

LAND UTILISATION SURVEYS THROUGH HOUSEHOLD INTERVIEWS AND A STUDY OF THE PATTERN OF SEASONAL UTILISATIONS

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SUMMARY. In cadastrally un-surveyed villages, sampling for acreage under crops has often to be carried out through land possessed by individual households as the ultimate units of sampling. A special survey by interviewing a sample of households was conducted in 1961-65 and the estimates of acreage under jute and paddy were compared with regular surveys based on plot to plot observation.

It was observed that the interview-survey is capable of giving consistent results but there is a serious gap between these estimates and those based on a regular survey. A type study was conducted to probe into the various factors causing lapses and introducing other defects in the interview-data. Apart from the exclusion of some land possessed by non-household units which might be under crop cultivation, land possessed by households living outside the village sector seem to have been systematically left out. It is felt that such a survey must cover rural as well as the urban areas.

Some interesting results regarding the sequence of crops and extent of land cultivated in more than one season during the year, have also been obtained.

I. INTRODUCTION

1.1. *Object.* Land utilisation surveys as developed by the Indian Statistical Institute are carried out through direct plot to plot observations on the spot and an eye-estimation of the percentage area under different utilisations in each. Short of actual measurements of all the parcels of cultivation given over to a particular crop, this is obviously the most objective procedure on which the area cultivated under specific crops can be ascertained. Such enumeration however involves the use of and reference to cadastral survey maps in which individual plots with their demarcating boundaries are shown. For regions which are yet cadastrally un-surveyed or for cadastrally surveyed villages of which the map sheets could not otherwise be procured, recourse must be made to alternative approaches. In the large scale surveys conducted by the National Sample Surveys, such areas are usually covered by a listing of all plots from village records, if they are available. When these are not available a complete list of all households in the sample village is prepared from which a selected number of households are interviewed, and particulars relating to the utilisations in respect of land possessed by them within a radius of 5 miles at the time of survey, is ascertained by actual observations.

Enumeration of fields possessed by a household by an actual observation on the spot is quite troublesome, even if there are O.S. maps for a ready reference. For, the informant can very rarely furnish the cadastral survey numbers and has necessarily to accompany the investigator to every parcel of land for their identification. Besides,

such a verification merely ensures the accuracy of the utilisation particulars in respect of land actually reported by the informant. The lapses or under-reporting of land, if any, will remain un-detected.

A special Scheme was tried out in the Spring seasons of 1964-65 and 1965-66 covering the whole of West Bengal with households selected in the second stage from villages selected in the first, data regarding utilisations in the previous autumn and winter seasons also being collected through a personal interview. The object of this special investigation was :

- (i) to find out whether a survey based purely on interview data can furnish reasonably good estimates or if biased, can serve as broad indicators, by comparing with those based on an objective plot to plot enumeration;
- (ii) to study the pattern of double or multiple croppings and the sequence of crops on the same land within one year's time and estimate the acreage under important crop combinations during the year. Obviously, such data cannot be collected through a single visit to the plots in question, and the only procedure would be either to make repeated visits from season to season or to interview the households for information.

1.2. *Concepts and definitions.* Area possessed by a household refers to all land owned *plus* all land leased in, of which the management and operations are in its own hands *less* land leased out, of which the operational management has passed on to some other household. Total land possessed by an individual household may be confined within its village of residence or may go beyond it. For the purpose of our present studies, total land possessed by a household within the entire State constitutes the ultimate unit. The proportion of land possessed outside the village limits will usually be small and in any case should ultimately balance out at the State level. An actual distribution of possessed land inside the sample village and outside, based on the present survey has been studied and discussed in subsequent paragraphs. Thus area possessed rather than area owned has been taken as the basic unit, the idea being that it is the ultimate possessor who operates the land, is the best person to furnish the data first hand.

