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MICROLEVEL ANALYSIS OF LAND HOLDINGS AND AGRICULTURAL PRACTICES : CASE STUDIES

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ABSTRACT : Variations in the agricultural patterns at the microlevel have been explained with the help of physio-socio-economic factors. In addition, the size and pattern of the landholdings, the process of fragmentation, and their interrelationships with efficient land utilization has deen examined at depth with the help of three villages chosen for the purpose of case study. The condition of the scheduled castes in the agricultural economy has been analysed separately to bring out the uniqueness of their situation in relation to the other cultivating castes.

Introduction

In a predominantly agricultural economy like India the agricultural patterns and production systems are mainly influenced by two sets of factors, physical–environmental on the one hand and technological institutional on the other. Since the farm is the basic unit of agricultural production, the focus of attention must be the ' farm ' itself. The farmers decision-making, regarding the choice of enterprises i. e. a combination of crop and livestock units, type of farming and allocation of resources, largely depends upon the structral orgainzation. Land tenure systems and the size of land holdings play an important role in this decision making process, as a major bulk of the total farm out put comes from small units, worked mostly by family labour. The size of landholding is also an important factor in determining the efficient use of the resources available to a farmer. The application of various amounts of inputs to the land and their efficient utilization depends upon the size of holding. It is well known that with the ever increasing population, the pressure on land increases and finally leads to fragmenation of land holdings into uneconomic units.

A major cause of low agricultural efficiency in India is due to fragmentation and subdivision of holdings. Apart from population pressure, the small size of the holdings could be attributed to the laws of inheritance, decline of the joint family system, absence of alternative employment opportunities in the form of handicrafts and village industries, lack of capital investment and attachment to landed property. The result is the existence of numerous small size holdings and widely scattered pieces of land which are uneconmic. These uneconomic holdings give rise to wasteful methods of farm operations (Dandekar and Rath 1971). The disadvantages of fragmentation and scattered holdings are well known ; it puts a large proportion of land outside the possibility of effective cultivation or economic development, it wastes time in the need to supervise and it makes capital duplication necessary (Shaw-1963). On the whole it is a serious impedement to the agricultural progress

and acts as a deterrent to full utilization of land and farm force (Sigh 1976).

In the rural areas, land is the principal source of income, and inequalities in agriculture basically stem from the inequality in the distribution of land holdings. If the size of a single landholding is more than what one farmer can efficiently manage, land is not fully utilized because of lack of sufficient labour and if it amounts to less than a critical limit, labour is not fully employed because of lack of sufficient land (Charansingh 1977). Of course, the size of efficient land unit is relative and may vary according to the fertility of the soil, methods of cultivation, nature of crops and other physico-socio-economic factors. Thus, one who attempts to explain the variation in the agricultural patterns at the micro-level has to account for the influence of the size of landholdings, the process of fragmentation and their inter-relationships.

In order to examine the above relationships, Poona district has been chosen as a laboratory, as the district displays a variety of physico-socio-economic characteristics. An attempt has been made here to analyse the structure of land holdings in relation to the above mentioned physico-socio-economic characteristics. An initial hypothesis is formulated that the size of land holding and the amount of fragmentation varies with the environmental and socio-economic conditions. To test this hypothesis the district was divided into physiographic regions, and three villages representing (i) a heavy rainfall area with rugged, hilly

