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Per acre utilization of fertilizer is higher (30 kg.). The percentage of area under double cropped (81 per cent) and multiple cropping (30 per cent) and utilization of HYV seeds (60 per cent) are also higher. Wage rate is also higher (Rs. 4.00). Land purchase gets lower priority in the utilization of agricultural savings (23.39 per cent). The price of land has not risen as high as in 'A' and 'B'. Kautsky is also of the opinion that "The simple commodity production peasant can, thus, pay a higher price for a given piece of land than one who produces on a capitalist basis."²⁴

SUMMING UP

Thus, the agrarian relations in the villages under study are neither pure feudal nor pure capitalist. It has the features of both mingled with each other in varying degrees. Feudalism is disintegrating. Capitalism is either penetrating or making ground slowly for its penetration. This conforms to the historical evolution of agrarian relations and development. Lenin also opines that "the capitalist economy could not emerge at once and corvee economy could not disappear at once. The only possible system of economy was accordingly a transitional one, a system combining the features of both the corvee and the capitalist system... with all the endless variety of forms characteristic of a transitional epoch."²⁵ Actually "capitalism penetrates into agriculture particularly slowly and in extremely varied forms."²⁶

Thus, "there can not be any doubt that in agriculture the process of development of capitalism is immeasurably more complex and assumes incomparably more diverse forms."²⁷ The variations in these transitional forms may be explained in terms of mainly two features: independency of direct producers and the system of production for use values or market values. The first case is of bonded direct producers and the system of production for use values; the second of independent direct producers and the system of production for use values and the third one of independent direct producers and the system of production for market values. This has put the agricultural economy of the villages at different stages of development.

AN ANALYSIS OF AGRARIAN STRUCTURE IN THE PUNJAB

S. S. Grewal and P. S. Rangi*

The agrarian structure prevailing in a country at a point of time has a close bearing on its agricultural development and hence on the overall development of the economy. A number of developing countries including India

24. Kautsky: *Agrarian Question*, French Edition, 1899, Chapter VIII.

25. Lenin: *op. cit.*, Vol. III, p. 194.

26. *ibid.*, p. 178.

27. Lenin: *op. cit.*, Vol. IV, p. 111.

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are in the process of modifying their agrarian systems to make these conducive to the development process. The agrarian structure in our country seems to have undergone changes under the impact of demographic, institutional and technological factors as well as overall development of the economy. But the impact of such factors is different in different areas except the demographic pressures which are common to all the States, although the intensity varies slightly.

We have made an attempt in this paper to analyse the agrarian structure in Punjab—the most agriculturally advanced State of the country. This State is distinct from other areas in the matter of technological break-through experienced in agriculture. The seed-cum-fertilizer technology which is essentially capital intensive in nature has led to sizable income generation on the farms. This factor in conjunction with some other factors mentioned above is bound to influence the agrarian structure of the State over time.

The central hypothesis sought to be tested in this study is that capital intensive technology which, *inter alia*, is characterized by large scale introduction of tractors and allied equipment has led to inequality in operational holdings making it possible for a small section of the farming population to operate a much larger area and exercise a greater control over the land and labour markets.

SOURCE OF DATA

Regarding the structure of ownership and operational holdings in the State, we have made use of data available from the different Rounds of the National Sample Survey (NSS). This macro level evidence was, however, considered inadequate from the point of view of identifying the reasons behind the change, and also it was rather old—the latest information pertaining to the year 1971-72 by which time the technological change in agriculture had not come into full operation. Thus it was supplemented by a micro level study conducted in a representative village (Ballawal) of Ludhiana district—one of the agriculturally developed districts of the State where new technology had permeated quite well. The village was selected purposively for reasons of very intimate knowledge about the village. All the farmer households in the village were studied covering the aspects of size distribution of holdings, source of draft power, irrigation, ownership of machinery, employment of labour, land transactions, etc. The information related to the year 1981. A comparison was made over time by checking with the farm operators the position obtaining in 1966, *i.e.*, on the eve of introduction of new High-Yielding Varieties (HYVs) of wheat. Because of the limitation of the recall method, information for this year was confined only to the size of ownership and operational holdings, source of draft power, for which there was no difficulty.