2. ESTIMATED ACREAGE UNDER JUTE AND WINTER PADDY CROPS

2.1. *Estimates based on household interview and plot to plot observation.*

The survey was carried in two independent samples of villages called 'half-samples' by two independent teams of investigators. In each village selected in the first stage, a sample of households was selected in the second stage and interviewed. In 1964-65 households were drawn in two separate samples C_1 and C_2 , the households in one (C_1) being selected with equal probabilities, but in the other (C_2) with probability proportional to land possessed by them. In 1965-66, the households in the second stage were all selected with equal probabilities.

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Table 1 gives the estimated acreages under Jute and Winter (aman) paddy, separately for each half-sample under each method of second stage selection, employing an unbiased estimation procedure appropriate to the respective methods of selection. For a comparison, the results based on the "regular" i.e., objective plot to plot survey, conducted in the respective seasons* are also shown along with the relevant standard errors. The two estimates based on the interview samples C_1 and C_2 of 1964-65 were averaged at the stratum level separately for each half-sample from which the standard error of the combined estimate have been worked out.

TABLE 1. ESTIMATED ACREAGE (000) UNDER WINTER PADDY, AND JUTE IN WEST BENGAL, AS OBTAINED FROM SPRING SURVEY THROUGH AN INTERVIEW OF SAMPLE HOUSEHOLDS AND A REGULAR SURVEY THROUGH AN OBJECTIVE PLOT TO PLOT OBSERVATION, IN THE YEARS 1964-65 AND 1965-66.

crop	surveys	number of villages (full sample)	estimated acreage (000)			p.e.
			half sample 1	half sample 2	combined \pm s.e.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a) 1964-65						
winter (aman) paddy	method— C_1	415	7020	6210	6618 \pm 348	5.2
	method— C_2	413	6504	5783	6144 \pm 186	3.0
	'interview' survey	415	6762	5997	6380 \pm 258	4.0
	'regular' survey	833	9611	10261	9936 \pm 255	2.6
jute	method— C_1	415	718	805	777 \pm 100	12.9
	method— C_2	413	648	680	664 \pm 49	7.4
	'interview' survey	415	698	743	721 \pm 72	10.0
	'regular' survey	833	1180	1056	1118 \pm 62	5.5
(b) 1965-66						
winter (aman) paddy	'interview' survey	339	8574	7293	6433 \pm 633	8.3
	'regular' survey	550	9686	10488	10087 \pm 206	2.1
jute	'interview' survey	339	503	608	556 \pm 74	13.3
	'regular' survey	570	919	821	871 \pm 84	9.7

* In the 'regular' survey, villages in the first stage and plotclusters in the second stage were both selected with a probability proportional to area.

It will be observed that :

(i) agreement between estimates obtained through a household interview for both the half-samples as well as for both the methods cannot be considered to be unsatisfactory;

(ii) in 1964-65, percentage errors of the estimates based on sample C_1 , where households within a selected village were drawn with equal probabilities, are found to be higher than the sample based on a sample where households were selected with probabilities proportionate to possessed area. In 1965-66, the households were selected with equal probabilities alone (corresponding to sample C_1 of 1964-65) and the percentage errors are consequently larger;

(iii) the interview survey gives considerably lower estimates of acreage compared to those obtained from the 'regular' plot to plot enumeration, by 35.8% in 1964-65 and 36.2% in 1965-66 in case of winter (aman) paddy and by 35.5% and 36.2% in case of jute.

2.2. *Proportionate adjustments in lieu of the deficit in total coverage.* It will be interesting to compare the estimates of 'possessed area' for the State as a whole based on the interview sample against the effective coverage of the 'regular' survey excluding such areas as are not under household possession and which again are definitely known to be outside cultivation. According to the complete enumeration carried out in 1946 (Ishaque's Report, Govt. of Bengal), about 3.0% of land is reported under rivers and canals, 1.3% under roads and railways and 12.1% of land under reserved forests and plantations. Besides, in Ishaque's time about 5.2% area was reported under water-areas, temples, homesteads, shops, grazing grounds, playing grounds etc., a part of which however may have been under household possession. This accounts a difference of 21.6%. But in recent years, area under homesteads alone represents something like 3% of total geographical area, the overall percentage of area under this category of land would thus be much more than 5.2%. A part of the forest areas or dried up water-areas may have since been brought under cultivation. On the other hand, there has been an increasing diversion of land towards office-sites, school-campus, roads, brick-fields, factories, collieries and other industrial enterprises. Thus a total deduction of at least 21.6% may safely be made from the gross geographical area of 19736(000) acres to arrive at an upper limit of "effective coverage" which works out to be 15473(000) acres.