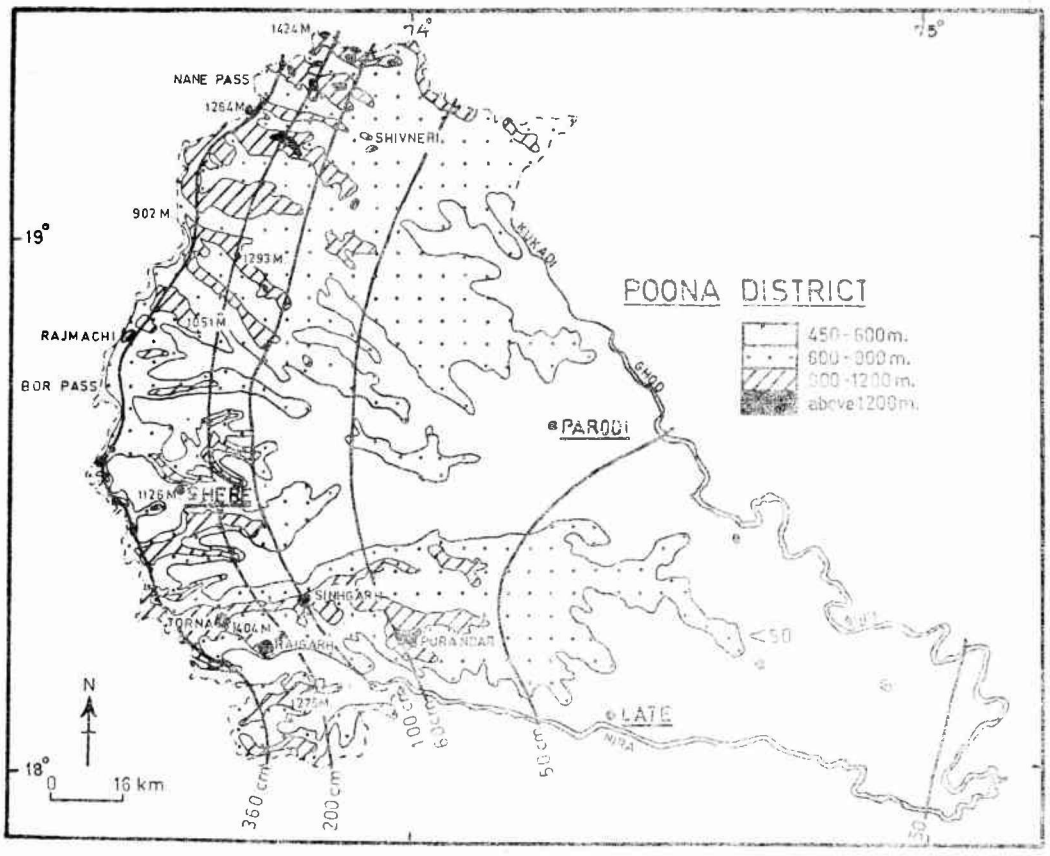

Fig. 1

Table I

1971	Shere (Hill-village)	Parodi (Unirrigated)	Late (Irrigated)
Total Population	761	576	2372
Total Agricultural workers (A. W.)	151	302	777
Cultivators (% of A. W.)	80.13	94.70	46.20
Agri. Labourers (% of A. W.)	11.92	5.30	51.09

topography-Shere (ii) a semi arid or drought prone region-Parodi and (iii) an irrigated tract in the river valley, Late, were selected for microlevel analysis (Fig. 1). Data regarding the occupational structure, general landuse, agricultural landuse, size of land holdings, number of land holders, and the number of fragments were collected during field trips to the selected villages. A questionaire was also prepared and personal interviews with the farmers conducted so as to estimate the economic potential of a farmer. For convenience sake the landholders, holdings and the fragements were classified in to five size categories namely, 0-1, 1-3, 3-5, 5-10 and above 10 acres. Finally, the position of the scheduled castes in the agricultural economy of the village is also studied separately. This will enable one to assess the condition of this socially and economically deprived section of the society vis-a vis the possession of productive assets.

Background of the villages

Shere is located about 32 km. west of Poona. This area receives very high rainfall (over2 00 cm) and is characterised by rugged relief. In contrast, Parodi is located 50 km in the north-east of Poona, in a drier region, receiving about 50 cm of rainfail. Late, though located in the drier eastern part of the district, (90km from Poona, rain fall about 50 cm.)is an irrigated village, in the Nira valley. Thus, the physico-socio-economic set up of these three villages is different. This is clearly reflected in the occupational structure, landuse, and land holdings (Table I).