The results of the study are discussed in two parts. The first part deals with the position at the State level as reflected by the NSS data and the second part gives the findings of a village study.

I

POSITION AT STATE LEVEL

Ownership Holdings

The information on land ownership and operational holdings in the Punjab is given in Table I. The average size of owned holdings per household had declined from 8.44 acres in 1953-54 to 7.96 acres in 1961-62 and further to 5.06 acres in 1971-72. The classwise analysis broadly revealed that during the three points of time there has been a decline in the proportion of owners and per cent area owned in the large categories, *i.e.*, 15 acres and above. On the other hand, there was a substantial increase in the proportion of owners in the lowest size category, *i.e.*, 2.5 acres and below, but the area owned showed only a marginal increase. Hence, the average size of holdings declined. Again, there has been a decrease in the proportion of owners in the size category of 7.5 to 15.0 acres but the total area operated and the average size of farm have gone up. Thus, on ownership basis, the small and marginal holdings have increased in numbers and there was a decline in the bigger sized holdings. The medium sized holdings (7.5 to 15.0 acres) also increased in importance on the basis of the proportion of area owned.

Operational Holdings

The average size of operational holdings in the State showed a marginal increase during the period, being 9.36, 9.51 and 10.01 acres in 1953-54, 1961-62 and 1971-72 respectively. The data revealed that unlike a substantial increase in the proportion of owners in the lower size category, *i.e.*, 2.5 acres and below, the proportion of operators has declined during the period. The proportion of operational holdings in the size-groups of 2.5 to 7.5 acres and 7.5 to 15 acres showed an increase, although there was not much change in the average size of operational holdings. In the size-group 15-25 acres, there was not much change in the proportion of operators as well as the area operated, although the average operational size increased in 1971-72 over 1961-62. In the highest size-group, *i.e.*, 25 acres and above, the proportion of operators as well as the area operated declined in 1971-72 compared to 1961-62, but the average size showed an increase. Thus, on the basis of operational pattern of holdings it could be inferred that very small operators (below 2.5 acres) were declining in importance and so was the case of very big operators, *i.e.*, above 25 acres. While operators in the size-group 15-25 acres maintained their position, operational holdings between 2.5 and 15 acres increased during the period selected for study. It is important to note that, in general, the average size of operational holdings has increased in four out of five groups and this increase was particularly more in the upper groups, *i.e.*, 15 acres and above. It was apparent that the new technology in agriculture favoured an increase in the size of operational holdings.

TABLE I.—DISTRIBUTION OF OWNERSHIP AND OPERATIONAL HOLDINGS IN PUNJAB

Size class	Ownership holdings										
	1953-54					1961-62					1971-72
	Number	Area	Average size (acres)	Number	Area	Average size (acres)	Number	Area	Average size (acres)	Number	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Less than 2.5 acres	..	35.85	3.68	0.81	39.90	3.95	0.79	65.02	4.47	0.26	
2.5-7.5	..	26.78	16.53	4.85	26.01	15.69	4.80	17.65	22.46	4.85	
7.5-15.0	..	23.04	21.71	7.40	18.80	25.37	10.75	11.34	31.31	10.52	
15.0-25.0	..	8.23	20.08	21.60	8.61	20.66	19.12	3.58	18.12	19.27	
25 and above	..	6.10	37.98	48.98	6.68	34.33	40.91	2.41	23.64	37.37	
Total	..	100.00	100.00	8.44	100.00	100.00	7.96	100.00	100.00	5.06	
Operational holdings											
Less than 2.5 acres	..	34.74	1.95	0.52	23.43	2.48	1.01	12.04	6.13	2.16	
2.5-7.5	..	23.51	12.25	4.87	28.81	14.39	4.75	35.18	17.30	4.89	
7.5-15.0	..	21.71	24.45	10.54	25.38	27.13	10.17	34.80	33.30	9.67	
15.0-25.0	..	11.31	22.83	18.90	13.64	24.95	17.41	12.04	23.88	22.40	
25 and above	..	8.73	38.52	41.26	8.74	31.05	33.05	5.44	19.39	35.97	
Total	..	100.00	100.00	9.36	100.00	100.00	9.51	100.00	100.00	10.01	