Possessed area covered by the interview-survey for the whole of rural Bengal was estimated on an unistage sample of 407 villages, all the households in which were completely enumerated at the initial stages of the interview survey. This has been obtained as 9565(000) acres which is short of the "effective coverage" but about 38.2%. The estimated acreages under different crops may therefore be stepped up accordingly assuming however, that this gap represents an un-reported area with an average intensity of cultivation, i.e., same as in the rest. The results are shown in Table 2.

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TABLE 2. ADJUSTED ESTIMATES OF ACREAGE UNDER VARIOUS UTILISATIONS,
'INTERVIEW' SURVEY VERSUS 'REGULAR' SURVEY

crop year	utilisation	estimated area (000) acres		
		interview		'regular'
		original	adjusted	
(1)	(2)	(3)	(4)	(5)
1964-65	winter (<i>aman</i>) paddy	6380	10323	9936
	jute	721	1167	1118
	'possessed' geographical area	9565	(15473)	15473*
1965-66	winter (<i>aman</i>) paddy	6433	10109	10087
	jute	556	900	871

*Upper limit of effective coverage obtained by deducting 21.6%

It will be seen that the "adjusted" estimates are now in better agreement with the 'regular' ones.

3. THE GAP BETWEEN "POSSESSED AREA" OF THE INTERVIEW SURVEY
AND "EFFECTIVE COVERAGE" OF THE REGULAR SURVEY

3.1. *Possible factors causing the discrepancy.* The gap between 'possessed area' estimated by the interview survey and the effective area represented by the regular survey will now have to be explained. There may be quite a number of factors which, singly or jointly may have caused this deviation, of which the following may be particularly mentioned :

- (a) incompleteness in an area-frame built up of lands possessed by individual households, owing to :
 - (a/1) incompleteness in household listing
 - (a/2) exclusion of non-household possessions, other than area occupied by structures and constructions (which are already deducted in arriving at the effective coverage of the regular survey);
- (b) incompleteness in the enumeration of possessed land at the household level, owing to :
 - (b/1) lapses, i.e., failure of the informant in recalling and reporting all his possessions;
 - (b/2) deliberate under-reporting on the part of the informant, specially in respect of land under food crops;
- (c) residual if any, owing to an imbalance between possessions of the sample households outside the village and village-areas possessed by households staying outside the sample village.

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The question of any bias in the objective plot to plot survey itself, owing to defects in the sampling frame, sampling design or estimation procedure are not being considered here.

It is difficult to ascertain the specific contributions of one or other of the factors independently, and an attempt has been made here merely to bring out the relative importance of each.

3.2. *Contribution of specific factors*

3.2.1. *Incompleteness in household listing.* Considerable discrepancies have generally been observed between two sets of house-hold lists compiled by two different enumerations, even within a short interval of time. Table (3.1) in cols. (4) and (5) gives the average (unweighted) number of households per sample village as listed in various 'interview' surveys, compared against the same according to the census enumerations of 1961, while col. (6) gives the 'Census' average expressed as percentages to those obtained by 'listing'

The definition of a household adopted in these surveys are more or less identical with that used in census enumerations, except in respect of residential hotels, messing establishments etc. It will be noted that the 'Census' 'listing' works out to be considerably higher than the survey 'listing', by about 8.4% in the Census year itself, and varying from 8.2% to 13.9% in the succeeding years. It has to be noted however that as population is continually increasing, the number of households should also be on the increase and the divergence from Census in 1961 should have come down. The real divergence from the true position is therefore likely to be more and as a broad guess, survey 'listing' is short by about 10% in individual villages presuming however that the Census of 1961 was fairly reliable. An inflation by about 11% is therefore needed to step up the listing results to come up to the Census level.