Agriculture is the only important occupation in all the three villages, accounting for over 90 per cent of the total workers. Among the agricultural workers, the proportion of cultivators is very high in Shere and Parodi. But in Late, the irrigated village, the proportion of agricultural labourers is higher than the cultivators. The higher agricultural productivity in an irrigated village leads to a higher demand for agricultural labour, which is reflected in the case of Late. In contrast, in the other two villages, agriculture being of a subsistence nature the proportion of owner cultivators is large, there being limited scope for hired farm labour.

General landuse

Proportion of the total area under different categories of landuse, namely gross cropped area, forest, grass, culturable waste, area not available for cultivation, and fallow in the three villages is compared (Table II) to bring out the influence of physiography in the basic nature of land-use.

It is observed that the rugged topography, the nature of slopes and soil cover have been responsible for the variations in the area strength of different landuse categories. In Shere, adverse topographical conditions are responsible for a lower proportion of gross cropped area. In contrast, the extensive flat lands and gently sloping areas in Parodi and Late explain the very high proportion

Table II

General landuse

	Proportion of the total area (per cent) (1974-75)		
	Shere	Parodi	Late
1	2	3	4
Gross cropped area	22.67	87.74	99.90
Forest	1.89	4.82	4.9
Grass	57,35	0.52	—
Culturable waste	—	0.89	2,13
Not available for cultivation	18.09	2.51	3.93
Fallow	—	3.52	—

of gross cropped area in those villages. In case of Late, this gross cropped area is even further inflated by the availability of irrigation. Late has about 20 per cent of its cultivated area sown more than once in a year.

Grass covers a very large area in the southern half of Shere. The hill slopes with a thin soil cover, and areas not suitable for cultivation are given over to grass. In Parodi and Late grass is insignificant as almost all the area is suitable for cultivation of crops. Proportion of area not available for cultivation is also significant in Shere. This is again due to the rugged nature of the topography.

Agricultural landuse

Cropping pattern in the study areas is, further influenced by the climatic conditions, soil characteristics and irrigation. Examination of the areal strength of crops in the three villages gives us some idea regarding the dominant factors which influence the choice of crops in a village. (Table III)

It is expected that in an area receiving over 200 cm of rain fall rice should dominate the cropping pattern. In Shere, rice is followed by nagli a hill millet. Generally better agricultural lands are given to rice and inferior lands are under nagli. In Parodi, the crop pattern changes considerably due to scanty rainfall. Jowar is the most important crop grown in the rabi season, followed by bajra a second rank crop -grown in the Kharif season. As both jowar and bajra are drought resisting crops they are selected in preference to other food crops. Pulses which are grown alongwith jowar or bajra also are a really important. Cropping pattern of Late has largely been influenced by the availability of water. Though this village also receives scanty rainfall like Parodi, the climatic constraint is modified as water is made available through sources like canal, river, well and lift irrigation. A diversified cropping pattern with cash crops like sugarcane, vegetables and fruits, cotton, and oilseeds, occupy a sizable area. Rice in the kharif, and wheat in the rabi season are also attempted only with the help of irrigation. In contrast, at Parodi and Shere, one finds the patrern of cropping either of monoculture or two crop combination. This reveals clearly, the strict control of the climatic factors.

Land holdings

In order to understand the structure of land holdings resulting from interaction between physico-socio-economic elements and its impact on the agricuitural patterns, data for the total land holders, size of landholding, location of the holdings, and number of fragments were collected,

Table III

Agricultural landuse

Crops	Per cent of G. C. A., under different crops (1974–75)		
	Shere	Parodi	Late
Jowar Rabi	–	53.79	26.29
Jowar Kharif	–	26.89	16.26
Bajra	–	–	3.70
Rice	74.40	–	3.31
Nagli	17.26	–	–
Wheat	2.98	0.45	17.14
Sugarcane	–	–	13.83
Vegetables and fruits	0.60	4.61	8.76
Cotton	–	–	4.30
Groundnut or other oilseeds	2.68	–	8.00
Karala	–	6.09	–
Tur	–	1.63	–
Gram	–	2.08	–
Mung	–	1.78	–
Hulaga	–	1.78	–
Math and Matki	–	2.53	–
Other pulses	1.79	7.73	–

compiled and analysed. It is generally understood that a small farmer is a farmer holding less than five acres of land. A medium farmer holds between five to ten acres of land and a big farmer is one who owns more than ten acres of land. The authors are aware that these categories, infact, are broad generalizations, but for matter of convenience, these classes were adopted with three sub-divisions in the first category, viz. size classes of 0-1, 1-3 and 3-5 acres.

