15) : Estimates of number of households reporting pumpsets and number of pumpsets possessed by size class of household holding

General Sample		West Bengal	
<i>Class</i> size of holding (hectare)	number of households reporting pumpsets (00)	number of pumpsets * (00)	
(0)	(1)	(2)	
below 0.5	207	207	
0.5 - 1.0	449	453	
1.0 - 2.0	666	674	676
2.0 - 4.0	651		668
4.0 - 10.0	209		213
10.0 & above	-		-
all classes	2182	2215	2217

*In this and subsequent tables on number of pumpsets, the number includes those possessed jointly as well as on rent. In the case of jointly possessed, instead of the household share of the number possessed, the total number possessed jointly has been counted as possessed by the sample household. Hence the estimated number of pumpsets is inflated to some extent.

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (16) : Estimates of number of pumpsets possessed by source of power and horse power

General Sample

: West Bengal

horse power (0.0)	number of pumpsets (00) having source of power*					total
	electri- city	diesel	both elec- tricity and diesel	not recorded		
(0)	(1)	(2)	(3)	(4)	(5)	
below	1.0	16				16
1.0	- 2.0	4		4		8
2.0	- 3.0	40				40
3.0	- 4.0	97				97
4.0	- 5.0	33				33
5.0 & above	37	1163		8		1208
not recorded	35	712	4	64		815
total	72	2065	4	76		2217

see footnote on Table (15).

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NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (17) : Estimates of number of pumpsets *possessed and household share of value of owned equipments by type of possession and source of power

General Sample

West Bengal

source of power	possession type										total (Rs. 000)	
	owned singly		owned jointly		rented		not recorded					
	no. of pump- sets (00)	h.k. of value of owned equipments (Rs. 000)	no. of pump- sets (00)	h.h. share of value of owned equipments (Rs. 000)	no. of pump- sets (00)	h.h. share of value of owned equipments (Rs. 000)	no. of pump- sets (00)	h.h. share of value of owned equipments (Rs. 000)	no. of pump- sets (00)	h.h. share of value of owned equipments (Rs. 000)		
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	6	
electricity	2	158498	-	-	40	-	4	-	72	158498		
diesel	803	3068787	188	282916	1066	-	8	16480	2065	3368183		
electricity & diesel	-	-	-	-	4	--	-	-	4	-		
not recorded	32	21714	-	-	12	-	32	245	76	21959		
total	863	3248999	188	282916	1122	-	44	15725	2217	3548640		

* see foot note on table (15)

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3.3.82.

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (18) : Estimates of number of pumpsets reporting area irrigated by source of power and source of water separately by possession type.

General Sample		West Bengal				
source of power	(0)	no. of pumpsets (00)* reporting area irrigated by source of water				
		open well	tube-well	rivers & streams	others	not recorded
	(1)	(2)	(3)	(4)	(5)	(6)
		<u>owned singly</u>				
electricity		28				28
diesel	18	359	89	264	16	746
electricity & diesel						
not recorded		20	4			24
total	18	407	93	264	16	798
		<u>owned jointly</u>				
electricity						
diesel	4	81	66	20		171
electricity & diesel						
not recorded						
total	4	81	66	20		171
		<u>rented</u>				
electricity	4	36				40
diesel	4	401	294	219	8	926
electricity & diesel						
not recorded		4	4			8
total	8	441	298	219	8	974
		<u>not recorded</u>				
electricity		4				4
diesel						
electricity & diesel						
not recorded					12	12
total		4			12	16
		<u>all</u>				
electricity	4	68				72
diesel	26	841	449	503	24	1843
electricity & diesel						
not recorded		24	8		12	44
total	30	933	457	503	36	1959

NATIONAL SAMPLE SURVEY, 31ST ROUND : JULY 1976 - JUNE 1977

Table (19) : Estimates of expenses for irrigation on other than capital account by items of expenditure

General Sample

West Bengal

items of expenditure	amount (Rs. 000)
(0)	(1)
repair and maintenance expenses of bunds and field channels	36439
water charges	54879
other expenses on independently owned lift irrigation	135684
share of expenses on joint arrangements	2826
receipt from sale of water	(-) 14179
total	215649

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APPENDIX - I

Concepts and Definitions

2.1 Some of the important concepts and definitions adopted in the survey are given below.

2.2 Household : A household was defined as a group of persons normally living together and taking food from a common kitchen. Thus a household was considered as constituted by normally resident members including temporary stay ways but excluding temporary visitors.