TABLE 3.1. AVERAGE NUMBER OF HOUSEHOLDS (UNWEIGHTED) PER VILLAGE AS PER DIFFERENT INTERVIEW-SURVEYS AND THE CENSUS ENUMERATIONS IN 1961

interview-survey	reference year	no. of sample villages	average number of households per village (un-weighted)		index col(5) / col(4) × 100
			'listing' in interview survey	census 61	
(1)	(2)	(3)	(4)	(5)	(6)
NSS—16th Round	1960-61	103	152.9	165.7	108.4
NSS—17th "	1961-62	114	168.8	181.0	113.9
NSS—special, spring	1962-63	95	154.9	167.6	108.2
NSS—special, spring	1964-65	407	209.7	230.6	110.0

* The unusually high average in the year 1964-65 may be explained by the fact that the villages here were selected with a probability proportionate to population, and an un-weighted average would naturally show up a higher average of households per village. The village in 1962-63 were also like-wise selected but most of the big villages were left out of tabulation, owing to an irregularity in the method of hamlet selection. As a result, the un-weighted average of households per village in 1962-63 is not seriously affected by the preponderance of big villages.

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On the other hand, the estimated (properly weighted) State total of the number of households for rural areas in 1964-65, based on our listing as well the Census listing of households on the same sample of village have been obtained as 4494(000) and 4747(000) respectively, i.e., as divergence of 5.3% only. But the Census estimate of 4747(000) is found to be lower than the corresponding State total of 4864(000), as published in the Census Report, by about 2.4%, possibly due to sampling fluctuations.

3.211. *Relative accuracy of listing in villages with increasing number of households.* Average number of households per village, obtained from the NSS-surveys of 1960-61 and 1961-62 for West Bengal against the same based on the Census listing of 1961, have on the other hand been worked out separately by different size-classes in terms of the number of households per village as shown in Table (3.2). Cols.(4) and (5) indicate that NSS 'Listing' gives a lower count with increasing number of households per village, i.e., more and more households are left out.

3.212. *Plot-wise listing of households.* The listing of households, which eventually serves as a sampling frame for the selection of households has therefore to be carried out with utmost care. To ensure that not a single household is left out, nor any one counted twice over, the best recourse in our experience would be to enumerate the households plot by plot guided by a cadastral map, when there is one. According to some type-studies for the determination of relative cost of household listing (in 8 village of Hazaribagh Dist., Bihar, 1957-58), it was found that a complete enumeration of all plots with the aid of c.s. maps was about thrice as costly as ordinary listing. Although costlier, a plot-wise listing would be on a-prior considerations more accurate and dependable, than an ad-hoc one and besides would facilitate checking out of field work. The cost may however be reduced appreciably if the listing is confined to the inhabited plots alone. A subsequent check up will in any case show up, if any of the inhabited plots have been totally left out or only partially surveyed.

3.22. *Exclusion of 'non-household' areas.* Apart from non-household land already known to be outside cultivation, which was accordingly deducted to arrive at the effective geographical coverage (discussed in para 2.11) household-interviews could have excluded some more land which although attached to non-household establishments may have some crop cultivation. But the extent of such land which is likely to be very small is difficult to ascertain.

3.23. *Incomplete enumeration of possessed land at household level owing to lapses or deliberate under-reporting.* Lapses in recall and the element of deliberate under-reporting if any, is difficult to contend with. A deep probing investigation may bring to light, the existence of such factors, but it is quite another matter to eliminate them effectively in larger scale operations. Nevertheless, it will be quite instructive to learn about its extent and magnitude, so that we may be duly alerted about their significance.

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In the interview survey of 1964-65, all households in the sample villages were completely listed along with the total land-area possessed by each. From this list, two samples of ten households each were selected in the second stage and a schedule with detailed particulars in respect of each parcel or 'kitta' possessed by the household was canvassed. Total land possessed by each of these twenty households could thus be built up and the overall acreage compared with the corresponding acreages returned at the stage of initial listing. In listing, the Investigator hurriedly covers all households in the village and the data regarding land in possession is likely to be inaccurate though broadly in order. At the time of filling in the detailed Schedules, the Investigator finds ample time to collect data in detailed breakdowns, and are thus likely to be more accurate.