The average size of the holdings in the district was 9.98 acres in 1970–71 (Maharashtra 10. 57 acres). In comparison with the district and state averages, average size of holdings in Shere, Parodi and Late are 6.82 acreas, 14.38 acres and 3.91 acres respectively. Only Parodi has an average land holding size which exceeds both the district and state average figures. This is a normal tendency in all dry villages.

The number of small holders (0–5 acres) was appreciable in the district. Though 46 per cent of the total holders were small holders, they operated only 10 per cent of the total area. For Maharashtra, the figures are 43 per cent and 9 per cent respectively. The analysis at microlevel yields some interesting results (Table IV). In Shere, 16.90 per cent of the total area is cultivated by 61 per cent of the holders. In Parodi, 5.69 per cent area is operated by 36.54 per cent of holders, and in Late 46.43 per cent area is cultivated by 78.31 per cent holders. In contrast, only 20.72 per cent holders own 64.29 per cent area in Shere. In Shere like the rest of the Maval villages the proportion of culturable waste is very high in the case of larger size holdings. The figures for Parodi and Late also reveal similar trends.

Table IV

Percentage of area under different categories of land holdings

Size classes in acres	0–1	1–3	3–5	0–5	5–10	above 10
Shere	1.13	8.43	7.34	16.90	18.81	64.29
	(4.96)	(22.75)	(20.97)	(48.68)	(28.40)	(23.61)
Parodi	0.32	1.68	3.69	5.69	8.34	86.00
	(–)	(–)	(7.64)	(7.64)	(10.34)	82.02)
Late	2.37	17.23	26.83	46.43	27.68	25.89
	(3.23)	(40.01)	(24.98)	(68,21)	(31.79)	(–)

Percentage of land holders in different categories of landholdings

Size classes in acres	0–1	1–3	3–5	0–5	5–10	above 10
Shere	15.32	32.43	13.51	61.26	18.02	20.72
	(20.83)	(45.84)	(16.67)	(83.31)	(12.50)	(4.17)
Parodi	9.62	13.46	13.46	36.54	17.31	46.15
	(–)	(–)	(25.00)	(25.00)	(25.00)	(50.00)
Late	14.80	35.71	27.80	78.31	15.65	6.41
	(11.54)	(53.85)	(19.23)	(84.62)	(15.38)	(–)

Source : Gram Panchayat Samitis Office. Figures in bracket are for scheduled castes.

Table V

Average size of fragments in different landholding classes (acres)

	0–1	1–3	3–5	0–5	5–10	above 10
Shere	0.29	0.79	1.01	0.76	0.92	1.72
	(0.31)	(0.50)	(0.98)	(0.59)	(0.73)	(0.72)
Parodi	0.35	0.84	2.12	1.21	1.98	4.54
	(—)	(—)	(3.70)	(3.70)	(2.50)	(6.63)
Late	0.57	1.53	2.67	1.83	4.27	7.36
	(0.85)	(1.26)	(3.19)	(1.58)	(4.05)	(—)

Percentage of total fragments in different landholding classes

	0–1	1–3	3–5	0–5	5–10	above 10 acre
Shere	4.94	13.83	0.05	27.82	25 43	46.75
	(11.46)	(37.50)	(17.71)	(66.67)	(32.29)	(1.04)
Poradi	3.37	7.21	6.25	26 83	15.14	68.03
	(—)	(—)	(11.11)	(11.11)	(22.22)	(66.67)
Late	11.76	31.74	28.31	71,31	18.26	9.93
	(7.69)	(61.54)	(15.32)	(84.61)	(15.38)	(—)

Source : Gram Panchayat Samitis Office Record. Figures in bracket are for scheduled castes.