Source: National Sample Survey, Eighth, Seventeenth and Twenty-Sixth Rounds.

Note:—Data for the years 1953-54 and 1961-62 included information for Haryana and Himachal Pradesh also. This, however, would not make much difference, since we have not taken into account the absolute numbers.

Factors Behind Change

The major factor responsible for a decline in the size of ownership holdings was the rapid growth of population. The rural population in the State increased by 40.7 per cent between 1961 and 1981 as against only 12 per cent increase in the area under cultivation in the same period. The land ceiling legislation also encouraged the sub-division of holdings. The break-up of larger holdings was further undertaken to escape the levies of Estate Duty and Wealth Tax. Apart from this, the small and marginal land holders are exempted from land revenue and can also avail the concessions under the programmes for the weaker sections sponsored by the SFDA and MFALA. Lastly, with the economic development in the State, the joint family system is giving way to the nuclear family system.

II

MICRO LEVEL EVIDENCE

In this section we are presenting the results of a village study to capture the changes in the agrarian structure more precisely. The pattern of ownership and operational holdings is given in Table II.

Ownership Holdings

The number of households owning land increased from 65 in 1966 to 110 in 1981 (an increase of 69 per cent). The total area owned also showed a slight increase of 59 acres during this period.¹ The average size of ownership holdings decreased from 13.0 acres to 8.2 acres in the above period. A comparison during the two points of time revealed that the number of households showed a marked increase in all the small sized categories below ten acres. The number of households in the size-groups of less than 2.5 acres, 2.5 to 5 acres and 5-10 acres increased in 1981 as compared to 1966. In the case of holdings above ten acres, there was a decrease in the percentage of owners almost in all the size-groups. Thus, the ownership pattern indicated a structural shift towards small and marginal holdings and this evidence was in line with the picture at the State level. The ownership holdings in the village had broken up primarily due to sub-division resulting from population growth.

Operational Holdings

The number of operating households was 69 in 1981 compared to 55 in 1966. The increased number of operating households (25 per cent) was much less compared to the number of owner households (69 per cent). The average size of operational holdings showed a slight decrease from 15.36 to 13.10 acres during the period 1966-1981. Among the 69 operating households, 35 (51 per cent) were bullock operated, 16 (23 per cent) had tractors along with bullocks and 18 (26 per cent) did farming by custom-hiring the tractor