Table 4 gives the average (un-weighted) possessed area per h.h., relating to these common households obtained through the usual 'Schedule' survey expressed as Indices to the same as reported at the time of initial listing, separately for the two half-samples under each of the sub-samples C_1 and C_2 mentioned earlier. It will be seen that 'listing' has an overall under-reporting tendency and the Schedule survey exceeds 'listing' by 2.7% when all samples are pooled up. This departure, not very large, is in the right direction, namely, it agrees with the general impression that a detailed enquiry is likely to miss less and be more free from omissions.

TABLE 3.2. AVERAGE NUMBER OF HOUSEHOLDS PER VILLAGE AS FROM DIFFERENT INTERVIEW-SURVEYS AND THE CENSUS ENUMERATION OF 1961

size in number of households per village	average number of households per village				index	
	NSS-sample 16th round		NSS-sample 17th round		$10 \times \frac{(2)}{(3)}$	$100 \times \frac{(4)}{(5)}$
	census listing	NSS listing	census listing	NSS listing		
(1)	(2)	(3)	(4)	(5)	(6)	(7)
up to 50	28.0	29.9	29.0	27.8	93.5	104.1
—100	73.2	70.7	78.4	71.8	103.5	109.1
—200	143.7	137.2	147.6	144.4	104.7	102.2
—300	249.2	238.6	246.4	206.4	104.4	119.3
above 300	535.9	464.1	492.7	411.8	115.5	119.6
total	165.7	162.0	181.0	158.8	108.4	113.9

3.231. 'Probing' type-studies in 1960-67. The effect of deliberate or even casual lapses are however not easy to ascertain and even a detailed enquiry in course of a large scale survey may not eliminate it. Assuming, that a deep probing enquiry with an intimate personal approach may go a long way, at least in reducing the lapses and neutralising the psychological resistance if any, a very small scale type study in nine villages selected out of the 1964-65 sample was organised in March 1967. The

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TABLE 4. UNWEIGHTED TOTAL OF POSSESSED AREA OBTAINED BY THE USUAL SCHEDULE EXPRESSED AS PERCENTAGE TO THE SAME BASED ON INITIAL LISTING, 1961-65

sample	total area as per schedule expressed as p.c. to the same obtained through initial listing		
	half-sample 1	half-sample 2	total
(1)	(2)	(3)	(4)
e_1	104.9	102.7	103.8
e_2	102.3	102.0	102.1
total	103.2	102.2	102.7

enquiry was carried out by teams of two, a senior statistical worker attached to one professional investigator. Three such teams were formed and each team was assigned with three villages from each of which twenty households surveyed in 1964-65 were to be contacted and much more detailed and probing enquiry was to be carried out. The Schedule covered all parcels or 'kittah's of land which were possessed in 1964-65 indicating if they were still possessed or not in 1966-67, and parcels not possessed in 1964-65, but brought under possession since. There is a risk of memory lapses in respect of 'kittas' possessed in 1964-65, but not under possession since. But since the proportion of such land was found to be quite small, any effect on this account would indeed be negligible.

The real object of the present enquiry was camouflaged under a much more appealing slogan namely, to investigate the ways and means for ensuring a better utilisation of land, not merely for crop production, but also for promoting industrial enterprises. It was explained that the experiences gained in this small type study may lead to an extensive country-wise investigation seeking well considered programmes of actions. Individual opinion and suggestions for promoting production were also invited. The declared object was very kindly taken up by the villagers and quite a number of concrete suggestions were received. The data collected in an atmosphere of enthusiasm and amity, may be considered as the best that would be hoped for. Table 5 gives the unweighted averages of area possessed per household in the year 1964-65, as obtained through the usual survey in 1964-65 and the probing survey of 1966-67, for each of the four size-classes, i.e., possessed area up to one acre, between one and three etc.