In Shere and Parodi, the proportion of area increases from lower categories to higher categories of land holdings, except for the 5-10 acre care category. A similar overall pattern is observed for Porodi, but the difference lies in the proportion of area in categories, 0-5, and 10 and above, which is spectacular. Late has a very small area in the 0-1 class, but in all other classes the distribution is more or less equitable.

The problem of fragmentation has been recognised long back. As the farmers total holdings are in may instances divided into several pieces far apart from one another, efficient cultivation of all these pieces is always a problem. Inspection of Table V brings out clearly the extent to which fragmentation has occurred in different physico-socio-economic areas. In all the three villages, the size of fragments increases with the increase in the size of holdings, though the rate of increase varies considerably. The number of fragments, it is also observed, increases with the larger sizes of holdings in Shere and Parodi. But in Late, an exactly opposite trend is observed. The number of fragments is more in the case of small holdings, and less in case of larger holdings.

The size of fragments and the number of fragments in different classes of holdings reflect the influence of (i) nature of the terrain (ii) productivity of the land and (iii) choice of crops to be grown. As paddy is generally grown in small fields, the size of the individual fragment tends to be relatiyely small in Shere. Parodi, lying in a scarcity area, the carrying capacity of the land is also small. This acts as a deterrent to fragmentation into smaller units, and results in a pattern of relatively higher size of holding as well as fragments. In Late, the average size of fragments is still higher due to the commencialization of agriculture.

In Late, the process of commercialznatoin of agriculture has proceeded far enough to generate a breed of prosperous farmers, hungry for land. Here, even a slight increase in the size of the holding, can bring about substantial gains from agriculture particularly in the context of the capital intensive system of agriculture prevailing in these parts. This perhaps helps to account for both the larger size of holding as well as greater size of the fragments.

Structure of land holdings for scheduled castes

Besides studying the overall structure of land holdings and their pattern of fragmentation the authors were interested in examining these same aspects for the scheduled castes who constitute the socially and economically weaker sections.

Among the scheduled castes in Maharashtra the Mahars, Mangs and Chambhars are numerically the most important, accounting for over 98 per cent of the total scheduled castes. The Mangs as a community do not own any land. Whereas among the Mahars and Chambhars there is a tendeny to lease out their lands on a share cropper basis to the other cultivating castes.

For Parodi, the area uuder different classes of land holdings is nearly the same for both, the scheduled castes and non -scheduld castes. In the case of Shere though the trend is similar, an increase in area with Increase in size classes, the porporation of area held by the scheduled castes. in the last four classes is much higher as compared to the non-scheduledc astes. The last category also shows remarkable difference with 21 per cent for scheduled castes as against 64 per cent for the non scheduled castes. This is because it is only the large farmers who own considerable amount of area under grass in Shere, and the scheduled castes being the small holders (83 per cent below 5 acres), do not have much area in this category above 10 acres. In Late also a similar pattern is observed, with not a single scheduled caste holder owning land over 10 acres.

Striking contrasts in the number of

fragments for scheduled caste holdings and non scheduled castes holdings are observed for Shere. Fragmention is maximum (66.67 per cent) in the case of small schduled caste holders. In contrast, it is only 27.82 per cent for non scheduled caste small holders. In Parodi and Late the pattern is similar for both the communities.

The size of fragment in almost all cases for all the three villages is more for the scheduled caste holders. This analogous pattern for the economically weaker sections of the society which is either land less or owns only a marginal holding could be explained more lucidly with the help of the cultural factor operating in the area. The scheduled castes' attachment to their land is not as strong as the higher castes who till their own lands, whereas the scheduled castes normally give away their lands to the other cultivating castes, in perference to assured wages or a job in the city. Another reason could be that land ownership among the higher castes is generally associated with social prestige. Hence they would perfer to cling on to the small fragment from their inheritance rather than face the prospect of being turned into a land less gentry, which would not only mean social degradation but also a loss of one's roots in the context of the rural Indian society.