1. Due to purchase of land in the adjoining village.

TABLE II—PATTERN OF OWNERSHIP AND OPERATIONAL HOLDINGS, STUDY SAMPLE, 1981

Size class	Ownership holdings				Operational holdings			
	1981		1966		1981		1966	
	Number of households	Area owned	Number of households	Area owned	Number of households	Area operated	Number of households	Area operated
								(area in acres)
Less than 2.5	8 (7.27)	13 (1.44)	1 (1.54)	2 (0.24)	7 (10.15)	13 (1.44)	—	—
2.5-5.0	30 (27.27)	87 (9.62)	7 (10.77)	17 (2.01)	11 (15.94)	45 (4.98)	—	—
5.0-10.0	39 (35.45)	256 (28.32)	17 (26.15)	103 (12.19)	20 (28.98)	147 (16.26)	12 (21.82)	74 (8.76)
10.0-15.0	15 (13.64)	157 (17.37)	19 (29.23)	254 (30.06)	12 (17.39)	149 (16.48)	10 (18.18)	113 (13.37)
15.0-20.0	8 (7.27)	124 (13.72)	9 (13.85)	141 (16.69)	5 (7.25)	92 (10.18)	13 (23.64)	196 (23.20)
20.0-30.0	6 (5.46)	125 (18.82)	10 (15.38)	228 (26.98)	5 (7.25)	142 (15.71)	16 (29.09)	329 (38.93)
30 and above	4 (3.64)	142 (15.71)	2 (3.08)	100 (11.83)	9 (13.04)	316 (34.95)	4 (7.27)	133 (15.74)
Total	110 (100.00)	904 (100.00)	65 (100.00)	845 (100.00)	69 (100.00)	904 (100.00)	55 (100.00)	845 (100.00)
Average size of holding..		8.22		13.00		13.10		15.36

Note:—Figures in parentheses are percentages of the column totals.

services. As against this, there was only one tractor operator in 1966 and all others were bullock operated farms. An interesting development with the introduction of tractors was the emergence of farmers having no draft power of their own and who depended upon custom-hiring tractor services. They were mostly part-time farmers belonging to the service class in the village. The average size of operational holdings in the case of bullock operated farms, tractor operated farms and custom-hiring farms was 11.1 acres, 31.78 acres and 4.72 acres respectively and their share in the total operated area was 42.9, 47.7 and 9.4 per cent respectively. It was important to note that only 9 households in the village with operational holdings above 30 acres (accounting for 13 per cent of operating households) operated as much as 35 per cent of the operated area and they were all tractor farmers. Similarly, in the size-group of 20-30 acres, 7 per cent of the farmers operated about 16 per cent of the area. They were also tractor operators. These two categories representing only 20 per cent of the farm operators, cultivated over 50 per cent of the operated area in the village. In sharp contrast to this, in the size-groups of 5-15 acres, 46 per cent of the farmers operated only 33 per cent of the area and they were mostly bullock operators.

The above analysis showed that in the matter of ownership holdings there was a break-up of the larger holdings into smaller units, but in regard to operational holdings, the trend was not similar. A large percentage of the area was being operated by the bigger size-groups—particularly the tractor operators. Thus, capital intensive technology in agriculture has widened the inequality in the operational holdings in favour of tractor operated farms, squeezing out the bullock operators in this process.

Tenancy Pattern

The leasing-in and leasing-out pattern is shown in Table III. On overall basis, the leased-in area as a percentage of operational area was 19.7. There was no leased-in land in the size classes upto 5 acres. The percentage of leased-in area for different size-groups ranged between 10.9 to 27.2, the maximum being for the size-groups of 30 acres and above and 5-10 acres. Of the total leased-in area in the village, the largest size class, *i.e.*, 30 acres and above accounted for 46 per cent of the total leased-in land.

The leasing-out pattern of holdings was examined to know the classwise position of the leased-out area. This depicted just a contrary picture. Of the total leased-out area, the small size-groups, *i.e.*, upto 5 acres accounted for 28 per cent of the total leased-out area and as much as 59 per cent of the area if we take into account the owners upto 10 acres. The proportion of leased-out land in the bigger size-groups was relatively small. It was quite apparent that most of the leasing-out was done by the small owners and the leasing-in by the big operators of land. This evidence belied the impression that leasing-out of land was done by the big owners of land and leasing-in by the small owners. The policy measures directed towards tenancy reforms should take cognizance of the changed scenario.