The size-class specific averages of possessed area per household obtained by 'probing' were weighted by the size-composition of the full Interview sample C_1 , where households were selected with equal probabilities. The weighted average of total possessed area per household thus obtained is found to be 10.0% in excess of the same based on 'Schedule' and 13% over 'listing', considering that the 'usual

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TABLE 5. TOTAL AREA AND PADDY AREA POSSESSED PER HOUSEHOLD IN 1964-65 BASED ON A COMMON SET OF HOUSEHOLDS INTERVIEWED IN 1964-65 EXPRESSED AS PERCENTAGES OF THE SAME BASED ON A RESURVEY IN 1966-67 WITH INTENSIVE PROBING BY SIZE-CLASSES OF TOTAL AREA POSSESSED, SEPARATELY FOR EACH INVESTIGATING TEAM

size-class in acres	no. of households		average per h.h. based on 'probing' as p.a. to same based on usual survey							
			team-1		team-2		team-3		total	
			probing survey 1966-67	interview survey 1964-65	total area	paddy area (winter)	total area	paddy area (winter)	total area	paddy area (winter)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
-1.0	56	1409	70.9	73.8	68.4	*	66.6	33.4	69.4	36.3
1.0-3.0	49	1175	102.1	91.7	94.4	71.8	90.0	76.5	95.4	79.0
3.0-6.0	32	890	113.7	160.5	110.0	101.1	99.6	104.4	106.4	115.8
6.1 and above	16	486	109.0	149.4	100.8	118.5	146.1	151.2	134.7	135.7
total weighted by col (3)	153	3960	106.4	134.7	115.2	92.6	106.6	104.9	110.0	107.4

Paddy area was reported in the 'probing' survey but not in the interview survey of 1964-65.

Schedule' over-reports by 2.7% compared to 'listing' (para 3.23). A relatively greater under-reporting tendency in respect of paddy land is not however noticeable. It may be noted here that compared to "probing", the 'schedule' tends to over-report in the lowest size-classes, giving however an overall under-reporting when all size-classes are pooled up. This is an interesting phenomenon, but the material is too meagre for drawing any conclusions. The consistency of this peculiar behaviour for each of the three probing teams, shown in cols. (4)-(9), however tends to confirm our observation.

3.24. *The un-explained residual.* Total area possessed by all households in a village, may be considered as a product of the total number of households and the average of area possessed per household. The Indices given in Table 6 represent the shortages so far accounted for in lieu of the two factors mentioned above, worked out on the basis of h.h. listing of 1964-65 NSS surveys (spring) against the census and the probing survey in 1966-67. The number of households (taking the listing as 100) calls for an adjustment of 11% to step up at par with the census (Table 3.1), as shown in col. (2). As regards area per household (taking the area listed as 100) the detailed enquiry reveals that it has to be stepped up by 2.7% (Table 4) giving an index 102.7. This has to be stepped up further for the factor revealed as per the probing survey (i.e.) 10% (Table 5) giving a value 113, as shown in col. (3).

The over-all Index for adjusting the possessed area estimated on the initial listing in interview-survey may be worked out as $100 \times 1.13 \times 1.11 = 125.4\%$, assuming that it has been possible to perfect the listing of households and the under-reporting

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TABLE 6 INDICES FOR AN ADJUSTMENT IN LIEU
OF (a) SHORT LISTING OF HOUSEHOLDS AND
(b) LAPSES IN THE COLLECTION OF
POSSESSED LAND

stages	index	
	number households	area per household
(1)	(2)	(3)
1. listing (nd-hoe)	100.0	100.0
2. listing (census)	111.0	—
3. schedule survey	—	102.7
4. probing survey	—	113.0

of possessed area at the household level has been rectified to the extent possible by deep probing investigations. The adjusted figure for possessed area now comes to 125.4 % of 9565(000) or 11995(000) acres. This still leaves a balance of 3478(000) acres or 22.5% of the effective coverage of 15473(000) acres as yet unexplained.