Patterns of agricultural practices

Here an attempt is made to examine the relationships between the size of landholding on the one hand and the type of implements used by the farmers, nature of inputs, his attitude towards application of new techniques, and methods and the farmers problems and requirements on the other. For this analysis, information was collected from personal interviews with the farmers belonging to different classes of landholdings in the above three villages.

As all holders below 5 acres in Shere are economically too weak to own all the implements needed for agricultural operations, the usual practice is to share many of these implements among three or four farmers. In Parodi also, the small holders possess sometimes a harrow or a planker, and some small implements. But in both, Shere and Parodi, some medium farmers (5-10) and all big farmers (above 10 acres) possess all the nacessary implements, including a bullock cart. In addition to this farmers in Parodi make use of oil engines and one farmer even owns a tractor. Not only in Shere, but also in the area around 10 km from Shere, no one owns a tractor. This is mostly attributed to the size of paddy field and the nature of terrian. In Late, even a small farmer in majority of the cases owns a plough and seed drill, with at least one at two bullocks, and a cart and keeps one or two cows, or buffaloes, sheep and some poultry birds. Oil engines or electric pumps, tractors and other farm machinery are used mostly by big farmers (above 10 acres). In all the three villages, small farmers rarely employ labour outside their family, but the medium farmers employ seasonal labour, whereas some big farmers in Late require permanent labour, a feature rarely observed in Shere or Parodi.

Farmers in all classess(with few exceptions) In Shere are conservative in their attitudes towards the adoption of new techniqutes, use of chemical fertilizers and improved seeds. Experiments in the recent past being unsuccessful, most of the farmers rarely use improved varieties of rice. Though occasionally some farmers were using chemical fertilizers like urea and supper phosphate, farm yard manure is prefered by all. In Parodi also farmers use farmyard manure in place of fertilizers. They practice crop rotation as a technique of dry farming. In contrast to the above, farmers in the irrigated village Late, are more progressive in their outlook. Even a small farmer with irrigated land uses hybrid varieties of jowar and improved varieties of cotton and wheat. At the same time they also use chemical fertilizers and pesticides,

the quantity depending upon the economic strength of the farmer.

In Shere normally the farmers are assured of at least one kharif crop due to heavy rainfall. But water is the crying need in Parodi. Located in drought prone areas, the farmers harvest only one good crop in five years. Many a time when the rains fail, the grain crop has to be used as fodder for cattle. In the drought years, even the big unirrigtead farmers perforce have to work as labourers elsewhere. The small holders have to work as agricultural labourers even in the normal years, the low crop yield per unit area being too low to support the farmers family for the whole year. So many small farmers place jobs ast heir second priority, besides water. Capitalis the third priority, needed badly, more so, after a scarcity year to rehabilitate the farmers. The small farmers in Late place capital as their first priorty. Though located in the drier areas, due to irrigation, water is not a problem as in the case of Parodi. The farmers require capital to reinvest in the land in the form of inputs. Even small farmers in Late make demand for an efficient distribuiion system improved seeds fertilizers and pesticides as their timely distribution and availability can influence the crop yield considerably.

Lastly, agricultural productivity is also related to the size of land holdings, along with other factors. Inputs in land vary considerbaly, according to the size of holdings, which reflect the economic strength of the farmer and therefore the outputs also vary. The yield of rice, a major crop in Shere, varies from 8 quintals/acre in the case of a small holder with less inputs to 12 quintals/acre in the case of a big farmer, with larger in puts. In Parodi, the yields are low in all cases. Average yields for Bajra vary between 4 to 5 quintals/acre and for Jowar 4 quintals/acre. Irrigation being an important factor affecting the productivity, it has a rele invance the contex of the size productivity relation ship (Dhongade 1978). In Late, depending upon the nature of inputs, the yields for selected crops vary significantly, e. g. for sugarcane 70 to 90 tons/acre, wheat 8 to 11 quintals/acre, cotton 8 to 13 quintals/acre and jowar 8.5 to 12 quntals/acre.