TABLE III—LEASING-IN AND LEASING-OUT PATTERN, STUDY SAMPLE, 1981

TABLE III.—LEASING-IN AND LEASING-OUT PATTERNS, STUDY SAMPLE, 1961

Size class of operational holdings		Total opera- tional area	Leased-in area			Size class of ownership holdings	Area owned	Area leased out	Leased out as percentage of		(area in acres)
			Area leased in	As percent- age of operated area in the class	As percent- age of total leased-in land				Leased out area in the village	Owned land in the class	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		
Less than 2.5	..	13	—	—	Less than 2.5	13	2	1.12	15.4		
2.5-5.0	..	45	—	—	2.5-5.0	87	48	26.97	55.2		
5.0-10.0	..	147	40	27.2	5.0-10.0	256	56	31.47	21.9		
10.0-15.0	..	149	24	16.1	10.0-15.0	157	29	16.29	18.5		
15.0-20.0	..	92	10	10.9	15.0-20.0	124	—	—	—		
20.0-30.0	..	142	22	15.5	20.0-30.0	125	18	10.11	14.4		
30 acres and above	..	316	82	25.9	30 acres and above	142	25	14.04	17.6		
		904	178	19.7	100.0	904	178	100.0	19.7		

Terms of Contract

As regards the terms of contract in the land-lease market it was found that over 80 per cent of the area was leased in on cash rental basis, the rest being covered by sharing of produce. Again, in most of the cases, the rent was paid in advance and partly during the course of the year to which the lease related. The duration of the tenure in none of the cases extended beyond two years at the first instance. Contracts of longer duration were not made by the owners in view of rising land rents and also because of the lurking apprehensions that longer leases would entitle the tenants to the rights for cultivation of land. Land leases were not registered under the provision of tenancy laws, although the tenants invariably obtained the receipts for rents paid. This operating mechanism in the lease market worked quite satisfactorily. The emergence of this pattern has made it possible for the large farmers who have some sources of non-farm income also to edge out the small operators from the land-lease market.

Operation of Land Market

(a) *Purchase of land*:—The study showed that a total of 124 acres of land changed hands through sales or mortgages between 1966 and 1981. The biggest category of operators, *i.e.*, 30 acres and above accounted for 82 acres (66 per cent of the land) during the period. It would be important to know that all these farm operators had supplementary source of non-farm income. The share of the pure farming class, *i.e.*, with no non-farm income was only 14.5 per cent in the transacted land. Some land was also purchased by farmers not actively engaged in farming.

The periodwise break-up of these land transactions indicated that 45 per cent of the transactions took place between 1966-70, 31 per cent between 1970-75 and 24 per cent afterwards. This showed that the land market was freezing over time.

(b) *Sale of land*:—The position regarding sale of land by different size classes showed mixed evidence. The land was sold or mortgaged out for several social and economic reasons. The sale was effected by the issueless families, daughters who inherited land under the Hindu Succession Act and also by the families indulging in extravagance in social and religious ceremonies, litigation and also marked by general lethargy and negative attitudes towards work. It would be interesting to mention that so far, small and marginal farmers have withstood the competition in the profession and were continuing in farming. We, however, feel that with further induction of capital intensive technology and under the pressures of competition they will, by and by, be forced into a state where whole-time farming will not be a paying proposition for them.

Ownership of Farm Machinery

As a next step, we have examined the distribution of important machinery assets and the employment of permanent labour among different size classes of

farmers with a view to knowing the inequality in the ownership of these items. This information is given in Table IV. The figures clearly revealed that there was sharp inequality in the ownership of machinery asset as well as employment of permanent labour. The two size categories above 20 acres which constituted about 20 per cent of the farm operators owned about 69 per cent of the tractors, 49 per cent of the electric motors and 25 per cent of the diesel engines in the village. They also engaged 60 per cent of the permanent labour. One would expect a strong positive relationship between the holding size and the ownership of the tractors because of the heavy investment involved. The same is, however, equally well true of the other items, *i.e.*, electric motors, diesel engines, although these are mostly considered to be the components of scale neutral technology. At this point, it would be pertinent to point out that the differential access to these items was responsible for encouraging more remunerative cropping pattern on relatively bigger size holdings. This was borne out by the fact that a major portion of the paddy production (most paying crop of the *khari* season) was accounted for by the top two classes of operators.