It may be noted here that some of the areas may have remained un-reported even in spite of all our probings. Secondly, much more land is likely to have been diverted towards non-household purposes than has been surmised in arriving at the net effective coverage (para 2.2). Finally, some contributions may have been due to a non-reporting of land possessed by outsiders. In fact, land *not* formally leased out and supposed to be directly managed and operated by absentee land-lords, must have been systematically left out of account. In the type studies with nine villages in 1966-67, the un-weighted totals of reported possessed area over all the households were found to represent about 82% of the total geographical coverage of these villages. To complete the picture, rural as well as urban households must therefore be covered in sampling for possessed area.

4. ON THE EXTENT OF DOUBLE CROPPING

4.1. *Utilisation from season to season within the year.* It has already been stated that an account of land utilisation during the last two seasons of the year was also collected during the interview in respect of each parcel of land listed in the Spring survey. Table 6 gives the percentage composition of land utilised in any one of the seasons, autumn, winter and spring alone or in two of the seasons or in all of them, by districts. It will be seen that only 18.2% of geographical area is utilised twice in the year while 2.7% is utilised in all three of the seasons.

4.2. *Sequence of crop cultivation within the year.* Table 7 on the other hand classifies the total possessed area according to their utilisations in respect of certain specified crops alone, cultivated one after the other. Thus, jute or autumn (*aus*) paddy followed by winter (*aman*) paddy and or Spring crops have been separately considered and the corresponding area utilised expressed as percentages to total, have

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TABLE 6. PERCENTAGE DISTRIBUTION OF AREA CULTIVATED IN ONE SEASON ONLY IN TWO DIFFERENT SEASONS OR IN ALL THE SEASONS OF 1964-65
SPRING SURVEY 1964-65
(all samples combined)

district	one season only				two seasons only				all the three seasons	unculti- vated	total
	spring	winter	autumn	total	spring and winter	winter and autumn	autumn and spring	total			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. Burdwan	1.0	73.0	5.6	79.6	0.8	0.1	6.8	7.7	1.6	11.1	100.0
2. Birbhum	1.0	78.3	2.8	82.1	4.2	0.2	1.5	5.9	1.4	10.6	100.0
3. Bankura	1.5	65.9	12.3	79.7	0.4	1.4	0.6	2.4	2.4	15.5	100.0
4. Midnapur	0.5	76.4	1.6	78.5	4.8	1.3	0.6	6.7	1.6	13.2	100.0
5. Howrah	1.0	72.9	0.3	74.2	4.3	0.2	0.4	4.9	0.3	20.6	100.0
6. Hooghly	1.6	66.4	0.9	68.9	0.1	1.6	9.2	10.9	0.8	19.4	100.0
7. 24 Parganas	0.6	70.0	5.5	76.1	1.2	0.6	6.0	7.8	1.5	14.6	100.0
8. Nadia	0.6	32.8	9.2	42.6	0.1	4.6	31.2	35.9	4.1	17.4	100.0
9. Murshidabad	3.2	41.0	4.5	48.7	5.2	1.0	29.7	35.9	4.7	10.7	100.0
10. Purulia	0.6	55.8	9.4	65.8	0.6	17.8	0.8	19.2	1.6	13.4	100.0
11. Malda	3.3	39.8	8.8	51.9	1.8	6.0	22.9	30.7	3.1	14.3	100.0
12. West Dinajpur	1.9	58.6	14.1	74.6	0.1	12.6	4.8	17.4	1.0	6.9	100.0
13. Jalpaiguri	0.6	52.4	4.8	57.9	1.0	30.2	1.8	33.0	1.1	8.0	100.0
14. Darjeeling	0.7	75.3	0.1	76.1	1.0	7.0	1.2	9.2	3.4	11.3	100.0
15. Cochinbhar	2.0	14.9	5.9	22.8	0.4	41.9	4.9	47.2	12.6	17.4	100.0
16. West Bengal	1.3	68.5	6.2	66.0	1.9	7.9	8.4	18.2	2.7	13.1	100.0

been shown in cols. (3)-(8), and total area under different crops in cols. (9)-(12), which include area grown in combinations other than those specified. Cereals, oilseeds and pulses have been considered as principal rabi crops.