Agricultural pracitices of scheduled caste farmers

The picture for the scheduled castes farmers, unlike the other cultivating castes is not clearly reflected in either the size or nature of their land holdings. The reason being that a great majority of them are either landless or marginal (less than 1 hectare) holders. Even among those who own land, few cultivateit by themselves. The normal practise being that of giving it out on lease for a 50 per sent share of the produce. Nearly all scheduled castes share the same basic constraint, a lack of necessary infra-tructure (bullocks, plough, capital etc.) for operating their farms, and under these circumstances, they find it more practical to lease them out for some returns, however meagre. The main disadvantage in such a system is that they are not only deprived of their legitimate share of the produce, but they are totally dependent on and at the mercy of the cultivating castes for their mere subsistence. This only helps to further perpectuate their condition of social and economic deprivation. Apart from the economic constraints, the authors im-pressions are that the cultural factor is also potent in explaining their aversion to cultivation. Though traditionally the scheduled castes have provided services and farm labour for the agriculturist, being a part and parcel of the agricultural system they lack tradition, skill and capacity for carrying out the various farm operations, which are not only continuous, but also require sustanied effort.

From the micro-level analysis of the nature of involvement of the scheduled castes minute differences within a generalized model of farm operation for the them could be discerned.

In all the three villages, only Late has

43 out of the 44 scheduled caste families owning land. Yet, fewer than a quarter, cultivate their own lands, as most of them prefer to lease them out to others, while they themselves work as agricultural labourers for daily wages, sometimes even on their own piece of land. In Parodi and Shere, the situation is slightly different, only fifty per cent of the scheduled castes are land owners, and nearly all of them due to the precarious nature of agriculture in these parts, work either as agricultural labourers or manials. Only Shere in the sample villages has the unique distinction of having atleast one member from each scheduled caste household being employed in the Bombay Municiple Corporation. In all the three villages, Mangs neither own any land nor are employed outside agriculture. They are the only scheduled castes who to some extent, still continue to work as Balutedars. For the rest of the scheduled castes, there are more instances among the Chambars of cultivating their own lands. As for the Mahars, nearly all of them lease out their lands on share cropping basis.

Furthr constraints are imposed by lack of capital, necessary implements and the marginal nature of their holdings. The practise of leasing out their lands and not cultivatiag them personally has further weakened their association with the productive aspects of the agricultural economy. This is reflected in their total unconcern and ignorance about matters like inputs-outs for farmings operations. Even their lack of perception about the advantages of cultivating their lands themselves, instead of leasing them out to others, can be attributed to this lack of personal experience and involvement in land exploitation. Thus under the present pattern of land exploitation, it is rather difficult to asses the economic potential from farming for the scheduled castes. This becomes further hazy when one of takes into account that it is only partly related, to the structure of there land ownship, bearing in mind the practise of farm exploitation. Since the lands owned by the scheduled castes in many instances are of good quality, greater promise lies in pooling their lands together and operating them on a cooperative basis. They would not only receive better returns by making them operationally more viable (from the present subistence level), but it could also remove the economic constraint which they face individually.

Conclusion

A vivid picture of the areal differences in the pattern of land holdings and the practise of agriculture have emerged in the case of the three villages under study. The structure of land ownership along with the other physics-socio-economic factors are important considerations, which exert considerable influence on the choice farmer makes for the crops he grows and the manner in which he exploits his farm. In the analysis it was revealed that the combination of crops and livestock, the type of farming and allocation of resources, all depend on two major factors, the amount of land at the farmers disposal and the facility for irrigation. The constraints imposed by the physico-climatic factors seem to pale into insignificance with the availability of water, (as is seen in the case of Late) and the pattern of land utilisation no longer reflects the otherwise sever limitations imposed by the natural factors. The problems of the scheduled castes are even more complex as they own even fewer productive resources, which they do not themselves exploit. Therefore, for making rural development more viable, a major change in the structure of landownership and the method of exploitation are necessary.

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