TABLE IV—DISTRIBUTION OF FARM MACHINERY ASSETS AND PERMANENT LABOUR BY SIZE-GROUPS, STUDY SAMPLE, 1981

Size class	Per cent farm operators	Tractors	Electric motors	Diesel engines	Permanent labour
2.5 acres ..	10.15	—	1 (2.8)	4 (5.6)	—
2.5-5.0 ..	15.94	—	3 (8.6)	15 (21.1)	2 (5.7)
5.0-10.0 ..	28.98	—	7 (20.0)	20 (28.3)	3 (8.6)
10.0-15.0 ..	17.39	1 (6.2)	4 (11.4)	7 (9.8)	4 (11.4)
15.0-20.0 ..	7.25	4 (25.0)	3 (8.6)	7 (9.8)	7 (14.3)
20.0-30.0 ..	7.25	6 (37.5)	7 (20.0)	6 (8.5)	7 (20.0)
30 and above ..	13.04	5 (31.3)	10 (28.6)	12 (16.9)	14 (40.0)
	100.00	16 (100.0)	35 (100.0)	71 (100.0)	35 (100.0)

Note:—Figures in parentheses are percentages of the column totals.

Apart from the hold on permanent labour, a very interesting development was the hold of big farm operators on the employment of migratory labour. At the time of enquiry, there were four gangs of migratory labour of 7 to 12 persons each. These labourers were residing in the farm houses/tubewells of big operators and hence these farms had no difficulty in the employment of casual labour but it was not so easy for the other farms.

Farm-Labour Relations

The introduction of new technology in farming has generated considerable demand for labour pushing up its earnings in the process. This has helped in improving the economic conditions of the labouring classes and also their capacity to bargain for wages with the employer. *Inter alia*, this is reflected in the low proportion of workers working as attached labourers over the period. Earlier, the labourer used to work with the same farmer for years together but now they change their employers frequently to seek better cash terms and working conditions. The introduction of machinery has improved the working conditions of the labourers, effected a reduction in the working hours and human drudgery. A preference on the part of labourers to work with farmers having machinery was noted. The relationship between farmer and labour was becoming business-like and the practice of extracting forced labour has disappeared altogether.²

MAIN FINDINGS AND POLICY IMPLICATIONS

The evidence available in the different Rounds of the NSS as well as in the village study revealed that there was a sizable decline in the size of ownership holdings and area owned in the bigger size-groups, thus swelling up the number of small and marginal farmers. The sub-division of land holdings was mainly due to the fast growth of population and also the imposition of land ceiling laws, whereby the big owners disposed of their surplus land and/or surrendered the surplus land. Sub-division was also undertaken in many cases to escape the levies of Estate Duty and Wealth Tax. A positive impact of land ceiling legislation has been to curb the tendency to own more land.

In the matter of operational holdings, however, the position was different. There was no or little decline in the operational holdings over time. The introduction of tractors on a large scale in the State (29 tractors per thousand hectares) has led to sharp inequalities in operational holdings where a small proportion of tractor owners cultivated a large part of the land. Similar inequality was in evidence in the ownership of machinery and employment of permanent labour. The bullock operators were losing ground in the competition. This type of development has wider implications by way of income distribution. Left to itself, the free play of market forces would accentuate the process. On the policy front, we need to seriously consider whether such a trend is desirable based on economic and social considerations. One can argue that there is a need to think in terms of putting a maximum limit on the operational holdings also, so long as gainful alternative employment opportunities were not made available to the ever increasing number of small and marginal farmers.

2. Based on A Study of the Economic Profile of Agricultural Labour in Punjab, 1980 by R. S. Dhaliwal, Department of Economics and Sociology, Punjab Agricultural University, Ludhiana, conducted under the supervision of the senior author.