It may be noted here that in West Bengal, jute is rarely cultivated in mixture with autumn (*aus*) paddy, and the cultivation of one generally follows that of the other. It will be seen that jute is followed by *aman* paddy in 2.3% of total land and *aus* is followed by *aman* paddy in 3.8%, during the same year.

LAND UTILISATION SURVEYS THROUGH HOUSEHOLD INTERVIEWS

TABLE 7. PERCENTAGE OF AREA UNDER SPECIFIED SEQUENCES OF CULTIVATION
IN THE CROP YEAR 1964-65 : SPRING SURVEY 1964-65
(all samples combined)

district	geographical area in '000'	percentage of area under									
		jute and aman	aus and aman	jute and rabi	aus and rabi	aman and rabi	jute/aus and aman and rabi	total jute	total aus	total aman	total rabi
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1. Burdwan	1700	0.0	—	1.9	4.1	0.8	—	3.0	9.3	73.2	1.0
2. Birbhum	1121	—	0.0	0.0	1.3	3.6	0.2	0.0	4.1	82.7	1.1
3. Bankura	1675	—	0.5	—	0.6	0.1	0.0	0.1	14.3	65.9	1.3
4. Midnapur	3324	0.4	0.0	0.1	0.7	4.4	0.1	0.9	2.2	81.5	0.5
5. Howrah	348	0.0	0.0	0.4	—	3.2	—	0.8	—	74.7	1.0
6. Hooghly	752	1.1	0.0	3.8	3.2	0.0	—	7.2	3.0	68.2	1.6
7. 24 Parganas	2265	0.3	0.2	1.1	3.5	1.3	0.2	4.2	8.3	71.9	0.6
8. Nadia	943	0.5	0.2	8.6	20.0	0.0	0.4	18.6	23.7	36.2	0.7
9. Murshidabad	1298	0.1	0.1	12.6	16.1	4.8	1.4	15.7	20.7	46.2	3.2
10. Purulia	1527	—	0.0	—	0.3	—	—	0.1	3.8	71.9	0.6
11. Maldaha	863	1.4	4.0	5.3	15.2	0.6	0.3	9.7	24.0	46.6	3.3
12. West Dinajpur	1326	4.3	7.1	2.1	1.0	0.1	0.4	14.0	14.1	70.8	1.9
13. Jalpaiguri	1518	11.8	14.6	0.2	0.4	0.1	0.4	16.2	15.6	81.7	0.6
14. Darjeeling	212	2.8	3.7	—	2.0	—	0.1	2.3	2.4	82.2	0.7
15. Coochbehar	844	15.9	31.5	1.6	0.6	0.5	3.1	22.5	40.3	64.3	2.0
16. West Bengal	19736	2.3	3.8	2.5	4.8	1.6	0.5	7.7	12.7	68.0	1.2

*Any principal crop.

5. DISTRIBUTION OF LAND POSSESSED BY INDIVIDUAL HOUSEHOLDS
LYING WITHIN THE VILLAGE OF RESIDENCE AND OUTSIDE

It will be interesting to examine as to what proportion of total land possessed by a household lies within the village limits and how much of it is distributed outside. Table 8 gives the unweighted percentages of total land contained within the village itself, percentage falling outside it, but remaining within the ring of adjoining villages, and so on, as has been observed in the survey in 1965-66.

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TABLE 8. PERCENTAGE OF HOUSEHOLD POSSESSED AREA BY THEIR LOCATION
SPRING SURVEY 1965-66

located within the	half sample-1		half sample-2		combined	
	percentage of possessed land	successive difference	percentage of possessed land	successive difference	percentage of possessed land	successive difference
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. sample village	90.4	90.4	89.0	89.0	89.7	89.7
2. villages adjoining	95.9	5.5	97.0	8.0	96.5	6.8
3. police station	99.4	3.5	99.0	2.0	99.2	2.7
4. district	100.0	0.6	100.0	1.0	100.00	0.8
5. state	100.0	0.0	100.0	0.0	100.0	0.0

It will be seen that 89.7% of possessed land is confined within the village and a total of 96.5% within a ring of immediately adjoining villages, leaving only 3.5% of land scattered elsewhere.

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