2.3 Household holding : A holding was defined as constituted by all land possessed by the household. Land possessed was taken as the sum of land owned but not leased out and land taken on lease. In case of joint ownership or joint leasing in by the sample household with other households, only the sample household's share of such land was taken as the part of the household holding.

2.4 Land owned : A plot of land was considered to be owned by the household if the right of permanent heritable possession with or without right to transfer title was vested in a member or members of the household. Land owned included also land held directly from Government under a grant, lease or assignment. Land owned by a household might be leased out to another household without losing ownership right.

2.5 Irrigation : Irrigation was considered to denote the practice of purposely providing land with water by artificial means for crop production.

2.6 Types of irrigation : Irrigation was broadly grouped into two categories namely flow irrigation and lift irrigation. When irrigation did not involve any use of power for lifting of water, it was considered under the flow type. Flow irrigation covered irrigation by canal, diversion scheme, tank and others not involving any lifting of water. Irrigation from wells, tube-wells, rivers, tanks and other sources using some lift arrangement constituted lift irrigation.

2.7 Net area irrigated : When a plot of land was irrigated more than once in the same or different seasons of an agricultural year, its area was considered only once for obtaining net area irrigated. In case the plot was having irrigation facility from more than one source of flow and/or lift irrigation, the major source was treated as the type of irrigation for the plot. For deciding the major source, the gross area irrigated was taken as the base.

2.8 Net area sown : When a plot of land was sown more than once in the same or different seasons of an agricultural year, its area was considered only once for obtaining net area sown.

2.9 Gross crop area : When a plot of land was cropped more than once in an agricultural year, the area of the land was counted as many times as it was cropped in obtaining the gross cropped area for the plot.

2.10 Irrigable land : Land belonging to a household was broadly classified into two groups - land having irrigation facilities and land not having ^{any} irrigation facility. Land having irrigation facilities was considered as irrigable irrespective of whether it was irrigated or not in 1975-76.

2.11 Value of agricultural/irrigation equipment : Value of agricultural/irrigation equipment owned by the household evaluated at the price prevailing in the local market ~~price~~ for ^{per} item in its present condition. For items owned jointly along with other households only the share of value of the household has been presented in Table 14. Similar procedure was followed for value of draught animals owned by the households.

Appendix - III

Sample Design and Estimation Procedure

1. For the household survey on irrigation in the 31st round, there was a general sample of villages distributed all over the country. Also, there was an additional special sample of villages from the command areas of (i) major irrigation projects commissioned after 1947 and (ii) medium irrigation projects commissioned after 1964. The sample design and estimation procedure for the survey carried out in the general sample of villages is discussed in the following paragraphs.

2. Sample design and sample size : The design was a stratified two stage with district (or portion of district) as stratum, village as the first stage unit and household as the second stage unit. In the central sample, the number of villages planned to be surveyed was 8304.

3. Stratification : There were 63 regions all over India coming under the geographical coverage of the present irrigation survey. These regions were formed during 1965 in such a way that they did not cut across the State/Union Territories. Also excepting a few regions in some States, none of the regions cut across district boundaries. Each district, contained within a region with 1971 district census rural population less than 1.5 million, formed one basic stratum by itself. Districts with more than 1.5 million 1971 census rural population were divided into two or more basic strata by grouping contiguous tehsils (or sub-divisions in the States of Bihar, Orissa and West Bengal) on consideration of homogeneity, density of rural population, crop pattern etc. so that the rural population of each basic stratum, so formed, was less than 1.5 million.

4. Determination of sample size : The sample size of the general sample in each State/Union Territory was decided taking into consideration available strength of the field staff in the State/Union Territory, resources required for special samples from the command areas of irrigation projects and other subjects of enquiry of the round.

5. Allocation of sample size : Total number of sample villages for a State was first allocated to different regions roughly in proportion to the total irrigated area in them. The regional allocation was then distributed among the constituent strata in proportion to population.

6. Selection of villages : Within each stratum, allotted number of villages was selected with probability proportional to 1971 population and with replacement. The list of 1971 census villages was used as the sampling frame.

7. Revenue village : Unit of selection was the census villages. But in cases where census village did not coincide with revenue village or census village could not be uniquely identified, the revenue village corresponding to the selected census villages was surveyed.

8. Hamlet group : Sample villages w... large population were divided into a number of hamlet groups having nearly equal population content. One of such hamlet groups was selected at random and the survey was confined to the selected hamlet group only.

9. Selection of a household : From each sample village, a fixed number of households determined at the regional level was initially selected circular systematically after arranging the households in a specified order viz. households which did not cultivate any land during 1975-76 were followed by households which cultivated land during 1975-76 without irrigation the latter again, being followed by households which cultivated land during 1975-76 with irrigation. The sample households selected from each sample village were divided into three mutually exclusive categories. Category 1 consisted of households which had cultivated land during the agricultural year 1975-76 with irrigation (or which usually used irrigation), category 2 consisted of remaining households which had cultivated land during the 1975-76 without irrigation and category 3 consisted of households which had not cultivated any land during 1975-76. For the households of category 1, particulars of irrigation etc. were collected in schedule 22.1, for the households of category 2, particulars of unirrigated household holding were collected in schedule 22.2 and for the households belonging to category 3, no schedule was canvassed.

10. Estimation procedure : The following notation are used in the formulae for obtaining various estimates :

- r : subscript for r-th region of a State/Union Territory
- s : subscript for s-th stratum
- i : subscript for i-th surveyed village/hamlet group
- j : subscript for j-th sample household
- f : adjustment factor for the survey of revenue village
- p : village population
- m : number of surveyed villages
- h : number of sample households initially selected
- P : total rural population (used for selection)
- D : number of hamlet groups actually formed
- y : value of the characteristic
- Y : total value of the characteristic in the population

Estimates of state totals : Estimate for a State/Union Territory is obtained as the sum of the estimates of constituent regions. Estimates of the regional total \hat{Y}_r of the characteristic y is given by $\hat{Y}_r = \hat{N}_r \sum_i^R \sum_j^S \hat{y}_{rsi}$, where \sum_j extends over households surveyed for schedule 22.1 and

$$\hat{N}_r = \frac{\hat{H}_r}{\sum_s^R \sum_i^S h_{rsi}}, \text{ where } \hat{H}_r \text{ is the estimate of the total rural households}$$

in the r -th region and is given by

$$\hat{H}_r = \sum_s^R \left(p_{rs} / m_{rs} \right) \sum_{rs}^{h_{rs}} \frac{d_{rsi}}{f_{rsi}} \frac{h_{rsi}}{F_{rsi}}$$

where H_{rsi} is total households in the sample hamlet group/village.

State level estimate \hat{Y}_s is obtained as $\hat{Y}_s = \sum_r^R \hat{Y}_r$, where the summation extends over all the regions.

Estimates of ratios : Let Y_s and X_s be the estimates of the aggregates at the State/U.T. level of the two characteristics y and x respectively. The ratio of the aggregates of the two characteristics $R_s = \frac{Y_s}{X_s}$ is estimated by the ratio of the estimates of Y_s and X_s and is given by

$$\hat{R}_s = \frac{\hat{Y}_s}{\hat{X}_s}$$